



## TUALATIN CITY PLANNING COMMISSION MEETING

THURSDAY, APRIL 20, 2023

TUALATIN CITY SERVICES BUILDING  
10699 SW HERMAN RD  
TUALATIN, OR 97062

OR

### Join Zoom Meeting

<https://us02web.zoom.us/j/82237590588?pwd=em1XTnpQenJveTEwaTdVSEZ5ZmRBdz09>

Meeting ID: 822 3759 0588

Passcode: 220783

Find your local number: <https://us02web.zoom.us/u/kgyATdbqQ>

Bill Beers, Chair

Janelle Thompson, Vice Chair

Daniel Bachhuber, Randall Hledik

Zach Wimer, Brittany Valli

Ursula Kuhn

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### CALL TO ORDER & ROLL CALL

### ANNOUNCEMENTS & PLANNING COMMISSION COMMUNICATION

### COMMUNICATION FROM THE PUBLIC (NOT ON THE AGENDA)

Limited to 3 minutes

### APPROVAL OF MINUTES

1. Review of TPC Minutes for October 20, 2022, and November 17, 2022.

### COMMUNICATION FROM CITY STAFF

1. Informational presentation on Tualatin's Equitable Funding Action Plan.

### ACTION ITEMS

1. The Planning Commission is asked to make a recommendation to the City Council on a request for a Plan Map Amendment (PMA) from Medium-Low Density Residential (RML) and Institutional (IN) to High-Density High Rise (RH-HR) located on a 9.2-acre site at 23370 SW Boones Ferry Road.

The Planning Commission is asked to make a recommendation to the City Council on a request for a Plan Text Amendment (PTA) that would remove the locational factors from the High-Density High Rise (RH-HR) purpose statement in Tualatin Development Code Section 44.100 and revise Table 44-3 to limit the structure height to 4 stories or 50 feet in the RH-HR zoning district south of Norwood Road, which would be applicable to the subject site.

## ADJOURNMENT



## Tualatin Planning Commission

### MINUTES OF October 20, 2022

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**TPC MEMBERS PRESENT:**

William Beers, Chair  
 Janelle Thompson, Commissioner  
 Ursula Kuhn, Commissioner  
 Zach Wimer, Commissioner  
 Randall Hledik, Commissioner  
 Daniel Bachhuber, Commissioner  
 Brittnay Valli, Commissioner

**STAFF PRESENT:**

Steve Koper  
 Keith Leonard  
 Jonathan Taylor

**GUESTS:** Elaine Howard

**TPC MEMBERS ABSENT:** None

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**CALL TO ORDER AND ROLL CALL:**

The meeting was called to order at 6:30 p.m. and roll call was taken.

**ANNOUNCEMENTS AND PLANNING COMMISSION COMMUNICATION:**

Motion to Vote for Vice Chair Thompson.

4 AYE

0 NAY

MOTION PASSED UNANIMOUSLY

**COMMUNICATION FROM STAFF:**

1. **Review the proposed Core Opportunity and Reinvestment Area Plan and vote to find conformance with the Tualatin Comprehensive Plan 2040.**

Jonathan Taylor, Economic Development Manager started his presentation with introductions of consultant Elaine Howard. Ms. Howard went over the overview of the topic. She explained the role of the Planning Commission to review the draft Core Opportunity and Reinvestment Area Plan and Report for conformance with the Comprehensive Plan 2040. She went over terminology commonly used.

These minutes are not verbatim. The meeting was recorded, and copies of the recording are retained for a period of one year from the date of the meeting and are available upon request

Ms. Howard explained the public input they received were through a variety of individual meetings. She noted it was a wide variety including the following: Tualatin Chamber of Commerce, Tualatin Parks Advisory Committee Presentation, Planning Commission Work Session, Portland General Electric Meeting, Commercial Citizen Involvement Organization Meeting, Level Development, Macadam Forbes, Tualatin Development Commission, Planning Commission and City Council.

Ms. Howard showed a map of the proposed boundary and explained location is smaller than first proposal. Mr. Taylor explained they originally included Bridgeport Village with anticipation of SW Corridor being built and passed. He explained Feasibility Study 2019 was readjusted due to changes since 2019. He noted next public outreach includes speaking with Clackamas County, Washington County and the Tualatin Tigard School District.

Mr. Taylor went over Tualatin's proposed project map with focus on mixed use development, affordable housing with transportation, community identity, and infrastructure development. He listed the projects and location of the following: 18970 Catalyst project, flood mitigation, main street corridor, pedestrian development, intersection improvements, river plaza, and -9. Regional projects.

Ms. Howard spoke about maximum indebtedness and how it was calculated using a 4% assessed value growth scenario. She noted urban renewal area does not increase property taxes.

Mr. Taylor explained the funding requirements and process that involves \$8 million bond. He let commissioners know Tualatin Development Commission fund something else or not a public building.

Commissioner Bachhuber asked if there was any conflict with a City Council being a part of City Development Commission. Mr. Taylor answered only conflict would be owning property and wanting to develop. Ms. Howard noted they would also excuse themselves on project with conflict of interest.

Commissioner Bachhuber asked if inflation and increase taxes affected this funding. Mr. Taylor answered they had to go back through and adjusted it from \$84 million to \$80.2 million. He noted inflation will be looked at when taking loans out for the next thirty years. He mentioned finance director will not be doing any financing for the next four years due to the market.

Commissioner Bachhuber asked for overview of composition of projects related to Urban Renewal. Mr. Taylor answered there are three processes in order to fund infrastructure being the following: transportation development plan, update water storm plan and zone changes.

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Commissioner Bachhuber asked if zoning changes can be established through urban renewal growth. Mr. Taylor answered zoning code changes have to go through Planning Commission recommendation to City Council.

Chair Beers made a motion the Tualatin Planning Commission finds, based upon the information provided in the staff report and the provided attachments, that the Core Opportunity and Reinvestment Area Plan conforms to Tualatin Comprehensive Plan 2040 and recommends Tualatin City Council adopts the proposed plan.

6 AYE

0 NAY

MOTION PASSED UNANIMOUSLY

## **2. Tualatin Development Code Update 2022-2023**

Keith Leonard, Associate Planner, started his presentation of overview of the project scope of amendments. He shared the amendment are to fix typos, inconsistencies, modernize code, update code section and comprehensive plan reference and make text more easily readable.

Mr. Leonard shared the changes in Table 32-1 Application Types and Review Procedures to lower Architectural Review Board thresholds for Commercial, Industrial and Institutional uses. He spoke about minor changes for TDC32.140- Application Submittal.

Mr. Leonard went over changes being proposed for Chapter 33- Applications and Approval Criteria. He spoke about annexations update for submittal requirements to be consistent with practice. He explained architectural review changes in lowering Architectural Review Board review thresholds. He went over changes in application requirements with the following requirement: existing conditions, electronic materials board, preliminary title report and applicable service providers.

Mr. Koper noted that the changes will allow more clarity and City Council will receive the packet with the changes so they can review them and if anything sticks out they can be aware.

Mr. Leonard noted the change of minor architectural review clarifies that changes to building exterior, landscape or hardscape triggers a review. He mentioned threshold increase from 200 sq. ft to 500 sq. ft. Mr. Koper noted the zoning area industrial and smaller area of change wouldn't need an architectural review.

Mr. Leonard spoke about the addition of if 10 trees are removed during a calendar year then a minor architectural review will be required and referenced in Chapter 34. Mr. Koper noted the

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overlap that is currently set for tree removal process.

Mr. Leonard shared in Chapter 33- applications and approval criteria changes. He stated in Chapter 33 remove the statement requiring conformance with the Tualatin comprehensive plan as this is only required for comprehensive plan amendments. Adjusted numbering and submittal requirements in zoned. He spoke about TDC 33.090 temporary outdoor sales permits update to allow these uses in MUC zone. He shared changes for TDC 3.110 tree removal permit changes rennumbers and clarifies trees approved via previously approved architectural review must go through a minor architectural review and or replacement.

Mr. Koper spoke about TDC 34.800 residential accessory uses change. He noted this change adds new section to specifically permit accessory structures in residential subject to reduced setbacks for smaller structures and clarifies that architectural review process is not required. He noted accessory dwelling units would also qualify for reduced setbacks for smaller structures, if the structure is detached.

Chair Beers asked what the setback threshold would be for this new change. Mr. Koper answered 500 feet.

Commissioner Bachhuber shared his concern on changing the accessory dwelling unit setbacks. Mr. Koper noted the City has the feedback but doesn't have policy change for ADU.

Commissioner Thompson also shared concern on changing this being close to other neighbors. Mr. Koper shared the last ADU they reviewed was 5ft on the side setback.

Commissioner Wimer liked the change and noted how with permanent structure increase

Mr. Koper noted he would come back to the Planning Commission with more information and examples.

Mr. Leonard spoke about proposed changes for Chapters 42 (RMH), 43(RH) and 44 (RH-HR) Zones. He explained this would remove confusion over middle housing in high density residential zones.

Mr. Leonard spoke about Chapter 38 sign regulations to add manufacturing business park (MBP) district to allow to be permitted. He noted this provision was not updated at the time of creation of the MBP zone.

Mr. Leonard went over proposed changes for Chapter 40 low density residential zone. He noted to make clear and objective housing regulation to eliminate CUP requirement for single-family

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dwellings in a small lot subdivision. He also noted add accessory structures at permitted use subject to proposed TDC 34.800.

Mr. Koper noted the changes proposed for Chapter 41 housing types in the Medium Low Density Residential Zone (RML). Add an "L" for Limiting to single-family dwellings in a flexible lot subdivision subject to TDC 36.410. Add "accessory structures" as a "P" permitted use subject to new section 34.800.

Mr. Leonard spoke about Chapters 42, 43, and 44 removed duplex from "Use Tables" to remove confusion over middle housing in high density residential zones. He noted duplexes are a middle housing type and do not meet minimum density requirements for these zones. Mr. Koper noted past projects that sparked confusion and make it clear and objective.

Mr. Leonard noted proposal change of Chapter 57 Mixed Use Commercial (MUC) development standards TDC 73A through 73D may apply to some uses and situations. Mr. Koper noted design standards remain the same for this zone.

Mr. Leonard noted proposal change of Chapter 58 Central Tualatin Overlay Zone table 58-1 Modifications to Use Regulations I the CC Zone. He explained this would remove duplex, triplex, quadplex and cottage clusters and permitted housing type as these are middle housing and do not meet density requirements for this zone.

Mr. Leonard went over the proposal change of Chapter 60 Light Manufacturing Zone relocate maximum height limitations and code reference from "maximum height" row to the appropriate located of "Maximum Height Adjacent to Residential District" row.

Mr. Leonard spoke about the proposal change Chapter 73 A. Site Design standards change "General Purpose text from "Objective of to "Criteria For". He noted historically the objectives section was used as criteria, even though compliance with them is not legally required. This inconsistency was recently raised by an applicant at an Architectural Review Board hearing. He stated the Architectural Review Board supports the proposed change.

Commissioner Wimer noted about conservation language being moved. Mr. Koper stated it is in Development Code and apart of standards.

Mr. Leonard noted proposal change Chapter 73A .100 Residential Design Standards add clarifying text indicating clear and objective design standards are only applicable to Low Density Residential and Medium Low Density Residential zones. He noted adding section for ADUs and design placement criteria under ADU section.

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Mr. Leonard noted proposal changes TDC 73A.300 Commercial Design Standard to update references to Comprehensive Plan and other miscellaneous changes.

Mr. Leonard noted proposal changes TDC 73A.400 Mixed Use Commercial Design Applicability Exceptions changes: added Mixed Use Commercial (MUC), added access ways, renumbered subsections and updated Comprehensive Plan Map references.

Mr. Leonard noted proposal changes TDC 73C.010 Off- Street Parking and Loading Applicability and General Requirements of the following: provide flexibility for required parking

Mr. Leonard noted proposal changes TDC 73C.110- Core Area Parking District Minimum Parking Requirements adding under 25,000 reference to retail shops and shopping centers over 25,000 sq. ft. reference.

Mr. Koper noted proposal change TDC 73G.020- Applicability and TDC 73G.030- Masonry Wall Design Standards. Removed the reference for a property having access-restricted access to expressway ROW or interstate highways. Updated figure reference number. Removed subsection applicable to state owned interstate highways.

Commissioner Thompson asked if this was pertaining to sound buffer to the residents. Mr. Koper answered no.

Commissioner Thompson asked about if they can require masonry wall to be aesthetically pleasing.

Commissioner Valli asked what the possibility of single family resident is would be on strip of land on highway needing a masonry wall. She noted a development would be more likely and wouldn't be cost burden wouldn't be as great. Mr. Koper noted the complexity of masonry wall and shared map to explain overall requirements.

Mr. Leonard noted proposal changes TDC 74.140- Construction Timing Adds language allowing private improvements to be secured by bond, cash, surety or cash equivalent but improvements must be made within 1 year - Clarifies that private improvements must be installed for subdivision and partitions

Mr. Leonard noted proposal TDC 74.210. Minimum Street Right-of-Way Widths. - Updated figures reference number - (5) changed "6" feet Public Utility Easement adjacent to the street to "8" feet - TDC 74.410. Future Street Extensions. Changed typo of "culs-de-sac" to "cul-de-sacs"

Mr. Koper noted proposal TDC 74.420. Street Improvements of the following: Updated

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Comprehensive Plan Transportation Map references, Added “fee-in-lieu” of design and construction improvements, fee must be based on engineer’s cost estimate, Added adequate pedestrian and ADA access requirement to Transit Stops. Mr. Koper noted research behind this proposal involved Autumn Sunrise application.

Mr. Koper noted proposal TDC 74- Public Improvement Requirements and Chapter TDC 75.040. - Driveway Approach Requirements. He noted this adds options for paying for required improvements not yet constructed, public improvements must be installed for subdivision and partitions. He noted also this clarifies fee-in-lieu language to be consistent with practice. He noted Chapter 75 requires driveway approaches to meet AASHTO requirements.

Mr. Leonard noted proposal change of Appendix B to update figure numbering titles, delete figure 73-2 Vision Clearance, and add reference to AASHTO requirements.

Chair Beers asked if he had to have a membership to view the requirements. Mr. Koper stated there are a number of ways can view the requirements including the website.

Chair Beers asked about the required parking spaces for hybrid, electric and carpool. Mr. Koper explained about larger development idea of requirements for parking.

Chair Beers noted he liked the threshold for review criteria due to smaller projects.

Mr. Leonard spoke about the next steps including returning to the TPC on November with a final draft code amendment package. He noted the Planning Commission will be asked to make a recommendation to City Council.

### **ADJOURNMENT**

A motion to adjourn was made by Commissioner Thompson and seconded by Chair Beers.

6 AYE

0 NAY

MOTION PASSED UNANIMOUSLY. The Planning Commission meeting was adjourned at 9:30 p.m.

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## Tualatin Planning Commission

### MINUTES OF November 17, 2022

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**TPC MEMBERS PRESENT:**

William Beers, Chair  
 Janelle Thompson, Commissioner  
 Ursula Kuhn, Commissioner  
 Zach Wimer, Commissioner  
 Randall Hledik, Commissioner  
 Daniel Bachhuber, Commissioner  
 Brittnay Valli, Commissioner

**STAFF PRESENT:**

Steve Koper  
 Erin Engman

**GUESTS:** Suzannah Stanley

**TPC MEMBERS ABSENT:** None

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**CALL TO ORDER AND ROLL CALL:**

The meeting was called to order at 6:30 p.m. and roll call was taken.

**ANNOUNCEMENTS AND PLANNING COMMISSION COMMUNICATION:**
**COMMUNICATION FROM STAFF:**

- 1 . **Consideration of an Industrial Master Plan application (IMP 22-0001) to amend a setback standard memorialized under IMP 00-01, for the Lam campus on 58 acres zoned Manufacturing Park (MP) at 11155 SW Leveton Drive. (Tax Lots: 2S122AA 00500, 00800 and 2S122AB 00100)**

Erin Engman, Senior Planner presented the staff report for the project. She noted there was additional public comment and minor revision to the recommended conditons of approval reflected in Attachments A-C to the record.

Ms. Engman provided site description and the project overview. The applicant LAM Research requests to amend setbacks for building, parking and circulation. The subject site comprises 58 acres of land in the Manufacturing Park zone, located on SW Leveton Drive, west of 108th Avenue, and south of SW Tualatin Road. The land is currently occupied by Lam Research Corporation and is improved with five buildings and associated parking.

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Ms. Engman provided the site background, procedure and review criteria. She explained Industrial Master Plan (IMP) is optional for development in the Manufacturing Park Zone. She went over the goal to achieve campus-like settings, while allowing independent development on smaller parcels. She explained modification development standards include the following: setbacks, building height, lot size, parking, internal circulation, building location and orientation, and street frontage.

Ms. Engman explained the land previously was approved for Industrial Master Plan 00-01 adopted by Resolution 3805-01. She went over the conditions of approval to the following: establish modified development standards, recognize public facilities are reviewed under AR process and establish building material and colors.

The setback requests also support a corresponding Architectural Review application (AR 22-0006) to construct a four-story, 120,000 square foot office building, two new access drives off of SW 108th, and parking lot expansions by approximately 578 stalls. She said IMP 00-01 originally envisioned two parking structures on the east side of the campus with a surface parking lot on the north east end of the site. Lam would now like to trade the anticipated parking structures with surface parking, by expanding two existing lots and by creating new lots that wrap along the eastern edge of the site. The setback reduction would provide flexibility to construct additional surface stalls near the new building.

Ms. Engman spoke about the request standards, review criteria for the showed aerial and site maps. She went over the site development standards in supported Architectural Review (AR22-0006) to construct a 120,000 square foot office building with two access driveways off 108<sup>th</sup> Ave and parking lot expansion.

Ms. Engman spoke about development standards found in Chapter 33 for Industrial Master Plan. She explained the City staff finds the proposal complies with

Ms. Engman stated based on staff analysis and findings, as well as the application materials demonstrating compliance with the applicable approval criteria, staff respectfully recommends approval of the subject Industrial Master Plan application (IMP 22-0001) with recommended conditions of approval, provided in the attached written order.

Ms. Engman spoke about the conditions of approval and outcomes of the decision. She explained if they went to amend the Industrial Master Plan they would be subject for the City for review through Architectural Review. She explained what particular conditions would be required including tree retention, and landscaping design.

Ms. Engman opened the floor to questions.

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Commissoner Thompson asked if the landscaping requirement of 20 percent would be required with the additional surfaces. Ms. Engman answered if they didn't ask for a underlying IMP yes.

Commissoner Thompson asked about the parking lot additional spaces how many that would entail. Ms. Engman answered they have a current Archetcitural Review with around 17,000 spaces. She noted the applicant can speak on it further.

Suzannah Stanley with Mackenzie applicant on behalf of LAM Research applicant gave a brief overview of their project's site and past project overview. She addressed the reasons why they are asking for amendments. She noted LAM has been improving their site as demands are needed. She noted the setbacks of current IMP plan and past IMP plan.

Ms. Stanley showed the commissoners the markups from their original plan including setbacks, parking and brum and noted how City Staff has provided clear and objective list of changes they are proposing. She went over the approval criteria and noted the compatible changes.

Commissoner Valli asked if they expect the parking spaces to be immediately be used for capcacity or growth over the next few years. Ms. Standly answered they expect new employees to hold the parking space.

Commissoner Khun asked about the erosion control map ground elevation change in the parking lot would address flooding with new drainage system. Ms. Stanley answered civil engineer is not at this meeting but would say setback reduction would not be related to building the site.

Marcus Bryson from the public asked if there will be any night-time construction. Applicant answered they would do construction during the day and couldn't think of anything that would require night time.

Commissoner Hledik stated he has a concern with changing setbacks for future developments with it being so close to berm if it's safe. Ms. Engman noted applicant would be required with a new development to go trough the proper permits and go through Tualatin Valley Fire District for adaqet firewall to meet setback requirements. Mr. Koper said they see a variety of settings and certainly doesn't would not override building or fire codes.

Commissoner Khun asked for clarification on setbacks for IMP doesn't affect setbacks. Ms. Engman answered it is possible to have a 0 ft. setback with an IMP but any development would have to go under a review process.

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Commissioner Hledik asked for clarification for the parking setback maximum being 25 feet. Ms. Engman answered how the code is written there is a minimum to provide applicants some flexibility and decision through the architectural review. Mr. Koper answered it doesn't set a maximum and is required to be shown in the development plan.

Commissioner Wimer asked if there was any repercussion if an applicant in the future put 0 ft. setback for their interior setback. Mr. Koper stated a number of industrial zones can be 0 ft. setback and not be unusual. However, certain requirements needed to be met for building a 0 ft. lot line for safety and code.

Commissioner Bachuber made the motion to approve the Industrial Master Plan application (IMP 22-0001) to amend a setback standard memorialized under IMP 00-01, for the Lam campus on 58 acres zoned Manufacturing Park (MP) at 11155 SW Leveton Drive. (Tax Lots: 2S122AA 00500, 00800 and 2S122AB 00100)

5 AYE

0 NAY

MOTION PASSED UNANIMOUSLY

#### **ADJOURNMENT**

A motion to adjourn was made by Commissioner Hledik and seconded by Chair Beers.

5 AYE

0 NAY

MOTION PASSED UNANIMOUSLY. The Planning Commission meeting was adjourned at 7:30 p.m.

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*City of Tualatin*

## CITY OF TUALATIN Staff Report

**TO:** Tualatin Planning Commissioners

**THROUGH:** Steve Koper, AICP, Assistant Community Development Director

**FROM:** Erin Engman, Senior Planner

**DATE:** April 20, 2023

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**SUBJECT:**

Informational presentation on Tualatin's Equitable Funding Action Plan.

**BACKGROUND:**

In 2021, the City Council adopted a Housing Production Strategy (HPS) which serves as a City's commitment to develop strategies that encourage the production of needed housing, with an emphasis on improving outcomes for underserved communities, people with lower incomes, and people in state and federal protected classes. The state requires cities to evaluate the effectiveness of their HPS strategies and report on implementation progress over a six-year period.

In 2022, the City of Tualatin was awarded a grant to work with EcoNW to develop a Strategic and Equitable Housing Funding Plan as a next step in studying select goals set out in the HPS. Staff then held a work session with City Council on October 24, 2022, to introduce the project and on March 13, 2023, to provide a project update. An advisory committee was formed to discuss and provide feedback on the financial considerations being studied over the course of five meetings.

**EXECUTIVE SUMMARY:**

Tualatin has an urgent need for more housing that is affordable to people who live and work in Tualatin. While these problems are not unique to Tualatin and are common across the Portland region and state, Tualatin has a role in supporting the development of housing that is affordable to people who live and work in Tualatin.

The Equitable Funding Plan studies actions identified in the HPS that either produce funding or require funding to support the development of housing that is affordable for moderate and low-income households with greater-than-average housing needs in Tualatin. This plan also intentionally incorporates equity into its recommendations for implementing strategic actions by prioritizing those with the greatest housing needs, including:

- **Low-income households.** Households below 60% of MFI who account for roughly a third of Tualatin's households are considered to require publicly subsidized housing to avoid cost burdening.
- **Cost-burdened renters.** Cost burdening typically describes households that pay more than 30% of their monthly income toward their total housing costs. In 2016-2020, nearly half of renters in Tualatin were cost burdened, compared to only 17% of homeowners.
- **People of color.** Cost burdening in Tualatin disproportionately affects people of color who both rent or own their homes. The legacy of historic discriminatory practices such as denial of financial services still creates housing disparities for households of color.

- **Seniors.** On average, Tualatin householders 65 years of age and over had a lower income than the overall median and may have more challenges finding affordable housing or paying for maintenance in a home that they own.
- **Disabled residents.** About 8% of Tualatin’s population had one or more disabilities, who may have additional housing needs beyond affordability, including accessible home features, proximity to transit, and other resources.
- **Commuters.** In Tualatin, 93% of workers commute from other nearby areas each day, some of whom are not currently able to afford the city’s rental rates or homeownership.

The table below page, shows a summary of each of the strategic actions that are being studied and their estimated range of funding in the next five years, either by providing revenue that can be used for housing, forgoing revenue to reduce costs for affordable development, or using funding for targeted programs.

Tool	What Does it Do	Population Served	Provides, Forgoes or Requires Revenue?
Construction Excise Tax	Levies a tax on new construction to fund housing programs and investments	Moderate Income and Lower-Income households	Provides Funding
Urban Renewal	Uses tax increment financing revenue for capital projects in urban renewal plan areas to support housing goals	Current and future residents within urban renewal area	Provides Funding
Nonprofit Low Income Tax Exemption	Forgoes property taxes for affordable housing provided by nonprofit organizations	Extremely and Very Low Income (<50%)	Forgoes Revenue
Multiple Unit Property Tax Exemption	Forgoes a portion of property taxes for mixed-income housing provided by market-rate developers	Low Income (50-80%)	Forgoes Revenue
System Development Charges Exemption	Reduces up-front development fees charged by the City for new affordable units (which must be backfilled from another funding source).	Extremely and Very Low Income (<50%) or Low Income (50-80%)	Forgoes Revenue
Down Payment Assistance	Provides funding for up-front costs to support moderate-income first-time homebuyers.	Moderate Income (80-120%) Seniors or disabled residents	Requires Funding
Home Rehabilitation	Provides funding for home repairs, weatherization, and/or accessibility improvements for qualifying homeowners.	Moderate Income (80-120%)	Requires Funding

All of the tools being considered in the funding plan will need future study and buy-in from the public, partners (such as overlapping taxing districts, developers, etc.), and City Council decision before being implemented. Related land use actions may come back to the Planning Commission at a later point.

**Next Steps**

- June 12: Staff will provide City Council with the Funding Plan for consideration of adoption by resolution.

**ATTACHMENTS:**

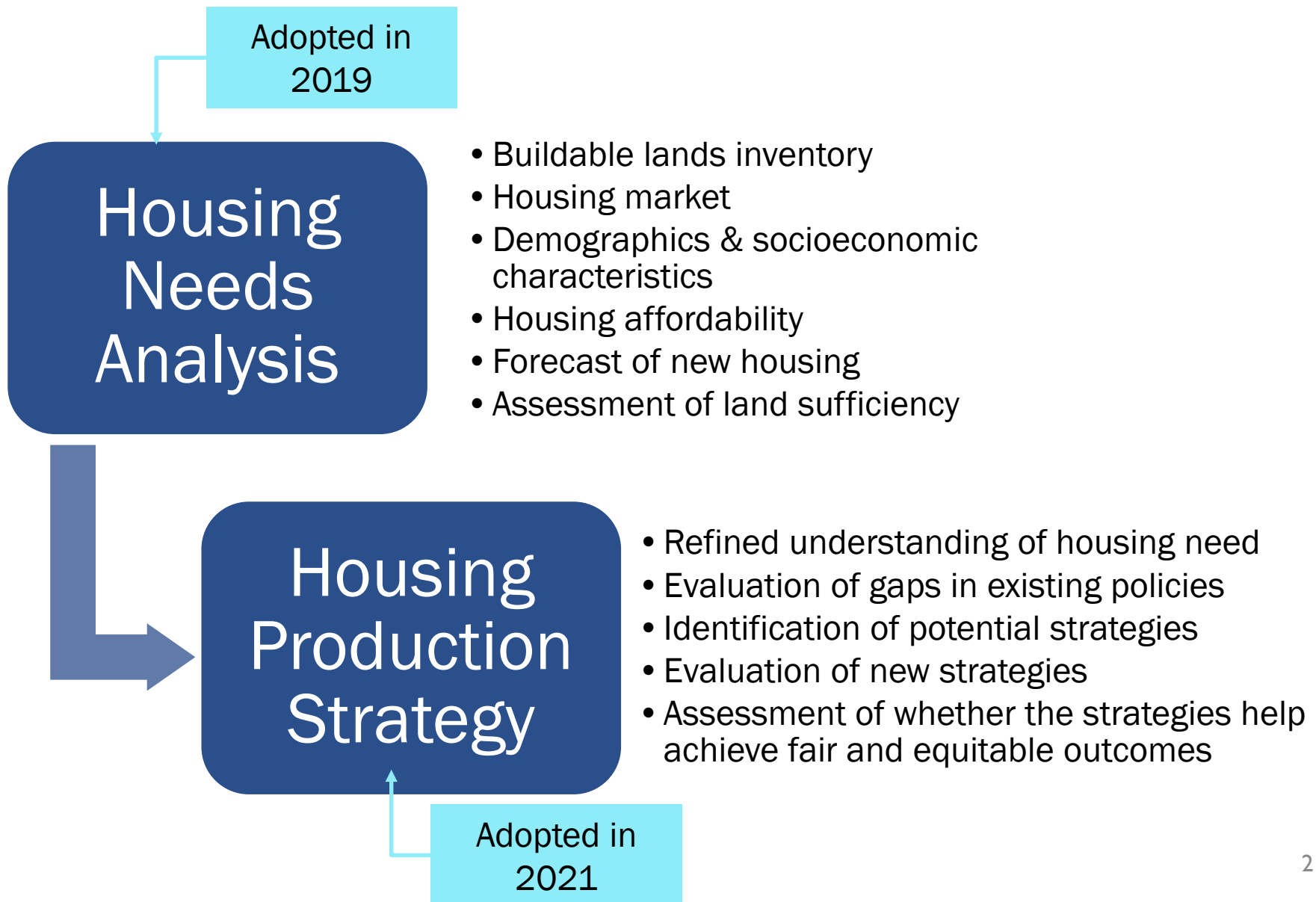
- Presentation
- Tualatin Equitable Funding Action Plan

# Tualatin's Strategic Equitable Housing Funding Plan

Planning Commission Session

April 20, 2023

# Tualatin's Recent Housing Planning Work





- The Equitable Funding Action Plan provides next steps towards affordable, fair and equitable housing outcomes
  - Will give guidance for financial and regulatory actions
  - Examines HPS strategic actions that produce funding and those that require funding
  - Focuses on financial and equity tradeoffs of these actions

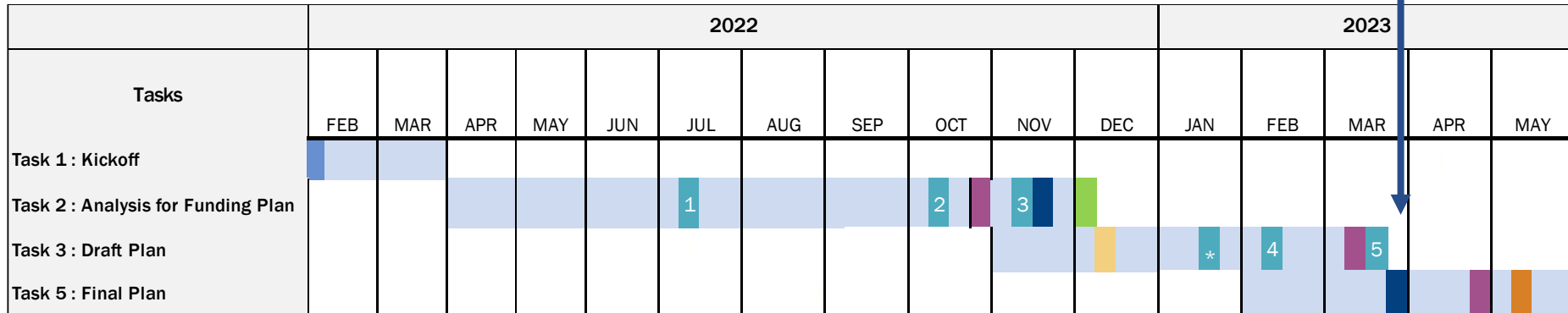
# Outcomes of Tonight's Discussion

- Informational presentation about the actions that could be used to support development of housing affordable to moderate income households
- Related land use actions may come back to the Planning Commission at a later point



# Project Schedule and Primary Tasks

We are here



- Kickoff Meeting with City Staff
- Ongoing Task
- Planning Commission meeting
- Advisory Committee Meeting
- Draft Product
- Public Workshop
- City Council Meeting
- Final Product

# Existing Housing Conditions

# Tualatin's Cost Burdened Households

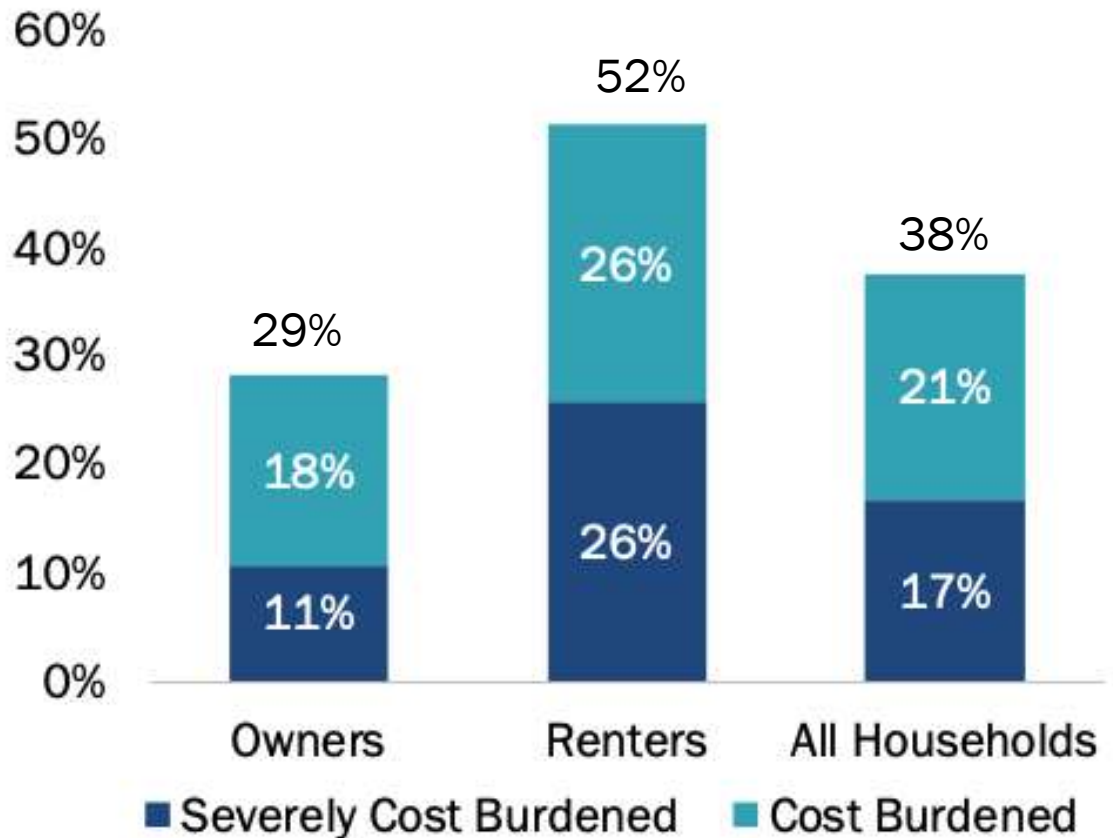
## Cost Burden by Tenure, Tualatin, 2016-2020

**Cost burdened:**

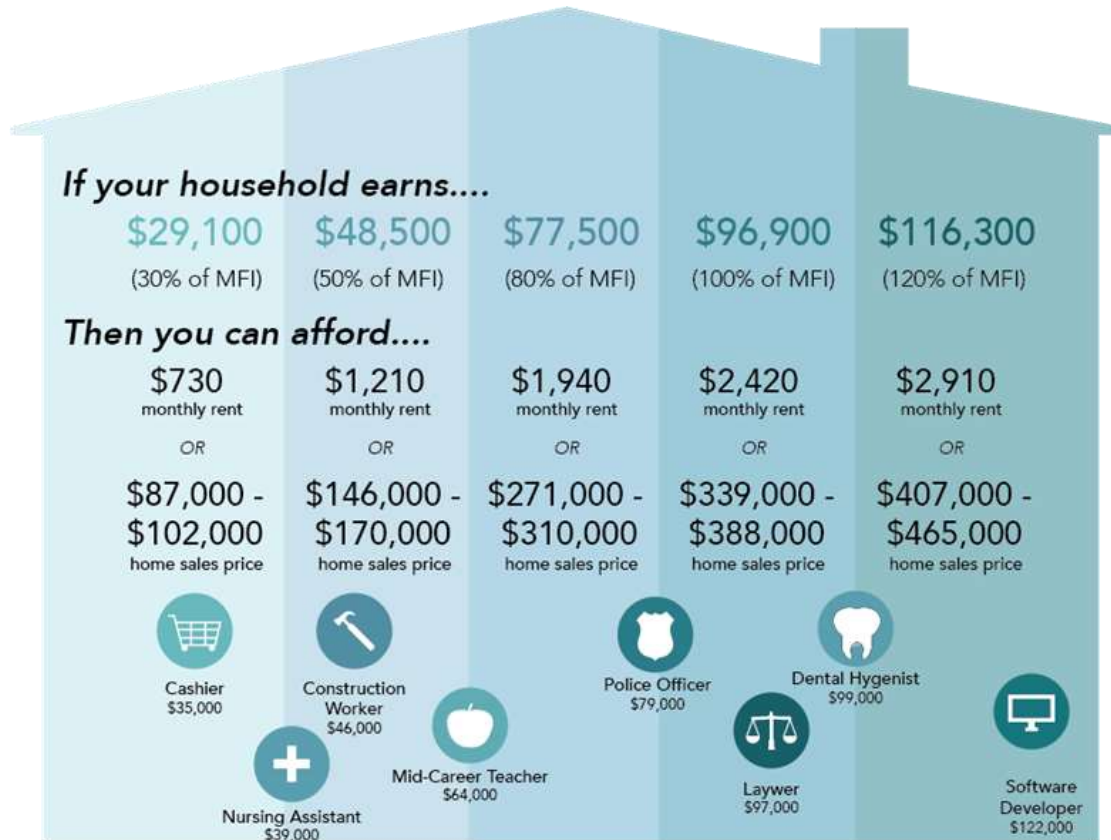
spending more than 30% of income on housing costs

**Severely cost burdened:**

spending more than 50% of income on housing costs



# Targeting Households with Income of 80% or Less of MFI



Median Home Sale Price:  
**\$492,000** (Redfin, 2020)

Requires \$123,000  
income (133% of MFI) to  
afford

Average Monthly Rent:  
**\$1,334** (not including utilities, 2-bedroom  
units, (CoStar, 2020))

Assuming \$250 per  
month in utilities (total of  
about \$1,580 in monthly  
cost), average rental  
housing costs requires  
\$63,000 income (65% of  
MFI) to afford)

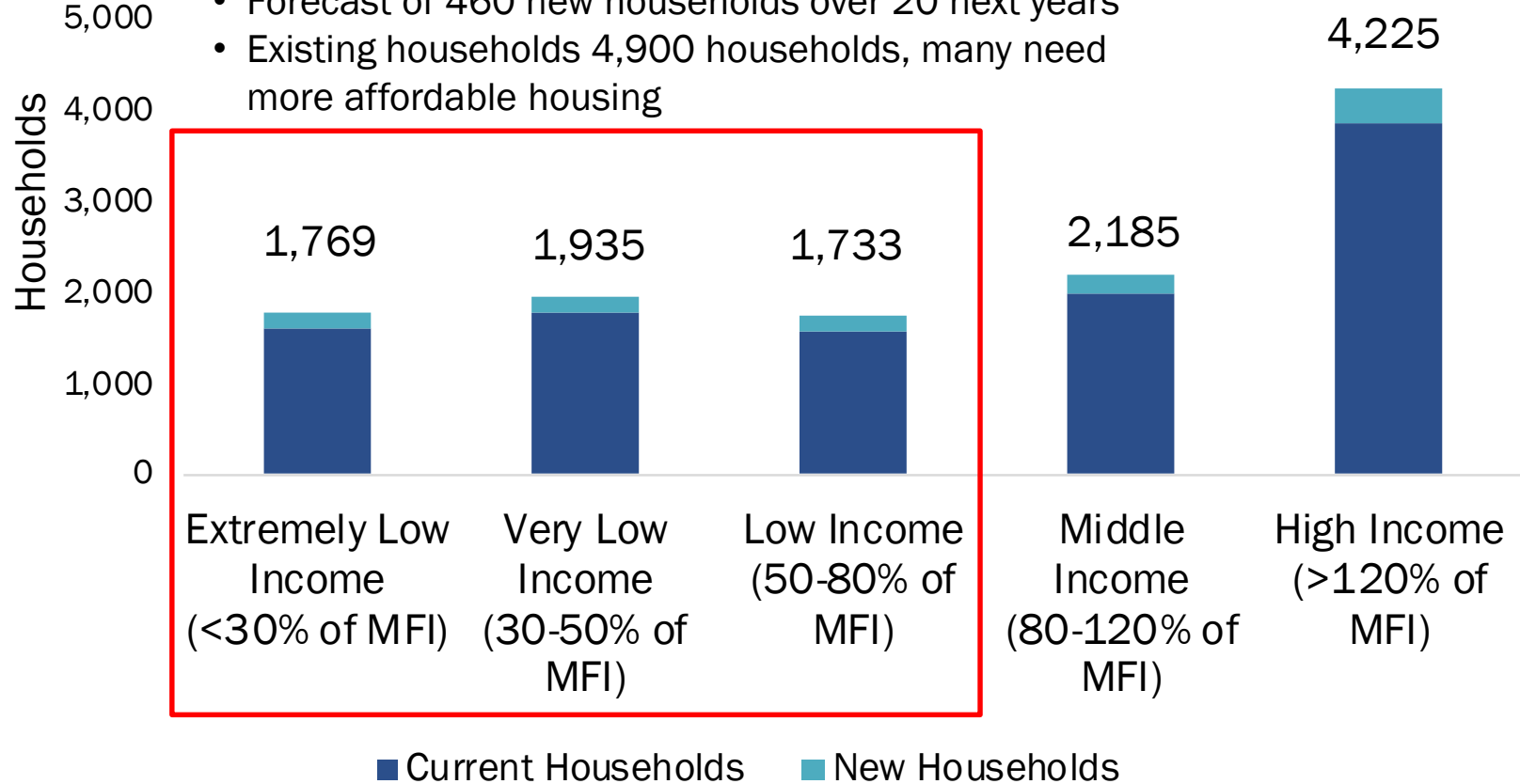
Source: U.S. Department of HUD 2021. U.S. Census Bureau, 2016-2020 ACS Table I9001.

Note: MFI is Median Family Income for a Family of 4.

# Tualatin's Current & Future Households by Income

For households with income below 80% MFI

- Forecast of 460 new households over 20 next years
- Existing households 4,900 households, many need more affordable housing



**Publicly Subsidized Affordable**  
0% - 60% MFI

**Middle Income / Workforce**  
60% - 120% MFI

**Market Rate**  
120% + MFI

# Funding of Affordable Housing



# Factors that Influence Housing Development

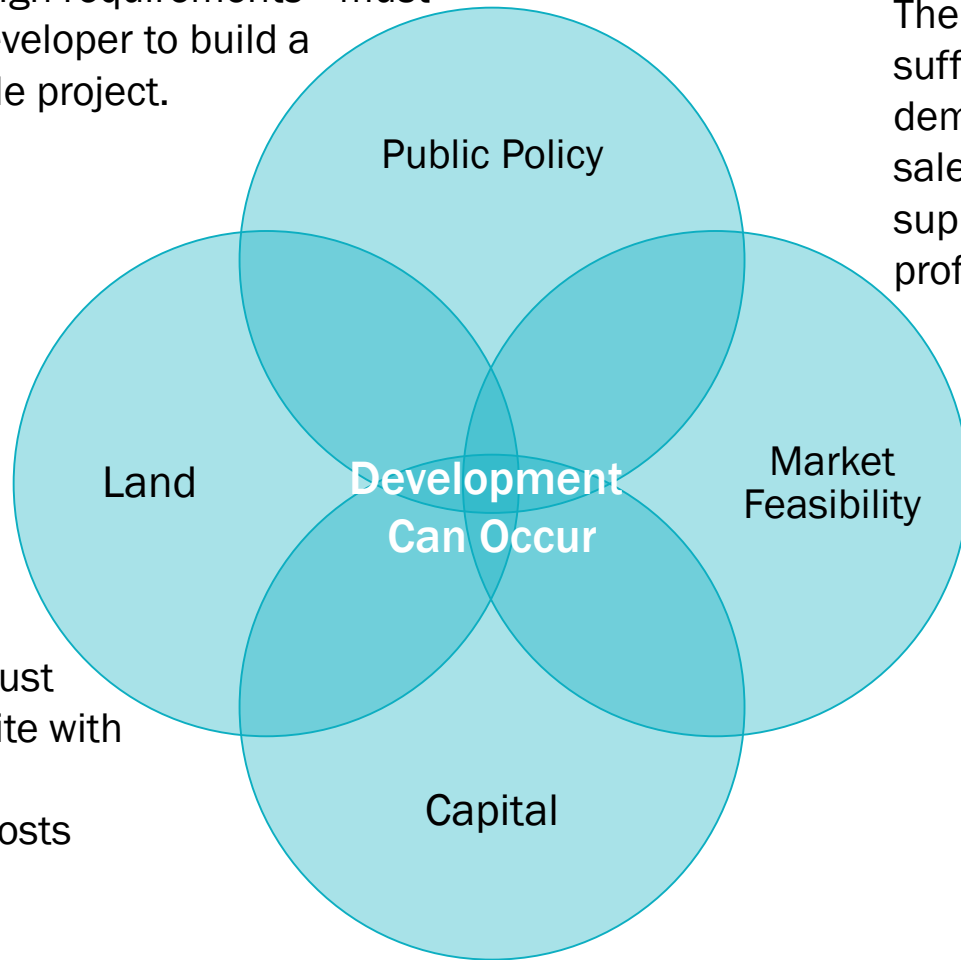
Policy—including zoning, density, and design requirements— must allow developer to build a profitable project.

There must be sufficient demand (rents, sales prices) to support a profitable project

Tualatin can directly influence public policy, land, and infrastructure.

Tualatin may have limited influence on market feasibility

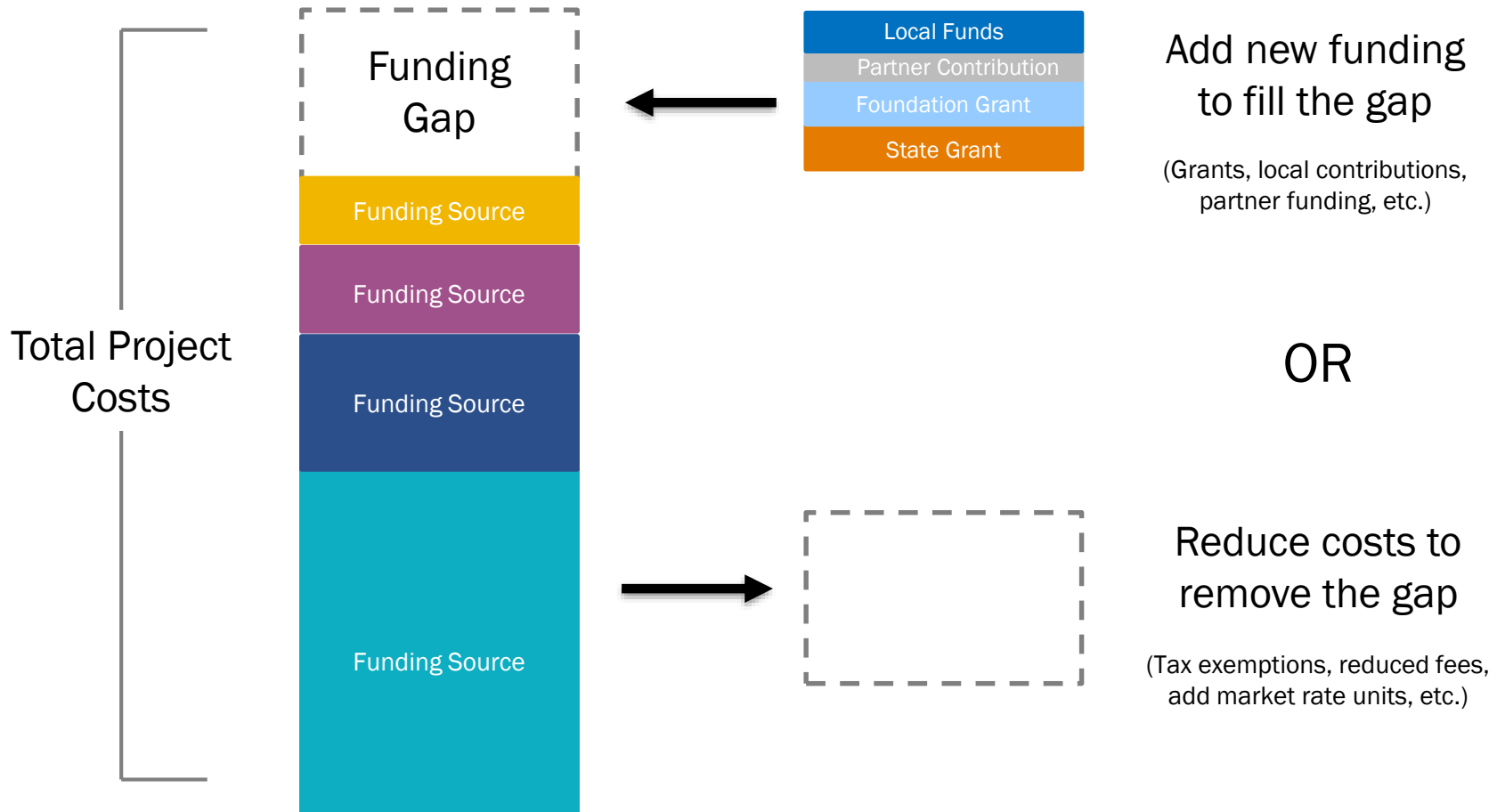
Developer must control the site with reasonable acquisition costs



Developer must be able to access resources for investment (e.g., equity investment, bank loans)

# Funding Affordable Housing

Affordable housing often falls short of the funding necessary for new construction. In order to make projects feasible, developers can...



# Strategic Actions Considered in this Project

Tool	Adds, Forgoes, or Needs City Revenue?	Income Level Served
Local Construction Excise Tax (CET)	Adds	Mostly 0-60% AMI Possibly 61-80% AMI
Urban Renewal Area Revenue	Adds	0-80% AMI
Nonprofit Low Income Tax Exemption	Forgoes	<60% AMI
Multiple Unit Property Tax Exemption	Forgoes	80% AMI
System Development Charge Exemption	Forgoes	0-80% AMI
Homeownership Assistance	Needs	80% AMI
Other Tools / Affordable Housing Trust Fund	Needs	0-80% AMI

# Many HPS Actions are not Considered in this Plan

- Amending Tualatin's **development code**
- Exploring opportunities for **added density or redevelopment**
- Supporting **affordable housing development in other ways**
- **Preserving existing** affordable housing
- Evaluating impediments to **Fair Housing** and education about Fair housing
- Evaluating prioritization of **capital improvement (transportation/utilities) programming** to support affordable and workforce housing development



# Potential Actions and Impacts

# Potential Actions

## Construction Excise Tax (CET)

### Adds revenue to the City through new local regulation

- **What does it do:** Levies a tax on new construction to fund housing programs and investments
- **How does it work:** Allows cities to collect a 1% tax on permit value of new residential development or higher for commercial/industrial.
- **Our findings:** 0.5% to 1% CET on commercial and industrial development may be worthwhile in Tualatin.

### Impact

- Assumes that the City would pursue a 1% rate for both residential and commercial/industrial CET
- Based on historical prices for residential and commercial/industrial development in the past 5 years
- **Estimated \$500,000 in revenue over 5 years**

## Urban Renewal Area Revenue

### Adds revenue in a specific area through tax increment financing

- **What does it do:** Provides local funding for capital projects to support URA plan goals (including housing)
- **How does it work:** Uses revenue from tax increment financing (TIF) to make public investments
- **Our findings:** Tualatin's proposed urban renewal area could integrate goals for housing and access TIF dollars.

### Impact

- Core Opportunity Reinvestment Area has the most potential to use TIF for affordable housing
- Assumes that the City will bond within the first five years of the plan
- Based on approximation from conversations with City staff and rough valuation in the plan
- **Estimated \$2.5 million available for multiple uses in the URA**

# Equity Benefits and Challenges

	Equity Benefits	Challenges
CET	<ul style="list-style-type: none"><li>• Provides flexible revenue that can serve low- and moderate-income households</li><li>• The City can choose to focus on programs that have specific equitable outcomes</li></ul>	<ul style="list-style-type: none"><li>• State statute somewhat limits the options for what can be done with CET funds</li><li>• Adds cost to market rate units is favor of lowering costs for affordable housing</li></ul>
Urban Renewal	<ul style="list-style-type: none"><li>• Can provide funding for housing for low- and moderate-income households</li><li>• Can provide housing near employment for Tualatin workers</li></ul>	<ul style="list-style-type: none"><li>• Building too much housing for low-income populations in URA risks concentrating poverty</li><li>• Some potential to displace existing residents in the urban renewal area</li></ul>



# Potential Actions

Nonprofit Low Income Tax Exemption	
<b>Forgoes revenue to the City for targeted housing type</b>	<b>Impact</b>
<ul style="list-style-type: none"><li>• <b>What does it do:</b> Provides a full property tax exemption for nonprofit owned affordable housing</li><li>• <b>How does it work:</b> Can exempt only city taxes or all taxing districts if at least 51% of the total tax roll agrees to participate.</li><li>• <b>Our findings:</b> Tualatin could exempt its own taxes to incentivize housing affordable to residents at or below 60 percent of area median income</li></ul>	<ul style="list-style-type: none"><li>• Our estimates show the City's share of taxes only (about 16.5% of the total tax roll)</li><li>• Shows the value for 100 new units using the exemption over a period of 5 years</li><li>• Based on prices of recent affordable multifamily housing developments in Tualatin or Tigard</li><li>• <b>Estimated to cost \$90,000 for 100 units over 5 years</b></li></ul>

# Potential Actions

## Multiple Unit Property Tax Exemption

### Forgoes revenue to the City for targeted housing type

- **What does it do:** Provides a partial property tax exemption for private developers of mixed-income housing
- **How does it work:** Can exempt only city taxes or all taxing districts if at least 51% of the total tax roll agrees to participate.
- **Our findings:** If providing an exemption from all districts, MUPTE could create an incentive for private developers to offer units at or below 80 percent of area median income

### Impact

- Our estimates show the City's share of taxes only (about 16.5% of the total tax roll)
- Shows the value for 100 new units using the exemption over a period of 5 years
- Assumes that rents will be discounted for 20% of units to 80% AMI level
- Based on prices of recent market rate multifamily housing developments in Tualatin or Tigard
- **Estimated to cost \$144,000 for 100 units over 5 years**

# Potential Actions

## System Development Charge Exemption

### Forgoes revenue to the City for targeted housing type

- **What does it do:** Reduces upfront development fees for developers who provide new affordable units
- **How does it work:** Can exempt City-controlled system development fees for Parks and Water, but not those collected by other service providers
- **Our findings:** Tualatin could provide an exemption for its two SDCs but would likely have to backfill the forgone revenue

### Impact

- Our estimates show the City's SDCs only: Parks and Water (not other service providers like Sewer)
- Shows the value for 100 new units total over a period of 5 years
- Parks SDC is a flat rate per unit, but Water SDC is dependent on the size of the building's water meter
- Water estimate is based on recent multifamily housing developments in Tualatin
- **Estimated to cost \$751,000 for 100 units over 5 years**

# Equity Benefits and Challenges

	Equity Benefits	Challenges
SDCs	<ul style="list-style-type: none"><li>• Can be used to support development of housing that serves low-income levels (&lt;60% MFI)</li><li>• Multifamily housing typically serves more households for a lower cost per unit (also applies for tax exemptions)</li></ul>	<ul style="list-style-type: none"><li>• Forgoes revenue for infrastructure which must be backfilled from other sources of funding</li></ul>
Nonprofit / MUPTE	<ul style="list-style-type: none"><li>• Can provide funding for housing for low- and moderate-income households</li><li>• Nonprofits may provide additional services along with housing</li><li>• Local contributions can attract more affordable housing developers and reduce permanent debt</li></ul>	<ul style="list-style-type: none"><li>• Forgoes revenue which could be used for other citywide programs and operations</li><li>• Limited time frame for program applicability for MUPTE (10 years), after which rents would likely increase to market rate</li></ul>

## Down Payment Assistance

Provides funding to support first-time home buyers

- Shows the value for down payment support on **10 homes** per year over a period of **5 years**
- Uses similar nearby programs in Oregon for comparison, including regional variation likely due to differing housing prices and funding opportunities

### Impact

- Estimated to cost **\$250,000 to \$1,100,000** for **10 units**, depending on subsidy granted

## Home Rehabilitation Programs

Provides funding to stabilize existing residents

- Shows the value for home rehabilitation projects for **10 homes** per year over a period of **5 years**
- Uses similar programs in Oregon for comparison, including a wide variation in cost by the type of home rehabilitation program (repairs, weatherization, etc.)

### Impact

- Estimated to cost **\$750,000 to \$500,000** for **10 units**, depending on subsidy granted

# Equity Benefits and Challenges

Question: Are we missing key equity benefits or challenges?

	Equity Benefits	Challenges
Down Payment	<ul style="list-style-type: none"><li>• Can benefit households who have been historically excluded from homeownership</li><li>• Allows households to build intergenerational wealth through home equity</li></ul>	<ul style="list-style-type: none"><li>• Higher cost per household means that assistance serves relatively fewer people</li><li>• Households must still meet other requirements (credit score, debt-to-income ratio, etc.)</li></ul>
Home Rehab	<ul style="list-style-type: none"><li>• Benefits existing low-income homeowners in Tualatin and ensures longer term stability</li><li>• Can provide resources for disabled residents and seniors to make accessibility improvements</li></ul>	<ul style="list-style-type: none"><li>• Cost per household varies by type of assistance (higher for more extensive repairs)</li><li>• Limited funding creates questions around who receives assistance.</li></ul>

# Questions to be Answered by the City Council

Tualatin's potential funding sources are not sufficient to fund all of these actions

- CET, if adopted, may result in \$500,000 in revenue in the first 5 years. How should it be used?
- How should Urban Renewal funds be spent?
- These actions are likely to require additional funding, if fully implemented

# Recommendations for Building in Equity

- Additional opportunities for building equity into the implementation of the HPS:
  - If the City establishes revenue sources for affordable housing (ex: CET and/or urban renewal fund), then it could establish an Oversight Committee:
    - Membership of the oversight committee could ensure representation from underrepresented groups
    - Compensating committee members for their participation would allow people of diverse backgrounds to participate
  - Partnership with nonprofits who provide specific types of support (ex. Culturally specific outreach)
  - *Others?*



# Questions and Discussion

- Questions?
- Next steps
  - June 12: City Council meeting
  - May result in policy changes that come back to the Planning Commission, like development code changes to support development

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# Tualatin's Equitable Funding Action Plan for Implementing Its Housing Production Strategy

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April 2023

Prepared for: City of Tualatin

Draft Report

**ECONorthwest**

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# Acknowledgements

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# Executive Summary

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Tualatin has an urgent need for more housing that is affordable to people who live and work in Tualatin. More than one-third of Tualatin’s households are cost burdened and cannot afford their housing, including 52% of renter households. Some groups are more likely to have difficulty finding affordable housing because of factors such as lower incomes, housing discrimination, and inability to find housing that meets their needs. In addition, low- and moderate-income workers at jobs in Tualatin may struggle to afford rental housing and homeownership in Tualatin.

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The purpose of the Equitable Funding Action Plan is to consider how to best implement the strategic actions in the HPS with a consideration of financial issues and increasing equitable access to housing.

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While these problems are not unique to Tualatin and are common across the Portland region and state, Tualatin has a role in supporting development of housing that is affordable to people who live and work in Tualatin.

This project builds on housing studies completed by Tualatin over the last several years. Tualatin adopted a *Housing Needs Analysis* in 2019 and a *Housing Production Strategy* (HPS) in 2021, which respectively identified gaps that exist for households in Tualatin and identified a set of strategies to address those needs. This document focuses on implementation of actions to fund and implement key strategies identified in the HPS.

## Goals and Outcomes of This Plan

This report focuses on describing the actions in the HPS that are most dependent on funding to support their implementation. These and other actions in the HPS are intended to provide the City with tools to support affordable housing development and preservation. Taken on their own and separately, they may not result in a large change in the availability of affordable housing. But they provide the City with policies to support bold development proposals that can, taken together, help create substantial change in availability of affordable housing. The actions considered in this report are:

- **Evaluate potential funding sources to support affordable housing development.** The strategic actions that generate funding for affordable housing development and preservation include Construction Excise Tax (CET), Urban Renewal tax increment financing, and other potential funding sources for affordable housing.
- **Identify opportunities to reduce development costs in support of affordable rental housing.** The strategic actions that focus on reduction of the cost of affordable multifamily development include the Nonprofit Low Income Housing Tax Exemption, Multiple Unit Property Tax Exemption, and System Development Charges Exemption.
- **Identify ways to support homeownership for lower-income households.** Strategic actions that increase and retain homeownership include down payment assistance and home rehabilitation.

This plan also intentionally incorporates equity into its recommendations for implementing strategic actions by prioritizing those with the greatest housing needs. In Tualatin, this includes:

- **Low-income households.** Households below 60% of MFI who account for roughly a third of Tualatin’s households are considered to require publicly subsidized housing to avoid cost burdening.
- **Cost-burdened renters.** Cost burdening typically describes households that pay more than 30% of their monthly income toward their total housing costs. In 2016-2020, nearly half of renters in Tualatin were cost burdened, compared to only 17% of homeowners.
- **People of color.** Cost burdening in Tualatin disproportionately affects people of color who both rent or own their homes. The legacy of historic discriminatory practices such as denial of financial services still creates housing disparities for households of color.
- **Seniors.** On average, Tualatin householders 65 years of age and over had a lower income than the overall median and may have more challenges finding affordable housing or paying for maintenance in a home that they own.
- **Disabled residents.** About 8% of Tualatin’s population had one or more disabilities, who may have additional housing needs beyond affordability, including accessible home features, proximity to transit, and other resources.
- **Commuters.** In Tualatin, 93% of workers commute from other nearby areas each day, some of whom are not currently able to afford the city’s rental rates or homeownership.

## Actions Considered in This Plan

This report provides information about what it will take to implement the strategic actions shown in



Exhibit 1. This includes analysis of the potential costs (or revenues) of each strategic action, financial tradeoffs and considerations, equity considerations, and information about existing programs and potential partnerships. The strategic actions in this plan fall into three categories: those that **provide funding** by introducing a new source of revenue to support affordable housing, **forgo revenue** for the City to reduce costs for developing affordable housing, or **require funding** to pay for new programs.

The strategic actions considered in this report touch on some but not all issues considered in the HPS. Examples of other actions in the HPS include changes to Tualatin’s development code to better support housing development, preservation of existing affordable housing, opportunities for redevelopment and potential land banking, and additional actions to support affordable housing development.

### Exhibit 1. Summary of Financial Tradeoffs Between Funding Tools

Tool	What Does it Do	Population Served	Provides, Forgoes or Requires Revenue?
<b>Construction Excise Tax</b>	Levies a tax on new construction to fund housing programs and investments	Moderate Income and Lower-Income households	<b>Provides Funding</b>
<b>Urban Renewal</b>	Uses tax increment financing revenue for capital projects in urban renewal plan areas to support housing goals	Current and future residents within urban renewal area	<b>Provides Funding</b>
<b>Nonprofit Low Income Tax Exemption</b>	Forgoes property taxes for affordable housing provided by nonprofit organizations	Extremely and Very Low Income (<50%)	<b>Forgoes Revenue</b>
<b>Multiple Unit Property Tax Exemption</b>	Forgoes a portion of property taxes for mixed-income housing provided by market-rate developers	Low Income (50-80%)	<b>Forgoes Revenue</b>
<b>System Development Charges Exemption</b>	Reduces up-front development fees charged by the City for new affordable units (which must be backfilled from another funding source).	Extremely and Very Low Income (<50%) or Low Income (50-80%)	<b>Forgoes Revenue</b>
<b>Down Payment Assistance</b>	Provides funding for up-front costs to support moderate-income first-time homebuyers.	Moderate Income (80-120%) Seniors or disabled residents	<b>Requires Funding</b>
<b>Home Rehabilitation</b>	Provides funding for home repairs, weatherization, and/or accessibility improvements for qualifying homeowners.	Moderate Income (80-120%)	<b>Requires Funding</b>

## Equity Impacts and Tradeoffs

Each of the strategic actions in this funding plan have tradeoffs related to equitable housing outcomes. These benefits and challenges include critical considerations for the recommendations in this plan and should be integrated in decision-making for affordable housing in Tualatin. Some of the key benefits and challenges for consideration in implementation of the strategic actions in this plan include:

### Exhibit 2. Summary of Key Equity Considerations Funding Tools

Equity Benefits	Equity Challenges
<ul style="list-style-type: none"> <li>• <b>CET and Urban Renewal</b> can be used to serve low- and moderate-income households. CET is more flexible, but urban renewal can provide a greater total amount.</li> <li>• <b>SDC and Tax Exemptions</b> incentivize new affordable multifamily units for low- to moderate-income households, typically at a lower cost per unit than homeownership.</li> <li>• <b>Down Payment Assistance</b> can benefit moderate-income households who have historically been excluded from homeownership and build intergenerational wealth.</li> <li>• <b>Home Rehabilitation</b> supports longer-term stability for homeowners, and specific support for people with disabilities and seniors.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>CET</b> increases housing costs for some types of housing to fund affordable housing.</li> <li>• <b>Urban Renewal's</b> geographic limitations can create concentrated areas of poverty.</li> <li>• <b>Tax Exemptions</b> forgo City general fund revenue, which could be used for other city programs. <b>MUPTE</b> has a limited 10-year time frame for affordability. <b>SDC exemptions</b> also forgo funding that must be backfilled from other sources.</li> <li>• The higher cost per household for <b>Down Payment Assistance and Home Rehabilitation</b> means that often they serve relatively fewer people.</li> </ul>

## Key Conclusions from Analysis

The City of Tualatin should carefully consider limitations of how different funding can be used to implement its Housing Production Strategy. The following are primary conclusions that we identified through our analysis:

- **Urban Renewal funding can only be used for limited project types and requires broader discussion about tradeoffs.** Tax increment financing can only be used for projects within the district and takes time for funding to accumulate.
- **Construction Excise Tax spending is relatively flexible.** It takes time to accumulate CET funds and can be used to support a wide range of affordable housing actions.
- **System Development Charge Exemptions will need to be backfilled.** SDC exemptions can reduce costs for developers to provide affordable units but requires a funding source to backfill the forgone SDCs, such as CET or Urban Renewal revenue.
- **The Multifamily Tax Exemption will need support from overlapping taxing districts.** Providing enough incentive to support affordable housing development by market-rate developers requires exempting the property taxes of overlapping taxing district, as well as the City's exemption.
- **Increasing access to affordable homeownership is expensive.** Homeownership programs require a larger amount of funding because of the relatively high cost of housing sales. Increasing access to homeownership leads to longer-term housing stability and provides households with opportunities to gain equity and build wealth.
- **The City can prioritize other actions to support homeownership that have lower costs.** The City could partner with a land trust to support development of affordable ownership housing or use Urban Renewal funding to assemble a development site where affordable ownership units would be built.
- **The City can pursue funding from other sources, such as the general fund.** Tualatin should seek to make a case for an allocation from the second round of the Metro General Obligation bond, pursue its own local option levy, implement new taxes (which would require voter approval), or allocate general fund revenue.

## Recommendations for Implementing the HPS

Recommendations for implementing the HPS and the strategic actions covered in this Plan include the following:

- **Build Equity into Decision-Making Processes.** As the City continues to implement the HPS, the City should develop an equity framework for decision-making that considers the distribution of cost and benefits and impacts on low-income residents, seniors, people of color, and other groups with higher housing needs in Tualatin. This framework should align with similar equity work that the City is developing for other

initiatives (such as the climate action plan). Over the next five years, the City can begin to use this framework to prioritize initiatives, monitor outcomes, and begin applying it to subsequent strategic actions.

**Establish an Affordable Housing Trust Fund and Create an Advisory Committee to Oversee it.** An Affordable Housing Trust Fund (AHTF) is a mechanism that can centralize revenue sources into a collective account and distribute money for housing in the city. The City can set eligibility criteria to affirm that projects that receive public funding go toward priority needs. Trust funds are typically overseen by a committee who works with city staff to formulate the application criteria and administer the approval process. An advisory committee should include low-income residents, renters, seniors, people with disabilities, commuters, and people of color in Tualatin, whom the City should compensate for their participation. Over time, the City can monitor outcomes and look for opportunities to add new funding sources to grow the AHTF. Ideal sources of funding for the AHTF are flexible, allowing the fund to support different types of housing initiatives over time.

- **Explore Available Private, Regional, State, and Federal Funding Sources for Homeownership and Affordable Rental Housing.** Our analysis of additional funding tools begins to show the range of further options for funding affordable housing from a number of private, regional, state, and federal sources, which vary in terms of time frame, scale, and eligibility. Tualatin should continue pursuing additional sources of funding for affordable housing beyond the strategic actions in this plan. For example, if there is a second round of allocations from Metro’s General Obligation bond for affordable housing, Tualatin could be a candidate to receive funding to support affordable multifamily rental housing.
- **Pursue a Construction Excise Tax on Residential and Commercial/Industrial Development.** Construction Excise Tax could be a large source of flexible revenue to fund strategic actions for housing in Tualatin within the next five years. Consistent with the schedule in the HPS, the City should prioritize exploring CET by 2025.
- **Work with Council to Identify the Right Balance of Housing Support in Implementing Urban Renewal.** The City is committed to implementing the Core Reinvestment Area Plan, including an explicit goal for development and preservation of multifamily housing affordable to a range of income levels. City staff should work with the City Council and Urban Renewal Agency to find the right balance of funding allocation for projects in the area. Decision-makers should discuss what is possible and what is an appropriate amount of funding to use for housing development in the Urban Renewal district within the next five years.
- **Implement a SCD Exemption for Affordable Housing Development.** The City can exempt the system development fees that it controls for Parks and Water and will need to identify a source to backfill the forgone revenue from other sources, such as the CET or Urban Renewal. The City will need to establish criteria for granting the exemption,

such as what level of affordability, the amount of SDC that will be exempted, and the number of affordable units it will require for an exemption.

- **Work with Overlapping Taxing Districts to Provide the Full Nonprofit Low Income Tax Exemption.** The City Council adopted the Nonprofit Low Income Tax Exemption on its own taxes in 2022, which accounts for 16.5% of all property taxes in the city. Applying the exemption to all property taxes requires approval from other taxing districts that make up at least 51% of the total tax roll.
- **Implement the Multiple Unit Property Tax Exemption and Seek Partnerships with Overlapping Taxing Districts.** The Multiple Unit Property Tax Exemption can add another tool to the City's options for creating affordable units for moderate-income households and incentivize more housing overall to be built in Tualatin.
- **Build Partnerships with Nonprofit Housing Organizations.** Nonprofit housing developers and operators are effective at delivering units that serve low-income residents and provide other supportive or culturally specific services. There are organizations operating within Tualatin and the region with whom the City could seek to build partnerships and include as part of decision-making conversations.

Maintaining ongoing communication with nonprofit housing providers can help to identify regulatory and financial barriers that these organizations may be encountering in Tualatin. Through these conversations, the City may find opportunities to support nonprofit staff. Likewise, local partners may also present opportunities to reduce the amount of city staff capacity needed for ongoing program implementation.

- **Revisit the Funding Action Plan and Continue to Implement the Housing Production Strategy.** In the next five years (and beyond), the City should undergo periodic review of the Funding Action Plan and HPS. This process should include evaluating whether the analysis included within the Funding Action Plan or future analysis findings alter priorities for funding actions in the HPS.

The City should also be proactive about monitoring whether actions which are not currently being explored become more viable or if precedents emerge for similar communities in Oregon. If such funding options emerge, the City can consider conducting further analysis and reorganizing its priorities for implementation.

# 1. Introduction

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Tualatin has an urgent need for more housing that is affordable to people who live and work in Tualatin. More than one-third of Tualatin’s households are cost burdened and cannot afford their housing, including 52% of renter households. Some groups are more likely to have difficulty finding affordable housing because of factors such as lower incomes, housing discrimination, and inability to find housing that meets their needs. These groups include seniors, people with disabilities, people of color, and people experiencing houselessness.

In addition, more than 90% of people that work at jobs in Tualatin commute in from another community. Workers with lower-wage jobs in Tualatin would struggle to afford rental housing in Tualatin and average-wage workers in Tualatin would struggle to afford homeownership in Tualatin.

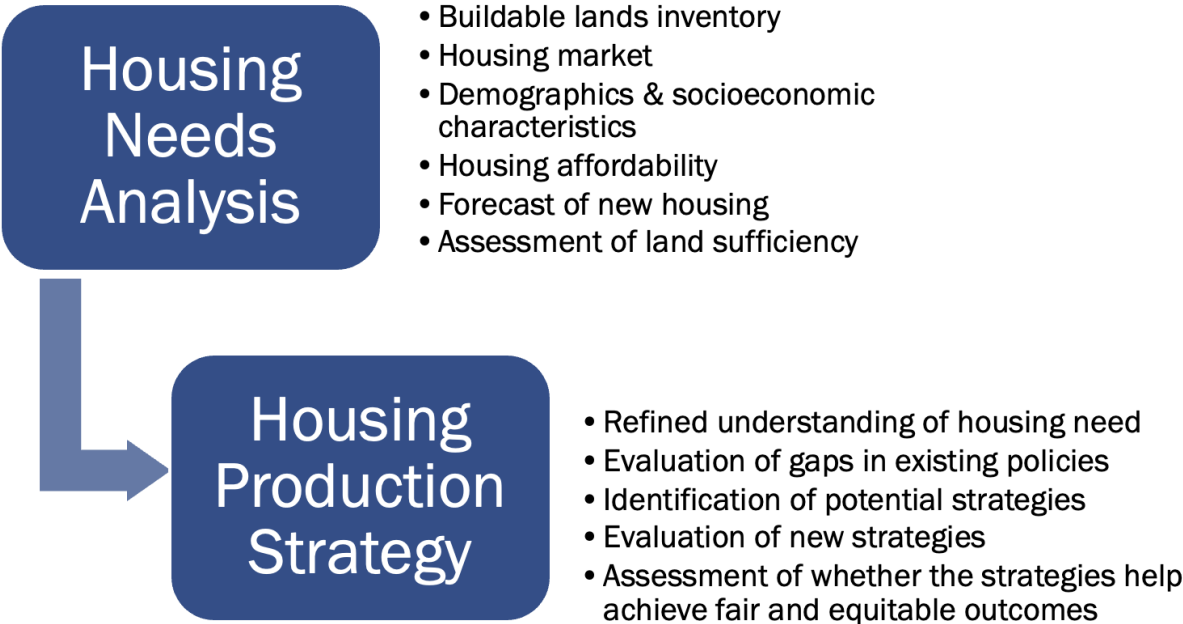
While these problems are not unique to Tualatin and are common across the Portland region and state, Tualatin has a role in supporting development of housing that is affordable to people who live and work in Tualatin.

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The purpose of the Equitable Funding Action Plan is to consider how to best implement the strategic actions in the HPS with a consideration of financial issues and increasing equitable access to housing.

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This project builds on housing studies completed by Tualatin over the last several years. Tualatin adopted a *Housing Needs Analysis* in 2019 and a *Housing Production Strategy* in 2021, which respectively identified gaps that exist for households in Tualatin and identified a set of strategies to address those needs. This document focus on implementation of actions to fund and implement key strategies identified in the *Housing Production Strategy*.



The *Housing Production Strategy* (HPS) recommended development of a Funding Action Plan to Implement the HPS with Attention to Equity (Action 5.a in the HPS). The purpose of the Equitable Funding Action Plan is to consider how to best implement the strategic actions in the HPS with a consideration of equity, with the intended outcome of increasing access to income-restricted and workforce affordable housing. Implementing housing policies in an equitable way goes beyond affordability—it aims to ensure all people have housing choices that are diverse, high quality, physically accessible, and reasonably priced with access to opportunities, services, and amenities (e.g., transit, schools, childcare, food, and parks). These issues are addressed throughout the 12 goals and the strategic actions in the HPS.

The Equitable Funding Action Plan also ensures that there are ongoing opportunities to revise the HPS' priorities based on changing conditions and input of underserved communities, as well as opportunities to determine how the city will fund implementation of the HPS. The funding action plan is intended to focus implementation of the HPS on increasing access to housing with an emphasis on low and moderate-income households while also furthering racial and social equity.

## Goals and Outcomes of This Plan

This report focuses on describing the actions in the HPS that are most dependent on funding to support their implementation and describing the funding sources (and potential available funding) for supporting their implementation. These and other actions in the HPS are intended to provide the City with tools to support affordable housing development and preservation. Taken on their own and separately, they may not result in a large change in the availability of affordable housing. But they provide the City with policies to support bold development proposals that can, taken together, create substantial change in availability of affordable housing.

The actions considered in this report are:

- **Evaluate potential funding streams to support affordable housing development.** This report examines strategic actions that generate funding for affordable housing development and preservation: Construction Excise Tax (CET), Urban Renewal tax increment financing, and other potential funding sources for affordable housing.
- **Identify opportunities to reduce development costs in support of development of affordable rental housing.** The strategic actions that focus on reduction of the cost of affordable multifamily development: Nonprofit Low Income Housing Tax Exemption, Multiple Unit Property Tax Exemption, and System Development Charges Exemption.
- **Identify ways to support homeownership for lower-income households.** Strategic actions that increase and retain homeownership: down payment assistance and home rehabilitation.

This report provides more information about what it will take to implement the action, the potential costs (or revenues) of the strategic action, financial tradeoffs and considerations of



each strategic action, and equity considerations for each strategic action. It also provides information about some existing programs and potential partnerships that can help lower-income households in Tualatin access affordable rental housing and attain homeownership.

The report is not intended to make specific recommendations about the details of how actions in the HPS should be implemented but to give the City Council (and other decision-makers) information about the tradeoffs and considerations of implementation of these actions. Additionally, it provides suggestions about how to embed equity further into implementation of these actions in the HPS to better achieve the goals of the HPS by increasing housing access for low and moderate-income households and increasing racial and social equity.

As the HPS notes, the City may consider updating the Funding Action Plan in 2026 to reevaluate the impact the HPS has had on increasing housing access to low and moderate-income households and on increasing racial and social equity.

The strategic actions considered in this report touch on some but not all issues considered in the HPS. Other actions that the City may implement, as part of the HPS, include:

- Opportunities for redevelopment and potential land banking
- Changes to Tualatin’s development code to better support housing development, especially affordable housing development
- Support to increase access to affordable homeownership
- Support of development of affordable rental housing, both for workforce affordable housing and income-restricted affordable housing
- Preservation of existing affordable housing
- Evaluation of impediments to Fair Housing and education about Fair Housing
- Encouraging opportunities for mixed-use development and redevelopment in commercial areas



## What Goals of Tualatin's Housing Production Strategy Are Being Addressed?

**Affordable Housing:** Strongly prioritize, encourage, and support affordable rental housing development to increase affordable housing for households earning 0-60% Median Family Income.

**Affordable Homeownership:** Encourage and support affordable homeownership to create opportunities for wealth creation.

**Preservation of Naturally Occurring Affordable Housing (NOAH):** Preserve naturally occurring affordable housing, where possible, to prevent loss of affordable units and to mitigate resident displacement.

**Housing for Underserved Communities:** Implement housing policies, projects, programs, and partnerships to further support racial and social equity.

**Workforce Housing:** Encourage, plan for, and support the development of workforce housing for households earning 61-80% Median Family Income for both owner and renter, in order to increase the jobs-housing balance, reduce commute time, and provide attainable housing for workers in Tualatin.

**Housing Rehabilitation:** Plan for and support housing programs and initiatives that are responsive to the safety and health needs of households earning 0-80% of Median Family Income.

**Mixed-Use Housing and Redevelopment:** Encourage and support development of mixed-use, mixed-income, and multifamily housing in commercial zones and urban renewal areas for households earning 0-80% Median Family Income.

## Equitable Implementation

Equitable implementation of housing strategies should prioritize actions which support households with the greatest needs. The *Housing Needs Assessment* and *Housing Production Strategy* identified specific groups that have higher rates of cost burdening, lower incomes, and other unmet housing needs in Tualatin.

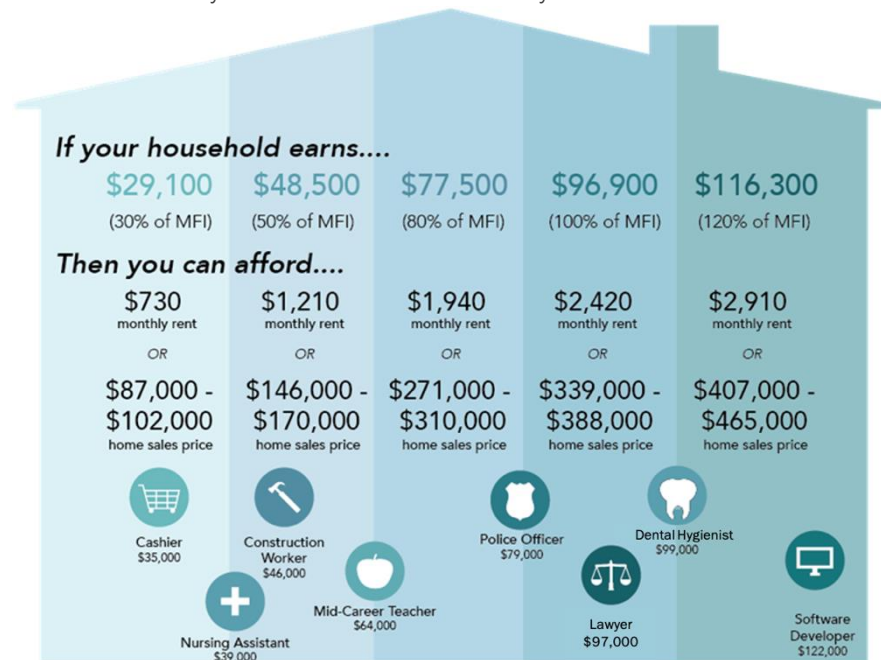
This plan targets households in those demographic cohorts that currently have higher-than-average unmet housing needs. Although the Funding Plan does not cover all of the strategies identified in the HPS, it addresses funding for those which could have significant impact on affordability for specific groups, including low-income households, renters, people of color, seniors, and disabled residents.

Median Family Income (MFI) for a four-person household in the Portland metropolitan area was \$96,900 in 2021, while average monthly housing costs in Tualatin were estimated to be around \$1,580, meaning that average rental housing costs require an income of \$63,000 per year (65% of the median).

### Exhibit 3. Affordable Housing Costs by MFI Level, 2021

Source: US Department of HUD 2021. US Census Bureau, 2016-2020 ACS Table 19001.

Note: Median Family Income is estimated for a family of 4



## Low-Income Households

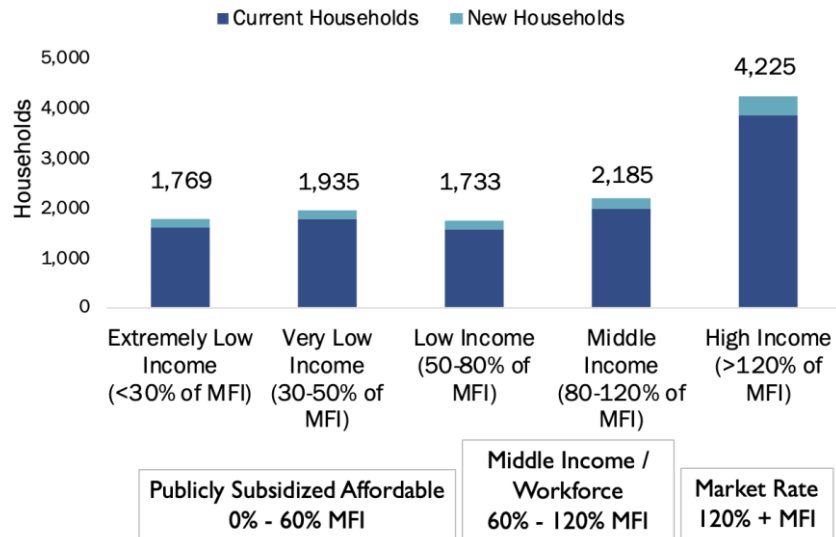
Households below 60% of MFI are considered to require publicly subsidized housing in order to not spend over 30% of their income on housing.

Middle income (or 'workforce') housing for those between 60 and 120% of MFI may also need support in order to ensure there is an adequate supply of housing affordable at these levels.

### Exhibit 4. Share of Current and Future Tualatin Households by Income

Source: 2014-2018 ACS, U.S. Census; PRC at PSU (2020-2040); and U.S. Department of HUD 2020 MFI.

Note: Median Family Income is estimated for a family of 4.

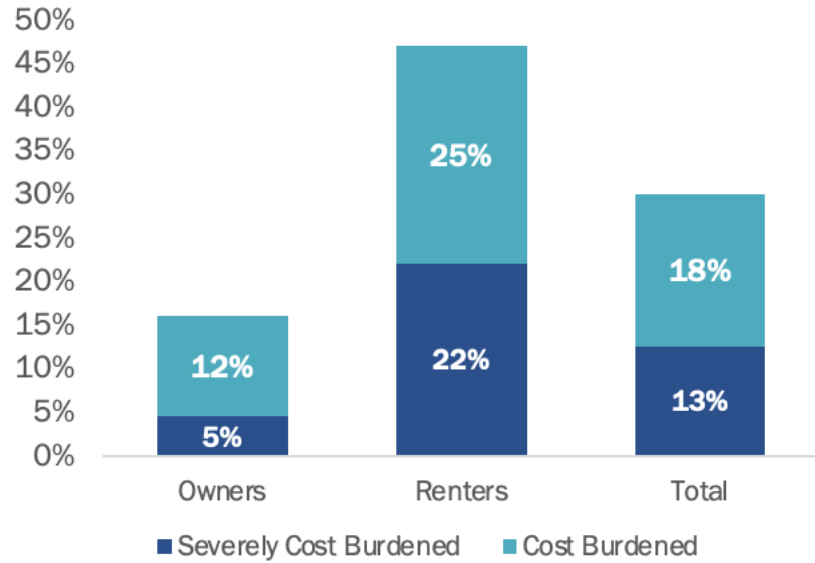


## Cost Burden

Cost burdening typically describes households that pay more than 30% of their monthly income toward their total housing costs (including rent, mortgage, utilities, etc.). About 47% of renters in Tualatin were cost burdened in 2016-2020, compared to 17% of homeowners. About 25% of Tualatin's renters and 5% of homeowners were severely cost burdened, spending 50% or more of their income on housing costs.

**Exhibit 5. Share of Cost Burdened or Severely Cost Burdened Households by Tenure, 2016-2020**

Source: US Census, ACS 2016-2020, Tables B25091 and B25070

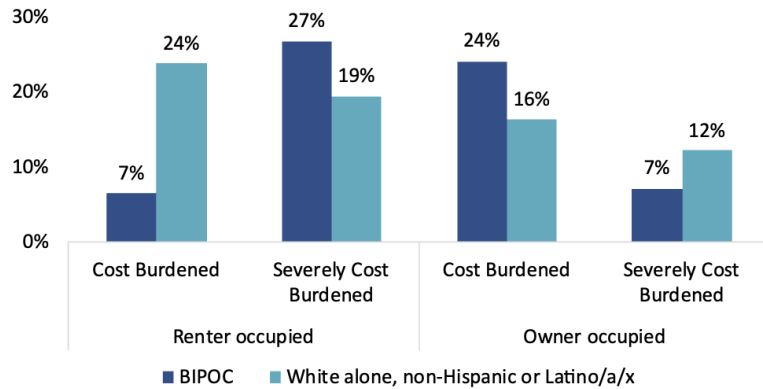


Cost burdening in Tualatin was also disproportionately higher for people of color who both rent and own their homes, consistent with trends across Oregon. Over a quarter of people of color who rented were severely cost burdened, compared to 19% of white renters. Nearly a quarter of people of color who owned their homes were also cost burdened, a higher rate overall than white homeowners.

**Exhibit 6. Cost-Burdened Households by Tenure and Race/Ethnicity, 2015-2019**

Source: CHAS 2015-2019, Table 9.

Note: 'BIPOC' indicates 'Black, Indigenous, and People of Color,' including Hispanic or Latino/a/x residents of any race.



**Why Look at Race and Housing Needs?**

In the United States, many people of color have been historically prohibited from purchasing homes or accessing housing through discriminatory practices, such as exclusion from federal housing programs and denial of financial services.<sup>1</sup> The legacy of these historical practices contributes to ongoing homeownership and cost burdening disparities nationwide. People of color have also been systemically prevented from accumulating generational wealth to the extent of white families in the United States, creating persistent barriers for achieving homeownership and other housing-related needs.<sup>2</sup> Actions that make homeownership and rental housing more attainable for people of color can help address these ongoing inequities.

<sup>1</sup> Rashawn Ray et al., "Homeownership, Racial Segregation, and Policy Solutions to Racial Wealth Equity," Brookings Institute, September 1, 2021, <https://www.brookings.edu/essay/homeownership-racial-segregation-and-policies-for-racial-wealth-equity/>.

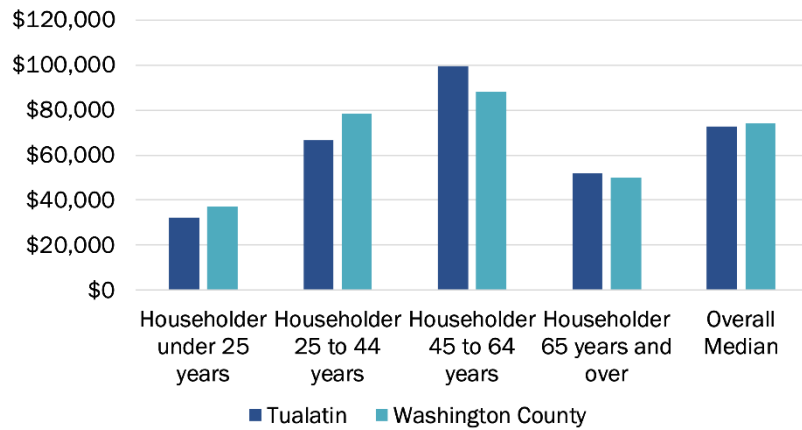
<sup>2</sup> Liz Mineo, "Racial Wealth Gap May Be a Key to Other Inequities," Harvard Gazette (Harvard University, June 3, 2021), <https://news.harvard.edu/gazette/story/2021/06/racial-wealth-gap-may-be-a-key-to-other-inequities/>.

## Seniors

Tualatin householders 65 years of age and over typically had an income lower than the overall median. Although this may not always correlate with cost burdening, seniors may have more challenges finding affordable housing or paying for maintenance in a home that they own.

### Exhibit 7. Median Household Income by Age of Householder, 2013-2017

Source: US Census Bureau, 2013-2017 ACS 5-Year Estimate, Table B19049.



### Why Look at Age and Housing Needs?

Housing needs can often change for people over time as they age. As individuals retire, their annual income typically lowers, and some may be unable to keep up with rising rents or make critical repairs to their homes.<sup>3</sup> Many older adults may also require physical modifications to their homes due to mobility or other disabilities. In the United States, only a small share of homes provide basic accessibility features, such as no-step entry, single-floor living, and door widths to accommodate a wheelchair.<sup>4</sup> These accessibility improvements can be costly and create displacement risks for seniors. Actions that enable housing that is affordable, right sized, and connected to community services can address the needs of many older adults.

<sup>3</sup> Stephanie Watson, "Low-Income and Affordable Housing Options for Older Adults," Forbes Health, January 5, 2023, <https://www.forbes.com/health/senior-living/affordable-housing-for-seniors/>.

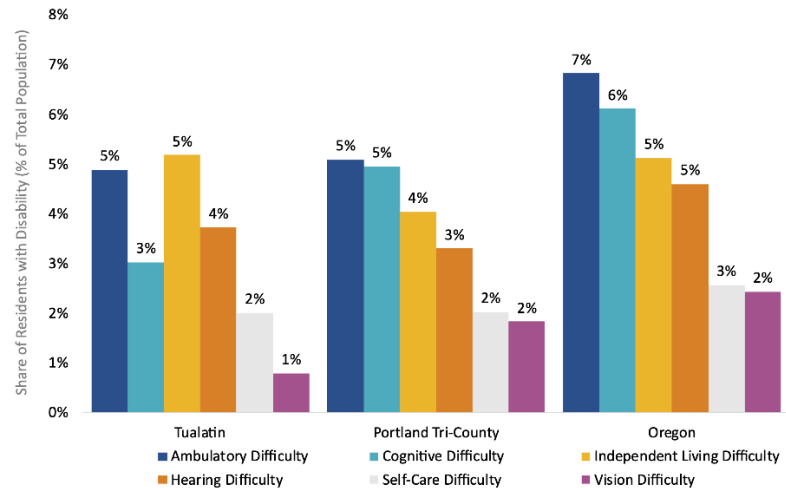
<sup>4</sup> Jennifer Molinsky, "Housing for America's Older Adults: Four Problems We Must Address," Joint Center for Housing Studies (Harvard University, August 18, 2022), <https://www.jchs.harvard.edu/blog/housing-americas-older-adults-four-problems-we-must-address>.

## Disabled Residents

About 8% of Tualatin’s population has one or more disabilities. Disabled residents may have additional housing needs beyond affordability, including accessible home features, as well as proximity to transit and other resources.

### Exhibit 8. Share of Persons with a Disability by Type (% of Total Population), 2021

Source: US Census Bureau, 2021 ACS 1-Year Estimate, Table K201803.  
Note that an individual can have more than one disability.



### Why Look at Disabilities and Housing Needs?

Disabled residents may require certain structural features in their homes, with similar concerns as older adults for finding adequately accessible units. In the United States, communities of color also often have higher incidence of disabilities due to interconnected issues of systemic racism and poverty.<sup>5</sup> Individuals may become disabled and require new accessibility features that they did not previously need in their homes, which may range in terms of scale and cost. Actions that support housing for disabled residents vary, but may overlap with those which support older households, such as financial support for low- and moderate-income households to make home improvements as well as location near community services and transit.

<sup>5</sup> Susan J. Popkin et al., “People with Disabilities Living in the US Face Urgent Barriers to Housing” (Urban Institute, October 21, 2022), <https://www.urban.org/research/publication/people-disabilities-living-us-face-urgent-barriers-housing>.

## Commuters

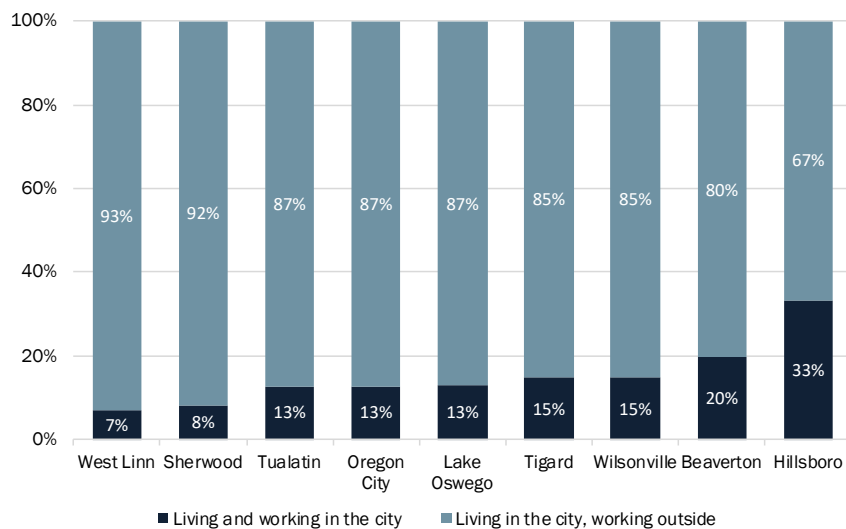
Commuting is a large concern in Tualatin because most people who work in Tualatin live in another community. Tualatin has nearly twice as many jobs as housing units, as described in the *Tualatin Housing Needs Analysis* (December 2019). Decreasing commuting will require building more housing in Tualatin, especially housing that people who work in Tualatin can afford. The *Tualatin Economic Opportunities Analysis* report (December 2019) reported an average wage of \$57,000 in Tualatin in 2017. Many workers have below-average wages and work in retail, the service industry, and administration and waste services. Reducing commuting will require increasing access to affordable housing for people to live and work in Tualatin.

Tualatin's *Economic Opportunities Analysis* report (December 2019) reported that of the more than 23,800 people who work in Tualatin, 93% of workers commute into Tualatin from other areas (such as Portland, Tigard, Beaverton, or Hillsboro) each day.

Some people who work in Tualatin can afford rent or homeownership in Tualatin, but some would be cost burdened.

### Exhibit 9. Commuting Flows of Residents, Tualatin Relative to Comparison Geographies, 2015

Source: U.S. Census Bureau, Census On the Map.





## Process for Developing the Funding Plan

The consulting team from ECONorthwest collaborated with city staff, local leadership, and residents while developing this funding and implementation plan, including:

- **City of Tualatin staff** in the Community Development and Planning department, who helped to convene stakeholders as well as review and refine funding strategies.
- The **Community Advisory Committee (CAC)**, composed of Tualatin residents and an affordable housing developer, which convened six times during 2022 and 2023 to provide valuable direction and input for the funding and implementation actions proposed in this plan.
- **Tualatin Planning Commission**, who met with the project team at one work session while the plan was being developed.
- **Tualatin City Council**, who met with the project team at two work sessions while the plan was being developed.

## Organization of This Report

The rest of this document is organized as follows:

- **Chapter 2. Housing Needs and Development Funding Structures** gives an overview of housing needs in Tualatin for the next twenty years and the types of strategic actions available to the City for funding housing projects in Tualatin. These include ways to generate new funds for affordable housing, reduce costs for affordable multifamily housing development, and support homeownership for low to moderate-income households.
- **Chapter 3. Strategic Actions that Generate Funds for Affordable Housing** provides details on actions that create new local funding sources which the City could allocate to affordable housing projects or programs. Two sources in particular have been shown to be effective in other Oregon cities: Construction Excise Taxes and Urban Renewal.
- **Chapter 4. Strategic Actions that Reduce Costs for Affordable Multifamily Development** presents details on funding tools which provide multiple options for the City to support this type of housing by reducing costs from property taxes or development costs. For each action, the chapter includes multiple options for how the City could structure implementation. These actions include the Nonprofit Low Income Tax Exemption, Multiple Unit Property Tax Exemption, and System Development Charge Exemptions.
- **Chapter 5. Strategic Actions to Increase and Retain Homeownership** addresses actions to increase affordable homeownership opportunities for Tualatin residents. These actions involve the City contributing funds that help residents become homeowners or

remain in their homes through down payment assistance or home rehabilitation programs.

- **Chapter 6. Tradeoffs and Conclusions** includes a summary of the amount of funding available and the amount needed for strategic actions in Chapters 3 to 5. This chapter presents fiscal tradeoffs as well as equity benefits and challenges for each action. It also sets up key questions for decision-makers related to these conclusions.
- **Chapter 7: Recommendations** were developed with the input of Steering Committee and City staff, including opportunities to build equity into implementation and opportunities to determine how the City might prioritize actions.
- **Appendix A** provides detailed background on each strategic action with a series of memoranda which were used during plan development, and a survey of additional funding tools that might be available to the City.

## 2. Housing Needs and Development Funding Structures

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This chapter clarifies the specific affordable housing needs in Tualatin and potential actions to address them. These actions focus on ways to generate new funding streams, reduce development costs, as well as programs focused on homeownership. Considerations are included throughout, though specific recommendation will be discussed later in the report. The analysis is broken down into the near term (five years) and long term (twenty years) to help demonstrate the pace needed to meet the city's goals.

### Housing Needs in Tualatin

The 2021 *Housing Production Strategy* (HPS) provided a summary of Tualatin's housing needs. Each of the strategic actions evaluated for this funding plan are related to a specific action in the HPS, though not every action from the HPS is covered in this analysis. Those with the greatest impact on funding and those which covered the widest range of income levels were prioritized.

#### How many affordable units are needed for Tualatin?

The HPS identified the total need of new units in Tualatin over the next twenty years and the breakdown of these units by household income levels (based on analysis from Tualatin's 2019 *Housing Needs Analysis*). In the 2016-2020 period, approximately 17% of households (1,790 total) in Tualatin were already severely cost burdened by housing expenses, including 26% of renter households. This plan details funding tools intended to **at minimum** meet the additional need for affordable housing anticipated in the next five years, with the goal of providing as many units as possible.

The *Housing Needs Analysis* shows that Tualatin is forecast to grow by about 1,014 households through 2040. About 45% of Tualatin's new households are expected to have income below 80% of MFI. Based on the forecast in the HNA, approximately 600 new units of this 1,000 would need to be for new low- and moderate-income households (with income below 120% of MFI). In addition, Tualatin has nearly 6,500 existing households with income below 120% of MFI, some of whom have unmet housing needs and are cost burdened. Tualatin has more than 4,200 existing households with income below 80% of MFI, many of whom are cost burdened or have other unmet housing needs. The actions in this report, as well as other actions in the HPS, are intended to help better meet these housing needs.

## How can cities support affordable housing development?

Housing development is a complex process that requires input from numerous interrelated markets and players, and each development input functions in its own market with supply and demand factors constantly in flux. Exhibit 10 illustrates the key factors necessary for development to occur. Cities have varying influence on these factors.<sup>6</sup>

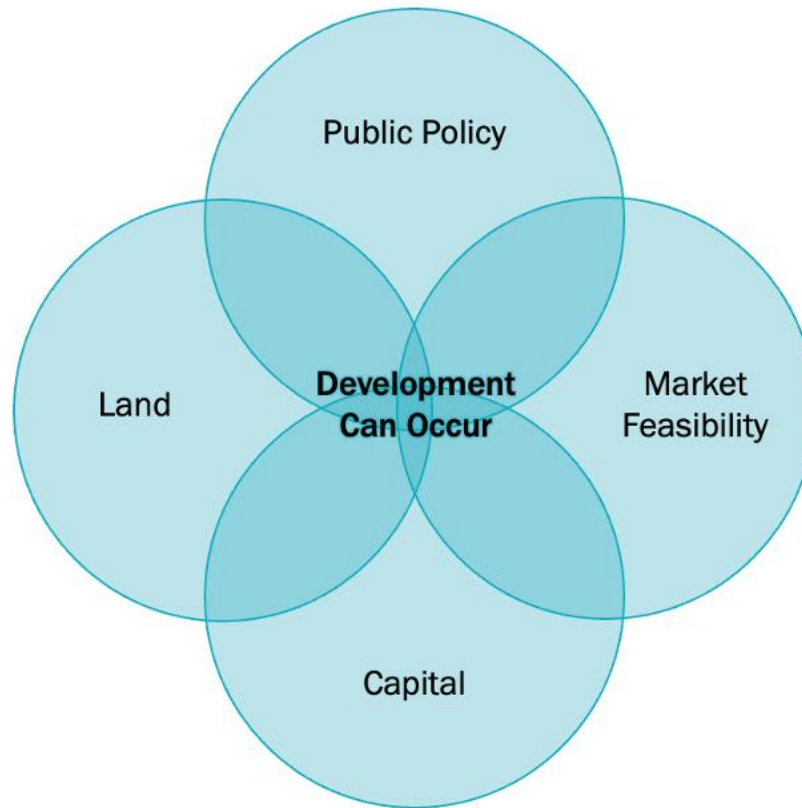
- **Land.** Landowners and property developers evaluate opportunities for development that can occur on a specific parcel. The city completed a *Housing Needs Analysis* (HNA) in 2019 to study the availability of land and redevelopment opportunities to accommodate 20 years of growth. The HNA found that Tualatin had limited buildable land available, making the provision of affordable housing an even greater challenge. Cities also have an influence on development by planning for and building necessary infrastructure, such as roads, water service, wastewater services, and stormwater services to serve this growth.
- **Public Policy.** Cities set public policies that affect development, such as zoning, density, building height, or subdivision policies.
- **Market feasibility.** This is a process that assesses the demand for development – comparing the expected revenues against the investment costs (e.g., labor and materials) – for the desired types of development. If a development project is not feasible, it will not be built. Cities can influence market feasibility through policies that lower the costs of development or lower the costs of operating the new housing, such as waiving fees or offering property tax exemptions.
- **Capital.** Building housing requires access to capital to pay for the costs of development and influences market feasibility through the financing terms set by the lender and the returns expected by the investor. When real estate development cannot meet return requirements of potential inventory, building housing becomes infeasible. Cities have a more minor role in supplying capital for construction, generally limited to funding rehabilitation programs or, occasionally, more significant funding for affordable housing development.

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<sup>6</sup> This discussion is adapted from the report *Oregon Transit and Housing Study, Housing Market Primer*, December 2020, by ECONorthwest with Parametrix and HDR.  
[https://www.oregon.gov/odot/Planning/documents/TransitHousing\\_PrimerWithGlossary.pdf](https://www.oregon.gov/odot/Planning/documents/TransitHousing_PrimerWithGlossary.pdf)

## Exhibit 10. Factors Influencing Housing Development

Source: ECONorthwest



This project is primarily concerned with supporting development of housing affordable below 120% of MFI, which can be separated into two categories: *income-restricted* housing affordable to households with income of 60% of MFI or less and *market-rate* affordable housing affordable to households with incomes of 60% to 120%.

Most funding for *income-restricted* housing comes from state and federal sources, such as Low-Income Housing Tax Credits (LIHTC), or nonprofit sources. Developing market-rate affordable housing (affordable to households with income of 60% to 120% of MFI) has different sources of funding, which are more likely to be private funding sources but can include some public funding.

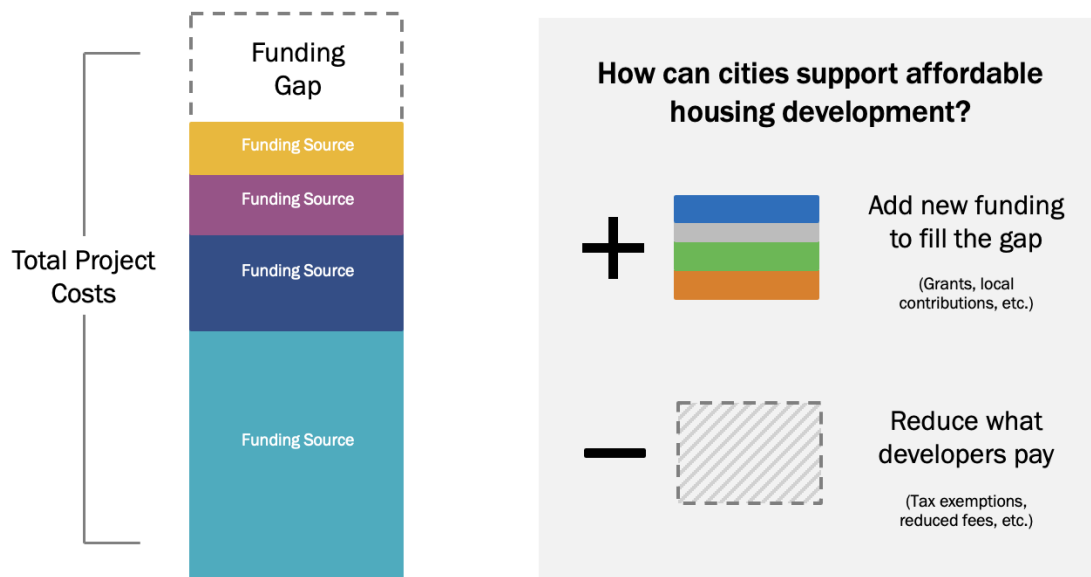
Funding to support development of *market-rate affordable* housing is less readily available from public sources, making it less common because it is typically not financially feasible. Housing affordable to households in this income group, especially households with incomes of 60% to 80% of MFI, may not be built unless there are subsidies to make development financially feasible. The intention of the strategic actions under consideration in this plan is to increase market feasibility for development, by lowering development costs or supplementing available funding for either income-restricted housing or market-rate affordable housing with rents that are below market rate.

When developing affordable housing, the developer must fund the costs of building and operating new housing. For income-restricted housing development, which is typically multifamily, funding may come from a wide range of sources, sometimes with 10 to 20 funding sources necessary to build new housing. Development costs of income-restricted housing vary based on location, scale, and other factors. Medium to large multifamily income-restricted affordable housing projects in Oregon typically have a funding gap between \$10 and \$15 million, or about \$100,000 - \$150,000 per unit on a 100-unit project.

The primary approaches that jurisdictions take to overcome these funding gaps are by directly contributing local funds, reducing costs associated with development (such as permitting fees or system development charges), or providing services such as technical assistance. Exhibit 11 illustrates a potential funding source.

**Exhibit 11. Illustration of potential funding gap for affordable housing development**

Source: ECONorthwest



This plan includes three types of strategic actions: (1) actions to generate additional funds to support Tualatin’s housing programs and actions in the HPS, (2) actions to lower costs for income-restricted and market-rate affordable multifamily rental housing, and (3) actions to increase and retain affordable homeownership.

In Tualatin and nearby jurisdictions (such as Tigard) a typical affordable multifamily housing development would provide between 50 and 100 units on a single development site, though developers may seek to include more units if they choose. Where possible, this analysis includes an estimate for potential funding impact over five and twenty years (per unit and applied across a hypothetical 100-unit building), to provide comparable examples.

### 3. Strategic Actions that Generate Funds for Affordable Housing

The strategic actions in this section are ways for the City to create new local funding sources to allocate to affordable housing projects or programs. Two sources in particular have been shown to be effective in other Oregon cities: Construction Excise Taxes and Urban Renewal.

#### Construction Excise Tax (CET)

- **What does it do:** CET levies a tax on new construction to fund housing programs and investments. It can be levied on any combination of residential, commercial, and industrial development.
- **Who initiates it:** As of 2016, local jurisdictions in Oregon can pass CET by adopting an ordinance through City Council, authorized by SB 1533.
- **How does it work:** This tax allows cities to collect up to a 1% tax on permit value of new residential development or any percentage for commercial/industrial development.
- **How can CET be used:** Residential CET and commercial/industrial CET have different rules for how the City can directly use revenues required by ORS 320.195:

For residential CET:

- 50% must be used for developer incentives (e.g., SDC exemptions, tax abatements, or finance-based incentives).
- 35% may be used flexibly for affordable housing programs.
- 15% is not available to the city and flows to Oregon Housing and Community Services for homeownership programs that provide down payment assistance.

For commercial/industrial CET:

- 50% of the funds must be used for housing-related (but not necessarily limited to affordable housing)
- The remaining 50% is unrestricted.

#### HPS Actions and Funding Plan Tools

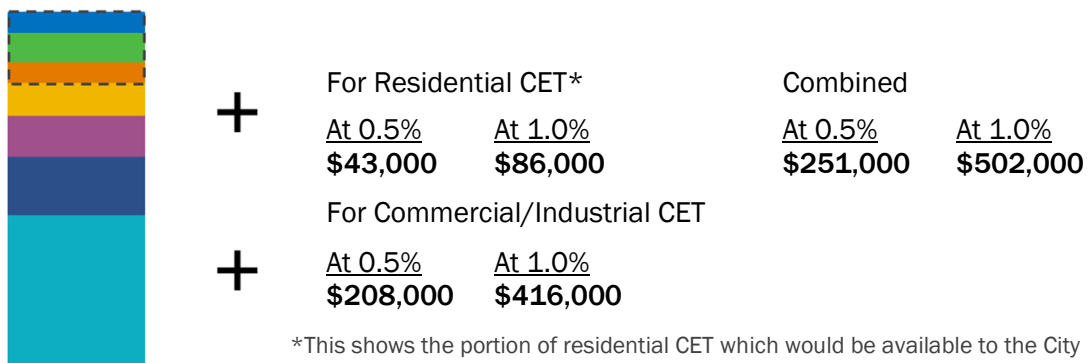
The tools included in this funding plan align with some of the specific actions in the 2021 Tualatin Housing Production Strategy. The table below demonstrates the associated actions and funding tools.

HIP Tool	HPS Action
Construction Excise Tax	1.c Evaluate Implementation of a Construction Excise Tax
Urban Renewal Area	1.d Evaluate Support for Affordable and Workforce Rental Housing as part of Urban Renewal
Other Funding Tools	1.e Evaluate Financial Resources for Local Contributions to Affordable Housing Development

In addition to providing direct funding, CET can also be leveraged by the City to attract affordable housing developers or match other funding sources. In both scenarios, the secondary impact of new funding could potentially provide additional benefits on top of the amount generated by the strategic action.

- **What is its potential funding impact:** A 0.5% to 1% CET on commercial and industrial development may be worthwhile in Tualatin. Through OHCS, this can also be explicitly used to fund down payment grants.

Based on historical permitting between 2016 and 2020, we calculated what CET could be expected to look like over a **five-year** time period. If Tualatin assessed a tax of 0.5%, on the low end of the allowable rate, collections from new commercial and industrial development could generate:



- **Limitations of CET:** Although CET generates funds that the City can explicitly use to meet its housing goals, the amount will not be sufficient to fully fund all projects. Additionally, administration for residential CET would be somewhat more complex due to the requirement of separating out revenues toward the spending categories as specified in statute, while the funding available to cover administrative costs would be negligible.
- **Equity Considerations:** CET gives a certain amount of flexibility in deciding how to use revenues. The City could choose to focus on programs that have equitable outcomes.

## Urban Renewal District

- **What does it do:** Within an active urban renewal district, tax increment financing (TIF) allows the jurisdiction to borrow against future property taxes in order to finance expenditures on current capital projects. This would be within specific district boundaries to support goals identified in the plan, including housing development. TIF funds cannot be used outside of the district and are mostly limited to capital projects. Cities sometimes use a share of revenue from urban renewal districts toward housing goals within district boundaries, including infrastructure that supports affordable housing or direct support for rehabilitation, acquisition, or site preparation.



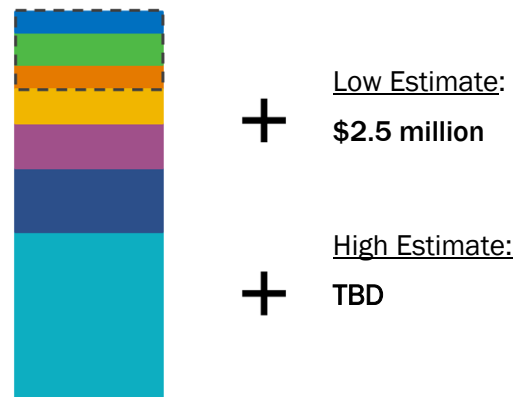
- **Who initiates it:** In Oregon, after an area has been deemed ‘blighted,’ a local urban renewal agency can propose an urban renewal plan, which must go through a hearing with public testimony and planning commission recommendations. City Council may then adopt the urban renewal plan by ordinance. Assuming a TIF borrowing will be undertaken, a framework for the eligible uses of those TIF funds would be developed by the City, including any goals for affordable housing.
- **How does it work:** Tualatin’s Core Opportunity Reinvestment Area, comprising commercial areas south of Bridgeport Road, Town Commons, I-5 Corridor, and Tualatin-Sherwood Road, has potential to provide funding for housing projects within the area boundaries.
- **How can Urban Renewal be used to support affordable housing:** The Urban Renewal Plan for Tualatin’s Core Opportunity Reinvestment Area could be used to support development of new infrastructure (such as water or wastewater upgrades or flood mitigation), land acquisition and parcel assembly, and for a variety of housing options.

The City has not yet identified any specific actions that it will take to support housing development but expects to identify those actions as it implements the Urban Renewal Plan. Mixed-income development that integrates market-rate and affordable housing is a route that the City could pursue to avoid concentrating a large amount of affordable housing in one area, while still increasing the overall supply of units.

- **What is its potential funding impact:** Tualatin’s newly adopted urban renewal area in the Core Opportunity Reinvestment Area could integrate goals for housing and access urban renewal funds. The current estimates for revenue to be generated in the next thirty years range from \$248 to \$362 million.<sup>7</sup> However, only a portion of this total funding would potentially go toward housing.

The amount of funding available to support affordable housing development will be decided as the City implements its Urban Renewal plan. The City could also dedicate land currently owned by the City within the urban renewal area, which would also reduce acquisition costs.

If the City were to provide support for an affordable housing developer, the average gap funding needed per unit in Oregon is typically between \$100,000 and \$150,000 per unit (see section above). Depending on how many units are subsidized and how much of the gap is filled with urban renewal funding, a rough approximation would be \$5 to \$15 million to finance 50 to 100 units.



<sup>7</sup> Tiberius Solutions and Elaine Howard Consulting, “Tualatin North District Urban Renewal Feasibility Study,” August 31, 2020, <https://www.tualatinoregon.gov/economicdevelopment/proposed-area-district-2>, 11-13.

- **Limitations of Urban Renewal:** Urban Renewal funding can only be spent within the Urban Renewal District, which is a limited area within Tualatin, around downtown. Much of the Urban Renewal District area is in the floodplain, so the City will need to be careful to ensure that new housing is designed in locations that are sufficiently elevated above the floodplain and constructed of appropriately flood-resistant materials.
- **Equity Considerations:** Urban Renewal can provide a large amount of funding for housing for extremely and very low-income households. However, because it is geographically limited to the boundaries of the urban renewal plan area, it also has the potential to create areas of concentrated poverty. Housing in different areas of the city can also help to meet diverse household needs: for some it is critical to be located near social services, while other households (such as low-income families with children) may need to be located closer to amenities like schools and parks.

## Summary of Potential New Funding for Affordable Housing

The City could choose to pursue a Construction Excise Tax on new buildings in Tualatin and would be able to flexibly decide the configuration within the limits set by the state. The City would be able to set the tax rate within these parameters and determine whether to apply it to residential, commercial/industrial, or both construction types. The way that the City spends this revenue must also follow the framework set out by ORS 320.195, which ensures that a portion goes toward housing programs. The revenue that CET could generate for affordable housing over the five- and twenty-year period is likely to change based on trends in construction costs, inflation rates, the labor market, other economic factors.

The Core Opportunity Reinvestment Area is projected to generate a large amount of revenue through tax increment financing. Depending on the availability of funds in the next five years, a portion could be used within the plan area for gap funding of affordable housing projects or other actions to support housing development such as site preparation or land acquisition.

## Exhibit 12. Rough Estimate of Potential Tools to Generate Funds

Note: High and low funding estimates are derived from the analysis memos attached to this report

Tool	Funding Considerations	Impact on Affordable Housing	Five Year Estimate		Twenty Year Estimate	
			Low	High	Low	High
Construction Excise Tax	<ul style="list-style-type: none"> <li>For commercial and industrial CET, 50% of funds must be used for housing programs</li> <li>For residential CET, 50% must be used for developer incentives</li> </ul>	Medium	\$251,000 (0.5% tax)	\$502,000 (1% tax)	\$1 million (0.5% tax)	\$2.5 million (1% tax)
Urban Renewal	<ul style="list-style-type: none"> <li>Urban renewal revenue has limitations on applicable types of projects and location</li> </ul>	High	\$2.5 million	TBD	Unknown	Unknown

# 4. Strategic Actions that Reduce Costs for Affordable Multifamily Development

The funding tools in this section provide multiple options for the City to support development of affordable multifamily housing by reducing costs from property taxes or development costs. For each tool, there are multiple options for how the City could structure implementation.

In some cases, these tools could be layered with multiple programs or combined with other tools that contribute funding, such as funds from the Construction Excise Tax to backfill these exemptions in support of eligible development.

## Nonprofit Low Income Tax Exemption

- What does it do:** This tool provides a full property tax exemption for nonprofit-owned affordable housing serving households with incomes at or below 60% of MFI. This tax exemption supports development of income-restricted housing.
- Who initiates it:** In 2022, Tualatin’s City Council adopted the Nonprofit Low Income Tax Exemption (enabled through ORS 307.540 to 307.548) on its own taxes, which accounts for 16.5% of all property taxes in the city. Applying the exemption to all property taxes requires approval from other taxing districts that make up at least 51% of the total tax roll.
- How does it work:** The City presently has adopted an exemption only to its own property taxes for low-income rental housing. It may also explore whether additional taxing districts are willing to join in the exemption. If the districts whose taxes comprise at least 51% of the total tax roll agree to participate, then all taxes for all districts would be exempted. This would provide a 10-year exemption for property owned or operated by a nonprofit entity, which may be renewed after the first ten years.

**HPS Actions and Funding Plan Tools**

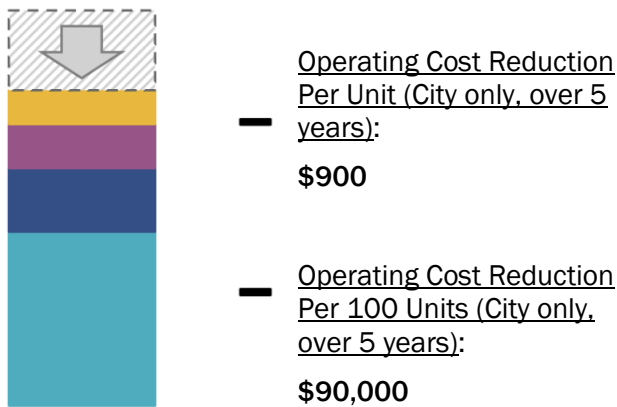
The tools included in this funding plan align with some of the specific actions in the 2021 Tualatin Housing Production Strategy. The table below demonstrates the associated actions and funding tools.

HIP Tool	HPS Action
Low Income Tax Exemption	1.a Evaluate a Low-Income Housing Property Tax Exemption Program for Affordable Rental Housing
Multiple Unit Property Tax Exemption	4.b Evaluate Using the Multiple Unit Property Tax Exemption to Slow Rental Cost Increases
System Development Charge Exemption	1.b Evaluate Changes to Systems Development Charges

Overlapping taxing districts in the city include the Tigard-Tualatin School District (44.7%), Washington County (17.3%), Tualatin Valley Fire and Rescue (12.2%), Portland Community College (3.8%), Metro Regional Government (3.3%), Northwest Regional Education Service District (0.9%), Tigard-Tualatin Aquatic District (0.5%), Soil Water Conservation Tualatin (0.5%), and Port of Portland (0.4%).

The Tigard-Tualatin school district comprises the largest share of the tax roll and covers a large area of the city. However, there are three other school districts that apply to smaller areas of Tualatin’s city limits, including West Linn-Wilsonville, Sherwood, and Lake Oswego. It is possible that if the exemption were accepted only by some of these districts that it would not apply across the whole city.

- **What is its potential funding impact:** Tested on comparable developments in Tualatin and Tigard, over **five years** the **City’s** nonprofit exemption would likely result in the City foregoing approximately \$900 per year (an amount that will vary over time) for each unit. Assuming development of a building with 100 units of income-restricted affordable housing, the City would forgo about \$90,000 per year in property taxes in a five-year time frame. Although this would provide support for nonprofit developers, this tax exemption is most effective when all taxing districts participate.



The amount of the exemption may not seem high compared to other strategic actions and the cost of development, but it does allow nonprofit housing developers to incur less permanent debt and creates greater savings for these organizations in the long term. This creates a higher incentive to attract nonprofit developers to the area.

If a sufficient share of taxing districts were to join the City in providing the exemption to trigger

a 100% property tax exemption, then the value would be approximately **\$538,000 for 100 units over a period of five years.**

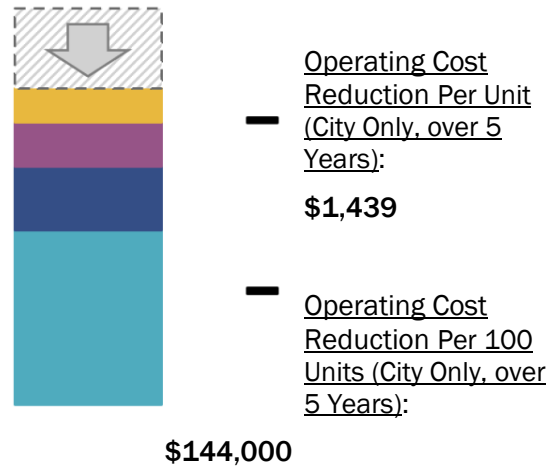
- **Limitations of the Nonprofit Tax Exemption:** The Nonprofit Tax Exemption does provide some gap financing support for organizations seeking to build affordable housing in Tualatin. However, since the City only accounts for 16.5% of total property taxes, this exemption is not as effective without the support of overlapping taxing districts.
- **Equity Considerations:** Many nonprofit organizations also serve specific populations and may provide culturally specific or supportive services alongside housing. Examples in the region include Las Adelitas operated by Hacienda CDC, Casa Amparo operated by Centro Cultural, and Nesika Illahee operated by the Native American Youth and Family Center.

## Multiple Unit Property Tax Exemption (MUPTE)

- **What does it do:** MUPTE provides a property tax exemption for up to ten years on the residential building portion of a property (but not land or building area for other uses such as commercial space). The incentive is for private developers of housing affordable to households with incomes of 60% to 120% of MFI. MUPTE can be used to support development where all housing in the building is affordable below 120% of MFI or mixed-income housing, where some housing is priced higher.
- **Who initiates it:** City Council can adopt the exemption on its own taxes but requires approval from other taxing districts to exempt all property taxes on the building.
- **How does it work:** The City can exempt only its own property taxes for nonprofit low-income housing, or all taxes for all districts if the districts whose taxes comprise at least 51% of the total tax roll agrees to participate. This program is flexible, with City discretion over many aspects of eligibility, including the level of affordability requirements, the minimum number of units in the property, and any design requirements.
- **What is its potential funding impact:** MUPTE could potentially create an incentive for private developers to offer rental units at a discounted rate that is affordable to moderate-income households. Other cities in Oregon have used this program with different configurations for affordability, though not all jurisdictions have these requirements:
  - In Newport, to meet MUPTE's local affordability requirements, projects may provide 20% of units at 80% of MFI or below, 10% of units at 60% of MFI or below, or make an in-lieu payment equal to 10% of the total property tax exemption.
  - In Salem, projects using the program with 100 units or more must provide at least 15% of units affordable at 80% of MIF or below, or at least two public benefits (such as daycare facilities, ground level commercial space, etc.).
  - In Bend, the program does not have an explicit affordability requirement. Instead, developers must provide at least three public benefits from a list in the Municipal Code, which includes 'Affordable Housing' and 'Middle Income Housing,' though developers can alternatively include other features, including childcare, open space, or green building features.

- When tested on recent multifamily buildings in Tigard and Tualatin, the value of the exemption for the City's portion in **five years** was \$1,439 for each unit. Assuming that a developer used the program on a new building with 100 units of income-restricted affordable housing, the City would forgo about \$144,000 in property taxes over five years.

The program configuration tested in our analysis (20% of units at 80% of MFI) would provide a net benefit to developers if the tax abatement applies to all overlapping taxing districts. However, **the city's share of the tax exemption alone is insufficient to provide a net incentive for developers.** If all taxing districts participated, this total benefit to developers would be \$8,531 over the first five years, or \$853,100 for 100 units.



- Potential sources of replacement funding:** The City could backfill the forgone property taxes from MUPTE through use of CET funds if so desired.
- Limitations of MUPTE:** The effectiveness of this exemption depends on whether it can incentivize developers to include affordable units in otherwise market-rate projects. To do so, MUPTE must generate a net profit. Our analysis shows that the City would need to achieve buy-in from overlapping tax districts if it were to use the benchmark of 20% of units at 80% of MFI in order to create a sufficient incentive. However, given the flexibility of the program, the City could pursue a number of different configurations.

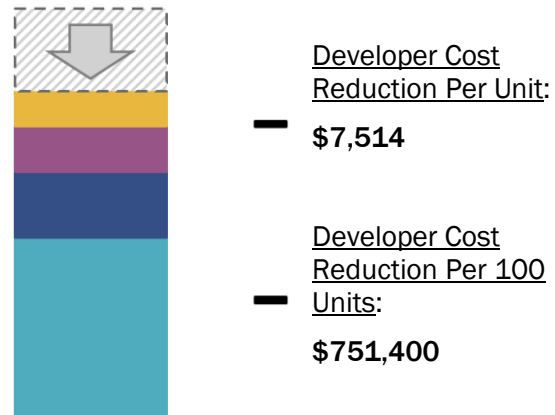
## System Development Charge (SDC) Exemption

- What does it do:** System Development Charges are one-time fees for new development, both for single-family and multifamily housing, that help pay for increased loads on infrastructure systems. Exempting SDCs reduces the up-front fees developers pay for those who provide new affordable units. In most cases the City will be required to backfill exempted SDCs from CET or another funding source.
- What SDCs are paid in Tualatin:** New development pays the following SDCs:
  - Tualatin-specific SDCs: Water (typically around \$1,150 per unit in a multifamily building, but varies based on the size of water meter) and Parks (\$6,371 per unit)
  - SDCs for other service districts: Transit Development Tax (\$6,542 per unit) and Sewer (\$7,266 per unit)



The Tualatin Parks and Recreation Department has already adopted an Affordable Housing Waiver Policy through Resolution 2020-24, which provides a 100% waiver for regulated affordable units at or below 30% of MFI, and 50% for those between 30 and 60% of MFI.

- Who initiates it:** City Council can adopt the exemption for City SDCs but would have to identify a source to backfill the forgone revenue from other sources. The City could also request that other districts that assess SDCs (sewer) or TDTs (roads) adopt an exemption, but either the City or that entity would also need to backfill the forgone revenue.
- How does it work:** The City can exempt the system development fees that it controls for Parks and Water. In most cases, the City will be required to backfill the costs of the SDC waivers. If the City wanted to subsidize the costs of SDCs collected by other service providers (such as sewage or TDT), the City could subsidize those costs in agreement with the developer. The City could decide what level of affordability and the number of affordable units it will require for an exemption. SDC exemptions can be used to support development of both income-restricted and market-rate affordable units.
- What is its potential funding impact:** Tualatin could provide an exemption for its two SDCs for Parks and Water but would likely have to backfill the forgone revenue.<sup>8</sup> Exempting both **city-controlled SDCs** in multifamily buildings over **five years** would amount to approximately \$7,514 per unit, or \$751,400 for 100 multifamily units in that time period.
- Potential sources of funding:** The City could backfill the SDC exemptions through use of CET funds.
- Limitations of the SDC waivers:** There are a limited amount of City SDCs, which reduces the potential impact of this tool. An SDC exception will also require the City to backfill forgone revenue, and it may be more effective to use funds to directly supplement affordable housing projects.



## Summary of Potential Cost Exemption Programs for Affordable Multifamily Development

Both Nonprofit Tax Exemption and MUPTE are recurring programs, where the City would most likely continue to forgo property tax revenue on the same units over time.

<sup>8</sup> Typically, cities in Oregon need to backfill forgone revenue when they offer exemptions, but in some cases (such as Tigard) cities do not backfill based on local legal interpretation.



The Nonprofit Tax Exemption does not include a limit in its duration per state regulations. Therefore, developers could continue to receive the benefit as long as they are in compliance with the program criteria. MUPTTE has a limit of 10 years included in state regulations. Although ORS 307.600-637 does allow for this time frame to be potentially extended for projects that provide affordable housing, this analysis assumes that the incentive will be a recurring program that applies over a 10-year period.

Exhibit 13 shows what the total forgone revenue would be per unit and per 100 units over time. This analysis is based on the property taxes derived from the cost of recent buildings in the Tualatin area but would likely change over time based on construction costs, inflation, and other economic factors.

System Development Charges are not a recurring program and are instead a one-time charge on new development. The exemption would apply to new units as they are built but would not be forgone annual revenue for the City.

### Exhibit 13. Potential Tools for Subsidize Multifamily Development

Note: High and low funding estimates are derived from the analysis memos attached to this report

Tool	Funding Considerations	Impact on Affordable Housing	Five-Year Estimate		Twenty-Year Estimate	
			Per Unit	Per 100 Units	Per Unit	Per 100 Units
Nonprofit Low Income Tax Exemption	<ul style="list-style-type: none"> <li>Flexibility for City to set up program requirements</li> <li>No required end to duration, renewable after 10 years</li> <li>Supports deep affordability (&lt;60% MFI)</li> </ul>	Low	\$900 <sup>9</sup>	\$90,000	\$3,600	\$360,000
Multiple Unit Property Tax Exemption	<ul style="list-style-type: none"> <li>Needs to create an incentive to private development</li> <li>10-year duration</li> <li>Supports workforce housing (60-80% MFI)</li> </ul>	Medium	\$1,439	\$144,000	\$2,878 <sup>10</sup>	\$287,800
System Development Charges Exemption	<ul style="list-style-type: none"> <li>City will likely be required to backfill forgone revenue</li> <li>Flexibility for City to set up program requirements</li> <li>Can be set up to support workforce housing or deeper affordability</li> </ul>	Medium	\$7,514	\$751,400	\$7,514 <sup>11</sup>	\$3,005,600 <sup>12</sup>

<sup>9</sup> The estimated annual costs are based on the first year of the exemption and would likely change in subsequent years based on construction costs, inflation rates, and other factors.

<sup>10</sup> The MUPTE program is limited by the state to 10 years, so this estimate is capped on a 10-year time frame rather than 20 years.

<sup>11</sup> Because SDCs are a one-time charge for developers and not an ongoing cost like property taxes, the amount spent *per new unit* would only change with the rates charged by the City for Parks and Water SDCs.

<sup>12</sup> Because SDCs are only a one-time charge for developers, this amount assumes that 100 new units use the exemption every five years for a total of 400 units.

# 5. Strategic Actions to Increase and Retain Homeownership

The previous section identified programs that support new construction of multifamily apartment buildings that have income-restricted units or market-rate affordable units. Tools in this section address maintaining and increasing affordable homeownership opportunities for Tualatin residents. The HPS says that, in 2020, a household would need to earn about \$140,500 a year (153% of MFI for a family of four) to afford the median sales price of a home in Tualatin (\$492,000). More than 60% of Tualatin’s households are unable to afford the median sales price of housing in Tualatin.

Increasing access to affordable homeownership for households with income below 120% of MFI may require assisting existing residents with programs that help them stay in their homes. In addition, helping renters become homeowners can provide stability and the potential to build wealth. Given the lower-than-average household incomes and disproportionate rates of cost burden among people of color, homeownership is especially out of reach.

Cities can help moderate income households (between 80 and 120% of MFI) to achieve and maintain homeownership by contributing funds for down payments and/or reduce unexpected costs that homeowners may have to pay to maintain their homes. This section provides information about these strategic actions, including typical costs of these programs for cities in Oregon.

To understand the amount typically provided, this section references observations from other down payment and home rehabilitation programs in Oregon (see ‘Homeownership Assistance Analysis’ memorandum). Exhibit 14 provides a summary of the range of assistance provided by type.

## HPS Actions and Funding Plan Tools





The tools included in this funding plan align with some of the specific actions in the 2021 Tualatin Housing Production Strategy. The table below demonstrates the associated actions and funding tools.

HIP Tool	HPS Action
Down Payment Assistance	2.a Evaluate Impediments to Homeownership and Their Removal
Homeownership Assistance	8.a Evaluate Establishing Local Housing Rehabilitation Program

Cities can take many other actions, in addition to those considered in this section, to support growth in homeownership. The Tualatin Housing Production Strategy includes other actions such as partnering with land trusts that build housing affordable to lower-income households; partnering with organizations that provide education to support households in becoming homeowners; and allowing for a wider range of housing types to be developed, some of which may be more affordable forms of homeownership housing.

## Exhibit 14. Summary of Homeownership Assistance Program Types

Source: ECONorthwest analysis

Program Type	Who is Typically Served	Typical Assistance Provided per Household*	Potential Funding Sources**
 Down Payment Assistance	First-time homebuyers (current renters) below 80% MFI	\$25,000 – \$110,000	US HUD (CDBG), OHCS (HOAP and CET revenue), Community Frameworks
 Home Repairs	Existing low-income homeowners at or below 80% MFI	\$10,000 – \$50,000	US HUD (CDBG, HOME), OHCS (Repair Health and Safety Program), OHA (Healthy Homes Grants)
 Weatherization	Existing low-income homeowners at or below 80% MFI	\$10,000 – \$25,000	US HUD (CDBG, HOME), public purpose charges, IJA grants
 Accessibility Improvements	Existing homeowners at or below 80% MFI, seniors, people with disabilities	\$7,500 – \$10,000	US HUD (CDBG, HOME)

\*These ranges are derived from case studies in this analysis but are not exhaustive of programs in Oregon

\*\*If over \$100,000 of state CDBG funds are used for administration costs they must be matched, but otherwise would not carry a matching requirement<sup>13</sup>

## Down Payment Assistance

- What does it do:** Down payment assistance programs reduce one up-front cost barrier for moderate-income households to become first-time homeowners by providing grant funds for a down payment. Some households may have the ability to pay for a mortgage but lack the savings necessary to pay for an up-front down payment on a house.

Typically, programs that provide access to homeownership are able to reach households at 80 to 120% of MFI, while rental programs are more efficient at targeting deeper levels of affordability.<sup>14</sup> Although these programs typically have a higher cost per household served, they are aimed at providing longer-term stability.

- Who initiates it:** The City could develop and administer its own program or identify a partnering organization. Several nonprofit organizations operate down payment assistance programs in nearby jurisdictions with whom the City could work to provide funding and resources specific to Tualatin, including Proud Ground, Community Frameworks, and DevNW.

<sup>13</sup> US Department of Housing and Urban Development, “State CDBG Program Eligibility Requirements,” n.d., <https://www.hudexchange.info/programs/cdbg-state/state-cdbg-program-eligibility-requirements/>.

<sup>14</sup> US Department of Housing and Urban Development, “The HOME Program: HOME Investment Partnerships,” September 20, 2017, <https://www.hud.gov/hudprograms/home-program>.

- How does it work:** This type of program provides grants or forgivable loans to individual renter households to pay for initial down payments. Partnership between government entities and nonprofits can be successful in offsetting the amount of administration required from city staff for homeownership assistance programs and providing funds through existing sources like Community Development Block Grants. Some jurisdictions may choose to implement their own independent program directly. Local programs may allow city staff flexibility in setting stronger MFI provisions and measures to achieve equitable outcomes but will have higher administrative costs and staff effort needed. Typically MFI is set at time of purchase for all household earners.
- What is its potential impact:** Partnerships to administer programs have been successful when offered in Tualatin’s peer cities. Washington and Clackamas County, as well as organizations like Proud Ground, offer potential partnership options for the City to leverage existing programs instead of creating new ones.

In other homeownership programs surveyed in Oregon, the amount per unit offered varies between programs. We found that on the low end, cities provided at least \$25,000 per household (in Springfield, OR, where the program is administered directly by staff), with the highest amount of \$110,000 provided in Beaverton through Proud Ground. If the City provided support, the cost **per ten units** would be between \$250,000 and \$1,100,000.



+ Per 10 Units - Low:  
**\$250,000**

+ Per 10 Units - High:  
**\$1,100,000**

The amount of funding required to provide effective down payment support may vary by the type of housing that buyers are purchasing. Prefabricated homes or homes held in a community land trust may be available at lower price points and require less funding than market rate housing. If the City were able to direct assistance to these types of units, then it could potentially serve more households or avoid the need to seek additional funding sources.

- Limitations of down payment assistance:** Down payment assistance is typically more expensive per household served than other programs. It needs a substantial amount of funding which will likely go toward households with moderate income (80 to 120% of MFI) rather than residents with low income (50-80% of MFI) or extremely and very low income (<50% of MFI).

Many down payment assistance programs also include other requirements that participants must meet, which can exclude households who have faced barriers to accumulating wealth. These include qualifying for a specific mortgage amount, meeting a minimum credit score, demonstrating a favorable debt-to-income ratio, providing proof of steady employment, and having personal savings to cover earnest money, inspections, and closing costs.

- **Equity Considerations:** Assisting first-time homebuyers can be an effective strategy to help address the racial wealth gap in the United States.<sup>15</sup> Many people of color have been historically prohibited from purchasing homes through discriminatory practices, unable to access federal programs such as low-interest loans, and prevented from accumulating the generational wealth that many rely on for purchasing their first home.<sup>16</sup> Down payment assistance can address the continuing homeownership gap by allowing households to overcome initial financial barriers to purchasing a home, but does not fully address these systemic inequalities.<sup>17</sup> Additionally, publicly funded and/or administered programs cannot give preference based on race or ethnicity, making it challenging to direct down payment programs specifically to homebuyers of color.

## Home Rehabilitation

- **What does it do:** Home rehabilitation programs can help low to moderate-income homeowners to pay for the following types of housing maintenance:
  - Major home repairs, such as roofing, electrical, or plumbing issues. The purpose of major home repair programs is to help people stay in their homes by addressing larger-scale maintenance problems that may force a homeowner to sell their house if they are unable to do essential work. *Typical Cost: \$10,000-50,000*
  - Accessibility improvements include upgrades such ramps, doorway modifications, or handrail installation for seniors and/or disabled residents. These serve homeowners who may not have needed accessibility features when they purchased their home. *Typical Cost: \$10,000-20,000*
  - Weatherization makes buildings more energy efficient by making upgrades to features like siding, windows, or mechanical systems. These improvements can reduce utility costs, contribute to climate goals, and proactively extend the life of housing units for existing homeowners. *Typical Cost: \$7,500-10,000*
- **Who initiates it:** The City could initiate its own program with local funding or coordinate with existing programs to connect residents to these resources. Washington

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<sup>15</sup> Michael Stegman and Mike Loftin, “An Essential Role for down Payment Assistance in Closing America’s Racial Homeownership and Wealth Gaps” (Urban Institute, April 22, 2021), <https://www.urban.org/research/publication/essential-role-down-payment-assistance-closing-americas-racial-homeownership-and-wealth-gaps>.

<sup>16</sup> Tim Henderson, “Black Families Fall Further behind on Homeownership,” The Pew Charitable Trusts, October 13, 2022, <https://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2022/10/13/black-families-fall-further-behind-on-homeownership>.

<sup>17</sup> Jung Hyun Choi and Laurie Goodman, “What Explains the Homeownership Gap between Black and White Young Adults?,” Urban Institute, November 20, 2018, <https://www.urban.org/urban-wire/what-explains-homeownership-gap-between-black-and-white-young-adults>.

and Clackamas Counties operate home rehabilitation programs in nearby jurisdictions, with whom the City could work to provide funding and resources specific to Tualatin:

- Washington County’s HARDE program is available for residents below 50% of MFI who are disabled or over the age of 62. Although it is primarily targeted at homeowners, renters may also apply for accessibility improvements up to \$10,000. The deferred interest-bearing loans (DIBL) program is also available for homeowners between 50 and 80% MFI up to \$25,000.
- Clackamas County also provides assistance through accessibility grants up to \$7,500 for low-income homeowners and eligible renters at or below 80% of MFI and a deferred payment loan (DPL) program for home repair loans up to \$35,000 depending on the project type. DPL also covers weatherization up to \$25,000.
- **How does it work:** These programs provide funds to individual households either through low-interest/deferred payment loans or outright grants for specific types of home projects. Deferred payment loans in both Washington and Clackamas County accrue only 3% interest for up to ten years and do not need to be paid monthly.
- **What is its potential impact:** Like down payment assistance, partnerships with the county and nonprofit organizations are often an effective way to deliver home rehabilitation programs. To understand the amount of assistance typically provided, we surveyed other home rehabilitation programs in Oregon, including City and County-funded programs, summarized above in Exhibit 14.

The amount offered per unit varies by the type of support. Accessibility improvements tend to be lower and major repairs tend to be higher. If the City provided this type of support, the range of funding needed **per ten units** would be between \$75,000 and \$500,000.



+ Per 10 Units – Low:  
**\$75,000**

+ Per 10 Units – High:  
**\$500,000**

- **Limitations of the rehabilitation assistance:** Like down payment assistance, home rehabilitation is typically more expensive per household served than strategies that target multifamily housing. This substantial funding typically goes to households that are moderate income (between 80 and 120% of MFI), rather than households with low (50-80% of MFI) or extremely and very low (<50% of MFI) incomes.

**Equity Considerations:** Home rehabilitation work targets people who are already homeowners but who may face displacement pressures due to a number of circumstances. Some types of home repair work contribute explicitly toward equitable outcomes, such as accessibility improvements for low-income disabled residents or older adults who may need to make physical home improvements.

Low-income seniors may also be at risk of losing their homes if they are unable to make critical structural repairs. Providing financial support for rehabilitation projects can



ensure that residents stay in their homes as they age and can reduce the risk of being unhoused.

## Summary of Potential Strategic Actions to Increase and Retain Homeownership

The low and high estimates for Down Payment Assistance and Home Rehabilitation funding are based on a limited survey of other programs in the region. There may be variation in the amount needed in Tualatin based on a number of factors, including the cost of labor and materials for home repair, home prices, and the type of rehabilitation work needed.

The number of households served may also vary by the type of rehabilitation work needed or size of down payments provided. For instance, if a large share of households sought accessibility improvement grants (which are typically less expensive than major home repairs), the same total amount of funding may be able to serve more households.

### Exhibit 15. Potential Tools to Support Homeownership

Note: High and low funding estimates are derived from the analysis memos attached to this report

Tool	Funding Considerations	Impact on Affordable Housing	Low Estimate Per 10 Units	High Estimate Per 10 Units
Down Payment Assistance	<ul style="list-style-type: none"> <li>• City can likely access CET revenue from OHCS</li> <li>• Recipients must meet other criteria (credit score, earnest, etc.)</li> </ul>	Medium to High	\$250,000	\$1,100,000
Home Rehabilitation	<ul style="list-style-type: none"> <li>• CDBG funds are typically used for these programs</li> <li>• Typically supports moderate income levels (80-120% MFI)</li> <li>• Can be delivered as grants or deferred payment/low interest/forgivable loans</li> </ul>	Low to Medium	\$75,000	\$500,000

## 6. Tradeoffs and Conclusions

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This plan includes tools that **provide** the city with new revenue to fund affordable housing programs or **forgo** potential city revenue that enable affordable housing development. There is also detail on potential affordable housing programs that **require** funding. The table below summarizes the considerations for each tool in the plan. Although these are estimates based on the analysis included in the Appendices, they highlight the relative tradeoffs between funding options.

### Housing Needs

Over the next twenty years, the greatest need for new **affordable units** will be for extremely and very low-income households, earning below 50% of MFI. While the largest group of new housing needed will be market rate (serving those at or above 120% of MFI), it is assumed that most of these units will not require any of the public subsidy covered in this plan.

The Housing Needs Analysis shows that Tualatin is forecast to grow by about 1,014 households through 2040. About 45% of Tualatin's new households are expected to have income below 80% of MFI. In addition, Tualatin already has more than 4,200 existing households with income below 80% of MFI, many of whom are cost burdened or have other unmet housing needs. The actions in this report, as well as other actions in the HPS, are intended to help better meet these housing needs.

### Fiscal Impacts and Tradeoffs

Increases or decreases to the taxes or fees paid by the developer can have a myriad of impacts. Some considerations to take into account:

- Over a five-year period, a **Construction Excise Tax** might provide up to \$500,000 that the City may use for some of the actions in this plan which require funding (such as rehabilitation funds and down payment assistance), or to backfill forgone revenue. The state also has some restrictions on how CET revenue can be spent. For residential CET, the state requires that the City use 50% toward developer incentives like SDC exemptions and that 15% goes to state down payment assistance programs. Commercial and industrial CET funds are more flexible, only requiring that 50% of funds are used for housing-related projects.
- **Urban Renewal** revenue has some flexibility in terms of uses and can theoretically be used on everything from homeownership and home rehab programs to parking infrastructure to backfilling lost SDC funds. These funds are restricted to the urban renewal area, which impacts the flexibility of where projects could take place.
- **Property tax abatement programs**, including MUPTE and the nonprofit tax exemption, are eligible at the time of construction, and as such, do not reduce existing revenue

levels. Nonetheless, it is potential revenue lost and could be made up in new CET funds if so desired.

- **SDC exemptions** will likely require the City to backfill forgone revenue, as new construction increases the capacity that infrastructure must accommodate. SDCs could be backfilled using CET funds which may not be sufficient on its own.
- **Down payment assistance** requires a large amount of funding and serves a relatively smaller number of households. However, it would provide longer-term stability for Tualatin residents and could help to achieve homeownership for groups who have faced historical barriers. The cost for **home rehabilitation** programs is also high and serves relatively few households but varies significantly by the type of assistance offered. While large home repairs can require more contribution per household, weatherization and accessibility programs can typically cost less.

**Exhibit 16. Summary of Financial Tradeoffs Between Funding Tools**

Tool	Population Served	Provides, Forgoes, or Requires Revenue?	Estimated Funding Range	
			5 Years	20 Years
<b>Construction Excise Tax</b>	Moderate Income and lower-income households	<b>Provides Funding</b>	\$251,000-502,000	\$832,000-1,664,000
<b>Urban Renewal</b>	Current and future residents within urban renewal area	<b>Provides Funding</b>	\$2.5 million	\$2.5 million
<b>Nonprofit Low Income Tax Exemption</b>	Extremely and Very Low Income (<50%)	<b>Forgoes Revenue</b>	\$90,000 <sup>18</sup> per 100 units	\$360,000 per 100 units
<b>Multiple Unit Property Tax Exemption</b>	Low Income (50-80%)	<b>Forgoes Revenue</b>	\$144,000 <sup>19</sup> per 100 units	\$287,800 per 100 units <sup>20</sup>
<b>System Development Charges Exemption</b>	Extremely and Very Low Income (<50%) or Low Income (50-80%)	<b>Forgoes Revenue</b>	\$751,400 per 100 units	\$3,005,600 per 400 units <sup>21</sup>
<b>Down Payment Assistance</b>	Moderate Income (80-120%)  Seniors or disabled residents	<b>Requires Funding</b>	\$250,000 - \$1,100,000 per 10 units	\$1,250,000-4,400,000 per 40 units

<sup>18</sup> The estimated annual costs are based on the first year of the exemption and would likely change in subsequent years. This estimate shows only the City's portion of property taxes.

<sup>19</sup> The estimated annual costs are based on the first year of the exemption and would likely change in subsequent years. This estimate shows only the City's portion of property taxes.

<sup>20</sup> The MUPTE program is limited by the state to 10 years, so this estimate is capped on that time frame, not 20 years.

<sup>21</sup> Because SDCs are only a one-time charge for developers, this amount assumes that 100 new units use the exemption every five years, for a total of 400 new units using the program.

<b>Home Rehabilitation</b>	Moderate Income (80-120%)	<b>Requires Funding</b>	\$75,000 - \$500,000 per 10 units	\$300,000 - \$2,000,000 per 40 units
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## Equity Impacts and Tradeoffs

Each of the strategic actions in this funding plan have tradeoffs related to equitable housing outcomes. These benefits and challenges include critical considerations for the recommendations in this plan and should be integrated in decision-making for affordable housing in Tualatin.

### Exhibit 17. Summary of Equity Considerations Funding Tools

Strategic Action	Equity Benefits	Equity Challenges
<b>Construction Excise Tax</b>	<ul style="list-style-type: none"> <li>Revenue can be used to serve low- and moderate-income households</li> <li>Allows some flexibility in deciding how to use revenues</li> <li>The City could choose to focus on programs that have specific equitable outcomes</li> </ul>	<ul style="list-style-type: none"> <li>State statute somewhat limits the options for what can be done with CET; a portion for residential must go toward developer incentives</li> <li>A CET increases housing costs for some types of housing to lower costs for more affordable housing.</li> </ul>
<b>Urban Renewal</b>	<ul style="list-style-type: none"> <li>Can provide a larger amount of funding for housing for extremely and very low-income households, as well as low- and moderate-income households</li> <li>Can provide housing near employment for Tualatin workers.</li> </ul>	<ul style="list-style-type: none"> <li>Geographic limitations create the potential to create areas of concentrated poverty if most of the city's affordable housing is built exclusively in the urban renewal district.</li> <li>Potential to displace existing residents or businesses in the plan area</li> </ul>
<b>Nonprofit Low Income Tax Exemption</b>	<ul style="list-style-type: none"> <li>Supports development of housing that serves very low-income levels</li> <li>Nonprofits may often provide culturally specific or other services alongside housing</li> <li>Multifamily housing typically serves more households for less cost per unit</li> <li>Local contribution can attract more affordable housing developers to the area and reduce their amount of permanent debt incurred for providing below-market rents</li> </ul>	<ul style="list-style-type: none"> <li>Tax exemptions forgo revenue for the City general fund which could be used for other citywide programs and operations.</li> </ul>
<b>Multiple Unit Property Tax Exemption</b>	<ul style="list-style-type: none"> <li>Supports moderate-income and mixed-income development, which may provide affordable units in higher-opportunity areas across the city</li> <li>Multifamily housing may serve more households for less cost per unit</li> </ul>	<ul style="list-style-type: none"> <li>Limited time frame for program applicability (10 years), after which rents would likely increase to market-rate. This increase could cause displacement risk for low-income residents after the program ends.</li> <li>Tax exemptions forgo revenue for the City general fund which goes to citywide programs and operations.</li> </ul>
<b>System Development Charges Exemption</b>	<ul style="list-style-type: none"> <li>Can be used to support development of housing that serves low- and moderate-income levels</li> <li>Multifamily housing may serve more households for less cost per unit</li> </ul>	<ul style="list-style-type: none"> <li>SDC exemptions must be backfilled from other sources of funding</li> <li>SDC exemptions forgo revenue for the City general fund, which could be used for other citywide programs and operations</li> </ul>

<b>Down Payment Assistance</b>	<ul style="list-style-type: none"> <li>• Often benefits households who have been historically excluded from homeownership</li> <li>• Allows households to build intergenerational wealth through home equity</li> </ul>	<ul style="list-style-type: none"> <li>• Higher cost per household means that assistance serves relatively fewer people</li> <li>• Limited funding creates challenging questions around who receives assistance</li> </ul>
<b>Home Rehabilitation</b>	<ul style="list-style-type: none"> <li>• Benefits existing low-income homeowners in Tualatin and ensures longer-term stability</li> <li>• Some programs specifically provide resources for disabled residents and seniors</li> </ul>	<ul style="list-style-type: none"> <li>• Higher cost per household means that assistance serves relatively fewer people</li> </ul>

## Conclusions about Available Funding

Strategic actions that support development of **multifamily rental housing**, (including property tax and SDC exemptions) are likely to serve a greater number of households at low, extremely low, and very low incomes. These actions could address the needs of a larger overall portion of Tualatin’s projected housing needs and typically require less public subsidy per unit compared to homeownership.

- The **Nonprofit Low Income Tax Exemption, MUPTE, and SDC exemptions** all increase equitable access to housing in this way. If the City implemented all three of these, then the amount of forgone revenue in the next five years for Tualatin would be **\$985,000**. Most of this total amount would be from SDC exemptions.
- However, in the case of the nonprofit exemption and MUPTE, **City taxes only account for about 16% of the total tax roll**. If taxing bodies which made up at least 51% of the total tax roll agreed to participate, then all taxes for all districts would be exempted per state statute. This could increase the exemptions for 100 units over five years by an estimated \$448,000 for the nonprofit exemption and \$709,000 for MUPTE, outside of the City’s taxes.

Strategic actions that target **homeownership** are more likely to benefit a smaller pool of moderate-income households but do typically provide longer-term stability than multifamily rental units.

- **Down payment assistance** has a high cost on a per-unit basis and can likely only serve a small number of households. While urban renewal revenue could potentially be used for funding these programs, single-family homes do not comprise a large share of the new Core Opportunity Reinvestment Area. Based on a survey of what other jurisdictions offer, the cost for a down payment program could range from **\$250,000 to \$1,100,000** in the next five years.
- For **home rehabilitation** programs, the cost per household and direct equity benefit varies substantially depending on the type of project. The projected cost for a home rehabilitation program in the next five years could range from **\$75,000 to \$500,000**. Several other state and federal sources are also available for home rehabilitation programs, which the City could pursue outside of the tools in this plan (see Exhibit 18).

Tualatin has limited sources of generating local revenue to be used for affordable housing programs. The total cost of both the multifamily rental housing and homeownership programs described above could be between **\$1.3 and \$2.5 million**, which new revenue sources will likely not be able to cover entirely. Most of this variation in program costs is based on what amount would be allocated to homeownership programs.

- **CET will not produce enough revenue to fund all of these programs**, as it is only estimated to provide up to **\$500,000** in the next five years if it covered residential, commercial, and industrial construction. The state also sets out rules for how revenue must be distributed. Construction and industrial CET is flexible, but **50% of residential CET revenue must go to developer incentives** like tax exemptions and SDC exemptions (about \$48,000).
- **Urban Renewal** may be able to provide the largest single source of funding at **\$2.5 million** in the next five years, which can potentially help to fund SDC exemptions and homeownership programs. However, **urban renewal funds are not able to meet all of Tualatin's affordable housing needs because their use is geographically limited to the boundaries of urban renewal districts**. There is limited single-family housing currently within the Core Opportunity Reinvestment Area that could use down payment or home rehabilitation assistance. Additionally, concentrating a large share of Tualatin's new affordable units in one area could have unintended consequences of creating a concentrated area of poverty.

### Additional Funding Tools

ECONorthwest evaluated additional potential funding tools such as new taxes or fees that could be used to fund affordable housing initiatives, as well as grants, partner contributions, and state funding (detailed in the Additional Funding Tools Analysis memorandum and summarized below in Exhibit 18).

Many of the largest funding sources would require popular buy-in or a public vote but likely lack political viability; others are restricted by state law. Grants and partner contributions can have an impact but are likely not ongoing sources that could be used for continued programs. If the City did find additional funding sources, it could centralize revenue from them (and others listed in this report) in an Affordable Housing Trust Fund. This could be used as a vehicle to fund projects with oversight from a committee who set clear criteria for use and prioritization.

The City should pay close attention to potential new sources of funding from the State to support homeownership programs in coming years. For example, the Oregon Housing Authority's Healthy Housing program is still under development and is expected to provide funding to cities to support rehabilitation. In the 2023 Legislative Session, the Legislature is considering multiple additional funding opportunities to support development of new affordable rental housing and increase access to homeownership for lower-income households.

#### Exhibit 18. Summary of New Funding Sources Evaluated

Revenue Source	Potential to Implement	Description	Assessment
<b>Most Common Local Sources</b>			
General Fund Revenue	Low	Contribution from the city's general budget	Can contribute directly but competing with other city priorities
Tualatin-specific or regional General Obligation (GO) Bond	High	Increases property taxes to pay back the amount of bonds taken out by the city for capital projects. In 2018, voters approved a regional GO Bond for housing for the Metro region. Funds from that bond are being used to create permanently affordable housing. Metro may consider issuing an additional GO Bond.	Requires a public vote but could provide long-term stable source Tualatin could be the recipient of additional funding from a new Metro GO Bond.
Local Option Levy	Medium	A time-limited property tax issued as a rate used for capital projects, operations, or programs	Also requires a public vote but GO bond is probably better
<b>Increases to Existing Taxes and Fees</b>			
Lodging Tax	Medium	An increase to the city's current lodging tax levied on hotels, motels, and short-term rentals, paid by visitors	Uses of revenue are restricted by the state; majority (70%) for tourism
Marijuana Tax	Medium	A targeted change in the city's current marijuana tax levied on marijuana purchases, paid by consumers	Marijuana tax revenues may already be at their maximum for Oregon
Building and Planning Permit Fee Surcharge	Low to Medium	An additional charge added to the city's existing fee for staffing and operational costs	The City has relatively low fees now, but increasing them would not help to incent new housing development
Utility Fee Surcharge	Low to Medium	An additional fee on utility bills, similar to the city's current parks utility fee	Potential nexus with infrastructure to support affordable projects
System Development Charges (SDCs)	Low	An increase to the city's existing one-time fees charged on new buildings, paid by developers	Conflicts with strategy to exempt SDCs for certain affordable development
<b>New Taxes and Fees</b>			
Business License Fee	Low	An additional fee issued with new business licenses	Could hinder economic development goals
Food and Beverage Tax	Low	A tax added to food and beverage sales within the city, paid by consumers	Unlikely to be politically viable
Real Estate Transfer Tax	Low	A tax levied on real estate transactions, paid by property owners	Not proven legal in Oregon
Sales Tax	Low	A tax on retail goods purchased within the city, paid by consumers	Unlikely to be politically viable
Payroll/Business Income Tax	Low	A tax for local business revenue, paid by business owners	Likely to face pushback from business community



Vacancy/Second Home Tax	Low	A tax levied on homes that are unoccupied for a certain period of time, paid by property owners	Likely not legal in Oregon or enough vacation homes
<b>Other Funding Sources</b>			
Donations and Gifts	Medium	Funds given by private foundations, firms, or individuals	Could have a mid-sized to low impact and likely to fluctuate
Grants	Medium	Funding from public agencies or companies for a specific purpose that the city applies for	Dependent on grant writing capacity and changing availability
State Funding (OHCS)	Medium to High	Oregon Housing and Community Services (OHCS) provides a number of funding opportunities for which Tualatin would be eligible including grants and CET	Mostly available as one-time contributions but can be spread out over years
State Funding (OHA)	High	OR HB 2842 (adopted in 2021) directs the Oregon Health Authority (OHA) to provide \$10 million in grants to fund the Healthy Homes program aimed at weatherization, accessibility, and home repair programs	A task force is currently working to configure eligibility for households to access program, which the City would need to include in its criteria if it received funding to implement this program
Federal Funding (IIJA)	High	The 2021 Infrastructure Investment and Jobs Act (IIJA) included \$3.5 billion in funding for the federal Weatherization Assistance Program (WAP) for states and local jurisdictions nationwide	In Oregon, OHCS has an allocation for WAP; local jurisdictions can apply through them

## Approval Processes and Administration

All of the tools in the funding plan will need buy-in from the public, City Council, and partners (such as overlapping taxing districts, developers, etc.). Decisions to implement some tools may require a public vote (such as a Local Option Levy) or Council decision, which should provide opportunities for public discussion about implementation of the strategic actions presented in this plan (as well as others in the HPS).

The need for City staff resources and ongoing administration/reporting are another consideration beyond funding that may impact whether these tools can be effective. The next section of this report (Chapter 7: Recommendations) includes general discussion of administration but will likely require refinement by the City.



## 7. Recommendations

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This chapter presents final recommendations for implementing Tualatin's Housing Production Strategy. Our team developed these actions with input from discussion with the project's Steering Committee, city staff, City Council, and Planning Commission.

### Key Conclusions from Analysis

The City of Tualatin should carefully consider limitations of how different funding can be used to implement its Housing Production Strategy. The following are primary conclusions that we identified through our analysis, including relevant fiscal impacts and equity tradeoffs of strategic actions. These conclusions about available funding sources informed our recommendations for the City in the next five years.

- **Urban Renewal funding can only be used for limited project types and requires broader discussion about tradeoffs.** Tax increment financing is a potentially powerful mechanism for affordable housing, but it can only be used for projects within the urban renewal district and takes time for funding to accumulate. Without issuing a bond on future funding, then Tualatin's Core Opportunity Urban Renewal district may have little to no funding over the next five years. If funding is not available in the next few years, that limits opportunities to execute on near-term actions in the Urban Renewal district.

Additionally, housing is also only one component of the Core Opportunity Reinvestment Area plan, and large portions of the plan area are zoned primarily for industrial and commercial use. There are other competing priorities for businesses, public space, and employment which will receive Urban Renewal revenue. The City and Urban Renewal Commission will need to discuss what to prioritize in the near-term and what projects it wants to pursue later within the plan area.

- **Construction Excise Tax spending is relatively flexible.** It takes time to accumulate CET funds and can be used to support a wide range of affordable housing actions. CET has to adhere to state regulations that set standards for what share of revenue which the City can allocate to different type of programs, including affordable housing.

It will take some time after the City would implement a CET to receive any revenue, which is paid when construction projects are complete. Depending on how quickly Tualatin sees new development happening and what type, it may take several years to have enough CET revenue to execute some of the actions in this plan.

- **System Development Charge Exemptions will need to be backfilled.** SDC exemptions can reduce costs for developers to provide affordable units but requires a funding source to backfill the forgone SDCs, such as CET or Urban Renewal revenue. These funding sources may not be sufficient to backfill all the potential requests for SDC exemptions.

The City could consider capping the amount of SDCs that it will exempt based on the availability of funding to backfill them. The City may want to prioritize the types of projects that it awards SDC exemptions for, focusing on the projects that best align with City goals. Alternatively, the City could also use a competitive selection process, though this may discourage developers to apply, depending on the criteria and will require a greater amount of staff capacity. Allocating general fund revenue could be an additional way to backfill the gap between exempted SDCs and available funding.

- **The Multifamily Tax Exemption will need support from overlapping taxing districts.** The City only controls about 16% of the tax roll. Providing enough incentive to support affordable housing development by market-rate developers requires exempting the property taxes of overlapping taxing district, as well as the City's exemption. If the city can't get other taxing bodies on board, then MUPTE will probably not be effective at producing new affordable units. The time limit on MUPTE could also be a significant equity challenge. The benefit only lasts for ten years, after which time rents will presumably rise without ongoing subsidy.

- **Increasing access to affordable homeownership is expensive.** Homeownership programs require a larger amount of funding because of the relatively high cost of housing sales prices. Increasing access to homeownership leads to longer term housing stability and provides lower-income households the opportunity to gain equity and build wealth. These programs are especially important for those who have been historically prohibited from homeownership. Rehabilitation programs can be important to combat displacement of seniors and people with disabilities.

Strategic actions in this plan can contribute to down payment assistance and home rehabilitation. Given the likely available funds, the City is unlikely to be able to provide the total amount of funding needed to address more than a small part of the need for down payment assistance and some of the need for rehabilitation. This is true even if the City dedicates a large share of revenue from CET and available revenue from Urban Renewal toward them. The City should pay close attention to potential new sources of funding from the State to support homeownership programs in coming years.

- **The City can prioritize other actions to support homeownership that have lower costs.** The City could partner with a land trust to support development of affordable ownership housing or use Urban Renewal funding to assemble a development site where affordable ownership units would be built by the land trust.
- **The City can pursue funding from other sources, such as the general fund.** Tualatin should seek to make a case for an allocation from the second round of the Metro General Obligation bond, pursue its own local option levy, or new taxes and (which would require voter approval). The City could pursue use of general fund revenue toward actions that support affordable homeownership and rental housing. To do so, the City would need to make tradeoffs elsewhere in the budget. This report includes other potential funding sources, most of which may have lower levels of probable public support.

## Recommendations for Implementing the HPS

This section presents recommended actions for the City of Tualatin. As a whole, they cover implementation steps within the City's power to address a range of housing needs in Tualatin for people at varying income levels.

- **Build Equity into Decision-Making Processes.** As the City continues to implement the HPS, the City should develop an equity framework for decision-making that considers the distribution of costs and benefits and impacts on low-income residents, seniors, people of color, and other groups with higher housing needs in Tualatin. This framework should align with similar equity work that the City is developing for other initiatives (such as the climate action plan).

Over the next five years, the City can begin to use this framework to prioritize initiatives and monitor outcomes. This framework can also apply for subsequent strategic actions that develop further into implementation of the HPS beyond the five-year horizon. The City should periodically revisit this framework and ensure that it captures relevant concerns and reflects broader equity work across Tualatin.

- **Establish an Affordable Housing Trust Fund and Create an Advisory Committee to Oversee it.** An Affordable Housing Trust Fund (AHTF) is a mechanism that can centralize revenue sources into a collective account and distribute money for housing in the city. Although most of the potential sources for an AHTF can also be used independently, this structure is useful for affirming that projects that receive public funding go toward priority needs. Trust funds are typically overseen by a committee who work with city staff to formulate the application criteria and administer the approval process. However, the City needs money to contribute to the AHTF, such as CET revenue and other funding sources (such as tax revenue, fees collected, bonds, etc.).
  - *AHTF Structure.* An AHTF would allow the City to make investments in the specific types of housing that are needed in Tualatin. The City could configure the criteria and eligibility standards to a specific affordability level, unit type, tenure type, and more. The fund can combine multiple funding sources, increasing stability because there is less dependence on a single revenue stream to fund affordable housing.
  - *Advisory Committee.* Alongside structuring the AHTF, the City should consider convening an ongoing advisory committee with the role of goal setting and oversight on how AHTF funds are used. This committee should include low-income residents, renters, seniors, people with disabilities, commuters, and people of color in Tualatin. The City could also consider targeting other populations to join the committee, such as local employers. To equitably implement this action, the City should compensate participants in the advisory committee, given that it is actively seeking to include underrepresented and low-income individuals. Compensation can include monetary compensation as well as accommodations while committee members are participating in meetings, such as meals, childcare, and transit tickets.

- *Monitoring.* Within the first few years of implementing an AHTF, the City could also initiate a monitoring system to track whether allocated funds are accomplishing intended goals. This could involve city staff reviewing projects that have received support from the AHTF and identifying the number of units that are serving households at different income levels (or other demographic groups such as seniors). Monitoring could also help to reveal challenges for projects that do not meet intended goals and give direction on further actions that the City could take to ease affordable housing development.
- *Look for Additional Sources of Funding to Grow the Affordable Housing Trust Fund.* Right now, there are not many sources that the City is able to put into an AHTF. If Tualatin implements a CET, the revenue from this tax could be allocated to the fund (which several other cities in Oregon have done). Allocations from the local general fund or other new revenue sources could also feed into the AHTF if the City is able to dedicate some amount toward housing.

Ideal sources of funding for the AHTF are flexible, allowing the fund to support different types of housing initiatives over time. Some funding sources that are available for affordable housing may have barriers for inclusion in the AHTF because of restrictions that prohibit them from going toward certain types of projects or programs.

- **Explore Available Private, Regional, State, and Federal Funding Sources for Homeownership and Affordable Rental Housing.** Our analysis of additional funding tools (summarized in Exhibit 18) begins to show the range of further options for funding affordable housing from a number of private, regional, state, and federal sources, which vary in terms of time frame, scale, and eligibility. Tualatin should continue pursuing additional sources of funding for affordable housing beyond the strategic actions in this plan to enhance equitable access to both homeownership opportunities and affordable rental housing.
  - *Homeownership.* Actions that support homeownership often require a relatively high amount of funding for each household served. These are important actions that support equitable access to homeownership but will likely be outside of the City's funding capacity, even if it allocates a significant amount of revenue from other strategic actions in this plan.

If the City implements a residential Construction Excise Tax, it will be eligible to access funds for down payment assistance from Oregon Housing and Community Services (OHCS). OHCS offers several resources of new homebuyers statewide (such as education programs) but uses CET funds specifically to augment local down payment assistance programs in jurisdictions that adopt this tax.<sup>22</sup> There are currently other opportunities for state and federal funding that can be used for home rehabilitation, such as funding from the Infrastructure Investment and Jobs Act

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<sup>22</sup> Oregon Housing and Community Services, "Residential Construction Excise Tax," n.d., <https://www.oregon.gov/ohcs/homeownership/Pages/homeownership-publications.aspx>.

(IIJA) and Oregon Health Authority (OHA)'s Healthy Homes Program. In coming years, the State may make additional funds available to support development of affordable rental housing and homeownership programs. The City should track these programs closely and identify opportunities for the City to apply for funding.

- *Rental Housing.* There are funding opportunities that the City could pursue to further support affordable rental housing. For example, if there is a second round of allocations from Metro's General Obligation bond for affordable housing, Tualatin could be a candidate to receive funding to support affordable multifamily rental housing. City residents already pay property taxes toward this bond, and the city meets several of Metro's criteria for priority selection.
- **Pursue a Construction Excise Tax on Residential and Commercial/Industrial Development.** Construction Excise Tax could be a large source of flexible revenue to fund strategic actions for housing in Tualatin within the next five years. Consistent with the schedule in the HPS, the City should prioritize exploring CET by 2025. As part of that process, the City should consider the level of tax that it wishes to levy on residential, commercial, and industrial development. Our analysis assumes that this rate will be 1% on all these types of development, but the City could consider a lower rate (or higher rate for commercial and industrial development).
- **Work with Council to Identify the Right Balance of Housing Support in Implementing Urban Renewal.** The City is committed to implementing the Core Reinvestment Area Plan, including an explicit goal for development and preservation of multifamily housing affordable to a range of income levels. City staff should work with the City Council and Urban Renewal Agency to find the right balance of funding allocation for projects in the area. Decision-makers should discuss what is possible and what is an appropriate amount of funding to use for housing development in the Urban Renewal district within the next five years.
  - *Potential for Land Acquisition and Site Assembly.* The City should also be proactive about identifying potential development sites where it could dedicate or lease land to an affordable housing developer in the Core Reinvestment Area Plan. If there are underutilized parcels owned by the City within the plan area, staff and decision-makers could identify initial steps for how it could leverage them for affordable housing. This could include selling land at a discounted rate, leasing it at a low rate, or subsidizing acquisition costs with urban renewal revenue.
- **Implement a SCD exemption for affordable housing development.** The City can exempt the system development fees that it controls for Parks and Water and will need to identify a source to backfill the forgone revenue from other sources, such as the CET or Urban Renewal. The City will need to establish criteria for granting the exemption, such as what level of affordability, the amount of SDC that will be exempted, and the number of affordable units it will require for an exemption.
- **Work with overlapping taxing districts to provide the full Nonprofit Low Income Tax Exemption.** The City Council adopted the Nonprofit Low Income Tax Exemption on its

own taxes, which accounts for 16.5% of all property taxes in the city. Applying the exemption to all property taxes requires approval from other taxing districts that make up at least 51% of the total tax roll.

- **Implement the Multiple Unit Property Tax Exemption and Seek Partnerships with Overlapping Taxing Districts.** The City has already implemented the Nonprofit Tax Exemption on its own share of the local property tax roll in Tualatin, which will help to provide new housing for low-income residents at or below 60% of MFI, in line with the program configuration. The Multiple Unit Property Tax Exemption can add another tool to the City's options for creating affordable units for moderate-income households and incentivize more housing overall to be built in Tualatin.
- **Build Partnerships with Nonprofit Housing Organizations.** Nonprofit housing developers and operators are effective at delivering units that serve low-income residents and provide other supportive or culturally specific services. These can include translation assistance, financial literacy, child support, mental health services, and more. There are organizations operating within Tualatin and the region with whom the City could seek to build partnerships and include as part of decision-making conversations.

Maintaining ongoing communication with nonprofit housing providers can help to identify regulatory and financial barriers that these organizations may be encountering in Tualatin. Through these conversations, the City may find opportunities to provide technical support from staff to overcome these barriers, or new initiatives to prioritize down the line. Likewise, local partners may also present opportunities to reduce the amount of city staff capacity needed for ongoing program implementation. For example, organizations that process down payment assistance can educate, track opportunities, and administer grants to individual households with city funding, while reducing potentially extensive time and effort required from staff.

- **Revisit the Funding Action Plan and Continue to Implement the Housing Production Strategy.** In the next five years (and beyond), the City should undergo periodic review of the Funding Action Plan and Housing Production Strategy. This process should include evaluating whether the analysis included within the Funding Action Plan or future analysis findings alter priorities for funding actions in the HPS.

This Funding Action Plan provides an initial list of additional funding sources (detailed in the Appendix), including some which may not currently be politically or legally feasible but could become so if conditions change in the future. The City should be proactive about monitoring whether actions become more viable or if precedents emerge for similar communities in Oregon. If such funding options emerge, the City can consider conducting further analysis and reorganizing its priorities for implementation.

# Appendix A: Detailed Evaluation and Information about Each Action

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This appendix presents the memoranda that ECONorthwest developed as a part of this project. They provide additional information about implementation of each strategic action considered in this plan.



DATE: July 14, 2022  
TO: City of Tualatin  
FROM: ECONorthwest  
SUBJECT: Summary of Construction Excise Tax Analysis

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The City of Tualatin is considering a range of strategies and actions to fund and implement the goals from its 2021 Housing Production Strategy into a Housing Implementation Plan. To understand the potential trade-offs of these strategies in Tualatin, this memorandum describes strategic actions around a Construction Excise Tax (CET) and how it works. In addition, it summarizes an analysis of the potential impacts of implementing this action. The final section outlines potential next steps for the City of Tualatin to consider.

## Construction Excise Tax

### Overview

In 2016, the Oregon Legislature passed Senate Bill 1533, which permits cities to adopt a construction excise tax (CET) on the value of new construction projects to raise funds for affordable housing projects. The tax is limited to 1% of the permit value on residential construction with no cap on the rate applied to commercial and industrial construction. A number of cities of various sizes in Oregon have adopted a CET.

**Construction Excise Tax:**  
Levies a tax on new construction projects to fund housing programs and/or investments. It can be applied to residential and/or commercial and industrial development.

### How the Construction Excise Tax Works

The allowed uses for CET funding are defined by state statute:

- The City may retain up to 4% of funds to cover administrative costs. The funds remaining must be allocated as follows, depending on whether the CET is on residential or commercial and industrial development:
- For a residential CET:
  - 50% must be used for developer incentives (e.g., permit fee and SDC waivers,<sup>23</sup> tax abatements, or finance-based incentives). The City would have to offer incentives but could cover the costs or foregone revenues with CET funds.
  - 35% may be used flexibly for affordable housing programs, as defined by the jurisdiction.
  - 15% is not available to the city and flows instead to Oregon Housing and Community Services for homeownership programs that provide down payment assistance.

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<sup>23</sup> Note that while these are called “waivers,” they are really subsidies, since the fees would still be paid by CET revenues rather than by the developer.



- For a commercial/industrial CET:
  - 50% of the funds must be used for housing-related programs, as defined by the jurisdiction (note that these funds are not necessarily limited to affordable housing).
  - The remaining 50% is unrestricted.

## Fiscal Impacts/Who Pays

The source for CET funds is new development. The statute exempts public buildings, regulated affordable housing, places of worship, public and private hospitals, agricultural buildings, nonprofit facilities, long-term care facilities, residential care facilities, and continuing care retirement communities.<sup>24</sup> The City can exempt other types of development if desired.

## Pros and Cons

### Pros:

- Offers the ability to link industrial or other employment investments, which generate new jobs and demand for new housing, with funding for housing development.
- CET is a flexible funding source, especially for funds derived from commercial/industrial development.
- Program funds can fund administration of the CET as well as staff time needed to administer programs funded by CET.

### Cons:

- CET increases development costs in an environment where many developers are already seeking relief from system development charges. Depending on the rates imposed, CET could have an impact on feasibility. More research would be necessary to understand the potential magnitude of the impact.
- Where demand is high relative to supply, additional fees on residential development may be passed on to tenants or home buyers through higher housing costs.
- Because CET revenue is development derived, it will fluctuate with market cycles and will not be a steady source of revenue for affordable housing when limited development is occurring.

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<sup>24</sup> Oregon Revised Statute 320.173

# Summary of CET Analysis

## Estimating Revenue Potential

### Methodology Overview

There is no statutory cap on the CET rate applied on commercial and industrial construction. Therefore, this analysis assumed a range of potential rates that the City could apply on this development type: 0.3%, 0.5%, 1%, and 2%. The CET rate applied on residential construction is capped at 1%. Therefore, this analysis assumed a range of potential rates that the City could apply on this development type under the 1% threshold: 0.3%, 0.5%, .75%, and 1%.

After establishing a range of rates, the analysis assessed what revenue would look like based on historical building permit values for each respective development type (i.e., commercial and industrial development over the last five years and residential development over the last five years).

Based on the statutory regulations about how the CET funds can be expended, we allocated the projected revenue forecasts as follows:

- **Commercial/Industrial Construction:** (1) 4% to administrative costs, (2) 50% of the balance after subtracting administrative costs to housing-related programs (i.e., 48% of the total), and (3) 50% of the balance after subtracting administrative costs to an unrestricted use (i.e., 48% of the total).
- **Residential Construction:** (1) 4% administrative costs, (2) 15% of the balance after subtracting administrative costs to OHCS (i.e., 14% of the total), (3) 35% of the balance after subtracting administrative costs to affordable housing programs (i.e., 34% of the total), and (4) 50% of the balance after subtracting administrative costs to developer incentives (i.e., 48% of the total).

### Results: Historical Permit Values

One way to estimate CET revenue is a backward-looking analysis. If the City of Tualatin had charged CET fees on recent development that had occurred, how much revenue might have the City collected (assuming the permitting activity had been unchanged as a result of that CET)?

Building permits for residential development and commercial/industrial development in Tualatin fluctuated from year to year over the last five years. Exhibit 19 summarizes annual total permit values for new residential and commercial/industrial construction as well as additions that increase square feet (excluding exempt development) in 2020 dollars.<sup>25</sup> The annual average over the five-year period (2016-2020) for residential development is about **\$10m in qualifying permit value** in 2020 dollars. The annual average over the five-year period for

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<sup>25</sup> ECONorthwest used the Construction Cost Index published by Engineering News Record to inflate permit values to 2020 dollars.

commercial and industrial development is about **\$41.8m in qualifying permit value** in 2020 dollars.

**Exhibit 19. Residential Building Permit and Commercial/Industrial Building Permit Values by Year (2016 to 2020), (in 2020 dollars)**

Source: ECONorthwest analysis of City of Tualatin permit data.  
 Note: The large bump in residential permit valuation in 2018 is primarily due to the City of Tualatin permitting an above-average number of residential developments (101 total permits in 2018, compared to 11, 12, 35, and 37 total permits in other years). The large bump in commercial/industrial valuation in 2020 is predominately due to a new industrial structure permitted on Blake Street with a permit value of \$90m (2020\$).

<b>Year</b>	<b>Commercial and Industrial Building Permit Valuation (2020\$)</b>	<b>Residential Building Permit Valuation (2020\$)</b>
2016	\$17,166,894	\$9,304,128
2017	\$11,042,600	\$6,270,048
2018	\$53,020,643	\$32,351,852
2019	\$14,918,542	\$1,257,071
2020	\$112,883,996	\$926,520
<b>Annual Average</b>	<b>\$41,806,535</b>	<b>\$10,021,924</b>
<b>Total (2016-2020)</b>	<b>\$209,032,675</b>	<b>\$50,109,618</b>

Next, the analysis calculated the revenue that the City would have generated if it had a CET in place during the 2016 to 2020 period (assuming the permitting activity had been unchanged as a result of that CET) using the different CET rates listed previously.

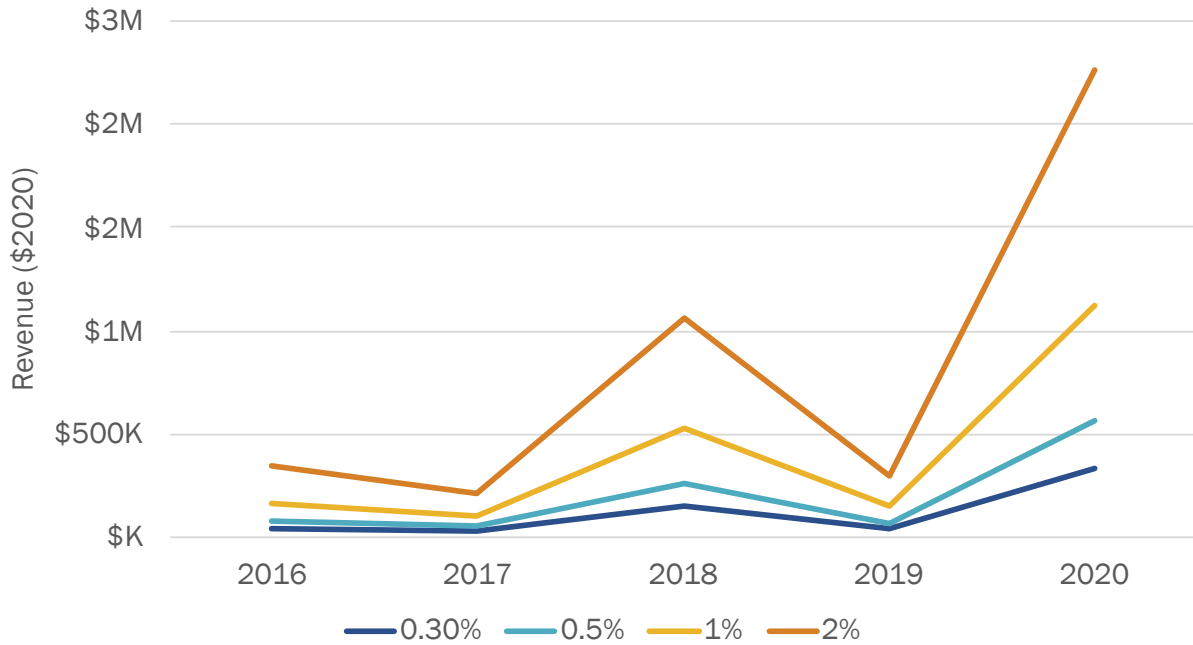
Exhibit 20 and Exhibit 21 show potential CET revenue for commercial/industrial development. This analysis shows that under the highest rate tested (2%), the average annual CET revenue over this period would have been about \$836,100.

Exhibit 22 and Exhibit 23 show potential CET revenue for residential development. This analysis shows that under the highest rate tested (1%), the average annual CET revenue over this period would have been about \$100,200.

Under either development type, the minimum CET revenue collected in a slow year would have varied little with the different rates, while the maximum collected in a “busy” year would have varied substantially.

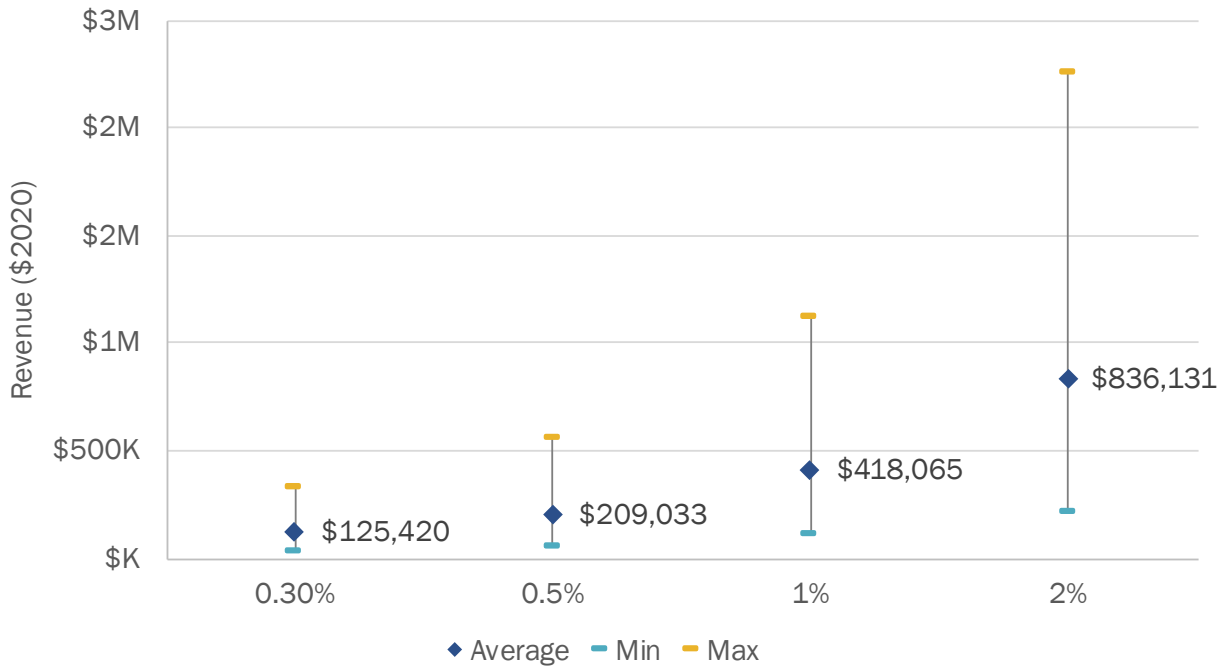
**Exhibit 20. Potential Annual Commercial/Industrial CET Revenue by Year and Rate (2016 to 2020)**

Source: ECONorthwest analysis of City of Tualatin permit data.



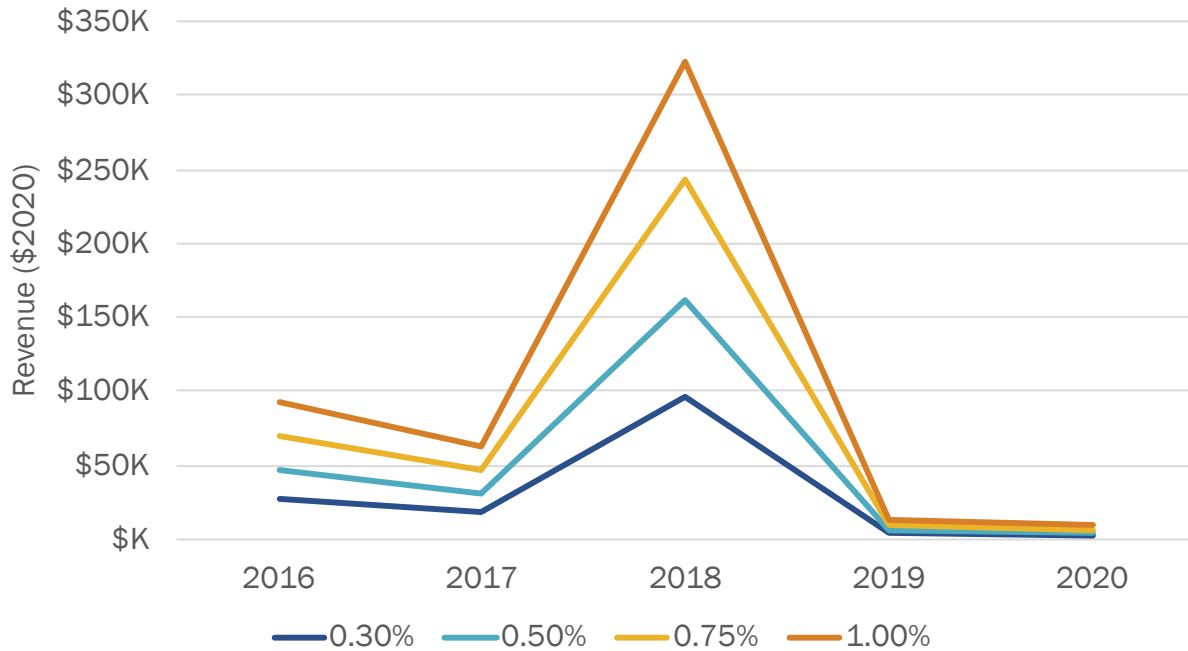
**Exhibit 21. Historical Minimum, Maximum, and Average Annual Potential Commercial/Industrial CET Revenue by Rate (2016 to 2020)**

Source: ECONorthwest analysis of City of Tualatin permit data.



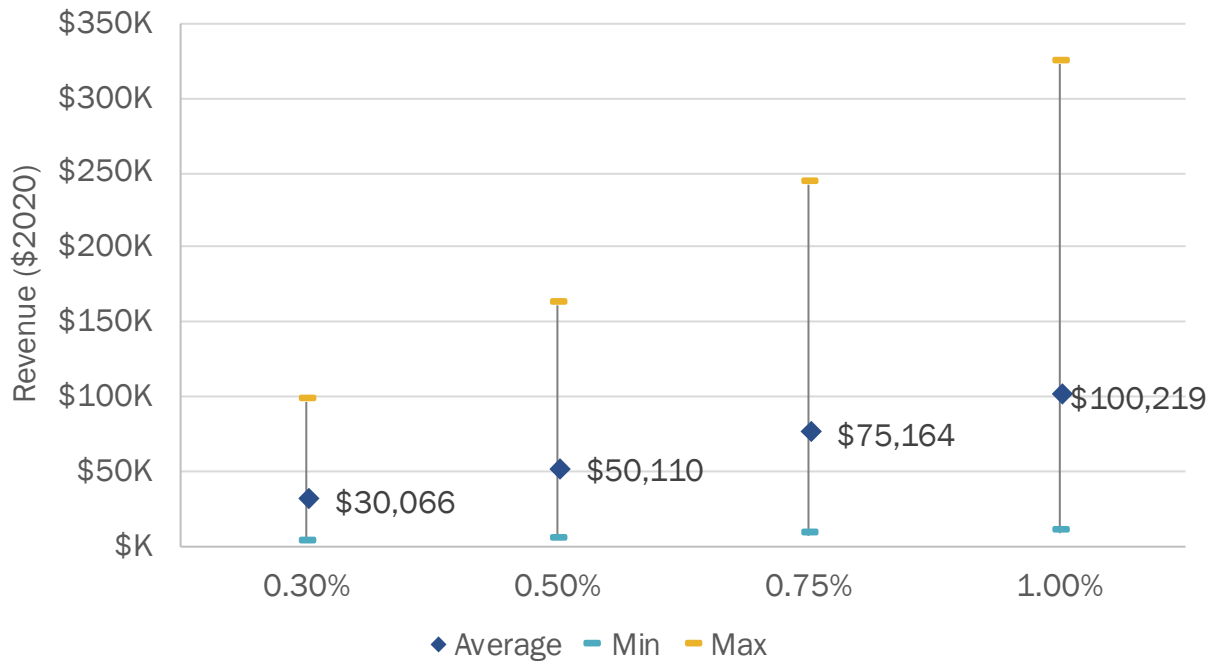
**Exhibit 22. Potential Annual Residential CET Revenue by Year and Rate (2016 to 2020)**

Source: ECONorthwest analysis of City of Tualatin permit data.



**Exhibit 23. Historical Minimum, Maximum, and Average Annual Potential Residential CET Revenue by Rate (2016 to 2020)**

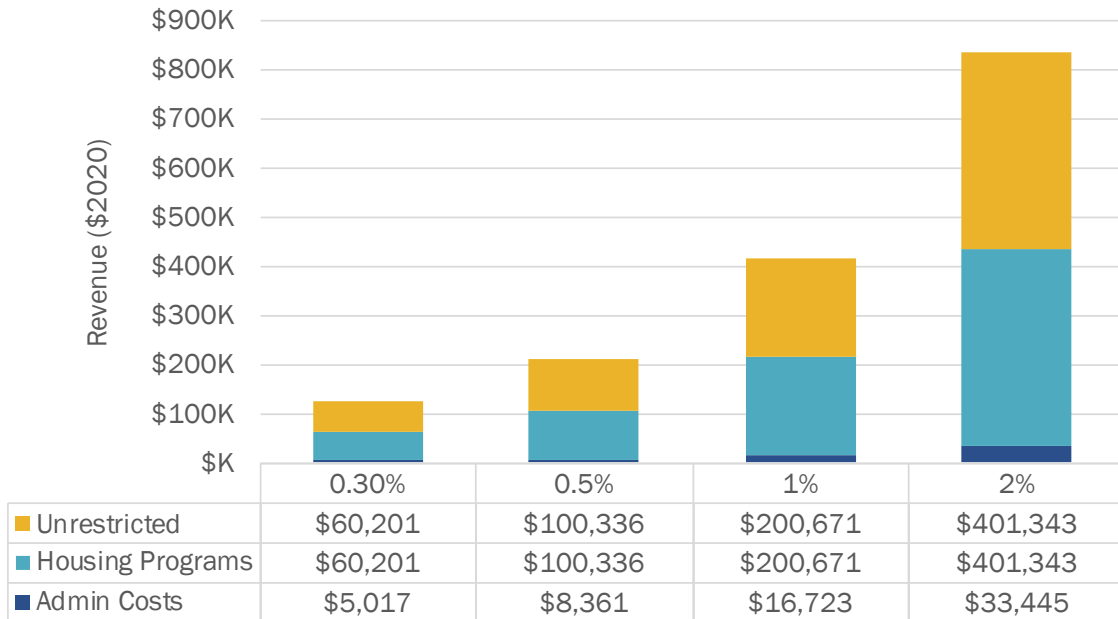
Source: ECONorthwest analysis of City of Tualatin permit data.



Based on the statutory requirements about use of funds, ECONorthwest translated the average annual simulated CET collections between 2016 and 2020 into funds available for each funding category, as shown in Exhibit 24 and Exhibit 25.

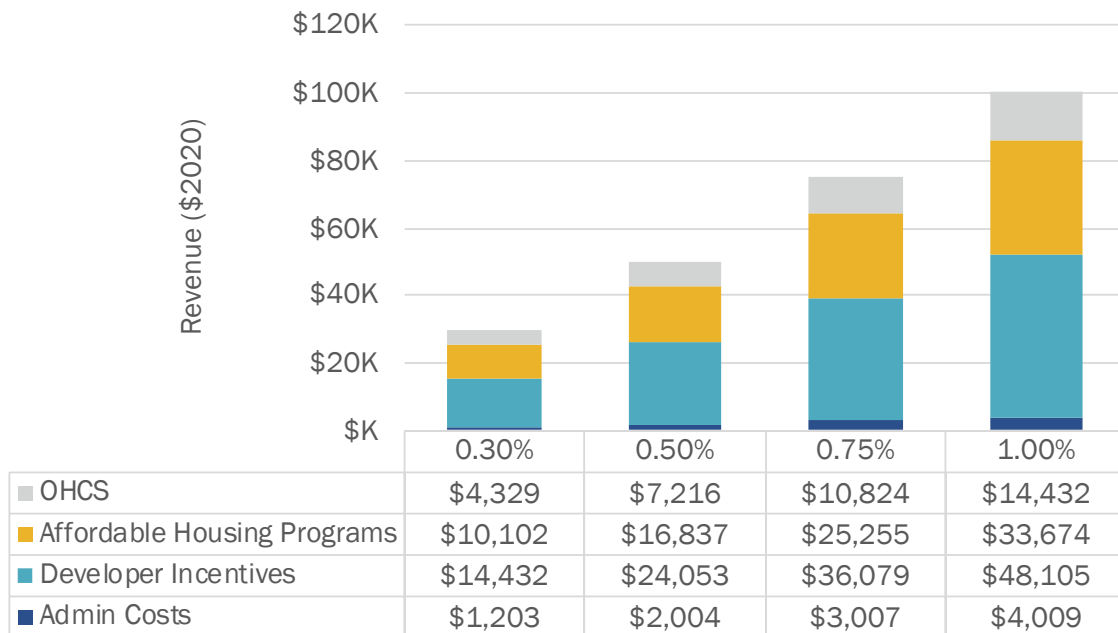
**Exhibit 24. Hypothetical Total Commercial/Industrial CET Revenue (2016 to 2020) by Rate and Use of Funds**

Source: ECONorthwest analysis of City of Tualatin permit data.



**Exhibit 25. Hypothetical Total Residential CET Revenue (2016 to 2020) by Rate and Use of Funds**

Source: ECONorthwest analysis of City of Tualatin permit data.



As shown above, a 0.5% or 1% rate on commercial and industrial development could generate meaningful revenue for programs, especially if the unrestricted portion is also dedicated toward housing programs. Because of the greater flexibility for these revenues, the City could design a flexible program for the revenues, or direct all of the net revenues towards a Housing Trust Fund or similar fund. This ease of use is important, because even with the higher revenue potential of the commercial/industrial CET, a 0.5% to 1% rate would offer little funding for administrative costs.

A CET on residential development would generate relatively little revenue given past trends in residential development, even at the maximum rate (1%). In addition, the administration would be more complex due to needing to separate out revenues toward the spending categories as specified in statute, while the funding available to cover administrative costs would be negligible.

## Conclusions and Next Steps

Given the results summarized above, a 0.5% to 1% CET on commercial and industrial development may be worthwhile to consider as it could generate a flexible source of revenue for local housing programs, especially if the City continues to see strong industrial and commercial growth. Imposing a CET on residential development is likely not worth considering unless the City annexes a large amount of vacant residential land where higher-end new housing is expected.

If the City chooses to further evaluate adoption of a CET, it should conduct additional outreach to stakeholders and local businesses to offer an opportunity for discussion and to raise any concerns. The City should also advance conversations about the potential uses of the funds, even though this is flexible and does not necessarily need to be determined prior to adoption. Working with stakeholders to clearly define the program's intended purpose, how the funds (especially the unrestricted portion) would be used, and who would make decisions about the use of funds is likely to help build support for the program. If the City chooses to adopt a CET, it must pass an ordinance or resolution that states the rate and base of the tax. Most communities also identify any further self-imposed restrictions on the use of funds as part of adopting the ordinance. If the ordinance passes, the City must then establish a process to distribute the funds.

DATE: October 4, 2022  
TO: City of Tualatin  
FROM: ECONorthwest  
SUBJECT: Urban Renewal Districts – Affordable Housing Funding Opportunities

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The City of Tualatin is considering a range of strategies and actions to fund and implement the goals from its 2021 Housing Production Strategy. To understand the potential trade-offs of implementing these strategies in Tualatin, this memorandum describes what each strategic action is and how it works. In addition, it summarizes an analysis of the potential impacts of implementing each action. The final section outlines potential next steps for the City of Tualatin to consider.

## Urban Renewal Districts

### Overview

Urban renewal districts in Oregon are authorized by the state in ORS Chapter 457 and implemented by local jurisdictions. State law specifies requirements for a city to create an urban renewal agency, which can then create plans for areas that are officially designated as ‘blighted’ by a local governing body (either the city or county).<sup>26</sup>

Urban renewal districts use tax increment financing (TIF) to fund strategic public investments intended to spur more development in designated areas. This tool works by leveraging future growth for new catalytic projects through bonds. When the plan is adopted, the total assessed value for properties in the boundary is ‘frozen’ for the plan’s lifespan. Taxes from that original base continue going to the taxing jurisdictions at the time of adoption at that base rate. The growth in tax revenue above the base is called the ‘increment,’ which goes to the urban renewal agency to be used for funding projects within the plan area. Agencies most often use bonds to begin projects, then when new development in the urban renewal area leads to an increase in property value and more tax revenue, the agency uses it to pay the bonds with TIF dollars. When the bonds are paid off and the plan sunsets, the entire valuation of the district is returned to the general property tax rolls.

#### **Urban Renewal Districts:**

Areas where a local urban renewal authority has created a plan for new public investments.

#### **Tax Increment Financing:**

TIF revenues generally pay off bonds used for catalytic improvements like parks, infrastructure, commercial development, or affordable housing.

In 2021, the City of Tualatin adopted the new Southwest and Basalt Creek Development Area, and in 2022 adopted the Core Opportunity Reinvestment Area. While much of the land included in these two areas is planned for industrial and commercial use, some portions of the new districts are also planned for residential or mixed-use development. These could be appropriate locations for new affordable housing rehabilitation or mixed-income housing funded by increment revenue. The City would only be able to use TIF revenue within renewal

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<sup>26</sup> ORS 457.020(1)



plan areas, though there may be flexibility for revenue generated within one district to be used in another urban renewal area.

### Fiscal Impacts/Who Pays

Designating TIF dollars from urban renewal is a way for the City to directly provide funding for affordable housing. While regulated affordable housing is often tax exempt and does not generate additional tax revenue, some jurisdictions allocate a portion of TIF revenues to fund affordable housing projects to support equitable development within the designated district. TIF can be invested in the form of low interest loans and/or grants for housing projects or a variety of capital investments. There are other restrictions that make it difficult to use TIF funding for operations and it is typically directed towards construction and capital projects such as multifamily development, rehabilitation, or supportive utilities.

Direct funds generated by TIF are typically not able to be used outside the boundaries of the plan district. There may be some possible exceptions for utilities located outside of the district that serve the urban renewal area. If there is a citywide program, TIF funds may be used as the funding source for it in the specific urban renewal area if projects align with plan goals. There are other restrictions that make it difficult to use TIF funding for operations and it is typically directed towards construction and capital projects such as multifamily development, rehabilitation, or supportive utilities.

### Pros and Cons

#### Pros:

- Urban renewal revenue is the city's largest locally-controlled funding source that could be available to support affordable housing development through direct project subsidies, land write-downs, and infrastructure enhancements.
- The City has recently created a new urban renewal district which includes explicit goals for development and preservation of affordable multifamily housing. The agency could use these goals in its investment criteria in the district.
- The City can use TIF revenue to ensure affordable housing is available in districts as properties appreciate due to investments in the urban renewal area. Including affordable housing investments as part of a comprehensive set of infrastructure enhancements can help to mitigate potential displacement when the district grows.

#### Cons:

- In many cases, regulated affordable housing projects are tax exempt, and therefore do not contribute to the growth of tax increment revenues. Investments should be made with this trade-off in mind.
- TIF can only be used in areas already designated for urban renewal. These may not necessarily be areas that have the highest need, ideal transportation options, or proximity to jobs.

- In active TIF areas in Tualatin, the majority of the land is zoned for industrial or commercial use rather than residential development, limiting the area where urban renewal funds could be used.
- Investing over \$750,000 in TIF (or any public funds) directly into a new or renovated privately developed project triggers prevailing wage requirements. Prevailing wages are specific local rates set by the US Department of Labor by different types of construction projects funded by federal dollars, including fringe benefits. These can typically increase overall project costs by 10 to 20% for developers.
- Setting aside TIF revenue or using bonds for affordable housing projects means that that amount is no longer available to other projects in the district like infrastructure, parks, or commercial development.

## Summary of Urban Renewal in Tualatin

### Potential Uses of Urban Renewal Revenue

The Agency must use TIF funds within the boundaries of the plan district and they must align with eligible project types included in ORS Chapter 457.020(4)-457.020(7) that are included in the goals of the urban renewal plan. The types of uses allowed by state law include:<sup>27</sup>

- Housing Authority powers
- Rehabilitation and conservation work in district
- Acquisition of property
- Clearance or rehabilitation for acquired property
- Construction or improvement of streets, utilities, and site improvements
- Carrying out plans for voluntary repair and rehabilitation of buildings or other improvements
- Relocation of displaced persons and property
- Selling or leasing property
- Neighborhood development programs

There may be some possible exceptions for utilities located outside of the district that serve the urban renewal area. If there is a citywide program, TIF funds may be used as the funding source for it in the specific urban renewal area if projects align with plan goals. The City currently has three active urban renewal areas that could include these eligible uses if it explicitly writes them into the plan.

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<sup>27</sup> Oregon Economic Development Association, “Best Practices for Tax Increment Financing Agencies in Oregon,” November 2019, <https://oeda.biz/committees/urban-renewal/>, 48.

## Core Opportunity Reinvestment Area Urban Renewal Plan

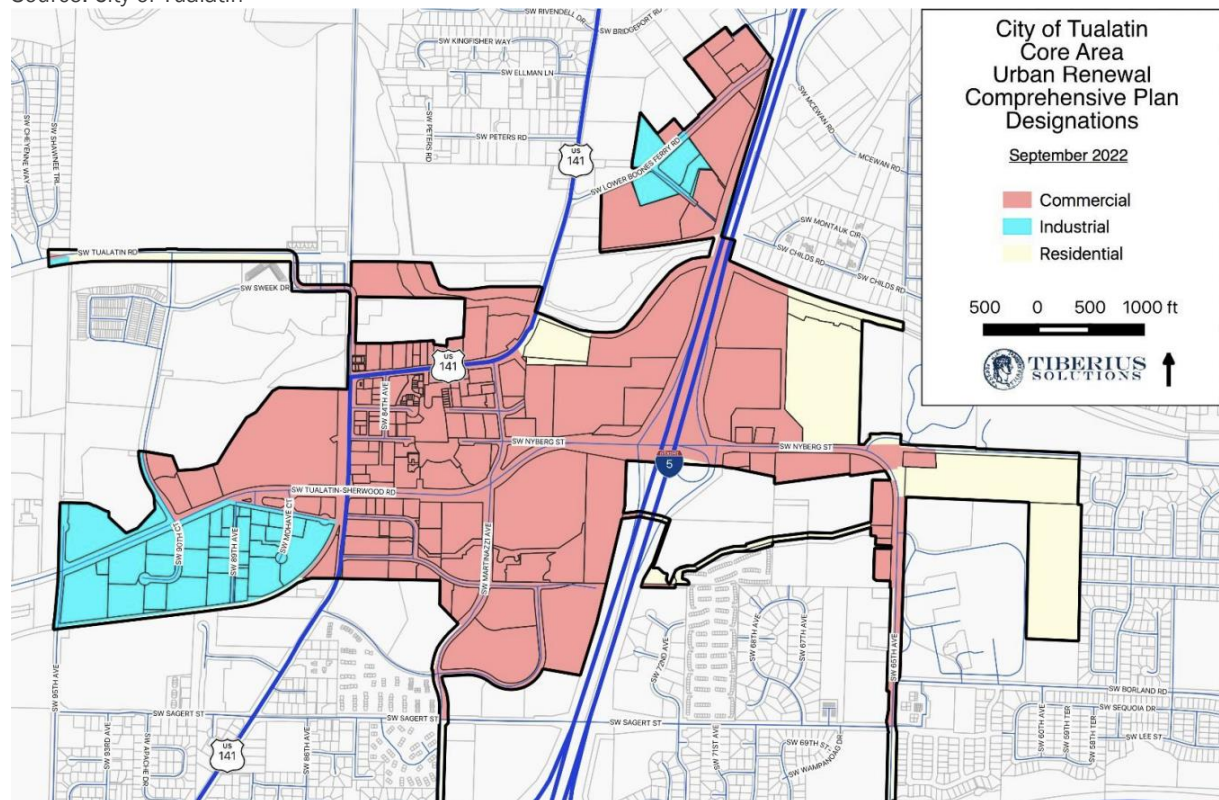
The City would only be able to use TIF revenue within renewal plan areas, though there may be flexibility for revenue generated within one district to be used in another urban renewal area.

The City's **Core Opportunity Reinvestment Area** adopted in November 2022 comprises commercial areas south of Bridgeport Road, Town Commons, I-5 Corridor, and Tualatin-Sherwood Road. It could be a potential site for investment in affordable housing through TIF, as the adopted plan's Goal 3: Mixed Use Development specifically aims to "Support development of housing affordable to people who have incomes between 30-120% of median family income in Washington County."<sup>28</sup> Like the City's other urban renewal areas, the Core Opportunity Reinvestment Area contains large amounts of industrial and commercially zoned land, but it does have portions for residential use where projects could be located.

Although majority of land exclusively zoned for residential use in the Core Opportunity Reinvestment Area is already developed, there could be potential for denser or mixed-use housing development in Downtown. Exhibit 26 shows the final boundaries for this plan area. It includes Downtown Tualatin as well commercial areas south of Bridgeport Village and residentially zoned areas on the outer parts of the district.

### Exhibit 26. Core Opportunity Reinvestment Area Boundaries and Comprehensive Plan Designations

Source: City of Tualatin



<sup>28</sup> City of Tualatin, "Core Opportunity Reinvestment Area Plan," November 2022, <https://www.tualatinoregon.gov/economicdevelopment/core-opportunity-and-reinvestment-area>.

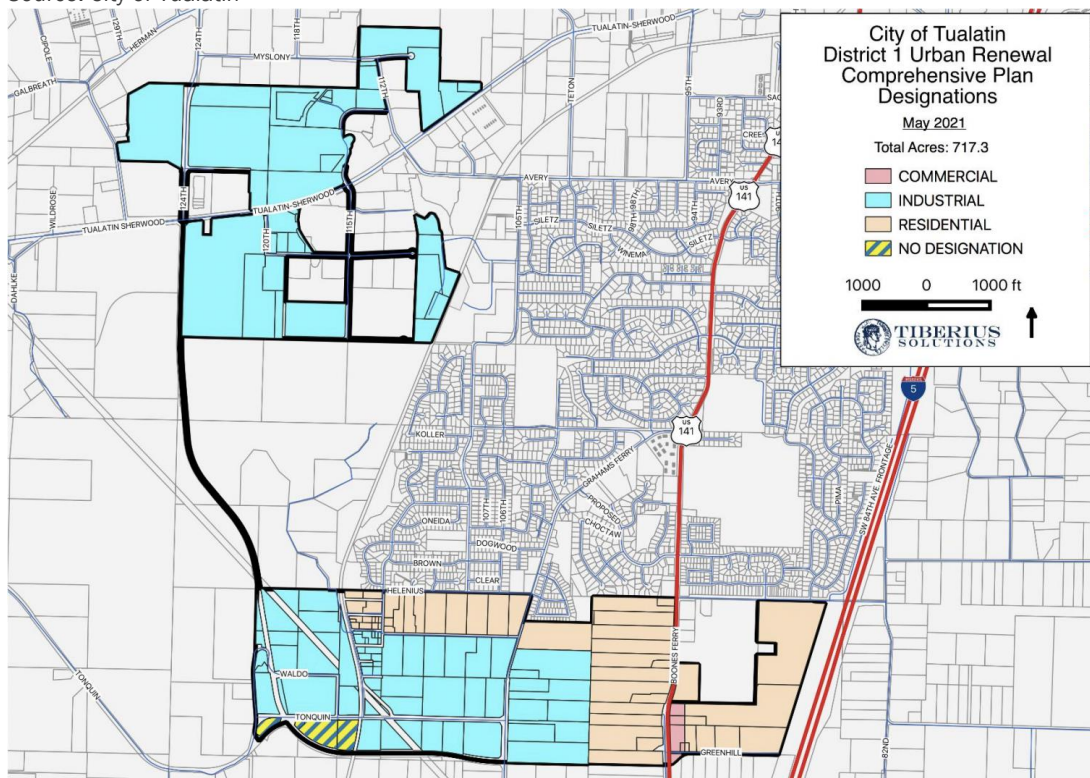
## Other Urban Renewal Areas

Exhibit 27 shows the boundaries for the **Southwest and Basalt Creek Area** and its comprehensive plan designations. While a part of the area is residential, large portions are zoned for industrial or commercial uses which could limit the actual area where affordable housing investments could be made. The residential zones in the district are focused in the eastern part of the district, near I-5. Many of the lots that would be eligible for the use of urban renewal funds are already developed and not available for new construction.

Within the Southwest and Basalt Creek Plan Area, Community Partners for Affordable Housing (CPAH) owns a parcel. CPAH was a part of the Task Force Advisory Board for developing the plan, which included infrastructure provisions that benefit affordable housing and other housing development within the plan boundaries.<sup>29</sup>

### Exhibit 27 Urban Renewal Plan Area Boundaries and Comprehensive Plan Designations in Southwest and Basalt Creek Plan Area

Source: City of Tualatin



The area of Tualatin's existing **Leveton Tax Increment Plan** is almost entirely designated for commercial and industrial use, with only a small corner designated for high density residential.<sup>30</sup> While the plan stresses compatibility with adjacent residential areas, it does not

<sup>29</sup> City of Tualatin, "Southwest and Basalt Creek Development Area Plan," August 2021, <https://www.tualatinoregon.gov/economicdevelopment/southwest-and-basalt-creek-development-area>.

<sup>30</sup> City of Tualatin, "Leveton Tax Increment Plan," April 2002, <https://www.tualatinoregon.gov/economicdevelopment/leveton-tax-increment-district>.



explicitly include initiatives or goals around housing. To use TIF funds in this area, the City would need to update their plan with objectives around housing but would be limited to a relatively small area for implementation.

## Estimating Potential Revenue

There are two potential urban renewal areas where Tualatin could consider using tax increment financing (TIF) revenue to support affordable housing projects. These include the Southwest and Basalt Creek Development which was established in 2021 and the Core Opportunity Reinvestment Area established in 2022.

The Southwest and Basalt Creek Development potential total TIF revenue over 30 years is estimated to be between \$28.4 million and \$55.5 million,<sup>31</sup> depending on future growth in assessed value in the area. The plan for this area includes objectives for affordable housing, including a parcel owned by Community Partners for Affordable Housing (CPAH).

The Core Opportunity Reinvestment Area’s potential total TIF revenue over 30 years is estimated between \$118.1 –\$171.4 M million based on three different growth scenarios detailed in a 2021 report and revisited for the 2022 adoption process.<sup>32</sup> Each urban renewal area has a maximum indebtedness that caps the total amount that projects can access which is typically lower than the district’s potential revenue.

### Exhibit 28. Summary of Urban Renewal Districts in Tualatin

	Leveton	Southwest and Basalt Creek	Core Opportunity Reinvestment Area
Year Established	1985 (last updated 2002)	2021	N/A
Potential TIF Revenue (30 years)	Undefined	\$28.4 - \$55.5M <sup>33</sup>	\$118.1 - \$171.4 M <sup>34</sup>
Maximum Indebtedness	\$36.4M	\$24.5 - \$48.7M <sup>35</sup>	\$140M <sup>36</sup>
Affordable Housing Considerations in URA Plan	Relocation of displaced residents <sup>37</sup>	“Assist in the provision of infrastructure to support the development of additional housing options in the Area” <sup>38</sup>	“Support development of housing affordable to people who have incomes between 30-120% of median family

<sup>31</sup> City of Tualatin, “Southwest and Basalt Creek Development Area,” accessed October 12, 2022, <https://www.tualatinoregon.gov/economicdevelopment/southwest-and-basalt-creek-development-area>.

<sup>32</sup> City of Tualatin, “Proposed Area: District 2,” accessed October 12, 2022, <https://www.tualatinoregon.gov/economicdevelopment/proposed-area-district-2>.

<sup>33</sup> Tiberius Solutions and Elaine Howard Consulting, “Tualatin Basalt Creek Urban Renewal Feasibility Study,” August 31, 2020, <https://www.tualatinoregon.gov/economicdevelopment/southwest-and-basalt-creek-development-area>, 10-12.

<sup>34</sup> City of Tualatin, “Core Opportunity Reinvestment Area Plan,” 3.

<sup>35</sup> City of Tualatin, “Southwest and Basalt Creek.”

<sup>36</sup> City of Tualatin, “Core Opportunity Reinvestment Area Plan,” 5.

<sup>37</sup> City of Tualatin, “Leveton Tax Increment Plan,” 22.

<sup>38</sup> City of Tualatin, “Southwest and Basalt Creek,” 9.

			income in Washington County.” <sup>39</sup>
Possible Eligible Uses in District	Relocation of displaced people	Construction or improvement of streets, utilities, and site improvements	Many possible uses – Rehabilitation, acquisition, or construction projects could be used to meet desired outcomes

## Examples of Other Urban Renewal Revenue Housing Programs

Other cities in Oregon have set aside tax increment funds for various local affordable housing initiatives in urban renewal areas. Some examples that could be relevant to Tualatin include set aside programs, financial and technical assistance, or gap financing for specific affordable housing projects. Infrastructure or utilities investments that reduce costs for required construction or dedication by affordable housing developers can also help to achieve goals for housing. Jurisdictions in Oregon that have implemented these kind of urban renewal projects include:

- Portland.** The City began using a **45% set aside** of their tax increment dollars for new affordable housing for households at or below 100% of MFI in 2006. Although funds could still only be used within the boundaries of urban renewal areas, the policy set a minimum share of TIF revenue to be put towards affordable housing projects. In the first twelve years of implementation, the set aside policy generated more than \$275 million in direct investment in housing affordable to low-income and workforce residents. In the years since, affordable housing investment has accounted for one-third of TIF expenditures across nine urban renewal areas in Portland.

The set aside has provided capital resources for key projects like the Bud Clark Commons, Block 49 veterans housing in South Waterfront, and preservation of existing low-income apartment units. Funds have also been used for down payment assistance programs and home repairs throughout urban renewal areas.<sup>40</sup>

- Tigard.** The City Center and Tigard Triangle Urban Renewal Plans included explicit goals to provide **financial and technical assistance** to targeted types of housing development. The City Center area has seen a 32% increase in multifamily housing since 2006, compared with a 25% increase in the rest of the city, while the Tigard Triangle has seen a 265% increase.<sup>41</sup> Although this progress is the result of multiple overlapping strategies, the urban renewal agency has contributed development assistance.

In 2017, Tigard’s Town Center Development Agency participated in a public-private partnership with Capstone Development to complete a 165-unit apartment building. Through the agreement, the developer team purchased the agency-owned property for

<sup>39</sup> City of Tualatin, “Core Reinvestment Opportunity Area.”

<sup>40</sup> Portland Housing Bureau, “Importance of TIF Set-aside Policy,” City of Portland, accessed August 2, 2022, <https://www.portlandoregon.gov/phb/article/653603>.

<sup>41</sup> Town Center Development Agency of the City of Tigard, “TIF District/Urban Renewal Financial Impact Report,” January 31, 2022, <https://www.tigard-or.gov/home/showpublisheddocument/2017/637792251216970000>.

its appraised value of \$1.7 million, and the City provided an SDC waiver for the same amount to the developer to offset some of the estimated \$2.8 million in SDCs incurred by the project. Since the project qualifies for a partial 10-year property tax reduction under the state's Vertical Housing program, some of the estimated \$7.8 million in property taxes that would be generated over 20 years will be forgone.<sup>42</sup>

- **Redmond.** The local urban renewal agency provided \$150,000 in **gap financing** in 2017 to fund Housing Works' 48-unit affordable housing project for seniors located in its Downtown Urban Renewal District. The building includes community space and a full-service 10,000 SF medical clinic. The total project cost was \$12 million and included financing from Wells Fargo's Community Lending & Investment team. It includes one residential condo and six project-based HUD Section 8 voucher units.<sup>43</sup>

## Conclusions and Next Steps

- The City should evaluate areas designated for residential use within its urban renewal areas, as well as potential for mixed-use development in commercial areas of the Core Opportunity Reinvestment Area.
- The City should evaluate a potential seaside or other policy language as part of the implementation of its existing urban renewal plan.
- The City should implement the flexible language in the Core Opportunity Reinvestment Area plan that could support the use of TIF funding for affordable housing. By including affordable housing in the urban renewal plan, the City should identify whether it wants to set unit production and affordability targets over time or simply include affordable housing as an eligible project category.

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<sup>42</sup> Downtown Revitalization Projects- Downtown Tigard. [http://www.tigard-or.gov/community/project\\_history.php](http://www.tigard-or.gov/community/project_history.php)

<sup>43</sup> NOAH Project Profile: Cook Crossing. [https://noah-housing.org/docs/project\\_profiles/Cook\\_Crossing.pdf](https://noah-housing.org/docs/project_profiles/Cook_Crossing.pdf)

DATE: November 7, 2022  
TO: City of Tualatin  
FROM: ECONorthwest  
SUBJECT: Affordable Housing Trust Fund and Additional Funding Tools Analysis

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The City of Tualatin is considering a range of strategies and actions to fund and implement the goals from its 2021 Housing Production Strategy. To understand the potential trade-offs of implementing these strategies in Tualatin, this memorandum describes strategic actions around an affordable housing tax exemption and how it works. In addition, it summarizes an analysis of the potential impacts of implementing these actions. The final section outlines potential next steps for the City of Tualatin to consider.

## Additional Funding Tools

### Overview

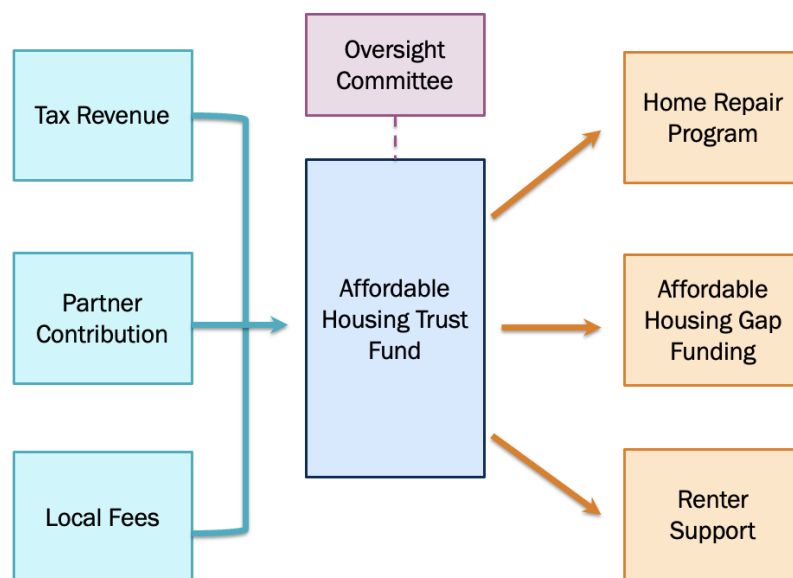
There are many potential strategies for creating new revenue sources or directing existing sources towards affordable housing, including new taxes or fees, local bonds and levies, partner contributions, and more. Some of the tools covered in other Housing Implementation Plan memorandums could contribute revenue to the city in order to financially support targeted types of housing. This analysis expands on those additional funding sources and how the city could use them in an Affordable Housing Trust Fund.

**Affordable Housing Trust Fund:** Trust Funds provide a single location to collect a variety of local contributions and other funds for affordable housing. They are typically managed by a combination of city staff and a steering committee who ensure the funds are distributed to fulfill priority housing goals.

An Affordable Housing Trust Fund is a mechanism that can centralize revenue sources into a collective account and distribute money for housing in the city. Although most of the sources analyzed can also be used independently, this structure could be useful for affirming that projects that receive public funding go towards meeting priority needs. Trust

### Exhibit 29. Affordable Housing Trust Fund Structure

Source: ECONorthwest





funds are typically steered by a committee who work alongside city staff to formulate the application criteria and administer the approval process. However, these funds only work if there are sufficient inputs in the form of tax revenue, fees collected, bonds, etc.

## Fiscal Impacts/Who Pays

These tools can leverage a variety of local, existing revenue sources; they are typically spread out to different funds, levies, and bonds to accumulate a larger sum. The fiscal impacts depend on the source, but in general it means that the City is choosing to allocate money towards housing projects in lieu of spending it elsewhere. In some cases, sources may also stipulate that funds can only be used for certain types of projects which may restrict how the trust can distribute its money. These may prohibit their use in the fund altogether: for example, urban renewal funds cannot be used outside of the boundaries of a district and are primarily used for supporting new capital projects, limiting their use for citywide goals or programmatic elements.

## Pros and Cons

### Pros:

- An affordable housing trust fund would allow the City to make investments in the specific types of housing that are needed in Tualatin. The City could configure the criteria and eligibility standards to a specific affordability level or unit/tenure type.
- The fund can combine multiple funding sources and lower dependence on a single revenue stream to fund affordable housing. It could also reduce the strain on any one source.
- Some sources that have low potential now because of political viability or legal status in Oregon may become more feasible over time with changes to state legislation that enable more tools to be used for affordable housing. For example, vacancy taxes have not been legally tested in the state but could be in the future.

### Cons:

- A trust fund requires administrative capacity from the City and will likely require support from a volunteer committee to oversee the application and approval processes.
- If goals and eligible project types are not clear from the outset of the trust, funding could go towards lower priority types of projects and/or cause public controversy.
- Other challenges might arise with requirements depending on the funding source within the trust fund, such as restrictions on the types of projects that can be funded by certain revenue sources, requirements for prevailing wages, or annual fluctuations in availability.

## Summary of Additional Funding Tools Analysis

ECONorthwest evaluated a number of revenue sources that could contribute funding to an affordable housing trust fund.

Exhibit 30 summarizes these sources and provides rationale for their recommended inclusion or exclusion in the Housing Implementation Plan.

An affordable housing trust fund could also collect revenue from other tools that ECONorthwest evaluated for this plan, such as revenue from a Construction Excise Tax. This analysis includes those explored in other sections of the Housing Implementation Plan and integrates ideas from the previous Housing Production Strategy.

**Exhibit 30. Summary of New Funding Sources Evaluated**

Revenue Source	Potential to Implement	Description	Assessment
<b>Most Common Local Sources</b>			
Tualatin-specific Construction Excise Tax (CET)	High	A tax levied on new construction of commercial, industrial, and/or residential buildings	Likely a high source of flexible local revenue
General Fund Revenue	Low	Contribution from the city's general budget	Can contribute directly but competing with other city priorities
Tualatin-specific or regional General Obligation (GO) Bond	High	Increases property taxes to pay back the amount of bonds taken out by the city for capital projects In 2018, voters approved a regional GO Bond for housing for the Metro region. Funds from that bond are being use to create permanently affordable housing. Metro may consider issuing an additional GO Bond.	Requires a public vote but could provide long term stable source Tualatin could be the recipient of additional funding from a new Metro GO Bond.
Local Option Levy	Medium	A time-limited property tax issued as a rate used for capital projects, operations, or programs	Also requires a public vote but GO bond is probably better
<b>Increases to Existing Taxes and Fees</b>			
Lodging Tax	Medium	An increase to the city's current lodging tax levied on hotels, motels, and short-term rentals, paid by visitors	Uses of revenue are restricted by the state; majority (70%) for tourism
Marijuana Tax	Medium	A targeted change in the city's current marijuana tax levied on marijuana purchases, paid by consumers	Marijuana tax revenues may already be at their maximum for Oregon
Building and Planning Permit Fee Surcharge	Low to Medium	An additional charge added to the city's existing fee for staffing and operational costs	The City has relatively low fees now, but increasing them would not help to incent new housing development

Utility Fee Surcharge	Low to Medium	An additional fee on utility bills, similar to the city's current parks utility fee	Potential nexus with infrastructure to support affordable projects
System Development Charges (SDCs)	Low	An increase to the city's existing one-time fees charged on new buildings, paid by developers	Conflicts with strategy to exempt SDCs for certain affordable development
<b>New Taxes and Fees</b>			
Business License Fee	Low	An additional fee issued with new business licenses	Could hinder economic development goals
Food and Beverage Tax	Low	A tax added to food and beverage sales within the city, paid by consumers	Unlikely to be politically viable
Real Estate Transfer Tax	Low	A tax levied on real estate transactions, paid by property owners	Not proven legal in Oregon
Sales Tax	Low	A tax on retail goods purchased within the city, paid by consumers	Unlikely to be politically viable
Payroll/Business Income Tax	Low	A tax for local business revenue, paid by business owners	Likely to face pushback from business community
Vacancy/Second Home Tax	Low	A tax levied on homes that are unoccupied for a certain period of time, paid by property owners	Likely not legal in Oregon or enough vacation homes
<b>Other Funding Sources</b>			
Donations and Gifts	Medium	Funds given by private foundations, firms, or individuals	Could have a mid-sized to low impact and likely to fluctuate
Grants	Medium	Funding from public agencies or companies for a specific purpose that the city applies for	Dependent on grant writing capacity and changing availability
State Funding	Medium to High	Oregon Housing and Community Services provides a number of funding opportunities for which Tualatin would be eligible including grants and CET	Mostly available as one-time contributions but can be spread out over years

## The City's Highest Potential Revenue Sources Are Construction Excise Tax (CET) Revenue and Property Taxes.

### CET is a Promising New Option, with Multiple Configurations Available.

Construction Excise Taxes (CET) is increasingly popular for funding affordable housing in Oregon, as SB 1533 passed in 2017 permits cities to adopt a tax on the value of new construction projects explicitly for the purpose of raising funds for affordable housing projects. The tax is limited to 1% of the permit value on residential construction with no cap on the rate applied to commercial and industrial construction. For residential, 50% of revenue must go to developer incentives like backfilling SDC abatements or forgone MUPTE revenue, 15% goes to OHCS programs, the city can use the remaining 35% flexibly (including adding to a trust). For commercial and industrial CET, 50% of revenue has to be used for housing related programs and could also flow into the trust, while the other half is unrestricted and could also go to other city programs.

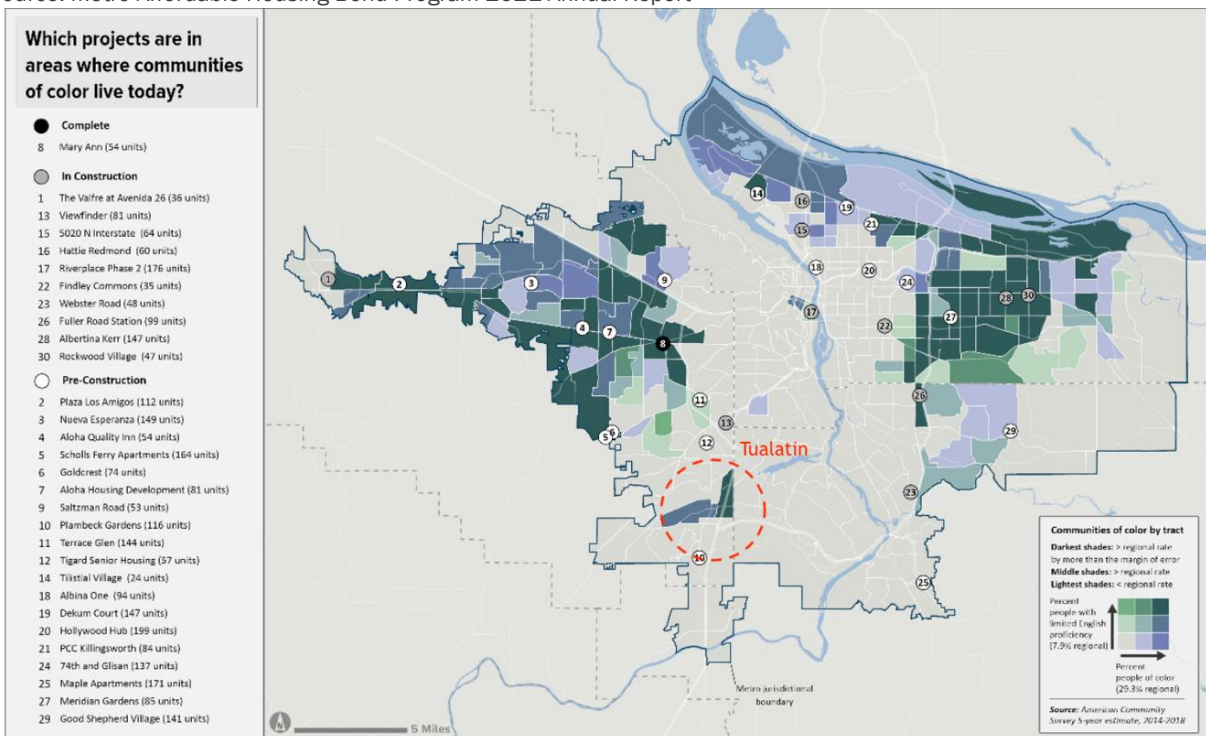
## A Local Option Levy or General Obligation Bond Would Require a Public Vote.

A new local option levy (ORS 280.040-280.145) or general obligation bond (ORS Chapter 456) would be a powerful tool but require an extensive public process and vote in order to pass. Depending on which route the city pursued, it would either take out a bond to be repaid by a property tax increase or increase the property tax rate for a fixed period of time to add towards housing. Both require a local public vote to implement.

The existing Metro GO Bond which Tualatin residents already pay property taxes towards covers Washington, Multnomah, and Clackamas County and is estimated to generate \$652.8 million for housing and homes for approximately 12,000 people.<sup>44</sup> Although Tualatin currently does not have an allocation for projects within the city, the intent of the bond is to be distributed regionally to provide more affordable units across all three counties with considerations for racial equity and existing access to regulated affordable housing.<sup>45</sup>

### Exhibit 31. Metro Housing GO Bond Projects in Areas Where Communities of Color Live Today

Source: Metro Affordable Housing Bond Program 2021 Annual Report



The city's tracts with relatively high share of people with limited English proficiency and people of color compared to the region (shown in Exhibit 31) and lack of current funding provided from the bond revenue could make Tualatin a strong candidate to receive funding within this regional equity framework. Like other cities (including Portland<sup>46</sup>), Tualatin could

<sup>44</sup> Metro, "Affordable Housing Bond Program," February 8, 2018, <https://www.oregonmetro.gov/public-projects/affordable-housing-bond-program#:~:text=In%202018%2C%20Metro%20partnered%20with.>

<sup>45</sup> Metro, "Metro Affordable Housing Bond Program 2021 Annual Report," June 30, 2021, <https://www.oregonmetro.gov/public-projects/affordable-homes-greater-portland/oversight.>

<sup>46</sup> Portland Housing Bureau, "Metro Housing Bond," 2022, <https://www.portland.gov/phb/metro-housing-bond.>

seek to partner with the Metro Housing Bond, set goals for adding affordable units, and solicit proposals for new affordable development.

### General Fund Revenue is Powerful but Competitive with Other Resources.

The City could decide to reallocate a portion of its general fund revenue as it chooses, which could potentially provide a large contribution towards housing projects and programs. However, using the city budget would likely mean reallocating funds from where they are currently going and competing with other city priorities.

## Increasing and Allocating Existing Taxes and Fees Has Limitations.

Increasing or reallocating revenue from existing taxes and fees may be more politically viable than introducing new ones in Tualatin. However, for existing funds and fees, the city typically already has earmarked where they are going to be spent and would need to evaluate if they want to divert resources from other projects or increase the tax and allocate the additional revenue to housing.

Existing taxes and fees considered include the city's lodging tax, marijuana tax, building and planning permitting fees, and system development charges (SDCs). In the case of lodging and marijuana taxes, it may be possible to eventually increase the current rate but the effectiveness of both is dependent on state legislative decisions.

Increases to SDC rates are not conducive to increasing housing feasibility and may cause challenges for attracting development. These rates are also typically set by service districts for infrastructure rather than by the City for funding other initiatives. Adding a surcharge that is linked to the cost of staff capacity for working on affordability initiatives may have a stronger nexus with the affordable housing trust fund and create less of a challenge for feasibility. Similarly, a surcharge to the City's utility bills like the existing park utility bill could be applied towards supporting infrastructure for new affordable projects.

## New Taxes and Fees May Be Difficult to Implement.

There are many theoretical options for adding new taxes or fees within the city, but most of them face challenges of political feasibility, legal issues, or hindering other goals. Taxes or fees could apply to a range of different parties, broadly including consumers, property owners, and business owners in the city. See this document's Appendix for detail on taxes and fees.

### Taxes and Fees Paid by Consumers Could Lack Political Viability.

New taxes and fees paid by consumers often face challenges of political viability. Both of those considered could have pushback from the business community and residents because they could be seen as disincentives to spending within the city.

## Taxes and Fees Paid by Property Owners Could Face Legal Challenges.

Local option levy and general obligation bonds would already add to existing property taxes, but there are other taxes that would apply primarily to property owners. Both options included here are likely to face legal challenges in Oregon and are not tested in the state.

## Taxes and Fees Paid by Business Owners Could Hinder Other Economic Goals.

Taxes levied on businesses are another option that the city could enact, but this could also discourage new small firms from establishing in Tualatin. Available options for these taxes and fees can also often be transferred on to consumers when businesses add on the cost for paying the tax to the price of their goods and services.

## Most Grants and Partner Contributions Have Short Term Impact.

### One-Time Grants and Partner Contributions Have Been Used in Other Funds.

Grants and partner contributions can have an impact but are likely not ongoing sources that could be used for continued programs or an AHTF. Cities like Newberg have relied on them as a part of their trust fund,<sup>47</sup> but they don't always produce enough contributions to be effective for long term programs. The city could explore funding campaigns for donors and grant writing efforts, but this is typically more effective for specific projects than open-ended funding.

### State Funding Could Add More Opportunities for Specific Goals.

Oregon Housing and Community Services (OHCS) offers a range of grant programs and tax credits that can be used for affordable housing development. Individual projects could utilize programs like the Oregon Affordable Housing Tax Credit (OAHTC), while the city could utilize the General Housing Account Program (GHAP) Capacity Building program to build out the affordable housing trust. The state's share of locally collected construction excise tax can also be used for down payment assistance programs.<sup>48</sup> The state Housing Development Grant Program ('Trust Fund') could be used by projects in Tualatin to match local funds.<sup>49</sup>

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<sup>47</sup> City of Newberg, "Affordable Housing Commission Home, Newberg Oregon," [www.newbergoregon.gov](http://www.newbergoregon.gov), accessed October 31, 2022, <https://www.newbergoregon.gov/ahtfc>.

<sup>48</sup> Oregon Housing and Community Services, "Down Payment Assistance," accessed November 4, 2022, <https://www.oregon.gov/ohcs/homeownership/pages/downpayment.aspx>.

<sup>49</sup> Oregon Housing and Community Services, "Grants & Tax Credits," [www.oregon.gov](http://www.oregon.gov), accessed November 4, 2022, <https://www.oregon.gov/ohcs/development/Pages/grants-tax-credit-programs.aspx>.



## Affordable Housing Trust Fund Case Study: Eugene

Affordable Housing Trust Funds are fairly common for cities in Oregon. Eugene, Portland, Ashland, Newberg, and Bend are all examples of jurisdictions who have established such funds, but their impact typically varies based on how much funding they are able to provide. Some may also be subject to vary over time based on their revenue sources.

Eugene has been successful in creating an Affordable Housing Trust Fund (AHTF) in 2019 when the City Council passed Ordinance 20609. The fund receives revenue from the city's Construction Excise Tax (CET) and the Council General Fund. CET revenue collects 0.5% on construction and additions in Eugene which makes it subject to fluctuation, but in FY22 it produced \$1.1 million that went towards the city's AHTF projects.<sup>50</sup>

An advisory committee oversees Eugene's AHTF and makes recommendations to staff about how funds should be used. Eligible types of expenditures include gap financing and acquisition for affordable development (which accounts for 75% of funds) and direct assistance for renters and home down payments (25%).<sup>51</sup>

### Exhibit 32. 'Peace Village' Project Funded by Eugene's AHTF

Source: Cultivate Architects



In the past three years, the fund has spent \$1.3 million and supported the creation of over 200 new units, including 122 rental units, 70 owner-occupied tiny homes, and 10 transitional units. AHTF money was also used for rental assistance and foreclosure prevention in response to the COVID-19 pandemic. More recently the City has begun to use the fund for down payment assistance, a tenant hotline, and rental housing navigation sources.

<sup>50</sup> City of Eugene, "Affordable Housing Trust Fund," [www.eugene-or.gov](https://www.eugene-or.gov), 2022, <https://www.eugene-or.gov/4232/Affordable-Housing-Trust-Fund>.

<sup>51</sup> City of Eugene, "Affordable Housing Trust Fund Advisory Committee | Eugene, or Website," [www.eugene-or.gov](https://www.eugene-or.gov), accessed October 31, 2022, <https://www.eugene-or.gov/4256/Affordable-Housing-Trust-Fund-Advisory-C>.

## Additional Considerations

- **Increasing Lodging Tax** could be possible as Tualatin currently charges 2.5% locally and other jurisdictions in Oregon have used a portion of their lodging tax towards an affordable housing fund, including Portland.<sup>52</sup> However, only 30% of the tax may be used for purposes other than tourism and workforce housing for employees in the tourism industry does not apply as tourism related expenditure.
- **Increasing the Marijuana Tax Rate** for housing is an increasingly popular strategy in Oregon (including Ashland where revenue is put towards their housing trust)<sup>53</sup> but may not be possible in Tualatin as the city is already levying the maximum tax for local jurisdictions at 3% of sales prices. However, if new legislation raises the maximum local tax rate to 10% the city could consider this increase.<sup>54</sup>
- **Increasing the Building and Planning Permit Fee** would add a cost for developers and may have the effect of discouraging development in general. This could include projects that may have used other incentives like MUPTE or SDC waivers in a market where not many new buildings are currently being delivered. These fees are also typically sized to project valuation and staffing operational costs/capacity so it could be difficult to justify. This has been used in other cities, including Bend,<sup>55</sup> but may be best used in cities with strong demand in current housing markets.
- **Higher System Development Charges** to fund housing projects would be possible, particularly for city-controlled taxes, but conflicts with this project's recommendation to exempt fees for affordable development as it would increase the amount the city would need backfill for any projects utilizing the program.
- **Food and Beverage Taxes** have been passed in other local jurisdiction in Oregon, though not explicitly for affordable housing.<sup>56</sup> To pass the tax requires voter approval, which has been contentious in other cities – most recently Cannon Beach where it did pass.
- **A Local Sales Tax** is also unlikely to be politically viable as it would require a voting process and is not widely implemented in Oregon. The state does not charge a sales tax,

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<sup>52</sup> Michael Anderson, "Portland Dedicates Short Term Rental Lodging Tax to Housing Investment Fund I," Community Change, 2016, <https://housingtrustfundproject.org/portland-dedicates-lodging-tax-to-housing-fund/>.

<sup>53</sup> City of Ashland Planning Division, "Housing Trust Fund," www.ashland.or.us, accessed October 21, 2022, <https://www.ashland.or.us/Page.asp?NavID=10828>.

<sup>54</sup> Joelle Jones, "Cashing in on Cannabis: How Oregon, Washington Are Using Weed Tax Revenue" (KOIN 6, April 6, 2022), <https://www.koin.com/local/cashing-in-on-cannabis-how-oregon-washington-are-using-weed-tax-revenue/#:~:text=Oregon%20Cannabis%20Tax&text=State%20School%20Fund%3A%2040%25>.

<sup>55</sup> City of Bend, "Affordable Housing," www.bendoregon.gov, accessed October 21, 2022, <http://bendoregon.gov/index.aspx?page=99>.

<sup>56</sup> Kathleen Stinson, "Prepared Food Tax Is Not New Oregon, Other Communities Have Passed Similar Measures," Cannon Beach Gazette, July 21, 2021, [https://www.cannonbeachgazette.com/news/prepared-food-tax-is-not-new-oregon-other-communities-have-passed-similar-measures/article\\_0a3533f0-eeed-11eb-bf68-3f0b06264caf.html](https://www.cannonbeachgazette.com/news/prepared-food-tax-is-not-new-oregon-other-communities-have-passed-similar-measures/article_0a3533f0-eeed-11eb-bf68-3f0b06264caf.html).



though Josephine County has recently proposed a seasonal sales tax of 3% to use for law enforcement.<sup>57</sup>

- **Real Estate Transfer Taxes** are prohibited in Oregon by ORS 306.815, with the exception of Washington County where there was already a tax in place when the legislation was enacted.<sup>58</sup> Unless there is significant chance to Oregon law this tax is not an option beyond what Washington County already collects in Tualatin.
- **Vacancy Taxes** (sometimes called ‘second home’ taxes) have been adopted or explored in some large cities with high development pressure, including Oakland, San Francisco, Vancouver, and Los Angeles.<sup>59</sup> However, vacancy taxes have not been legally tested in Oregon. The strength of the housing market in a city also helps to determine whether it will have sufficient impact.
- **A Business Income Tax** would add a local charge on net business income, often for firms that make over a certain amount annually. Metro already charges a 1% business tax in Clackamas, Multnomah, and Washington Counties that goes towards housing services,<sup>60</sup> so an added local tax may be unlikely to gain traction.
- **A Business License Fee** would add a local fee for registering a new business within Tualatin but would likely conflict with other economic development goals in the city. Unless there is a clear line with workforce housing it may also be difficult to establish a nexus with affordable housing.

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<sup>57</sup> Jane Vaughan, “Josephine County Sends Seasonal Sales Tax Proposal to Voters,” OPB, August 11, 2022, <https://www.opb.org/article/2022/08/11/josephine-county-sends-seasonal-sales-tax-proposal-to-voters/>.

<sup>58</sup> Lincoln Land Institute, “Transfer Tax - Washington County,” LILP, 2018, <https://www.lincolninst.edu/real-estate-transfer-charge/transfer-tax-washington-county-oregon-2018>.

<sup>59</sup> Camille Squires, “San Francisco Is the Latest City to Consider Tackling Its Housing Crisis by Taxing Empty Homes,” Quartz, February 11, 2022, <https://qz.com/2125251/cities-are-taxing-vacant-homes-to-create-more-housing>.

<sup>60</sup> Metro, “Metro Supportive Housing Services Tax: Frequently Asked Questions: Business Income Tax,” November 2021, <https://www.oregonmetro.gov/sites/default/files/2021/11/17/FAQ-SHS-Tax-business-Nov-2021.pdf>.

DATE: 07/15/2022  
TO: City of Tualatin  
FROM: ECONorthwest  
SUBJECT: Summary of Nonprofit Corporation Low Income Housing Exemption

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The City of Tualatin is considering a range of strategies and actions to fund and implement the goals from its 2021 Housing Production Strategy. To understand the potential trade-offs of implementing these strategies in Tualatin, this memorandum describes strategic actions around an affordable housing tax exemption and how it works. In addition, it summarizes an analysis of the potential impacts of implementing these actions. The final section outlines potential next steps for the City of Tualatin to consider.

## Nonprofit Corporation Low-Income Rental Housing Tax Exemption

### Overview

The **Nonprofit Corporation Low-Income Rental Housing Exemption**<sup>61</sup> provides a full property tax exemption for new and existing affordable housing owned and operated by a 501(c)(3) or (4) nonprofit organization, and land held by a nonprofit for future affordable housing development.

**Tax Exemptions:**  
Incentivizes affordable housing development by waiving some property taxes for qualifying projects. Depending on the local program, nonprofits or all housing developers may be eligible.

The Nonprofit Corporation Low-Income Rental Housing Exemption can apply for as long as the property using it meets eligibility criteria. These include requirements that tenants must initially qualify at 60% of Median Family Income (MFI) or below, which is about \$55,000 for a family of four people in Tualatin based on 2020 MFI.<sup>62</sup> Once qualified, existing tenant incomes may rise to as much as 80% of MFI (\$74,000 for a family of four) over time. Annual renewal is required to ensure compliance with these requirements.<sup>63</sup>

The City has options to consider in implementing the tax exemption. First and foremost are which taxing districts will participate in the tax exemption. Only the City's property taxes would be exempted unless there is sufficient support from overlapping taxing districts. If the City and other taxing districts that comprise at least 51% of the local tax roll participated in the program, qualifying developments could have 100% of their property taxes waived. With this majority, all taxing districts would be obligated to participate. Without the support of at least 51% of overlapping districts, only city taxes would be affected by the exemption. The city could

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<sup>61</sup> This tax exemption is authorized in ORS 307.540 to 307.548.

<sup>62</sup> The information about Median Family Income below (and throughout the report) use the 2020 MFI for Washington County (\$92,000). This is based on information in the Tualatin Housing Production Strategy.

<sup>63</sup> This requirement is stated in ORS 307.545.

also determine the length of these programs and whether to apply a cap on how long organizations may participate.

In addition, the City must select a definition of affordability (if different from the one stated above of having income at or below 60% of MFI) and set local requirements for receiving this tax exemption, if any. The exemption can be granted for as long as the property meets eligibility criteria, but the property owner must reapply on an annual basis to demonstrate on-going eligibility. For land held for future affordable housing development, the City sets a limit on how long the exemption can apply, with the option for property owners to apply for an extension after that time.

This exemption is granted to development of rental housing with state and federal funding that requires verification of tenant incomes to ensure the tenants meet the income requirements. As a result, little or no additional monitoring or enforcement is likely needed for this program, since eligibility is limited to nonprofit affordable housing providers and the annual application process provides evidence of eligibility. In addition, if part of an eligible property is used for purposes other than low-income housing (e.g., a commercial use or mixed-income housing), the exemption is pro-rated.

Some examples of cities that have adopted this tax exemption include: Newport, Beaverton, Portland, Tigard, Forest Grove, Cornelius, and Wilsonville.

### Fiscal Impacts/Who Pays

If the Nonprofit Low-Income Rental Housing Exemption is implemented, the City would forgo property tax income for qualifying new development for the duration of the exemption. This reduces some revenue for city services and potentially revenue for participating taxing districts such as school districts. However, if no development was to happen, then no taxes would be generated. The level of impact on tax revenue is contingent on affordable projects occurring in Tualatin and developers using the program.

### Pros and Cons

#### Pros:

- The abatement can be used for most nonprofit affordable rental housing development.
- Can apply to both existing and new housing.
- Reduces carrying costs before development occurs (tax exemption available for land being held for development of affordable units), and offsets operational costs once the development is complete, reducing feasibility gaps.
- Allows a city to adopt additional criteria, such as a cap on the number of eligible properties or on the amount of lost tax revenue.
- City services and other taxing districts would not forgo any revenue unless projects were built that served tenants under 60% MFI and developers used the program.

- The structure of this subsidy is simple and straightforward to affordable housing developers. Because it is by-right, it also eliminated some of the administrative costs of programs that are more discretionary.

#### Cons:

- The city must get affirmative support from enough overlapping taxing districts to apply to their tax collections.
- The tax exemption reduces general fund revenues for all affected taxing districts. This could potentially cause funding gaps that need to be backfilled for some taxing districts
- This tax exemption only applies to housing that is affordable for households with income below 60% of MFI. So, it does not support development of mixed-income housing or affordable housing built by for-profit developers.
- The requirement for the property owner to resubmit eligibility documentation every year may be burdensome, though a streamlined application process can mitigate this.
- Compared to state or federal affordable housing programs, the burden is on local tax payers. Unfortunately, due to construction costs and lack of significant affordable housing funds, layering local, state and federal funds is often necessary.
- Some review of income eligibility by residents is required to maintain these programs. In other jurisdictions in Oregon programs are typically administered by a city's housing bureau or planning and development staff. This will also require some capacity for reporting from participating developers.

## Summary of Tax Exemption Analysis

### Estimating Forgone Revenue

#### Methodology Overview

To estimate forgone tax revenue from implementing the Nonprofit Corporation Low-Income Rental Housing Exemption, ECONorthwest identified recent examples of affordable multifamily developments that could have potentially qualified for this program (Exhibit 34).

Given the shortage of new affordable multifamily development in Tualatin in the last ten years, two of the three examples used are comparable projects built nearby in Tigard. Tigard shares some of the same taxing districts as Tualatin, including schools and aquatic centers as well as Washington County, Port of Portland, and Metro Regional Government rates. The third example used was an older affordable housing complex in Tualatin originally built in 1972 but recently renovated in 2021.

### Exhibit 33. Comparable Affordable Multifamily Buildings

Source: CoStar

	<b>Red Rock Creek Commons</b>	<b>The Fields</b>	<b>River Loft Apartments</b>
<b>Developer</b>	Community Partners for Affordable Housing (CPAH)	DBG Properties	Next Wave Investors
<b>Jurisdiction</b>	Tigard	Tigard	Tualatin
<b>Year Built</b>	2021	2021	1972 (Renov. 2021)
<b>Lot Size</b>	0.88 acres	24.12 acres	3.8 acres
<b>Units</b>	48	264	74
<b>Average Sq. Ft. per Unit</b>	591 sq ft.	759 sq ft.	930 sq ft.
<b>Assessed Value*</b>	\$2,974,590	\$17,576,080	\$4,274,350

\*For those examples recently built in Tigard, the assessed value was not directly available through the Washington County Assessment and Taxation portal because they were already using the city's Nonprofit Corporation Low Income Housing Exemption. To approximate this value, we used their real market value (RMV) included in publicly available assessor files and Washington County's 2021-2022 changed property ration (CPR) for apartment buildings (0.356).

Using these assessed values, we calculated the hypothetical tax dollars that would have been exempted by unit if these projects had been built in Tualatin with the tax schedule in Exhibit 34. Then, we projected how these onto a hypothetical building to demonstrate the forgone tax revenue for a 100-unit building, with considerations for the impact on different taxing districts.

### Property Tax Rates

There are a number of taxing districts which have coverage in the City of Tualatin. The City could either model their exemption with their own taxes or all overlapping districts. Exhibit 34 shows the rate each of these districts alongside the rate that they charge on assessed property value and their share of the total tax roll.

The largest share of property taxes in Tualatin goes to public school systems. Although multiple school districts overlap the city including Tigard-Tualatin, West Linn-Wilsonville, Sherwood, and Lake Oswego, this model uses the district with the most coverage (Tigard-Tualatin).

Tualatin also spans two counties in Oregon. Although a portion of the city is in Clackamas County, the majority of the city falls on the Washington County side. This model assumes Washington County's tax rates, though they may generally be lower in Clackamas.

### Exhibit 34. Property Tax Rates for All Districts in Tualatin, OR

Source: Washington County Assessment and Taxation

Taxing District	Tax Rate per \$1,000 of value	Share
Tigard-Tualatin School District	0.78%	44.7%
Washington County	0.30%	17.3%
<b>City of Tualatin</b>	<b>0.29%</b>	<b>16.5%</b>
Tualatin Valley Fire and Rescue	0.21%	12.2%
Portland Community College	0.07%	3.8%
Metro Regional Government	0.06%	3.3%
Northwest Regional Education Service District	0.02%	0.9%
Port of Portland	0.01%	0.4%
Tigard-Tualatin Aquatic District	0.01%	0.5%
SWC Tualatin	0.01%	0.5%
<b>Total (All Districts)</b>	<b>1.74%</b>	<b>100%</b>

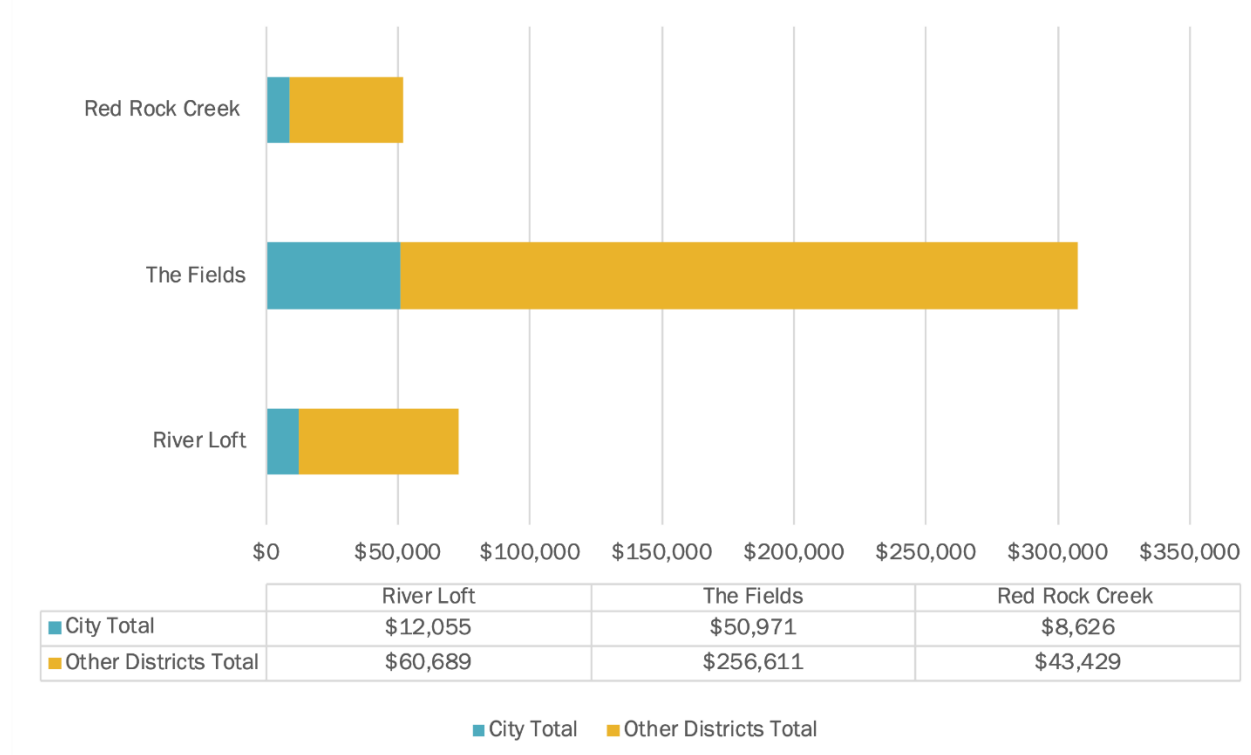
### Results

If the City alone were to implement a Nonprofit Low-Income Rental Housing Tax Exemption program, it would alleviate 16.5% of property taxes for participating projects. If all taxing districts were to participate, this total exemption would be higher and alleviate 100% of annual tax burden for years that the building was included in the program.

Using comparable multifamily building examples, we first estimated the total forgone revenue that would have been associated with those projects (Exhibit 35). There is a wide range in these values based on the number of units, unit mix, location, and other features.

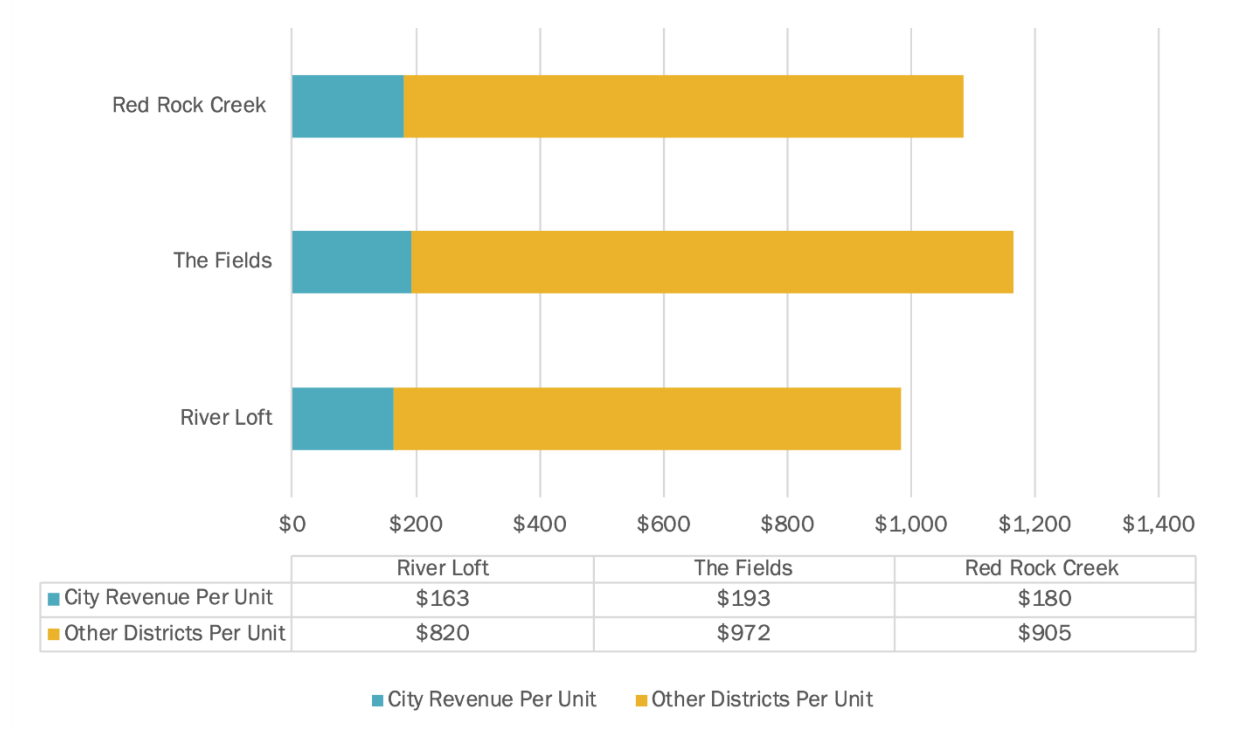
**Exhibit 35. Total Potential Annual Forgone Tax Revenue in Comparable Multifamily Buildings**

Source: Washington County Assessment and Taxation, ECONorthwest Analysis



**Exhibit 36. Potential Forgone Tax Revenue Per Unit in Comparable Multifamily Buildings**

Source: Washington County Assessment and Taxation, ECONorthwest Analysis



Based on these total figures and building specifications, the potential forgone annual revenue for the City would range from \$163-193 per affordable unit (Exhibit 36). Different unit sizes and types may also account for the variability in this range. The average across all example buildings would be **\$179 of forgone annual revenue to the City per unit**. If applied to all taxing districts this impact higher, ranging from **\$983-1,165 per unit with an average of \$1,078**.

For Tualatin only, using the average amount per unit (approximately \$179), we estimate that multiplied across a new development, **for every 100 affordable units built using the exemption, the City would forgo \$17,856 in potential tax revenue per year of the program**.

It is possible that the City may reach an agreement with taxing districts that make up at least 51% of the total levy. In this case all taxing districts would be obligated to participate, resulting in a 100% tax exemption program. If this total exemption were applied at the average of approximately \$1,078 per unit, **it would total \$107,753 in annual savings for a 100-unit affordable building**. Of this amount, public school districts would account for the largest share at 45% (or \$48,204 annually) of the forgone revenue for those units.

### Example Tax Exemption Programs

Other jurisdictions have applied the Nonprofit Low-Income Rental Housing Tax Exemptions to their areas. The examples below provide implementation considerations for how Tualatin could structure a similar exemption program.

#### Portland: Non-Profit Low Income Housing Limited Tax Exemption (NPLTE)

- Portland offers three limited tax exemption programs, including one specifically for nonprofit organizations. To qualify for this program, properties must be located within the City of Portland and rents must be affordable to households earning 60% MFI or less.
- NPLTE is available to participating organizations who are certified by the Internal Revenue Service as 501(c)(3) or (4). They must own, have a leasehold interest in the property, or participate in a partnership where they are responsible for day-to-day property management.
- The Portland Housing Bureau (PHB) administers this program on behalf of the City of Portland by reviewing and approving applications. There is an annual renewal process and fee for participants. In PHB's most recent reporting (2017-18), 11,365 units in the city were using the program for rent-restricted housing units in multifamily buildings. No units in the program were for single-family homes, though it is not specifically prohibited.



## Conclusions and Next Steps

- The City should consider this subsidy mechanism as part of the larger mix of funding sources to support development of income-restricted affordable housing. Given the substantial funding gaps that exist with affordable housing projects, this is a powerful and relatively simple tool to put into play.
- A tax abatement does not layer with all potential forms of subsidy. For example, Urban Renewal uses tax increment financing that typically accesses the same property taxes which would be forgone by the program. A tax exemption would work well with other approaches that add revenue to the City's budget (for instance, a Construction Excise Tax).
- The total impact of the tax exemption for supporting affordable housing development will depend on whether other taxing districts are willing to join the abatement or if it will just apply to city taxes. The Tigard-Tualatin School District participates in a nonprofit tax exemption in Tigard, indicating that they may be willing to consider a similar program in Tualatin. Washington County (who accounts for 17.3% of the tax roll) also offers an exemption for unincorporated areas outside of cities.

DATE: October 4, 2022  
TO: City of Tualatin  
FROM: ECONorthwest  
SUBJECT: Summary of Multiple Unit Property Tax Exemption Analysis

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The City of Tualatin is considering a range of strategies and actions to fund and implement the goals from its 2021 Housing Production Strategy. To understand the potential trade-offs of implementing these strategies in Tualatin, this memorandum describes what each strategic action is and how it works. In addition, it summarizes an analysis of the potential impacts of implementing each action. The final section outlines potential next steps for the City of Tualatin to consider.

## Multiple Unit Property Tax Exemption (MUPTE)

### Overview

The Multiple Unit Property Tax Exemption (MUPTE, sometimes referred to as MULTE) provides a 10-year partial property tax exemption on new or rehabilitated multifamily rental housing (or middle housing rentals like duplexes, triplexes, etc.) that meets criteria set by the City.<sup>64</sup> It can be used for market-rate multifamily housing with particular features, or for mixed-income or fully regulated affordable housing. If used for housing with affordability restrictions, the exemption can last longer than 10 years and continue as long as the restrictions remain in place. This program is flexible, with City discretion over many aspects of eligibility, including the level of affordability requirements, the minimum number of units in the property, and any design requirements.

**Multiple Unit Property Tax Exemption:** Can be used to incent multifamily housing with particular features or at particular price points by offering qualifying developments a partial property tax exemption for 10 years (or longer, for housing subject to affordability agreements).

Regardless of the local eligibility criteria, the exemption applies to 100% of the residential portion of the property's improvement value but does not apply to the land value. In other words, all of a residential project's improvement value can be exempt even if only 10% of the units are affordable if the city's criteria require a minimum of 10% affordability. Further, if there are nonresidential portions of the building (like ground floor commercial), it won't apply over that portion of the development.

Like the Nonprofit Corporation Low-Income Tax Exemption (described in ECONorthwest's previous memorandum), this program applies only to the City's taxes unless the boards of other taxing districts representing at least 51% of the combined levy agree to the exemption, in which case all districts are included. The same taxing districts detailed in ECONorthwest's Summary of Nonprofit Corporation Low Income Housing Exemption memorandum apply for this program.

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<sup>64</sup> This tax exemption is authorized in ORS.307.600 to 307.637

A number of cities in Oregon have implemented tax abatement programs under these statutes, though the program names vary between jurisdictions. This memorandum includes several examples to illustrate different program structures with similar goals to Tualatin for housing. Some cities use the same program to incentivize housing in specific areas with specific design features rather than affordability.

This memorandum focuses on the use of MUPTE to incentivize mixed-income development through inclusion of affordable units in market rate buildings to provide workforce housing. MUPTE can also preserve unregulated affordable housing by encouraging owners to rehabilitate properties without raising rents or displacing tenants, but the analysis for this memorandum focuses primarily on its function for providing new units.

### Fiscal Impacts/Who Pays

If this tool is implemented, MUPTE reduces general fund revenues for either the City alone or for all overlapping taxing districts (if at least 51% of the levy agrees to participate). The loss of tax revenue may or may not outweigh the value of affordable rents offered by new development using the program. If it does not, market rate developers would not opt into a voluntary program. However, there is no upfront cost to the City for introducing the program. In this case, revenue would only be forgone if eligible projects used the program to provide or preserve affordable units.

### Pros and Cons

#### Pros:

- MUPTE is a tool that can be used for mixed-income development that supports Tualatin's workforce between 60-80% of MFI.
- Although Tualatin has not seen much new multifamily development in the past decade, this tool could be used to incentivize developers to the area.
- The City can exempt its own taxes without any other taxing districts approval, and potentially extend the benefit to all taxing districts if school districts sign on. However, this will not likely be a strong enough incentive with only the City participating.

#### Cons:

- Depending on the City's requirements for the duration of affordability, building owners will most likely use the program as long as they apply and then raise rents to the market rate when they expire. Although this helps achieves affordability goals short term, it may have negative long-term implications for tenants.
- City could be the only entity monitoring compliance with income and rent restrictions on an otherwise market-rate property.

# Summary of MUPTE Analysis for Tualatin

## Estimating Forgone Tax Revenue

### Methodology Overview

To estimate the value of the MUPTE incentive for developers, ECONorthwest analyzed its benefit relative to the cost of rent discounts, using an assumption that rents would be set to be affordable to households earning 80% of MFI. We used example multifamily developments that were recently built in Tualatin and Tigard, which were selected as the most comparable new market-rate buildings in the past five years (2017-2022).

The example we used for testing the incentive is a multifamily development. While MUPTE could be applied to middle housing (e.g. triplexes), most smaller-scale middle housing development is unlikely to allow for efficient administration of income qualification within a mixed-income project.<sup>65</sup> The example property is a 180-unit development, 3-story development with a clubhouse, pool, and fitness center. To reach 20% of units affordable at 80% of MFI, this example would have to provide 36 income-restricted units.

Example 1 was used to test these results on the most recent multifamily development within Tualatin. Estimated market rents and the difference with 80% MFI rents are listed in Exhibit 37.

### Exhibit 37. Estimated Market Rents by Example Property and Market Area and 80% MFI Rent

Source: ECONorthwest, based on data from CoStar, HUD, and Washington County

Unit Type	Residential Market Rate Rent*	80% MFI Max Rent**	Rent Discount to 80% MFI	Share of Discount to Market Rent
Studio	\$1,780	\$1,477	\$303	17%
1BR	\$1,926	\$1,578	\$348	18%
2BR	\$2,596	\$1,833	\$763	29%
3BR	\$2,763	\$2,174	\$589	21%

\* Market rents are based on current asking rents for comparable properties, adjusted for an assumed 6% increase to next year.

\*\*Affordable rents are based on 2022 Washington County maximum rents by income level and unit size for Low Income Housing Tax Credit projects,<sup>66</sup> adjusted for a water, sewer, and garbage allowance and an assumed 3% increase to next year.

### Results

Exhibit 38 illustrates the value of the abatement (the combined navy and turquoise positive bars) compared to the foregone revenue from below-market rents (shown as an orange negative bar), and the net benefit to the developer (shown as a yellow dot and line).

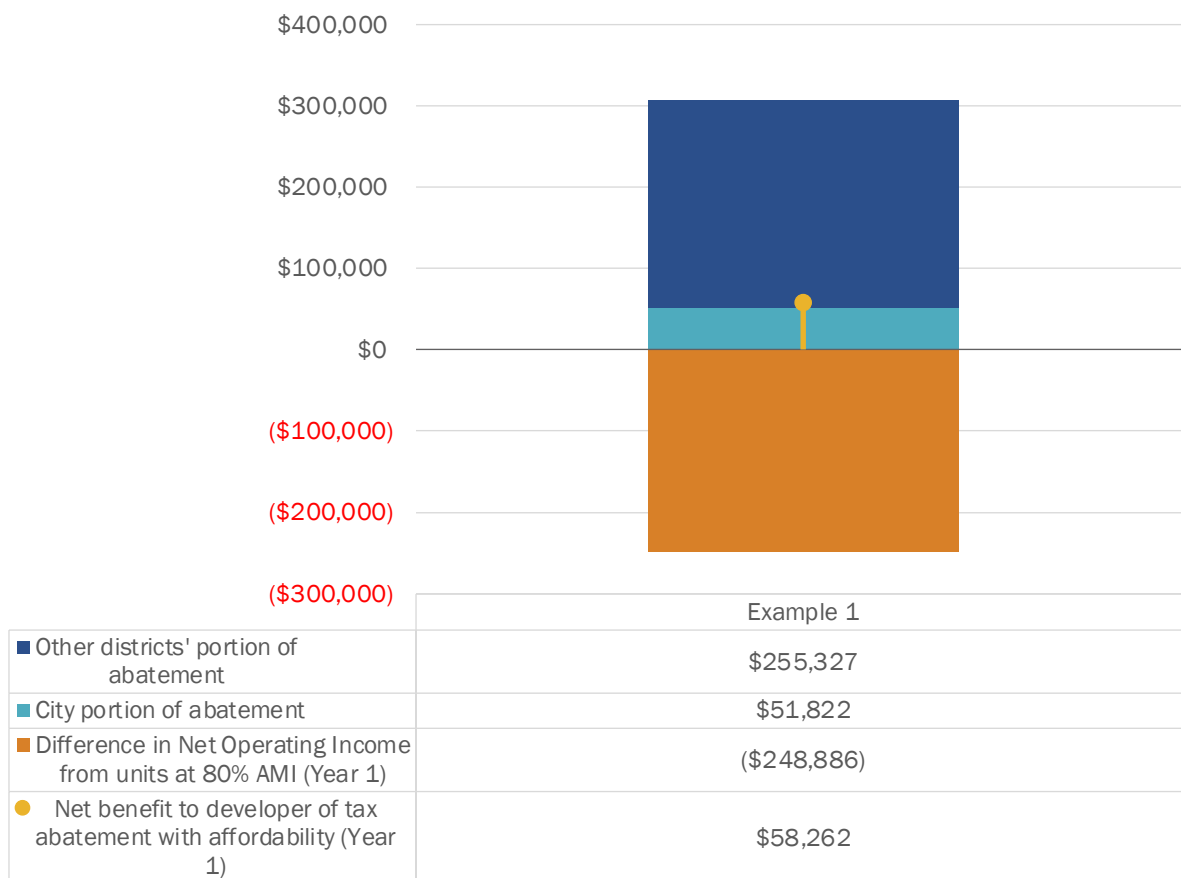
<sup>65</sup> The improvement value for each example property was available from Washington County assessor data; although part of Tualatin is in Clackamas County, all the properties examined here fall in the Washington County side.

<sup>66</sup> <https://www.oregon.gov/ohcs/compliance-monitoring/Documents/rents-incomes/2022/LIHTC/Washington.pdf>

This analysis indicates that in Year 1, the value of the abatement from all taxing districts would likely exceed the rent loss from the affordable units if all taxing districts participated, exempting a total of roughly \$307,000 in the first year. The total rent discount is estimated at roughly \$249,000 in year one, offering a net benefit to the developer of roughly \$58,000 in increased net operating income (NOI).

If the City were to allow MUPTE participants to allocate any units in the building to meet 80% MFI affordability criteria, it would increase the incentive and potentially encourage more developers to participate in the program. The unit mix of the example development is not the most advantageous for maximizing the benefits of MUPTE. Of the 180 units in the building, 102 are 2-bedroom apartments, which equates with the largest rent discount to 80% MFI at a loss of \$763 per unit (a higher share of market rent than larger 3-bedroom units). Even though the incentive is applied evenly across all unit types in the building, there is a higher share that fall into this higher discount difference.

**Exhibit 38. Tax Abatement Value vs. Foregone Rent (Year 1) for Example Development**



If these same rates were applied to a new 100-unit building (assuming a similar unit mix and even distribution of the incentive across types of units), the total value of the abatement would be \$170,638 for one year, or \$1,706 per unit. The City's portion of this would be \$28,790 total, or \$287 per unit.

Revenue impacts may change over time. Over time, property taxes (and the value of the abatement) will most likely grow at 3% per year.<sup>67</sup> Based on this projection, the total value of taxes abated over 10 years would be approximately \$3.07 million if all taxing districts were included. Rent may grow at a similar rate but rent growth will vary from year to year and is less predictable. In the near future, it is likely to grow at more than 3% per year given recent trends, though this may slow over time. In addition, the allowed rent for the income-restricted units will change over time as the MFI determined by the US Department of Housing and Urban Development changes.

As a result, the net value of the abatement may change over the life of the program. If the net benefit is negative to start, there is a likely chance that the value of the abatement may not exceed the foregone revenue in the future. A longer affordability period means greater unknowns about how the foregone rent will change over time.

## Other Considerations

**Coordination with Other Taxing Districts:** The City represents only about 17% of the overall tax rate, meaning that if that were the only portion included in the abatement it would generally not provide a sufficient incentive. The Tigard-Tualatin School District's support along with the City would be enough to apply the tax abatement to all taxing districts as their share totals about 45% of the tax rate.<sup>68</sup> The school district previously supported the Nonprofit Low Income Rental Housing tax exemption program in Tigard, but the City would need to seek their support for this or other additional tax abatement programs.

**Administrative Effort:** For market rate developers, participating in an income-restricted program may add significantly more administrative effort to maintain compliance. Verifying tenant incomes, reporting, and monitoring can take additional capacity beyond what would typically be needed for a non-regulated building. If benefits from the abatement program increase the net operating income, this may offset the burden of administrative needs.

**Program Design:** The specific design of a MUPT program may change developers' willingness to participate in a voluntary program. Flexibility with requirements may be effective in allowing developers to choose an optimal approach, while still providing clear enough guidelines that ensure public benefits.

If affordable units must be distributed across all unit sizes, developers cannot meet the requirement by simply providing smaller units where market rents would meet or nearly meet the affordability requirements. For example, studio or 1-bedroom units are both a lower overall discount for affordable units relative to market rate prices and a lower share of the market rate rent lost compared with 2-bedroom units. (ECONorthwest's analysis assumes that the affordable units are distributed across unit sizes consistent with the overall unit mix).

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<sup>67</sup> This is due to Oregon's property taxation system, which caps the increase in taxable value at 3% per year unless major improvements are made to the property.

<sup>68</sup> <https://www.co.washington.or.us/AssessmentTaxation/upload/2020-Summary-Book.pdf>

If the affordable units can be designated as specific units within the building, the developer can also economize on finishes (e.g., laminate countertops vs. granite) to mitigate the reduced rent from those units. What features are economized and their impact on livability in a unit also has potential equity implications for the program.

## Example Multiple Unit Housing Tax Exemption Programs

A number of cities have implemented programs under the multiple unit housing statutes summarized above (ORS 307.600 to ORS 307.637), though the program names vary between jurisdictions, including:

- **Newport**, where the City refers to its program as the Multiple Unit Housing Property Tax Exemption (MUPTE).
  - **Applicability:** MUPTE applies to projects with 3 or more units (or renovation projects that add 2 or more units) within certain zones that are located within a quarter-mile of bus service. Projects must meet green building and affordability requirements. To meet the affordability requirements, projects may provide 20% of units at 80% of MFI or below, 10% of units at 60% of MFI or below, or make an in-lieu payment equal to 10% of the total property tax exemption.
  - **Administration:** The application process includes submitting a proforma for review by a third party to show a need for the exemption. Once approved, property owners must sign a Regulatory Agreement that is recorded against the title and submit annual documentation of tenant income and rents for the affordable units to the City's Community Development Department.
- **Portland**, which refers to its program as the Multiple-Unit Limited Tax Exemption (MULTE) Program.<sup>69</sup>
  - **Applicability:** MULTE is currently paired with Portland's Inclusionary Housing (IH) requirement. Projects must have a minimum of 20 units (the same threshold for the IH program). For projects within the Central City Plan District that meet a minimum floor area ratio (FAR), it applies to 100% of the residential portion of the improvement value, including residential parking. For other projects, the City limits the exemption to the affordable portion of the project. At least 5% of the affordable units must be adaptable for ADA accessibility, and the affordable units must be distributed evenly by bedroom size within the project. While the affordability restriction period is for 99 years, the City limits the exemption to 10 years.
  - **Administration:** Applicants must provide project information and basic financial information to calculate the value of the exemption, but do not need to provide a pro forma because the financial need is demonstrated by the City's calibration of their IH

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<sup>69</sup> All program details from City of Portland, "Multiple-Unit Limited Tax Exemption (MULTE) Program Interim Administrative Rule," <https://www.portland.gov/sites/default/files/policies/hou-3.02-multiple-unit-limited-tax-exemption-multe-program.pdf>



program. During the compliance period, projects must provide tenant income and rental data annually.

- **Program cap:** The City imposes a rolling cap on foregone revenue of no more than \$15 million within a 5-year period, except for projects located within an urban renewal area. Projects within an urban renewal area require approval from Prosper Portland and the City's Debt Manager.
- **Salem** calls their program the Multi-Unit Housing Tax Incentive Program (MUHTIP).<sup>70</sup>
- **Applicability:** Can apply to projects with at least two dwelling units located in the downtown core. Projects must include at least one public benefit, though these are discretionary and include a range of options including recreation facilities or common meeting rooms, daycare facilities, ground-level commercial space, special architectural features, and "Units at sales prices or rental rates which are accessible to a broad income range of the general public."<sup>71</sup> Projects with 100 or more units must provide at least 15% of units affordable at 80% of MFI or below, or at least two public benefits.
- **Administration:** Applicants must attend a pre-application conference and submit project information. Applications are reviewed by other city departments and the City Council.

## Conclusions and Next Steps

- The program configuration of 20% of units at 80% MFI could provide a net benefit to developers if the tax abatement applies to all overlapping taxing districts. However, the city's rate alone is insufficient to provide an incentive.
- MUPTE may offer a greater incentive for development of smaller studio or 1-bedroom units because these units have a smaller gap between market rate and affordable rents. This could make it a potential tool to align with the City's goals around providing senior housing or generally meeting the needs of smaller 1-to-2 person households.
- If the City is unable to garner sufficient support from overlapping taxing districts, the City could explore pairing it with other incentives that reduce development costs (such as system development charge exemptions). However, in order to be layered with other incentives, those programs would also have to include mixed-income development projects in their eligibility criteria.
- If the City is the sole party providing funding or financial incentives in exchange for affordability, as is likely for a mixed-income development by a market-rate developer, the City would need to take on monitoring and enforcement or find a partner to take

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<sup>70</sup> All program details from City of Salem, "Multi Unit Housing Tax Incentive Program," <https://www.cityofsalem.net/pages/multi-unit-housing-tax-incentive-program.aspx>

<sup>71</sup> Salem Revised Code: [SRC 2.815](#) (c).



this on. Property managers would also need to income-qualify applicants for the affordable units.

- The City could reach out to the Washington County Housing Authority to see if the County would be willing to provide administrative support for the program.

DATE: September 23, 2022  
 TO: City of Tualatin  
 FROM: ECONorthwest  
 SUBJECT: Summary of System Development Charge Exemption Analysis

The City of Tualatin is considering a range of strategies and actions to fund and implement the goals from its 2021 Housing Production Strategy. To understand the potential trade-offs of implementing these strategies in Tualatin, this memorandum describes what each strategic action is and how it works. In addition, it summarizes an analysis of the potential impacts of implementing each action. The final section outlines potential next steps for the City of Tualatin to consider.

## System Development Charge Exemptions

### Overview

System Development Charges are one-time fees for new development and certain types of redevelopment that help pay for increased loads on infrastructure systems. These charges are a way for local governments to pay for public facilities like sewer, water, transportation, and parks. SDCs are designed to vary with the magnitude of development impacts, but this can be calculated in a variety of ways depending on the service with which they are associated; for example, water SDCs are often measured by the size of the meter needed, not by the number of dwelling units, square footage, or valuation of the building.

While SDCs are primarily intended to be based on impact, some jurisdictions in Oregon offer exemptions or reductions in system development charges (SDCs) for specific types of development based on local policies. Some jurisdictions offer exemptions or reductions for regulated affordable rentals, deed-restricted affordable homeownership, and/or accessory dwelling units. This memo focuses on analysis for a potential SDC exemption for regulated affordable housing in Tualatin.

Lowering SDCs for affordable housing projects can help to make development more feasible by lowering upfront building costs. Typically, affordability requirements are put in place for a period of time, with the level of affordability and duration of requirements varying by jurisdiction. For rental units or affordable homeownership this can include annual reporting requirements or deed restrictions respectively to ensure compliance. Jurisdictions set their own

**New Development Charges in Tualatin:**  
 SDCs are a part of the fees that new developments pay to service districts. Rates for SDCs in Tualatin are different based on these districts. The table below summarizes the rates for these charges in Tualatin. (\*indicates that a line shows a charge that is a different type of fee, not an SDC)

Service District	Rate
Metro Construction Excise Tax (CET) *	0.12% of valuation
Transit Development Tax (TDT)	\$6,542 / unit
Parks and Recreation	\$6,371 / unit
Schools CET (Tigard-Tualatin District) *	\$1.45 / sq ft.
Sewer	\$7,266 / unit
Water	Varies by meter size

standards for these requirements, like program caps that may set a limit on how much the city can forgo per year.

Generally, cities can only exempt the SDCs that they control, not those controlled by special districts or other service providers.

Some cities “backfill” the lost revenue by paying the lost amount from other specific funding sources allocated to fill the gap. In other cases, cities simply forego SDC revenue for exempt projects. Whether a city backfills revenue or not depends on local determinations.

## Fiscal Impacts/Who Pays

The City of Tualatin has limited control over SDCs because most of these charges are collected on behalf of other service districts and providers. These entities determine their own rates and fee structure. However, the City does control Parks and Water SDCs.

ECONorthwest’s analysis in the Tualatin Housing Production Strategy identified the Parks SDC as the most promising option for implementing an exemption (this charge recently went through a review and update process). The Water SDC is based on meter size, which makes it difficult to predict what new buildings will pay, especially for multifamily projects. An exemption for Parks would theoretically mean forgone revenue for the City’s Parks and Recreation Department or the need to identify another funding source to backfill the funding gap. However, if projects are only feasible with the SDC exemption, this may be revenue that the City would not have collected regardless.

The City does not control TDT (Transportation Development Tax), which is a voter-approved charge imposed on new development and redevelopment within Washington County. This charge helps to pay for the impact development has on the transportation system.

## Pros and Cons

### Pros:

- Tualatin would be able to set its own qualifying standards for development to use the SDC exemption, allowing the city to target the kind of units it most needs in terms of apartments vs. single family homes, MFI level, and duration of affordability.
- SDC exemptions have been successful in other jurisdictions in Oregon, including Portland, Tigard, Eugene, and Bend. Some backfill forgone revenue using a variety of local funding options while others do not.
- The City has the flexibility to control whether it wants to implement a program cap that could avoid excessive forgone revenue in Tualatin, depending on the estimated gap created by projected participation in the program. Like the nonprofit tax exemption, revenue would not actually be forgone unless affordable housing projects are built which qualify for the desired criteria. If implemented, considerations for how projects are chosen should be clear and based on an application process.

## Cons:

- Tualatin only has control over Parks and Water SDCs. TDT and sewer/stormwater SDCs are collected for other service providers, restricting the City's ability offer an exemption.
- It is difficult to estimate what the cost of Water SDCs will be for multifamily buildings, giving the City less certainty about the impact of an exemption program. Since the charge is based on a fixed water meter size, this incentive also does not scale easily with more units the way that Parks and other SDCs do. This would require careful consideration for lost revenue and how it could be backfilled when there is only a very rough approximation that is subject to variation.
- Most other jurisdictions in Oregon that have offered SDC exemptions have included more than one. It is possible that only exempting the Parks SDC would not provide a strong enough incentive to encourage development, though for regulated affordable housing it will still likely provide some assistance for existing plans.

## Summary of the SDCs in Tualatin

### Estimating Forgone Revenue

#### Methodology Overview

To estimate the potential impact of providing an SDC exemption for Tualatin, city staff provided data on the new development charges estimated for an affordable housing project currently undergoing land use review. The example site is planned as a 116-unit housing development split between two 4-story wood-framed residential buildings, with a freestanding community center located on the site that includes additional resident services and offices.

ECONorthwest used the rates for this example site and confirmed that they aligned with the most current rates through public facing information as of July 2022 from the City and Clean Water Services. Exhibit 39 shows the rate schedule and its total estimated costs that they created for the sample building. Some of these charges are calculated by unit, including Transit Development Tax, Parks, and Sewer. Other charges are calculated by specific measurements, including total valuation or building area.

### Exhibit 39. Summary of New Development Charges for Sample Multifamily Development

Source: City of Tualatin

Note: There is a cap on the amount that the Metro or Schools CET can charge on new development. Metro's CET will not collect more than \$12,000 per project, while the Tigard-Tualatin CET caps at \$36,100 for nonresidential development only.

Charge Category	Rate	Cost	Per Unit Estimate
Metro Construction Excise Tax (CET)*	0.12% of valuation	TBD	N/A
Transit Development Tax (TDT)	\$6,542 / unit	\$758,872	\$6,542
<b>Parks (City)</b>	<b>\$6,371 / unit</b>	<b>\$739,036</b>	<b>\$6,371</b>
Schools CET (Tigard-Tualatin)*	1.45 / sq ft.	\$175,035	\$1,508
Sewer (CWS)	\$7,266 / unit	\$842,856	\$7,266
<b>Water (City)</b>	<b>One (1) 4" water meter</b>	<b>\$132,634</b>	<b>\$1,143</b>
<b>Total</b>		<b>\$2,574,077</b>	<b>\$22,190</b>

### System Development Charge Rates

In addition to this building's SDCs, we also used the rates listed in Exhibit 39 to generate estimates for three other recent examples of comparable affordable multifamily buildings. While we were able to gather information about each building's valuation, unit number, and square footage, we relied on the per unit estimate from our example building for the water SDC. School district rates may also vary throughout Tualatin. The example building used is located in the Sherwood School District, which as a rate of \$1.39/sq ft. rather than \$1.45. For this model we used \$1.45/sq ft. because that is consistent with the other three of the four school districts covering the city. Some school districts also include caps on what they charge development. This includes Tigard-Tualatin which has a non-residential maximum of \$35,000.

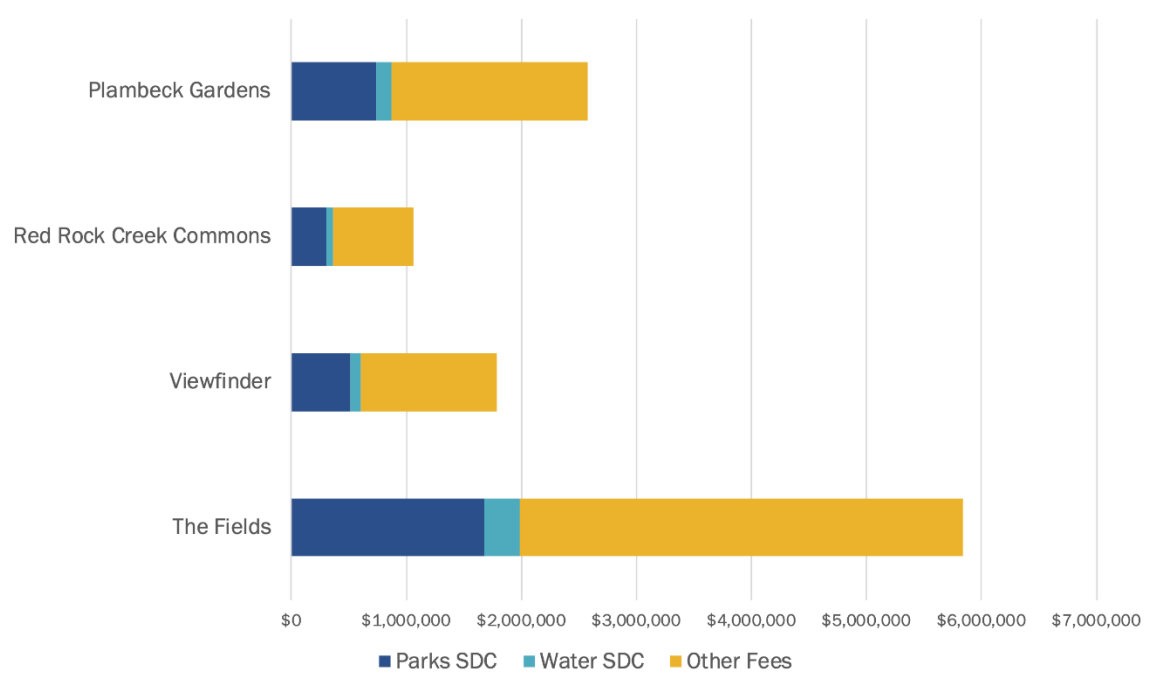
In our analysis the example building, which is not yet completed, there was not yet a permit valuation publicly listed from the Washington County Assessor. Since this was not available to generate the likely charge from Metro CET, it is lower than the developer is likely to pay, but we were able to include this in all other buildings analyzed.

**There is a wide range in these values based on the number of units, unit mix, location, and other features. For example, although the total estimate for The Fields is much higher than the other buildings analyzed, this building contains more units. Exhibit 40**

Exhibit 42 shows a rate per unit that is closer to that of other recent affordable housing developments.

### Exhibit 40. Total Estimated New Development Charges in Comparable Buildings

Source: City of Tualatin, ECONorthwest Analysis



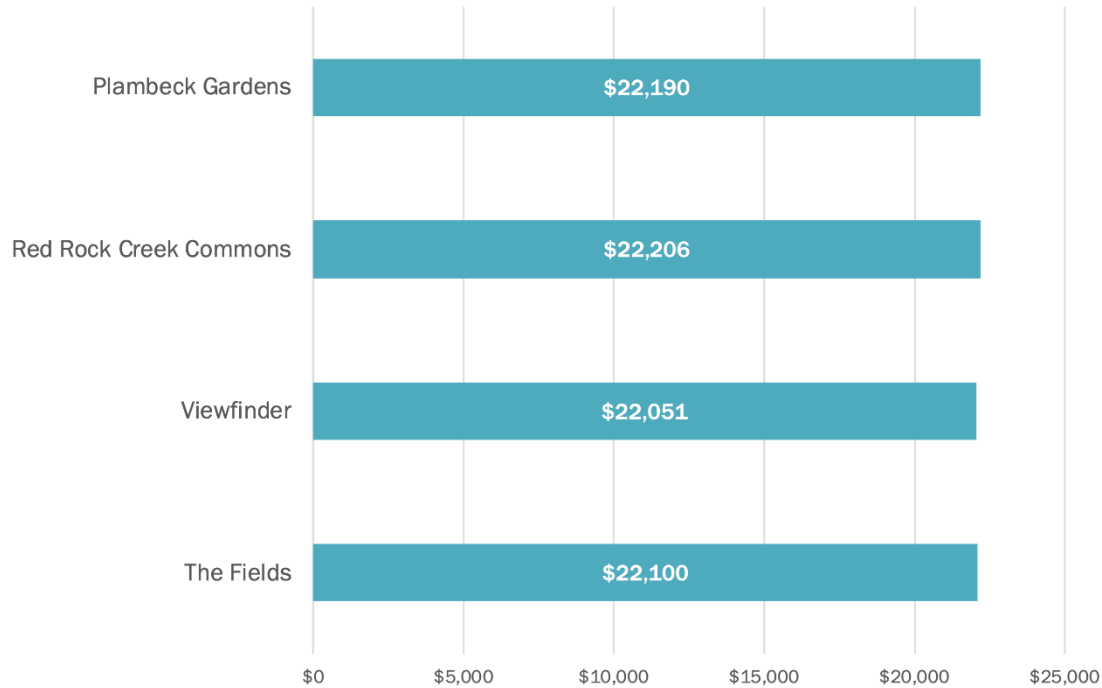
### Exhibit 41. Detail of Total Estimated New Development Charges in Comparable Buildings

Source: City of Tualatin, ECONorthwest Analysis

	Plambeck Gardens (116 units)	Red Rock Creek (48 units)	ViewFinder (81 units)	The Fields (264 units)
<b>Parks SDC</b>	\$739,036	\$305,808	\$516,051	\$1,681,944
<b>Water SDC</b>	\$132,634	\$54,883	\$92,615	\$301,857
<b>Other Fees</b>	\$1,702,407	\$705,186	\$1,177,498	\$3,850,588
<b>Total</b>	\$2,574,077	\$1,065,877	\$1,786,164	\$5,834,389

## Exhibit 42. Total Estimated System Development Charges Per Unit in Comparable Buildings

Source: City of Tualatin, ECONorthwest Analysis



### Results

For these comparable multifamily buildings, the value of all SDCs ranged between \$705,000 to \$3.8 million (Exhibit 41). However, when controlled for the number of units in each building, the cost of SDCs had very little variation. This may be in part because four of the six SDC rates are calculated at a flat rate per unit, putting costs for all four buildings around \$22,000 for each apartment. Of these total costs, the Parks SDC accounted for a greater share of the total SDC amount than the Water SDC in each building.

Since the Parks SDC is a flat rate per unit in multifamily buildings, it can be easily measured by the number of units. If the City had offered an exemption for Parks SDCs during this period for the example building, it would have foregone roughly \$739,000 in revenue (\$6,371 per unit). Applied to a hypothetical new multifamily development, this exemption would translate to \$667,100 in forgone Parks revenue per 100 units in an affordable development. Water SDC rates are more difficult to measure consistently for hypothetical buildings, but based on an average for the example, this would roughly equate to \$114,300 in forgone Water SDC revenue per 100 affordable units. The Parks and Water SDC exemptions combined would equal \$7,514 per unit.

If an SDC exemption were to be used for developing affordable single-family residential units, the City applies a flat rate of \$8,133 per unit for the Parks SDC which would be forgone. Although Water SDCs can be difficult for multifamily buildings, it may be easier to offer this incentive for single family affordable homeownership. Typical new homes require between a 5/8" -3/4" water meter, which costs a flat rate of either \$5,306 or 7,958 in Tualatin as of the City's 2022 rate schedule. If the City were able to offer both Parks and Water SDC exemptions for

affordable homeownership projects, the forgone revenue would be between \$13,439-16,091 per unit depending on water meter size. Regarding just Parks (the most likely charge to be exempted) forgone SDC revenue is 22% higher per unit for single family homeownership than it is per unit in a multifamily building.

## Fiscal Requirements

Requirements to backfill exempted SDCs vary by jurisdiction in Oregon depending on local determinations. If Tualatin were to pursue this strategy, first steps would need to include setting up a conversation about legal requirements. Based on an initial assessment it is likely that the City would have to find a source to backfill forgone revenue for Parks and Water.

A number of cities have implemented SDC programs with different configurations of city and participant requirements:

- **Tigard** provides exemptions for the local Transportation and Park SDCs for regulated affordable housing that serves households earning 80% of MFI or less. The exemption can be used for rental or for sale housing, but affordability restrictions must last for at least 20 years. There is no program cap or backfill.
- **Eugene** offers an SDC exemption of all charges except the Metropolitan Wastewater Management Commission (MWMC) regional wastewater fees. This program is for rental and affordable homeownership affordable housing developments. For rentals, units must be affordable to households at 60% of MFI for at least five years. For homeownership, they must be affordable to households at 80% of MFI or less for at least five years. Eugene's exemption is backfilled using local funds, which is capped at \$372,280, to be split evenly between rental and homeownership applicants.
- **Bend** offers a forgivable loan for City Transportation, Water, and Sewer SDCs. This is available for affordable rental and homeownership housing that is deed restricted. The program can be used for projects affordable to households at 80% of MFI or less for at least five years.<sup>72</sup> Bend backfills the program using local funds and the program initially had a cap and projects were selected on a competitive basis.
  - The program is structured as a forgivable loan at 6% interest per annum for 5-year installment loans or 7% for 10-years. If the property owner leaves the program or is out of compliance, the SDCs must be paid back with interest. Applications are reviewed by the Affordable Housing Advisory Committee on a rolling basis.<sup>73</sup>

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<sup>72</sup> Bend City Code 12.10.120(C)(1-2)

<sup>73</sup> <https://www.bendoregon.gov/government/departments/economic-development/affordable-housing-program/developer-resources>



## Conclusions and Next Steps

- The City should consider this exemption as a method to help close gaps for affordable multifamily housing development. Although it is possible to offer for affordable single-family homeownership, the benefits are multiplied when used for larger developments which have higher total upfront system development charges. To ensure compliance with either type of housing, the City could also include deed restriction agreements for developers or property owners.
- To implement this action, the City should begin a conversation with the Parks and Recreation Department and Public Works Department as well as consulting with an attorney to understand the impact to their revenues and any requirements for backfilling. In addition, the City should consider steps to identify backfilling sources either from the general fund, another local funding source, or other tools examined in this project that generate revenue for affordable housing development.
- In addition to an outright exemption, the City could consider a deferral program where developers or homeowners can pay SDCs later in the development process (for example at certificate of occupancy), but this would likely require a higher level of staff capacity.
- An SDC exemption would work more efficiently alongside some tools than others. Projects funded by Low Income Housing Tax Credits (LIHTC) will not receive as strong of a benefit from an exemption because of the reduction in eligible costs used to calculate equity for those projects.

DATE: November 2, 2022  
TO: City of Tualatin  
FROM: ECONorthwest  
SUBJECT: Homeownership Assistance Analysis

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The City of Tualatin is considering a range of strategies and actions to fund and implement the goals from its 2021 Housing Production Strategy. To understand the potential trade-offs of implementing these strategies in Tualatin, this memorandum describes strategic actions around an affordable housing tax exemption and how it works. In addition, it summarizes an analysis of the potential impacts of implementing these actions. The final section outlines potential next steps for the City of Tualatin to consider.

## Homeownerships Assistance

### Overview

This memorandum focuses on strategies that address housing stability for existing homeowners and current renters who wish to become homeowners. Keeping Tualatin an affordable place to live may require assisting existing residents with programs that help them stay in their homes. Alongside that, helping renters become homeowners can provide stability and the potential to build wealth.

### Rehabilitation and Weatherization Programs

Many available programs for rehabilitation and weatherization in Oregon target low- to moderate-income homeowners, typically for owner-occupied single-family dwellings or middle housing such as duplexes. Some of these tools can also be used for preserving existing affordable multifamily housing to benefit renters, but they typically do not apply to market rate buildings. Tenants typically do not have the same flexibility or incentive as homeowners to pursue rehabilitation or weatherization of their units, though some programs related to accessibility are available to individual renters. Here our analysis focuses on single households accessing programs directly rather than benefitting through a third-party owner making upgrades.

**Housing Rehabilitation:** Older housing often needs improvements to continue to be safe and livable, which can be unexpected costs for some households.

**Weatherization:** Home improvements that make buildings more energy efficient to reduce utility costs and contribute to climate goals, as well as help to proactively extend the life of housing units for existing homeowners.

**Down Payment Assistance:** Some households may have the ability to pay for a mortgage but lack the savings necessary to pay for an upfront down payment on a house. Low-interest loans or grants can help households overcome this barrier to homeownership.

Rehabilitation programs typically serve low-income households, often those that have owned homes for a long time but need to make repairs to keep them up to the city code (including roof replacement, plumbing, and other critical needs). Many repair programs also cover accessibility upgrades such ramps, doorway modifications, or handrail installation for disabled residents.

For residents on a fixed income, large one-time repairs may not appear viable within their current budgets.

Weatherization assists households in proactively modifying their homes to reduce the cost of utility bills while increasing energy efficiency. Projects that these programs often cover include replacing windows, adding insulation, or upgrading heating and cooling systems.

### Homebuyer Assistance Programs

Barriers to homeownership are often costs which are outside of regular monthly housing expenses (such as a mortgage and utility bills) that would figure into a household's budget. A down payment on a new home, physical upkeep work, weatherization, and accessibility additions can all become financial obstacles for residents who are otherwise able to afford housing costs but require a larger lump sum.

Typically homeownership programs are able to reach households at 80% of median family income, while rental programs are more efficient at targeting deeper levels of affordability.<sup>74</sup>

A variety of tools can be used to remove homeownership barriers for households by reducing upfront costs for purchasing a home (typically through loans or grants) or maintaining the quality of housing over time, allowing residents to remain compliant with local code.

The actions in this memorandum support stability for existing homeowners below the area's median income as well as support for more relatively low income households to become new homeowners. Potential tools associated with this strategy include low interest loans, publicly funded grants, and technical support for weatherization or healthy home projects.

### Fiscal Impacts/Who Pays

Tools for homeownership assistance can come from a variety of local, state, and federal funds. They can be spread out to different grants, levies, bonds, and other sources, then streamlined into a single homeownership program. A local Affordable Housing Trust Fund could also be a mechanism that combines local contributions and supplies funding for such programs.

Some of the tools discussed in other memoranda for the Housing Implementation Plan that provide the city with revenue earmarked for affordable housing could also be used towards funding for rehabilitation programs and downpayment assistance (such as a new Construction Excise Tax). Urban renewal revenue typically cannot be used for downpayment assistance or is difficult to implement, but could potentially be used more readily for directly funding renovation work.

Exhibit 43 below provides a summary of four types of homeownership assistance programs with details about our findings from case study research. This includes who is served by each





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<sup>74</sup> US Department of Housing and Urban Development, "The HOME Program: HOME Investment Partnerships," September 20, 2017, <https://www.hud.gov/hudprograms/home-program>.

type of assistance, the typical range of funding that is provided per household and potential funding sources that other programs in Oregon have accessed.

### Exhibit 43. Summary of Homeownership Assistance Program Types

Source: ECONorthwest analysis

	Program Type	Who is Typically Served	Typical Assistance Provided per Household*	Potential Funding Sources**
	Down Payment Assistance	First time home buyers (current renters) below 80% MFI	\$25,000-\$110,000	US HUD (CDBG), OHCS (HOAP and CET), Community Frameworks
	Home Repairs	Existing low-income homeowners at or below 80% MFI	\$10,000-\$50,000	US HUD (CDBG, HOME), OHCS funds (Repair Health and Safety Program), CET revenues
	Weatherization	Existing low-income homeowners at or below 80% MFI	\$10,000-\$25,000	US HUD (CDBG, HOME), public purpose charges
	Accessibility Improvements	Existing homeowners at or below 80% MFI, seniors, people with disabilities	\$7,500-\$10,000	US HUD (CDBG, HOME)

\*These ranges are derived from case studies in this memorandum but not exhaustive of programs in Oregon

\*\*If over \$100,000 of state CDBG funds are used for administration costs they must be matched, but otherwise would not carry a matching requirement<sup>75</sup>

## Pros and Cons

### Pros:

- Providing accessible paths to homeownership through down payment assistance helps to stabilize existing renter households and provides them with the opportunity for long-term equity in their homes.
- Improving existing housing provides better environmental quality, is typically associated with lower carbon emissions, and ensures that older housing is consistent with the city code.
- Partnership between government entities and nonprofits has been successful for funding and administering homeownership assistance programs in Oregon, providing models that could be used by Tualatin. There are multiple programs already operating at the state and county level where the City could begin building new relationships.

<sup>75</sup> US Department of Housing and Urban Development, "State CDBG Program Eligibility Requirements," n.d., <https://www.hudexchange.info/programs/cdbg-state/state-cdbg-program-eligibility-requirements/>.

## Cons:

- Staff capacity for administration or funds required to support nonprofit partnerships can be limiting factors for the scope of these homeownership assistance programs.
- Availability of grant funding and external sources may be unpredictable from year-to-year, making programs inconsistent over time.
- Down payment assistance still comes with requirements that are hard for some households to fulfill, such as personal savings for earnest money and closing costs.
- Federal funding sources may come with program requirements that make it difficult for some households to participate, such as debt-to-income ratio. They may also trigger prevailing wages in some cases, depending on the size and source of funding.

## Summary of Homeownership Assistant Tools Analysis

For this analysis we used a case study approach to understand how comparable cities to Tualatin provide tools for homeownership through rehabilitation or down payment assistance. We explored examples from around Oregon to understand their respective approaches to homeownership assistance. Our team used these key questions to analyze the intent, structure, and impact of these programs:

- What programs are available for rehabilitation and/or down payment assistance?
- What is the City's role in this strategy?
- How are the programs structured and funded? How are recipients prioritized?
- Who is eligible to use the program? Is the program targeted to help specific groups of people (for example, seniors, households below 60% MFI, etc.)?
- What are the reporting requirements to ensure compliance with the program?

## City-Nonprofit Partnerships for Down Payment Grants

### Overview

Several jurisdictions in Washington County partner with the nonprofit organization Proud Ground to provide down payment assistance for residents. The cities of Beaverton, Hillsboro, and Tigard are all participants who use local Community Development Block Grant (CDBG) dollars to fund homeownership assistance alongside funding from Oregon Housing and Community Services (OHCS) and Community Frameworks.

## Role of the City

The cities' role in these programs is as a partner rather than the ongoing administrator for down payment grants. Specifically, cities in Washington County have allocated portions of their federal funding that are eligible for the program, but do not have to contribute ongoing staff capacity for monitoring, distribution, and outreach.

## Program Details

The amount that local programs offer differs between each city; Beaverton<sup>76</sup> and Tigard<sup>77</sup> currently offer up to \$110,000 for qualified buyers and Hillsboro<sup>78</sup> offers up to \$90,000. Grant recipients for Proud Ground administered programs must be first-time home buyers that meet extensive qualifications for income and their plans to purchase a home.

## Eligibility

For participating buyers' household income must match CDBG guidelines from 80% of median family income (MFI) in line with federal requirements - currently in Washington County this is \$85,200 for a family of four. In order to verify income, program users must provide federal tax returns and W-2 forms. Eligibility is on a first-come, first-served basis when funds are available.

Buyers must also qualify for a minimum total mortgage of \$350,000 with a lender from the organization's list. They must also have at least \$3,000-5,000 in personal savings depending on the jurisdiction to cover earnest money, inspections, and closing costs. They must also have a credit score above 620, a debt-to-income ratio below 10%, and two years of steady employment history that is verifiable through paystubs, benefit statements, child support forms, or other formal documentation.

## Takeaways

Partnerships can be an efficient way to deliver homeownership support without exceeding capacity of city staff to process applications and verify income information. There is likely an opportunity for Tualatin to pursue a similar program, including one with the same configuration as its peer cities in Washington County, though Proud Ground does not currently serve any cities in Clackamas County.

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<sup>76</sup> ©Proud Ground. "City of Beaverton Down-Payment Assistance." Accessed October 19, 2022. <https://proudground.org/properties/affordable-pending/90000-beaverton-homebuying-opportunity-pool/227>.

<sup>77</sup> ©Proud Ground. "City of Tigard Down-Payment Assistance." Accessed October 19, 2022. <https://proudground.org/properties/affordable-pending/110000-tigard-down-payment-assistance-grant/250>.

<sup>78</sup> ©Proud Ground. "City of Hillsboro Down-Payment Assistance." Accessed October 19, 2022. <https://proudground.org/properties/affordable-available/90000-down-payment-assistance-grant/366>.

## State and Federal Funding for Home Repairs and Weatherization

### Overview

The 2021 Infrastructure Investment and Jobs Act (IIJA) included \$3.5 billion in funding for the federal Weatherization Assistance Program (WAP). This is a one-time source targeted towards long-term energy efficiency for low-income households.<sup>79</sup>

Oregon's HB 2842 (adopted in 2021) also directs the Oregon Health Authority (OHA) to provide grants to fund the Healthy Homes program. This program provides funding for homeowners and landlords for essential home repairs, accessibility improvements, and rehabilitation to address climate hazards.<sup>80</sup> \$10 million is currently allocated to this program statewide.

### Role of the City

The federal Weatherization Assistance Program and state Health Homes program accept applications from local governments to receive funding, which is used for home repair or weatherization projects for low-income households. In both cases, the City could apply for these grants and establish a program to distribute funds to households who meet eligibility criteria included in state and federal programs.

### Program Details

WAP grants are awarded through the US Department of Energy to states, tribes, and territories to contract with local organizations including nonprofit organizations and local governments.<sup>81</sup> Oregon Housing and Community Services (OHCS) distributes WAP funds to local organizations and housing authorities in the state, as well as assistance with utility bills through the federal program Low-Income Home Energy Assistance Program (LIHEAP).<sup>82</sup> The program helps to fund services including insulation, air filtration, furnace repair, heating duct improvements, and energy conservation education.

Healthy Homes is primarily intended to support weatherization and can also be used for projects that maximize energy efficiency, extend the usable life of residences, or improve health

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<sup>79</sup> Carlos Martín, "Harnessing the IIJA's Weatherization Assistance Program to Leave No Household in the Cold," Joint Center for Housing Studies (Harvard University, January 23, 2023), <https://www.jchs.harvard.edu/blog/harnessing-iijas-weatherization-assistance-program-leave-no-household-cold>.

<sup>80</sup> Oregon Health Authority, "Healthy Homes Grant Program," accessed February 3, 2023, <https://www.oregon.gov/oha/ph/healthyenvironments/healthyneighborhoods/healthyhomesgrantprogram/pages/index.aspx>.

<sup>81</sup> US Department of Energy, "Weatherization Assistance Program," accessed February 3, 2023, <https://www.energy.gov/scep/wap/weatherization-assistance-program>.

<sup>82</sup> Oregon Housing and Community Services, "Home Weatherization Services: Energy & Weatherization," accessed February 3, 2023, <https://www.oregon.gov/ohcs/energy-weatherization/Pages/weatherization-services.aspx>.



and safety. In addition to traditional weatherization, these may include removal of radon, lead, and mold, fire resistance, smoke filtration, and accessibility improvements.<sup>83</sup>

## Eligibility

Both WAP and Healthy Homes are targeted towards low-income households. To access WAP, households must be at or below 200% of the federal poverty level, based on income level and household size. WAP gives priority to households with seniors, disabled residents, children under the age of 19, high energy use, and high energy burden.

Healthy Homes provides funding for entities that serve communities with a high concentration of low-income households or areas impacted by environmental justice factors. An Interagency Task Force is currently working to determine the final eligibility criteria for households receiving assistance from the program.<sup>84</sup>

## Takeaways

The City of Tualatin could be eligible to apply for grant funding from both state and federal resources. The City would be responsible for administering a program and providing funds to individual households. Alternatively, the City could partner with a nonprofit organization in applying for funding and serving households in Tualatin.

## County-Administered Low Interest Loans for Rehab, Weatherization, and Accessibility

### Overview

In Oregon, counties and regional bodies sometimes provide homeownership resources that cities can leverage for their residents. Clackamas and Washington County are examples of larger scale government agencies that provide grant and loan programs for home rehabilitation, weatherization, and accessibility that are already applicable in Tualatin.

### Role of the City

For regional low interest loan programs, cities are partners with other government bodies rather than directly delivering a program. City staff can direct local residents to appropriate resources and promote them for targeted groups, but do not track ongoing compliance or process applications. Some larger jurisdictions like Beaverton and Hillsboro within the county opt out in favor of their own nonprofit partnerships for home repairs and accessibility.

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<sup>83</sup> Catie Gould, "Oregon Experiments with Healthy Homes Repair Fund," Sightline Institute, November 12, 2021, <https://www.sightline.org/2021/11/12/oregon-experiments-with-healthy-homes-repair-fund/>.

<sup>84</sup> Ibid.



## Program Details

Both Clackamas County and Washington County offer low interest loans for home rehabilitation, including additional outright grants for accessibility projects. Both counties prioritize funding for the most critical health and safety projects (such as dangerous electrical systems, roof leakage, and structural problems) ahead of nonemergency repairs or upgrades (such as weatherization).

**Clackamas County** structures their home repair loan program as a 3% simple low interest loan with deferred payments for owner-occupants. The eligible amount varies depending on project type: up to \$15,000 is available for a single purpose health or safety items like water, septic or roof repair, \$25,000 for exterior repairs, and \$35,000 for complete repairs that meet Community Development Block Grant rehab standards. Outright grants are not given for home repairs but are available for accessibility improvements up to \$7,500.<sup>85</sup>

**Washington County** has two programs depending on the income level of participants. The Home Access and Repair for Disabled and Elderly (HARDE) provides outright grants targeted at very low-income residents up to \$10,000. The Deferred Interest-Bearing Loan (DIBL) is provided for moderately low-income residents up to \$25,000 with a similar structure to Clackamas County, accruing 3% interest for up to ten years that does not need to be paid monthly. Up to 10% of DIBL funds may be used for ‘nonessential’ projects like Homeowners who qualify for DIBL assistance may use up to 10% of the loan amount for non-essential items like lighting fixtures or floor upgrades.<sup>86</sup>

## Eligibility

Both Clackamas and Washington County homeowners are eligible for home repair loans at or below 80% MFI who have sufficient equity in the property. Taxes and mortgage payments must also be current in both jurisdictions, and applicants must have a sufficient debt-to-income ratio. Both programs used deferred low-interest loans where the owner does not have to make monthly payments; the loan is then repaid when the home is sold or transferred.

Washington County’s HARDE program is available for residents below 50% MFI who are disabled or over the age of 62. Although it is primarily targeted at homeowners, renters may also apply for accessibility improvements. The DIBL is for homeowners between 50-80% MFI.

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<sup>85</sup> Clackamas County. “Home Repair Loans and Home Accessibility Grants.” [www.clackamas.us](http://www.clackamas.us). Accessed October 19, 2022. <https://www.clackamas.us/communitydevelopment/repair.html>.

<sup>86</sup> Washington County Office of Community Development, “Housing Rehabilitation Program Policies,” 2022, <https://www.washingtoncountyor.gov/commdev/housing-rehabilitation>.

## Takeaways

Programs provided at a higher level like a county or regional body can cover a wide area and serve multiple jurisdictions with programs for home rehabilitation. These programs are often funded through CDBG and must be compliant with their regulations.

Washington and Clackamas Counties offer program which Tualatin residents could use, while jurisdictions like Beaverton and Hillsboro have operated their own independent options. Tualatin could work with the County to increase participation or set up their own separately to give them more latitude over allocation of their CDBG funding for other projects.

## City-Administered Assistance for Down Payments and Rehabilitation

### Overview

Some cities in Oregon choose to administer their own programs for homeownership assistance rather than partnering with a nonprofit organization to work with individual households. Springfield and Corvallis are examples of local jurisdictions that offer this direct support, including home repair support and down payments (in Springfield).

### Role of the City

With city administered programs, staff directly work with homebuyers and homeowners. Springfield and Corvallis are located in Lane and Benton Counties respectively, neither of which have an alternative county-level program. There are additional nonprofit organizations providing resources with coverage in both areas. Like cities who use a partnership model, both of these programs also utilize federal funding from the US Department of Housing and Urban Development, including the CDBG and HOME (for multifamily building rehab projects).

### Program Details

**Springfield** offers up to \$25,000 in interest-free loans for down payments, with repayment not required until the home is sold, refinanced, or transferred. It is not intended for full coverage, as homebuyers must contribute at least 50% of the required down payment. The city also provides funding for rehabilitation up to \$10,000, targeted at urgent home repairs and those that will enhance health, safety, or accessibility. It does not cover weatherization improvements but refers residents towards a nonprofit operating in Lane County. All rehab work must be performed by licensed and bonded contractors hired and paid by the City.<sup>87</sup>

**Corvallis** only provides local rehab funding but covers weatherization and accessibility improvements. The loan is structured with two options: program participants between 50-80%

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<sup>87</sup> City of Springfield, "Homeowner Programs," accessed October 21, 2022, <https://springfield-or.gov/city/development-public-works/homeowner-programs/>.

MFI accrue no interest with their monthly payments, and those below 50% as well as disabled homeowners and seniors can defer payments until the homeowner moves or sells the house.<sup>88</sup>

## Eligibility

Springfield's income requirements are set slightly higher than other jurisdictions surveyed in this memo, with residents qualifying for the home repair program at 50% MFI in 2022. The City also limits the rehab program based on the value of the home, which must be under \$334,000 according to the Lane County Assessor. For its down payment program, buyers must be prequalified, below 80% MFI, and first-time home buyers. Additionally, the property must be vacant or occupied by either the buyer or seller to avoid renter displacement.

Corvallis requires that residents are below 80% MFI for their weatherization, rehab, and accessibility loans, but offers additional help for those under 50% MFI. Requirements are also similar to county and nonprofit programs.

## Takeaways

The amount offered in cities that administer their own program may be lower than in jurisdictions that partner with a nonprofit or county. Although it is a small sample size, this may be due to the costs of administration. Local programs also allow city staff flexibility in setting stronger MFI provisions and adding measures to avoid displacement.

## Conclusions and Next Steps

- The City should consider the extent to which it wants to directly provide programs or establish on partnerships for administration based on current capacity.
- Federal funding from HUD's Community Development Block Grants or state funds from OHCS are typically what other places in Oregon use to fund homeownership assistance programs for down payments and rehabilitation work. If Tualatin has these available, it should leverage them and explore partnerships with established programs.
- Given its location in Washington and Clackamas Counties, there are resources that can be used already in Tualatin for home rehabilitation work. However, residents may need help navigating which programs apply for their needs and understanding the criteria. The City could increase guidance available for individuals to find existing resources rather than building new programs.
- The City could also help to put together resources for some of the other requirements that existing programs use, such as building sufficient credit for a down payment grants or identifying eligible contractors to perform rehab work within the parameters of available grants.

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<sup>88</sup> City of Corvallis, "Housing Repair and Rehabilitation Loans," accessed October 21, 2022, <https://www.corvallisoregon.gov/cd/page/housing-repair-and-rehabilitation-loans>.



*City of Tualatin*

## CITY OF TUALATIN Staff Report

**TO:** Tualatin Planning Commissioners  
**THROUGH:** Steve Koper, Assistant Community Development Director  
**FROM:** Madeleine Nelson, Assistant Planner  
**DATE:** April 20, 2023

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### **SUBJECT:**

#### Plan Map Amendment:

The applicant, Vista Residential Partners, is requesting approval of a Plan Map Amendment (PMA) from Medium-Low Density Residential (RML) and Institutional (IN) to High-Density High Rise (RH-HR) located on a 9.2-acre site at 23370 SW Boones Ferry Road.

#### Plan Text Amendment:

The applicant, Vista Residential Partners, is requesting approval of a Plan Text Amendment (PTA) that would remove the locational factors from the High-Density High Rise (RH-HR) purpose statement in Tualatin Development Code Section 44.100 and revise Table 44-3 to limit the structure height to 4 stories or 50 feet in the RH-HR zoning district south of Norwood Road, which would be applicable to the subject site.

### **EXECUTIVE SUMMARY:**

The proposal was submitted by AKS Engineering & Forestry, LLC, on behalf of Vista Residential Partners and Property Owner, Horizon Community Church propose two land use applications located on a 9.2-acre site at 23370 SW Boones Ferry Road (Tax Lot: 2S135D000106). The requested Plan Map Amendment (PMA) would change the existing zoning from Medium-Low Density Residential (RML) and Institutional (IN) to High-Density High Rise (RH-HR). Future development would require submittal and approval of an Architectural Review application subject to compliance with design and siting standards applicable to the RH-HR District. The requested Plan Text Amendment (PTA) would remove the locational factors from the High-Density High Rise (RH-HR) purpose statement in Tualatin Development Code Section 44.100 and revise Table 44-3 to limit the structure height to 4 stories or 50 feet in the RH-HR zoning district south of Norwood Road, which would be applicable to the subject site.

The applicant's Narrative (Exhibit A) addresses the applicable criteria to the proposal for Comprehensive Plan Amendments. The applicant has also included a Transportation Impact Analysis (Exhibit D) and Utility Capacity Analysis (Exhibit F).

The Findings and Analysis include a review of the proposal and application materials against the applicable criteria and standards, which include: Statewide Planning Goals, Oregon Administrative Rules, Metro Code, and the Tualatin Comprehensive Plan and Development Code. The specific approval criteria for a Plan Amendment are found at Tualatin Development Code (TDC) Section 33.070(5), and include other applicable criteria and standards that must be met.

### **RECOMMENDATION TO CITY COUNCIL:**

The Planning Commission will be asked to vote on a recommendation on the proposed Plan Map Amendment that will be presented to the City Council. This recommendation may be in favor, against, or

neutral. The Planning Commission will also be asked to vote on a recommendation on the proposed Plan Text Amendment. This recommendation may be in favor, against, or neutral.

**OUTCOMES OF RECOMMENDATION:**

The Planning Commission's recommendation will be presented to the City Council, tentatively scheduled for its meeting on Monday, May 24, 2023. If the Plan Map Amendment application is approved by the Council, the subject property would change to High-Density High Rise (RH-HR). If the application is denied, the existing zoning would continue to apply. If the Plan Text Amendment application is approved by the Council, then the purpose statement in Tualatin Development Code Section 44.100 and Table 44-3 would be amended to remove the locational factors and limit the structure height to 4 stories or 50 feet in the RH-HR zoning district south of Norwood Road. If the application is denied, the locational criteria would remain.

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**ATTACHMENTS:**

- Attachment 1: Presentation
- Attachment 2: Analysis & Findings
- Exhibit A: Application & Narrative
- Exhibit B: Existing and Proposed Zoning Maps
- Exhibit C: Proposed Development Code
- Exhibit D: Transportation Impact Analysis
- Exhibit E: DKS Memorandum
- Exhibit F: Utility Capacity Analysis
- Exhibit G: Murraysmith Water Capacity Memorandum
- Exhibit H: Preliminary Layouts & Maps
- Exhibit I: Supporting Documents
- Exhibit J: Arborist Report
- Exhibit K: Public Noticing
- Exhibit L: Housing Needs Analysis
- Exhibit M: Housing Production Strategies
- Exhibit N: Economic Opportunities Analysis
- Exhibit O: Public Comments

# Norwood Multi-Family Plan Map & Text Amendment (PMA 23-0001 & PTA 23-0001)

Tualatin Planning Commission  
April 20, 2023



# PROJECT DESCRIPTION

AKS Engineering & Forestry, LLC, on behalf of Vista Residential Partners and Property Owner, Horizon Community Church propose two land use applications located on a 9.2-acre site at 23370 SW Boones Ferry Road (Tax Lot: 2S135D000106).



# PROPOSAL

## **The requested Plan Map Amendment (PMA) would**

- Change the existing zoning from Medium Low Density Residential (RML) and Institutional (IN) to High Density High Rise (RH-HR)
- Future development would require submittal and approval of an Architectural Review application subject to compliance with design and siting standards applicable to the RH-HR District

## **The requested Plan Text Amendment (PTA) would**

- Remove the locational factors from the High Density High Rise (RH-HR) purpose statement in Tualatin Development Code Section 44.100
- Revise Table 44-3 to limit the structure height to 4 stories or 50 feet in the RH-HR zoning district south of Norwood Road, which would be applicable to the subject site



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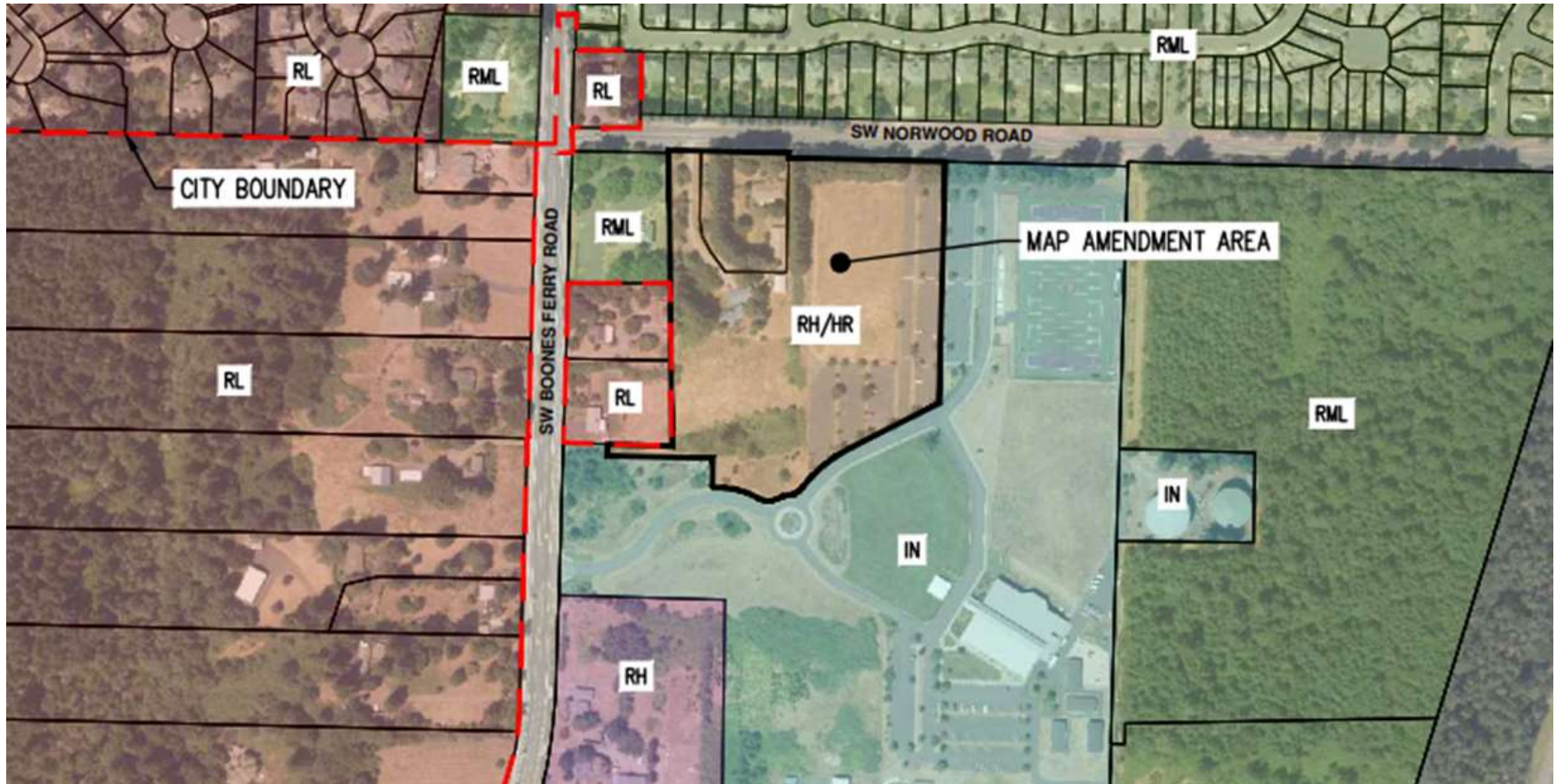
**TUALATIN** OREGON



# PMA CURRENT ZONING



# PMA PROPOSED ZONING



# TEXT AMENDMENT

## Chapter 44 High Density High Rise Zone (RH-HR)

### TDC 44.100. Purpose.

The purpose of the High Density High Rise (RH-HR) zone is to provide areas of the City ~~within the City's Central Urban Renewal area, an area west of the Central Urban Renewal area, north of the wetlands, and south of the Tualatin Country Club~~ that are suitable for high density apartment of condominiums ~~towers~~.





# TEXT AMENDMENT

## TDC 44.300. Development Standards.

Table 44-3

Development Standards in the RH-HR Zone

STRUCTURE HEIGHT		
Minimum Height, Multi-Family and Condominium Developments	4 stories	
Maximum Height	64 feet	South of SW Norwood Road, structure height is limited to 4 stories or 50 feet, whichever is less. If structure does not include underground parking, maximum height is 5 stories. If the first story includes underground parking, maximum height is 6 stories. Regardless of the number of stories, structure height must not exceed 64 feet.



# APPLICANT CONDITIONS

The applicant has suggested and agreed to the following conditions of approval:

- Offsite improvements as recommended in the TIA, including the signal at the SW Norwood Rd & SW Boones Ferry Rd prior to occupancy of future site development
- A 60-foot buffer along SW Norwood Rd to preserve trees that do not need to be removed for the future access or public roadway improvements.
- Limiting the height allowed at the site to 4 stories or 50 feet



# APPLICABLE CRITERIA

- TDC 33.070 Highlights
  - Granting the Amendment is in the Public interest
  - The Amendment Conforms with Tualatin Community Plan
  - The Recommendation Considers the characteristics of city, land development trends, health and safety, natural resources
  - The Amendment is Consistent with Oregon Statewide Planning Goals and Administrative Rules including compliance with the Transportation Planning Rule TPR (OAR 660-012-0060).



CITY OF

**TUALATIN** OREGON

# TPC ACTION

*The Planning Commission is asked to make a recommendation to City Council on PMA 23-0001/PTA 23-0001. The TPC may recommend to the council:*

- *Approval either as proposed or with modifications;*
- *Denial; or*
- *Neither approval nor denial (i.e a “neutral” recommendation).*





**Analysis and Findings for  
Norwood Multi-Family Plan Map Amendment and Text Amendment**

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Case #:	PMA 23-0001 and PTA 23-0001
Project:	Norwood Multi-Family Plan Map and Text Amendment
Owner:	Horizon Community Church
Applicant:	Vista Residential Partners
Representative:	AKS Engineering & Forestry, LLC

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**EXHIBITS**

- Exhibit A: Application & Narrative
- Exhibit B: Existing and Proposed Zoning Maps
- Exhibit C: Proposed Development Code
- Exhibit D: Transportation Impact Analysis
- Exhibit E: DKS Memorandum
- Exhibit F: Utility Capacity Analysis
- Exhibit G: Murraysmith Water Capacity Memorandum
- Exhibit H: Preliminary Layouts & Maps
- Exhibit I: Supporting Documents
- Exhibit J: Arborist Report
- Exhibit K: Public Noticing
- Exhibit L: Housing Needs Analysis (2019)
- Exhibit M: Housing Production Strategies (2021)
- Exhibit N: Economic Opportunities Analysis (2019)
- Exhibit O: Public Comments



## I. INTRODUCTION

### A. Applicable Criteria

Tualatin Development Code (TDC) Chapters 32 and 33; Tualatin Comprehensive Plan; Applicable Oregon Statewide Planning Goals; Applicable Oregon Administrative Rules including compliance with the Transportation Planning Rule; and Metropolitan Service District's Urban Growth Management Functional Plan.

### B. Project Description

AKS Engineering & Forestry, LLC, on behalf of Vista Residential Partners and Property Owner, Horizon Community Church propose two land use applications located on a 9.2-acre site at 23370 SW Boones Ferry Road (Tax Lot: 2S135D000106).

The requested Plan Map Amendment (PMA) would change the existing zoning from Medium Low Density Residential (RML) and Institutional (IN) to High Density High Rise (RH-HR). Future development would require submittal and approval of an Architectural Review application subject to compliance with design and siting standards applicable to the RH-HR District.

The requested Plan Text Amendment (PTA) would remove the locational factors from the High Density High Rise (RH-HR) purpose statement in Tualatin Development Code Section 44.100 and revise Table 44-3 to limit the structure height to 4 stories or 50 feet in the RH-HR zoning district south of Norwood Road, which would be applicable to the subject site.

### C. Site Description and Surrounding Land Use

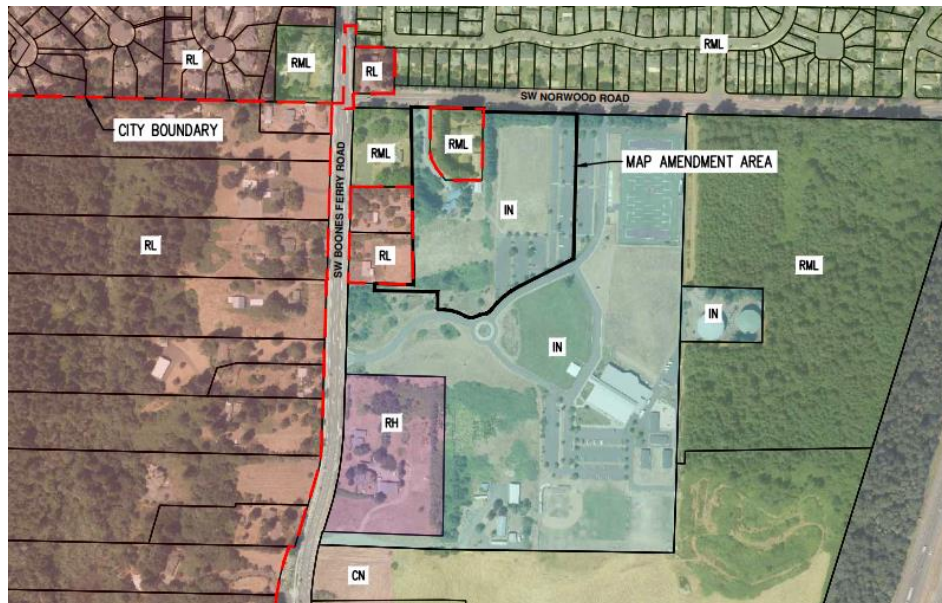


Figure 1 Surrounding Zoning and Land Use

The subject property is a 9.2-acre site located at 23370 SW Boones Ferry Road, which is east of SW Boones Ferry Road and South of SW Norwood Road. The property takes access from existing access points on SW Boones Ferry and SW Norwood Road. The Horizon Community Church is located on the site with improved sports fields, parking areas, buildings, and access driveways. There are several open

and unimproved areas throughout the site. An approximately 60-foot buffer of evergreen trees is located adjacent to SW Norwood road. Stormwater ponds are adjacent to the access driveway from SW Boones Ferry. 1-acre of the property is zoned Medium Low Density Residential (RML) and includes an existing detached single-family home on site. A portion of the site is within the Basalt Creek Planning Area.

#### **D. Previous Land Use Actions**

- AR 12-03 – Expired, Approval May of 2012
- AR 15-20 – Expired, Approval in September of 2019

#### **E. Surrounding Uses**

Surrounding uses include:

North: Medium Low Density Residential (RML)

- Norwood Heights Subdivision
- Pennington Heights Subdivision
- SW Norwood Road

South: Medium Low Density Residential (RML)/Neighborhood Commercial (CN)

- Autumn Sunrise Subdivision

West: High Density Residential (RH)/Unincorporated Lots with County FD-20 Zoning

- Plambeck Gardens Apartments
- Low Density Residential Properties Zoned County FD-20
- SW Boones Ferry Road

East: Medium Low Density Residential (RML)/Institutional (IN)

- Autumn Sunrise Subdivision
- City-Owned Water Tanks

## II. FINDINGS

### A: Oregon Statewide Planning Goals

#### Goal 1 – Citizen Involvement

**To develop a citizen involvement program that insures the opportunity for citizens to be involved in all phases of the planning process.**

**Finding:**

*The Planning Commission will review the proposed amendment at a public meeting on April 20, 2023. The Planning Commission is the City's acknowledged Committee for Citizen Involvement (CCI), in compliance with Goal 1.*

*In addition, the City has followed its acknowledged public notice procedures for quasi-judicial Comprehensive Plan Amendments, found in TDC 32.240. The procedures include mailed notice of the City Council hearing to surrounding property owners, publishing notice of the City Council hearing in the Tualatin Times, notice of the hearing to the Department of Land Conservation and Development (Exhibit K) at least 35 days prior to the first hearing, notice to affected government entities, and publicly posting notice of the hearing. Postcard land use application notices were sent to property owners on March 17, 2023 (Exhibit K). The Tualatin Times published the City Council public hearing notice on April 6, 2023 and April 13, 2023 (Exhibit K). The proposed amendment will be considered at a City Council at a public hearing on May 22, 2023.*

#### Goal 2 – Land Use Planning

**To establish a land use planning process and policy framework as a basis for all decision and actions related to use of land and to assure an adequate factual base for such decisions and actions.**

**Finding:**

*The City of Tualatin's Comprehensive Plan and Development Code provide an acknowledged and established land use planning process and policy framework which serve as the basis for all decisions and actions related to use of land, including requirements to assure that an adequate factual basis is provided for those decisions and actions. The proposed amendment has been processed in accordance with these procedures.*

#### Goal 5 – Open Spaces, Scenic and Historic Area, and Natural Resource

**Goal 5 establishes a process for each resource to be inventoried and evaluated. OAR 660-015-0000(5) and OAR 660.023 (Procedures and Requirements for Complying with Goal 5)**

**Finding:**

*The proposed amendment does not modify the City's existing open space and natural resources requirements or include any text amendment to the regulations for those Goal 5 resources regulated by Tualatin Development Code Chapter 71 (Wetlands Protection District) and Tualatin Development Code Chapter 72 (Natural Resource Protection Overlay District). All development would be reviewed under the Architectural Review (AR) process to ensure that new construction will be reviewed consistent with these requirements.*

#### Goal 6 – Air, Water and Land Resources Quality

**Finding:**

*The Oregon Department of Environmental Quality (DEQ) regulates air, water and land with Clean Water Act (CWA) Section 401 Water Quality, Water Quality Certificate, State 303(d) listed waters, Hazardous Wastes, Clean Air Act (CAA), and Section 402 NPDES Construction and Stormwater Permits. The Oregon Department of State Lands and the U.S. Army Corps of Engineers regulate jurisdictional wetlands and CWA Section 404 water of the state and the country respectively. Clean Water Services (CWS) coordinates storm water management, water quality and stream enhancement projects throughout the City. Future development would need to comply with national, state and regional regulations and protections for air, water and land resources. Tualatin has an acknowledged Comprehensive Plan that complies with this goal. All future development will be required to be reviewed consistent with these requirements.*

**Goal 7 – Areas Subject to Natural Disasters and Hazards**

**Finding:**

*Tualatin has an acknowledged Comprehensive Plan that complies with this goal. The proposed amendment does not modify the City's natural hazards requirements or existing goals and policies associated with Goal 7 established by the Comprehensive Plan. Future development would be required to be consistent with the applicable requirements of the Tualatin Development Code under Chapters 70 and 72.*

**Goal 8 – Recreation Needs**

**To satisfy the recreational needs of the citizens of the state and visitors and, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts.**

**Finding:**

*The proposed amendment does not affect policies associated with recreational needs. Any change to the existing recreational facilities will be reviewed as part of an Architectural Review and compliance with the Tualatin Development Code recreational facilities requirements.*

**Goal 9 – Economy of the State**

**To provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon's citizens.**

**Finding:**

*The proposed amendment does not affect policies, lands, or opportunities associated with Goal 9 established by the Comprehensive Plan. There are no impacts on the inventory of commercial and industrial lands with the submission of this amendment. The major employment areas of the City are protected.*

**Goal 10 – Housing**

**To provide for the housing needs of citizens of the state.**

**Finding:**

*The proposed plan map amendment would change the zoning designation of the subject site from Medium Low Density Residential (RML) and Institutional (IN) to High Density High Rise (RH-HR). This change would allow a maximum of 30 units per acre for household living uses. Tualatin's 2019 Housing Needs Analysis (Exhibit M) identified a deficit of land zoned RH-HR as opposed to a surplus of land zoned RML and IN.*

*The text amendment, as proposed, is consistent with OAR 660-007 (the Metropolitan Housing Rule) which is used by cities such as Tualatin that are within the Portland Metropolitan UGB to demonstrate compliance with Goal 10. Additional findings addressing OAR 660-007 are found below.*

### **Goal 11 – Public Facilities and Services**

#### **Finding:**

*Land within the City of Tualatin is adequately served by public facilities and services. The amendment would encourage compact development and the use of existing services and facilities. The proposed amendment does not affect policies related to public facilities and services including water, sewer, and emergency services. Public facilities are addresses in Tualatin Development Code Chapter 33.070(5)(f)(h)(i), additional materials addressing this standard are provided in Exhibit D, E, F, and G.*

### **Goal 12 – Transportation**

#### **Finding:**

*The requirements of Goal 12 are addressed by compliance with Oregon Administrative Rule (OAR) Section 660-012-0060, also known as the Transportation Planning Rule or TPR. The proposed amendment's compliance with the TPR is addressed below under the applicable OAR Section.*

### **Goal 13 – Energy**

#### **Findings:**

*The proposed amendment does not include any changes that are related to or intended to impact Tualatin's land use regulations pertaining to energy consumption.*

### **Goal 14 – Urbanization**

#### **Finding:**

*The subject property is within the Urban Growth Boundary. The proposal does not contain any proposed modification to the Urban Growth Boundary or development outside of the Urban Growth Boundary.*

## **B: Oregon Administrative Rules**

### **OAR Chapter 660 Division 7 (Metropolitan Housing)**

**[...]**

#### **660-007-0045**

##### **Computation of Buildable Lands**

**(1) The local buildable lands inventory must document the amount of buildable land in each residential plan designation.**

**(2) The Buildable Land Inventory (BLI): The mix and density standards of OAR 660-007-0030, 660-007-0035 and 660-007-0037 apply to land in a buildable land inventory required by OAR 660-007-0010, as modified herein. Except as provided below, the buildable land inventory at each jurisdiction's choice shall either be based on land in a residential plan/zone designation within the jurisdiction at the time of periodic review or based on the jurisdiction BLI at the time of acknowledgment as updated. Each jurisdiction must include in its computations all plan and/or zone changes involving residential land which that jurisdiction made since acknowledgment. A jurisdiction need not include plan and/or zone changes made by another jurisdiction before annexation to a city. The adjustment of the BLI at the time of acknowledgment shall:**

- (a) Include changes in zoning ordinances or zoning designations on residential planned land if allowed densities are changed;**
- (b) Include changes in planning or zoning designations either to or from residential use. A city shall include changes to annexed or incorporated land if the city changed type or density or the plan/zone designation after annexation or incorporation;**
- (c) The county and one or more cities affected by annexations or incorporations may consolidate buildable land inventories. A single calculation of mix and density may be prepared. Jurisdictions which consolidate their buildable lands inventories shall conduct their periodic review simultaneously;**
- (d) A new density standard shall be calculated when annexation, incorporation or consolidation results in mixing two or more density standards (OAR 660-007-0035). The calculation shall be made as follows:**
  - (A)**
    - (i) BLI Acres x 6 Units/Acre = Num. of Units;**
    - (ii) BLI Acres x 8 Units/Acre = Num. of Units;**
    - (iii) BLI Acres x 10 Units/Acre = Num. of Units;**
    - (iv) Total Acres (TA) - Total Units (TU).**

**(B) Total units divided by Total Acres = New Density Standard;**

**(C) Example:**

- (i) Cities A and B have 100 acres and a 6-unit-per-acre standard: (100 x 6 = 600 units); City B has 300 acres and a 10-unit-per-acre standard: (300 x 10 = 3000 units); County has 200 acres and an 8-unit-per-acre standard: (200 x 08 = 1600 units); Total acres = 600 - Total Units = 5200.**
- (ii) 5200 units divided by 600 acres = 8.66 units per acre standard.**

**(3) Mix and Density Calculation: The housing units allowed by the plan/zone designations at periodic review, except as modified by section (2) of this rule, shall be used to calculate the mix and density. The number of units allowed by the plan/zone designations at the time of development shall be used for developed residential land.**

**660-007-0050**

**Regional Coordination**

**(1) At each periodic review of the Metro UGB, Metro shall review the findings for the UGB. They shall determine whether the buildable land within the UGB satisfies housing needs by type and density for the region's long-range population and housing projections.**

**(2) Metro shall ensure that needed housing is provided for on a regional basis through coordinated comprehensive plans.**

**660-007-0060**

**Applicability**

**(1) The new construction mix and minimum residential density standards of OAR 660-007-0030 through 660-007-0037 shall be applicable at each periodic review. During each periodic review local government shall prepare findings regarding the cumulative effects of all plan and zone changes affecting residential use. The jurisdiction's buildable lands inventory (updated pursuant to OAR 660-007-0045) shall be a supporting document to the local jurisdiction's periodic review order.**

**(2) For plan and land use regulation amendments which are subject to OAR 660, Division 18, the local jurisdiction shall either:**

**(a) Demonstrate through findings that the mix and density standards in this Division are met by the amendment; or**

**(b) Make a commitment through the findings associated with the amendment that the jurisdiction will comply with provisions of this Division for mix or density through subsequent plan amendments.**

**Finding:**

*In 2019, the City of Tualatin completed a Housing Needs Analysis (HNA) which included a computation of the City's residential buildable lands inventory (BLI)(Exhibit M). The BLI analysis complied with statewide planning Goal 10 policies that govern planning for residential uses. Consistent with these sections, the detailed methodology used to complete the buildable lands inventory is presented in Appendix A of the HNA (Exhibit M).*

**OAR 660 Division 12 (Transportation Planning)**

**OAR 660-012-0060**

**Plan and Land Use Regulation Amendments**

**(1) If an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation (including a zoning map) would significantly affect an existing or planned transportation facility, then the local government must put in place measures as provided in section (2) of this rule, unless the amendment is allowed under section (3), (9) or (10) of this rule. A plan or land use regulation amendment significantly affects a transportation facility if it would:**

**(a) Change the functional classification of an existing or planned transportation facility (exclusive of correction of map errors in an adopted plan);**

**(b) Change standards implementing a functional classification system; or**

**(c) Result in any of the effects listed in paragraphs (A) through (C) of this subsection based on projected conditions measured at the end of the planning period identified in the adopted TSP.**

**As part of evaluating projected conditions, the amount of traffic projected to be generated within the area of the amendment may be reduced if the amendment includes an enforceable, ongoing requirement that would demonstrably limit traffic generation, including, but not limited to, transportation demand management. This reduction may diminish or completely eliminate the significant effect of the amendment.**

- (A) Types or levels of travel or access that are inconsistent with the functional classification of an existing or planned transportation facility;**
- (B) Degrade the performance of an existing or planned transportation facility such that it would not meet the performance standards identified in the TSP or comprehensive plan;**
- or**
- (C) Degrade the performance of an existing or planned transportation facility that is otherwise projected to not meet the performance standards identified in the TSP or comprehensive plan.**

**(2) If a local government determines that there would be a significant effect, then the local government must ensure that allowed land uses are consistent with the identified function, capacity, and performance standards of the facility measured at the end of the planning period identified in the adopted TSP through one or a combination of the remedies listed in (a) through (e) below, unless the amendment meets the balancing test in subsection (2)(e) of this section or qualifies for partial mitigation in section (11) of this rule. A local government using subsection (2)(e), section (3), section (10) or section (11) to approve an amendment recognizes that additional motor vehicle traffic congestion may result and that other facility providers would not be expected to provide additional capacity for motor vehicles in response to this congestion.**

**(a) Adopting measures that demonstrate allowed land uses are consistent with the planned function, capacity, and performance standards of the transportation facility.**

**(b) Amending the TSP or comprehensive plan to provide transportation facilities, improvements or services adequate to support the proposed land uses consistent with the requirements of this division; such amendments shall include a funding plan or mechanism consistent with section (4) or include an amendment to the transportation finance plan so that the facility, improvement, or service will be provided by the end of the planning period.**

**(c) Amending the TSP to modify the planned function, capacity or performance standards of the transportation facility.**

**(d) Providing other measures as a condition of development or through a development agreement or similar funding method, including, but not limited to, transportation system management measures or minor transportation improvements. Local governments shall, as part of the amendment, specify when measures or improvements provided pursuant to this subsection will be provided.**

**(e) Providing improvements that would benefit modes other than the significantly affected mode, improvements to facilities other than the significantly affected facility, or improvements at other locations, if:**

**(A) The provider of the significantly affected facility provides a written statement that the system-wide benefits are sufficient to balance the significant effect, even though the improvements would not result in consistency for all performance standards;**

**(B) The providers of facilities being improved at other locations provide written statements of approval; and**

**(C) The local jurisdictions where facilities are being improved provide written statements of approval.**

**(3) Notwithstanding sections (1) and (2) of this rule, a local government may approve an amendment that would significantly affect an existing transportation facility without assuring that the allowed land uses are consistent with the function, capacity and performance standards of the facility where:**

**(a) In the absence of the amendment, planned transportation facilities, improvements and services as set forth in section (4) of this rule would not be adequate to achieve consistency with the identified function, capacity or performance standard for that facility by the end of the**



**planning period identified in the adopted TSP;**

**(b) Development resulting from the amendment will, at a minimum, mitigate the impacts of the amendment in a manner that avoids further degradation to the performance of the facility by the time of the development through one or a combination of transportation improvements or measures;**

[...]

**(4) Determinations under sections (1)–(3) of this rule shall be coordinated with affected transportation facility and service providers and other affected local governments.**

**(a) In determining whether an amendment has a significant effect on an existing or planned transportation facility under subsection (1)(c) of this rule, local governments shall rely on existing transportation facilities and services and on the planned transportation facilities, improvements and services set forth in subsections (b) and (c) below.**

**(b) Outside of interstate interchange areas, the following are considered planned facilities, improvements and services:**

**(A) Transportation facilities, improvements or services that are funded for construction or implementation in the Statewide Transportation Improvement Program or a locally or regionally adopted transportation improvement program or capital improvement plan or program of a transportation service provider.**

**(B) Transportation facilities, improvements or services that are authorized in a local transportation system plan and for which a funding plan or mechanism is in place or approved. These include, but are not limited to, transportation facilities, improvements or services for which: transportation systems development charge revenues are being collected; a local improvement district or reimbursement district has been established or will be established prior to development; a development agreement has been adopted; or conditions of approval to fund the improvement have been adopted.**

**(C) Transportation facilities, improvements or services in a metropolitan planning organization (MPO) area that are part of the area's federally-approved, financially constrained regional transportation system plan.**

**(D) Improvements to state highways that are included as planned improvements in a regional or local transportation system plan or comprehensive plan when ODOT provides a written statement that the improvements are reasonably likely to be provided by the end of the planning period.**

**(E) Improvements to regional and local roads, streets or other transportation facilities or services that are included as planned improvements in a regional or local transportation system plan or comprehensive plan when the local government(s) or transportation service provider(s) responsible for the facility, improvement or service provides a written statement that the facility, improvement or service is reasonably likely to be provided by the end of the planning period.**

**(c) Within interstate interchange areas, the improvements included in (b)(A)–(C) are considered planned facilities, improvements and services, except where:**

**(A) ODOT provides a written statement that the proposed funding and timing of mitigation measures are sufficient to avoid a significant adverse impact on the Interstate Highway system, then local governments may also rely on the improvements identified in paragraphs (b)(D) and (E) of this section; or**

**(B) There is an adopted interchange area management plan, then local governments may also rely on the improvements identified in that plan and which are also identified in paragraphs (b)(D) and (E) of this section.**

**(d) As used in this section and section (3):**

**(A) Planned interchange means new interchanges and relocation of existing interchanges that are authorized in an adopted transportation system plan or comprehensive plan;**

**(B) Interstate highway means Interstates 5, 82, 84, 105, 205 and 405; and**

**(C) Interstate interchange area means:**

**(i) Property within one-quarter mile of the ramp terminal intersection of an existing or planned interchange on an Interstate Highway; or**

**(ii) The interchange area as defined in the Interchange Area Management Plan adopted as an amendment to the Oregon Highway Plan.**

**(e) For purposes of this section, a written statement provided pursuant to paragraphs (b)(D), (b)(E) or (c)(A) provided by ODOT, a local government or transportation facility provider, as appropriate, shall be conclusive in determining whether a transportation facility, improvement or service is a planned transportation facility, improvement or service. In the absence of a written statement, a local government can only rely upon planned transportation facilities, improvements and services identified in paragraphs (b)(A)–(C) to determine whether there is a significant effect that requires application of the remedies in section (2).**

[...]

**Finding:**

*The applicant proposed an amendment to the Comprehensive Plan and Zoning Map designation of the subject property as Tualatin is a single-map Comprehensive Plan/Zoning Map jurisdiction. The proposed plan amendment would increase the maximum density from 25 units per acre (townhouses) under the current Medium Low Density Residential (RML) zoning to a maximum of 30 units per acre (household living uses) under the High Density High Rise Zone (RH-HR).*

*The applicant provided a review of Oregon’s Transportation Planning Rule (TPR) (OAR 660-012-0060) and a trip generation analysis by Lancaster Mobley included in Exhibit D. The review identified the proposed amendment would impact an existing transportation facility. Specifically, the applicant identified the intersection of SW Norwood Road and SW Boones Ferry Road as failing. Staff note that the applicant’s TPR analysis, which was reviewed and concurred by DKS Associates, indicated that this intersection would ultimately fail, with or without the proposed plan map amendment, unless a traffic signal is installed at the intersection of SW Norwood Road and SW Boones Ferry Road. The applicant’s analysis stated all study intersections show operational results that meet standards under all analysis scenarios except the intersection of SW Norwood Road and SW Boones Ferry Road if it remains unsignalized.*

*On behalf of the City of Tualatin, DKS Associates evaluated the applicant’s TPR analysis and mitigation recommendation (Exhibit E). DKS Associates agreed with the applicant’s TPR analysis findings and that the construction of a traffic signal would be an adequate mitigation measure to address the failing intersection of SW Boones Ferry Rd and SW Norwood Road. DKS Associates also stated the intersection should include a separate striped westbound left turn lane for safety reasons, consistent with the functional classification. It is recommended the westbound left turn run on a separate phase to protect the pedestrians on the south crosswalk, which is directly adjacent to a transit stop. A leading pedestrian interval could also be used and a northbound right turn overlap could be implemented to shorten the right turn queue length.*

*The application of the reasonable worst-case analysis must be performed to show no significant impact of the zone change per the Transportation Planning Rule. The trip generation comparison for the zone change shows the reasonable worst-case build-out of the two subject parcels under both the existing and proposed zoning. Overall the trip generation comparison shows a decrease of 157 trips in the AM peak hour due to less contributing school traffic and an increase of 60 trips in the PM peak hour. There is an increase of 636*

*daily trips which is over the 450 trip threshold set by ODOT which requires operational analysis to determine if there are significant impacts from this zone change.*

*Operations analysis was performed for the existing and proposed zoning scenarios under year 2040 conditions. The study intersections generally performed slightly better in the AM peak hour and the same or slightly worse in the PM peak hour under the proposed zoning. Under both zoning scenarios, the intersection of Boones Ferry Road/Norwood Road would fail without signalization. This triggers OAR 660-012-0060 section (1)(c)(C). With signalization, the intersection performs at LOS B and v/c ratio 0.73 under the proposed zoning. Thus, with the proposed mitigation of signalization, the analysis concluded the significant effect due to the proposed zoning change is mitigated per OAR 660-012-0660(2)(d).*

## **C: Metro Chapter 3.07, Urban Growth Management Functional Plan**

**The following Chapters and Titles of Metro Code are applicable to the proposed amendments:  
Chapter 3.07, Urban Growth Management Functional Plan**

### **Finding:**

*Metro's Urban Growth Management Functional Plan is established in Metro Code as Section 3.07. The following Functional Plan sections are applicable to the proposed plan and map amendments:*

#### **Title 1 – Housing Capacity: requires a city or county to maintain or increase its housing capacity.**

- *The proposed amendment would create a High Density High Rise (RH-HR) zone that permits multi-family housing at 26-30 units an acre from the current zoning of Medium Low Density (RML) and Institutional (IN). Page 3 of the applicant's narrative cited Tualatin's Housing Needs Analysis (HNA) and stated there is a surplus in Low Density Residential (RL), Medium Low Density Residential (RML), and High Density Residential (RH) designations in the City of Tualatin. As there are currently no buildable acres of RH-HR lands, a deficit of 101 dwelling units is shown. After the proposed plan map amendment, there would still be a surplus of RML land and there would no longer be a deficit of RH-HR land. The applicant stated the proposed amendment does not seek to adjust minimum or maximum densities or uses required by the RH-HR zone. The proposed map and plan text amendment changes also do not decrease housing supply, density, or capacity within the City of Tualatin.*

#### **Title 2 – Regional Parking Policy: repealed.**

#### **Title 3 – Water Quality and Flood Management: protects Water Quality and Flood Management Areas.**

- *Water Quality and Flood Management are addressed in Tualatin Development Code Chapters 70, 71, and 74. No amendments are proposed to these chapters. No physical development is proposed with this application for the plan map and text amendment. The subject site would be further examined for natural resources with future development of the site through an Architectural Review. Future development of the site would need to comply with local, regional, state, and federal requirements for the protection of air, water, and land resources.*

#### **Title 4 – Industrial and Other Employment Areas: promotes "clustering" of industries that operate more productively and efficiently when in proximity to each other.**

- *The site is currently zoned to allow Medium Low Density (RML) and Institutional (IN) uses. While the area was previously designated by Metro as an Industrial Area (Title 4, Industrial and Other Employment Areas map), the proposed map and text amendments do not diminish the industrial or commercial capacities of the City because the area was not zoned for industrial or commercial uses by the City of Tualatin.*

#### **Title 5 - Neighbor Cities and Rural Reserves: repealed**

#### **Title 6 – Centers, Corridors, Station Communities and Main Streets: enhancements of these areas as principal centers of urban life via actions and investments.**

- *The subject site has not been identified as a Regional Center, Town Center, Station Community or Main Street.*

**Title 7 – Housing Choice: implements policies regarding establishment of voluntary affordable housing production goals to be adopted by local governments.**

- *The proposed plan map amendment would permit multi-family housing at 26-30 units an acre. Page 29 of the applicant’s narrative stated the amendments do not prohibit regulated affordable housing on the project site, but the project does not plan to utilize or provide affordable housing. The amendments will allow for the development of multifamily dwelling units, which provide additional housing choices; choices that are more affordable than detached single-family housing. The applicant cites Tualatin’s Housing Needs Analysis recommendation that the City provide all types of housing, including market-rate multifamily housing.*

**Title 8 – Compliance Procedures: ensures all cities & counties are equitably held to the same standards.**

- *The City of Tualatin continues to partner with Metro to comply with the Functional Plan. Amendments were shared and posted with DLCD on March 20, 2023 – 63 days before the scheduled hearing.*

**Title 9 – Performance Measures: repealed.**

**Title 10 – Functional Plan Definitions.**

**Title 11 – Planning for New Urban Areas: guides planning of areas brought into the UGB.**

- *The proposed High Density High Rise (RH-HR) zone subject site is not on land eligible for annexation into the City of Tualatin; therefore amendments do not affect planning areas outside of the UGB.*

**Title 12 – Protection of Residential Neighborhoods: protects existing residential neighborhoods from pollution, noise, crime, and provides adequate levels of public services.**

- *The site of the proposed plan map amendment would be adequately serviced by existing and proposed infrastructure and services. Infrastructure and public services will be discussed in greater detail in TDC 33.070(5)(i).*
- *The proposed text amendment would limit the height of structures on the subject site to 50 feet or four stories to make the aesthetic of the site compatible with surrounding uses. The applicant has proposed a 60-foot landscape buffer along SW Norwood Rd for additional screening.*

**Title 13 – Nature in Neighborhoods: conserves, protects and restores a continuous ecologically viable streamside corridor system integrated with upland wildlife habitat and the urban landscape.**

- *Protection of natural resources are addressed in Chapter 72 of the Tualatin Development Code. In addition, sites are reviewed for the presence of natural resources and are reviewed by Clean Water Services at the time of development. No physical development is proposed with this application for the plan map and text amendment. The subject site would be further examined for natural resources with future development of the site through an Architectural Review. Future development of the site would need to comply with local, regional, state, and federal requirements for the protection of air, water, and land resources. No amendments to this chapter are proposed under this application.*

***Title 14 – Urban Growth Boundary: prescribes criteria and procedures for amendments to the UGB.***

- *No amendments are proposed to the UGB under this application.*

## **D: Tualatin Comprehensive Plan**

### **Chapter 1 – Community Involvement:**

**POLICY 1.1.3. Conduct the planning process with adequate input and feedback from citizens in each affected neighborhood.**

#### **Finding:**

*The applicant provided evidence that an in-person Neighborhood/Developer Meeting was held on October 25, 2022, that discussed the proposed plan map and text amendments (Exhibit I). The meeting was held and noticed in accordance with TDC 32.120. As a land use application requiring a Type IV-A procedure, an advisory recommendation will be sought before the Tualatin Planning Commission prior to the City Council meeting. City staff issued public notice and request for comment in accordance with the noticing procedures outlined in TDC 32.240 and included as Exhibit K.*

### **Chapter 3 – Housing & Residential Growth:**

**GOAL 3.1 HOUSING SUPPLY. Ensure that a 20-year land supply is designated and has urban services planned to support the housing types and densities identified in the Housing Needs Analysis.**

#### **Finding:**

***Plan Map Amendment:*** Tualatin’s 2019 Housing Needs Analysis (HNA) identified a deficit of land designated for housing in the High Density High Rise (RH-HR) residential comprehensive plan designations. The HNA reported 4 acres of RH-HR zoning are needed to provide additional housing in the City. There are existing properties identified for RH-HR zoning on the City’s Comprehensive Map. The current RH-HR area is generally located south of SW Tualatin Road and is constrained by public ownership, lack of direct public access and environmental factors such as the existing wetlands and floodplains. The HNA has considered the land to be unbuildable and is not considered available for additional housing. The proposed map amendment would provide a ±9.2-acre site to support the housing types and densities identified within the HNA. The HNA forecasts that multifamily units will provide 45 percent (456 dwelling units) of the 1,014 dwellings that are needed in Tualatin between 2020 and 2040.

*Page 8 of the applicant’s narrative (Exhibit A) provided information from the Tualatin Housing Production Strategy (HPS) that presented a housing strategy for the implementation of Tualatin’s HNA. The applicant’s narrative highlighted HPS Actions 1.2 “Evaluate opportunities to rezone land to provide additional opportunities for multifamily housing development”, 5.1 “Identify districts within Tualatin with opportunities for redevelopment for housing and employment uses” and 5.2 “Support redevelopment of underutilized commercial buildings for housing”. The applicant stated the proposed plan map amendment aligns with the cited actions of the HPS.*

***Plan Text Amendment:*** The proposed text amendment would remove the zoning district locational language from the purpose statement of Chapter 44 of the Tualatin Development Code. The existence of the locational language does not allow the RH-HR zoning to be permitted in a location that is considered buildable. The text amendment would allow RH-HR to be permitted on other properties with access to facilities, services, and without the constraints of the wetlands, floodplains and lack of public access.

**POLICY 3.1.1 DENSITY. Maintain a citywide residential density of at least eight (8) dwelling units per net**

acre.

**Finding:**

**Plan Map Amendment:** OAR 660-007 requires that Tualatin provide the opportunity for the development of housing at an overall average density of eight dwelling units per net acre. The High Density High Rise (RH-HR) zoning requires a density between 26 and 30 dwelling units per acre for household living uses. The proposed plan map amendment would increase the City's residential land supply and contribute to the minimum target density provisions.

**Plan Text Amendment:** The proposed text amendment would remove the zoning district locational language from the purpose statement of Chapter 44 of the Tualatin Development Code. The existence of the locational language does not allow the RH-HR zoning to be permitted in a location that is considered buildable. The text amendment would allow RH-HR to be permitted on other properties with access to facilities, services, and without the constraints of the wetlands, floodplains and lack of public access.

**POLICY 3.1.2 ZONING FOR MULTIFAMILY. Provide zoning for multifamily development, which may be located in areas adjacent to transit.**

**Finding:**

**Plan Map Amendment:** Page 10 of the applicant's narrative (Exhibit A) cited Tualatin's Housing Needs Analysis, which stated there are no areas of High Density High Rise (RH-HR) zoning that are considered available for additional housing. The plan map amendment would provide zoning for multi-family development near Trimet Bus Route 96 which is located along SW Boones Ferry Road.

**Plan Text Amendment:** The proposed text amendment would remove the zoning district's locational language from the purpose statement of Chapter 44 of the Tualatin Development Code. The removal of this language would allow the City to apply the RH-HR zoning for multifamily development beyond the locational limits of the current code. This would include other sites that could be zoned for multi-family development and also adjacent to transit that are outside of the current permitted locations.

**GOAL 3.2 HOUSING FOR ALL. Encourage development and preservation of housing that is affordable for all households in Tualatin.**

**Finding:**

**Plan Map Amendment:** Page 10 of the applicant's narrative (Exhibit A) cited Tualatin's 2019 Housing Needs Analysis which identified the need for a higher percentage of multifamily dwelling units (45% of new housing) to meet the demographics of the City and to increase housing affordability. The applicant stated that for rent apartments are an affordable alternative to buying a home and that without an additional supply of residential rental units the demand would continue to raise rents and make renting less affordable in Tualatin. The plan map amendment would permit a density of 26-30 units per acre for multi-family housing.

**Plan Text Amendment:** The proposed text amendment would remove the zoning district locational language from the purpose statement of Chapter 44 of the Tualatin Development Code. The existence of the locational language does not allow the RH-HR zoning to be permitted in a location that is considered buildable. The text amendment would allow RH-HR to be permitted on other properties with access to facilities, services, and without the constraints of the wetlands, floodplains and lack of public access.



**POLICY 3.2.1 HOUSING TYPE DIVERSITY.** Support development of townhomes, duplexes, triplexes, quadplexes, cottages, courtyard housing, accessory dwelling units, single story unites, senior housing, and extended family and multi-generational housing in all residential zoning districts.

**Finding:**

*Page 11 of the applicant’s narrative (Exhibit A) stated the proposed plan map and text amendment would increase the supply of renter occupied housing and the diversity of housing types within the City of Tualatin by allowing the construction of apartment housing.*

***Plan Map Amendment:*** *The proposed plan map amendment would change the subject site zoning from Institutional (IN) and Medium Low Density Residential (RML) to High Density High Rise (RH-HR). The proposed map amendment could allow for the construction of up to 276 housing units on the ±9.2-acre site,*

***Plan Text Amendment:*** *The plan text amendment would allow the City to apply the RH-HR zoning for multifamily development on properties without the constraints of the current available land inventory for RH-HR lands such as wetland habitats and floodplains.*

**GOAL 3.5 HOUSING AND TRANSPORTATION.** Encourage development and redevelopment in Tualatin that supports all modes of transportation, including walking, biking and mass transit.

**GOAL 3.7 RESIDENTIAL GROWTH AND THE ENVIRONMENT.** Plan for housing and residential growth to minimize and mitigate for environmental impacts.

**Finding:**

***Plan Map Amendment:*** *The location of the proposed plan map amendment is near the intersection of SW Boones Ferry Road, SW Norwood Road, and the future extension of the Basalt Creek Parkway. The subject site is near Trimet Bus Route 96 which is located along SW Boones Ferry Road. The submitted narrative from the applicant implied that future increased residential, commercial, and industrial growth in the area could lead to expanded levels of service along the route. On page 12 of the submitted narrative, the applicant provided additional figures in response to Goal 3.7 (Exhibit A). The figures depicted the existing High Density High Rise (RH-HR) zoned lands in the City of Tualatin. The figures included an overlay that showed the land constraints of the existing RH-HR zoned areas. The applicant stated the existing RH-HR lands within the City have been classified as largely unbuildable due to wetland habitats and floodplains. Other nearby residential lands to the amendment subject site such as that west of SW Boones Ferry Road, are also significantly impacted by historic buildings, wetland, riparian, and upland habitats. In comparison, the applicant noted that the proposed subject site does not feature any identified upland or riparian habitats. The plan map amendment would provide zoning for multi-family development on land free from historic buildings, wetland, riparian, and upland habitats.*

***Plan Text Amendment:*** *The plan text amendment would allow the City to apply the RH-HR zoning for multifamily development on properties that meet the above criterion without the constraints of the current available land inventory for RH-HR lands such as wetland habitats and floodplains.*

**POLICY 3.7.1 ENVIRONMENTAL PROTECTION.** Housing and residential growth policies will be evaluated for consistency with the environmental protection goals and policies of Chapter 7 (Parks, Open Space, and the Environment).

**Finding:**

*Further review of the site would be conducted through the Architectural Review process to meet the environmental protection goals and policies of Chapter 7. Chapters 71 and 72 of the Tualatin Development Code address any Wetland Protection Districts and Natural Resource Overlay Districts. Any development will be reviewed under the Architectural Review (AR) process to ensure that new construction would be consistent with these requirements.*

**Chapter 10 – Land Use Designations and Zoning:**  
**Planning District Objectives**

**RESIDENTIAL PLANNING DISTRICTS:**

**Medium Low Density Residential Planning District (RML)**

**This district supports household living uses with a variety of housing types at moderately low densities. This district is primarily oriented toward middle housing types including attached dwellings, multi-family development, and manufactured dwelling parks.**

**High Density Residential/High-Rise Planning District (RH-HR)**

**This district supports a wide range of housing types at the greatest density of household living in areas with the greatest access to amenities.**

**OTHER PLANNING DISTRICTS:**

**Institutional Planning District (IN)**

**The purpose of this district is to provide an environment exclusively for, and conducive to, the development and operation of religious institutions, schools, public parks, and related uses, in a manner that is harmonious with adjacent and nearby residential, commercial, or manufacturing planning districts and uses.**

**The district is intended to accommodate large-scale campus-style developments, owned and operated by governmental or nonprofit entities, consisting of multiple structures or facilities, which may serve multiple purposes and provide multiple services to the community.**

**Permitted and conditional uses shall be developed and operated in a manner that promotes and protects the health, safety, and general welfare of all adjacent and nearby planning districts and uses. Additionally, conditional uses shall be allowed provided that the use is developed and operated in a manner that is consistent with the intent of the planning district, and that promotes and protects the health, safety, and general welfare of all adjacent and nearby planning districts and uses.**

**The district may be applied to land that is able to accommodate large-scale campus-style development and operation of religious institutions, schools, public parks, and related uses, as follows:**

- **Contiguous land one and one-half acre in size or greater;**
- **Access to a collector or arterial street;**
- **Adequate public facilities are available to the property.**

**Finding:**

***Plan Map Amendment:*** *The proposed amendment would rezone the subject site to High Density High Rise (RH-HR) from the current zoning of Institutional (IN) and Medium Low Density Residential (RML). On page 14 of the narrative, the applicant stated the removal of the ±8.2-acres of Institutional land will not compromise the ability of the Horizon Church and School to optimize the use of their land and the services they provide. The applicant cited the 2019 Housing Needs Analysis and Economic Opportunities Analysis which identified the surplus of existing RML and IN zoning in the City of Tualatin. The applicant’s narrative also provided additional background information regarding the subject site. Prior to annexation to the City*

*of Tualatin, Washington County approved a Master Plan in 2006 for the church and school property. The church has determined that their needs and the realization of the Master Plan can be met on a more compact portion of their property. This provides the opportunity to rezone and develop the remainder of the property with multifamily housing. The proposed plan map amendment would change the zoning designation of the subject site from Medium Low Density Residential (RML) and Institutional (IN) to High Density High Rise (RH-HR). This change would allow a maximum of 30 units per acre for household living uses. Tualatin's 2019 Housing Needs Analysis identified a deficit of land zoned RH-HR as opposed to a surplus of land zoned RML and IN.*

***Plan Text Amendment:*** *The proposed text amendment would remove the zoning district locational language from the purpose statement of Chapter 44 of the Tualatin Development Code. The existence of the locational language does not allow the RH-HR zoning to be permitted in a location that is considered buildable. The text amendment would allow RH-HR to be permitted on other properties with access to facilities, services, and without the constraints of the wetlands, floodplains and lack of public access.*

## E: Tualatin Development Code

### Chapter 32: Procedures

#### **TDC 32.010. - Purpose and Applicability.**

**(2) Applicability of Review Procedures.** All land use and development permit applications and decisions, will be made by using the procedures contained in this Chapter. The procedure "type" assigned to each application governs the decision-making process for that permit or application. There are five types of permit/application procedures as described in subsections (a) through (e) below. Table 32-1 lists the City's land use and development applications and corresponding review procedure(s).

**(d) Type IV-A Procedure (Quasi-Judicial Review—City Council Public Hearing).** Type IV-A procedure is used when the standards and criteria require discretion, interpretation, or policy or legal judgment and is the procedure used for site-specific land use actions initiated by an applicant. Type IV-A decisions are made by the City Council and require public notice and a public hearing. Appeals of Type IV-A decisions are heard by the Land Use Board of Appeals (LUBA).

**(3) Determination of Review Type.** Unless specified in Table 32-1, the City Manager will determine whether a permit or application is processed as Type I, II, III, IV-A or IV-B based on the descriptions above. Questions regarding the appropriate procedure will be resolved in favor of the review type providing the widest notice and opportunity to participate. An applicant may choose to elevate a Type I or II application to a higher numbered review type, provided the applicant pays the appropriate fee for the selected review type.

Table 32-1—Applications Types and Review Procedures

Application/Action	Procedure Type	Decision Body*	Appeal Body*	Pre-Application Conference Required	Neighborhood/Developer Mtg Required	Applicable Code Chapter
<b>Plan Amendments</b>						
• Map or Text Amendments for a specific property	IV-A	CC	LUBA	Yes	Yes	TDC <u>33.070</u>

\* City Council (CC); Planning Commission (PC); Architectural Review Board (ARB); City Manager or designee (CM); Land Use Board of Appeals (LUBA).

#### **Finding:**

*The proposed plan map and plan text amendment applications are subject to the Type IV-A procedures according to Table 32-1. Both applications have been processed according to the applicable code for Type IV-A procedures. Any future development or construction will be reviewed under a separate land use*

*application.*

**TDC 32.030. - Time to Process Applications.**

**(1) Time Limit—120-day Rule.** The City must take final action on all Type II, Type III, and Type IV-A land use applications, as provided by ORS 227.178, including resolution of all local appeals, within 120 days after the application has been deemed complete under TDC 32.160, unless the applicant provides written request or consent to an extension in compliance with ORS 227.178. (Note: The 120-day rule does not apply to Type IV-B (Legislative Land Use) decisions.)

**(3) Time Periods.** "Days" means calendar days unless otherwise specified. In computing time periods prescribed or allowed by this Chapter, the day of the act or event from which the designated period of time begins is not included. The last day of the period is included, unless it is a Saturday, Sunday, or a legal holiday, in which case the period runs until the end of the next day that is not on a weekend or City recognized legal holiday.

**Finding:**

*The proposed plan map amendment and plan text amendments are an amendment to the City's Comprehensive Plan and Tualatin Development Code, the 120-day rule portion of ORS 227.178 is not applicable.*

**TDC 32.110. - Pre-Application Conference.**

**(1) Purpose of Pre-Application Conferences.** Pre-application conferences are intended to familiarize applicants with the requirements of the TDC; to provide applicants with an opportunity discuss proposed projects in detail with City staff; and to identify approval criteria, standards, and procedures prior to filing a land use application. The pre-application conference is intended to be a tool to assist applicants in navigating the land use process, but is not intended to be an exhaustive review that identifies or resolves all potential issues, and does not bind or preclude the City from enforcing any applicable regulations or from applying regulations in a manner differently than may have been indicated at the time of the pre-application conference.

**(2) When Mandatory.** Pre-application conferences are mandatory for all land use actions identified as requiring a pre-application conference in Table 32-1. An applicant may voluntarily request a pre-application conference for any land use action even if it is not required.

**(3) Timing of Pre-Application Conference.** A pre-application conference must be held with City staff before an applicant submits an application and before an applicant conducts a Neighborhood/Developer meeting.

**(4) Application Requirements for Pre-Application Conference.**

**(a) Application Form.** Pre-application conference requests must be made on forms provided by the City Manager.

[...]

**Finding:**

*A Pre-Application meeting is mandatory for plan map and text amendment applications. The applicant participated in a Pre-Application meeting on July 13, 2022, and submitted their application approximately six months later on January 11, 2023.*

**TDC 32.120. - Neighborhood/Developer Meetings.**

**(1) Purpose.** The purpose of this meeting is to provide a means for the applicant and surrounding property owners to meet to review a development proposal and identify issues regarding the proposal so they can be considered prior to the application submittal. The meeting is intended to allow the

developer and neighbors to share information and concerns regarding the project. The applicant may consider whether to incorporate solutions to these issues prior to application submittal.

(2) **When Mandatory.** Neighborhood/developer meetings are mandatory for all land use actions identified in Table 32-1 as requiring a neighborhood/developer meeting. An applicant may voluntarily conduct a neighborhood/developer meeting even if it is not required and may conduct more than one neighborhood/developer meeting at their election.

(3) **Timing.** A neighborhood/developer meeting must be held after a pre-application meeting with City staff, but before submittal of an application.

(4) **Time and Location.** Required neighborhood/developer meetings must be held within the city limits of the City of Tualatin at the following times:

(a) If scheduled on a weekday, the meeting must begin no earlier than 6:00 p.m.

(b) If scheduled on a weekend, the meeting must begin between 10:00 a.m. and 6:00 p.m.

(5) **Notice Requirements.**

(a) The applicant must provide notice of the meeting at least 14 calendar days and no more than 28 calendar days before the meeting. The notice must be by first class mail providing the date, time, and location of the meeting, as well as a brief description of the proposal and its location. The applicant must keep a copy of the notice to be submitted with their land use application.

(b) The applicant must mail notice of a neighborhood/developer meeting to the following persons:

(i) All property owners within 1,000 feet measured from the boundaries of the subject property;

(ii) All property owners within a platted residential subdivision that is located within 1,000 feet of the boundaries of the subject property. The notice area includes the entire subdivision and not just those lots within 1,000 feet. If the residential subdivision is one of two or more individually platted phases sharing a single subdivision name, the notice area need not include the additional phases; and

(iii) All designated representatives of recognized Citizen Involvement Organizations as established in TMC Chapter 11-9.

(c) The City will provide the applicant with labels for mailing for a fee.

(d) Failure of a property owner to receive notice does not invalidate the neighborhood/developer meeting proceedings.

(6) **Neighborhood/Developer Sign Posting Requirements.** The applicant must provide and post on the subject property, at least 14 calendar days before the meeting. The sign must conform to the design and placement standards established by the City for signs notifying the public of land use actions in TDC 32.150.

(7) **Neighborhood/Developer Meeting Requirements.** The applicant must have a sign-in sheet for all attendees to provide their name, address, telephone number, and email address and keep a copy of the sign-in sheet to provide with their land use application. The applicant must prepare meeting notes identifying the persons attending, those commenting and the substance of the comments expressed, and the major points that were discussed. The applicant must keep a copy of the meeting notes for submittal with their land use application.

**Finding:**

*The applicant provided evidence that a Neighborhood/Developer Meeting was held on October 25, 2022 that discussed the proposed plan map and plan text amendments. The applicant provided documentation of sign posting and notification in compliance with Section 32.120 in Exhibit I.*

**Section 32.130 – Initiation of Applications.**

**(1) Type I, Type II, Type III, and Type IV-A Applications.** Type I, Type II, Type III, and Type IV-A applications may be submitted by one or more of the following persons:

- (a) The owner of the subject property;
- (b) The contract purchaser of the subject property, when the application is accompanied by proof of the purchaser's status as such and by the seller's written consent;
- (c) A lessee in possession of the property, when the application is accompanied by the owners' written consent; or
- (d) The agent of any of the foregoing, when the application is duly authorized in writing by a person authorized to submit an application by paragraphs (a), (b) or (c) of this subsection, and accompanied by proof of the agent's authority.

[...]

**Finding:**

*The applicant has provided a title report, included as Exhibit I, showing Horizon Community Church and 9300 SW Norwood Road OR LLC to be the current owners of the subject site. The applications have been submitted by the property owners and contract purchasers of all properties affected by the proposed plan map and text amendments.*

**Section 32.140 – Application Submittal.**

**(1) Submittal Requirements.** Land use applications must be submitted on forms provided by the City. A land use application may not be accepted in partial submittals. All information supplied on the application form and accompanying the application must be complete and correct as to the applicable facts. Unless otherwise specified, all of the following must be submitted to initiate completeness review under TDC 32.160:

- (a) A completed application form. The application form must contain, at a minimum, the following information:
  - (i) The names and addresses of the applicant(s), the owner(s) of the subject property, and any authorized representative(s) thereof;
  - (ii) The address or location of the subject property and its assessor's map and tax lot number;
  - (iii) The size of the subject property;
  - (iv) The comprehensive plan designation and zoning of the subject property;
  - (v) The type of application(s);
  - (vi) A brief description of the proposal; and
  - (vii) Signatures of the applicant(s), owner(s) of the subject property, and/or the duly authorized representative(s) thereof authorizing the filing of the application(s).
- (b) A written statement addressing each applicable approval criterion and standard;
- (c) Any additional information required under the TDC for the specific land use action sought;
- (d) Payment of the applicable application fee(s) pursuant to the most recently adopted fee schedule;
- (e) Recorded deed/land sales contract with legal description.
- (f) A preliminary title report or other proof of ownership.
- (g) For those applications requiring a neighborhood/developer meeting:
  - (i) The mailing list for the notice;
  - (ii) A copy of the notice;
  - (iii) An affidavit of the mailing and posting;
  - (iv) The original sign-in sheet of participants; and
  - (v) The meeting notes described in TDC 32.120(7).

**(h) A statement as to whether any City-recognized Citizen Involvement Organizations (CIOs) whose boundaries include, or are adjacent to, the subject property were contacted in advance of filing the application and, if so, a summary of the contact. The summary must include the date when contact was made, the form of the contact and who it was with (e.g. phone conversation with neighborhood association chairperson, meeting with land use committee, presentation at neighborhood association meeting), and the result;**

**(i) Any additional information, as determined by the City Manager, that may be required by another provision, or for any other permit elsewhere, in the TDC, and any other information that may be required to adequately review and analyze the proposed development plan as to its conformance to the applicable criteria;**

**(2) Application Intake.** Each application, when received, must be date-stamped with the date the application was received by the City, and designated with a receipt number and a notation of the staff person who received the application.

**(3) Administrative Standards for Applications.** The City Manager is authorized to establish administrative standards for application forms and submittals, including but not limited to plan details, information detail and specificity, number of copies, scale, and the form of submittal

**Finding:**

*The applicant submitted an application for PMA23-0001 and PTA23-0001 on January 11, 2023. The application was deemed complete on February 10, 2023. The general land use submittal requirements were included with the application.*

**Section 32.150 - Sign Posting.**

**(1) When Signs Posted.** Signs in conformance with these standards must be posted as follows:

- (a) Signs providing notice of an upcoming neighborhood/developer meeting must be posted prior to a required neighborhood/developer meeting in accordance with Section 32.120(6); and**
- (b) Signs providing notice of a pending land use application must be posted after land use application has been submitted for Type II, III and IV-A applications.**

**(2) Sign Design Requirements.** The applicant must provide and post a sign(s) that conforms to the following standards:

- (a) Waterproof sign materials;**
- (b) Sign face must be no less than eighteen (18) inches by twenty-four (24) inches (18" x 24");**  
**and**
- (c) Sign text must be at least two (2) inch font.**

**(3) On-site Placement.** The applicant must place one sign on their property along each public street frontage of the subject property. (Example: If a property adjoins four public streets, the applicant must place a sign at each of those public street frontages for a total of four signs). The applicant cannot place the sign within public right of way.

**(4) Removal.** If a sign providing notice of a pending land use application disappears prior to the final decision date of the subject land use application, the applicant must replace the sign within fortyeight (48) hours of discovery of the disappearance or of receipt of notice from the City of its disappearance, whichever occurs first. The applicant must remove the sign no later than fourteen (14) days after:

- (a) The meeting date, in the case of signs providing notice of an upcoming neighborhood/developer meeting; or**
- (b) The City makes a final decision on the subject land use application, in the case of signs providing notice of a pending land use application.**



**Finding:**

*The applicant provided certification, included as Exhibit I, that signs for the plan map and text amendment applications in conformance with Section 32.150 were placed on site.*

**Section 32.160 – Completeness Review.**

**(1) Duration.** Except as otherwise provided under ORS 227.178, the City Manager must review an application for completeness within 30 days of its receipt.

**(2) Considerations.** Determination of completeness will be based upon receipt of the information required under TDC 32.140 and will not be based on opinions as to quality or accuracy. Applications that do not respond to relevant code requirements or standards can be deemed incomplete. A determination that an application is complete indicates only that the application is ready for review on its merits, not that the City will make a favorable decision on the application.

**(3) Complete Applications.** If an application is determined to be complete, review of the application will commence.

**(4) Incomplete Applications.** If an application is determined to be incomplete, the City Manager must provide written notice to the applicant identifying the specific information that is missing and allowing the applicant the opportunity to submit the missing information. An application which has been determined to be incomplete must be deemed complete for purposes of this section upon receipt of:

**(a) All of the missing information;**

**(b) Some of the missing information and written notice from the applicant that no other information will be provided; or**

**(c) Written notice from the applicant that none of the missing information will be provided.**

**(5) Vesting.** If an application was complete at the time it was first submitted, or if the applicant submits additional required information within 180 days of the date the application was first submitted, approval or denial of the application must be based upon the standards and criteria that were in effect at the time the application was first submitted.

**(6) Void Applications.** An application is void if the application has been on file with the City for more than 180 days and the applicant has not provided the missing information or otherwise responded, as provided in subsection (4) of this section.

[...]

**Finding:**

*The applicant submitted an application for PMA23-0001 and PTA 23-0001 on January 11, 2023. The applications were deemed complete on February 10, 2023.*

**TDC 32.240. - Type IV-A Procedure (Quasi-Judicial Review—City Council Public Hearing).**

Type IV-A decisions are quasi-judicial decisions made by the City Council after a public hearing. A hearing under these procedures provides a forum to apply standards to a specific set of facts to determine whether the facts conform to the applicable criteria and the resulting determination will directly affect only a small number of identifiable persons. Except as otherwise provided, the procedures set out in this section must be followed when the subject matter of the evidentiary hearing would result in a quasi-judicial decision. City Council decisions may be appealed to the state Land Use Board of Appeals pursuant to ORS 197.805—197.860.

**(1) Submittal Requirements.** Type IV-A applications must include the submittal information required by TDC 32.140(1).

**(2) Determination of Completeness.** After receiving an application for filing, the City Manager will review the application will for completeness in accordance with TDC 32.160.

**(3) Written Notice of Public Hearing—Type IV-A.** Once the application has been deemed complete, the

**City must mail by regular first class mail Notice of a Public Hearing to the following individuals and agencies no fewer than 20 days before the hearing.**

**(a) Recipients:**

- (i) The applicant and, the owners of the subject property;**
- (ii) All property owners within 1,000 feet measured from the boundaries of the subject property;**
- (iii) All property owners within a platted residential subdivision that is located within 1,000 feet of the boundaries of the subject property. The notice area includes the entire subdivision and not just those lots within 1,000 feet. If the residential subdivision is one of two or more individually platted phases sharing a single subdivision name, the notice area need not include the additional phases;**
- (iv) All recognized neighborhood associations within 1,000 feet from the boundaries of the subject property;**
- (v) All designated representatives of recognized Citizen Involvement Organizations as established in TMC Chapter 11-9;**
- (vi) Any person who submits a written request to receive a notice;**
- (vii) Any governmental agency that is entitled to notice under an intergovernmental agreement entered into with the City and any other affected agencies, including but not limited to: school districts; fire district; where the project either adjoins or directly affects a state highway, the Oregon Department of Transportation; and where the project site would access a County road or otherwise be subject to review by the County, then the County; and Clean Water Services; Tri Met; and, ODOT Rail Division and the railroad company if a railroad-highway grade crossing provides or will provide the only access to the subject property. The failure of another agency to respond with written comments on a pending application does not invalidate an action or permit approval made by the City under this Code;**
- (viii) Utility companies (as applicable); and,**
- (ix) Members of the City Council.**

**(b) The Notice of a Public Hearing, at a minimum, must contain all of the following information:**

- (i) The names of the applicant(s), any representative(s) thereof, and the owner(s) of the subject property;**
- (ii) The street address if assigned, if no street address has been assigned then Township, Range, Section, Tax Lot or Tax Lot ID;**
- (iii) The type of application and a concise description of the nature of the land use action;**
- (iv) A list of the approval criteria by TDC section for the decision and other ordinances or regulations that apply to the application at issue;**
- (v) Brief summary of the local decision making process for the land use decision being made and a general explanation of the requirements for submission of testimony and the procedure for conduct of hearings;**
- (vi) The date, time and location of the hearing;**
- (vii) Disclosure statement indicating that if any person fails to address the relevant approval criteria with enough detail, he or she may not be able to appeal to the Land Use Board of Appeals on that issue, and that only comments on the relevant approval criteria are considered relevant evidence;**
- (viii) The name of a City representative to contact and the telephone number where additional information may be obtained;**
- (ix) Statement that the application and all documents and evidence submitted to the City are in the public record and available for review, and that copies can be obtained at a**

reasonable cost from the City; and

(x) Statement that a copy of the staff report will be available for inspection at no cost at least seven days prior to the hearing and will be provided at reasonable cost.

(c) Failure of a person or agency to receive a notice, does not invalidate any proceeding in connection with the application, provided the City can demonstrate by affidavit that required notice was given.

**(4) Additional Notice Requirements for Certain Type IV-A Application Types.** The following additional notice requirements apply to Type IV-A Hearings where the City Council will be considering the application or removal of a Historic Landmark Designation or a Plan Text or Map Amendment for a particular property or discrete set of properties.

(a) The City Manager will notify in writing the Oregon Department of Land Conservation and Development (DLCD) in accordance with the minimum number of days required by ORS Chapter 197.

(b) At least 14 calendar days before the scheduled City Council public hearing date, public notice must be provided by publication in a newspaper of general circulation in the City.

(c) At least 14 calendar days before the scheduled City Council public hearing date, public notice must be posted in two public and conspicuous places within the City.

**Finding:**

*The first evidentiary public hearing before the City Council will be held on May 22, 2023 and will follow the Quasi-Judicial review process. After submittal and completeness review as required by this section, a notice of public hearing for Type IV-A application for PMA23-0001 and PTA23-0001 was mailed by city staff on March 17, 2023, and contained the information required by this section, as attached in Exhibit K The Oregon Department of Land Conservation was notified prior to the 35-day notice period on March 20, 2023, attached in Exhibit K. Public notice has been provided in the Tualatin Times during the weeks of April 6, 2023 and April 13, 2023, attached in Exhibit K. Public notice was posted in two public places within the City on March 17, 2023, attached as Exhibit K. Public comments have been received and included in Exhibit L.*

**(5) Conduct of the Hearing—Type IV-A.**

The Mayor (or Mayor Pro Tem) must follow the order of proceedings set forth below. These procedures are intended to provide all interested persons a reasonable opportunity to participate in the hearing process and to provide for a full and impartial hearing on the application before the body. Questions concerning the propriety or the conduct of a hearing will be addressed to the chair with a request for a ruling. Rulings from the Mayor must, to the extent possible, carry out the stated intention of these procedures. A ruling given by the Mayor on such question may be modified or reversed by a majority of those members of the decision body present and eligible to vote on the application before the body. The procedures to be followed by the Mayor in the conduct of the hearing are as follows:

(a) At the commencement of the hearing, the Mayor (or designee) must state to those in attendance all of the following information and instructions:

(i) The applicable approval criteria by Code Chapter that apply to the application;

(ii) Testimony and evidence must concern the approval criteria described in the staff report, or other criteria in the comprehensive plan or land use regulations that the person testifying believes to apply to the decision;

(iii) Failure to raise an issue with sufficient detail to give the City Council and the parties an opportunity to respond to the issue, may preclude appeal to the state Land Use Board of Appeals on that issue;

(iv) At the conclusion of the initial evidentiary hearing, the City Council must deliberate and make a decision based on the facts and arguments in the public record; and  
(v) Any participant may ask the City Council for an opportunity to present additional relevant evidence or testimony that is within the scope of the hearing; if the City Council grants the request, it will schedule a date to continue the hearing as provided in TDC 32.240(5)(e), or leave the record open for additional written evidence or testimony as provided TDC 32.240(5)(f).

(b) The public is entitled to an impartial decision body as free from potential conflicts of interest and pre-hearing ex parte (outside the hearing) contacts as reasonably possible. Where questions related to ex parte contact are concerned, members of the City Council must follow the guidance for disclosure of ex parte contacts contained in ORS 227.180. Where a real conflict of interest arises, that member or members of the City Council must not participate in the hearing, except where state law provides otherwise. Where the appearance of a conflict of interest is likely, that member or members of the City Council must individually disclose their relationship to the applicant in the public hearing and state whether they are capable of rendering a fair and impartial decision. If they are unable to render a fair and impartial decision, they must be excused from the proceedings.

(c) Presenting and receiving evidence.

(i) The City Council may set reasonable time limits for oral presentations and may limit or exclude cumulative, repetitious, irrelevant, or personally derogatory testimony or evidence;

(ii) No oral testimony will be accepted after the close of the public hearing. Written testimony may be received after the close of the public hearing only as provided by this section; and

(iii) Members of the City Council may visit the property and the surrounding area, and may use information obtained during the site visit to support their decision, if the information relied upon is disclosed at the beginning of the hearing and an opportunity is provided to dispute the evidence.

(d) The City Council, in making its decision, must consider only facts and arguments in the public hearing record; except that it may take notice of facts not in the hearing record (e.g., local, state, or federal regulations; previous City decisions; case law; staff reports). Upon announcing its intention to take notice of such facts in its deliberations, it must allow persons who previously participated in the hearing to request the hearing record be reopened, as necessary, to present evidence concerning the newly presented facts.

(e) If the City Council decides to continue the hearing, the hearing must be continued to a date that is at least seven days after the date of the first evidentiary hearing (e.g., next regularly scheduled meeting). An opportunity must be provided at the continued hearing for persons to present and respond to new written evidence and oral testimony. If new written evidence is submitted at the continued hearing, any person may request, before the conclusion of the hearing, that the record be left open for at least seven days, so that he or she can submit additional written evidence or arguments in response to the new written evidence. In the interest of time, after the close of the hearing, the decision body may limit additional testimony to arguments and not accept additional evidence.

(f) If the City Council leaves the record open for additional written testimony, the record must be left open for at least seven days after the hearing. Any participant may ask the decision body in writing for an opportunity to respond to new evidence (i.e., information not disclosed during the public hearing) submitted when the record was left open. If such a request is filed, the decision body must reopen the record, as follows:

- (i) When the record is reopened to admit new evidence or arguments (testimony), any person may raise new issues that relate to that new evidence or testimony;
  - (ii) An extension of the hearing or record granted pursuant to this section is subject to the limitations of TDC 32.030(1) (ORS 227.178—120-day rule), unless the applicant waives his or her right to a final decision being made within 120 days of filing a complete application; and
  - (iii) If requested by the applicant, the City Council must grant the applicant at least seven days after the record is closed to all other persons to submit final written arguments, but not evidence, provided the applicant may expressly waive this right.
- (6) Notice of Adoption of a Type IV-A Decision. Notice of Adoption must be provided to the property owner, applicant, and any person who provided testimony at the hearing or in writing. The Type IV-A Notice of Adoption must contain all of the following information:
- (a) A description of the applicant's proposal and the City's decision on the proposal, which may be a summary, provided it references the specifics of the proposal and conditions of approval in the public record;
  - (b) The address or other geographic description of the property proposed for development, including a map of the property in relation to the surrounding area;
  - (c) A statement a statement that a copy of the decision and complete case file, including findings, conclusions, and conditions of approval, if any, is available for review and how copies can be obtained;
  - (d) The date the decision becomes final; and
  - (e) The notice must include an explanation of rights to appeal a City Council decisions to the state Land Use Board of Appeals pursuant to ORS 197.805—197.860.
- (7) Effective Date of a Type IV-A Decision.
- (a) The written order is the final decision on the application.
  - (b) The date of the order is the date it is mailed by the Mayor (or designee) certifying its approval by the decision body.
  - (c) Appeal of a IV-A City Council decision is to the State Land Use Board of Appeals pursuant to ORS 197.805—197.860.

**Finding:**

*The City Council hearing will be conducted according to these requirements. Notice of Adoption of a Type IV-A Decision and any appeal will follow the requirements of this section.*

**Chapter 33: Applications and Approval Criteria**

**Section 33.070 Plan Amendments**

- (1) Purpose. To establish a process for the review of proposed amendments to the Zone Standards of the Tualatin Development Code and to the Text or the Plan Map of the Tualatin Comprehensive Plan.
- (2) Applicability. Quasi-judicial amendments may be initiated by the City Council, the City staff, or by a property owner or person authorized in writing by the property owner. Legislative amendments may only be initiated by the City Council.
- (3) Procedure Type.
  - (a) Map or text amendment applications which are quasi-judicial in nature (e.g. for a specific property or a limited number of properties) is subject to Type IV-A Review in accordance with TDC Chapter 32.
- (4) Specific Submittal Requirements. An application for a plan map or text amendment must comply with the general submittal requirements in TDC 32.140 (Application Submittal).

**Finding:**

*The proposed plan map and text amendments are quasi-judicial in nature and has been processed according to the Type IV-A procedures discussed above.*

**(5) Approval Criteria.**

**(a) Granting the amendment is in the public interest.**

**Finding:**

**Plan Map Amendment:** *Page 21 of the applicant's provided narrative stated the proposed map amendment serves the public interest by accommodating the housing, employment and transportation needs of the community as identified in the goals and policies of the Comprehensive Plan. The applicant cited the City's most recent Housing Needs Analysis (HNA) conducted in 2019 stating the lack of vacant units and continued demand for housing will drive the need to provide additional multifamily housing, which is expected to be 45% of Tualatin's future housing stock. Providing housing of various densities and levels of affordability are key housing needs addressed in Tualatin's HNA. From the HNA, the applicant cites that nearly 93% of the 23,800 people who work in Tualatin commute from outside of the city. A recommendation of the HNA was to provide housing closer to workplaces and thereby reducing transportation issues associated with long commutes. The submitted narrative references Tualatin's Basalt Creek Planning Area which is located near the subject site. The applicant stated the industrial lands and anticipated employment capacity would not be affected by the proposed zoning change from the current IN and RML zoning to RH-HR zoning, and that the plan map amendment would provide additional housing near the anticipated employment zone.*

*The applicant provided information pertaining to utility and transportation infrastructure for the plan map and text amendments outlined in the Transportation Impact Analysis located in Exhibit D and the Utility Capacity Analysis located in Exhibit F. The applicant proposed the addition of a traffic signal at the SW Norwood Road and SW Boones Ferry Road intersection to mitigate existing traffic impacts and the future impact of development on the subject site. Transportation and utilities in relation to the proposed amendments are further addressed in Section B: Oregon Administrative Rules and TDC 33.070(5)(f)(h)(i).*

*The proposed plan map amendment would change the subject site zoning from Institutional (IN) and Medium Low Density Residential (RML) to High Density High Rise (RH-HR). The proposed map amendment could allow for the construction of up to 276 housing units on the ±9.2-acre site, and would provide additional multifamily housing opportunities near an anticipated employment zone.*

*Comprehensive Plan goals and policies serve as the adopted expression of the public interest. As identified in Section D, above, the applicant has provided evidence that the proposed Map Amendment would satisfy several existing Plan policies and goals, and therefore the change would be in the public interest. Although the record includes testimony (Exhibit O) indicating that the public interest would be served by denial of the Plan Map Amendment and/or that approval of the Plan Map Amendment would not be in the public interest, said testimony does not identify specific Comprehensive Plan goals and policies that would not be satisfied by the Amendment or would conflict with approval of the Amendment.*

**Plan Text Amendment:** *There are existing properties identified for RH-HR zoning on the City's Comprehensive Map. The current RH-HR area is generally located south of SW Tualatin Road and is constrained by public ownership, lack of direct public access and environmental factors such as the existing wetlands and floodplains. The HNA has considered the land to be unbuildable and is not considered available for additional housing. The proposed text amendment would remove the zoning district locational*

*language from the purpose statement of Chapter 44 of the Tualatin Development Code. The existence of the locational language does not allow the RH-HR zoning to be permitted in a location that is considered buildable, and in effect precludes practical application of the RH-HR zone. The text amendment would allow RH-HR to be permitted on other properties with access to facilities, services, and without the constraints of the wetlands, floodplains and lack of public access.*

*Public comments (Exhibit L) have been received in opposition amendments that noted concerns over the protection of public interest, none of said comments identify what Plan goals and policies would be inconsistent with removal of the locational criteria for the RH-HR zone.*

**(b) The public interest is best protected by granting the amendment at this time.**

**Finding:**

***Plan Map Amendment:*** *Page 22 of the narrative submitted by the applicant stated the public interest is best protected by granting the amendment at this time due to Tualatin having few vacant lands with the ability to provide housing at the needed density established by the 2019 Housing Needs Analysis (HNA). The narrative continued to reference the HNA by stating the City would be challenged over the next 20 years to provide housing of all types, including market-rate multi-family housing. The applicant mentioned that allowing for increased density through the plan map amendment could help alleviate households' cost burdens by providing opportunities to add dwelling units to the housing market. The proposed plan map amendment would change the subject site zoning from Institutional (IN) and Medium Low Density Residential (RML) to High Density High Rise (RH-HR). The applicant stated the conversion of IN land to residential zoning protects the public interest by preserving employment lands in commercial and industrial zoning areas. The narrative referenced the Tualatin Economic Opportunities Analysis (Exhibit O) that was completed in 2019, which found there is low demand for land zoned IN in comparison to industrial, commercial, and residential zoning. The applicant went on to say, the City's HNA determined that the City has a 27-acre surplus of RML lands and a deficit of RH-HR lands. The conversion of RML lands to RH-HR specifically help address a previously identified, and thus already existing, deficient of land for needed housing. Despite the fact that there are other housing developments in various stages of approval and construction that will help meet the City's housing need, none are located or proposed to be located in the RH-HR zone. In addition, the applicant's proposal includes the installation of a traffic signal at SW Norwood Road and SW Boones Ferry Road.*

***Plan Text Amendment:*** *The proposed text amendment intends to limit the height of future buildings on the subject site to four stories or 50 feet (Exhibit C). The applicant has also proposed a 60-foot landscape buffer along SW Norwood Rd for additional screening. The narrative stated this would protect the public interest by ensuring compatibility with the surrounding aesthetics of neighborhoods and existing nearby structures.*

*Public comments (Exhibit L) have been received in opposition to the proposed plan map and text amendments that noted concerns over the protection of public interest, although they have not been identified with sufficient specificity to support a finding that this criterion is not met.*

*The removal of the locational restriction which in effect creates no developable lands zoned RH-HR is preexisting, and creates a deficit of lands identified in the HNA, which the proposed amendment would address.*

**(c) The proposed amendment is in conformity with the applicable objectives of the Tualatin Community Plan.**



**Finding:**

*As discussed above in Section D, the Plan Map amendment – application of the RH-HR zone to the subject property – has been identified by the applicant as being consistent with several existing goals and policies of the Comprehensive Plan. The Plan Map amendment also meets the same applicable goals and policies of the Plan in that it allows for the application of the RH-HR zone in a location that is considered buildable.*

**(d) The following factors were consciously considered:**

**(i) The various characteristics of the areas in the City;**

**Finding:**

***Plan Map Amendment:** Page 22 of the applicant’s narrative addressed the various characteristics of the area of the subject property. The site is located near public transportation bus lines, future goods and services, and employment areas. The site is in an area of growth and in close proximity to the Basalt Creek Employment Area which is expected to provide up to 2,300 jobs in the next 16 years. The subject site location would provide housing opportunities closer to future local workplaces in the Basalt Creek area. The applicant stated the subject site would allow for the provision of housing in a relatively undeveloped greenfield area without the reduction of housing stock or displacement of current residents. The proposed plan map amendment is not in an area with known environmental constraints, and would not be in need of environmental protection. The applicant provided a Transportation Impact Analysis including a Transportation Planning Rule analysis attached in Exhibit D. The report found that a traffic signal at the intersection of SW Norwood Road and SW Boones Ferry Road would be necessary even without the proposed apartment project due to the current conditions. With the addition of the traffic signal, the proposed zoning could be accommodated by the surrounding transportation network and frontage improvements.*

*It is worth noting that the above criterion calls for the various characteristics of the areas in the City to be “consciously considered” but does not provide a standard by which an amendment should be approved or denied. However, the applicant has identified several characteristics of the area relative to the City’s plans and goals for housing that it argues makes this location suitable for the type of housing that could be developed under the proposed amendment. Conversely, while there is public testimony that argues that the location is unsuitable, there is not sufficient specificity of the identified factors so as to support a finding that the characteristics of the areas of the city were not considered.*

***Plan Text Amendment:** The proposed text amendment would allow the application of High Density High Rise (RH-HR) zone to an area that meets the above factors and is not in a floodplain. The proposed text amendment requests to limit the height of future buildings on the subject site to four stories or 50 feet (Exhibit C). The proposed height limitation would reduce the visual impacts and characteristics of the future site improvements in surrounding areas.*

**(ii) The suitability of the areas for particular land uses and improvements in the areas;**

**Finding:**

***Plan Map Amendment:** Within the submitted narrative (Exhibit A), the applicant addressed the suitability of this particular geographic area on page 23 for the proposed land use which would be multi-family residential units. The applicant provided a Utility Capacity Analysis included as Exhibit F to address the proposed plan map amendment. The applicant noted nearby service and planned*



*improvements to include water, sanitary sewer, stormwater, transportation and public transit. The services and improvements are reviewed in greater detail in Section 33.070(5)(i).*

*Similar to the previous finding, it is worth noting that the above criterion calls for the suitability of the areas for particular land uses and improvements in the areas to be “consciously considered” but does not provide a standard by which an amendment should be approved or denied. However, the applicant has identified several characteristics of the area relative to the City’s goals for land uses and public improvements that it argues makes this location suitable for the type of housing that could be developed under the proposed amendment. Conversely, while there is public testimony that argues that the location is unsuitable, there is not sufficient specificity of the identified factors so as to support a finding that the characteristics of the areas of the city were not considered.*

**Plan Text Amendment:** *The proposed text amendment would allow the application of High Density High Rise (RH-HR) zone to an area that meets the above factors and is not in a floodplain. The locational factors of the current development code do not allow for a suitable area for RH-HR land uses. The proposed text amendment requests to limit the height of future buildings on the subject site to four stories or 50 feet (Exhibit C). The proposed height limitation would reduce the visual impacts and characteristics of the future site improvements in surrounding areas. The applicant provided a Utility Capacity Analysis included as Exhibit F to address the proposed plan text amendment. The applicant noted nearby service and planned improvements to include water, sanitary sewer, stormwater, transportation and public transit. The services and improvements are reviewed in greater detail in Section 33.070(5)(i).*

### **(iii) Trends in land improvement and development;**

#### **Finding:**

**Plan Map Amendment:** *The applicant’s narrative (Exhibit A) cited the City’s Housing Needs Analysis identified need for diverse housing choices and additional multifamily dwelling units on page 24. The surrounding areas are also experiencing housing development. The Autumn Sunrise subdivision is under development to the east of the subject site. Plambeck Gardens Apartments has completed the land use process to construct a 116 unit multi-family development southwest of the subject site. The applicant stated the proposed plan map amendment would provide additional housing opportunities in an area of the City currently experiencing growth. The applicant cited the City’s most recent Housing Needs Analysis (HNA) conducted in 2019 stating the lack of vacant units and continued demand for housing will drive the need to provide additional multifamily housing, which is expected to be 45% of Tualatin’s future housing stock. Providing housing of various densities and levels of affordability are key housing needs addressed in Tualatin’s HNA.*

**Plan Text Amendment:** *The proposed text amendment would remove the zoning district locational language from the purpose statement of Chapter 44 of the Tualatin Development Code. The existence of the locational language does not allow the High Density High Rise (RH-HR) zoning to be permitted in a location that is considered buildable. The text amendment would allow RH-HR to be permitted on other properties with access to facilities, services, and without the constraints of the wetlands, floodplains and lack of public access.*

### **(iv) Property values;**

#### **Finding:**

*Public comments (Exhibit L) have been received that note concerns over the property value of homes declining in the surrounding neighborhoods due to the proposed plan map and text amendments and future site development. Although property values were consciously considered, there is not sufficiently specific evidence that identifies material impact to property values from the proposed plan map and text amendments.*

**(v) The needs of economic enterprises and the future development of the area; needed right-of-way and access for and to particular sites in the area;**

**Finding:**

***Plan Map Amendment:*** Page 25 of the submitted narrative stated that providing multifamily residential zoning in the proposed area relieves pressure to rezone other non-residential lands for the purpose of housing. The narrative added that an employment center with nearby residences could create an attractive environment for companies relocating to the Basalt Creek Planning Area. The subject site would be close to future employment centers and would provide the opportunity for employees to live nearer to their workplace. The applicant stated a future right-of-way dedication along SW Norwood Road would be provided to meet the short-term and long-term transportation improvement needs identified by the City and Washington County. Any future development would be reviewed through the Architectural Review process to address specific right-of-way and access needs for the site development.

***Plan Text Amendment:*** The proposed text amendment would remove the zoning district locational language from the purpose statement of Chapter 44 of the Tualatin Development Code. The existence of the locational language does not allow the RH-HR zoning to be permitted in a location that is considered buildable. The text amendment would allow RH-HR to be permitted on other properties with access to facilities, services, and without the constraints of the wetlands, floodplains and lack of public access.

**(vi) Natural resources of the City and the protection and conservation of said resources;  
(vii) Prospective requirements for the development of natural resources in the City;**

**Finding:**

*There are no mapped natural resources on the site affected by the plan map and text amendment. No physical development is proposed with this application for the plan map and text amendment. The subject site would be further examined for natural resources with future development of the site. Future development of the site would need to comply with local, regional, state, and federal requirements for the protection of air, water, and land resources.*

*Public comments (Exhibit L) have been received in reference to the loss of trees along SW Norwood Road due to nearby development. Concerns have been raised regarding the habitats of local animals and birds. However, none of these features are listed as natural resources of the City.*

**(viii) The public need for healthful, safe, esthetic surroundings and conditions;**

**Finding:**

*Any future development must go through an Architectural Review and any future development will be required to comply with Tualatin Development Code requirements to address safety, health and aesthetic factors.*

**Plan Map Amendment:** *The proposed plan map amendment would change the subject site zoning and development standards from Institutional (IN) and Medium Low Density Residential (RML) to High Density High Rise (RH-HR). The proposed map amendment could allow for the construction of up to 276 housing units on the ±9.2-acre site.*

**Plan Text Amendment:** *The removal of the locational criteria by itself is not anticipated to have an impact on the elements listed above, considerations of these factors would be applicable on where to apply the zone. The applicant's text amendment proposal (Exhibit C) requests to revise the height limitation of development to four stories or 50 feet for future projects on the subject site. The applicant proposed a 60-foot buffer of vegetation to remain along SW Norwood Road to create a visual barrier to the site on page 4 of the narrative. The applicant stated these measures will make the future development of the site compatible with the existing neighborhoods.*

*Public comments (Exhibit L) have been received that have concerns about higher crime rates around apartment developments. Comments have also been received that multi-story developments would look out of place in the area. This criterion asks that the decision-maker "consciously consider" the public need for healthful, safe, esthetic surroundings and conditions but does not identify which could or would be sufficient to support a finding of denial; it is worth noting that application of future development standards would be applied to address these impacts.*

**(ix) Proof of change in a neighborhood or area, or a mistake in the Plan Text or Plan Map for the property under consideration are additional factors to consider.**

**Finding:**

*Page 26 of the applicant's narrative noted the Basalt Creek Planning Area south of SW Norwood Road is an area planned for future growth within the Cities of Tualatin and Wilsonville. The concept plan for the area includes lands planned for residential, neighborhood commercial, and industrial uses. Housing developments are underway on the Autumn Sunrise Subdivision located east of the subject site and the Plambeck Gardens Apartments located to the southwest of the subject site. The City of Tualatin has purchased ±14 acres of land in the vicinity of the project for the purpose of providing public parks. The parks are intended to provide amenities to existing and future residents in this area of the City. The applicant stated there was no mistake in the plan text or map for the property under consideration, however, the Housing Needs Analysis has identified that the City has a deficit of High Density High Rise (RH-HR) lands with no buildable acres available due to constraints.*

**(e) If the amendment involves residential uses, then the appropriate school district or districts must be able to reasonably accommodate additional residential capacity by means determined by any affected school district.**

**Finding:**

*The applicant provided comments from the Sherwood School District included as Exhibit I. Sherwood School District Chief Operations Officer, Jim Rose, provided confirmation that the school district could accommodate any additional students from the future multifamily development on the subject site.*

*City staff provided an email notice of public hearing and request for comment that was sent to the Sherwood School District on March 17, 2023 included in Exhibit K. As of the date of writing this report, the City of Tualatin has not received any response from the school district.*

*Public comments (Exhibit L) have been received that express concerns of overcrowding in the surrounding Tigard-Tualatin Schools.*

**(f) Granting the amendment is consistent with the applicable State of Oregon Planning Goals and applicable Oregon Administrative Rules, including compliance with the Transportation Planning Rule TPR (OAR 660-012-0060).**

**Finding:**

*The applicant provided a review of Oregon's Transportation Planning Rule (TPR) (OAR 660-012-0060) and a trip generation analysis by Lancaster Mobley included in Exhibit D. This standard was previously addressed in Section B. Oregon Administrative Rules.*

*On behalf of the City of Tualatin, DKS Associates conducted a review of the applicant's Transportation Impact Analysis and Transportation Planning Rule analysis (Exhibit E). The development is proposed on existing Medium Low Density Residential (RML) and Institutional (IN) zoned land. The development proposes to change the zoning to High Density High Rise (RH-HR), a reasonable worst-case analysis must be performed to show no significant impact of the zone change per the Transportation Planning Rule. Operations analysis was performed for the existing and proposed zoning scenarios under year 2040 conditions. The study intersections generally performed slightly better in the AM peak hour and the same or slightly worse in the PM peak hour under the proposed zoning. Under both zoning scenarios the intersection of Boones Ferry Road/Norwood Road would fail without signalization. This triggers OAR 660-012-0060 section (1)(c)(C). With signalization the intersection performs at LOS B and v/c ratio 0.73 under the proposed zoning. Thus, with the proposed mitigation of signalization, the analysis concludes the significant effect due to the proposed zoning change is mitigated per OAR 660-012-0660(2)(d). The proposed mitigation of a signal at Boones Ferry Road/Norwood Road should include a separate striped westbound left turn lane for safety reasons, consistent with the functional classification. It is recommended the westbound left turn run on a separate phase to protect the pedestrians on the south crosswalk, which is directly adjacent to a transit stop. A leading pedestrian interval could also be used and a northbound right turn overlap could be implemented to shorten the right turn queue length.*

*The review from DKS Associates concluded that the benefit to the public of the proposed plan map amendment would be the requirement of the development to install a new traffic signal as mitigation at SW Norwood Rd and SW Boones Ferry Rd. The signal would decrease existing delays at the intersection and increase safety with the existing crash risks. The installation of the traffic signal would create a safer, protected crossing for pedestrians to access the nearby transit stop and the future proposed park to the west.*

*Public comments (Exhibit L) have been received that express concerns over the validity of the traffic studies and crash data. Comments have been received that say SW Norwood Road and SW Boones Ferry Road cannot handle additional traffic. Comments have been received that question the potential of individuals being able to turn left onto SW Norwood Road from the proposed development. Comments have stated that they believe people will cut through the existing neighborhoods to avoid traffic. Comments are concerned about traffic accidents in the area. Some comments express that the proposed traffic signal will not help the situation.*

**(g) Granting the amendment is consistent with the Metropolitan Service District's Urban Growth Management Functional Plan.**

**Finding:**

*The proposed amendment would not adversely impact the City's compliance with Titles 1-14 of the Metro Chapter 3.07, Urban Growth Management Functional Plan as discussed in Section C of these findings*

**(h) Granting the amendment is consistent with Level of Service F for the p.m. peak hour and E for the one-half hour before and after the p.m. peak hour for the Town Center 2040 Design Type (TDC Map 10-4), and E/E for the rest of the 2040 Design Types in the City's planning area.**

**Finding:**

**Plan Map Amendment:** *The subject site is outside of the Town Center Design Type area. The applicant submitted a Transportation Planning Rule Review and a trip generation analysis provided in Exhibit D. The Level of Service in relation to the proposed changes is expected to meet the City standards. Operations analysis was performed for the existing and proposed zoning scenarios under year 2040 conditions. The study intersections generally performed slightly better in the AM peak hour and the same or slightly worse in the PM peak hour under the proposed zoning. Under both zoning scenarios the intersection of Boones Ferry Road/Norwood Road would fail without signalization. This triggers OAR 660-012-0060 section (1)(c)(C). With signalization the intersection performs at LOS B and v/c ratio 0.73 under the proposed zoning. Thus, with the proposed mitigation of signalization, the analysis concludes the significant effect due to the proposed zoning change is mitigated per OAR 660-012-0660(2)(d). The proposed plan map amendment and plan text amendment will not alter the transportation needs of the affected parcels in Tualatin's Transportation System Plan.*

**Plan Text Amendment:** *The criterion is not applicable to the proposed plan text amendment.*

*Public comments (Exhibit L) have been received that express concerns over traffic increases and congestion as a result of the proposed plan map and text amendments. There is not specific evidence to indicate the overall level of service would be degraded as a result of the amendments.*

**(i) Granting the amendment is consistent with the objectives and policies regarding potable water, sanitary sewer, and surface water management pursuant to TDC 12.020, water management issues are adequately addressed during development or redevelopment anticipated to follow the granting of a plan amendment.**

[...]

**Finding:**

*The applicant submitted a Utility Capacity Analysis (Exhibit F) in response to the City's objectives and policies regarding potable water, sanitary sewer, and stormwater management.*

**Water:** *Water service for the subject site will tie into existing public water mains within SW Norwood Road. Per the 9300 SW Norwood – Water System Capacity Analysis, dated September 11, 2022, from Brian Ginter, PE of Murraysmith, Inc. included as part of Exhibit G, "adequate water service for domestic use and fire suppression is available" for the proposed development.*

**Sanitary Sewer:** *An 8-inch gravity sanitary sewer line will be constructed north of the proposed site within the SW Norwood Road and SW Boones Ferry Road rights-of-way. This line is planned to lead to an existing sanitary sewer line within SW Boones Ferry Road north of its intersection with SW Norwood Road. Adequate capacity is available to serve the proposed increase in residential density*

**Stormwater:** *A new connection to an existing stormwater main within SW Boones Ferry Road is planned. Using a combination of an existing on-site stormwater pond and new underground detention facilities, CWS water quality and hydromodification requirements can be met that ensure release rates for the site will be less than or equal to those currently observed.*

## **Chapter 41: Medium Low Density Residential Zone (RML)**

### **Section 41.000 Purpose**

**The purpose of this zone is to provide household living uses with a variety of housing types at moderately low densities. This district is primarily oriented toward middle housing types including attached dwellings, multi-family development, and manufactured dwelling parks.**

#### **Finding:**

*In the submitted narrative, the applicant cited Tualatin's Housing Needs Analysis which identified a surplus of 27-acres of Medium Low Density Residential (RML) designated land.*

**Plan Map Amendment:** *The proposed plan map amendment would reduce the quantity of RML lands by approximately one acre.*

**Plan Text Amendment:** *The proposed text amendment does not reference or affect the RML district.*

## **Chapter 44: High Density High Rise Zone (RH-HR)**

### **Section 44.100 Purpose.**

**The purpose of the High Density High Rise (RH-HR) zone is to provide areas of the City within the City's Central Urban Renewal area, an area west of the Central Urban Renewal area, north of the wetlands, and south of the Tualatin Country Club that are suitable for high density apartment or condominium towers.**

#### **Finding:**

*The purpose statement of the High Density High Rise (RH-HR) zoning district restricts the zoning designation to Tualatin's Central Urban Renewal Area.*

**Plan Map Amendment:** *The proposed text amendment would be applicable to the ±9.2-acre site that is currently zoned Medium Low Density Residential (RML) and Institutional (IN). The applicant has identified a surplus of both of these zoning types in Tualatin's Housing Needs Analysis (HNA) and Economic Opportunities Analysis, while there is an existing deficient in buildable RH-HR lands.*

**Plan Text Amendment:** *The draft plan text amendment language is included in Exhibit C. The proposed text amendment would remove the locational restrictions from the purpose statement, as well as, the statement to only provide residences in "towers". The proposed plan text amendment would impose a four story or 50 foot height limitation for the area south of SW Norwood Road, which is applicable to the subject site. The existence of the locational language does not allow the RH-HR zoning to be permitted in a location that is considered buildable. The text amendment would allow RH-HR to be permitted on other properties with access to facilities, services, and without the constraints of the wetlands, floodplains and lack of public access.*

### **Section 44.300 Development Standards.**

Development standards in the RH-HR zone are listed in Table 44-3. Additional standards may apply to some uses and situations, see TDC 44.310.

**Table 44-3  
 Development Standards in the RH-HR Zone**

STANDARD	REQUIREMENT	LIMITATIONS AND CODE REFERENCES
<b>MAXIMUM DENSITY</b>		
Household Living Uses	Maximum: 30 units per acre Minimum: 26 units per acre	
Retirement Housing or Congregate Care Facility	45 units per acre	
Nursing Facility	45 units per acre	
Group Living Uses	30 units per acre	Does not apply to Nursing Facility or Congregate Care Facility.
<b>MINIMUM LOT SIZE</b>		
Multi-Family Structure		
• Development on Less than One Acre	10,000 square feet	For up to two units, plus an additional 1,198 square feet for each unit exceeding two.
• Development on More than One Acre	1,452 square feet per unit	
Multi-Family Structure under Condominium Ownership	20,000 square feet	Limited to the primary condominium lot.
All Other Permitted Uses	10,000 square feet	
Conditional Uses	20,000 square feet	
Infrastructure and Utilities Uses	—	As determined through the Subdivision, Partition, or Lot Line Adjustment process.
<b>MINIMUM AVERAGE LOT WIDTH</b>		
Townhouses (Rowhouses)	14 feet	
Multi-Family Structure	75 feet	May be 40 feet on a cul-de-sac street.
Multi-Family Structure under Condominium Ownership	75 feet	Limited to the primary condominium lot. Minimum lot width at street is 40 feet.
All Other Permitted Uses	75 feet	
Conditional Uses	100 feet	Minimum lot width at street is 40 feet.
Flag Lots	—	Must be sufficient to comply with minimum access requirements of TDC 73C.
<b>MINIMUM SETBACKS</b>		
Front Setback		Minimum setback to a garage door must be 20 feet.
• 1 story structure	20 feet	
• 1.5 story structure	25 feet	
• 2 story structure	30 feet	
• 2.5 story structure	35 feet	
• Over 2.5 story structure	—	As determined through Architectural Review process. No setback must be required which is greater than the height of the structure.
Side and Rear Setback		Where living spaces face a side yard, the minimum setback must be 10 feet.
• 1 story structure	5 feet	

• 1.5 story structure	7 feet	
• 2 story structure	10 feet	
• 2.5 story structure	12 feet	
• Over 2.5 story structure	—	As determined through Architectural Review process. No setback must be required which is greater than the height of the structure.
Corner Lots	—	On corner lots, the setback is the same as the front yard setback on any side facing a street other than an alley.
Minimum Distance Between Buildings within One Development	10 feet	
Parking and Vehicle Circulation Areas	10 feet	
Conditional Uses	—	As determined through Architectural Review process. No minimum setback must be greater than 50 feet.
Any Yard Adjacent to a Wetland Protected Area	100 feet	As defined in TDC Chapter 71.
Any Yard Area Adjacent to Basalt Creek Parkway	50 feet	
<b>STRUCTURE HEIGHT</b>		
Minimum Height, Multi-Family and Condominium Developments	4 stories	
Maximum Height	64 feet	If structure does not include underground parking, maximum height is 5 stories. If the first story includes underground parking, maximum height is 6 stories. Regardless of the number of stories, structure height must not exceed 64 feet.

**Finding:**

**Plan Map Amendment:** *The proposed text amendment would be applicable to the ±9.2-acre site that is currently zoned Medium Low Density Residential (RML) and Institutional (IN). The applicant has identified a surplus of both of these zoning types in Tualatin’s Housing Needs Analysis (HNA) and Economic Opportunities Analysis, while there is an existing deficient in buildable RH-HR lands.*

**Plan Text Amendment:** *The proposed text amendment would modify the development standards of TDC 44.300 to place a 4-story height limitation or 50-foot maximum on structures in the High Density High Rise (RH-HR) zoning district in areas south of SW Norwood Road. The described area would be applicable to the subject site. Due to the development constraints of the areas currently zoned RH-HR that are available within the City’s core areas, properties that may be designated for this zoning may be proximate to lower density zoning. The subject site is generally surrounded by Medium Low Density Residential (RML) and Institutional (IN) uses. The proposed plan text amendment would limit the height of buildings to four stories or 50 feet to remain compatible with the adjacent residential and institutional uses.*





Applicant's Consultant:  
 AKS Engineering & Forestry, LLC  
 Melissa Slotemaker, AICP  
 12965 SW Herman Road, Suite 100  
 Tualatin, OR 97062  
 slotemakerm@aks-eng.com  
 (503) 563-6151

## Land Use Application

### Project Information

Project Title: **Norwood Multi-Family Map and Text Amendment**

Brief Description: **Map Amendment from RML and IN to RH-HR Zone for ±9.2-acre site. Text Amendment to remove locational factors from RH-HR purpose statement.**

### Property Information

Address: 9300 SW Norwood Road and 23370 SW Boones Ferry Road

Assessor's Map Number and Tax Lot(s): 2S135D Tax Lots 108 and 106

### Applicant/Primary Contact

Name: **Lee Novak**

Company Name: **Vista Residential Partners**

Address: **25 NW 23rd Place, Suite 6 #414**

City: **Portland**

State: **OR**

ZIP: **97210**

Phone: **Contact Applicant's Consultant**

Email: **Contact Applicant's Consultant**

### Property Owner

Name: **Horizon Community Church**

Address: **23370 SW Boones Ferry Road (Tax Lot 106)**

City: **Tualatin**

State: **OR**

ZIP: **97062**

Phone: **Contact Applicant's Consultant**

Email: **Contact Applicant's Consultant**

Property Owner's Signature:

(Note: Letter of authorization is required if not signed by owner)

Date:

**AS THE PERSON RESPONSIBLE FOR THIS APPLICATION, I HEREBY ACKNOWLEDGE THAT I HAVE READ THIS APPLICATION AND STATE THAT THE INFORMATION IN AND INCLUDED WITH THIS APPLICATION IN ITS ENTIRETY IS CORRECT. I AGREE TO COMPLY WITH ALL APPLICABLE CITY AND COUNTY ORDINANCES AND STATE LAWS REGARDING BUILDING CONSTRUCTION AND LAND USE.**

Applicant's Signature: *Lee Novak*

Date: **10/11/2022**

#### Land Use Application Type:

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Annexation (ANN)                          | <input type="checkbox"/> Historic Landmark (HIST)             | <input type="checkbox"/> Minor Architectural Review (MAR) |
| <input type="checkbox"/> Architectural Review (AR)                 | <input type="checkbox"/> Industrial Master Plan (IMP)         | <input type="checkbox"/> Minor Variance (MVAR)            |
| <input type="checkbox"/> Architectural Review—Single Family (ARSF) | <input checked="" type="checkbox"/> Plan Map Amendment (PMA)  | <input type="checkbox"/> Sign Variance (SVAR)             |
| <input type="checkbox"/> Architectural Review—ADU (ARADU)          | <input checked="" type="checkbox"/> Plan Text Amendment (PTA) | <input type="checkbox"/> Variance (VAR)                   |
| <input type="checkbox"/> Conditional Use (CUP)                     | <input type="checkbox"/> Tree Removal/Review (TCP)            | <input type="checkbox"/> Other _____                      |

### Office Use

Case No:	Date Received:	Received by:
Fee:	Receipt No:	



Applicant's Consultant:  
 AKS Engineering & Forestry, LLC  
 Melissa Slotemaker, AICP  
 12965 SW Herman Road, Suite 100  
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Property Information		
Address: 9300 SW Norwood Road and 23370 SW Boones Ferry Road		
Assessor's Map Number and Tax Lot(s): 2S135D Tax Lots 108 and 106		
Applicant/Primary Contact		
Name: <b>Lee Novak</b>	Company Name: <b>Vista Residential Partners</b>	
Address: <b>25 NW 23rd Place, Suite 6 #414</b>		
City: <b>Portland</b>	State: <b>OR</b>	ZIP: <b>97210</b>
Phone: <b>Contact Applicant's Consultant</b>	Email: <b>Contact Applicant's Consultant</b>	
Property Owner		
Name: <b>Horizon Community Church</b>		
Address: <b>23370 SW Boones Ferry Road (Tax Lot 106)</b>		
City: <b>Tualatin</b>	State: <b>OR</b>	ZIP: <b>97062</b>
Phone: <b>Contact Applicant's Consultant</b>	Email: <b>Contact Applicant's Consultant</b>	
Property Owner's Signature: (Note: Letter of authorization is required if not signed by owner)	DocuSigned by: <i>Ken Allen</i> 09C146C09995450...	Date: <b>10/12/2022</b>
<b>Director of Development</b>		
<p><b>AS THE PERSON RESPONSIBLE FOR THIS APPLICATION, I HEREBY ACKNOWLEDGE THAT I HAVE READ THIS APPLICATION AND STATE THAT THE INFORMATION IN AND INCLUDED WITH THIS APPLICATION IN ITS ENTIRETY IS CORRECT. I AGREE TO COMPLY WITH ALL APPLICABLE CITY AND COUNTY ORDINANCES AND STATE LAWS REGARDING BUILDING CONSTRUCTION AND LAND USE.</b></p>		
Applicant's Signature:	Date:	

Land Use Application Type:

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Annexation (ANN)                          | <input type="checkbox"/> Historic Landmark (HIST)             | <input type="checkbox"/> Minor Architectural Review (MAR) |
| <input type="checkbox"/> Architectural Review (AR)                 | <input type="checkbox"/> Industrial Master Plan (IMP)         | <input type="checkbox"/> Minor Variance (MVAR)            |
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| <input type="checkbox"/> Conditional Use (CUP)                     | <input type="checkbox"/> Tree Removal/Review (TCP)            | <input type="checkbox"/> Other _____                      |

Office Use		
Case No:	Date Received:	Received by:
Fee:	Receipt No:	





horizoncommunity.church

## Memo

**Date:** October 12<sup>th</sup>, 2022

**To:** City of Tualatin, Planning Dept

**From:** Randy Cambell, Horizon Community Church

**CC:** Melissa Slotemaker, AKS Engineering

This letter is to serve the purpose of Horizon Community Church, authorizing Ken Allen, of Norwood Horizon Holdings, LLC as our official representative as pertaining to matters of land use and development of the proposed multifamily land approval process with the City of Tualatin.

Ken Allen has the authority to sign City of Tualatin, Washington County and Clean Water Services forms and applications on Horizon's behalf.

Sincerely, Randy Cambell

DocuSigned by:  
*Randy Cambell* 10/12/2022  
8A46A58E441B47D...

Executive Pastor  
Horizon Community Church



Applicant's Consultant:  
 AKS Engineering & Forestry, LLC  
 Melissa Slotemaker, AICP  
 12965 SW Herman Road, Suite 100  
 Tualatin, OR 97062  
 slotemakerm@aks-eng.com  
 (503) 563-6151

## Land Use Application

Project Information		
Project Title: <b>Norwood Multi-Family Map and Text Amendment</b>		
Brief Description: <b>Map Amendment from RML and IN to RH-HR Zone for ±9.2-acre site. Text Amendment to remove locational factors from RH-HR purpose statement.</b>		
Property Information		
Address: <b>9300 SW Norwood Road and 23370 SW Boones Ferry Road</b>		
Assessor's Map Number and Tax Lot(s): <b>2S135D Tax Lots 108 and 106</b>		
Applicant/Primary Contact		
Name: <b>Lee Novak</b>	Company Name: <b>Vista Residential Partners</b>	
Address: <b>25 NW 23rd Place, Suite 6 #414</b>		
City: <b>Portland</b>	State: <b>OR</b>	ZIP: <b>97210</b>
Phone: <b>Contact Applicant's Consultant</b>	Email: <b>Contact Applicant's Consultant</b>	
Property Owner		
Name: <b>9300 SW Norwood Road OR, LLC (Owner of Tax Lot 108)</b>		
Address: <b>2964 Peachtree Road, Suite 585</b>		
City: <b>Atlanta</b>	State: <b>GA</b>	ZIP: <b>30305</b>
Phone: <b>Contact Applicant's Consultant</b>	Email: <b>Contact Applicant's Consultant</b>	
Property Owner's Signature: <b>(Note: Letter of authorization is required if not signed by owner)</b>		Date:

<b>AS THE PERSON RESPONSIBLE FOR THIS APPLICATION, I HEREBY ACKNOWLEDGE THAT I HAVE READ THIS APPLICATION AND STATE THAT THE INFORMATION IN AND INCLUDED WITH THIS APPLICATION IN ITS ENTIRETY IS CORRECT. I AGREE TO COMPLY WITH ALL APPLICABLE CITY AND COUNTY ORDINANCES AND STATE LAWS REGARDING BUILDING CONSTRUCTION AND LAND USE.</b>	
Applicant's Signature:	Date: <b>1-20-2023</b>

**Land Use Application Type:**

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Annexation (ANN)<br><input type="checkbox"/> Architectural Review (AR)<br><input type="checkbox"/> Architectural Review—Single Family (ARSF)<br><input type="checkbox"/> Architectural Review—ADU (ARADU)<br><input type="checkbox"/> Conditional Use (CUP) | <input type="checkbox"/> Historic Landmark (HIST)<br><input type="checkbox"/> Industrial Master Plan (IMP)<br><input checked="" type="checkbox"/> Plan Map Amendment (PMA)<br><input checked="" type="checkbox"/> Plan Text Amendment (PTA)<br><input type="checkbox"/> Tree Removal/Review (TCP) | <input type="checkbox"/> Minor Architectural Review (MAR)<br><input type="checkbox"/> Minor Variance (MVAR)<br><input type="checkbox"/> Sign Variance (SVAR)<br><input type="checkbox"/> Variance (VAR)<br><input type="checkbox"/> Other _____ |
|--|---|---|

Office Use		
Case No:	Date Received:	Received by:
Fee:	Receipt No:	

## PLAN AMENDMENTS

**Plan Map Amendments** provide for the review of proposed amendments to the standards of the Community Plan Map of the Tualatin Community Plan as described in TDC 33.070.

**Plan Text Amendments** provide for the review of proposed amendments to the standards of the Tualatin Development Code as described in TDC 33.070.

**PROCEDURE** Amendments to the Zone Standards of the Tualatin Development Code and to the Plan Text or the Plan Map of Tualatin Comprehensive Plan are a Type IV-A quasi-judicial decision made by Tualatin City Council after a public hearing and a recommendation from the Tualatin Planning Commission.

### PRIOR TO APPLICATION SUBMITTAL

- Attend a Pre-Application Meeting (TDC 32.110)
- Notice and host a Neighborhood/Developer Meeting (TDC 32.120)

Following submittal of the application, the applicant must post a sign on the subject property to provide notice of the pending land use application.

### SUBMITTAL REQUIREMENTS

Please submit all materials electronically through the following link: <https://permits.ci.tualatin.or.us/eTrakit/>  
Details regarding submittal requirements are listed in TDC 32.140(1) and 33.070.

#### GENERAL:

- ✓ Land Use Application
- ✓ Narrative addressing all criteria
- ✓ Title Report
- ✓ Fee

#### PUBLIC NOTICE:

- ✓ Documentation for Neighborhood Developer Meeting, including notice and mailing list, affidavit of mailing notice, certification of sign posting, participant sign in sheet and meeting notes
- Certification of Sign Posting for Pending Land Use Application **To be provided after submittal.**

#### ADDITIONAL DOCUMENTS AS APPLICABLE, SUCH AS:

- ✓ Transportation Impact Analysis
- ✓ Transportation Planning Rule (TPR) Analysis
- ✓ School District Approval

### APPROVAL CRITERIA

The applicant's plans and narrative must work together to demonstrate that all applicable criteria are met.

#### **Tualatin Development Code:**

- Chapter 33.070 Plan Amendments
- Applicable sections of the Tualatin Community Plan (Chapters 1-30)

# 9300 SW Norwood Road Plan Map and Text Amendment

---

**Date:** January 2023

**Submitted to:** City of Tualatin  
18880 SW Martinazzi Avenue  
Tualatin, OR 97062

**Applicant:** Vista Residential Partners  
25 NW 23<sup>rd</sup> Place, Suite 6 #414  
Portland, OR 97210

**AKS Job Number:** 8723

The logo for AKS Engineering & Forestry features the letters 'AKS' in a large, bold, dark blue font. Below the letters, the words 'ENGINEERING & FORESTRY' are written in a smaller, dark blue, sans-serif font. The logo is overlaid on a background map showing residential lots and green spaces.

**AKS**  
ENGINEERING & FORESTRY

12965 SW Herman Road, Suite 100  
Tualatin, OR 97062  
(503) 563-6151



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## Figures

**Figure 1:** Existing Project Site

**Figure 2:** Proposed Plan Map Changes

**Figure 3:** Existing RH-HR Zoning and Residential Land Constraints

**Figure 4:** Project Site Residential Land Constraints

## Exhibits

**Exhibit A:** Existing and Proposed Zoning Map

**Exhibit B:** Proposed Development Code

**Exhibit C:** Land Use Application & Checklists

**Exhibit D:** Property Ownership Information

**Exhibit E:** Neighborhood/Developer Meeting Noticing Information

**Exhibit F:** Map Amendment Legal Description

**Exhibit G:** Sherwood School District Communications

**Exhibit H:** Transportation Impact Analysis

**Exhibit I:** Utility Capacity Analysis

**Exhibit J:** Market Information

**Exhibit K:** Boones Ferry Road Access Analysis

**Exhibit L:** Sign Posting Information

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# 9300 SW Norwood Road

## Plan Map and Text Amendment Application

<b>Submitted to:</b>	City of Tualatin Planning Division 18880 SW Martinazzi Avenue Tualatin, OR 97062
<b>Applicant:</b>	Vista Residential Partners 25 NW 23 <sup>rd</sup> Place, Suite 6 #414 Portland, OR 97210
<b>Property Owner:</b>	Horizon Community Church (Tax Lot 106) PO Box 2690 Tualatin, OR 97062
	9300 SW Norwood Road OR, LLC (Tax Lot 108) 2964 Peachtree Road, Suite 585 Atlanta, GA 30305
<b>Applicant's Consultant:</b>	AKS Engineering & Forestry, LLC 12965 SW Herman Road, Suite 100 Tualatin, OR 97062
	Contact: Melissa Slotemaker, AICP Email: <a href="mailto:slotemakerm@aks-eng.com">slotemakerm@aks-eng.com</a> Phone: (503) 563-6151
<b>Site Location:</b>	9300 SW Norwood Road South of SW Norwood Road, east of SW Boones Ferry Road, and north of SW Greenhill Lane; Tualatin, OR
<b>Assessor's Map:</b>	Washington County Assessor's Map 2S135D; Tax Lots 106 and 108
<b>Site Size:</b>	±9.2 acres
<b>Existing Land Use Districts:</b>	Tax Lot 108: Washington County FD-20; After Annexation Medium-Low Density Residential (RML) Tax Lot 106: Institutional (IN)
<b>Proposed Land Use District:</b>	High-Density High-Rise Residential (RH-HR)





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## I. Executive Summary

Vista Residential Partners (Applicant) is pleased to submit this plan map and text amendment application to the City of Tualatin. Horizon Community Church is selling a portion of their property south of SW Norwood Road and east of SW Boones Ferry Road. This plan map and text amendment will change the zoning of this land (as well as an adjacent one acre of land) to allow an apartment use and limit the height of the future buildings to 4 stories. The site is currently zoned Institutional (IN) and Medium-Low Density Residential (RML). A portion of the subject site is within the Basalt Creek Planning Area which has been the focus of years of planning effort between the City of Tualatin, the City of Wilsonville, Washington County, and Metro and is currently under various stages of development.

### Housing Need

There is a well-known need for housing within the City of Tualatin, as well as within the region and state. As part of *Tualatin 2040* (a visioning process the City underwent in 2019 to identify updates needed to the City's Comprehensive Plan and Development Code), stakeholders identified housing affordability and the need for a wider variety of housing types (other than single-family homes) as two of the highest policy priorities. The City produced a *Housing Needs Analysis* (HNA), and *Housing Production Strategy* (HPS) to support the Tualatin 2040 project. The HNA evaluated and recommended various ways to meet the overall housing need within the City, recognizing the extent of the housing crisis and the need for a multi-faceted approach to find solutions. The HPS built on the HNA recommendations and established goals and strategic actions related to the identified housing needs in the City.

The City's Housing Needs Analysis states that Tualatin's housing market is strongly impacted by the regional housing market and nearly 93% of the 23,800 people who work in Tualatin commute from outside of the city. The US Census Bureau's 2021 American Community Survey estimates that ±43.1 percent of those employed in Tualatin spend greater than 30 minutes traveling to work. Allowing additional housing opportunities to be constructed near these centers of employment would allow more people to live near their work and reduce the number and length of time vehicles were on the road. The lack of vacant units and continued demand for housing drives the need to provide additional multifamily housing, which is expected to be 45% of Tualatin's future housing stock.

The analysis also determined that Tualatin is challenged to provide new multifamily housing over the next 20 years due to limited land supply of appropriately zoned property. In order to solve this problem, the HNA and HPS recommendations include:

- looking for opportunities to add residentially zoned land for multifamily development,
- adding density to existing residentially zoned land,
- accommodating a higher percentage of apartment units in the City than has historically been built, and
- locating housing near employment centers.

Approval of this map and text amendment application will implement the Tualatin 2040 policies and the specific HNA and HPS recommendations above. This application will allow apartments to be built on a site that currently only allows institutional uses (churches or recreational uses) and detached or attached homes and is located in an area of the City slated for future growth including a significant employment district.

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### **Multifamily Land Deficit**

The HNA outlines the numbers and types of housing units Tualatin should plan for within the 20-year planning period. This analysis found that Tualatin has a deficit of lands available for higher density multifamily housing and will need to provide a greater number of multifamily homes. As further discussed on page 28 of this narrative, the City of Tualatin currently has no buildable acres of High-Density High-Rise Residential (RH-HR) and a deficit of 4 acres was identified. Medium Low-Density (RML) zoning, by contrast, has a land surplus of 27 acres within the City. Lower density zoning with capacity does not have the potential to provide the same types of multifamily housing opportunities as higher density zoning districts where those uses are permitted.

Simply stated, rezoning lower density land as RH-HR is a solution to the City's housing deficit that the City has adopted as part of the HNA. One challenge with using the RH-HR zone to partially address the City's housing deficit is the current text of the RH-HR zoning district restricts the possibility of providing higher density housing within the City of Tualatin by confining the location of RH-HR zoning to a specific area of the City – one which has already been identified as having no significant buildable acreage. The text amendment portion of this application seeks to remove the locational restriction from the text of the RH-HR zoning district, allowing the City to meet the specific goals and recommendations of its adopted plans.

The HNA also states that over half of renter households in the City are cost burdened and that the City will be challenged over the next 20 years to provide housing of all types, including market-rate multifamily housing. Allowing for increased density can help alleviate households' cost burdens by providing opportunities to add dwelling units to the housing market. This application provides additional land for future apartments and fulfills a need identified in the HNA to help alleviate households' cost burden.

Current market information for the Sherwood/Tualatin area, included as Exhibit J to this application package, supports the conclusions found by the Housing Needs Analysis. The current multifamily market within Tualatin has experienced a 70 percent increase in rent in the past decade. Conversely, rents within the Metro area had a cumulative increase of only 48.7 percent in the past decade. Tualatin rents increased 6.2 percent over the past year. The number of units to be built in the foreseeable future are forecast to have little effect on these overall trends, with Commons on the Tualatin expected to deliver ±260 units in 2023 and those units expected to be absorbed within the year. Tualatin also sees ±8.75 percent higher average rents than the average rents within the Portland Metro area. The Plambeck Garden Apartment project, an affordable housing development approved in 2022 south of the site along SW Boones Ferry Road, will provide essential affordable housing to the neighborhood. Allowing market rate apartments at this SW Norwood Road site will further fill a need within the City to provide additional housing stock that fits between income restricted affordable housing and single family homes.

This site is appropriate for a multifamily use with easy access to higher classified streets (SW Norwood Road, a Major Collector, and SW Boones Ferry Road, a Major Arterial), bus service along SW Boones Ferry Road, accessibility to future jobs on the industrial lands to the south and west, and compatibility with the adjacent church and school uses. Infrastructure improvements in the surrounding area are in various stages of planning, funding and construction, with road, water, sewer, stormwater, and other improvements in progress and available to the site. Development of the site will contribute to infrastructure and solve an existing traffic capacity problem by providing a traffic signal at SW Norwood and Boones Ferry Road.

---

## Transportation

The future apartment project will gain access onto SW Norwood Road. A Transportation Impact Analysis (TIA) including a Transportation Planning Rule analysis (Exhibit H) has been prepared to address the impacts of this plan map and text amendment with the future project in mind. The study, completed by Jennifer Danziger, PE, Senior Transportation Engineer at Lancaster Mobley, determined that the proposed zoning and project could be accommodated by the surrounding planned transportation network.

The TIA determined that when only background growth is considered (i.e., the project is not constructed) the intersection of SW Norwood Road and SW Boones Ferry Road is projected to need a signal, but a signal is not currently planned or funded. Further, under a reasonable worst case development scenario with the existing zoning (not the proposed zoning), the intersection is eventually projected to fail. However, if the project installs a signal at that intersection, then the existing near-term and long-term problem is solved. The project's traffic is mitigated so that the street network performance standards are met and the zone change will not require any additional mitigation or change in classification.

As directed by City and County transportation staff, the study used a more conservative approach to the traffic counts (using higher trip numbers than the Institute of Transportation Engineers Trip Generation Manual, 10<sup>th</sup> Edition, requires for a similar apartment project). Even with the assumed higher number of trips, the study found that a future apartment project will create a minor impact on the transportation system which will be mitigated by the recommended traffic signal at the SW Norwood Road and SW Boones Ferry Road intersection.

## Conditions of Approval

The Applicant is willing to agree to conditions of approval that would require the following:

- Off-site improvements as recommended in the TIA, including the signal at the SW Norwood Road and SW Boones Ferry Road prior to occupancy of future site development.
- A 60-foot buffer along SW Norwood Road to preserve trees that do not need to be removed for the future access or public roadway improvements.
- Limit the height allowed at this site. The RH-HR zone allows a 64-foot maximum height. The text amendment portion of this application, as further detailed in Exhibit B, includes a height limit of 4 stories or 50 feet, whichever is less, on property south of SW Norwood Road.

## Associated Land Use Applications

Several applications are needed in order to prepare the site for multifamily housing. The following is an outline of the various applications and their sequencing:

### **Partition (previously submitted, under review)**

The existing Horizon Community Church and Christian School campus is located on a ±38-acre lot (Tax Lot 106 of Washington County Assessor's Map 2S135D). The partition application was submitted to the City in November 2022 to divide the existing lot into two parcels, resulting in a ±30-acre parcel for the school and church campus (Parcel 1) and an ±8.2-acre parcel planned for future multifamily housing (Parcel 2).

### **Annexation (previously submitted, under review)**

Tax Lot 108 is an adjacent ±1.0-acre lot. An annexation application to the City of Tualatin for Tax Lot 108 was submitted concurrent with the partition application to the City in November. This annexed

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lot is planned to be combined with the ±8.2-acre parcel (Parcel 2) to create a ±9.2-acre site for future multifamily housing (see Lot Consolidation, below).

#### **Map and Text Amendment (current application)**

Associated with the partition and annexation applications, this plan map and text amendment application is submitted to the City to apply the High-Density High-Rise (RH-HR) zoning district to the new ±9.2-acre site on SW Norwood Road (this ±9.2-acre site combines Parcel 2 of the partition application and adjacent Tax Lot 108, as described above). Currently, the RH-HR zoning district is restricted to a specific area within the City's Central Urban Renewal Area (URA). A text amendment to the Tualatin Development Code (TDC) is included that modifies the TDC's RH-HR language to allow the zoning district to be applied elsewhere in the City.

The text amendment also limits the maximum height of buildings to four stories south of SW Norwood Road in order to provide appropriate building massing in the Basalt Creek Planning Area. The proposed four-story height limitation to the RH-HR is significant, and results in the "High-Density High-Rise" name of the zone to be a misnomer because a four-story building is not a high-rise. (The term "high-rise" is subjective and depends on the context of the community. For example, in a denser urban area, a building would need to be at least 9 stories tall to be considered a "high-rise".) It is also worth noting that the Institutional (IN) zone allows up to 50-foot tall buildings; therefore, the proposed height limit of 4 stories or 50 feet is consistent with the existing zoning on the majority of the site.

#### **Lot Consolidation (future application)**

After annexation and partition approval, a lot consolidation application will be submitted to combine the ±1.0-acre annexed site with the ±8.2-acre parcel (Parcel 2) from the partition. This ±9.2-acre site is the same area subject to the map and text amendment and will be the subject of a future architectural review (AR) application.

#### **Architectural Review (future application)**

The future use of the ±9.2-acre site is anticipated to be multifamily housing. Planned improvements will require review and approval through the architectural review process with the Architectural Review Board acting as the decision-making body.

As described above, this plan map and text amendment application follows the partition and annexation applications. The area applicable to this application is shown in Figure 1 below.

This application satisfies the applicable approval criteria for map and text amendments outlined within the Tualatin Development Code (TDC) and Tualatin Comprehensive Plan and includes the City application forms and written materials necessary for the City to review and determine compliance with the applicable approval criteria. The evidence is substantial and supports approval of the application.

## **II. Site Description/Setting**

The subject site is ±9.2 acres in size and is comprised of two tax lots on the south side of SW Norwood Road ±290 feet east of SW Boones Ferry Road. Tax Lot 108 is located within the Portland Metropolitan Urban Growth Boundary (UGB) and Basalt Creek Planning Area and will be designated RML upon its annexation. The larger portion of the site proposed for a plan map amendment is currently annexed, is not included within the Basalt Creek Planning Area, and is zoned Institutional (Tax Lot 106). This portion



of the site is currently part of the Horizon Christian Church and School campus. There are two existing detached single-family homes and parking areas on the subject site.

**Figure 1:** Existing Zoning of Site



**Figure 2:** Proposed Plan Map Changes



Adjacent uses include the following:

North: SW Norwood Road and Norwood Heights residential subdivision, zoned Medium-Low Density Residential (RML).

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East: Horizon Community Church and Horizon Christian School campus (Tax Lot 106) with church and school buildings, sports fields, parking areas, and stormwater facilities zoned Institutional (IN). City-owned water tanks zoned IN. Autumn Sunrise residential subdivision zoned RML.

South: Horizon Community Church and Horizon Christian School campus (Tax Lot 106) with church and school buildings, sports fields, parking areas, and stormwater facilities. Zoned Institutional (IN). Autumn Sunrise residential subdivision zoned RML and Neighborhood Commercial (CN).

West: The Tualatin Hills Christian Church site is located west at the southeast corner of SW Boones Ferry Road and SW Norwood Road (zoned RML). Unincorporated low-density residential properties are located on the east and west sides of SW Boones Ferry Road (with County Zoning of FD-20).

Additionally, the site is close to a number of services and amenities such as:

- TriMet bus route 96-Tualatin/I-5 providing service between Commerce Circle and the Portland City Center with connections to Wilsonville’s SMART transit system and TriMet Westside Express Service (WES) commuter rail
- Pedestrian and bicycle facilities, including existing and future facilities along SW Norwood Road
- Future park lands along Basalt Creek on the west side of SW Boones Ferry Road
- Ibach Park
- Employment areas within the Basalt Creek Planning Area
- Wilsonville and the SW Elligsen Road/I-5 interchange
- Tualatin High School
- Edward Byrom Elementary School

### III. **Applicable Review Criteria**

#### TUALATIN COMPREHENSIVE PLAN 2040

#### CHAPTER 1 – COMMUNITY INVOLVEMENT

##### GOAL 1.1

Implement community involvement practices in line with Statewide Planning Goal 1.

##### Policy 1.1.3

Conduct the planning process with adequate input and feedback from citizens in each affected neighborhood.

**Response:** An in-person Neighborhood/Developer Meeting was held on October 25, 2022 at the Tualatin Public Library where feedback was received from citizens in the affected neighborhood. The meeting was held and noticed in accordance with the City’s neighborhood meeting requirements outlined in the Tualatin Development Code.

As a land use application requiring a Type IV-A procedure, a Planning Commission meeting and City Council public hearing will be required. These meetings will provide an opportunity for the public to comment on the application.

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## CHAPTER 3 – HOUSING

### GOAL 3.1 HOUSING SUPPLY.

Ensure that a 20-year land supply is designated and has urban services planned to support the housing types and densities identified in the Housing Needs Analysis.

**Response:** The City’s HNA found that approximately 4 acres of RH-HR zoning are needed to provide additional multifamily housing in the City. Where RH-HR areas are currently designated within the City, they are considered unbuildable by the HNA – meaning that they are not considered available for additional housing. The current RH-HR area is generally located south of SW Tualatin Road around the Tualatin Police Department and is largely owned by the City of Tualatin. It is unlikely that these lands, because of their public ownership and environmental constraints, would be available for residential development. Additionally, only a small portion of the currently designated area is unbuilt or unencumbered by wetlands, floodplains, and historic buildings.

The proposed map amendment provides a ±9.2-acre site to support the housing types and densities identified within the HNA. The HNA forecasts that multifamily units will provide 45 percent (456 dwelling units) of the 1,014 dwellings that are needed in Tualatin between 2020 and 2040.

The one-acre residential property (Tax Lot 106) is within the Basalt Creek Concept Plan area and, upon annexation to the City of Tualatin, will be zoned Residential Medium Low (RML). An additional 8.2-acre portion, following finalization of the proposed partition of Tax Lot 108 (Horizon Site), is currently zoned Institutional (IN). IN areas are generally designated where existing public or semi-public facilities already exist and were not considered as part of any land supply analysis. Meaning, the 8.2 acres of IN-zoned land have not been included in residential or employment land inventories.

The *Tualatin Housing Strategy Memorandum*, cited by the *City of Tualatin Housing Needs Analysis* (December 2019), presents a list of recommendations, and calls for the City to look for opportunities to re-zone lands to higher density residential. While Actions 1.2, 5.1, and 5.2 (excerpted and annotated below) don’t specifically list IN zoned lands, the recommendations clearly call for the City to identify opportunities for redevelopment and rezoning that would accommodate the City’s housing needs. During the process of creating the HNA, ECONorthwest and the City’s Community Advisory Committee (CAC) identified Actions 1.2 and 5.1 as high priorities to provide needed housing for the City.



Strategies, Actions, and Recommendations	Priority
<b>Strategy 1: Ensure an adequate supply of land that is available and serviceable.</b>	
<b>Action 1.1. Evaluate opportunities to increase development densities within Tualatin's existing zones by modifying the Development Code.</b> <ul style="list-style-type: none"> <li>▪ <b>Recommendation 1.1a:</b> Evaluate increasing densities in the Residential High and Residential High Density / High Rise residential designations by allowing buildings that are five to eight stories tall.</li> <li>▪ <b>Recommendation 1.1b:</b> Conduct an audit of the City's Development Code to identify barriers to residential development (e.g., lot size, setbacks, and lot coverage ratio) and identify alternatives for lowering or eliminating the barriers.</li> <li>▪ <b>Recommendation 1.1c:</b> Evaluate off-street parking requirements for multifamily housing to identify opportunities for reduction in parking requirements, especially for housing developed for groups who have fewer cars.</li> <li>▪ <b>Recommendation 1.1d:</b> Adopt a Planned Unit Development (PUD) ordinance to allow flexibility in both development standards and housing types.</li> </ul>	High
<b>Action 1.2. Evaluate opportunities to rezone land to provide additional opportunities for multifamily housing development.</b> <ul style="list-style-type: none"> <li>▪ <b>Recommendation 1.2a:</b> Identify opportunities to rezone industrial or commercial land for mixed-use that includes employment and residential uses.</li> <li>▪ <b>Recommendation 1.2b:</b> Evaluate opportunities to re-zone Residential Low Density and Residential Medium Low Density residential land for higher-density housing.</li> <li>▪ <b>Recommendation 1.2c:</b> Evaluate merging High Density zone and the High Density / High Rise zone into one zone and evaluate increasing the maximum density and maximum height limit allowed.</li> </ul>	High
<b>Action 1.3. Plan for infrastructure development to support residential development, consistent with Strategy 3.</b> <ul style="list-style-type: none"> <li>▪ <b>Recommendation 1.3a:</b> Identify opportunities to increase coordination between transportation planning and residential growth to manage congestion from growth.</li> <li>▪ <b>Recommendation 1.3b:</b> Identify opportunities to increase transit service.</li> </ul>	Medium
<b>Action 1.4. Plan for long-term development in Tualatin through 2040 and beyond.</b> <ul style="list-style-type: none"> <li>▪ <b>Recommendation 1.4a:</b> Actively work with Metro staff on upcoming Regional Growth Management reports. Coordinate Tualatin's planning with regional plans.</li> <li>▪ <b>Recommendation 1.4b:</b> Develop and implement a system to monitor the supply of residential land every two years.</li> <li>▪ <b>Recommendation 1.4c:</b> Reevaluate Tualatin's housing needs and land sufficiency on a schedule tied to the Metro Growth Management cycle.</li> <li>▪ <b>Recommendation 1.4d:</b> When needed in the future, work with Metro on potential expansion of the Metro UGB to include the Stafford area.</li> </ul>	High

Strategies, Actions, and Recommendations	Priority
<b>Action 3.8. Ensure that Tualatin has sufficient staff capacity to implement the housing program priorities set by the City Council.</b> <ul style="list-style-type: none"> <li>▪ <b>Recommendation 3.8a:</b> Determine whether the City will need to add staff to implement the policies in the housing strategy.</li> </ul>	Low
<b>Strategy 4: Identify funding tools to support residential development.</b>	
<b>Action 4.1. Evaluate opportunities to use leveraged funds from the Metro Housing Bond to support development of affordable housing.</b> <ul style="list-style-type: none"> <li>▪ <b>Recommendation 4.1a:</b> Evaluate opportunities, such as housing development incentives (in Strategy 3), to use leveraged funding from the Metro Housing Bond to support the development of affordable housing.</li> </ul>	High
<b>Action 4.2. Evaluate establishing an urban renewal district.</b> <ul style="list-style-type: none"> <li>▪ <b>Recommendation 4.2a:</b> Continue the evaluation of establishing a new urban renewal district and consider including urban renewal projects that support development of multifamily housing affordable for households earning less than 60% of MFI.</li> </ul>	High
<b>Action 4.3. Evaluate implementation of a construction excise tax.</b> <ul style="list-style-type: none"> <li>▪ <b>Recommendation 4.3a:</b> Evaluate implementation of a CET, starting with an analysis of the financial capacity of a CET.</li> </ul>	Medium
<b>Strategy 5: Identify redevelopment opportunities.</b>	
<b>Action 5.1. Identify districts within Tualatin with opportunities for redevelopment for housing and employment uses.</b> <ul style="list-style-type: none"> <li>▪ <b>Recommendation 5.1a:</b> Identify opportunities for redevelopment of mixed-use districts and initiate an area planning process to guide redevelopment.</li> </ul>	High
<b>Action 5.2. Support redevelopment of underutilized commercial buildings for housing.</b> <ul style="list-style-type: none"> <li>▪ <b>Recommendation 5.2a:</b> Identify underutilized commercial areas that are ripe for redevelopment and work with landowners and developers to support redevelopment.</li> </ul>	Medium
<b>Strategy 6: Ensure there are connections between planning for housing and other community planning.</b>	
<b>Action 6.1. Ensure that updates to the Transportation System Plan are coordinated with planning for residential growth.</b> <ul style="list-style-type: none"> <li>▪ <b>Recommendation 6.1a:</b> Evaluate opportunities to decrease dependence on automotive transportation in areas planned for housing.</li> <li>▪ <b>Recommendation 6.1b:</b> Evaluate opportunities to expand transit and improve transportation connectivity in Tualatin, particularly from the future Southwest Corridor station in Bridgeport to the Tualatin's Town Center.</li> <li>▪ <b>Recommendation 6.1c:</b> Evaluate opportunities for planning transit-oriented development.</li> <li>▪ <b>Recommendation 6.1d:</b> Develop a bicycle and pedestrian plan for Tualatin to increase connectivity within Tualatin.</li> </ul>	High
<b>Action 6.2. Coordinate planning for economic development planning with housing planning.</b> <ul style="list-style-type: none"> <li>▪ <b>Recommendation 6.2a:</b> Ensure the City includes housing planning for housing that is affordable to people who work at businesses in Tualatin.</li> </ul>	Medium
<b>Action 6.3. Develop a design and planning framework for "ten-minute neighborhoods" that include a mixture of uses.</b> <ul style="list-style-type: none"> <li>▪ <b>Recommendation 6.3a:</b> Develop a framework for mixed-use neighborhoods that includes the elements that residents need for day-to-day life.</li> </ul>	Low
<b>Action 6.4. Support sustainable development practices.</b> <ul style="list-style-type: none"> <li>▪ <b>Recommendation 6.4a:</b> Evaluate sustainable building practices, including certifications, to determine whether the City should offer incentives for certification or require certification of new buildings as sustainable.</li> </ul>	Low



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Amendment of the City’s RH-HR zoning district locational language will allow the City to apply RH-HR zoning beyond the limited area to where it is currently restricted, accomplishing the housing supply goal of the City’s HNA. The provision of additional lands for this purpose helps the City meet its 20-year land supply needs. The proposal satisfies this goal.

**POLICY 3.1.1 DENSITY.**

Maintain a citywide residential density of at least eight (8) dwelling units per net acre.

**Response:** High-Density High-Rise Residential (RH-HR) zoning is a critical part of the provision of appropriate residential densities within the City of Tualatin. The district requires density between 26 and 30 dwelling units per acre, and per the City’s HNA, accounts for only one percent of the total residential acreage within the City. The residential densities of the City’s various zoning districts are combined to provide the City’s overall target density of 8.0 dwelling units per acre, on average. According to the HNA, the City is below the target density of 8.0 dwelling units per acre. This map amendment will contribute to the City’s overall residential land supply and will help the City to better meet the minimum target density provisions. The proposal complies with this policy.

**POLICY 3.1.2 ZONING FOR MULTIFAMILY.**

Provide zoning for multifamily development, which may be located in areas adjacent to transit.

**Response:** According to the City’s Housing Needs Analysis, no areas of RH-HR zoning are vacant or partially vacant, meaning that they are not considered available for additional housing. This creates a two-fold problem – an identified need of 110 housing units will remain unmet because of the 4-acre land supply deficit, but the current plan text includes locational restrictions that limit the ability to apply this zoning within other areas of the City. The proposed amendments will remove the locational requirements within the TDC and allow for this site to be redesignated as RH-HR, allowing the City to meet its multifamily development housing needs. The subject site is also in close proximity to TriMet bus route 96 along SW Boones Ferry Road. Therefore, this policy to provide zoning for multifamily housing adjacent to transit is met.

**GOAL 3.2 HOUSING FOR ALL.**

Encourage development and preservation of housing that is affordable for all households in Tualatin.

**Response:** The proposed zoning changes will allow for the development of needed housing within Tualatin. The HNA identified the need for a higher percentage of multifamily dwelling units (45% of new housing) in order to meet the changing demographics and increasing housing affordability (*Housing Needs Analysis*, Page XI). In the current real estate market, it is difficult for many families, and especially first-time homeowners, to buy a home. For rent apartment homes are an affordable alternative to buying and provide housing options for households that might not be able to or want to buy a home in today’s market. Without additional supply of residential units, demand will continue to drive rents up significantly making renting less affordable. This application helps meets the goal of providing housing for all.

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### POLICY 3.2.1 HOUSING TYPE DIVERSITY.

Support development of townhomes, duplexes, triplexes, quadplexes, cottages, courtyard housing, accessory dwelling units, single story units, senior housing, and extended family and multi-generational housing in all residential zoning districts.

**Response:** The City implemented Development Code updates in 2021 to comply with statewide “middle housing” mandates and to allow for more housing diversity within single-family residential districts. However, changes to allow additional multifamily residential development were not included in the Development Code updates. The proposed map amendment will allow for the construction of apartment housing that will increase the supply of renter occupied housing and the diversity of housing types within the City.

### GOAL 3.5 HOUSING AND TRANSPORTATION.

Encourage development and redevelopment in Tualatin that supports all modes of transportation, including walking, biking, and mass transit.

### GOAL 3.7 RESIDENTIAL GROWTH AND THE ENVIRONMENT.

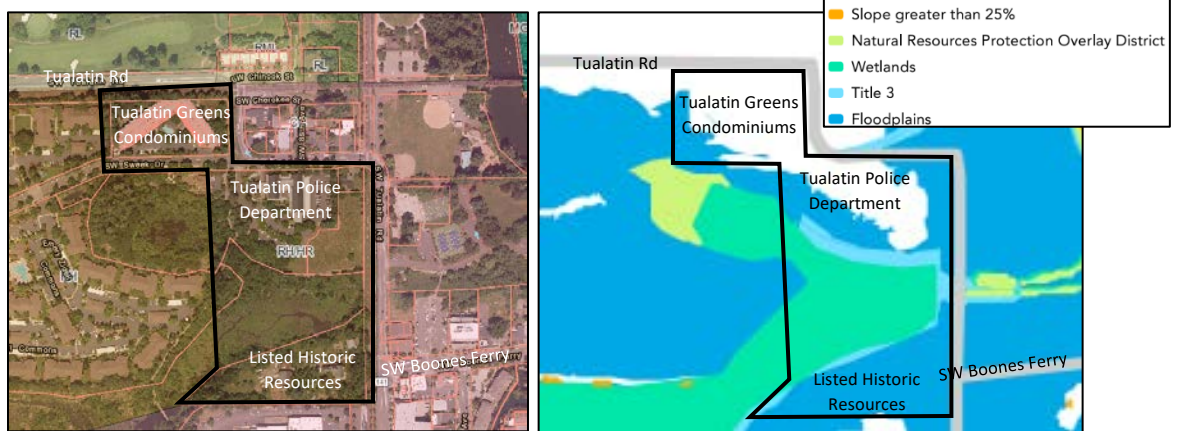
Plan for housing and residential growth to minimize and mitigate for environmental impacts.

**Response:** Compact growth within a city is more transit-supportive, has a smaller environmental impact, and allows for more efficient use of infrastructure. As most of Tualatin’s available residential buildable lands (88 acres) are within the Basalt Creek Planning Area, and there are no acres of available RH-HR lands within the rest of the City, rezoning is the only option to make RH-HR lands available to meet the City’s future housing needs.

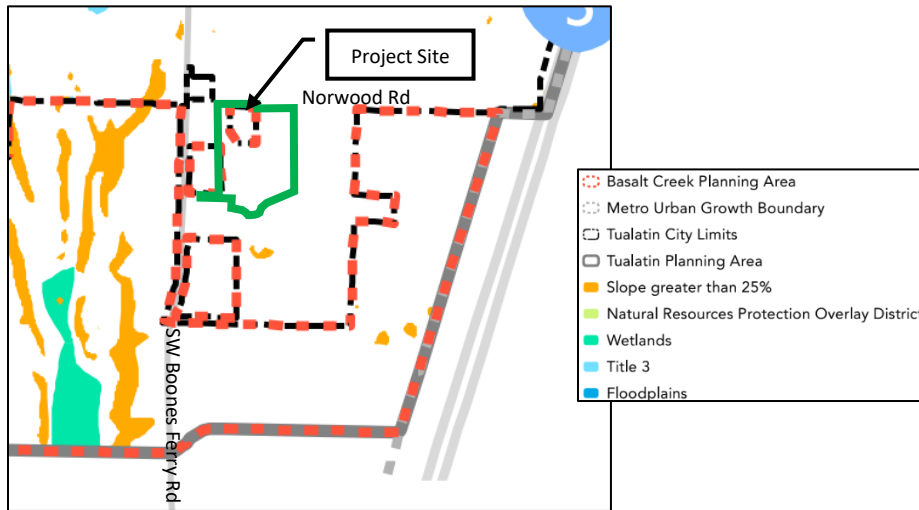
The location of proposed new RH-HR lands is near the intersection of SW Boones Ferry Road, SW Norwood Road, and the future extension of Basalt Creek Parkway allowing for greater pedestrian and bicycle connections to Tualatin and beyond. Transit options are currently available near the project site and increased residential, commercial, and industrial growth nearby may lead to increased levels of service along this route in the future.

The location of the project site accomplishes the goal of minimizing environmental impacts. The site does not feature any identified upland or riparian habitat, in contrast with existing RH-HR lands within the City (pictured below as Figure 3) which have been classified as largely unbuildable due to wetland habitats and floodplain. Other nearby residential lands, such as those west of SW Boones Ferry Road, are also significantly impacted by historic buildings, wetland, riparian, and upland habitats (Figure 4 below). Figure 4 demonstrates the location of the proposed map amendment. These goals are met.

**Figure 3: Existing RH-HR Zoning and Residential Land Constraints**



**Figure 4: Project Site Residential Land Constraints**



**CHAPTER 7 – PARKS, OPEN SPACE & ENVIRONMENT**

**GOAL 7.1**

Identify and protect significant natural resources that promote a healthy environment and natural landscape that improves livability, and to provide recreational and educational opportunities.

**POLICY 7.1.1**

Protect significant natural resources that provide fish and wildlife habitat, scenic values, water quality improvements, storm-water management benefits, and flood control.

**GOAL 7.2**

Balance natural resource protection with growth and development needs.

**Response:**

The project area is located where it will not infringe on natural resource areas. Removing the locational requirement of the RH-HR zoning and rezoning this area will allow for needed growth and development while still protecting natural resources within the City. While not considered a natural resource area, there are existing trees on the subject site along SW Norwood Road. As detailed in the Executive Summary, the applicant is willing

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to commit to a 60-foot tree preservation area. Due to access needs to the site and the widening requirements of SW Norwood Road, not all of the trees will be preserved, but a substantial number can be. These provisions are met.

## CHAPTER 10 – LAND USE DESIGNATIONS & ZONING

### PLAN MAP BACKGROUND

#### PLANNING DISTRICT BOUNDARIES.

The boundaries between planning districts, as portrayed on the Plan Map, are intended to follow property lines (or extensions thereof), roadways, or natural features such as creeks. Where such definition was not possible, the Map is drawn to scale and district boundaries can be determined by using this scale. It should be noted that property lines shown on the Plan Map were derived from County Assessor's Maps and are therefore relatively accurate. Consequently, the planning districts shown on the Plan shall be considered zoning districts, as normally termed. This eliminates the need for two sets of maps and simplifies the understanding of what land uses may be allowed on an individual property.

**Response:** The proposed map amendment follows the property lines created by a proposed partition of one of the subject lots. A future application will consolidate the recently annexed property and the parcel created through the partition of the Horizon Community Church campus (Parcel 2). The intent of the plan map district boundaries has been met.

#### PLANNING DISTRICT OBJECTIVES

##### RESIDENTIAL PLANNING DISTRICTS:

###### Medium-Low Density Residential Planning District (RML)

This district supports household living uses with a variety of housing types at moderately low densities. This district is primarily oriented toward middle housing types including attached dwellings, multi-family development, and manufactured dwelling parks.

###### High-Density Residential/High-Rise Planning District (RH-HR)

This district supports a wide range of housing types at the greatest density of household living in areas with the greatest access to amenities.

##### OTHER PLANNING DISTRICTS:

###### Institutional Planning District (IN)

The purpose of this district is to provide an environment exclusively for, and conducive to, the development and operation of religious institutions, schools, public parks, and related uses, in a manner that is harmonious with adjacent and nearby residential, commercial, or manufacturing planning districts and uses.

The district is intended to accommodate large-scale campus style developments, owned and operated by governmental or nonprofit entities, consisting of multiple structures or facilities, which may serve multiple purposes and provide multiple services to the community.

Permitted and conditional uses shall be developed and operated in a manner that promotes and protects the health, safety, and general welfare of all adjacent and nearby planning districts and uses. Additionally, conditional uses shall be allowed provided that the use is developed and operated in a manner that is consistent with the intent of the planning district, and that

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promotes and protects the health, safety, and general welfare of all adjacent and nearby planning districts and uses.

The district may be applied to land that is able to accommodate large-scale campus-style development and operation of religious institutions, schools, public parks, and related uses, as follows:

- Contiguous land one and one-half acre in size or greater;
- Access to a collector or arterial street;
- Adequate public facilities are available to the property.

**Response:** The project site is proposed to be rezoned to High-Density High-Rise Residential (RH-HR) from its current zoning of Institutional (IN) and Medium-Low Residential (RML). The removal of ±8.2-acres of IN land will not compromise the ability of the Horizon Church and School to optimize the use of their land and services they provide. And as previously discussed in this narrative, the HNA identified a surplus of RML zoning within the City and rezoning to RH-HR will meet numerous City goals and policies.

Prior to annexation to the City of Tualatin, Washington County approved a Master Plan in 2006 for the church and school property. The church has determined that their needs and the realization of the Master Plan can be met on a more compact portion of their property. This provides the opportunity to rezone and develop the remainder of the property with needed multifamily housing, making the current IN designation unnecessary. The proposed changes do not bring the remaining Institutional-zoned property out of compliance with the Tualatin Comprehensive Plan or previous land use approvals nor prevent its use in a manner that satisfies the purpose of the Institutional district.

Therefore, this application for a plan map and text amendment complies with the intent of the applicable planning districts.

## TUALATIN DEVELOPMENT CODE

### CHAPTER 32 – PROCEDURES

#### TDC 32.010. – Purpose and Applicability

- (1) *Purpose.* The purpose of this Chapter is to establish standard procedures for the review and processing of land use applications and legislative land use proposals, as well as ministerial actions. This Chapter is intended to enable the City, the applicant, and the public, where applicable, to reasonably review applications and participate in the local decision-making process in a timely and effective way. Table 32-1 provides a key for determining the review procedure and the decision-making body for particular applications.
- (2) *Applicability of Review Procedures.* All land use and development permit applications and decisions, will be made by using the procedures contained in this Chapter. The procedure "type" assigned to each application governs the decision-making process for that permit or application. There are five types of permit/application procedures as described in subsections (a) through (e) below. Table 32-1 lists the City's land use and development applications and corresponding review procedure(s).
  - (d) *Type IV-A Procedure (Quasi-Judicial Review—City Council Public Hearing).* Type IV-A procedure is used when the standards and criteria require discretion, interpretation, or policy or legal judgment and is the

procedure used for site-specific land use actions initiated by an applicant. Type IV-A decisions are made by the City Council and require public notice and a public hearing. Appeals of Type IV-A decisions are heard by the Land Use Board of Appeals (LUBA).

Table 32-1 – Application Types and Review Procedures

Application/Action	Procedure Type	Decision Body*	Appeal Body*	Pre-Application Conference Required	Neighborhood/Developer Mtg Required	Applicable Code Chapter
Plan Amendments						
• Map or Text Amendments for a specific property	IV-A	CC	LUBA	Yes	Yes	TDC 33.070

**Response:** This application is for plan map and text amendments that affect two parcels to be owned by the applicant. The requested action affects a limited number of properties and will require public notice and a public hearing before the City Council.

TDC 32.110. – Pre-Application Conference.

- (1) *Purpose of Pre-Application Conferences.* Pre-application conferences are intended to familiarize applicants with the requirements of the TDC; to provide applicants with an opportunity discuss proposed projects in detail with City staff; and to identify approval criteria, standards, and procedures prior to filing a land use application. The pre-application conference is intended to be a tool to assist applicants in navigating the land use process, but is not intended to be an exhaustive review that identifies or resolves all potential issues, and does not bind or preclude the City from enforcing any applicable regulations or from applying regulations in a manner differently than may have been indicated at the time of the pre-application conference.
- (2) *When Mandatory.* Pre-application conferences are mandatory for all land use actions identified as requiring a pre-application conference in Table 32-1. An applicant may voluntarily request a pre-application conference for any land use action even if it is not required.
- (3) *Timing of Pre-Application Conference.* A pre-application conference must be held with City staff before an applicant submits an application and before an applicant conducts a Neighborhood/Developer meeting.

**Response:** A pre-application conference was held with City of Tualatin staff to discuss the overall project and this specific redesignation of residential lands and required text amendment. The required pre-application conference was held with City of Tualatin Staff on July 13, 2022, prior to the application submittal date.

- (4) *Application Requirements for Pre-Application Conference.*
  - (a) *Application Form.* Pre-application conference requests must be made on forms provided by the City Manager.
  - (b) *Submittal Requirements.* Pre-application conference requests must include:
    - (i) A completed application form;
    - (ii) Payment of the application fee;
    - (iii) The information required, if any, for the specific pre-application conference sought; and



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- (iv) Any additional information the applicant deems necessary to demonstrate the nature and scope of the proposal in sufficient detail to allow City staff to review and comment.
  - (5) *Scheduling of Pre-Application Conference.* Upon receipt of a complete application, the City Manager will schedule the pre-application conference. The City Manager will coordinate the involvement of city departments, as appropriate, in the pre-application conference. Pre-application conferences are not open to the general public.
  - (6) *Validity Period for Mandatory Pre-Application Conferences; Follow-Up Conferences.* A follow-up conference is required for those mandatory pre-application conferences that have previously been held when:
    - (a) An application relating to the proposed development that was the subject of the pre-application conference has not been submitted within six months of the pre-application conference;
    - (b) The proposed use, layout, and/or design of the proposal have significantly changed; or
    - (c) The owner and/or developer of a project changes after the pre-application conference and prior to application submittal.

**Response:** A pre-application conference to discuss the application was held on July 13, 2022. The conference followed the above procedures and is valid for six months (until January 13, 2023). These criteria are met.

**TDC 32.120. - Neighborhood/Developer Meetings.**

- (1) *Purpose.* The purpose of this meeting is to provide a means for the applicant and surrounding property owners to meet to review a development proposal and identify issues regarding the proposal so they can be considered prior to the application submittal. The meeting is intended to allow the developer and neighbors to share information and concerns regarding the project. The applicant may consider whether to incorporate solutions to these issues prior to application submittal.
- (2) *When Mandatory.* Neighborhood/developer meetings are mandatory for all land use actions identified in Table 32-1 as requiring a neighborhood/developer meeting. An applicant may voluntarily conduct a neighborhood/developer meeting even if it is not required and may conduct more than one neighborhood/developer meeting at their election.
- (3) *Timing.* A neighborhood/developer meeting must be held after a pre-application meeting with City staff, but before submittal of an application.
- (4) *Time and Location.* Required neighborhood/developer meetings must be held within the city limits of the City of Tualatin at the following times:
  - (a) If scheduled on a weekday, the meeting must begin no earlier than 6:00 p.m.
  - (b) If scheduled on a weekend, the meeting must begin between 10:00 a.m. and 6:00 p.m.
- (5) *Notice Requirements.*
  - (a) The applicant must provide notice of the meeting at least 14 calendar days and no more than 28 calendar days before the meeting. The notice must be by first class mail providing the date, time, and location of the meeting, as well as a brief description of the proposal and its location. The applicant must keep a copy of the notice to be submitted with their land use application.
  - (b) The applicant must mail notice of a neighborhood/developer meeting to the following persons:

- (i) All property owners within 1,000 feet measured from the boundaries of the subject property;
  - (ii) All property owners within a platted residential subdivision that is located within 1,000 feet of the boundaries of the subject property. The notice area includes the entire subdivision and not just those lots within 1,000 feet. If the residential subdivision is one of two or more individually platted phases sharing a single subdivision name, the notice area need not include the additional phases; and
  - (iii) All designated representatives of recognized Citizen Involvement Organizations as established in TMC Chapter 11-9.
- (c) The City will provide the applicant with labels for mailing for a fee.
  - (d) Failure of a property owner to receive notice does not invalidate the neighborhood/developer meeting proceedings.
- (6) *Neighborhood/Developer Sign Posting Requirements.* The applicant must provide and post on the subject property, at least 14 calendar days before the meeting. The sign must conform to the design and placement standards established by the City for signs notifying the public of land use actions in TDC 32.150.
  - (7) *Neighborhood/Developer Meeting Requirements.* The applicant must have a sign-in sheet for all attendees to provide their name, address, telephone number, and email address and keep a copy of the sign-in sheet to provide with their land use application. The applicant must prepare meeting notes identifying the persons attending, those commenting and the substance of the comments expressed, and the major points that were discussed. The applicant must keep a copy of the meeting notes for submittal with their land use application.

**Response:** A Neighborhood/Developer Meeting is required for this type of application, and one was held in-person on October 25, 2022 at the Tualatin Public Library. The required information is provided in Exhibit E. These requirements are met.

**TDC 32.130. - Initiation of Applications.**

- (1) *Type I, Type II, Type III, and Type IV-A Applications.* Type I, Type II, Type III, and Type IV-A applications may be submitted by one or more of the following persons:
  - (a) The owner of the subject property;
  - (b) The contract purchaser of the subject property, when the application is accompanied by proof of the purchaser's status as such and by the seller's written consent;
  - (c) A lessee in possession of the property, when the application is accompanied by the owners' written consent; or
  - (d) The agent of any of the foregoing, when the application is duly authorized in writing by a person authorized to submit an application by paragraphs (a), (b) or (c) of this subsection, and accompanied by proof of the agent's authority.
- (2) *Type IV-A or B Applications.* Type IV-A or B applications may be initiated by the City.

**Response:** This application has been submitted by the property owners and contract purchaser of all properties affected by the proposed map and text amendment. The applicable criteria are met.



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TDC 32.140. - Application Submittal.

- (1) **Submittal Requirements.** Land use applications must be submitted on forms provided by the City. A land use application may not be accepted in partial submittals. All information supplied on the application form and accompanying the application must be complete and correct as to the applicable facts. Unless otherwise specified, all of the following must be submitted to initiate completeness review under TDC 32.160:
  - (a) A completed application form. The application form must contain, at a minimum, the following information:
    - (i) The names and addresses of the applicant(s), the owner(s) of the subject property, and any authorized representative(s) thereof;
    - (ii) The address or location of the subject property and its assessor's map and tax lot number;
    - (iii) The size of the subject property;
    - (iv) The comprehensive plan designation and zoning of the subject property;
    - (v) The type of application(s);
    - (vi) A brief description of the proposal; and
    - (vii) Signatures of the applicant(s), owner(s) of the subject property, and/or the duly authorized representative(s) thereof authorizing the filing of the application(s).
  - (b) A written statement addressing each applicable approval criterion and standard;
  - (c) Any additional information required under the TDC for the specific land use action sought;
  - (d) Payment of the applicable application fee(s) pursuant to the most recently adopted fee schedule;
  - (e) Recorded deed/land sales contract with legal description.
  - (f) A preliminary title report or other proof of ownership.
  - (g) For those applications requiring a neighborhood/developer meeting:
    - (i) The mailing list for the notice;
    - (ii) A copy of the notice;
    - (iii) An affidavit of the mailing and posting;
    - (iv) The original sign-in sheet of participants; and
    - (v) The meeting notes described in TDC 32.120(7).
  - (h) A statement as to whether any City-recognized Citizen Involvement Organizations (CIOs) whose boundaries include, or are adjacent to, the subject property were contacted in advance of filing the application and, if so, a summary of the contact. The summary must include the date when contact was made, the form of the contact and who it was with (e.g. phone conversation with neighborhood association chairperson, meeting with land use committee, presentation at neighborhood association meeting), and the result;
  - (i) Any additional information, as determined by the City Manager, that may be required by another provision, or for any other permit elsewhere, in the TDC, and any other information that may be required to adequately review and analyze the proposed development plan as to its conformance to the applicable criteria;

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- (2) **Application Intake.** Each application, when received, must be date-stamped with the date the application was received by the City, and designated with a receipt number and a notation of the staff person who received the application.
  - (3) **Administrative Standards for Applications.** The City Manager is authorized to establish administrative standards for application forms and submittals, including but not limited to plan details, information detail and specificity, number of copies, scale, and the form of submittal.

**Response:** Required information, city forms, and this narrative have been submitted to the City of Tualatin for approval. These criteria are met.

**TDC 32.150. - Sign Posting.**

- (1) **When Signs Posted.** Signs in conformance with these standards must be posted as follows:
  - (a) Signs providing notice of an upcoming neighborhood/developer meeting must be posted prior to a required neighborhood/developer meeting in accordance with Section 32.120(6); and
  - (b) Signs providing notice of a pending land use application must be posted after land use application has been submitted for Type II, III and IV-A applications.
- (2) **Sign Design Requirements.** The applicant must provide and post a sign(s) that conforms to the following standards:
  - (a) Waterproof sign materials;
  - (b) Sign face must be no less than 18 inches by 24 inches (18" x 24"); and
  - (c) Sign text must be at least two inch font.
- (3) **On-site Placement.** The applicant must place one sign on their property along each public street frontage of the subject property. (Example: If a property adjoins four public streets, the applicant must place a sign at each of those public street frontages for a total of four signs.) The applicant cannot place the sign within public right-of-way.
- (4) **Removal.** If a sign providing notice of a pending land use application disappears prior to the final decision date of the subject land use application, the applicant must replace the sign within 40-eight (48) hours of discovery of the disappearance or of receipt of notice from the City of its disappearance, whichever occurs first. The applicant must remove the sign no later than 14 days after:
  - (a) The meeting date, in the case of signs providing notice of an upcoming neighborhood/developer meeting; or
  - (b) The City makes a final decision on the subject land use application, in the case of signs providing notice of a pending land use application.

**Response:** Signs duly notifying the public of the pending land use application will be posted in accordance with the above provisions. Signs for the Neighborhood/Developer Meeting were posted in accordance with TDC 32.120(6). Signage providing notice of the pending land use application hearing will be posted when applicable. The applicable criteria have been or will be met.

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TDC 32.230. - Type III Procedure (Quasi-Judicial Review—Public Hearing).

Type III decisions involve the use of discretion and judgment and are made by the Planning Commission or Architectural Review Board after a public hearing with an opportunity for appeal to the City Council. The decision body for each application type is specified in Table 32-1. A hearing under these procedures provides a forum to apply standards to a specific set of facts to determine whether the facts conform to the applicable criteria and the resulting determination will directly affect only a small number of identifiable persons.

- (1) **Submittal Requirements.** Type III applications must include the submittal information required by TDC 32.140(1).

[...]

**Response:** The application includes the applicable information listed within TDC 32.140(1). This criterion is met.

### CHAPTER 33 – APPLICATIONS AND APPROVAL CRITERIA

TDC 33.070. – Plan Amendments.

- (1) **Purpose.** To provide processes for the review of proposed amendments to the Zone Standards of the Tualatin Development Code and to the Text or the Plan Map of the Tualatin Comprehensive Plan.

**Response:** The applicant is applying for a plan map amendment in order to provide opportunities for multifamily housing.

The applicant has also applied for plan text amendments in order to remove location restrictions related to the placement of RH-HR zoning and limit the height to four stories south of SW Norwood Road. Current TDC language restricts this zoning to a ±17.8-acre area on SW Tualatin Road largely encumbered with wetlands, floodplain, other obstacles to development and allows building to be up to 64 feet in height.

The required materials have been attached to this narrative as exhibits, providing justification for these plan map and text amendment requests.

- (2) **Applicability.** Quasi-judicial amendments may be initiated by the City Council, the City staff, or by a property owner or person authorized in writing by the property owner. Legislative amendments may only be initiated by the City Council.

**Response:** A pre-application conference with City of Tualatin staff has identified this application for plan map and text amendments, with a limited scope affecting a small number of properties, as requiring a quasi-judicial process. The application is subject to a Type IV-A review in accordance with TDC 32.010. This application has been submitted by the property owner and their authorized representatives. This criterion is met.

- (3) **Procedure Type.**

- (a) Map or text amendment applications which are quasi-judicial in nature (e.g. for a specific property or a limited number of properties) is subject to Type IV-A Review in accordance with TDC Chapter 32.
- (b) Map or text amendment applications which are legislative in nature are subject to Type IV-B Review in accordance with TDC Chapter 32.

**Response:** This application affects a limited number of properties and is therefore quasi-judicial in nature and subject to a Type IV-A Review in accordance with the procedures outlined within TDC Chapter 32.

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- (4) *Specific Submittal Requirements.* An application for a plan map or text amendment must comply with the general submittal requirements in TDC 32.140 (Application Submittal).

**Response:** The applicant has submitted the required materials in accordance with TDC 32.140. These specific materials were outlined previously within this application. This criterion is met.

- (5) *Approval Criteria.*  
(a) *Granting the amendment is in the public interest.*

**Response:** Providing housing, especially those types identified by the City as specifically needed in Tualatin, are important to reaching the City's goals of offering residents various densities and levels of affordability. Additionally, Metro requires at least 50% of new residential units within the City of Tualatin to be either multifamily or attached single family units. The proposed map amendment could allow for the construction of up to 276 housing units on the ±9.2-acre site. The public interest is served through providing an opportunity for housing and helping the City meet both identified goals of the Tualatin Comprehensive Plan and regional Metro housing requirements.

The City's Housing Needs Analysis states that Tualatin's housing market is strongly impacted by the regional housing market and nearly 93% of the 23,800 people who work in Tualatin commute from outside of the city. The US Census Bureau's 2021 American Community Survey estimates that ±43.1 percent of those employed in Tualatin spend greater than 30 minutes traveling to work. Allowing additional housing opportunities to be constructed near these centers of employment would have an impact in the number and length of time vehicles were on the road. The lack of vacant units and continued demand for housing will drive the need to provide additional multifamily housing, which is expected to be 45% of Tualatin's future housing stock. The analysis also determined that Tualatin would be challenged to provide multifamily housing over the next 20 years.

A key recommendation of the Housing Needs Analysis is providing housing closer to workplaces and thereby reducing transportation issues associated with long commutes. The Basalt Creek Planning Area is expected to provide up to 2,300 jobs over the next 16 years. Because the lands proposed for map amendment are surplus Institutional and residential lands, the industrial and employment capacity within the Basalt Creek Planning Area is preserved. Amending other districts within the Basalt Creek Planning Area would either reduce employment capacity or require locating higher density housing further away from transportation facilities and amenities.

Another key component of this application is the provision of utility and transportation infrastructure, as outlined in the TIA (Exhibit H) and the Utility Capacity Analysis (Exhibit I). The addition of the traffic signal at the SW Norwood Road and SW Boones Ferry Road intersection will mitigate for existing traffic impacts as well as the minor impact of the future apartment project on the site.

The proposed map and text amendments serve the public interest by accommodating the housing, employment, utility, and transportation needs of the community. Therefore, the amendments benefit the public and the applications satisfy this criterion.

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(b) The public interest is best protected by granting the amendment at this time.

**Response:** Since the City has few vacant lands and no ability to provide housing at the needed density established by the HNA on existing buildable lands, approval of these amendments at this time is needed and is in the best interest of the public. Additionally, the City’s Housing Needs Analysis states that over half of renter households in the City are cost burdened. Allowing for increased density can help alleviate households’ cost burdens by providing opportunities to add dwelling units to the housing market. The City’s HNA also states that the City will be challenged over the next 20 years to provide housing of all types, including market-rate multifamily housing. The public interest is served and protected through meeting public needs for housing.

The provision of the traffic signal protects the public interest by solving an existing problem and mitigating future impacts of additional traffic from future improvements to the site. The text amendment to limit the height of buildings at the site to 4-stories also protects the public interest by ensuring compatibility with surrounding neighborhoods.

The conversion of IN zoned land to residential zoning also protects the public interest by preserving employment lands in commercial and industrial zoned areas. According to the *Tualatin Economic Opportunities Analysis* completed in 2019, there is little demand for institutionally zoned land in the City when compared to industrial, commercial, or residential designations.

This criterion is met.

(c) The proposed amendment is in conformity with the applicable goals and policies of the Tualatin Comprehensive Plan.

**Response:** Conformance with the applicable goals and policies of the Tualatin Comprehensive Plan have been reviewed and responses provided previously within this application. This criterion is satisfied.

(d) The following factors were consciously considered:

(i) The various characteristics of the areas in the City;

**Response:** The characteristics of the proposed location were considered. The subject site is located near transportation options, goods and services, and employment areas. As previously stated, the City lacks the buildable lands necessary to provide housing to meet its projected residential growth. Other available areas do not have the necessary level of services, access to employment centers and transportation, or amenities that are or will be available in this location. The site is in an area of future growth and in close proximity to the Basalt Creek employment area which is expected to provide up to 2,300 jobs in the next 16 years.

Many other lands, 86 percent of the total acres with residential comprehensive plan designations, are also considered “developed” per Metro Regional Services (Metro) definitions and must be redeveloped to accommodate any changes to housing or additional housing in the future. Redevelopment requires consideration of the project site and surroundings and can be costly in comparison to development of a vacant site. This application allows for the provision of housing in a relatively undeveloped greenfield area

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without the possible reduction in housing stock or displacement of current residents that may occur with the redevelopment of a developed site.

Neighbors attending the Neighborhood/Developer Meeting expressed concerns related mainly with traffic and building height. As part of this application, the Applicant has provided a Transportation Impact Analysis including a Transportation Planning Rule analysis (Exhibit H). The report, completed by Jennifer Danziger, PE, Senior Transportation Engineer at Lancaster Mobley, studied the existing and background conditions of the transportation network. The report concluded that the traffic signal at the intersection of SW Norwood Road and SW Boones Ferry Road is required even without the apartment project being built. However, with the addition of the signal, the proposed zoning and project could be accommodated by the surrounding planned transportation network, frontage improvements, and traffic signal. The recommended improvements will allow the street network performance standards to be met without any additional mitigation or change in classification.

Concern about the height of the buildings has been addressed by the proposed text amendment which would limit the height of the RH-HR zone to four stories within areas south of SW Norwood Road (Exhibit B). (See discussion in the Executive Summary about the text amendment for height.) The proposed code height limitation would reduce the visual impacts of the future site improvements on the surrounding area. Along with the required transportation improvements, the proposed plan map and text amendments consciously consider the characteristics of this and other areas of the City, and this criterion is met.

(ii) **The suitability of the areas for particular land uses and improvements in the areas;**

**Response:**

The site proposed for the map amendment is a future growth area of the City, near transportation options, a neighborhood commercial area, parks, schools, and employment centers, and is a suitable location for multifamily development. Planned improvements and infrastructure that is anticipated to be the responsibility of the project will accommodate development in the area. Nearby service and planned improvements include:

**Water:** Water service for the subject site will tie into existing public water mains within SW Norwood Road. Per the *9300 SW Norwood – Water System Capacity Analysis*, dated September 11, 2022, from Brian Ginter, PE of Murraysmith, Inc. included as part of Exhibit I, “adequate water service for domestic use and fire suppression is available” for the proposed development.

**Sanitary Sewer:** An 8-inch gravity sanitary sewer line will be constructed north of the proposed site within the SW Norwood Road and SW Boones Ferry Road rights-of-way. This line is planned to lead to an existing sanitary sewer line within SW Boones Ferry Road north of its intersection with SW Norwood Road. Adequate capacity is available to serve the proposed increase in residential density.



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**Stormwater:** A new connection to an existing stormwater main within SW Boones Ferry Road is planned. Using a combination of an existing on-site stormwater pond and new underground detention facilities, CWS water quality and hydromodification requirements can be met that ensure release rates for the site will be less than or equal to those currently observed.

**Transportation:** As previously discussed and detailed within the TIA (Exhibit H), a signal at the intersection of SW Norwood Road and SW Boones Ferry Road is warranted without any changes to the subject site. With the addition of a signal and other improvements to the transportation network surrounding the site, there is adequate capacity for the proposed development. Additionally, as described in the Executive Summary above, a bus stop for TriMet route 96 is within 350 feet of the site providing service to Portland City Center and connections to Wilsonville’s SMART transit system and TriMet Westside Express Service (WES) commuter rail. Capacity of the surrounding network is adequate, and the proposed project does not require additional measures of mitigation.

**Emergency and School Services:** The project site is served by the Tualatin Police Department and is within the Sherwood School and Tualatin Valley Fire and Rescue (TVF&R) Districts. Correspondence with the Sherwood School District is included as Exhibit G which states that capacity for additional students is available within Sherwood schools. Compliance with TVF&R standards and service requirements can be provided and will be reviewed with future applications for architectural review related to site design and layout.

Further analysis of current and proposed utilities is available within Exhibit I. The proposal is consistent with the City’s Master Plans and the area is suitable for this type of development. This criterion is satisfied.

(iii) **Trends in land improvement and development;**

**Response:**

As outlined in the Executive Summary, the state, region, and City are in the midst of a housing emergency. State and regional policies are addressing the shortages of all types of housing. The City’s HNA identified a need for diverse housing choices and additional multifamily dwelling units. Future development of this and surrounding sites was considered when creating this plan map and text amendment proposal. A portion of the area of the map change is part of the Basalt Creek Planning Area which has been the focus of years of planning effort between the City of Tualatin, City of Wilsonville, Washington County, and Metro and is currently under various stages of development.

To the east, Phase 1 of the Autumn Sunrise Subdivision is under development. To the southwest, Plambeck Garden Apartments has received land use approval and is likely to begin construction soon. The City has purchased lands west of SW Boones Ferry Road for the purpose of providing public parklands. Areas of industrial employment to the south and west are readying for development and existing facilities are growing. Infrastructure improvements are in various stages of progress, with road, water, sewer, stormwater, and other improvements completed or scheduled in conjunction with this growth.

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This application provides a significant opportunity for the City to provide needed housing within an area of future growth of the City. The proposed zoning would allow an appropriate use and one the City and region are in dire need of at a suitable site. This criterion is met.

(iv) **Property values;**

**Response:** The proposed amendments include a height limitation for future projects on the site. The future site plan will also propose a buffer of existing vegetation along SW Norwood Road, creating a visual barrier to the site. These measures will make the future development of the site compatible with the nearby homes. We are unaware of data that supports a conclusion that mitigated multifamily development negatively impacts property values of the surrounding area. The proposed rezone of the site increases the value of the church's excess land. The effects of the proposed amendments on property values were consciously considered and this criterion is met.

(v) **The needs of economic enterprises and the future development of the area; needed right-of-way and access for and to particular sites in the area;**

**Response:** The plan map and text amendment are necessary to provide additional needed housing within the City of Tualatin. Providing multifamily residential zoning in the proposed area relieves pressure to rezone other non-residential lands for the purpose of housing. Supplying this area relatively close to future employment centers provides the opportunity for employees to live nearer to their work. An employment center with nearby residences creates an attractive environment for companies relocating to the Basalt Creek Planning Area.

A future right-of-way dedication along SW Norwood Road will be provided to meet the short term and long-term transportation improvement needs identified by the City and County. A future architectural review application will address the specific right-of-way and access needs for the site development and ensure a thoughtfully designed project. This criterion is met.

(vi) **Natural resources of the City and the protection and conservation of said resources;**

**Response:** There are no mapped natural resources on the site affected by the plan map and text amendment. The site is largely vacant and underdeveloped with single-family residences and a parking lot. Vegetation is largely concentrated in the area adjacent to SW Norwood Road and surrounding Tax Lot 108. A wetland is located on the Horizon church and school site southwest of the plan map amendment area. This wetland was delineated and reviewed with the partition application submitted in November 2022. No physical development is proposed with this application for plan map and text amendment. The site will be further examined for natural resources, with any resources delineated, appropriately protected, and any impacts to resources mitigated with future development of the site. Future development of the site will need to comply with local, regional, state, and federal requirements for the protection of air, water, and land resources. This criterion is met.



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(vii) **Prospective requirements for the development of natural resources in the City;**

**Response:** There are no mapped natural resources on the site affected by the plan map and text amendment. The site is largely vacant and underdeveloped with single-family residences and a parking lot. Vegetation is largely concentrated in the area adjacent to SW Norwood Road and surrounding Tax Lot 108.

No physical development is proposed with this application for plan map and text amendment, and future development of the site will need to comply with local, regional, state, and federal requirements for the protection of air, water, and land resources. The site will be examined for natural resources, with any resources delineated, appropriately protected, and any impacts to resources mitigated with future development of the site. This criterion is met.

(viii) **The public need for healthful, safe, esthetic surroundings and conditions; and**

**Response:** This application helps satisfy the public need for housing in an appropriate location that considers the specific site conditions. The 2019 *Housing Needs Analysis* forecasted demand for 101 dwelling units of new housing between 2020 and 2040 within the RH-HR zoning district. Per the analysis and as explained previously, new housing opportunities for RH-HR do not exist within Tualatin, leaving a deficiency of at least 101 dwelling units.

The Basalt Creek Planning Area is projected to provide around 2,300 new jobs per the *Basalt Creek Concept Plan* adopted by the City in 2018. This job growth is expected to drive the need for additional housing units in Tualatin, especially in areas close to the centers of future employment, such as the proposed amendment area. The subject site is one of the closest residential areas in proximity to the burgeoning employment areas and would be highly desirable to employees of businesses in the area.

Key findings of the 2019 HNA are that Tualatin must “plan for more single-family attached and multifamily dwelling units in the future to meet the City’s housing needs” and that multifamily housing will account for 45 percent of future housing in the City. Another finding of the HNA states that the City could not “accommodate all of its housing needs” without employing strategies such as “by re-zoning land, increasing densities allowed in Plan Designations with deficits, or by accommodating housing in Plan Designations with surpluses.” Approving this request will serve the purposes of the plans outlined within this narrative as well as meet the public need for efficient and safe future development of the area.

The provisions of the TDC address safety, health, and aesthetic factors that will be adequately considered as part of future applications for architectural design review.

The application complies with this criterion.

(ix) **Proof of change in a neighborhood or area, or a mistake in the Plan Text or Plan Map for the property under consideration are additional relevant factors to consider.**

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**Response:** The Basalt Creek Planning Area south of SW Norwood Road is an area planned for future growth within the Cities of Tualatin and Wilsonville. The concept plan for this area includes lands planned for residential, neighborhood commercial, and industrial uses. The first stages of development in this area are currently underway with the approvals of the Autumn Sunrise Subdivision and Plambeck Gardens Apartments. The City has recently purchased ±14 acres of land in the vicinity of the project, at 23465 and 23515 SW Boones Ferry Road, for the purpose of providing public parks. These parks are planned to provide amenities for existing and future residents in this area of the City. This map and text amendment to allow for future residential uses is compatible and appropriate for the neighborhood as the planned growth occurs.

While there was no mistake in the plan text or map for the property under consideration, the HNA has identified that the City has a deficit of RH-HR lands and this narrative demonstrates that no buildable acres are available due to constraints. This application complies with this criterion.

- (e) **If the amendment involves residential uses, then the appropriate school district or districts must be able to reasonably accommodate additional residential capacity by means determined by any affected school district.**

**Response:** The proposed plan map and text amendment will modify zoning code text, re-zone a portion of the Basalt Creek Planning Area, and increase residential densities in the area. The proposed site is located within the Sherwood School District; therefore, the school district's input was sought as part of this application. Those comments are included as part of Exhibit G. Sherwood School District's Chief Operations Officer, Jim Rose, provided confirmation that the district could accommodate any additional students from future multifamily development on the site. This criterion is met.

- (f) **Granting the amendment is consistent with the applicable State of Oregon Planning Goals and applicable Oregon Administrative Rules, including compliance with the Transportation Planning Rule TPR (OAR 660-012-0060).**

**Response:** The proposed amendments are consistent with Oregon Statewide Planning Goal 1 – Citizen Involvement and Goal 2 – Land Use Planning and the applicable Oregon Administrative Rules. This proposal complies by satisfying the citizen involvement criteria of the TDC. The plan and map amendments are compliant with Goal 2 because the amendments satisfy the City's established land use planning processes and procedures.

By rezoning IN land to allow for housing, both Statewide Planning Goals 9 and 10 are met. The purpose of Goal 9 – Economic Development, is to make sure cities have enough land available to realize economic growth and development opportunities. There are no impacts to the inventory of commercial and industrial zoned lands with this application and major employment areas of the City are protected.

The amendments are compliant with Oregon Statewide Goal 10 (OAR 660-015-0000(10)) as they consider the City's *Housing Needs Analysis*, help address the City's deficit of housing by providing appropriate types and amounts of land for housing, provide an appropriate location currently undergoing development, and consider the carrying capacity of the City's natural resources.

The text amendment, as proposed, is consistent with OAR 660-007 (the Metropolitan Housing Rule), as it does not propose to change aspects of the type or density of housing within the RH-HR zoning district.

The proposal will allow the construction of needed housing and the efficient use of lands within the City of Tualatin. A review of Oregon’s Transportation Planning Rule (OAR 660-012-0060) and trip generation analysis have been provided by a traffic engineer (Exhibit H). Based on this analysis, the proposed map amendment was found to meet the TPR criteria, and the transportation system was found to have the capacity to accommodate the proposed changes. This criterion has been met.

(g) Granting the amendment is consistent with the Metropolitan Service District's Urban Growth Management Functional Plan.

**Response:** Metro’s *Urban Growth Management Functional Plan* is established in Metro Code as Section 3.07. The following Functional Plan sections are applicable to the proposed plan and map amendments:

**Title 1: Housing Capacity:** Title 1 requires that a City maintain or increase its housing capacity. The City’s HNA established the need for housing. Specifically, it identified a deficit of lands available for high-density multifamily housing and medium high-density residential. ( See below.)

**Exhibit 4. Comparison of capacity of existing residential land with demand for new dwelling units and land surplus or deficit, Tualatin City Limits and Basalt Creek, 2020 to 2040**

Source: Buildable Lands Inventory; Calculations by ECNorthwest. Note: DU is dwelling unit.

Residential Plan Designations	Capacity (Dwelling Units)	Demand for New Housing	Remaining Capacity (Supply minus Demand)	Land Surplus or (Deficit) Gross Acres
Low Density	523	466	57	10
Medium Low Density	386	71	315	27
Medium High Density	13	122	(109)	(7)
High Density	285	254	31	2
High Density High-Rise	-	101	(101)	(4)

As shown above, the Medium High-Density (RMH) and High-Density High-Rise (RH-HR) designations are deficient in future housing capacity, while there is a surplus in Low Density (RL), Medium Low Density (RML), and High-Density (RH) designations. A surplus of 315 dwelling units was calculated for the City’s RML districts. As there are currently no buildable acres of RH-HR lands, a deficit of 101 dwelling units is shown. After the proposed plan map amendments, there will still be a surplus of RML land and there will no longer be a deficit of RH-HR land.

The proposed amendment does not seek to adjust minimum or maximum densities or uses required by the RH-HR zone. The proposed map and plan text amendment changes also do not decrease housing supply, density, or capacity within the City of Tualatin.

**Title 4: Industrial and Other Employment Areas:** This portion of the Functional Plan protects the supply of industrial and employment lands within cities. The site is currently

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zoned to allow Medium-Low Residential and Institutional uses. While the area was previously designated by Metro as an Industrial Area (Title 4, Industrial and Other Employment Areas map), the proposed map amendment does not diminish the industrial or commercial capacities of the City because the area was not zoned for industrial or commercial uses by the City of Tualatin.

**Title 7: Housing Choice:** Title 7 establishes voluntary affordable housing production goals for local governments. The amendments do not prohibit regulated affordable housing on the project site, but the project plan does not plan to utilize or provide affordable housing. The amendments, however, will allow for the development of multifamily dwelling units, which provides additional housing choices; choices that are more affordable than detached single family housing. The City's HNA recommends that the City provide all types of housing, including market rate multifamily housing.

The increased density and change in established zoning will allow for the construction of needed multifamily dwelling units while not diminishing the City's ability to provide other deficient housing types or commercial and industrial lands.

This criterion is met and the application is consistent with the applicable sections of Metro Code Chapter 3.07.

- (h) Granting the amendment is consistent with Level of Service F for the p.m. peak hour and E for the one-half hour before and after the p.m. peak hour for the Town Center 2040 Design Type (Comprehensive Plan Map 10-4), and E/E for the rest of the 2040 Design Types in the City's planning area.

**Response:** A Transportation Planning Rule review and trip generation analysis has been provided by a traffic engineer (Exhibit H). The Level of Service following the proposed changes is expected to meet the City's standards. The proposed plan map amendment and plan text amendment will not alter the transportation needs of the affected parcels in the City's Transportation System Plan. This criterion is met.

- (i) Granting the amendment is consistent with the objectives and policies regarding potable water, sanitary sewer, and surface water management pursuant to applicable goals and policies in the Tualatin Comprehensive Plan, water management issues are adequately addressed during development or redevelopment anticipated to follow the granting of a plan amendment.

**Response:** The proposed plan map and text amendments are consistent with the City's objectives and policies regarding potable water, sanitary sewer, and stormwater management. This analysis is further detailed within Exhibit I – Utility Capacity Analysis and above in the response to TDC 33.070.(5)(d)(ii). This criterion is met.

- (j) The applicant has entered into a development agreement. This criterion applies only to an amendment specific to property within the Urban Planning Area (UPA), also known as the Planning Area Boundary (PAB), as defined in both the Urban Growth Management Agreement (UGMA) with Clackamas County and the Urban Planning Area Agreement (UPAA) with Washington County.

**Response:** The Applicant has not entered into a development agreement nor is the site within the Urban Planning Area. This standard does not apply.

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## CHAPTER 41 – MEDIUM LOW DENSITY RESIDENTIAL ZONE (RML)

### TDC 41.100 - Purpose

The purpose of this zone is to provide household living uses with a variety of housing types at moderately low densities. This district is primarily oriented toward middle housing types including attached dwellings, multi-family development, and manufactured dwelling parks.

**Response:** As detailed in the HNA, there is currently a surplus of approximately 27 acres of RML designated land. The proposed changes to the plan map will reduce the quantity of RML lands by approximately one acre or up to 25 dwelling units. The proposed text changes do not affect the RML district. After the approval of this application, sufficient RML land will continue to be available and the purpose of this district is not impacted.

## CHAPTER 44 – HIGH DENSITY HIGH RISE ZONE (RH-HR)

### TDC 44.100. - Purpose.

The purpose of the High Density High Rise (RH-HR) zone is to provide areas of the City within the City's Central Urban Renewal area, an area west of the Central Urban Renewal area, north of the wetlands, and south of the Tualatin Country Club that are suitable for high density apartment or condominium towers.

**Response:** As previously mentioned, the purpose statement of the High-Density High-Rise (RH-HR) zoning district restricts the zone to the City's Central Urban Renewal area. The proposed text amendment would remove this restriction as well as the suggestion that the zone would only provide residences in "towers." The proposed amendments would also impose a 4-story height limitation south of SW Norwood Road to allow for increased compatibility between future multifamily structures and existing neighborhoods. Please see Exhibit B for the planned text changes.

The proposed changes would allow the City to meet its expected future needs for higher density housing.

### TDC 44.200. - Use Categories.

- (1) *Use Categories.* Table 44-1 lists use categories Permitted Outright (P) or Conditionally Permitted (C) in the RH-HR zone. Use categories may also be designated as Limited (L) and subject to the limitations listed in Table 44-1 and restrictions identified in TDC 44.210. Limitations may restrict the specific type of use, location, size, or other characteristics of the use category. Use categories which are not listed are prohibited within the zone, except for uses which are found by the City Manager or appointee to be of a similar character and to meet the purpose of this zone, as provided in TDC 31.070.
- (2) *Overlay Zones.* Additional uses may be allowed in a particular overlay zone. See the overlay zone Chapters for additional uses.

[...]

**Response:** The applicant has proposed the removal of the locational restriction contained within the Purpose section of the code (Exhibit B). The uses allowed within the zoning district by Table 44-1 have not been proposed to change as part of this application.

[...]

TDC 44.220. - Housing Types.

Table 44-2 lists Housing Types permitted in the RH-HR zone. Housing types may be Permitted Outright (P), Conditionally Permitted (C), or Not Permitted (N) in the RH-HR zone.

[...]

**Response:** The contents of Table 44-2 have not been proposed to change as part of this application.

TDC 44.300. - Development Standards.

Development standards in the RH-HR zone are listed in Table 44-3. Additional standards may apply to some uses and situations, see TDC 44.310.

Table 44-3  
Development Standards in the RH-HR Zone

STANDARD	REQUIREMENT	LIMITATIONS AND CODE REFERENCES
<b>MAXIMUM DENSITY</b>		
Household Living Uses	Maximum: 30 units per acre Minimum: 26 units per acre	
Retirement Housing or Congregate Care Facility	45 units per acre	
Nursing Facility	45 units per acre	
Group Living Uses	30 units per acre	Does not apply to Nursing Facility or Congregate Care Facility.
<b>MINIMUM LOT SIZE</b>		
Multi-Family Structure		
• Development on Less than One Acre	10,000 square feet	For up to two units, plus an additional 1,198 square feet for each unit exceeding two.
• Development on More than One Acre	1,452 square feet per unit	
Multi-Family Structure under Condominium Ownership	20,000 square feet	Limited to the primary condominium lot.
All Other Permitted Uses	10,000 square feet	
Conditional Uses	20,000 square feet	
Infrastructure and Utilities Uses	—	As determined through the Subdivision, Partition, or Lot Line Adjustment process.
<b>MINIMUM AVERAGE LOT WIDTH</b>		
Townhouses (Rowhouses)	14 feet	
Multi-Family Structure	75 feet	May be 40 feet on a cul-de-sac street.
Multi-Family Structure under Condominium Ownership	75 feet	Limited to the primary condominium lot. Minimum lot width at street is 40 feet.
All Other Permitted Uses	75 feet	
Conditional Uses	100 feet	Minimum lot width at street is 40 feet.
Flag Lots	—	Must be sufficient to comply with minimum access requirements of TDC 73C.
<b>MINIMUM SETBACKS</b>		
Front Setback		Minimum setback to a garage door must be 20 feet.
• 1 story structure	20 feet	
• 1.5 story structure	25 feet	
• 2 story structure	30 feet	
• 2.5 story structure	35 feet	

• Over 2.5 story structure	—	As determined through Architectural Review process. No setback must be required which is greater than the height of the structure.
<b>Side and Rear Setback</b>		Where living spaces face a side yard, the minimum setback must be 10 feet.
• 1 story structure	5 feet	
• 1.5 story structure	7 feet	
• 2 story structure	10 feet	
• 2.5 story structure	12 feet	
• Over 2.5 story structure	—	As determined through Architectural Review process. No setback must be required which is greater than the height of the structure.
Corner Lots	—	On corner lots, the setback is the same as the front yard setback on any side facing a street other than an alley.
Minimum Distance Between Buildings within One Development	10 feet	
Parking and Vehicle Circulation Areas	10 feet	
Conditional Uses	—	As determined through Architectural Review process. No minimum setback must be greater than 50 feet.
Any Yard Adjacent to a Wetland Protected Area	100 feet	As defined in TDC Chapter 71.
Any Yard Area Adjacent to Basalt Creek Parkway	50 feet	
<b>STRUCTURE HEIGHT</b>		
Minimum Height, Multi-Family and Condominium Developments	4 stories	
Maximum Height	64 feet	If structure does not include underground parking, maximum height is 5 stories. If the first story includes underground parking, maximum height is 6 stories. Regardless of the number of stories, structure height must not exceed 64 feet.
<b>MAXIMUM LOT COVERAGE</b>		
All Uses	45%	

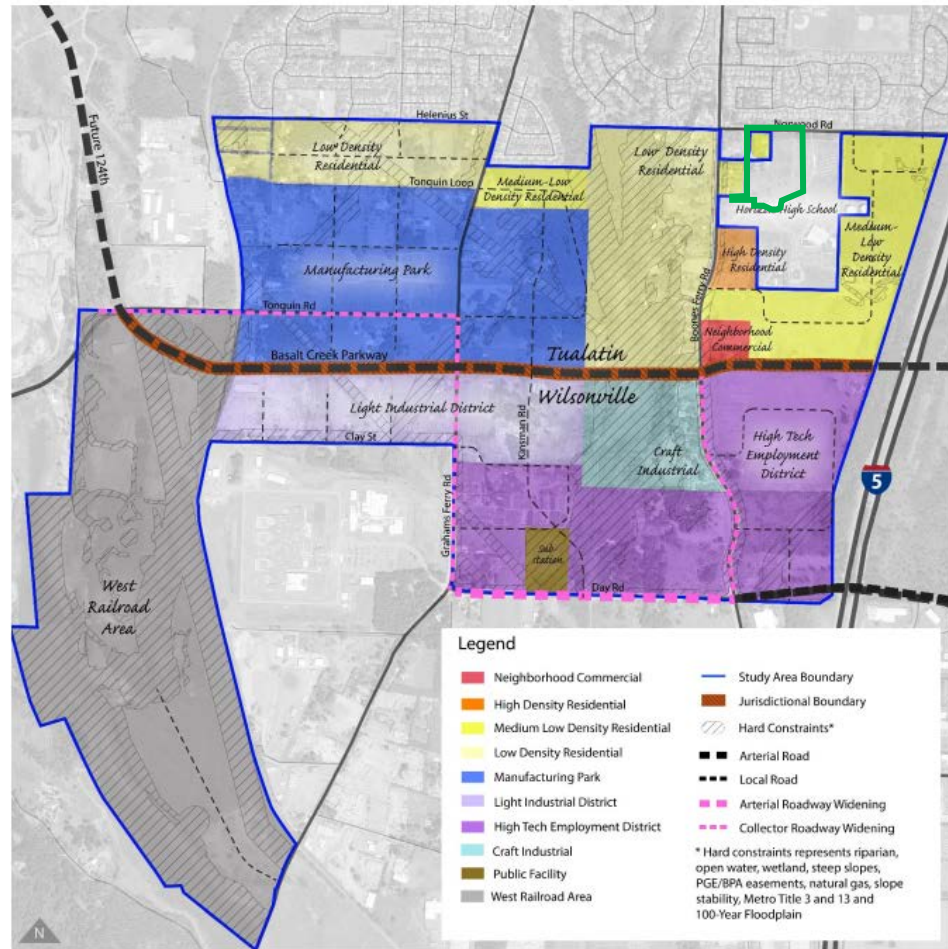
**Response:** The proposed text amendment would modify the development standards of TDC 44.300 to place a 4-story height limitation on structures in the RH-HR zoning district in areas south of SW Norwood Road. Because there are no buildable RH-HR-zoned properties available within the City’s core areas, properties which may be designated for this zoning may be proximate to lower density zoning. This site is generally surrounded by medium-density residential and institutional uses. The proposed code provision limits the height of buildings to 4-stories to remain compatible with the adjacent residential and institutional uses.

[...]



## BASALT CREEK CONCEPT PLAN

Figure 8 Basalt Creek Land Use Concept Map



**Response:** The Basalt Creek Concept Plan was included in the Comprehensive Plan Update in 2019. The Basalt Creek Planning Area, shown above outlined in blue, includes a one-acre portion of the ±9.2-acre site. (The site is outlined in green.) The one-acre area is designated Medium Low Residential (RML) and is currently used for a single-family detached home. This area conforms with the applicable sections of the Basalt Creek Concept Plan, reviewed herein.



Concept Plan for Basalt Creek

Development Types

Table 3 Summary of Development Types Identified for Basalt Creek Planning Area by Jurisdiction

Jurisdiction	Land Use Designation	Buildable Acreage	Households		Employment	
			Count	Density per Gross Acre	Count (jobs)	Jobs per Gross Acre
Tualatin	High Density Residential	3.36	67	19.9	-	-
	Medium-Low Density Residential	59.83	374	6.3	-	-
	Low Density Residential	24.83	134	5.4	-	-
	Neighborhood Commercial	2.89	-	-	33	11.3
	Manufacturing Park	92.95	-	-	1,897	20.4
	Functionally Unbuildable	10.37	-	-	-	-
	<b>Tualatin Subtotal</b>	<b>194.23</b>	<b>575</b>			<b>1,929</b>

Tualatin

Housing. Most of the remaining land north of the proposed Basalt Creek Parkway (beyond employment land) is allocated to a mix of residential uses at varying densities. The Concept Plan organizes residential land uses into two general areas that are intended to have easy access to services and be connected to parks, schools, and natural areas.

1. The plan focuses the lowest density housing (a mixture of low-density and medium-low density) along the northern portion of the Planning Area and low density along the west side of Boone’s Ferry Road, adjacent to existing neighborhoods of Tualatin. This land is expected to accommodate 134 new households.
2. The eastern portion of the Tualatin future annexation area is anticipated to be a mixture of high and medium-low density residential; the land immediately east of Boones Ferry Rd is intended for high density housing; The remainder of the land east and south of Horizon School is planned for medium-low density residential. This eastern subarea is expected to accommodate 407 new housing units in Tualatin. This land is near the intersection between Boones Ferry Road and the new Basalt Creek Parkway.

**Response:** As the site represents a small portion of the area accounted for within the Basalt Creek Concept Plan, the proposed map and text amendment does not signify a substantial change in the number of dwelling units which will be provided within the Basalt Creek Planning Area. With its current RML designation, Table 3 above assumed the site would

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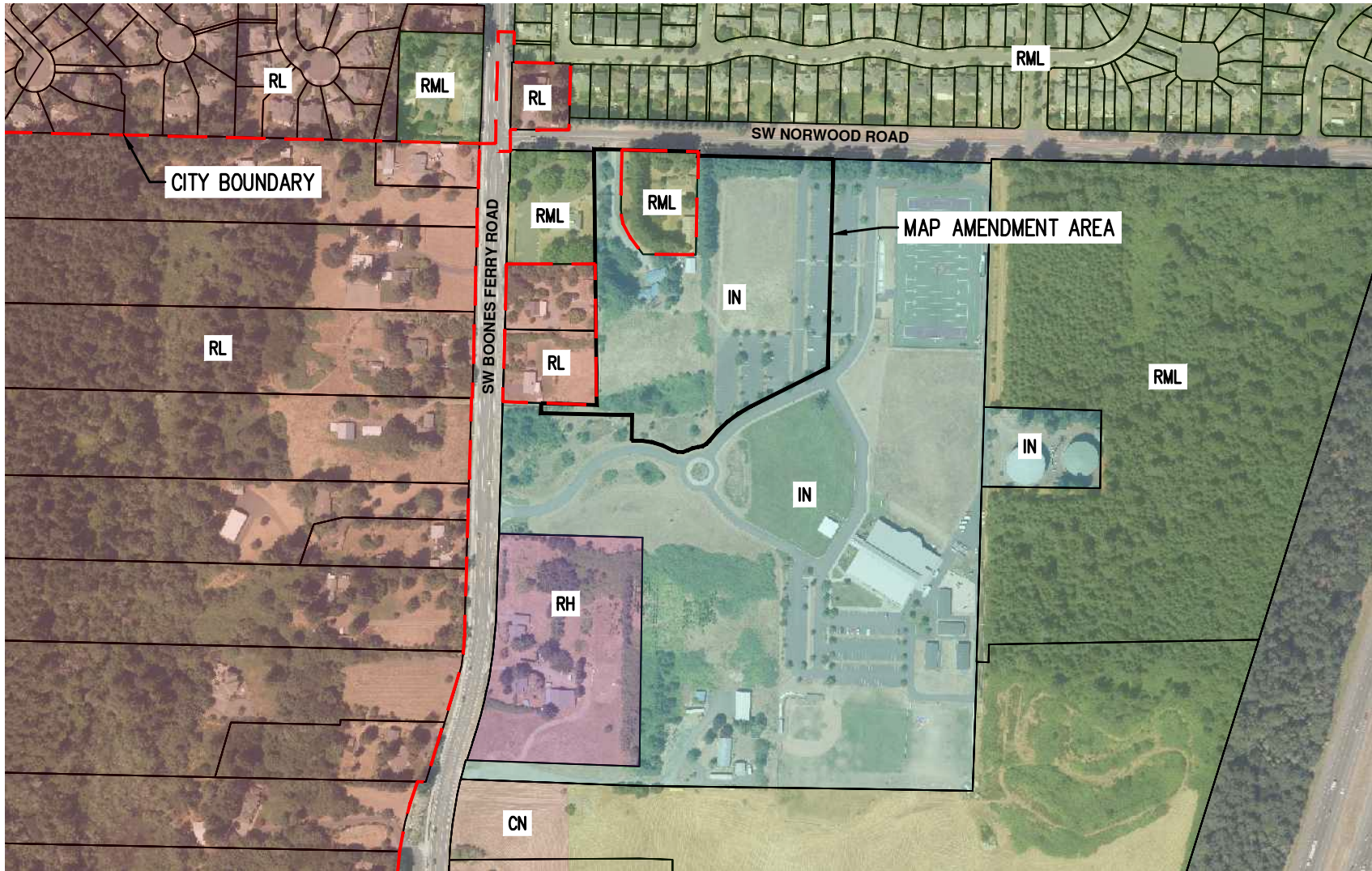
accommodate 6.3 dwelling units per gross acre. (It is worth noting that since the adoption of the Basalt Creek Concept Plan in 2019, middle housing code was adopted by the City in 2021 which now allows up to 25 townhome units per net acre in the RML zone.)

The City's *Housing Needs Analysis* determined that the City has a 27-acre surplus of RML lands and a deficit of High Density High Rise Residential lands. The conversion of RML lands to RH-HR lands can help remedy these projected deficits in housing types and densities. The area of the proposed RH-HR lands is east of SW Boones Ferry Road as described under (2) above and is consistent and compatible with the planned uses within the Basalt Creek Concept Plan.

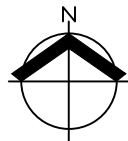
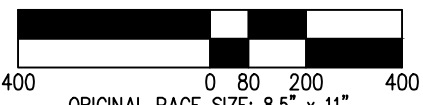
The proposal does not contradict the identified policies of the Basalt Creek Concept Plan.

#### **IV. Conclusion**

The required findings have been made and this written narrative and accompanying documentation demonstrate that the application is consistent with the applicable provisions of the Tualatin Development Code and the Tualatin Comprehensive Plan. The evidence in the record is substantial and supports approval of the application. Therefore, the Applicant respectfully requests that the City approve this application.



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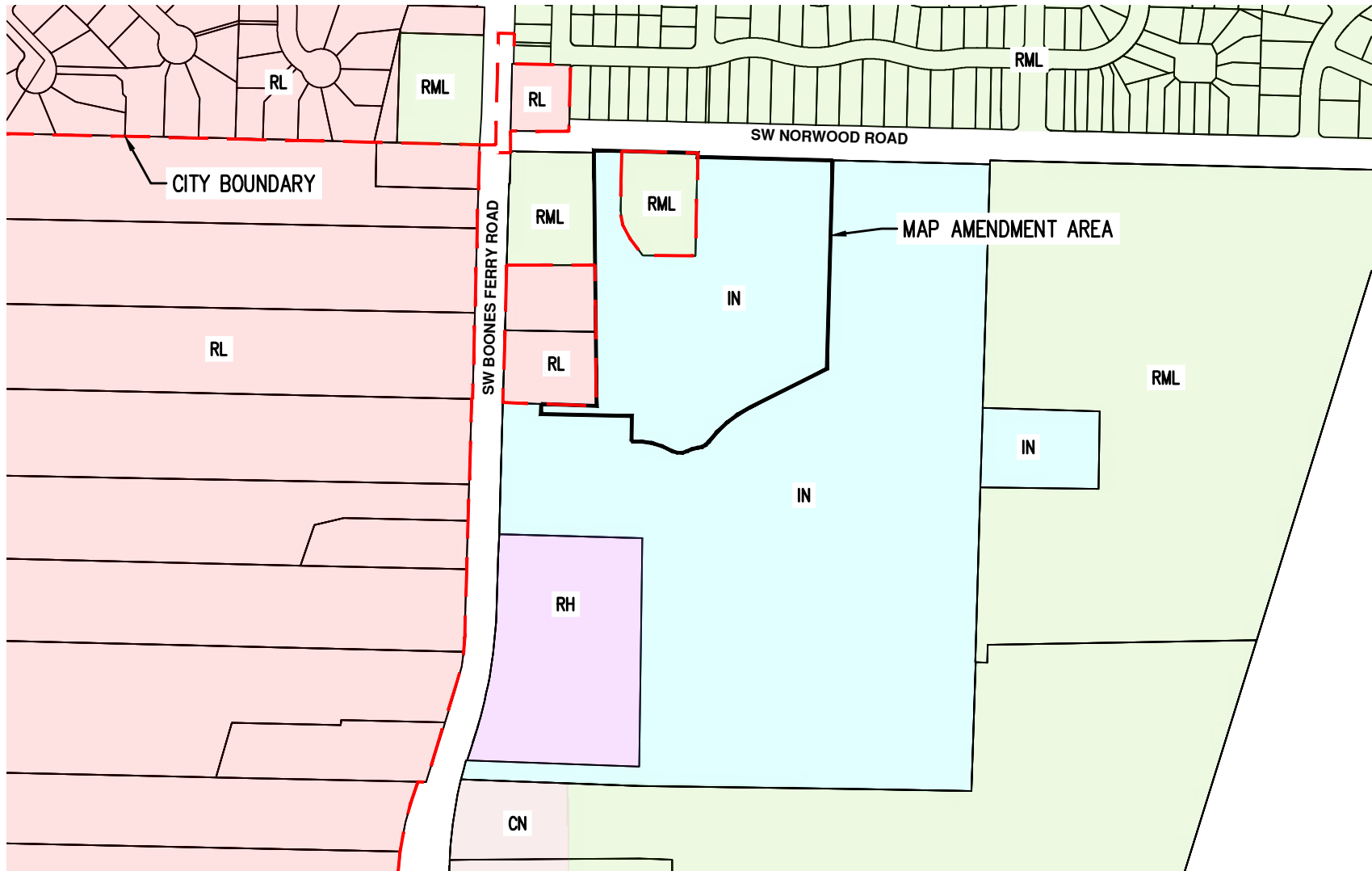
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 AKS ENGINEERING & FORESTRY, LLC  
 12985 SW HERMAN RD, STE 100  
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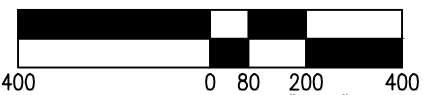


# EXISTING ZONING EXHIBIT (AERIAL) NORWOOD MULTI-FAMILY

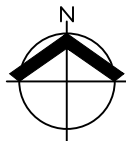
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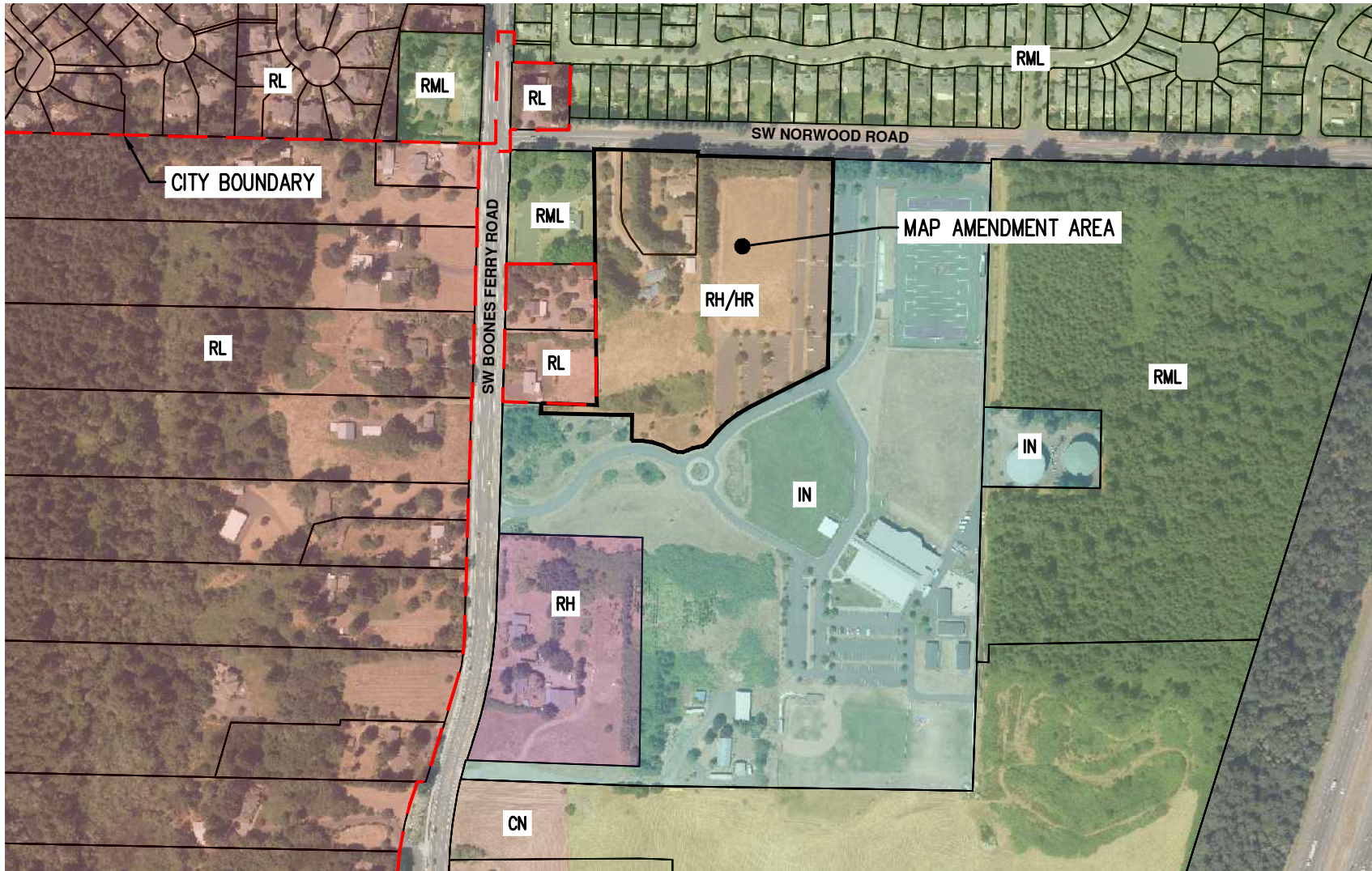
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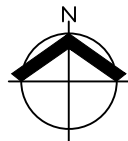
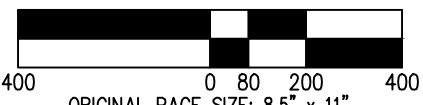
# EXISTING ZONING EXHIBIT NORWOOD MULTI-FAMILY

EXHIBIT  
 A-2





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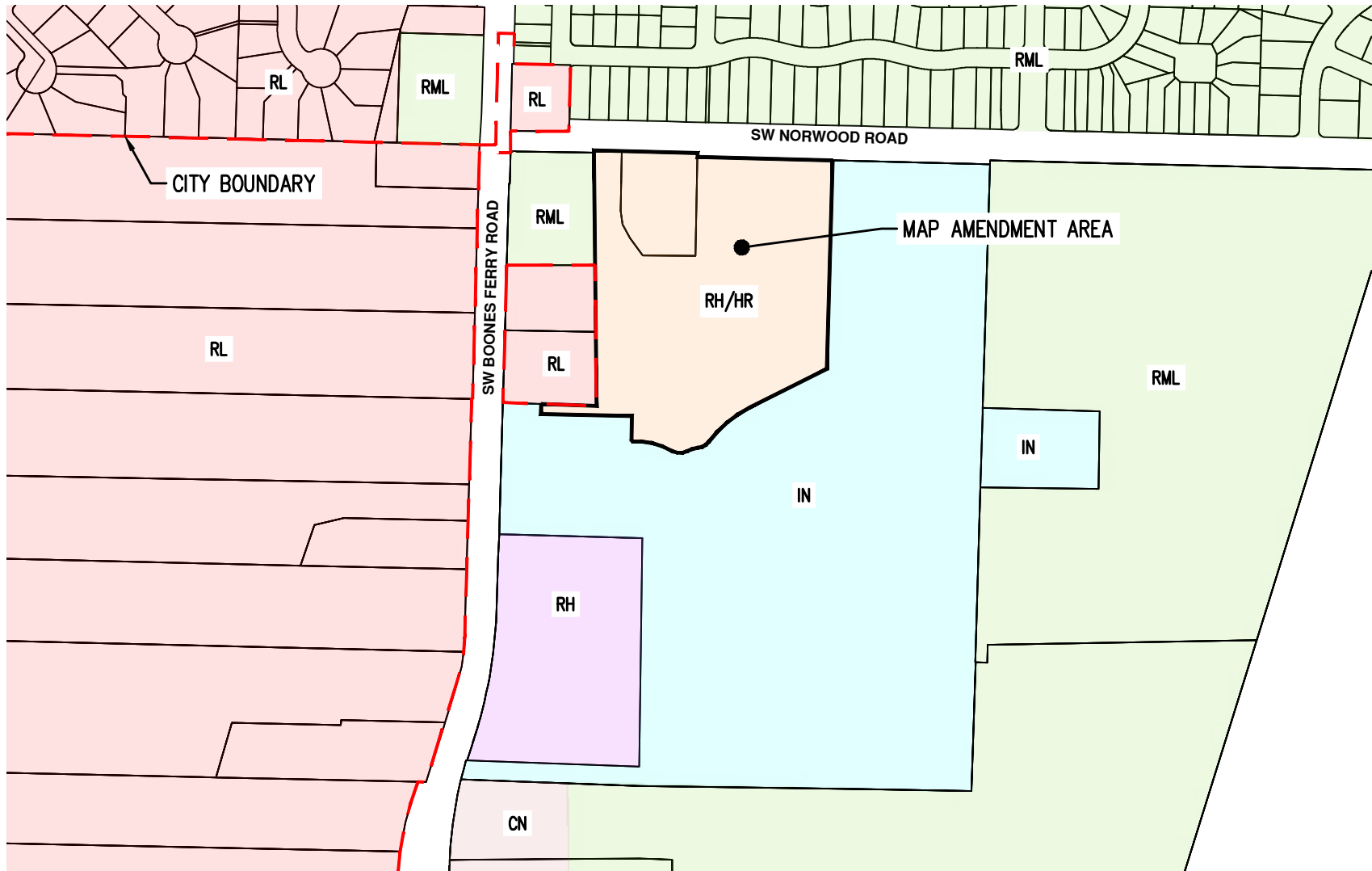
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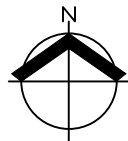
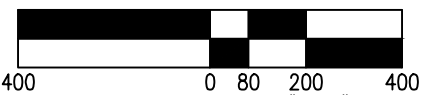
# PROPOSED ZONING EXHIBIT (AERIAL) NORWOOD MULTI-FAMILY

EXHIBIT  
 A-3

ENGINEERING • SURVEYING • NATURAL RESOURCES  
 FORESTRY • PLANNING • LANDSCAPE ARCHITECTURE



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# PROPOSED ZONING EXHIBIT NORWOOD MULTI-FAMILY

EXHIBIT  
 A-4

## CHAPTER 44 HIGH DENSITY HIGH RISE ZONE (RH-HR)

### TDC 44.100. Purpose.

The purpose of the High Density High Rise (RH-HR) zone is to provide areas of the City ~~within the City's Central Urban Renewal area, an area west of the Central Urban Renewal area, north of the wetlands, and south of the Tualatin Country Club~~ that are suitable for high density apartment or condominiums ~~s~~towers.

### TDC 44.200. Use Categories.

- (1) *Use Categories.* Table 44-1 lists use categories Permitted Outright (P) or Conditionally Permitted (C) in the RH-HR zone. Use categories may also be designated as Limited (L) and subject to the limitations listed in Table 44-1 and restrictions identified in TDC 44.210. Limitations may restrict the specific type of use, location, size, or other characteristics of the use category. Use categories which are not listed are prohibited within the zone, except for uses which are found by the City Manager or appointee to be of a similar character and to meet the purpose of this zone, as provided in TDC 31.070.
- (2) *Overlay Zones.* Additional uses may be allowed in a particular overlay zone. See the overlay zone Chapters for additional uses.

**Table 44-1  
Use Categories in the RH-HR Zone**

USE CATEGORY	STATUS	LIMITATIONS AND CODE REFERENCES
<b>RESIDENTIAL USE CATEGORIES</b>		
Household Living	P/C	Permitted housing types subject to TDC 44.220.
Residential Accessory Uses	P (L)	Permitted uses limited to Family Day Care subject to ORS 329A.440.
Group Living	P/C (L)	Permitted uses limited to: <ul style="list-style-type: none"> <li>• Residential Home;</li> <li>• Residential Facility; and</li> <li>• Nursing Facility</li> </ul> Conditional uses limited to Congregate Care Facility subject to TDC 34.400.
<b>COMMERCIAL USE CATEGORIES</b>		
Agriculture	C (L)	Subject to TDC 44.210(1).
Durable Goods Sales	C (L)	Conditional uses limited to retail nurseries.
Retail Sales and Service	C (L)	Conditional uses limited to Child Day Care Center.
<b>INSTITUTIONAL USE CATEGORIES</b>		
Assembly Facilities	C (L)	Conditional uses limited to places of religious worship. See TDC 34.800 Religious uses and ORS 227.500 pertaining to activities customarily associated with the practices of religious activity.
Community Services	C	
Medical Center	C (L)	Conditional uses limited to a hospital.

Schools	C	—
<b>INFRASTRUCTURE AND UTILITIES USE CATEGORIES</b>		
Basic Utilities	P/C (L)	Permitted uses limited to water or sewage pump stations and pressure reading stations.  Conditional uses limited to water reservoirs, with a maximum height of 75 feet.
Greenways and Natural Areas	P	—
Parks and Open Areas	P/C (L)	Permitted uses limited to public park or playground.  Conditional uses limited to golf course or country club with golf course.
Public Safety Facilities	C (L)	Conditional uses limited to fire stations.
Transportation Facilities	P	—
Wireless Communication Facilities	P/C (L)	Subject to TDC 44.210(2). Maximum height and minimum setbacks subject to TDC Chapter 73F.

#### **TDC 44.210. Additional Limitations on Uses.**

- (1) *Agricultural Uses.* The following agricultural uses are allowed with a conditional use permit within areas designated on Comprehensive Plan Map 10-6:
  - (a) *Conditional Use of Agricultural Animals.* Raising of agricultural animals, limited to cattle, horses and sheep. The City Council may limit the number of animals to be allowed on a specific parcel of property; and
  - (b) *Agricultural structures such as barns, stables, sheds, but excluding feed lots.* Feed lots are prohibited.
- (2) *Wireless Communication Facilities.* Wireless Communication Facilities may be permitted uses or conditional uses, depending on the nature of the use.
  - (a) *Permitted Uses.* The following uses are permitted outright:
    - (i) Wireless Communication Facility Attached, provided the facility is not mounted on a single-family dwelling or its accessory structures; and
    - (ii) Wireless Communication Facility, provided the facility is located within 300 feet of the centerline of Interstate 5.
  - (b) *Conditional Uses.* All other detached wireless communication facilities may be allowed with a conditional use permit.

(Ord. No. 1450-20 , § 22, 12-14-20)

#### **TDC 44.220. Housing Types.**

Table 44-2 lists Housing Types permitted in the RH-HR zone. Housing types may be Permitted Outright (P), Conditionally Permitted (C), or Not Permitted (N) in the RH-HR zone.



**Table 44-2  
Housing Types in the RH-HR Zone**

<b>HOUSING TYPE</b>	<b>STATUS</b>	<b>LIMITATIONS AND CODE REFERENCES</b>
Single-Family Dwelling	N	
Accessory Dwelling Unit	N	
Duplex Townhouse (or Rowhouse)	P	See definition in TDC 31.060.
Multi-Family Structure	P	See definition in TDC 31.060.
Manufacturing Dwelling	N	
Manufactured Dwelling Park	N	
Retirement Housing Facility	C	Subject to TDC 34.400.
Residential Home	P	See definition in TDC 31.060.

**TDC 44.300. Development Standards.**

Development standards in the RH-HR zone are listed in Table 44-3. Additional standards may apply to some uses and situations, see TDC 44.310.

**Table 44-3  
Development Standards in the RH-HR Zone**

<b>STANDARD</b>	<b>REQUIREMENT</b>	<b>LIMITATIONS AND CODE REFERENCES</b>
<b>MAXIMUM DENSITY</b>		
Household Living Uses	Maximum: 30 units per acre Minimum: 26 units per acre	
Retirement Housing or Congregate Care Facility	45 units per acre	
Nursing Facility	45 units per acre	
Group Living Uses	30 units per acre	Does not apply to Nursing Facility or Congregate Care Facility.
<b>MINIMUM LOT SIZE</b>		
Multi-Family Structure		
• Development on Less than One Acre	10,000 square feet	For up to two units, plus an additional 1,198 square feet for each unit exceeding two.
• Development on More than One Acre	1,452 square feet per unit	
Multi-Family Structure under Condominium Ownership	20,000 square feet	Limited to the primary condominium lot.
All Other Permitted Uses	10,000 square feet	
Conditional Uses	20,000 square feet	
Infrastructure and Utilities Uses	—	As determined through the Subdivision, Partition, or Lot Line Adjustment process.
<b>MINIMUM AVERAGE LOT WIDTH</b>		
Townhouses (Rowhouses)	14 feet	
Multi-Family Structure	75 feet	May be 40 feet on a cul-de-sac street.
Multi-Family Structure under Condominium Ownership	75 feet	Limited to the primary condominium lot. Minimum lot width at street is 40 feet.

All Other Permitted Uses	75 feet	
Conditional Uses	100 feet	Minimum lot width at street is 40 feet.
Flag Lots	—	Must be sufficient to comply with minimum access requirements of TDC 73C.
<b>MINIMUM SETBACKS</b>		
Front Setback		Minimum setback to a garage door must be 20 feet.
• 1 story structure	20 feet	
• 1.5 story structure	25 feet	
• 2 story structure	30 feet	
• 2.5 story structure	35 feet	
• Over 2.5 story structure	—	As determined through Architectural Review process. No setback must be required which is greater than the height of the structure.
Side and Rear Setback		Where living spaces face a side yard, the minimum setback must be 10 feet.
• 1 story structure	5 feet	
• 1.5 story structure	7 feet	
• 2 story structure	10 feet	
• 2.5 story structure	12 feet	
• Over 2.5 story structure	—	As determined through Architectural Review process. No setback must be required which is greater than the height of the structure.
Corner Lots	—	On corner lots, the setback is the same as the front yard setback on any side facing a street other than an alley.
Minimum Distance Between Buildings within One Development	10 feet	
Parking and Vehicle Circulation Areas	10 feet	
Conditional Uses	—	As determined through Architectural Review process. No minimum setback must be greater than 50 feet.
Any Yard Adjacent to a Wetland Protected Area	100 feet	As defined in TDC Chapter 71.
Any Yard Area Adjacent to Basalt Creek Parkway	50 feet	
<b>STRUCTURE HEIGHT</b>		
Minimum Height, Multi-Family and Condominium Developments	4 stories	
Maximum Height	64 feet	<u>South of SW Norwood Road, structure height is limited to 4 stories or 50 feet, whichever is less.</u> If structure does not include underground parking, maximum height is 5 stories. If the first story includes underground parking, maximum height is 6 stories. Regardless of the number of stories, structure height must not exceed 64 feet.

MAXIMUM LOT COVERAGE	
All Uses	45%

(Ord. No. 1450-20 , § 23, 12-14-20)

**TDC 44.310. Projections Into Required Yards.**

The following architectural features may project into a required front or rear yard setback area not more than three feet, and into a required side yard not more than two feet: cornices, eaves, canopies, decks, sun-shades, gutters, chimneys, flues, belt courses, leaders, sills, pilasters, lintels, ornamental features, and other similar architectural features.

**TDC 44.320. Density Bonus or Setback Reduction for Developments Adjacent to Greenways and Natural Areas.**

To preserve natural areas and habitat for fish and wildlife, the decision-making authority may provide a density bonus or setback reduction for developments that are adjacent to Greenways or Natural Areas that dedicate land for conservation or public recreational purposes, in accordance with the following standards:

- (1) *Density Bonus.* The lot(s) may be developed to the same number of dwelling units that would be permitted in the RH-HR zone if none of the land area in the Greenway or Natural Area lots were in a conservation or protection area.
- (2) *Setback Reduction.* All permitted uses may be allowed a reduction of up to 35 percent of the front, side or rear yard setbacks, as determined through the Architectural Review process, if as a result the buildings are farther away from fish and wildlife habitat areas. Setback areas that abut property lines in the RL zone are not eligible for the setback reduction.
- (3) *Location of Greenway or Natural Area Lot.* A portion of the parcel must be located wholly in one of the following conservation or protection areas:
  - (a) Natural Resource Protection Overlay (NRPO) District (TDC Chapter 72); or
  - (b) Clean Water Services Vegetated Corridor.
- (4) *Ownership of Greenway or Natural Area Lot.* The ownership of each Greenway or Natural Area Lot must be one of the following.
  - (a) Dedicated to the City at the City's option;
  - (b) Dedicated in a manner approved by the City to a non-profit conservation organization; or
  - (c) Retained in private ownership.
- (5) *Ownership Considerations.* The decision-making authority must consider, but not limited to, the following factors when determining the appropriate ownership of the Greenway or Natural Area Lot:
  - (a) Does the Park and Recreation Master Plan designate the lot for a greenway, pedestrian or bike path, public park, recreation, overlook or interpretive facility, or other public facility;
  - (b) Does the lot include one or more designated Heritage Trees, or one or more significant trees;
  - (c) Does the lot provide a significant view or esthetic element, or does it include a unique or intrinsically valuable element;
  - (d) Does the lot connect publicly owned or publicly accessible properties;

- 
- (e) Does the lot abut an existing park, greenway, natural area or other public facility;
  - (f) Does the lot provide a public benefit or serve a public need;
  - (g) Does the lot contain environmental hazards;
  - (h) Geologic stability of the lot; and
  - (i) Future maintenance costs for the lot.

(Ord. 1414-18, 12-10-18; Ord. 1427-19 , § 22, 11-25-19)



**lancaster  
moble**

## Norwood Apartments

Transportation Impact  
Analysis

Tualatin, Oregon

Date:

February 2, 2023

Prepared for:

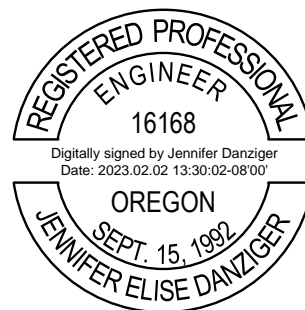
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RENEWS: 12 / 31 / 2023

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## Executive Summary

As summarized in the key findings below, the proposed Norwood Apartments project will create a minor impact on the transportation system, which will be mitigated by the recommended traffic signal at the intersection of SW Boones Ferry Road & Norwood Road. The traffic signal is warranted under background conditions without the proposed project, and the long-term analysis of the reasonable worst case scenario traffic analysis of the existing zone concludes that the SW Boones Ferry Road & SW Norwood Road intersection will fail without a signal. However, if the project installs a signal at that intersection, then the existing near-term and long-term problem is solved. The project's traffic is mitigated so that the street network performance standards are met and the zone change will not require any additional mitigation or change in classification.

### Overview

1. The proposed Norwood Apartments project includes the development of a 276-unit apartment complex on a site located south of SW Norwood Road and east of SW Boones Ferry Road in Tualatin, Oregon. The project site consists of two lots (Tax Lot 2S135D 000108 and a portion of Tax Lot 2S135D 000106) with an approximate total of 9.2 acres.
2. The application will require rezoning the site from Institutional (IN) and Medium Low Density Residential (RML) to High Density-High Rise Residential (RH-HR).
3. The site will take access from SW Norwood Road. An emergency access connection to the Horizon School circulation network is also provided.

### Proposed Zone Change Findings

4. To understand the potential impacts of the requested zone change, the reasonable worst-case land uses under existing and proposed zoning were compared. Under existing zoning, the residentially-zoned land was assumed to redevelop to its maximum density with 25 attached homes while the institutionally-zoned land was assumed to develop with a 250-student private school. The proposed development of 276 apartments is the maximum density under the proposed zoning.
5. The existing zoning would likely generate a greater number of trips during the morning peak hour, when congestion associated with schools is most prevalent. However, the proposed zoning could generate a greater number of trips in the evening peak hour; thus, a TPR analysis was performed.
6. A comparison of long-term operations with the existing and proposed zoning shows that the proposed zoning would have a significant effect that can be mitigated with a traffic signal at the intersection of SW Boones Ferry Road & SW Norwood Road, to be installed by the applicant at the time of development. This proposal is consistent with the mitigation recommended to address the impacts of the proposed development in the TIA.

### Traffic Impact Analysis Findings

7. The Norwood Apartments project could be characterized as two different land use categories, low-rise multifamily housing or mid-rise multifamily. This analysis uses the more conservative (e.g., assumes a higher level of traffic) land use category, low-rise multifamily housing, as requested by the City of Tualatin. The trip generation calculations show that the proposed Norwood Apartments development is estimated to





generate a net increase of 107 trips during the morning peak hour, 137 trips during the evening peak hour, and 1,826 daily trips during the average weekday.

8. In general, impacts from the proposed project are expected to be minor. All study intersections show operational results that meet standards under all analysis scenarios except for the intersection of SW Boones Ferry Road & SW Norwood Road if it remains unsignalized. However, with the recommended signal installation, this intersection will be improved to meet agency standards.
9. In general, changes in 95<sup>th</sup> percentile queuing between the year background and buildout conditions are anticipated to be small, one vehicle or two vehicles. As with the operational findings, one intersection is anticipated to have significant growth in queues: SW Boones Ferry Road & SW Norwood Road. However, with the recommended signal installation, queuing will be consistently improved.
10. A traffic signal is recommended at the intersection of SW Boones Ferry Road & SW Norwood Road. With a signal but no widening on SW Norwood Road, the overall intersection v/c ratio will meet the City mobility standard of LOS D and the County mobility target of 0.90. On the westbound approach, delays will be shorter than background conditions without the proposed project and recommended traffic signal. The queuing analysis shows that even with five years of additional growth, the 95<sup>th</sup> percentile queues on the shared westbound approach will not extend to the first driveway on SW Norwood Road. Therefore, widening SW Norwood Road to include a westbound right-turn lane or widening SW Boones Ferry Road to lengthen the northbound right-turn lane should not occur until the adjacent parcels redevelop.
11. Traffic signal warrants are met under both background and buildout conditions at the intersection of SW Boones Ferry Road & SW Norwood Road. Installing a traffic signal at the intersection of SW Boones Ferry Road & SW Norwood Road is a recommended mitigation measure.
12. Traffic signal warrants are not met at the site access intersection with SW Norwood Road or at the unsignalized intersection of SW Norwood Road & SW 82nd Avenue.
13. Left-turn lane warrants are not met at the proposed site access intersection on SW Norwood Road for either peak hour under the 2026 buildout scenario for any analysis period.
14. At the proposed site accesses on SW Norwood Road, dense foliage restricts existing sight lines; however, preliminary assessment of horizontal and vertical curvature indicate that the 500-foot sight distance requirement is expected to be satisfied.
15. On SW Norwood Road, the minimum access spacing standard of 100 feet will be met with construction of the proposed site access.
16. Based on a review of the most recent five years of available crash data, no significant trends or crash patterns were identified at any of the study intersections. Accordingly, no safety mitigation is recommended per the crash data analysis.



# Project Description

## Introduction

The proposed Norwood Apartments project includes the development of a 276-unit apartment complex on a site located south of SW Norwood Road and east of SW Boones Ferry Road in Tualatin, Oregon. The application will require rezoning the site from Institutional (IN) and Medium Low Density Residential (RML) to High Density/High Rise Residential (RH-HR). The site will take all access from SW Norwood Road.

The purposes of this study are to determine whether the transportation system within the vicinity of the site is capable of safely and efficiently supporting the proposed development, to determine any mitigation that may be necessary to do so, and to demonstrate compliance with the Transportation Planning Rule (TPR).

Based on prior scoping coordination with the City of Tualatin and Washington County, the report includes safety and capacity analyses at 6 intersections:

1. SW Boones Ferry Road & SW Ibach Street
2. SW Boones Ferry Road & SW Norwood Road
3. Site Access & SW Norwood Road (future intersection)
4. SW 82nd Avenue & SW Norwood Road
5. SW Boones Ferry Road & Basalt Creek Parkway Extension (future intersection)
6. SW Boones Ferry Road & SW Day Road

Detailed information on traffic counts, trip generation calculations, safety analyses, and level of service calculations are included in the appendix to this report.

## Location Description

The project site consists of tax lots 2S135D 000108 and 2S135D 000106. Lot 108 includes a 1.0-acre parcel located at 9300 SW Norwood Road and is currently occupied by one single-family home. The lot is currently outside the City of Tualatin with a Washington County zoning designation of FD-20; once annexed, the lot will be zoned Medium Low Density Residential (RML).

Lot 106 includes an 8.2-acre portion of the parcel located at 23370 SW Boones Ferry Road, which is part of the Horizon Christian School property. The portion of this lot to be redeveloped is currently zoned Institutional (IN) and is occupied by one single-family home. It is also developed with a parking lot with approximately 120 striped spaces. Both parcels are proposed for rezoning to High Density/High Rise Residential (RH-HR).

The proposed Norwood Apartments development includes the development of six 4-story buildings totaling 276 apartments on the site. Future access to the site will be provided via one new driveway along SW Norwood Road. An emergency access connection to the Horizon School circulation network is also provided.

A site plan is included in Appendix A and the site location is shown in Figure 1 with the project site outlined in yellow.

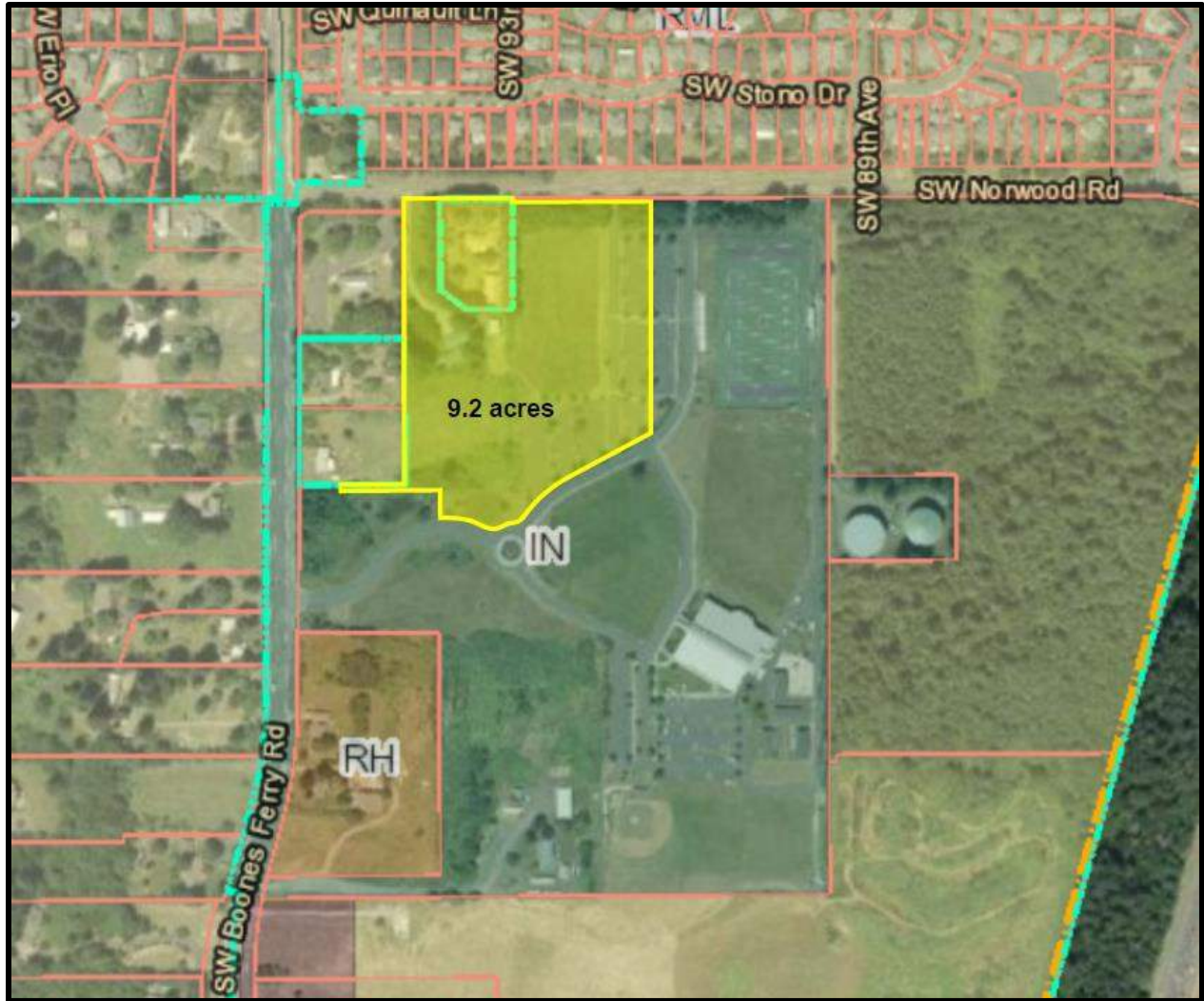


Figure 1: Project Location (Source: City of Tualatin Interactive Zoning Map)

**Vicinity Streets**

Five roadways within the study area are expected to be impacted by the proposed development. The characteristics of these roadways are summarized in Table 1.

**Study Intersections**

Through coordination with the City of Tualatin and Washington County, six study intersections were identified for evaluation. The existing characteristics of these intersections are summarized in Table 2. A vicinity map showing the project site, vicinity streets, and study intersection configurations is shown in Figure 2.



Table 1: Roadway Characteristics

Street Name	Jurisdiction	Functional Classification	Posted Speed	Curbs & Sidewalks	On-Street Parking	Bicycle Facilities
SW Boones Ferry Road	City of Tualatin / Washington County	Major Arterial / Arterial	35 / 45 mph <sup>1</sup>	Partial Both Sides	None	Bike Lanes
SW 82 <sup>nd</sup> Avenue	Washington County	Major Collector	45 mph	None	None	None
SW Ibach Street / Court	City of Tualatin	Major Collector / Local	35 / 25 mph	Both Sides	None	Bike Lanes
SW Norwood Road	Washington County	Collector (Major Collector <sup>2</sup> )	45 mph	Both Sides	None	None
SW Day Road	City of Wilsonville	Major Arterial	40 mph	South Side	None	Bike Lanes

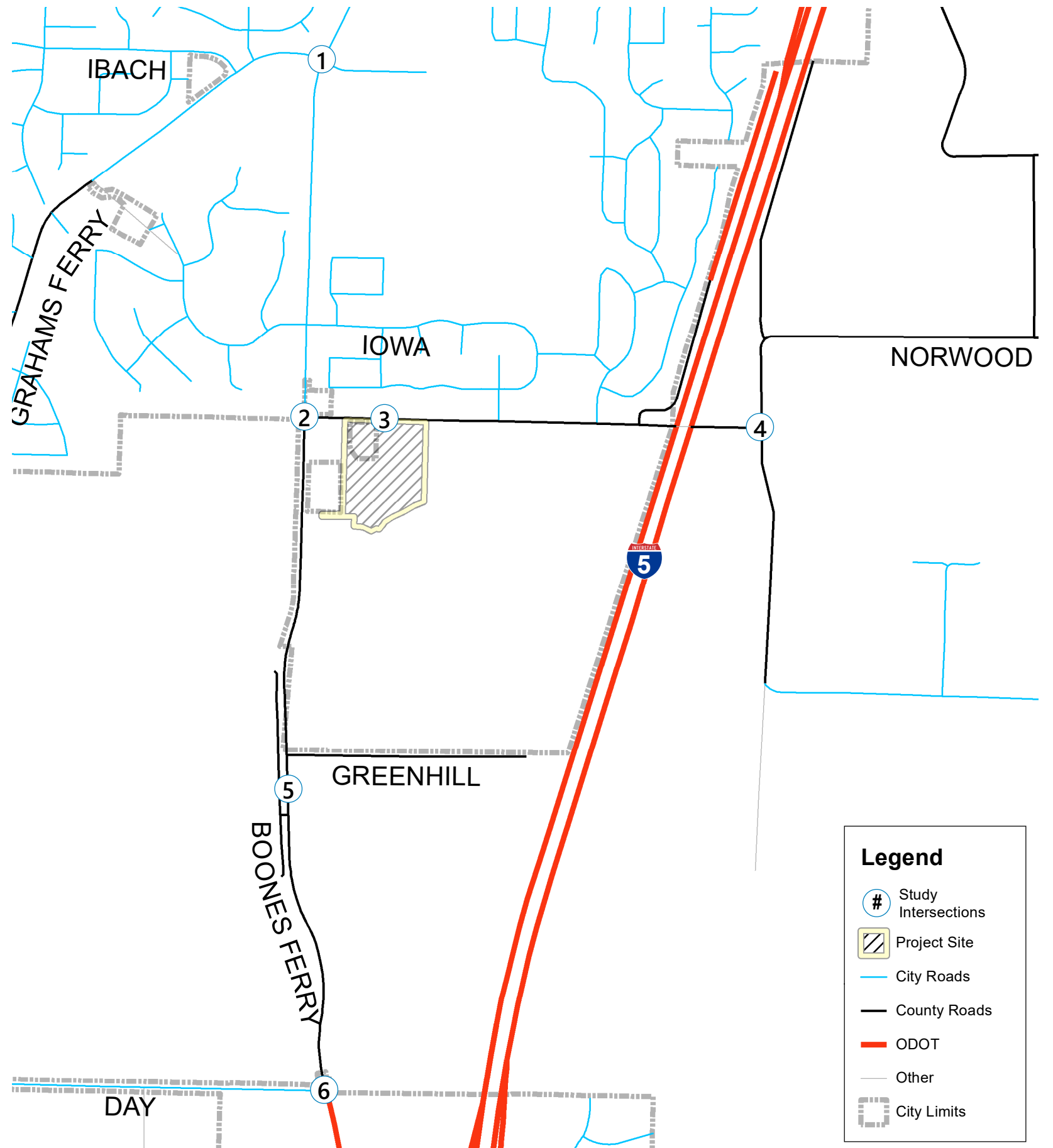
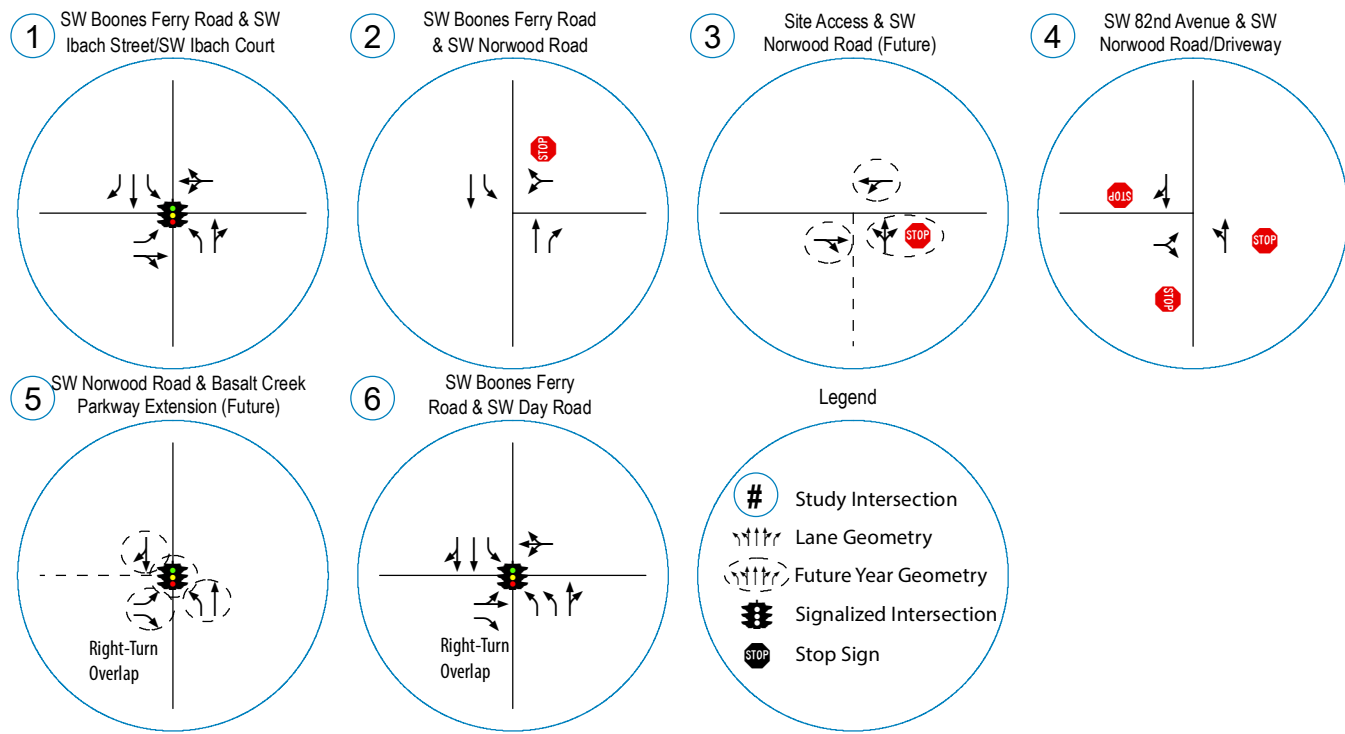
Notes:

1. Speed increases from 35 mph to 45 mph south of SW Norwood Road.
2. City of Tualatin Classification.

Table 2: Vicinity Intersection Descriptions

	Intersection	Geometry	Traffic Control	Phasing/Stopped Approaches
1	SW Boones Ferry Road & SW Ibach Street/SW Ibach Court	Four-Legged	Signalized	Protected NB Left/ Permitted EB/WB/SB Left
2	SW Boones Ferry Road & SW Norwood Road	Three-Legged	Stop-Controlled	WB Stop-Controlled
3	Site Access & SW Norwood Road (future intersection)	Three-Legged	Stop-Controlled	NB Stop-Controlled
4	SW 82 <sup>nd</sup> Avenue & SW Norwood Road	Three-Legged	Stop-Controlled	NB/SB Stop-Controlled Except SB Free Right
5	SW Boones Ferry Road & Basalt Creek Parkway Extension (future intersection)	Three-Legged	Signalized	Protected/Permitted NB Left w/ EB Right Turn Overlap
6	SW Boones Ferry & SW Day Road	Four-Legged	Signalized	Protected NB/SB Lefts Permitted EB/WB Lefts w/ EB Right Turn Overlap





## **Public Transit**

The project is located near one transit line that has stops within less than a one-quarter mile walking/biking distance of the site.

*Route 96 – Tualatin/I-5* provides weekday rush-hour service between Commerce Circle and the Mohawk Park & Ride in Tualatin, and regular service between Mohawk Park & Ride and Portland City Center. Weekday service is scheduled from approximately 5:15 AM to 9:10 PM with headways of approximately 30 to 60 minutes. There is currently no weekend or holiday service. The nearest bus stops to the site are currently located just south of the intersection of SW Boones Ferry Road at SW Norwood Road.



## Site Trips

The proposed development consists of six 4-story buildings totaling 276 apartments. All access will be taken from SW Norwood Road.

## Trip Generation

To estimate the number of trips that will be generated by the proposed development, trip rates from the *Trip Generation Manual*<sup>1</sup> were used. Rates from land use code 210, *Single-Family Detached Housing*, were used to estimate existing site trip generation based on the number of dwelling units. City staff requested land use code 220, *Multifamily Housing (Low-Rise)*<sup>2</sup> be used to estimate the proposed trip generation of the 276 apartment units; therefore, this assumption was used in the trip estimates presented in Table 3.

As shown in Table 3, the trip generation calculations as requested by the City show that the proposed Norwood Apartments development is estimated to generate a net increase of 107 trips during the morning peak hour, 137 trips during the evening peak hour, and 1,826 daily trips during the average weekday. Detailed calculation worksheets are provided in Appendix A.

**Table 3: Trip Generation Summary**

ITE Code – Land Use	Intensity (DU)	Morning Peak Hour			Evening Peak Hour			Weekday Trips
		In	Out	Total	In	Out	Total	
<b>Existing</b>								
210 - Single-Family Detached Housing	-2	0	-1	-1	-1	-1	-2	-18
<b>Propose</b>								
220 - Multifamily Housing (Low-Rise)	276	26	82	108	88	51	139	1,844
Net New Trips		26	81	107	87	50	137	1,826

## Trip Distribution

The directional distribution of site trips to/from the project site was assumed to be the same as the distribution used for other approved projects in the area. That trip distribution was estimated based on the locations of likely trip destinations, locations of major transportation facilities in the site vicinity, and a select zone analysis using Metro’s Regional Travel Demand Forecasting Model. An additional consideration was Google Maps estimated travel times along various routes to/from the site.

<sup>1</sup> Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 10<sup>th</sup> Edition, 2017.

<sup>2</sup> As the proposed apartments will be four stories, ITE guidance suggests that the appropriate land use code for the development is 221, *Multifamily Housing (Mid-Rise)*, which includes data for apartment complexes ranging from four to 10 stories. Trip rates for this land use are generally lower during the evening peak and over the course of the day than those for land use code 220, *Multifamily Housing (Low-Rise)*, which includes data for apartment complexes ranging from one to three stories. Using the low-rise multifamily housing option provides a more conservative estimate of trip generation.



The initial distribution, prior to the construction of the Basalt Creek Parkway Extension, is summarize below:

- Approximately 40 percent of site trips will travel to/from the north on SW Boones Ferry Road
  - Approximately 3 percent will travel to/from uses south of SW Ibach Road
  - Approximately 5 percent will travel to/from SW Ibach Road
  - Approximately 32 percent will travel to/from areas north of SW Ibach Road
- Approximately 45 percent of site trips will travel to/from the south on SW Boones Ferry Road
  - Approximately 10 percent will travel to/from SW Day Road
  - Approximately 35 percent will travel to/from areas south of SW Day Road
- Approximately 15 percent of site trips will travel to/from the east on SW Norwood Road

The anticipated project trip distribution and assignment of site trips generated during the morning and evening peak hours is provided in Figure 3.

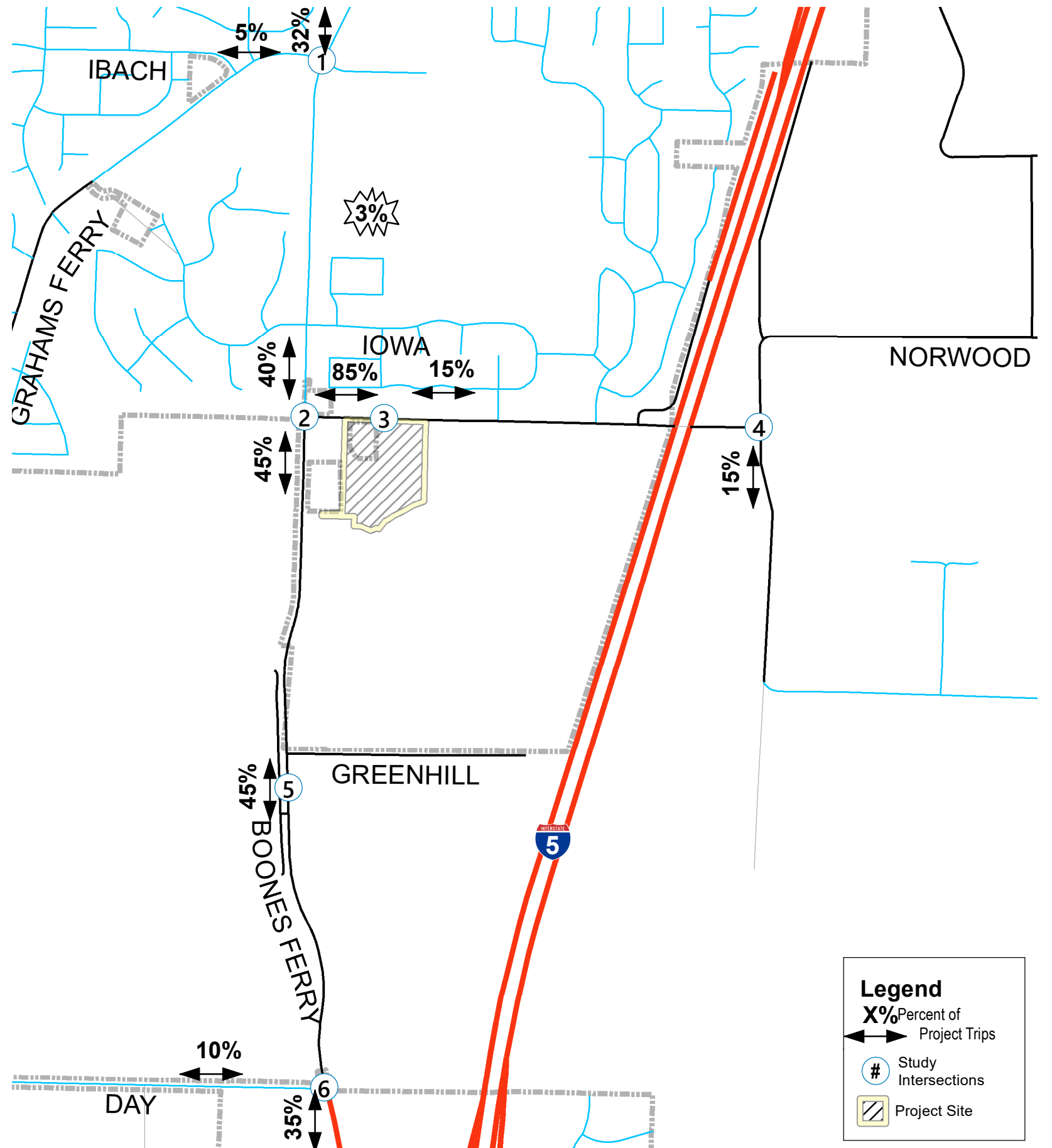
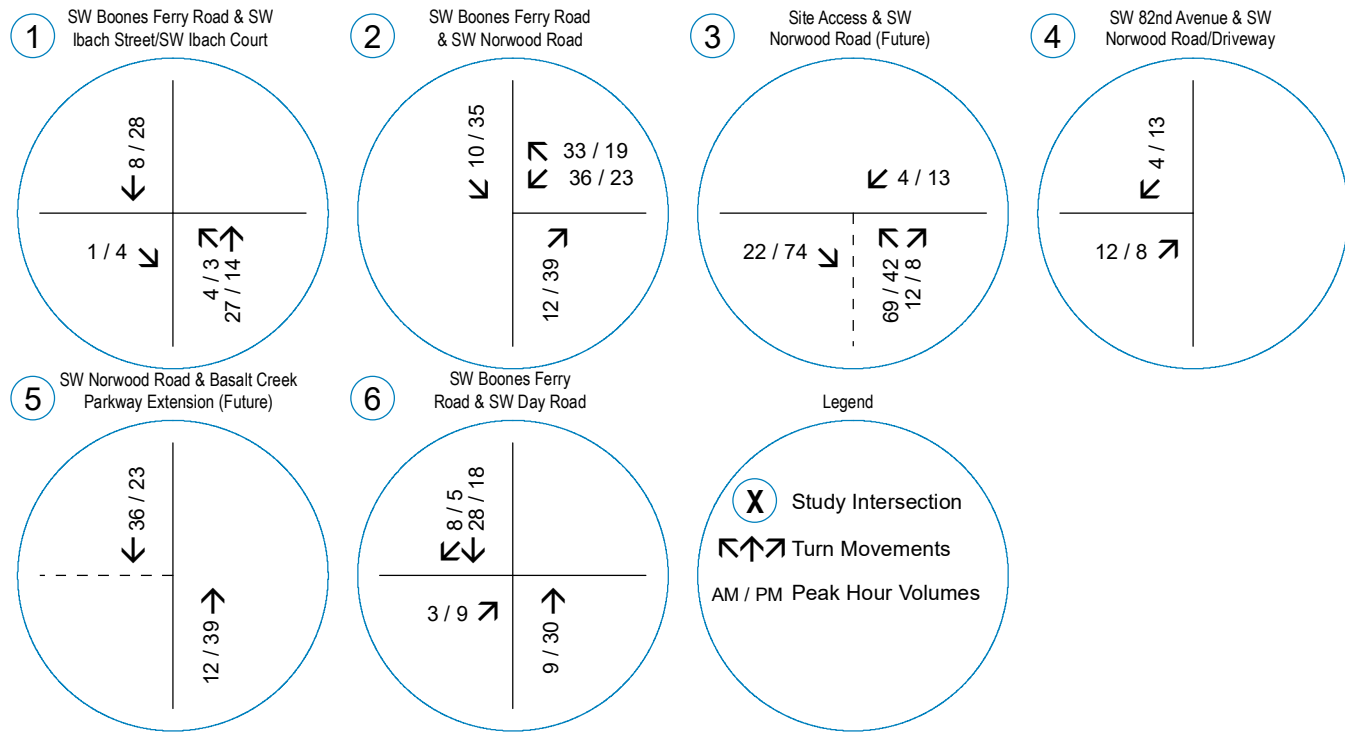
### **Basalt Creek Parkway Extension**

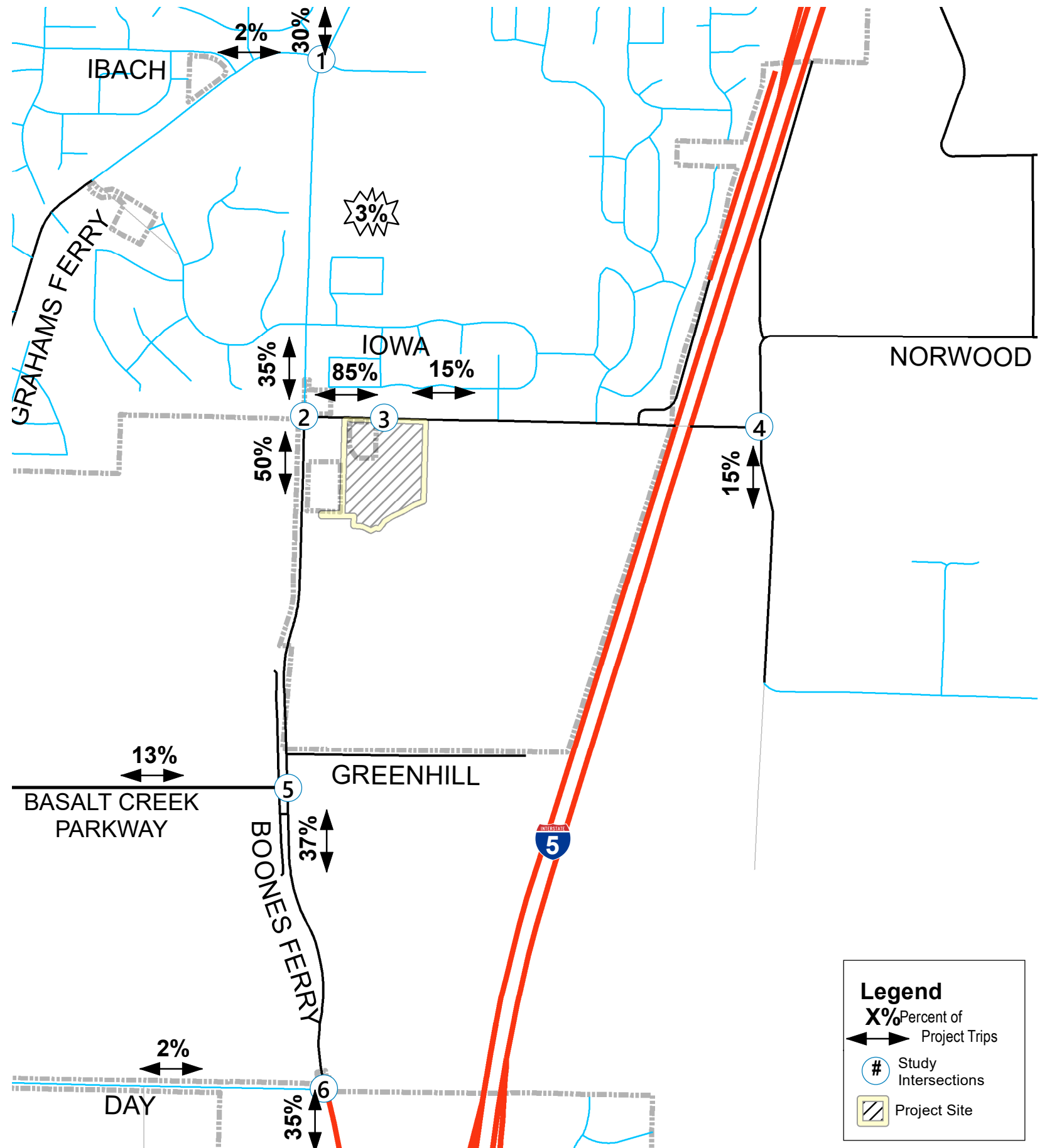
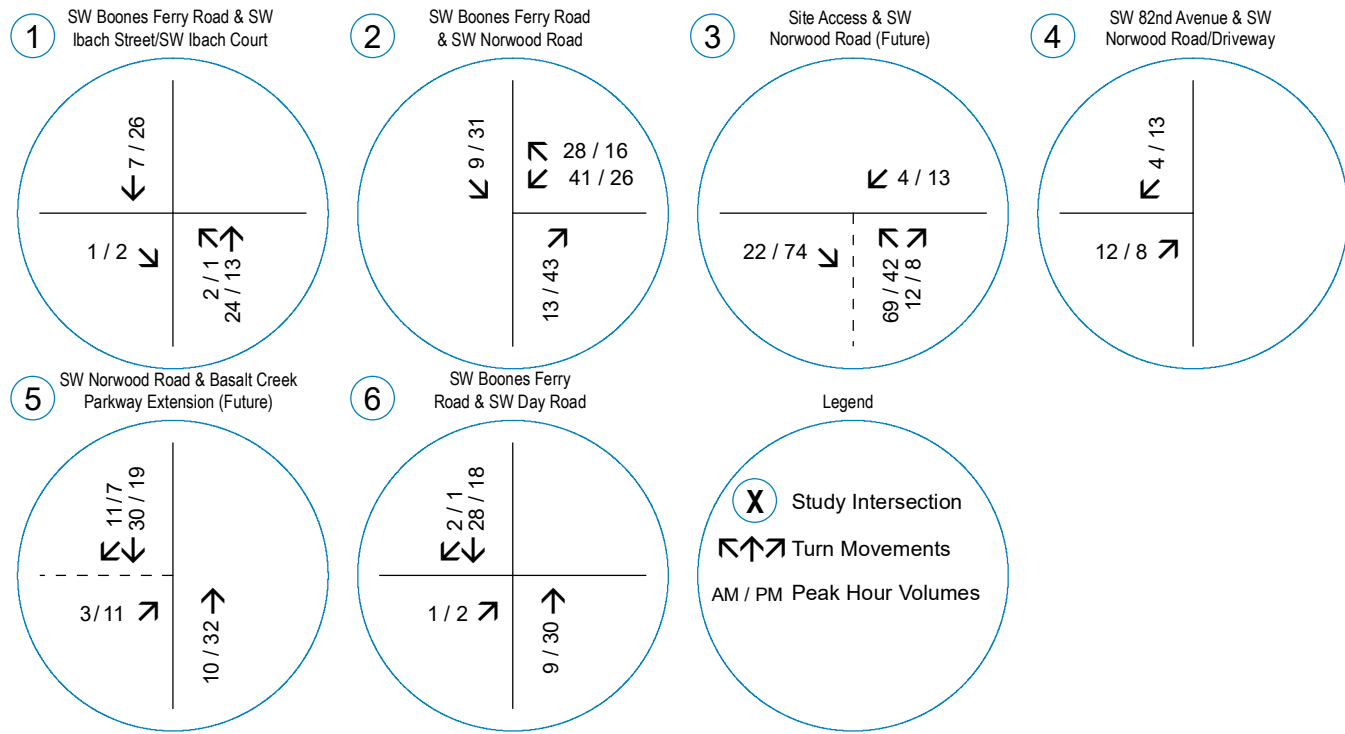
Washington County is currently engineering the extension of the Basalt Creek Parkway eastward from SW Grahams Ferry Road to SW Boones Ferry Road at a connection just south of SW Greenhill Lane. Although funding for construction has not been secured yet, both city and county staff requested an analysis of the study area with the extension. The following changes in trip distribution with the Basalt Creek Parkway Extension anticipated are:

- Shift five (5) percent of project trips heading north on SW Boones Ferry Road (continuing onto SW Ibach Street and SW Avery Street) to the Basalt Creek Parkway Extension.
- Shift eight (8) percent of project trips heading south on SW Boones Ferry Road (continuing onto SW Day Road) to the Basalt Creek Parkway Extension.

These changes are not anticipated to change the project study area. The resulting project trip distribution and assignment of site trips generated during the morning and evening peak hours with the Basalt Creek Parkway Extension is provided in Figure 4.







## Traffic Volumes

### Existing Conditions

Traffic counts were conducted at the study intersections on Thursday, October 20<sup>th</sup>, 2022, from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM. Additionally, a 12-hour count (7:00 AM to 7:00 PM) from September 29, 2021, was obtained for the intersection of SW Boones Ferry Road & SW Norwood Road. Counts were collected while school was in session, and no COVID-19 adjustments were used as traffic volumes have largely stabilized.

The year 2022 data was summarized for each intersection's respective morning and evening peak hours. At the intersection of SW Boones Ferry Road & SW Norwood Road, peak hour data was also summarized for the year 2021. During the morning peak hour, the year 2021 peak hour counts were lower than the 2022 peak hour counts; therefore, only the 2022 count data were used. During the evening peak hour, the year 2021 peak hour counts were higher for some but not all turning movements; therefore, an average of the two traffic counts was used. Additionally, the through volumes on SW Boones Ferry Road at SW Ibach Road and SW Day Road were also increased to reflect the higher demand.

Figure 5 shows the existing traffic volumes at the study intersections during the morning and evening peak hours.

### Background Conditions

To provide analysis of the impact of the proposed development on the nearby transportation facilities, an estimate of future traffic volumes is required. Two components were included in the background traffic estimates: 1) general growth and 2) growth associated with planned developments.

For the background growth, a short-term annual growth rate of two percent per year was applied to the year 2022 existing traffic volumes. This growth rate is generally consistent with historical growth rates on study area roadways although conservatively higher than trends on SW Boones Ferry Road.

Two projects were assumed for the in-process development. The affordable housing development known as Plambeck Gardens is planned to be constructed to the south of the project site along SW Boones Ferry Road. The buildout year for this project was assumed to be 2025. The Autumn Sunrise housing development is planned to be constructed east and south of the project site, taking access via SW Boones Ferry Road and SW Norwood Road. The buildout year for this project was assumed to be 2026. Therefore, trip assignment associated with both nearby developments were included in the 2026 background year scenario. Detailed project trip information for both planned developments can be found in Appendix B.

Figure 6 shows the projected year 2026 background traffic volumes at the study intersections during the morning and evening peak hours.

#### **Background Year 2026 with Basalt Creek Parkway Extension**

Washington County is currently engineering the extension of the Basalt Creek Parkway eastward from SW Grahams Ferry Road to SW Boones Ferry Road at a connection just south of SW Greenhill Lane. Engineering is under way but construction is contingent on securing funding for the project.

Since funding and the construction timeline are indefinite, this project was not assumed as part of the base transportation network. However, an analysis scenario with the planned project has been developed to understand how it might change traffic operations with the proposed project. A County study for<sup>3</sup> this phase of the Basalt Creek Parkway project was provided for the new intersection created by the extension to SW Boones Ferry Road for the year 2023. Although the projections did not address other study area intersections, year 2015 base year and year 2040 future year model forecasts were also obtained from Washington County and Metro.

To develop background volumes for a year 2026 background condition, the following assumptions were made:

- The year 2023 forecast volumes for the intersection of SW Boones Ferry Road and the Basalt Creek Parkway Extension were compared with the existing year 2022 volumes on SW Boones Ferry Road. Since the volumes were comparable, the forecasts were assumed as year 2022 volumes for the new intersection.
- Increases in traffic volumes on SW Boones Ferry Road due to the Basalt Creek Parkway Extension were added to through movements at the intersections north and south of the new intersection.
- Based on the model forecasts, the following traffic shifts were assumed to estimate study area traffic with completion of the extension:
  - 50 percent of the northbound traffic currently turning left from SW Boones Ferry Road to SW Day Road will continue traveling northward and turn left on the Basalt Creek Parkway Extension.
  - 50 percent of the eastbound traffic currently turning right from SW Day Road to SW Boones Ferry Road will travel along the Basalt Creek Parkway Extension and turn right on SW Boones Ferry Road at the new intersection.
  - 50 percent of the southbound traffic currently turning right from SW Boones Ferry Road to SW Day Road will turn on the Basalt Creek Parkway Extension instead of continuing south to SW Day Road.
  - 50 percent of the eastbound traffic currently turning left from SW Day Road to SW Boones Ferry Road will travel along the Basalt Creek Parkway Extension and turn left onto SW Boones Ferry Road at the new intersection.
  - 25 percent of the eastbound traffic currently turning left from SW Ibach Road to SW Boones Ferry Road will have diverted to the Basalt Creek Parkway Extension.
  - 25 percent of the southbound traffic currently turning right from SW Boones Ferry Road to SW Ibach Road will have diverted to the Basalt Creek Parkway Extension.
- Once year 2022 traffic volumes were developed to reflect the Basalt Creek Parkway Extension, an annual growth rate of 2 percent per year was applied and the in-process traffic was added.

Figure 7 shows the projected year 2026 background traffic volumes at the study intersections during the morning and evening peak hours with the Basalt Creek Parkway Extension in place.

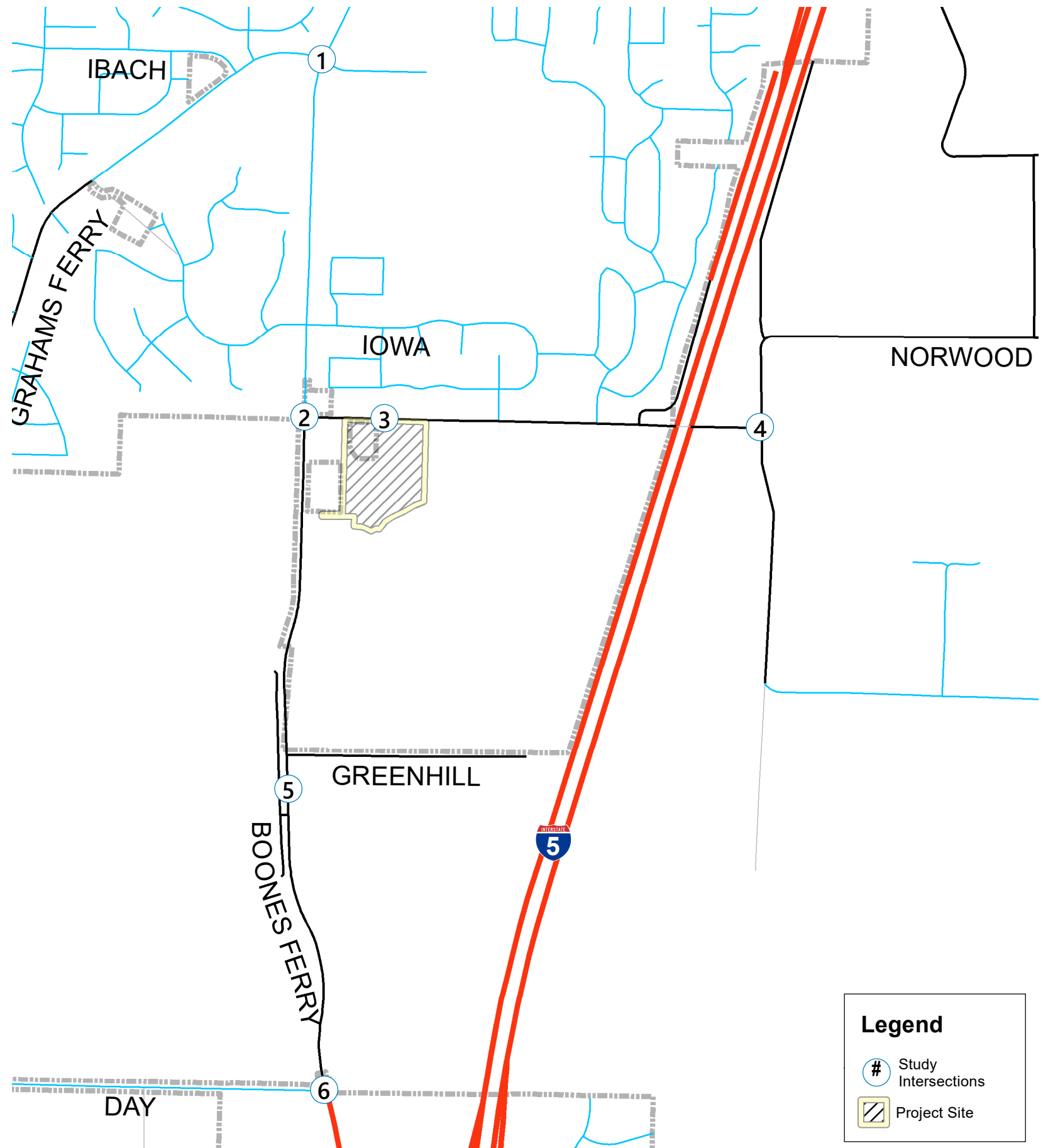
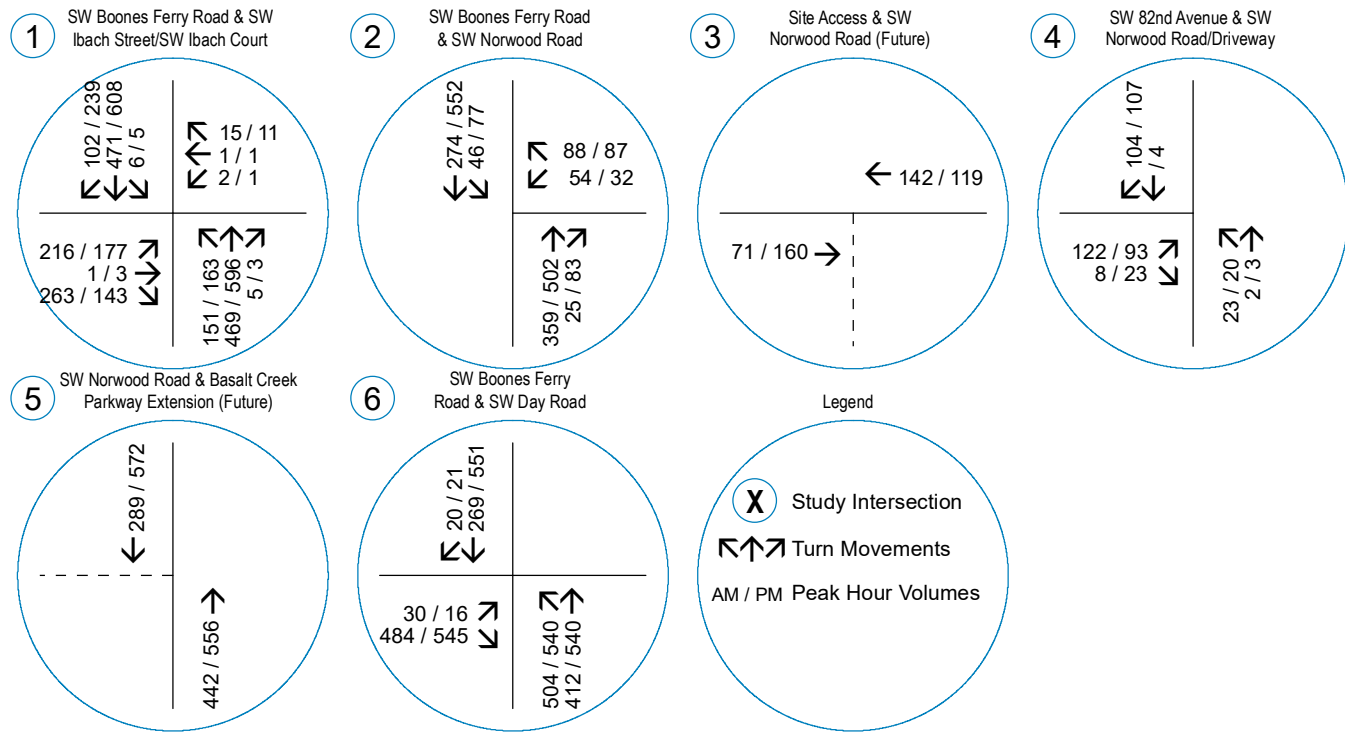
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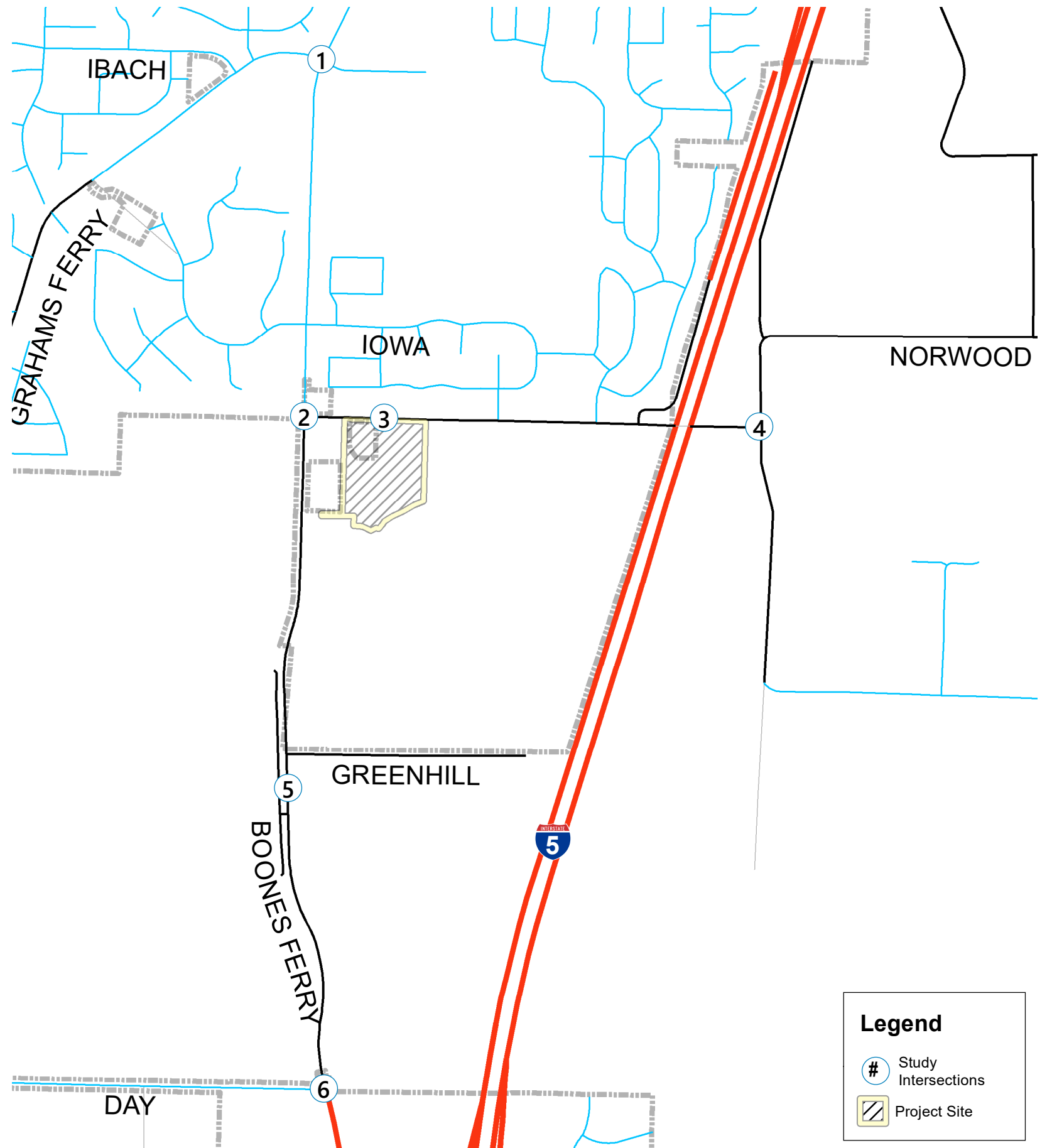
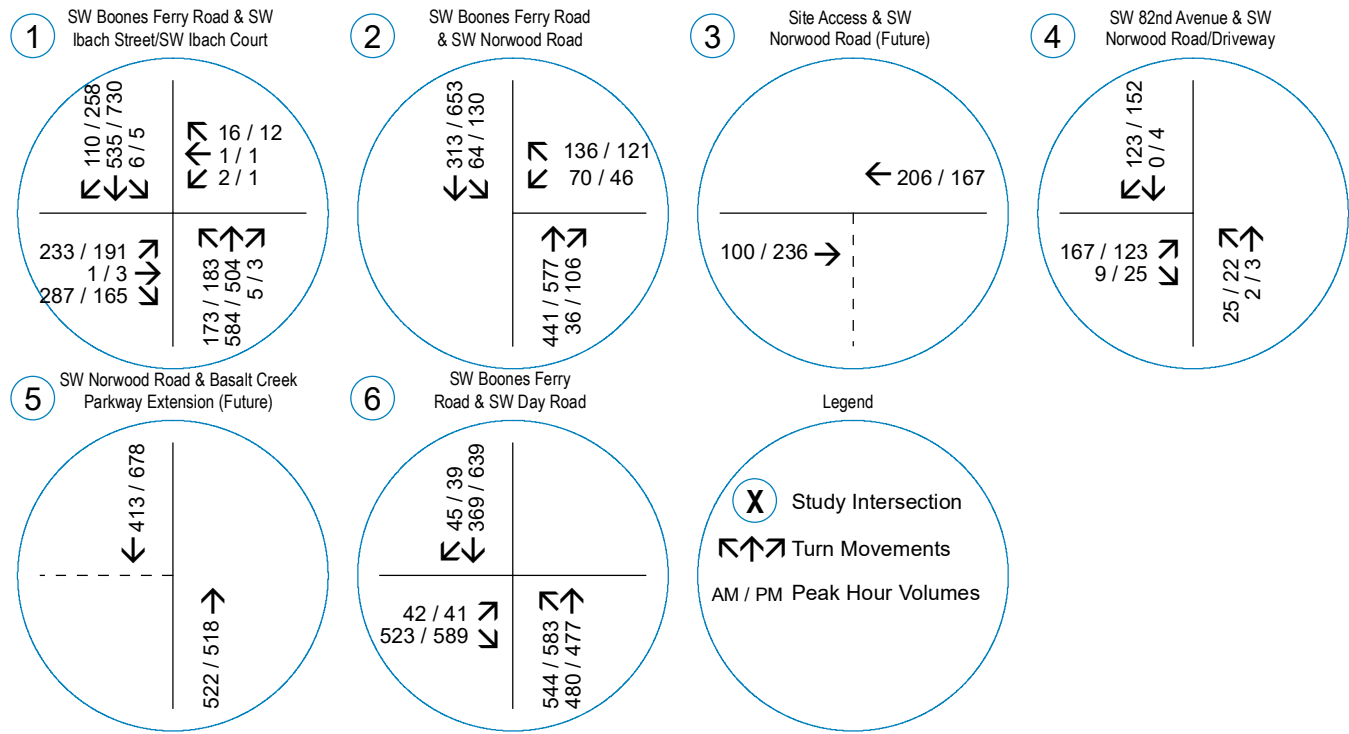
<sup>3</sup> DKS Associates, "Washington County Basalt Creek Extension – Traffic Analysis Memorandum," January 16, 2020.

## Buildout Conditions

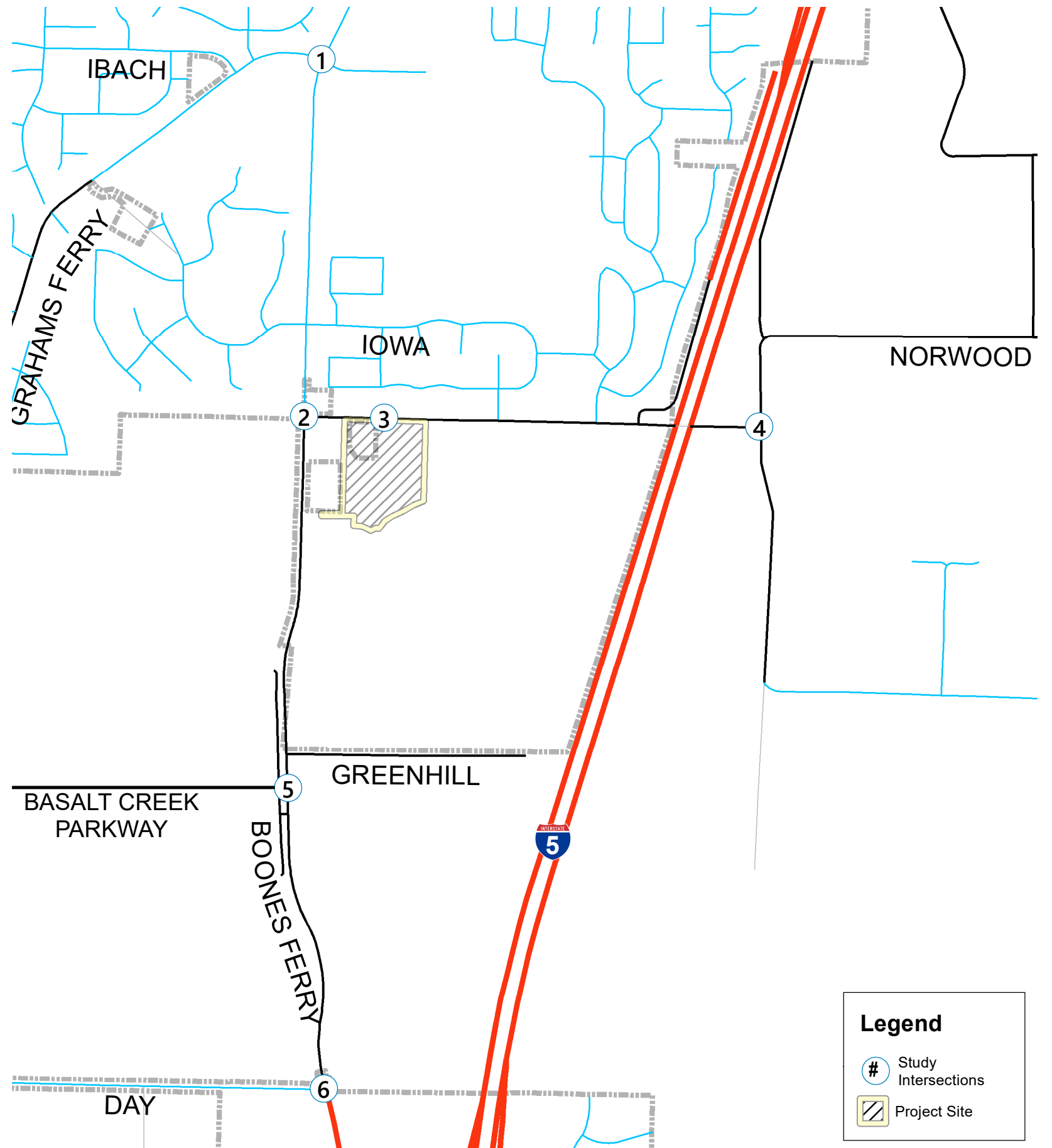
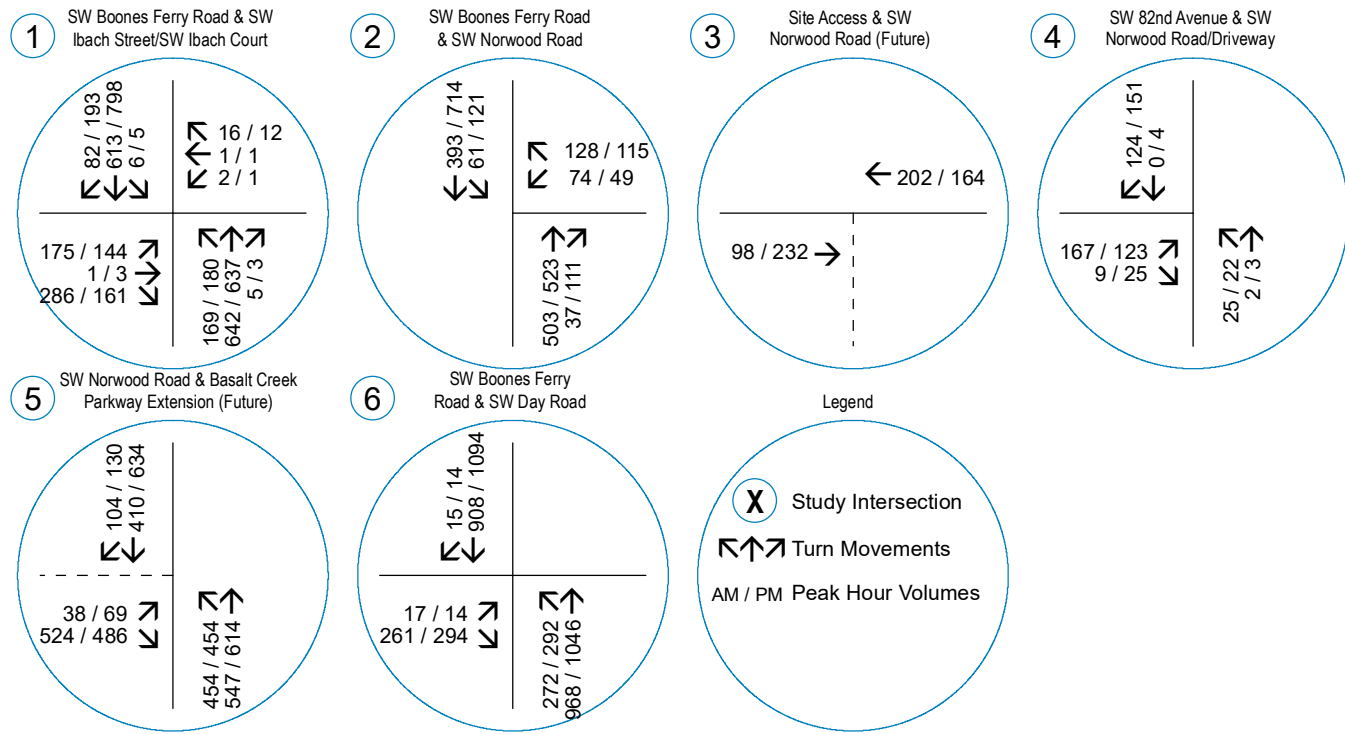
The project is proposed to be occupied by the year 2026, so 2026 is used as the buildout year. Peak hour trips calculated to be generated by the proposed development, as described earlier within the *Site Trips* section, were added to the projected year 2026 background traffic volumes to obtain the expected 2026 site buildout volumes.

Figure 8 shows the projected year 2026 buildout traffic volumes at the study intersections during the morning and evening peak hours and Figure 9 shows the projected year 2026 buildout traffic volumes at the study intersections during the morning and evening peak hours with the Basalt Creek Parkway Extension in place.

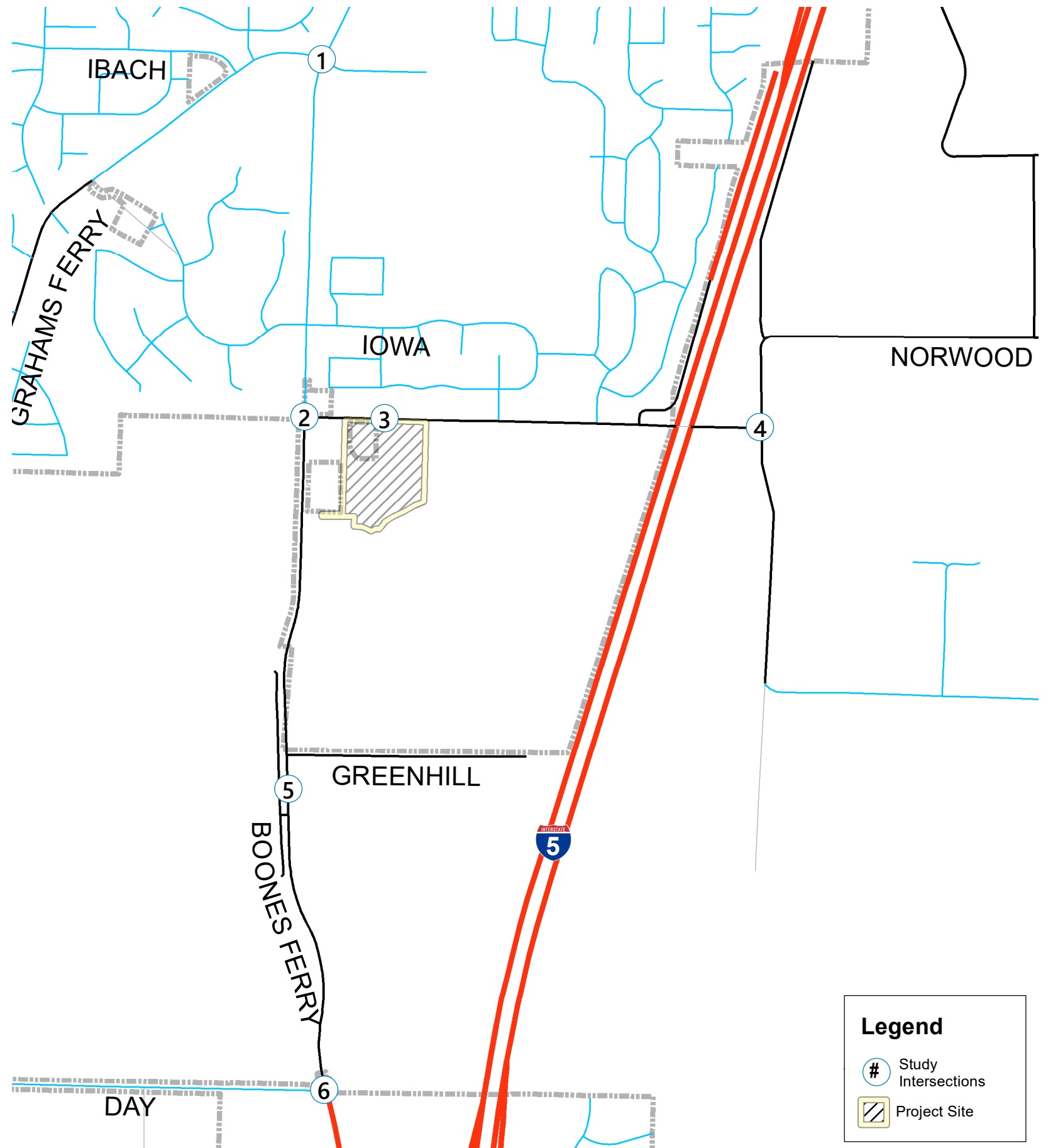
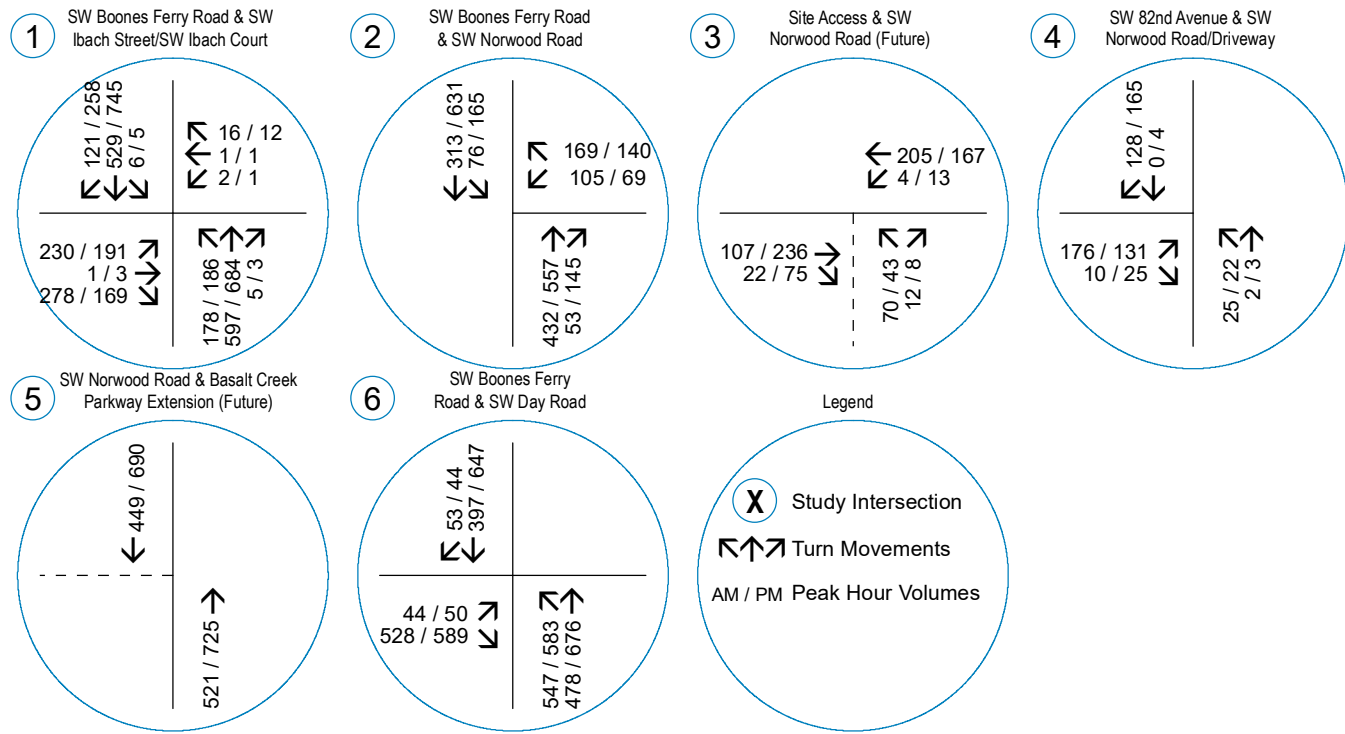


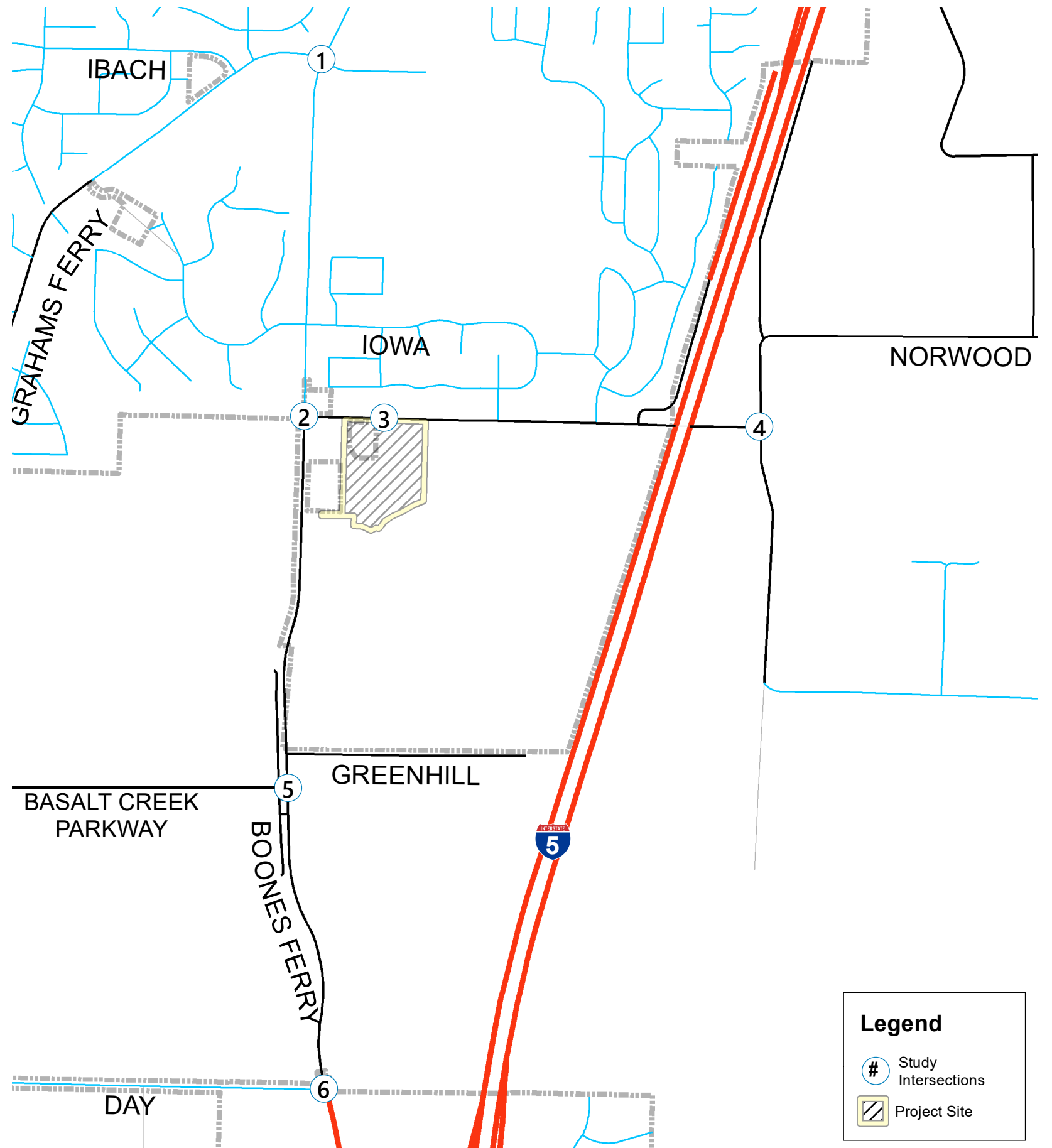
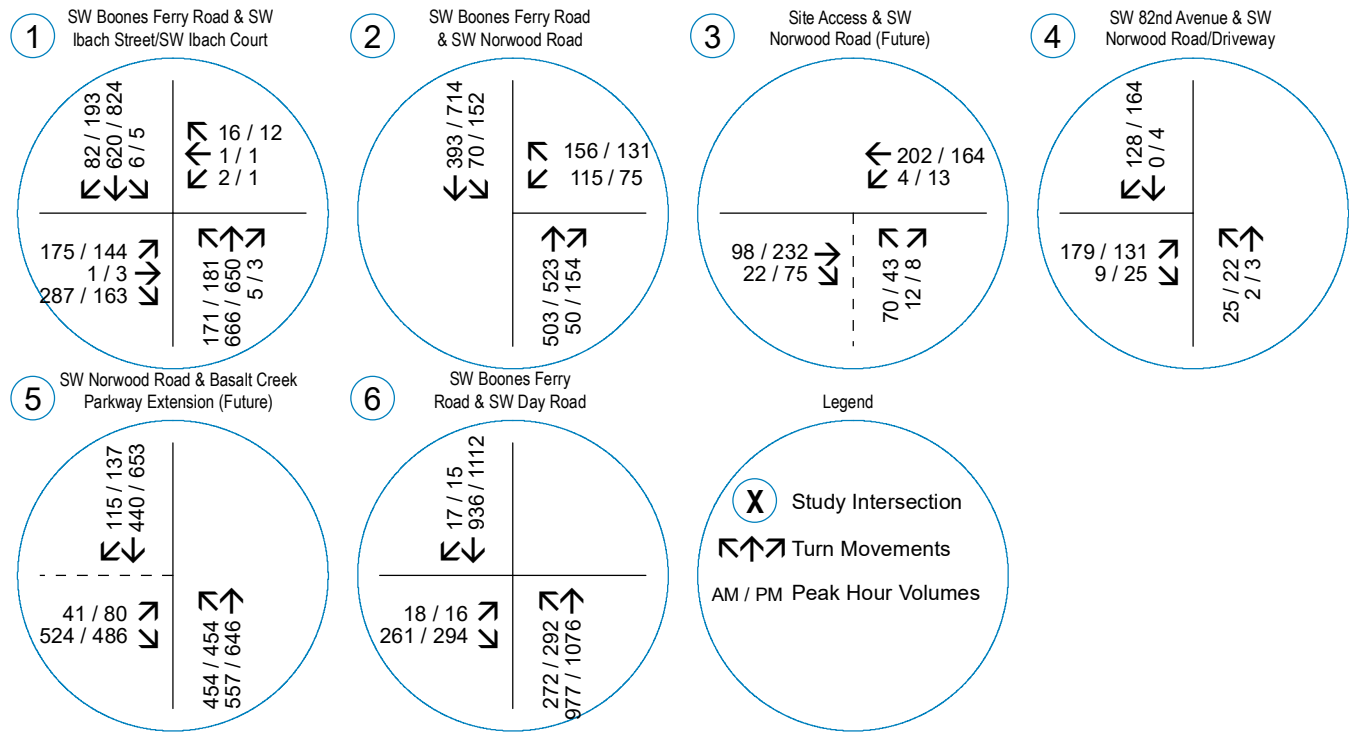












# Safety Analysis

## Crash History Review

Using data obtained from ODOT’s Crash Data System, a review of approximately five years of the most recent available crash history (January 2016 through December 2020) was performed at the study intersections. The crash data was evaluated based on the number of crashes, the type of collisions, and the severity of the collisions. Crash severity is based on injuries sustained by people involved in the crash, and includes five categories:

- Property Damage Only (PDO)
- Possible Injury (Injury C)
- Non-Incapacitating Injury (Injury B)
- Incapacitating Injury (Injury A)
- Fatality or Fatal Injury

Crash rates provide the ability to compare safety risks at different intersections by accounting for both the number of crashes that have occurred during the study period and the number of vehicles that typically travel through the intersection. Crash rates were calculated using the common assumption that traffic counted during the evening peak period represents approximately 10 percent of the annual average daily traffic (ADT) at the intersection.

Table 4 provides a summary of crash types while Table 5 summarizes crash severities and crash rates for each of the study intersections. Detailed ODOT crash reports are included in Appendix C.

**Table 4: Crash Type Summary**

	Intersection	Crash Type							Total Crashes	
		Rear End	Turning	Fixed Object	Angle	Bicycle	Head On	Ped Involved		Sideswipe
1	SW Boones Ferry Road & SW Ibach Street/Court	6	1	1	0	0	0	1	0	9
2	SW Boones Ferry Road & SW Norwood Road	2	4	1	0	0	0	0	0	7
4	SW 82 <sup>nd</sup> Avenue & SW Norwood Road	0	0	0	0	0	0	0	0	0
6	SW Boones Ferry Road & SW Day Road	21	4	1	0	0	1	0	2	29



Table 5: Crash Severity and Rate Summary

	Intersection	Crash Severity					Total Crashes	PHV	Crash Rate	90 <sup>th</sup> % Rate
		PDO	C	B	A	Fatal				
1	SW Boones Ferry Road & SW Ibach Street/Court	3	5	1	0	0	9	1,950	0.25	0.860
2	SW Boones Ferry Road & SW Norwood Road	6	1	0	0	0	7	1,333	0.29	0.293
4	SW 82 <sup>nd</sup> Avenue & SW Norwood Road	0	0	0	0	0	0	250	0.00	0.408
6	SW Boones Ferry Road & SW Day Road	16	11	1	1	0	29	2,213	0.72	0.860

PHV = Peak Hour Volume

### Crash Severity

None of the crashes reported in the five-year analysis period resulted in a fatality but one of the crashes resulted in an incapacitating injury (Injury A):

- A fixed object collision reported at the intersection of SW Boones Ferry Road at SW Day Road resulted in one incapacitating injury (Injury A). The crash involved a single eastbound vehicle on a rainy day with the driver at fault for driving improperly.

### Pedestrian Collisions

One of the reported crashes involved a pedestrian:

- A pedestrian walking southbound in the west crosswalk was reportedly struck by a northbound vehicle making a left turn onto SW Ibach Street. The pedestrian sustained possible injuries (Injury C) and the driver was reported at fault for failing to yield right of way to a pedestrian crossing in a marked crosswalk.

### ODOT 90<sup>th</sup> Percentile Crash Rates

Intersection crash rates were compared to the published statewide 90<sup>th</sup> percentile crash rates within ODOT's Analysis Procedures Manual (APM). According to Exhibit 4-1: Intersection Crash Rates per MEV by Land Type and Traffic Control in the APM, intersections which experience crash rates in excess of 90<sup>th</sup> percentile crash rates should be "flagged for further analysis".

None of the intersections in the study area were calculated to have crash rates that exceed the 90<sup>th</sup> percentile crash rates for the intersection type.

### ODOT Safety Priority Index System

According to the ODOT TransGIS website, none of the study area intersections were listed in the worst 15 percent of ODOT's 2019 Safety Priority Index System (SPIS) list.

## Washington County Safety Priority Index System

One of the study area intersections is listed in the Washington County 2015-2017 SPIS List. The intersection of SW Boones Ferry Road & SW Day Road is ranked 323 of 365 based on 11 crashes over a three-year period. The crash analysis shows that most (65 percent) crashes were rear-end collisions and the severity was generally low.

### Conclusion

Based on a review of the most recent five years of available crash data, no significant trends or crash patterns were identified at any of the study intersections. Accordingly, no safety mitigation is recommended per the crash data analysis.

## Sight Distance

SW Norwood Road is under Washington County jurisdiction, so intersection sight distance (ISD) was measured and evaluated in accordance with Washington County Community Development Code (CDC) Section 501-8.5.F. Sight distance measurements were made from an entering driver's eye height of 3.5 feet above the roadway surface 15 feet behind the curb line/edge of pavement of the intersecting street to the position of an oncoming vehicle in the major-street traffic lane 4.25 feet above the roadway.

At the proposed site access on SW Norwood Road, the posted speed is 45 mph. Assuming a travel speed 5 mph over the posted speed results in an intersection sight distance requirement of 500 feet.

Due to foliage along the roadside, accurate sight distance measurements cannot be taken along the future roadway frontage. SW Norwood Road is straight and horizontal curvature is not anticipated to be an issue. The elevation profiles show that vertical curvature is unlikely to be an issue as well. Based on this preliminary assessment, the 500-foot sight distance requirement is expected to be satisfied at the proposed site access on SW Norwood Road.

## Access Spacing

Site access will be taken from SW Norwood Road, which is under Washington County jurisdiction. The county access requirements are shown in CDC Section 501-8.5B. For SW Norwood Road with a collector classification, the access spacing standard is 100 feet measured between the edge of travel lanes or easements on both sides of the roadway.

One access on SW Norwood Road is proposed with the development. Measured consistently with the CDC, the access is planned approximately 540 feet east of SW Boones Ferry Road, 298 feet east of the existing driveway serving the Tualatin Hills Christian Church, and 376 feet west of an existing driveway serving the Horizon Christian School. There are no accesses on the north side of SW Norwood Road between SW Boones Ferry Road and SW 89<sup>th</sup> Avenue. Thus, the proposed site access will meet the Washington County access spacing standard of 100 feet as shown in the CDC Section 501-8.5B.

## Left-Turn Lane Warrants

Left-turn lanes are not present on SW Norwood Road; therefore, left-turn lane warrants were examined at the proposed site access on SW Norwood Road using the methodology outlined in the National Cooperative Highway Research Program Report (NCHRP) 457, published by the Transportation Research Board in 2001. These turn-lane warrants are evaluated based on the number of left-turning vehicles, the number of advancing and opposing vehicles, and the roadway travel speed. The results are summarized in Table 6 for year 2026 conditions with full buildout of the proposed development, both with and without the Basalt Creek Parkway Extension. Detailed information on the warrant analysis is included in Appendix C.

**Table 6: Summary of Left-Turn Lane Warrant Evaluation**

Intersection & Scenario	Warrant Met?	
	Morning Peak	Evening Peak
<b>3. Site Access &amp; SW Norwood Road (westbound)</b>		
2026 Buildout – No BCP Extension	No	No
2026 Buildout –With BCP Extension	No	No

*BCP = Basalt Creek Parkway*

As shown in Table 6, left-turn lane warrants are not met at the proposed site access intersection for either peak hour under the 2026 buildout scenario for any analysis period.

## Traffic Signal Warrants

### Preliminary Signal Warrants

Preliminary traffic signal warrants were examined at the unsignalized study area intersections to determine whether the installation of a new traffic signal will be warranted at these intersections upon completion of the proposed development.

At all three intersections, the speed assumed for the evaluation was 45 mph. The posted speed on SW Norwood Road is 45 mph. The posted speed on SW Boones Ferry Road changes from 45 mph south of the intersection with SW Norwood Road to 35 mph north of the intersection. A speed study conducted on SW Boones Ferry Road south of SW Norwood Road shows that the 85<sup>th</sup> percentile speed is 45 mph in both directions (see Appendix B). While drivers may be traveling slower north of the intersection, they are still likely to be traveling at a speed near 40 mph as they approach SW Norwood Road. Both the City of Tualatin and Washington County confirmed that using the 70 percent warrant thresholds for speeds of 40 mph or greater is appropriate.

The results are summarized in Table 7 for year 2026 conditions with full buildout of the proposed development, both with and without the Basalt Creek Parkway Extension. Detailed information on the warrant analysis is included in Appendix C.

Table 7: Summary of Preliminary Traffic Signal Warrant Evaluation

Intersection & Scenario	Warrant Met?	
	Based on Morning Peak	Based on Evening Peak
<b>2. SW Boones Ferry Road &amp; SW Norwood Road (Shared Lane – 50% Right-Turn Discount)</b>		
2026 Buildout – No BCP Extension	Yes	Yes
2026 Buildout – With BCP Extension	Yes	Yes
<b>2. SW Boones Ferry Road &amp; SW Norwood Road (Separate Left- and Right-Turn Lanes)</b>		
2026 Buildout – No BCP Extension	No	No
2026 Buildout – With BCP Extension	Yes	No
<b>3. Site Access &amp; SW Norwood Road</b>		
2026 Buildout – No BCP Extension	No	No
2026 Buildout – With BCP Extension	No	No
<b>4. SW 82<sup>nd</sup> Avenue &amp; SW Norwood Road</b>		
2026 Buildout – No BCP Extension	No	No
2026 Buildout – With BCP Extension	No	No

BCP = Basalt Creek Parkway

As shown in Table 7, preliminary traffic signal warrants are met at the SW Boones Ferry Road & SW Norwood Road intersection both with and without the Basalt Creek Parkway Extension with a shared westbound approach lane on SW Norwood Road. If separate left- and right-turn lanes are provided on SW Norwood Road, the preliminary warrant is met based on morning peak hour volumes. No warrants are met at the other two intersections evaluated.

**Detailed Warrant Analysis**

Since the preliminary warrants are met at the intersection of SW Boones Ferry Road & SW Norwood Road, a more detailed warrant analysis was conducted to better understand the circumstances that would warrant a traffic signal.

Using the 12-hour count as the basis of the evaluation, future volume forecasts were developed by growing the hourly volumes by 2 percent per year and adding the in-process traffic for the background condition and site-generated traffic for the buildout condition. The “Hourly Distribution of Entering and Exiting Vehicle Trips by Land Use” from the ITE *Trip Generation Manual* were used to estimate the hourly volumes for the in-process and site-generated trips based on the daily volume estimates. To account for the effects of the Basalt Creek Parkway Extension, through traffic volumes on SW Boones Ferry Road were increased by 5 percent in each direction.

The results of the detailed evaluation are summarized in Table 8 for two scenarios, one where a shared westbound approach lane is maintained and a second where a separate right-turn lane is added. As noted previously, at the request of City staff, land use code 220, *Multifamily (Low-Rise)*, was used rather than 221,



*Multifamily (Mid-Rise)*, because it has higher trip rates and presents a more conservative assessment of project impacts. Detailed analyses are included in Appendix C.

**Table 8: Detailed Signal Warrant Evaluation**

Condition	Warrant Met?		
	8-Hour	4-Hour	Peak Hour
<b>2. SW Boones Ferry Road &amp; SW Norwood Road (Shared Lane – 50% Right-Turn Discount)</b>			
2026 Background – No BCP Extension	Yes	Yes	Yes
2026 Background – With BCP Extension	Yes	Yes	Yes
2026 Buildout – No BCP Extension	Yes	Yes	Yes
2026 Buildout – With BCP Extension	Yes	Yes	Yes
<b>2. SW Boones Ferry Road &amp; SW Norwood Road (Separate Left- and Right-Turn Lanes)</b>			
2026 Background – No BCP Extension	No	No	No
2026 Background – With BCP Extension	No	No	No
2026 Buildout – No BCP Extension	Yes	Yes	Yes
2026 Buildout – With BCP Extension	Yes	Yes	Yes

As shown in Table 8, with a shared westbound approach lane and a 50 percent right-turn discount to account for the ease of making right turns compared with left turns, all of the warrants are met under both background and buildout conditions with either land use category.

If a separate westbound right-turn lane is added, which requires acquiring right-of-way from the property on the north side of the street, the warrant results varied. The background condition would not meet any signal warrants but the buildout condition would meet the warrants with the conservative land use assumptions.<sup>4</sup>

Since the signal warrants are met for the buildout conditions with the shared westbound lane, a traffic signal is recommended as mitigation.

<sup>4</sup> Under these conditions, the assumption of land use category is shown to make a difference in the results. Using trip rates for low-rise apartments, as requested by the City, generates volumes that would meet the warrants while using trip rates for mid-rise apartments generates volumes that would not meet the warrants if a separate right-turn lane were to be provided.





## Operational Analysis

The operations of the transportation were evaluated for the morning and evening peak hours for existing conditions and the future scenarios without and with the proposed development presented in this TIS.

### Intersection Capacity Analysis

A capacity and delay analysis were conducted for each of the study intersections per the signalized and unsignalized intersection analysis methodologies in the *Highway Capacity Manual* (HCM)<sup>5</sup>. Intersections are generally evaluated based on the average control delay experienced by vehicles and are assigned a grade according to their operation. The level of service (LOS) of an intersection can range from LOS A, which indicates very little, or no delay experienced by vehicles, to LOS F, which indicates a high degree of congestion and delay. The volume-to-capacity (v/c) ratio is a measure that compares the traffic volumes (demand) against the available capacity of an intersection.

The analysis was performed using the Synchro (version 11) software which applies the HCM6 methodologies to all study intersections.

### Performance Standards

The following agency performance standards are applicable in the study area:

- The City of Tualatin requires intersections to operate at a minimum LOS D and LOS E for signalized and unsignalized intersections, respectively.
- Washington County has a mobility target of 0.90 but a v/c ratio of 0.99 or less is acceptable.

### Assumptions for Basalt Creek Parkway Extension

The Basalt Creek Parkway Extension will create a new intersection along SW Boones Ferry Road. The geometry for the intersection and the traffic control were assumed to be the same as was used for the Opening Year Minimum Build 2023 scenario. Note, volumes differ because of additional background growth and in-process traffic from developments constructed after year 2023. The peak hour factor also differs based on more recent traffic counts.

### Delay & Capacity Analysis

The LOS, delay, and v/c results of the capacity analysis are shown in Table 9 for the morning and evening peak hours and five scenarios. No changes to existing intersection configurations are assumed in this analysis except for those specifically associated with the Basalt Creek Parkway Extension project; recommended mitigation is discussed separately, after potential project impacts have been identified. Detailed calculations as well as tables showing the relationship between delay and LOS are included in Appendix D.

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<sup>5</sup> Transportation Research Board, *Highway Capacity Manual 6<sup>th</sup> Edition*, 2016.

Table 9: Capacity Analysis Summary

Intersection & Scenario	Performance Standard	Morning Peak Hour			Evening Peak Hour		
		LOS	Delay (s)	V/C	LOS	Delay (s)	V/C
<b>1. SW Boones Ferry Road &amp; SW Ibach Street/Court</b>							
2022 Existing	LOS D	B	18	0.73	B	19	0.77
2026 Background		C	22	0.80	C	27	0.87
2026 Background w/ BCPE		C	22	0.81	B	19	0.80
2026 Buildout		C	22	0.81	C	29	0.89
2026 Buildout w/ BCPE		C	22	0.82	C	20	0.81
<b>2. SW Boones Ferry Road &amp; SW Norwood Road</b>							
2022 Existing	0.99 LOS E	C	15	0.34	C	17	0.30
2026 Background		C	22	0.55	C	24	0.50
2026 Background w/ BCPE		D	28	0.62	C	24	0.50
2026 Buildout		D	34	0.75	E	38	0.70
2026 Buildout w/ BCPE		F	52	0.87	E	40	0.71
<b>3. Site Access &amp; SW Norwood Road</b>							
2026 Buildout	0.99 LOS E	B	12	0.16	B	12	0.10
2026 Buildout w/ BCPE		B	12	0.16	B	12	0.10
<b>4. SW 82<sup>nd</sup> Avenue &amp; SW Norwood Road</b>							
2022 Existing	0.99	B	12	0.10	B	11	0.06
2026 Background		B	13	0.13	B	11	0.08
2026 Background w/ BCPE		B	13	0.13	B	11	0.08
2026 Buildout		B	14	0.14	B	12	0.09
2026 Buildout w/ BCPE		B	14	0.14	B	12	0.09
<b>5. SW Boones Ferry Road &amp; Basalt Creek Parkway (future intersection)</b>							
2026 Background w/ BCPE	0.99	C	21	0.78	C	28	0.89
2026 Buildout w/ BCPE		C	23	0.81	C	31	0.93
<b>6. SW Boones Ferry Road &amp; SW Day Road</b>							
2022 Existing	0.99	C	31	0.49	C	34	0.60
2026 Background		C	31	0.58	C	34	0.67
2026 Background w/ BCPE		C	24	0.74	C	25	0.73
2026 Buildout		C	31	0.60	C	33	0.68
2026 Buildout w/ BCPE		C	24	0.74	C	24	0.75

BCPE = Basalt Creek Parkway Extension

Locations that do not meet standards are **BOLDED**.



In general, impacts from the proposed project are expected to be minor. All study intersections show operational results that meet standards under all analysis scenarios except for the intersection of SW Boones Ferry Road & SW Norwood Road. This intersection exceeds operational standards during the year 2026 buildout scenario with the Basalt Creek Parkway Extension in place during the morning peak hour.

To address these impacts, we recommend installing a traffic signal at the intersection of SW Boones Ferry Road & SW Norwood Road to mitigate the operational impacts of the project. The benefits of the recommended signal are described in the section of this report titled *Mitigation Analysis*.

## Queuing Analysis

An analysis of projected queuing was conducted for the study intersections. The 95<sup>th</sup> percentile queue lengths were estimated based on the same Synchro/SimTraffic simulations used for the delay calculations. The 95<sup>th</sup> percentile queue is a statistical measurement which indicates there is a 5 percent chance that the queue may exceed this length during the analysis period; however, given this is a probability, the 95<sup>th</sup> percentile queue length may theoretically never be met or observed in the field.

No changes to existing intersection configurations are assumed in this analysis except for those specifically associated with the Basalt Creek Parkway Extension project; recommended mitigation is discussed separately, after potential project impacts have been identified. All queues more than 5 feet longer than a multiple of 25 were rounded up. Those that were 5 feet or less were rounded down since 5 feet is equivalent to the space between queued vehicles.

The 95<sup>th</sup> percentile queue lengths reported in the simulation are presented for the three concepts in Table 10 for the morning and evening peak hours. Detailed queuing analysis reports are included in Appendix D.

**Table 10: Queuing Analysis Summary**

Movement	Effective Storage (ft)	95 <sup>th</sup> Percentile Queue Morning/Evening Peak Hour (ft)			
		2026 Background	2026 Background w/ BCPE	2026 Buildout	2026 Buildout w/BCPE
<b>1. SW Boones Ferry Road &amp; SW Ibach Street/Court</b>					
EBL	175	250/175	150/150	225/175	175/150
NBL	200	200/225	200/200	225/225	200/200
SBL	125	50/75	50/50	25/75	50/75
SBR	200	200/275	225/275	175/275	200/250
<b>2. SW Boones Ferry Road &amp; SW Norwood Road</b>					
WBLR	200	100/150	100/125	150/325	250/225
SBL	325	50/75	50/75	50/100	50/100
<b>3. Site Access &amp; SW Norwood Road</b>					
WBLT	330	-	-	0/25	25/25
NBLR	70	-	-	75/50	75/50



Table 10: Queuing Analysis Summary

Movement	Effective Storage (ft)	95 <sup>th</sup> Percentile Queue Morning/Evening Peak Hour (ft)			
		2026 Background	2026 Background w/ BCPE	2026 Buildout	2026 Buildout w/BCPE
<b>4. SW 82<sup>nd</sup> Avenue &amp; SW Norwood Road</b>					
NB	100	50/50	50/50	50/50	50/50
SBLT	60	0/25	0/25	0/25	0/25
<b>5. SW Boones Ferry Road &amp; Basalt Creek Parkway (future intersection)</b>					
EBL	>1,000	-	75/125	-	75/125
EBR	>1,000	-	475/450	-	450/475
NBL	575	-	375/500	-	400/525
<b>6. SW Boones Ferry Road &amp; SW Day Road</b>					
EBLT	110	75/75	50/50	75/75	50/50
EBR	500	200/275	125/150	225/275	150/175
NBL	500	400/375	250/275	375/400	275/300

BCPE = Basalt Creek Parkway Extension

*BOLDED results show projected queues which exceed current available storage*

In general, changes in 95<sup>th</sup> percentile queuing between the year background and buildout conditions are anticipated to be small, one vehicle or two vehicles. One intersection is anticipated to have significant growth in queues: SW Boones Ferry Road & SW Norwood Road. Buildout conditions show queuing on the westbound approach fluctuates considerably from simulation to simulation but is sometimes expected to extend past the first driveway under build conditions.

To address these impacts, we recommend installing a traffic signal at the intersection of SW Boones Ferry Road & SW Norwood Road to mitigate the operational impacts of the project. The benefits of the recommended signal are described in the section of this report titled *Mitigation Analysis*.



## Mitigation Analysis

The intersection of SW Boones Ferry Road & SW Norwood Road is expected to exceed mobility targets under one buildout scenario. Both the preliminary and detailed signal warrant analysis show that a signal is warranted at the intersection with a westbound shared-lane approach. The operational results and 95<sup>th</sup> percentile queues for the 2026 buildout condition with these mitigation options are summarized in Table 11. Detailed analysis and queuing reports are included in Appendix D.

Table 11: SW Boones Ferry Road & SW Norwood Road with Signal and No Widening

Measure	Condition/ Potential Improvement			
	2026 Buildout		2026 Buildout w/ BCPE <sup>1</sup>	
	Morning Peak	Evening Peak	Morning Peak	Evening Peak
<b>Overall Intersection Operations</b>				
v/c	0.63	0.64	0.68	0.64
LOS	B	B	B	B
Delay (s)	14	13	15	12
<b>Operations on Westbound Approach</b>				
v/c	0.72	0.74	0.68	0.66
LOS	C	C	C	C
Delay (s)	19	21	22	21
Movement (Storage <sup>2</sup> )	Condition/ Potential Improvement			
	2026 Buildout		2026 Buildout w/ BCPE <sup>1</sup>	
	Morning Peak	Evening Peak	Morning Peak	Evening Peak
<b>50<sup>th</sup>/95<sup>th</sup> Percentile Queues (ft)</b>				
WBLR (200 ft)	75/150	75/125	75/150	75/125
NBT (100 ft)	150/225	175/275	150/250	150/275
NBR (85 ft)	25/100	50/150	25/100	50/150
SBL (325 ft)	50/100	100/150	50/75	75/125
SBT (230 ft)	75/125	100/200	75/150	125/225

Notes:

1. BCPE = Basalt Creek Parkway Extension

2. Storage lengths reflect the distance to the closest driveway.

**BOLDED** results show projected queues which exceed current available storage



## Findings

The results of the operational analysis show that installing a traffic signal at the intersection, as warranted, will result in an overall intersection v/c ratio that would meet the City mobility standard of LOS D and the County mobility target of 0.90. On the westbound approach, delays will be shorter than background conditions without the project.

The queuing analysis with the recommended signal shows that the 95<sup>th</sup> percentile queues on the shared westbound approach will not extend to the first driveway on SW Norwood Road. Furthermore, analysis (see Appendix D) shows that with five years of additional growth, in 2031, westbound queues will still not extend to the first driveway on SW Norwood Road. These results support a conclusion a separate right-turn is not needed to accommodate the proposed development.

The queuing analysis shows that, when the intersection is signalized, the northbound queues in the through lane will sometimes block access to the northbound right-turn lane; however, the northbound right-turn is not necessary to meet operational thresholds. Queues for the northbound through lane will extend past the first driveway on the west side of SW Boones Ferry Road, which currently serves a single-family residence.

## Recommendations

Based on these findings, a traffic signal is recommended at the intersection of SW Boones Ferry Road & SW Norwood Road but no additional travel lanes are needed to accommodate the proposed development. Therefore, widening SW Norwood Road to include a westbound right-turn lane or widening SW Boones Ferry Road to lengthen the northbound right-turn lane should not occur until the adjacent parcels redevelop.



## Transportation Planning Rule

The Transportation Planning Rule (TPR) is in place to ensure that the transportation system can support possible increases in traffic intensity that could result from changes to adopted plans and land-use regulations.

The Norwood Apartments project proposes a zone change for a 9.2-acre parcel of land in Tualatin. The 9.2-acre site consists of Tax Lot 2S135D 000108, which is 1.0 acres and will be zoned Medium Low Density Residential (RML) upon annexation and 8.2 acres of Tax Lot 2S135D 000106, which is currently zone Institutional (IN). The site is proposed for rezoning to High Density/High Rise Residential (RH-HR).

The TPR requires an analysis of a reasonable worst-case development scenario of the site under existing and proposed zoning. If trip generation under the proposed zoning is greater than it would be under the existing zoning, then operational analysis is necessary to demonstrate that the change in zoning can be accommodated or mitigation will be necessary.

## Trip Generation

The assumptions and potential development scenarios are described below.

### Existing Zoning Assumptions

The Tualatin Development Code (TDC) describes allowed uses under RML zoning in Chapter 41 and the IN zoning in Chapter 49. In considering development scenarios for the TPR analysis, only permitted uses in the zone were considered.

#### *Medium Low Density Residential (RML)*

For Lot 108 with the RML zoning, residential development is the only permitted use that will generate significant traffic. TDC Table 41-3 describes the permitted densities for different types of residential development which range from 10 to 25 units per acre. For a reasonable worst-case analysis scenario, the site was assumed accommodate 25 townhomes, the maximum density that could be achieved.

#### *Institutional (IN)*

For Lot 106 with the IN zoning, allowed uses include assembly facilities (limited to places of religious worship), community services (limited to public facilities such as community recreation buildings or indoor aquatic centers), schools, and government offices. Allowed infrastructure uses include government-owned parks, sports fields, and tennis courts. Since the adjacent site to the west already includes a church and the remainder of the parcel will include a sanctuary/place of assembly, another church was not considered a reasonable option. Neither was a government office, which tend to be centrally located within a community. Although a community recreation center could be sited at this location, other nearby facilities make another recreation center at this location unlikely; therefore, a private school was selected for the reasonable worst-case analysis:

For a potential school use on the 8.2-acre site, the density of 31 students per acre from the annexation analysis was used. Based on this rate, a school accommodating approximately 250 students could be developed. For a reasonable worst-case analysis scenario, a private school offering kindergarten through 8<sup>th</sup> grade was assumed.

## Proposed Zoning Assumptions

For the proposed RH-HR zoning, residential development is the only permitted use that will generate significant traffic. TDC Table 44-3 describes the permitted densities for different types of residential development. At the maximum density of 30 units/acre, the site could accommodate 276 apartments. Land use code 220, *Multifamily Housing (Low-Rise)* was used to estimate the reasonable worst case, which is consistent the proposed development.<sup>6</sup>

## Trip Generation Comparison

To estimate trips that will be generated by the redevelopment, trip rates from the *Trip Generation Manual* were used based on the number of dwelling units (DU) or the number of students. The land use assumptions and trip generation estimates are summarized in Table 12.

**Table 12: Trip Generation Comparison of Existing and Proposed Zoning**

Option- Land Use (Code)	Intensity	Morning Peak Hour			Evening Peak Hour			Weekday Trips
		In	Out	Total	In	Out	Total	
<b>Existing Zoning</b>								
Lot 108 (1 Acre): RML Zoning (After Annexation)								
Single-Family Attached Housing (LUC 215)	25 DU	4	8	12	8	6	14	180
Lot 106 (8.2 Acres): IN Zoning								
Private School: K-8 (LUC 530)	250 Students	142	111	253	30	35	65	1,028
Combined Lots 106 & 108 (9.2 Acres) Worst Case								
Townhouses + K-8 School		146	119	265	38	41	79	1,208
<b>Proposed Zoning</b>								
Lots 106 & 108 (9.2 Acres): RH-HR Zoning								
Multifamily Housing: Low-Rise (221)	276 DU	26	82	108	88	51	139	1,844
Net Change with Proposed Zoning		-120	-37	-157	50	10	60	636

As shown in Table 12, the reasonable worst-case scenarios under the existing zoning would likely generate a greater number of trips during the morning peak hour, when congestion associated with schools is most prevalent. However, the proposed zoning could generate a greater number of trips in the evening peak hour. Therefore, a long-range assessment of peak hour conditions is needed for the TPR evaluation. Although the proposed zoning would only generate more traffic than existing zoning in the evening peak hour, the morning peak hour conditions were also evaluated.

<sup>6</sup> As explained in a prior footnote, the four-story project qualifies as ITE land use code is 221, *Multifamily Housing (Mid-Rise)*, which includes trip rates that are generally lower during the evening peak and over the course of the day than those for land use code 220, *Multifamily Housing (Low-Rise)*. Using the low-rise multifamily housing option provides a more conservative estimate of trip generation.



## Future Traffic Volumes

For a TPR analysis, the forecasts should be based on “projected conditions measured at the end of the planning period identified in the adopted TSP.” Although the current Tualatin TSP has a forecast year of 2035, it was amended to include the Basalt Creek Concept Plan, which has a forecast year of 2040. Therefore, the future year for the TPR analysis was assumed to be 2040.

To estimate future 2040 volumes, two sources of data were reviewed. One is the year 2040 regional travel demand model forecasts obtained from Washington County and Metro. The other was the “Washington County Basalt Creek Extension – Traffic Analysis Memorandum,” dated January 16, 2020. After careful review of the various forecasts, a simple growth rate was used to estimate volumes in the study area.<sup>7</sup>

The long-term growth rates that best matched the future link forecasts from the other planning efforts were 0.5 percent per year for through traffic on SW Boones Ferry Road and 2.0 percent per year for all other movements. These growth rates were applied to the 2026 background condition volumes with the Basalt Creek Parkway Extension to estimate the 2040 existing zoning scenario.

The traffic generated by each zoning scenario was then added to the background growth to estimate the 2040 zoning scenario volumes. The resulting peak hour volumes are shown in Figure 10 for the existing zoning and Figure 11 for the proposed zoning.

## Operational Analysis

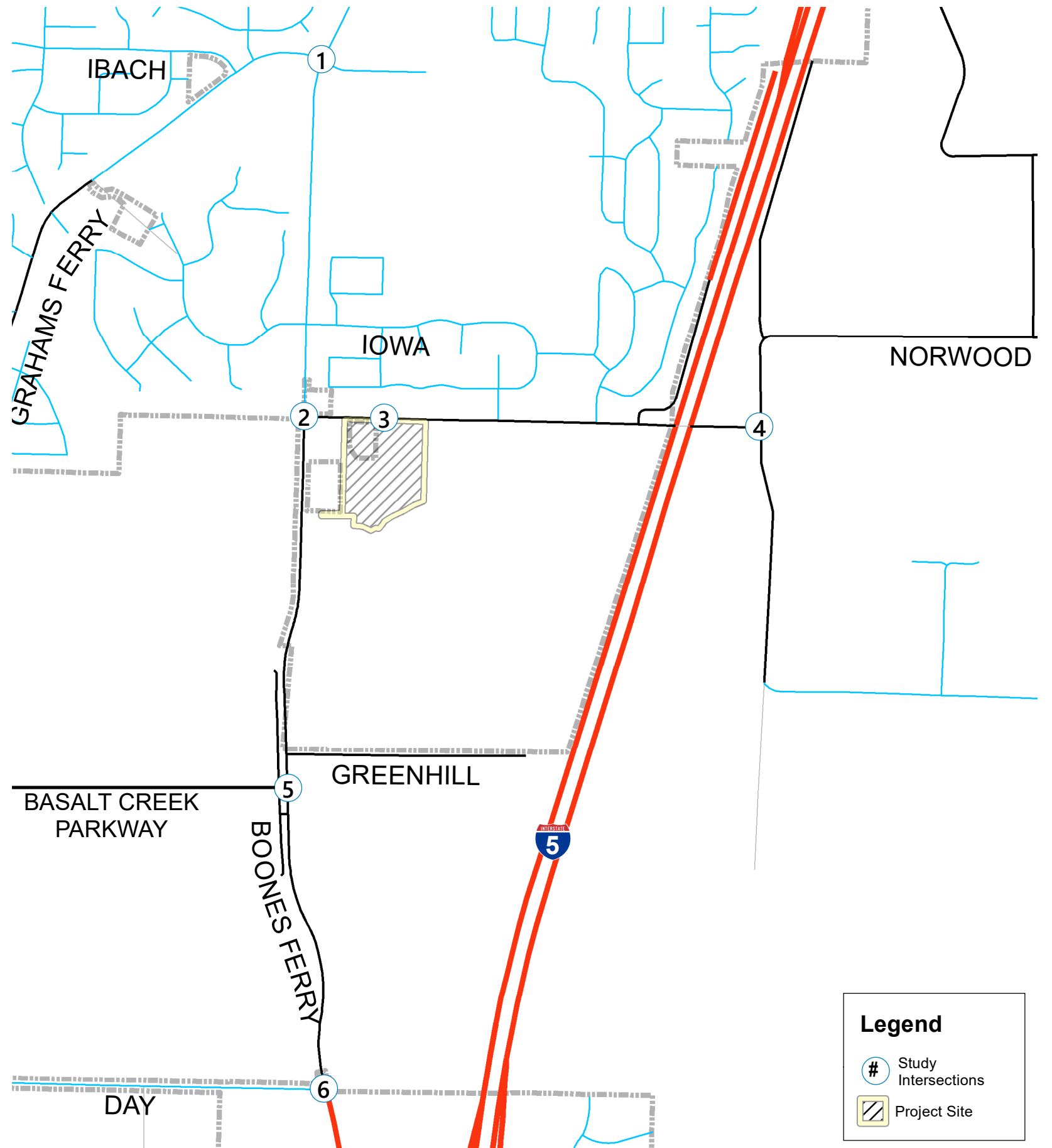
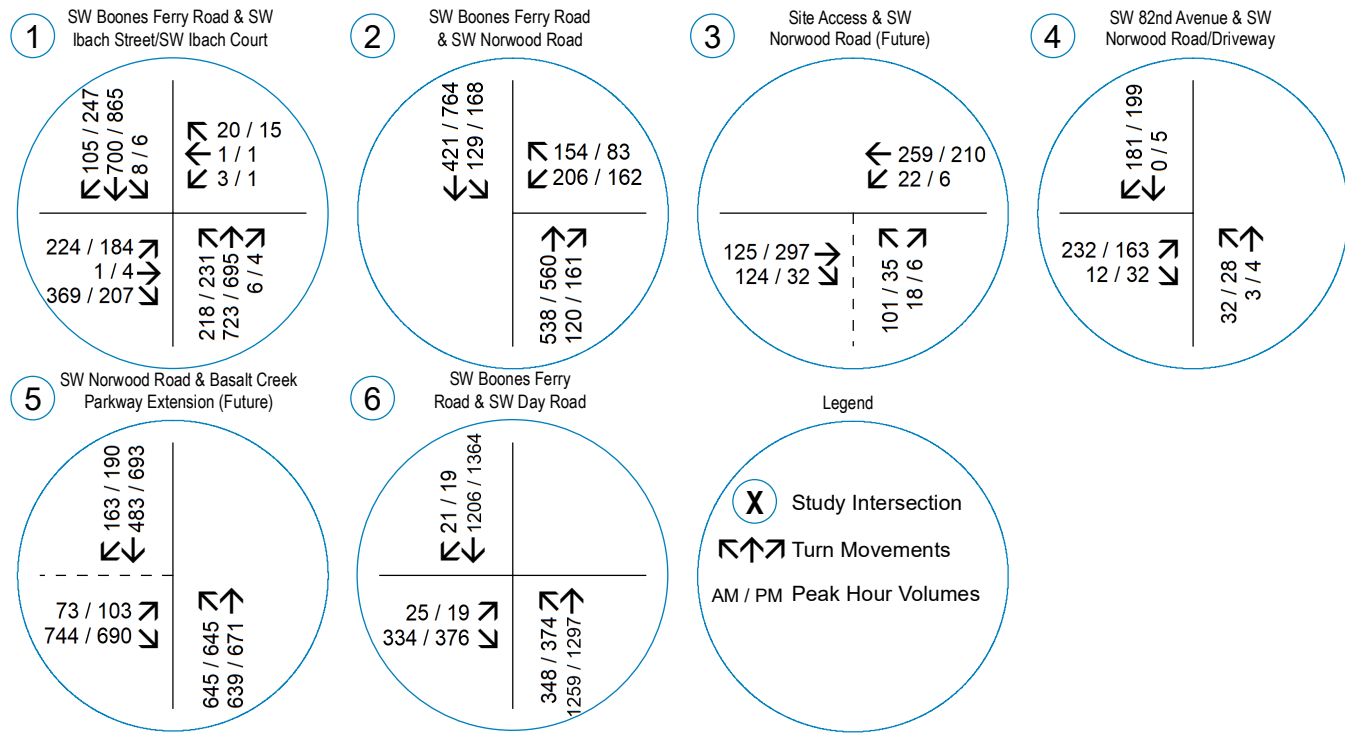
For the 2040 future operations, the following traffic control and lane configuration changes were assumed:

- The current lane configurations on SW Boones Ferry Road at the intersections with SW Norwood Road and SW Ibach Street were assumed. The TSP assumes that SW Boones Ferry Road will generally remain two to three lanes north of SW Norwood Road.
- The intersection of SW Boones Ferry Road & SW Norwood Road was assumed to be unsignalized since the adopted Tualatin TSP does not identify a signal at the intersection.
- To accommodate the long-term demand under the 2040 existing scenario, SW Boones Ferry Road was assumed to be widened to a five-lane section ending north of the Basalt Creek Parkway Extension. This assumption is consistent with the long-term build configuration presented in the January 16, 2020, memorandum for Basalt Creek Parkway Extension and the Washington County TSP. Specific intersection configurations are consistent with assumptions in these documents.

The resulting evening peak hour analysis for the 2040 existing zoning scenario and the 2040 proposed zoning scenario is summarized in Table 13.

---

<sup>7</sup> The growth rate method was selected because forecasting model-based methods were producing future volumes that were lower than 2026 buildout volumes for several critical movements in the study area.



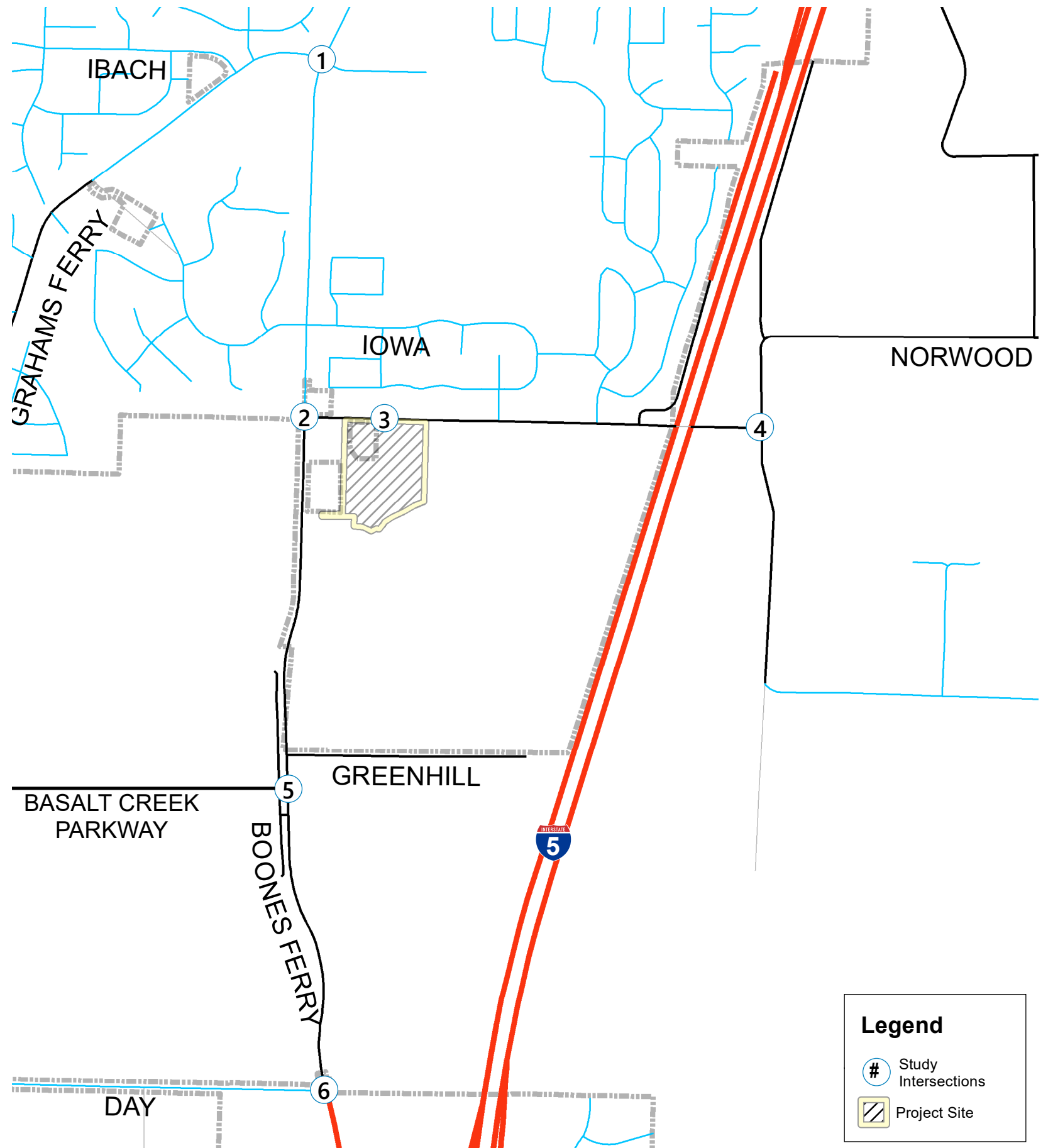
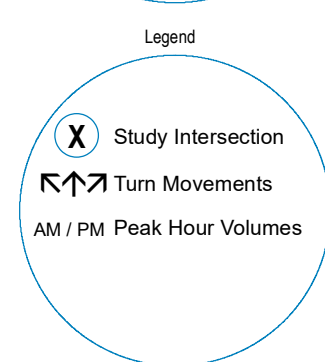
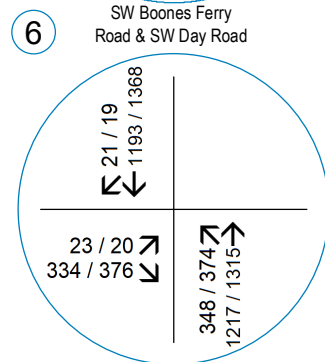
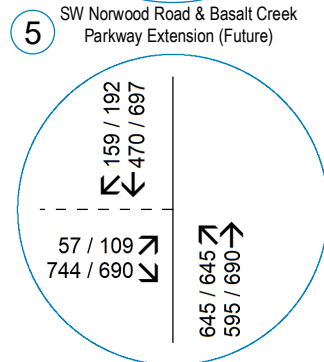
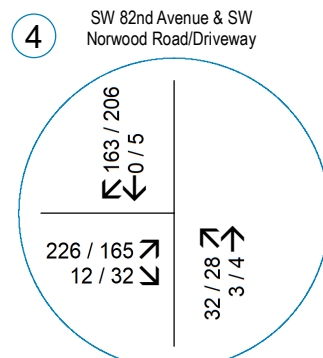
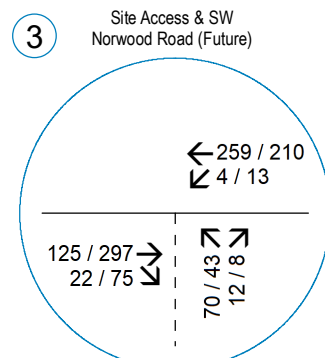
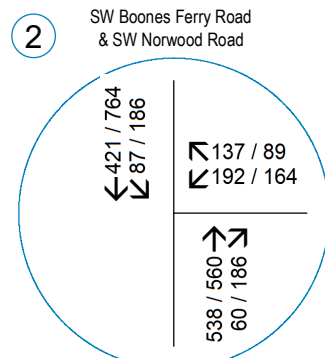
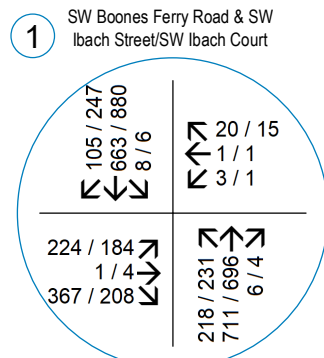


Table 13: Year 2040 Peak Hour Capacity Analysis Summary

Intersection	Performance Standard	Morning Peak Hour			Evening Peak Hour		
		LOS	Delay (s)	V/C	LOS	Delay (s)	V/C
<b>1. SW Boones Ferry Road &amp; SW Ibach Street/Court</b>							
Existing Zoning	LOS D	C	34	0.83	C	29	0.90
Proposed Zoning		C	31	0.81	C	29	0.91
<b>2. SW Boones Ferry Road &amp; SW Norwood Road</b>							
Existing Zoning	0.99	F	100	1.07	F	72	0.91
Proposed Zoning	LOS E	F	56	0.90	F	91	0.99
<b>3. Site Access &amp; SW Norwood Road</b>							
Existing Zoning	0.99	B	14	0.25	B	13	0.09
Proposed Zoning	LOSE	B	12	0.15	B	14	0.12
<b>4. SW 82nd Avenue &amp; SW Norwood Road</b>							
Existing Zoning	0.99	B	15	0.16	B	13	0.11
Proposed Zoning		B	15	0.15	B	13	0.11
<b>5. S5\W Boones Ferry Road &amp; Basalt Creek Parkway</b>							
Existing Zoning	0.99	B	20	0.88	C	25	0.87
Proposed Zoning		B	19	0.88	C	25	0.87
<b>6. SW Boones Ferry Road &amp; SW Day Road</b>							
Existing Zoning	0.99	B	18	0.78	B	18	0.84
Proposed Zoning		B	18	0.77	B	18	0.84

Locations that do not meet standards are **BOLDED**.

As shown in Table 13, changes in operations at all intersections will be the same or minimally better during the morning and the same or minimally worse during the evening with the proposed zoning. With either zoning scenario, all intersections will continue to meet agency standards except for intersection of SW Boones Ferry Road & SW Norwood Road. This intersection will operate at LOS F for under both the existing zoning and proposed zoning scenarios if it were to remain unsignalized. In the morning peak hour, conditions would be worse under existing zoning. In the evening peak hour, conditions would be worse with the proposed zoning.

Since the proposed zoning would worsen conditions during the evening peak hour, mitigation at the intersection of SW Boones Ferry Road & SW Norwood Road will be necessary. A traffic signal is proposed to mitigate the impact. As shown in Table 14, the signal would improve operations to meet standards.



Table 14: Year 2040 Peak Hour Capacity Analysis with Mitigation

Intersection	Performance Standard	Morning Peak Hour			Evening Peak Hour		
		LOS	Delay (s)	V/C	LOS	Delay (s)	V/C
1. SW Boones Ferry Road & SW Norwood Road							
Existing Zoning	0.99	B	18	0.71	B	14	0.69
Proposed Zoning	LOS D	B	15	0.67	B	13	0.73

## TPR Findings

The applicable elements of the TPR are each quoted directly in italics below, with responses following.

### 660-012-0060

(1) *If an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation (including a zoning map) would significantly affect an existing or planned transportation facility, then the local government must put in place measures as provided in section (2) of this rule, unless the amendment is allowed under section (3), (9) or (10) of this rule. A plan or land use regulation amendment significantly affects a transportation facility if it would:*

(a) *Change the functional classification of an existing or planned transportation facility (exclusive of correction of map errors in an adopted plan);*

**Response:** Subsection (a) is not triggered because the functional classification of an existing or planned transportation facility is not changed by the proposal.

(b) *Change standards implementing a functional classification system; or*

**Response:** Subsection (b) is not triggered because the standards for implementing a functional classification system are not changed by the proposal.

(c) *Result in any of the effects listed in paragraphs (A) through (C) of this subsection. If a local government is evaluating a performance standard based on projected levels of motor vehicle traffic, then the results must be based on projected conditions measured at the end of the planning period identified in the adopted TSP. As part of evaluating projected conditions, the amount of traffic projected to be generated within the area of the amendment may be reduced if the amendment includes an enforceable, ongoing requirement that would demonstrably limit traffic generation, including, but not limited to, transportation demand management. This reduction may diminish or completely eliminate the significant effect of the amendment.*

(A) *Types or levels of travel or access that are inconsistent with the functional classification of an existing or planned transportation facility;*

(B) *Degrade the performance of an existing or planned transportation facility such that it would not meet the performance standards identified in the TSP or comprehensive plan; or*

- (C) *Degrade the performance of an existing or planned transportation facility that is otherwise projected to not meet the performance standards identified in the TSP or comprehensive plan.*

**Response:** Subsection (c) would be triggered by the proposed zone change. The operational analysis with the proposed zoning would further degrade an intersection that would be performing below agency standards under existing zoning; the SW Boones Ferry Road & Norwood Road intersection, as summarized in Table 13. Therefore, the proposed zoning would have a significant effect. To address the effect, a traffic signal is proposed at the intersection of SW Boones Ferry Road & SW Norwood Road as mitigation. This proposal is consistent with the mitigation recommended to address the impacts of the proposed development in the TIA.

(2) *If a local government determines that there would be a significant effect, then the local government must ensure that allowed land uses are consistent with the performance standards of the facility measured or projected at the end of the planning period identified in the adopted TSP through one or a combination of the remedies listed in subsections (a) through (e) below, unless the amendment meets the balancing test in subsection (e) or qualifies for partial mitigation in section (11) of this rule. A local government using subsection (e), section (3), section (10) or section (11) to approve an amendment recognizes that additional motor vehicle traffic congestion may result and that other facility providers would not be expected to provide additional capacity for motor vehicles in response to this congestion.*

(a) *Adopting measures that demonstrate allowed land uses are consistent with the performance standards of the transportation facility.*

**Response:** This action is not recommended.

(b) *Amending the TSP or comprehensive plan to provide transportation facilities, improvements, or services adequate to support the proposed land uses consistent with the requirements of this division. Such amendments shall include a funding plan or mechanism consistent with section (4) or include an amendment to the transportation finance plan so that the facility, improvement, or service will be provided by the end of the planning period.*

**Response:** The City of Tualatin has indicated that they will be adding a traffic signal at the intersection of SW Boones Ferry Road & SW Norwood Road as an element of the TSP. The addition is anticipated to occur with an update to the TSP scheduled for adoption in 2024. Funding of this improvement is anticipated to come from Transportation System Development Charges. However, this future amendment of the TSP is not relied upon in this application to comply with the TPR. Instead, a traffic signal will be installed at the intersection of SW Boones Ferry Road & SW Norwood Road at the time of development as mitigation, as provided in OAR 660-12-0660(2)(d).

(c) *Amending the TSP to modify the performance standards of the transportation facility.*

**Response:** This action is not recommended.

(d) *Providing other measures as a condition of development or through a development agreement or similar funding method, including, but not limited to, transportation system management measures or minor transportation improvements. Local governments shall, as part of the amendment, specify when measures or improvements provided pursuant to this subsection will be provided.*

**Response:** A condition of approval that requires the installation of a traffic signal at the intersection of SW Boones Ferry Road & SW Norwood Road at the time of development will mitigate the impact of the rezone , and as shown in Table 14, the intersection will be consistent with performance standards at the end of the planning period.

- (e) *Providing improvements that would benefit modes other than the significantly affected mode, improvements to facilities other than the significantly affected facility, or improvements at other locations, if:*
  - (A) *The provider of the significantly affected facility provides a written statement that the system-wide benefits are sufficient to balance the significant effect, even though the improvements would not result in consistency for all performance standards;*
  - (B) *The providers of facilities being improved at other locations provide written statements of approval; and*
  - (C) *The local jurisdictions where facilities are being improved provide written statements of approval.*

**Response:** This action is not recommended.

### **Conclusion**

Based on this comparison of reasonable worst case trip generation, the proposed zoning would have a significant effect that can be mitigated with a traffic signal at the intersection of SW Boones Ferry Road & SW Norwood Road. Accordingly, we recommend a condition of approval requiring installation of a traffic signal at SW Boones Ferry Road & SW Norwood Road at the time of development. This proposal is consistent with the mitigation recommended to address the impacts of the proposed development in the TIA.



# Conclusions

## Proposed Zone Change Findings

- To understand the potential impacts of the requested zone change, the reasonable worst-case land uses under existing and proposed zoning were compared. Under existing zoning, the residentially-zoned land was assumed to redevelop to its maximum density with 25 attached homes while the institutionally-zoned land was assumed to develop with a 250-student private school. The proposed development of 276 apartments is the maximum density under the proposed zoning.
- The existing zoning would likely generate a greater number of trips during the morning peak hour, when congestion associated with schools is most prevalent. However, the proposed zoning could generate a greater number of trips in the evening peak hour; thus, a TPR analysis was performed.
- A comparison of long-term operations with the existing and proposed zoning shows that the proposed zoning would have a significant effect that can be mitigated with a traffic signal at the intersection of SW Boones Ferry Road & SW Norwood Road, to be installed by the applicant at the time of development. This proposal is consistent with the mitigation recommended to address the impacts of the proposed development in the TIA.

## Traffic Impact Analysis Findings

- The Norwood Apartments project could be characterized as two different land use categories, low-rise multifamily housing or mid-rise multifamily. This analysis uses the more conservative (e.g., assumes a higher level of traffic) land use category, low-rise multifamily housing, as requested by the City of Tualatin. The trip generation calculations show that the proposed Norwood Apartments development is estimated to generate a net increase of 107 trips during the morning peak hour, 137 trips during the evening peak hour, and 1,826 daily trips during the average weekday.
- In general, impacts from the proposed project are expected to be minor. All study intersections show operational results that meet standards under all analysis scenarios except for the intersection of SW Boones Ferry Road & SW Norwood Road if it remains unsignalized. However, with the recommended signal installation, this intersection will be improved to meet agency standards.
- In general, changes in 95<sup>th</sup> percentile queuing between the year background and buildout conditions are anticipated to be small, one vehicle or two vehicles. As with the operational findings, one intersection is anticipated to have significant growth in queues: SW Boones Ferry Road & SW Norwood Road. However, with the recommended signal installation, queuing will be consistently improved.
- A traffic signal is recommended at the intersection of SW Boones Ferry Road & SW Norwood Road. With a signal but no widening on SW Norwood Road, the overall intersection v/c ratio will meet the City mobility standard of LOS D and the County mobility target of 0.90. On the westbound approach, delays will be shorter than background conditions without the proposed project and recommended traffic signal. The queuing analysis shows that even with five years of additional growth, the 95<sup>th</sup> percentile queues on the shared westbound approach will not extend to the first driveway on SW Norwood Road. Therefore, widening SW Norwood Road to include a westbound right-turn lane or widening SW Boones Ferry Road to lengthen the northbound right-turn lane should not occur until the adjacent parcels redevelop.



- Traffic signal warrants are met under both background and buildout conditions at the intersection of SW Boones Ferry Road & SW Norwood Road. Installing a traffic signal at the intersection of SW Boones Ferry Road & SW Norwood Road is a recommended mitigation measure.
- Traffic signal warrants are not met at the site access intersection with SW Norwood Road or at the unsignalized intersection of SW Norwood Road & SW 82nd Avenue.
- Left-turn lane warrants are not met at the proposed site access intersection on SW Norwood Road for either peak hour under the 2026 buildout scenario for any analysis period.
- At the proposed site accesses on SW Norwood Road, dense foliage restricts existing sight lines; however, preliminary assessment of horizontal and vertical curvature indicate that the 500-foot sight distance requirement is expected to be satisfied.
- On SW Norwood Road, the minimum access spacing standard of 100 feet will be met with construction of the proposed site access.
- Based on a review of the most recent five years of available crash data, no significant trends or crash patterns were identified at any of the study intersections. Accordingly, no safety mitigation is recommended per the crash data analysis.



## Appendix A – Site Information

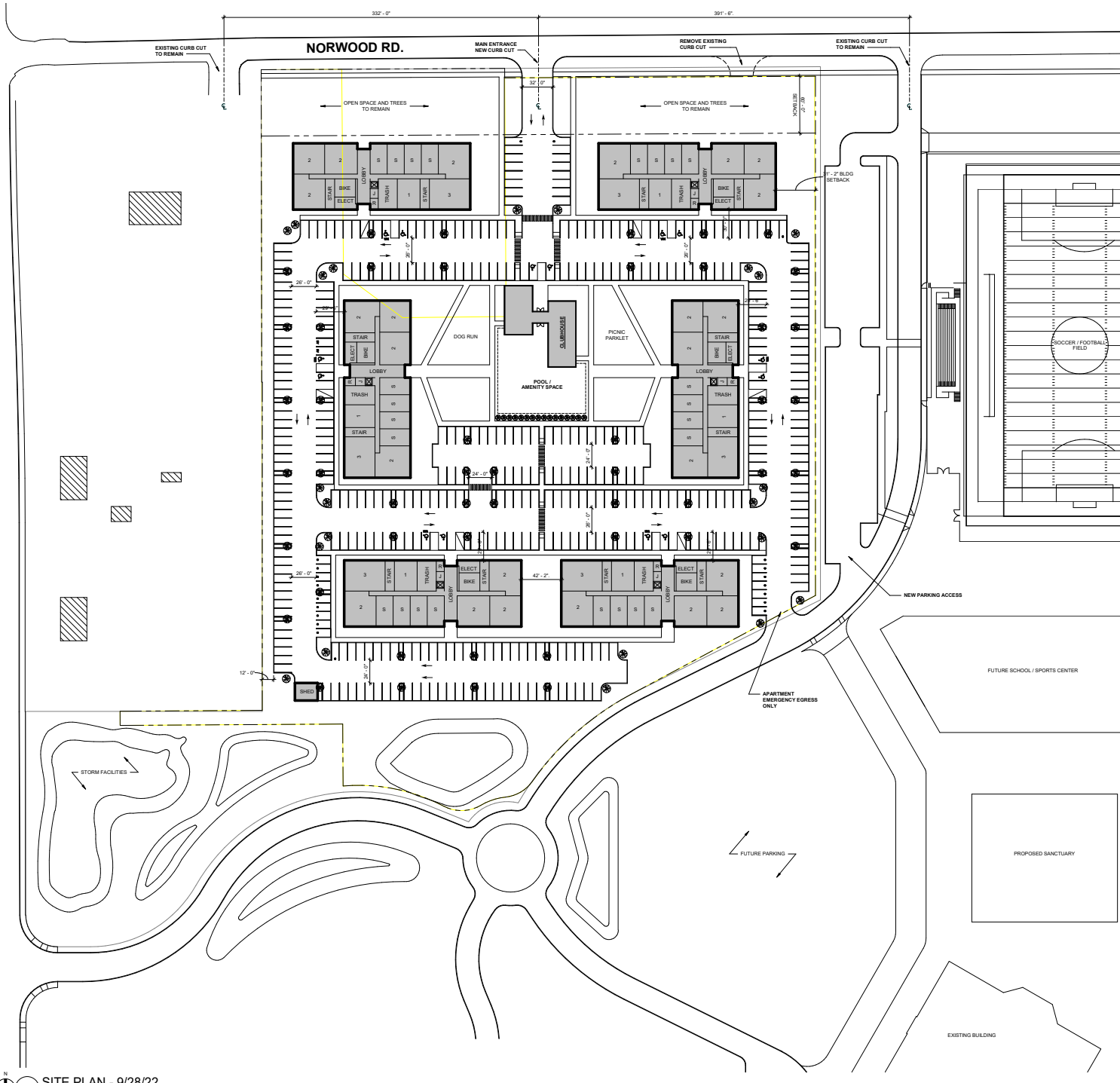
Site Plan

Trip Generation Calculations



BOONES FERRY RD.

NORWOOD RD.



**PROGRAM SUMMARY**

9.2 ACRE SITE

(6) 4-STORY RESIDENTIAL BUILDINGS  
TOTAL UNITS = 276 (30 DU/ACRE)  
TOTAL GSF = APPROX. 314,072

*See preliminary plans to be submitted with the Architectural Review application for additional detail.*



LSW Architects, PC  
610 Esther St., Suite 200  
Vancouver, WA 98660  
360.684.8571  
LSW-Architects.com

preliminary

Drawn by:  
Author  
Checked by:  
Checker  
New job number:  
2022-0020

NORWOOD APARTMENTS  
VISTA RESIDENTIAL PARTNERS  
Tualatin, OR

Issue Date:  
Issue Date:  
Project Status:  
Revisions:

ANY REPRODUCTION NEEDS BECOME FROM  
THE ORIGINAL ARCHITECTURAL DRAWINGS  
PREPARED BY LSW ARCHITECTS, PC

SITE PLAN

A-004

Scale: 1" = 40'-0"

REVISED 9/28/22 AM

1 SITE PLAN - 9/28/22  
SCALE: 1" = 40'-0"



TRIP GENERATION CALCULATIONS  
 Source: Trip Generation Manual, 11th Edition

*Land Use:* Single-Family Detached Housing  
*Land Use Code:* 210  
*Land Use Subcategory:* All Sites  
*Setting/Location:* General Urban/Suburban  
*Variable:* Dwelling Units  
*Trip Type:* Vehicle  
*Formula Type:* Rate  
*Variable Quantity:* 2

WARNING: Variable Quantity is less than Minimum Survey Size for Peak Hours

**AM PEAK HOUR**

*Trip Rate:* 0.7

	Enter	Exit	Total
Directional Split	26%	74%	
Trip Ends	0	1	1

**PM PEAK HOUR**

*Trip Rate:* 0.94

	Enter	Exit	Total
Directional Split	63%	37%	
Trip Ends	1	1	2

**WEEKDAY**

*Trip Rate:* 9.43

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	9	9	18

**SATURDAY**

*Trip Rate:* 9.48

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	9	9	18



TRIP GENERATION CALCULATIONS  
 Source: Trip Generation Manual, 11th Edition

*Land Use:* Multifamily Housing (Low-Rise)  
*Land Use Code:* 220  
*Land Use Subcategory:* Not Close to Rail Transit  
*Setting/Location:* General Urban/Suburban  
*Variable:* Dwelling Units  
*Trip Type:* Vehicle  
*Formula Type:* Equation  
*Variable Quantity:* **276**

AM PEAK HOUR

*Trip Rate:* =0.31\*(\$X5)+22.85

	Enter	Exit	Total
Directional Split	24%	76%	
Trip Ends	26	82	108

PM PEAK HOUR

*Trip Rate:* =0.43\*(\$X5)+20.55

	Enter	Exit	Total
Directional Split	63%	37%	
Trip Ends	88	51	139

WEEKDAY

*Trip Rate:* =6.41\*(\$X5)+75.31

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	922	922	1,844

SATURDAY

*Trip Rate:* =4.55\*(\$X5)

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	628	628	1,256

*Caution: Small Sample Size*



TRIP GENERATION CALCULATIONS  
 Source: Trip Generation Manual, 11th Edition

*Land Use:* Single-Family Attached Housing  
*Land Use Code:* 215  
*Land Use Subcategory:* All Sites  
*Setting/Location:* General Urban/Suburban  
*Variable:* Dwelling Units  
*Trip Type:* Vehicle  
*Formula Type:* Rate  
*Variable Quantity:* 25

AM PEAK HOUR

*Trip Rate:* 0.48

	Enter	Exit	Total
Directional Split	31%	69%	
Trip Ends	4	8	12

PM PEAK HOUR

*Trip Rate:* 0.57

	Enter	Exit	Total
Directional Split	57%	43%	
Trip Ends	8	6	14

WEEKDAY

*Trip Rate:* 7.2

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	90	90	180

SATURDAY

*Trip Rate:* 8.76

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	110	110	220



TRIP GENERATION CALCULATIONS  
 Source: Trip Generation Manual, 11th Edition

Land Use: Private School (K-8)  
 Land Use Code: 530  
 Land Use Subcategory: All Sites  
 Setting/Location: General Urban/Suburban  
 Variable: Students  
 Trip Type: Vehicle  
 Variable Quantity: **250**

AM PEAK HOUR

Trip Rate: 1.01

	Enter	Exit	Total
Directional Split	56%	44%	
Trip Ends	142	111	253

PM PEAK HOUR

Trip Rate: 0.26

	Enter	Exit	Total
Directional Split	46%	54%	
Trip Ends	30	35	65

WEEKDAY

Trip Rate: 4.11

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	514	514	1,028

AFTERNOON PEAK HOUR

Trip Rate: 0.6

	Enter	Exit	Total
Directional Split	47%	53%	
Trip Ends	71	79	150

Caution: Small Sample Size



TRIP GENERATION CALCULATIONS  
 Source: Trip Generation Manual, 11th Edition

*Land Use:* Multifamily Housing (Low-Rise)  
*Land Use Code:* 220  
*Land Use Subcategory:* Not Close to Rail Transit  
*Setting/Location:* General Urban/Suburban  
*Variable:* Dwelling Units  
*Trip Type:* Vehicle  
*Formula Type:* Equation  
*Variable Quantity:* **276**

**AM PEAK HOUR**

*Trip Rate:* =0.31\*(\$X5)+22.85

	Enter	Exit	Total
Directional Split	24%	76%	
Trip Ends	<b>26</b>	<b>82</b>	<b>108</b>

**PM PEAK HOUR**

*Trip Rate:* =0.43\*(\$X5)+20.55

	Enter	Exit	Total
Directional Split	63%	37%	
Trip Ends	<b>88</b>	<b>51</b>	<b>139</b>

**WEEKDAY**

*Trip Rate:* =6.41\*(\$X5)+75.31

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	<b>922</b>	<b>922</b>	<b>1,844</b>

**SATURDAY**

*Trip Rate:* =4.55\*(\$X5)

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	<b>628</b>	<b>628</b>	<b>1,256</b>

*Caution: Small Sample Size*



## Appendix B – Volumes

Traffic Counts

In-Process Trips





(303) 216-2439

www.alltrafficdata.net

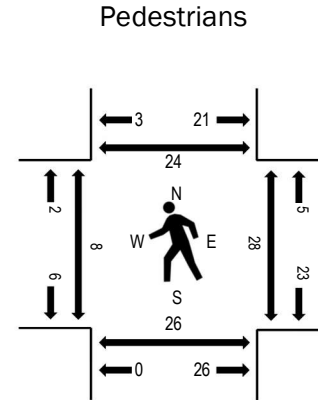
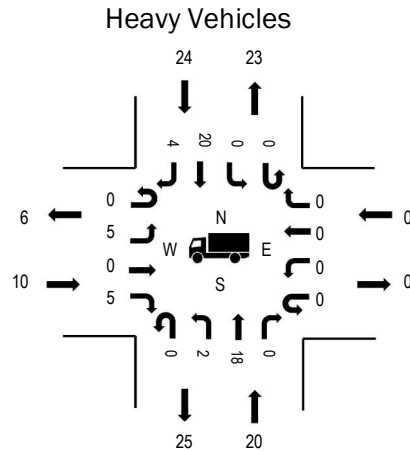
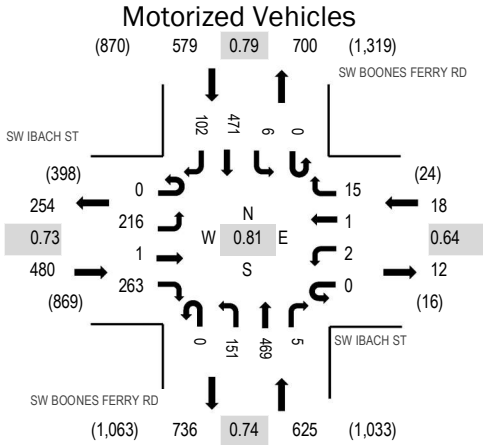
Location: 1 SW BOONES FERRY RD & SW IBACH ST AM

Date: Thursday, October 20, 2022

Peak Hour: 08:00 AM - 09:00 AM

Peak 15-Minutes: 08:45 AM - 09:00 AM

Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	2.1%	0.73
WB	0.0%	0.64
NB	3.2%	0.74
SB	4.1%	0.79
All	3.2%	0.81

Traffic Counts - Motorized Vehicles

Interval Start Time	SW IBACH ST Eastbound				SW IBACH ST Westbound				SW BOONES FERRY RD Northbound				SW BOONES FERRY RD Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	12	0	3	0	0	0	1	0	3	19	0	0	0	11	3	52	1,094
7:05 AM	0	14	0	4	0	0	0	0	0	9	32	1	0	0	13	5	78	1,172
7:10 AM	0	15	0	7	0	0	0	0	0	3	21	0	0	0	11	2	59	1,196
7:15 AM	0	26	0	6	0	0	0	1	0	5	18	0	0	0	15	2	73	1,243
7:20 AM	0	15	0	3	0	0	0	1	0	6	25	0	0	0	12	9	71	1,291
7:25 AM	0	23	0	9	0	0	0	0	0	6	20	0	0	0	19	3	80	1,352
7:30 AM	0	28	0	5	0	0	0	1	0	5	28	0	0	0	14	4	85	1,399
7:35 AM	0	19	1	14	0	0	0	2	0	5	29	1	0	0	19	7	97	1,448
7:40 AM	0	30	0	12	0	0	0	0	0	5	30	0	0	0	34	8	119	1,511
7:45 AM	0	25	0	9	0	0	0	0	0	10	38	0	0	0	27	7	116	1,559
7:50 AM	0	38	0	21	0	0	0	0	0	6	46	0	0	1	20	10	142	1,631
7:55 AM	0	33	0	17	0	0	0	0	0	8	29	0	0	0	22	13	122	1,655
8:00 AM	0	24	0	12	0	0	0	1	0	11	41	0	0	0	32	9	130	1,702
8:05 AM	0	24	0	7	0	0	1	0	0	5	28	0	0	0	24	13	102	
8:10 AM	0	19	0	13	0	0	0	0	0	11	29	0	0	0	26	8	106	
8:15 AM	0	27	0	14	0	0	0	2	0	6	18	0	0	1	41	12	121	
8:20 AM	0	30	0	12	0	0	0	3	0	10	40	3	0	0	25	9	132	
8:25 AM	0	14	0	14	0	1	0	0	0	12	43	2	0	0	34	7	127	
8:30 AM	0	12	0	17	0	1	0	2	0	16	34	0	0	2	44	6	134	
8:35 AM	0	20	0	41	0	0	0	2	0	13	34	0	0	0	42	8	160	
8:40 AM	0	11	0	46	0	0	0	0	0	15	42	0	0	1	47	5	167	
8:45 AM	0	16	0	48	0	0	0	2	0	17	49	0	0	0	43	13	188	
8:50 AM	0	11	0	24	0	0	0	1	0	18	58	0	0	0	51	3	166	
8:55 AM	0	8	1	15	0	0	0	2	0	17	53	0	0	2	62	9	169	
Count Total	0	494	2	373	0	2	1	21	0	222	804	7	0	7	688	175	2,796	
Peak Hour	0	216	1	263	0	2	1	15	0	151	469	5	0	6	471	102	1,702	

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	1	0	0	0	1	7:00 AM	0	0	0	0	0	7:00 AM	0	0	1	0	1
7:05 AM	1	1	0	1	3	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	0	2	0	1	3	7:10 AM	1	0	0	0	1	7:10 AM	0	0	0	0	0
7:15 AM	0	0	1	1	2	7:15 AM	0	0	0	1	1	7:15 AM	0	0	0	0	0
7:20 AM	0	2	0	1	3	7:20 AM	0	0	0	0	0	7:20 AM	0	0	1	0	1
7:25 AM	1	0	0	1	2	7:25 AM	0	0	0	0	0	7:25 AM	1	0	0	0	1
7:30 AM	0	0	0	1	1	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	1	2	0	1	4	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	1	0	0	4	5	7:40 AM	0	0	0	0	0	7:40 AM	0	0	1	2	3
7:45 AM	0	0	0	2	2	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	1	1
7:50 AM	0	0	0	1	1	7:50 AM	0	0	1	0	1	7:50 AM	0	0	0	0	0
7:55 AM	1	2	0	2	5	7:55 AM	0	0	0	0	0	7:55 AM	0	0	1	1	2
8:00 AM	2	1	0	1	4	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	1	1
8:05 AM	0	2	0	0	2	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	1	2	0	1	4	8:10 AM	0	0	0	1	1	8:10 AM	0	0	2	1	3
8:15 AM	0	0	0	1	1	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	1	1
8:20 AM	0	0	0	1	1	8:20 AM	0	0	0	0	0	8:20 AM	2	1	0	0	3
8:25 AM	3	1	0	3	7	8:25 AM	0	0	0	1	1	8:25 AM	0	3	1	0	4
8:30 AM	0	4	0	3	7	8:30 AM	0	0	0	0	0	8:30 AM	2	6	2	0	10
8:35 AM	2	2	0	2	6	8:35 AM	0	0	0	0	0	8:35 AM	2	6	4	5	17
8:40 AM	2	2	0	4	8	8:40 AM	0	0	0	0	0	8:40 AM	0	3	13	12	28
8:45 AM	0	3	0	3	6	8:45 AM	0	0	0	1	1	8:45 AM	2	6	3	2	13
8:50 AM	0	2	0	3	5	8:50 AM	0	0	0	1	1	8:50 AM	0	1	3	3	7
8:55 AM	0	1	0	2	3	8:55 AM	0	0	0	1	1	8:55 AM	0	0	1	0	1
Count Total	16	29	1	40	86	Count Total	1	0	1	6	8	Count Total	9	26	33	29	97
Peak Hour	10	20	0	24	54	Peak Hour	0	0	0	5	5	Peak Hour	8	26	29	25	88



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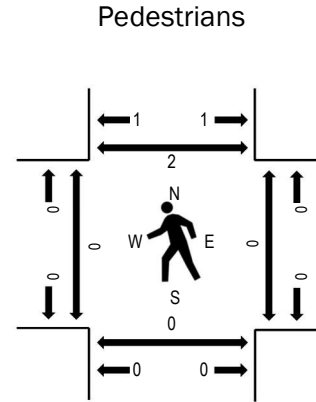
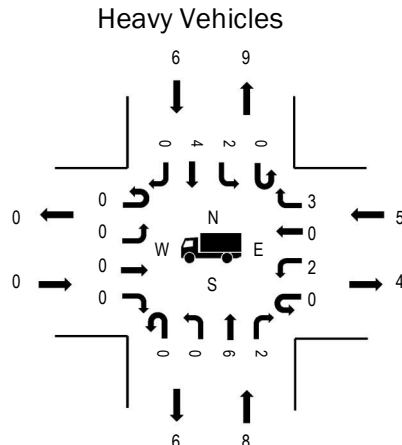
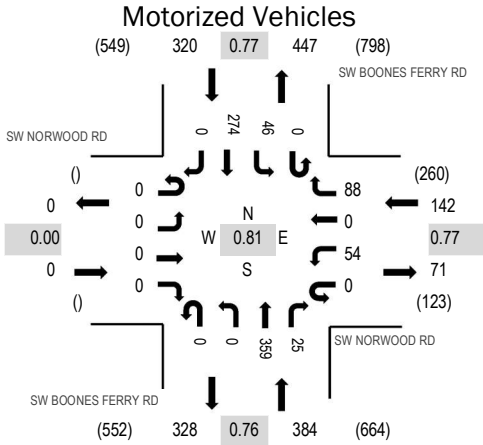
Location: 2 SW BOONES FERRY RD & SW NORWOOD RD AM

Date: Thursday, October 20, 2022

Peak Hour: 07:30 AM - 08:30 AM

Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.00
WB	3.5%	0.77
NB	2.1%	0.76
SB	1.9%	0.77
All	2.2%	0.81

Traffic Counts - Motorized Vehicles

Interval Start Time	SW NORWOOD RD Eastbound				SW NORWOOD RD Westbound				SW BOONES FERRY RD Northbound				SW BOONES FERRY RD Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	0	0	0	0	1	0	3	0	0	15	2	0	0	9	0	30	697
7:05 AM	0	0	0	0	0	4	0	5	0	0	18	2	0	4	11	0	44	741
7:10 AM	0	0	0	0	0	1	0	1	0	0	17	2	0	4	9	0	34	761
7:15 AM	0	0	0	0	0	0	0	3	0	0	17	3	0	1	23	0	47	785
7:20 AM	0	0	0	0	0	3	0	0	0	0	20	0	0	0	15	0	38	805
7:25 AM	0	0	0	0	0	1	0	8	0	0	26	0	0	0	16	0	51	843
7:30 AM	0	0	0	0	0	5	0	5	0	0	26	0	0	4	16	0	56	846
7:35 AM	0	0	0	0	0	3	0	4	0	0	23	0	0	4	28	0	62	842
7:40 AM	0	0	0	0	0	4	0	6	0	0	27	2	0	4	32	0	75	834
7:45 AM	0	0	0	0	0	4	0	11	0	0	40	2	0	3	31	0	91	820
7:50 AM	0	0	0	0	0	7	0	3	0	0	39	2	0	5	29	0	85	809
7:55 AM	0	0	0	0	0	4	0	10	0	0	38	6	0	2	24	0	84	796
8:00 AM	0	0	0	0	0	4	0	9	0	0	37	2	0	2	20	0	74	776
8:05 AM	0	0	0	0	0	7	0	7	0	0	25	1	0	4	20	0	64	
8:10 AM	0	0	0	0	0	4	0	8	0	0	26	0	0	5	15	0	58	
8:15 AM	0	0	0	0	0	5	0	5	0	0	17	4	0	8	28	0	67	
8:20 AM	0	0	0	0	0	6	0	11	0	0	33	6	0	3	17	0	76	
8:25 AM	0	0	0	0	0	1	0	9	0	0	28	0	0	2	14	0	54	
8:30 AM	0	0	0	0	0	2	0	10	0	0	21	1	0	3	15	0	52	
8:35 AM	0	0	0	0	0	2	0	8	0	0	19	5	0	3	17	0	54	
8:40 AM	0	0	0	0	0	3	0	9	0	0	27	2	0	3	17	0	61	
8:45 AM	0	0	0	0	0	2	0	17	0	0	27	2	0	4	28	0	80	
8:50 AM	0	0	0	0	0	1	0	22	0	0	25	4	0	4	16	0	72	
8:55 AM	0	0	0	0	0	4	0	8	0	0	25	0	0	3	24	0	64	
Count Total	0	0	0	0	0	78	0	182	0	0	616	48	0	75	474	0	1,473	
Peak Hour	0	0	0	0	0	54	0	88	0	0	359	25	0	46	274	0	846	

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	1	0	0	1	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	0	1	1	0	2	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	0	1	0	0	1	7:10 AM	0	0	0	1	1	7:10 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	1	1	7:15 AM	0	0	0	0	0
7:20 AM	0	1	0	1	2	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	0	0	1	1	2	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	0	1	0	1	2	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	1	1
7:40 AM	0	1	0	1	2	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	1	1
7:45 AM	0	0	0	1	1	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	0	2	1	1	4	7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0
8:00 AM	0	1	0	0	1	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	0	2	0	0	2	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	0	1	2	1	4	8:10 AM	0	0	0	1	1	8:10 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	0	0	1	1	2	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	0	0	1	0	1	8:25 AM	0	0	0	1	1	8:25 AM	0	0	0	0	0
8:30 AM	0	1	0	1	2	8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0
8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	0	0	0	1	1	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	0	0	1	2	3	8:45 AM	0	0	0	1	1	8:45 AM	0	0	0	0	0
8:50 AM	0	0	1	0	1	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	0	0	0	2	2	8:55 AM	0	0	0	0	0	8:55 AM	0	0	1	0	1
Count Total	0	13	9	14	36	Count Total	0	0	0	5	5	Count Total	0	0	1	2	3
Peak Hour	0	8	5	6	19	Peak Hour	0	0	0	2	2	Peak Hour	0	0	0	2	2



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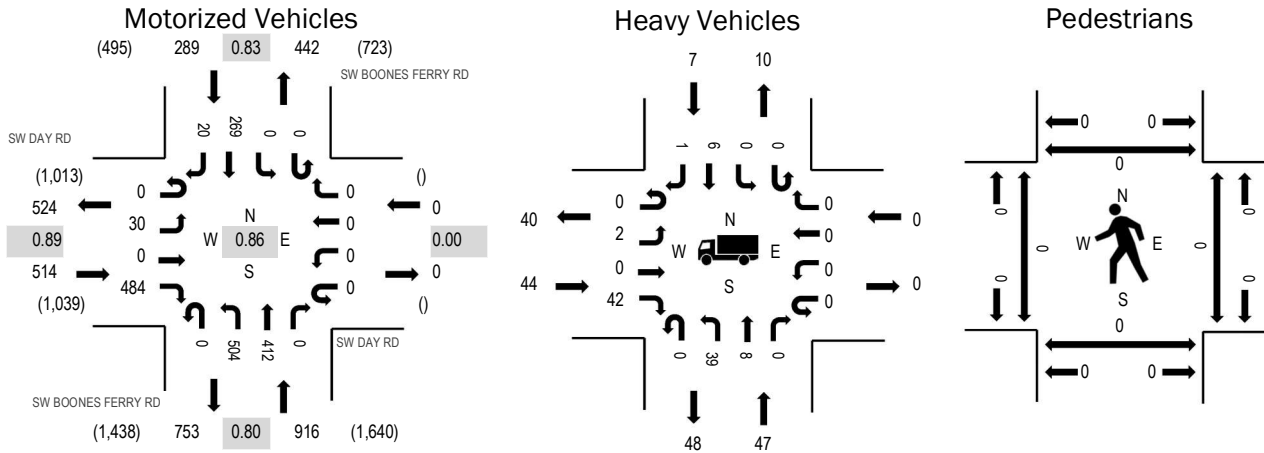
Location: 3 SW BOONES FERRY RD & SW DAY RD AM

Date: Thursday, October 20, 2022

Peak Hour: 07:30 AM - 08:30 AM

Peak 15-Minutes: 07:45 AM - 08:00 AM

### Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	8.6%	0.89
WB	0.0%	0.00
NB	5.1%	0.80
SB	2.4%	0.83
All	5.7%	0.86

### Traffic Counts - Motorized Vehicles

Interval Start Time	SW DAY RD Eastbound				SW DAY RD Westbound				SW BOONES FERRY RD Northbound				SW BOONES FERRY RD Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	1	0	30	0	0	0	0	0	39	24	0	0	0	12	1	107	1,638
7:05 AM	0	1	0	46	0	0	0	0	0	47	18	0	0	0	11	1	124	1,676
7:10 AM	0	2	0	40	0	0	0	0	0	37	14	0	0	0	10	1	104	1,685
7:15 AM	0	2	0	46	0	0	0	0	0	50	19	0	0	0	18	1	136	1,715
7:20 AM	0	0	0	33	0	0	0	0	0	46	25	0	0	0	19	2	125	1,702
7:25 AM	0	1	0	40	0	0	0	0	0	46	19	0	0	0	12	2	120	1,703
7:30 AM	0	3	0	38	0	0	0	0	0	47	33	0	0	0	17	1	139	1,719
7:35 AM	0	3	0	41	0	0	0	0	0	45	24	0	0	0	23	1	137	1,700
7:40 AM	0	0	0	31	0	0	0	0	0	51	35	0	0	0	26	2	145	1,690
7:45 AM	0	7	0	47	0	0	0	0	0	37	54	0	0	0	25	1	171	1,669
7:50 AM	0	9	0	39	0	0	0	0	0	46	49	0	0	0	30	3	176	1,642
7:55 AM	0	3	0	32	0	0	0	0	0	56	46	0	0	0	14	3	154	1,584
8:00 AM	0	0	0	47	0	0	0	0	0	40	27	0	0	0	29	2	145	1,536
8:05 AM	0	3	0	33	0	0	0	0	0	39	29	0	0	0	26	3	133	
8:10 AM	0	2	0	43	0	0	0	0	0	38	26	0	0	0	24	1	134	
8:15 AM	0	0	0	50	0	0	0	0	0	33	26	0	0	0	12	2	123	
8:20 AM	0	0	0	36	0	0	0	0	0	37	28	0	0	0	25	0	126	
8:25 AM	0	0	0	47	0	0	0	0	0	35	35	0	0	0	18	1	136	
8:30 AM	0	3	0	41	0	0	0	0	0	40	17	0	0	0	18	1	120	
8:35 AM	0	5	0	46	0	0	0	0	0	35	18	0	0	0	20	3	127	
8:40 AM	0	4	0	43	0	0	0	0	0	33	27	0	0	0	15	2	124	
8:45 AM	0	6	0	48	0	0	0	0	0	38	29	0	0	0	19	4	144	
8:50 AM	0	0	0	49	0	0	0	0	0	35	21	0	0	0	13	0	118	
8:55 AM	0	2	0	36	0	0	0	0	0	24	23	0	0	0	20	1	106	
Count Total	0	57	0	982	0	0	0	0	0	974	666	0	0	0	456	39	3,174	
Peak Hour	0	30	0	484	0	0	0	0	0	504	412	0	0	0	269	20	1,719	

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	6	2	0	0	8	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	6	6	0	1	13	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	8	6	0	0	14	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	6	2	0	0	8	7:15 AM	0	0	0	0	0	7:15 AM	1	0	0	0	1
7:20 AM	4	7	0	1	12	7:20 AM	0	0	0	1	1	7:20 AM	0	0	0	0	0
7:25 AM	0	3	0	2	5	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	3	5	0	1	9	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	5	1	0	0	6	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	3	3	0	1	7	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	3	3	0	1	7	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	5	5	0	0	10	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	1	6	0	1	8	7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0
8:00 AM	3	3	0	1	7	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	3	7	0	0	10	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	3	3	0	1	7	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	2	4	0	0	6	8:15 AM	0	0	0	1	1	8:15 AM	0	0	0	0	0
8:20 AM	9	5	0	0	14	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	4	2	0	1	7	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	3	5	0	2	10	8:30 AM	0	0	0	1	1	8:30 AM	0	0	0	0	0
8:35 AM	3	5	0	0	8	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	3	3	0	0	6	8:40 AM	0	0	0	1	1	8:40 AM	0	0	0	0	0
8:45 AM	3	7	0	0	10	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	4	3	0	0	7	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	7	4	0	2	13	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	97	100	0	15	212	Count Total	0	0	0	4	4	Count Total	1	0	0	0	1
Peak Hour	44	47	0	7	98	Peak Hour	0	0	0	1	1	Peak Hour	0	0	0	0	0



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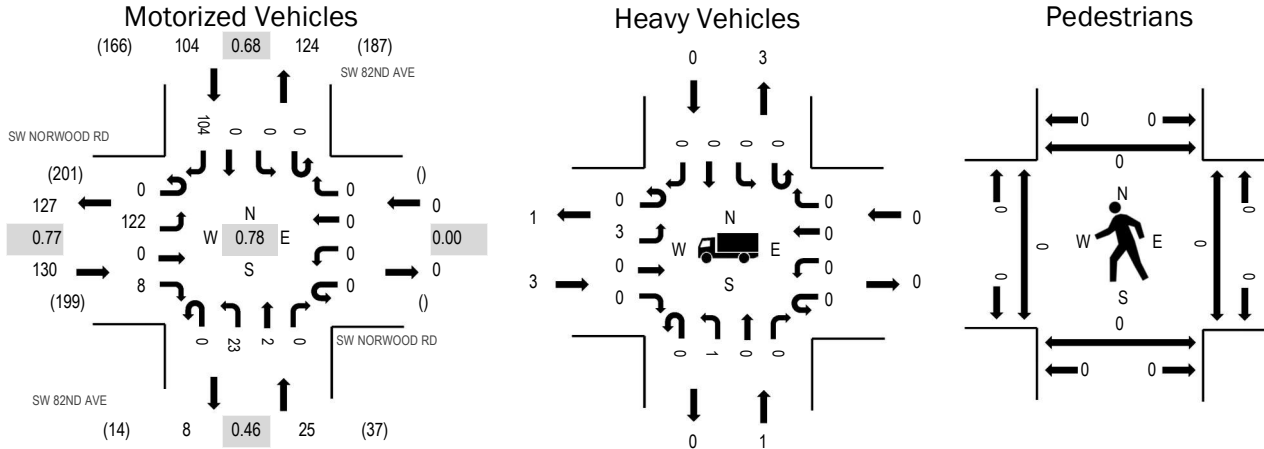
Location: 4 SW 82ND AVE & SW NORWOOD RD AM

Date: Thursday, October 20, 2022

Peak Hour: 07:40 AM - 08:40 AM

Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	2.3%	0.77
WB	0.0%	0.00
NB	4.0%	0.46
SB	0.0%	0.68
All	1.5%	0.78

Traffic Counts - Motorized Vehicles

Interval Start Time	SW NORWOOD RD Eastbound				SW NORWOOD RD Westbound				SW 82ND AVE Northbound				SW 82ND AVE Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	4	183
7:05 AM	0	8	0	2	0	0	0	0	0	1	0	0	0	0	0	1	12	194
7:10 AM	0	7	0	0	0	0	0	0	0	0	0	0	0	0	3	10	203	
7:15 AM	0	2	0	1	0	0	0	0	0	2	0	0	0	0	1	6	212	
7:20 AM	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4	8	226	
7:25 AM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	4	6	240	
7:30 AM	0	8	0	1	0	0	0	0	0	1	0	0	0	0	5	15	253	
7:35 AM	0	12	0	0	0	0	0	0	0	1	0	0	0	0	4	17	257	
7:40 AM	0	13	0	1	0	0	0	0	0	0	0	0	0	0	8	22	259	
7:45 AM	0	10	0	0	0	0	0	0	0	6	0	0	0	0	10	26	257	
7:50 AM	0	17	0	1	0	0	0	0	0	5	0	0	0	0	8	31	259	
7:55 AM	0	16	0	1	0	0	0	0	0	3	0	0	0	0	6	26	239	
8:00 AM	0	8	0	0	0	0	0	0	0	0	0	0	0	0	7	15	219	
8:05 AM	0	11	0	0	0	0	0	0	0	0	0	0	0	0	10	21		
8:10 AM	0	7	0	2	0	0	0	0	0	0	0	0	0	0	10	19		
8:15 AM	0	10	0	1	0	0	0	0	0	1	1	0	0	0	7	20		
8:20 AM	0	11	0	0	0	0	0	0	0	3	0	0	0	0	8	22		
8:25 AM	0	7	0	1	0	0	0	0	0	4	1	0	0	0	6	19		
8:30 AM	0	6	0	0	0	0	0	0	0	1	0	0	0	0	12	19		
8:35 AM	0	6	0	1	0	0	0	0	0	0	0	0	0	0	12	19		
8:40 AM	0	8	0	0	0	0	0	0	0	1	0	0	0	0	11	20		
8:45 AM	0	7	0	1	0	0	0	0	0	0	0	0	0	0	20	28		
8:50 AM	0	3	0	1	0	0	0	0	0	2	0	0	0	0	5	11		
8:55 AM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	4	6		
Count Total	0	185	0	14	0	0	0	0	0	35	2	0	0	0	166	402		
Peak Hour	0	122	0	8	0	0	0	0	0	23	2	0	0	0	104	259		



### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	1	0	0	1	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	1	0	0	0	1	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	1	0	0	0	1	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	0	0	0	1	1	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	1	0	0	0	1	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	0	1	0	0	1	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0
8:00 AM	1	0	0	0	1	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	1	0	0	0	1	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0	8:30 AM	0	1	0	1	1	8:30 AM	0	0	0	0	0
8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	2	0	0	0	2	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	7	2	0	1	10	Count Total	0	1	0	1	1	Count Total	0	0	0	0	0
Peak Hour	3	1	0	0	4	Peak Hour	0	1	0	1	1	Peak Hour	0	0	0	0	0



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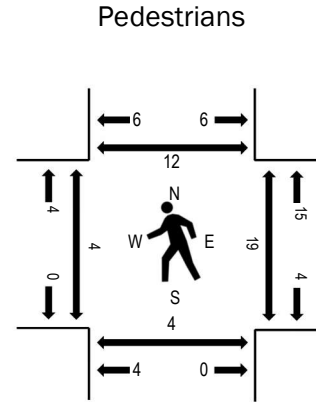
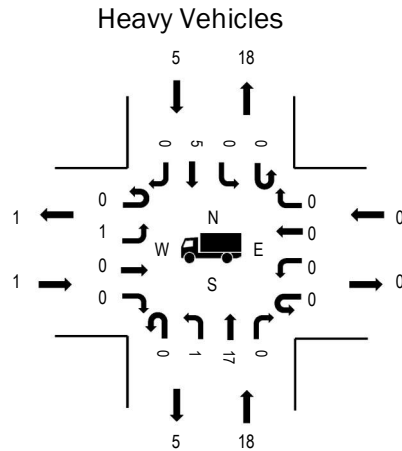
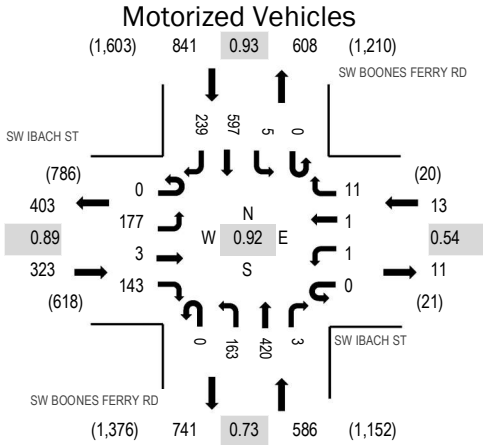
Location: 1 SW BOONES FERRY RD & SW IBACH ST PM

Date: Thursday, October 20, 2022

Peak Hour: 04:00 PM - 05:00 PM

Peak 15-Minutes: 04:40 PM - 04:55 PM

Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.3%	0.89
WB	0.0%	0.54
NB	3.1%	0.73
SB	0.6%	0.93
All	1.4%	0.92

Traffic Counts - Motorized Vehicles

Interval Start Time	SW IBACH ST Eastbound				SW IBACH ST Westbound				SW BOONES FERRY RD Northbound				SW BOONES FERRY RD Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	17	0	7	0	1	1	2	0	35	66	0	0	0	47	13	189	1,763
4:05 PM	0	17	0	12	0	0	0	2	0	14	42	0	0	0	37	17	141	1,723
4:10 PM	0	11	0	9	0	0	0	0	0	7	37	1	0	0	50	20	135	1,757
4:15 PM	0	15	0	7	0	0	0	1	0	9	33	0	0	0	56	25	146	1,752
4:20 PM	0	14	0	13	0	0	0	1	0	9	26	0	0	1	42	18	124	1,762
4:25 PM	0	9	1	14	0	0	0	0	0	9	32	0	0	0	46	27	138	1,758
4:30 PM	0	18	0	15	0	0	0	1	0	9	26	0	0	0	52	20	141	1,754
4:35 PM	0	15	0	15	0	0	0	1	0	11	24	0	0	0	50	20	136	1,746
4:40 PM	0	17	2	11	0	0	0	1	0	11	29	0	0	0	61	17	149	1,731
4:45 PM	0	14	0	12	0	0	0	1	0	16	43	0	0	1	54	27	168	1,708
4:50 PM	0	15	0	17	0	0	0	0	0	17	36	1	0	1	54	19	160	1,670
4:55 PM	0	15	0	11	0	0	0	1	0	16	26	1	0	2	48	16	136	1,653
5:00 PM	0	21	0	7	0	0	0	0	0	18	46	0	0	0	43	14	149	1,630
5:05 PM	0	14	0	6	0	0	0	0	0	17	53	0	0	1	57	27	175	
5:10 PM	0	14	0	11	0	0	0	0	0	14	29	0	0	1	49	12	130	
5:15 PM	0	24	0	7	0	0	1	0	0	6	36	0	0	1	54	27	156	
5:20 PM	0	10	0	6	0	0	1	0	0	11	21	0	0	0	51	20	120	
5:25 PM	0	15	0	9	0	0	0	0	0	6	37	0	0	1	44	22	134	
5:30 PM	0	14	0	7	0	1	0	2	0	14	26	2	0	0	46	21	133	
5:35 PM	0	17	0	8	0	0	0	0	0	8	28	0	0	1	37	22	121	
5:40 PM	0	16	0	13	0	0	0	0	0	14	33	0	0	1	36	13	126	
5:45 PM	0	17	0	12	0	0	0	0	0	18	34	0	0	0	36	13	130	
5:50 PM	0	10	0	11	0	1	0	0	0	14	45	0	0	2	45	15	143	
5:55 PM	0	17	0	9	0	0	0	1	0	14	22	0	0	0	29	21	113	
Count Total	0	366	3	249	0	3	3	14	0	317	830	5	0	13	1,124	466	3,393	
Peak Hour	0	177	3	143	0	1	1	11	0	163	420	3	0	5	597	239	1,763	

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	14	0	1	15	4:00 PM	0	0	0	0	0	4:00 PM	0	0	4	1	5
4:05 PM	0	1	0	0	1	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	0	0	0	1	1	4:10 PM	0	0	0	1	1	4:10 PM	0	0	1	1	2
4:15 PM	0	0	0	1	1	4:15 PM	0	0	0	0	0	4:15 PM	0	3	5	1	9
4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0	4:20 PM	0	0	2	0	2
4:25 PM	0	1	0	0	1	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	1	1
4:35 PM	0	1	0	1	2	4:35 PM	0	0	0	1	1	4:35 PM	1	1	2	0	4
4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0	4:40 PM	0	0	2	4	6
4:45 PM	0	0	0	0	0	4:45 PM	1	0	0	0	1	4:45 PM	0	0	2	2	4
4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	1	1	0	1	3	4:55 PM	0	2	0	0	2	4:55 PM	3	0	1	2	6
5:00 PM	1	0	0	1	2	5:00 PM	0	0	0	0	0	5:00 PM	0	1	0	0	1
5:05 PM	0	1	0	0	1	5:05 PM	0	0	0	0	0	5:05 PM	2	0	0	0	2
5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	1	1
5:15 PM	0	1	0	0	1	5:15 PM	1	0	0	0	1	5:15 PM	0	0	1	1	2
5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0	5:20 PM	1	1	2	0	4
5:25 PM	0	0	0	1	1	5:25 PM	0	1	0	0	1	5:25 PM	0	0	2	1	3
5:30 PM	0	2	0	0	2	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	1	1
5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0	5:35 PM	0	1	0	0	1
5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	1	0	0	1	5:45 PM	1	1	0	1	3	5:45 PM	0	0	1	1	2
5:50 PM	0	0	0	2	2	5:50 PM	0	0	0	0	0	5:50 PM	0	0	1	2	3
5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	2	23	0	9	34	Count Total	3	4	0	3	10	Count Total	7	7	26	19	59
Peak Hour	1	18	0	5	24	Peak Hour	1	2	0	2	5	Peak Hour	4	4	19	12	39



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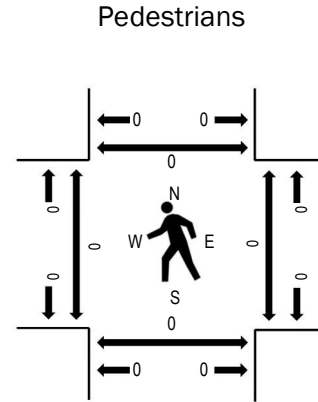
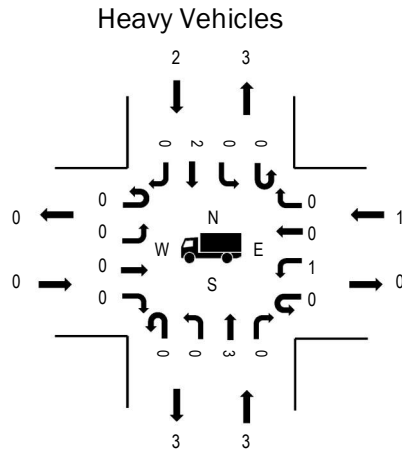
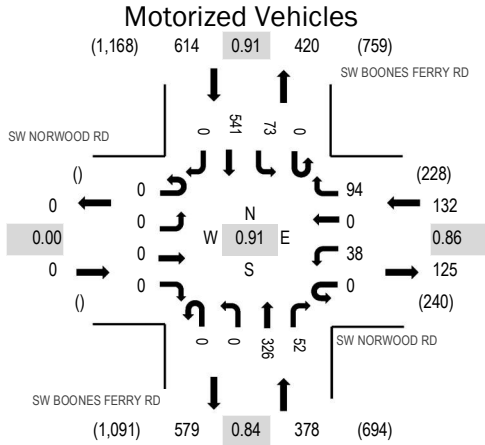
Location: 2 SW BOONES FERRY RD & SW NORWOOD RD PM

Date: Thursday, October 20, 2022

Peak Hour: 04:30 PM - 05:30 PM

Peak 15-Minutes: 04:35 PM - 04:50 PM

Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.00
WB	0.8%	0.86
NB	0.8%	0.84
SB	0.3%	0.91
All	0.5%	0.91

Traffic Counts - Motorized Vehicles

Interval Start Time	SW NORWOOD RD Eastbound				SW NORWOOD RD Westbound				SW BOONES FERRY RD Northbound				SW BOONES FERRY RD Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	0	0	0	2	0	2	0	0	25	0	0	3	46	0	78	1,088
4:05 PM	0	0	0	0	0	1	0	5	0	0	19	1	0	6	40	0	72	1,097
4:10 PM	0	0	0	0	0	3	0	4	0	0	27	7	0	6	53	0	100	1,122
4:15 PM	0	0	0	0	0	2	0	9	0	0	17	8	0	11	51	0	98	1,121
4:20 PM	0	0	0	0	0	5	0	7	0	0	17	3	0	6	50	0	88	1,106
4:25 PM	0	0	0	0	0	1	0	3	1	0	26	4	0	10	33	0	78	1,104
4:30 PM	0	0	0	0	0	0	0	7	0	0	21	4	0	7	48	0	87	1,124
4:35 PM	0	0	0	0	0	5	0	12	0	0	21	5	0	8	47	0	98	1,112
4:40 PM	0	0	0	0	0	2	0	5	0	0	33	4	0	6	55	0	105	1,079
4:45 PM	0	0	0	0	0	1	0	7	0	0	39	4	0	6	49	0	106	1,055
4:50 PM	0	0	0	0	0	2	0	10	0	0	22	3	0	10	51	0	98	1,028
4:55 PM	0	0	0	0	0	6	0	9	0	0	19	3	0	3	40	0	80	1,031
5:00 PM	0	0	0	0	0	1	0	11	0	0	35	4	0	5	31	0	87	1,002
5:05 PM	0	0	0	0	0	2	0	8	0	0	37	4	0	3	43	0	97	
5:10 PM	0	0	0	0	0	7	0	6	0	0	29	4	0	5	48	0	99	
5:15 PM	0	0	0	0	0	5	0	4	0	0	19	5	0	5	45	0	83	
5:20 PM	0	0	0	0	0	3	0	5	0	0	22	7	0	7	42	0	86	
5:25 PM	0	0	0	0	0	4	0	10	0	0	29	5	0	8	42	0	98	
5:30 PM	0	0	0	0	0	3	0	6	0	0	18	2	0	7	39	0	75	
5:35 PM	0	0	0	0	0	3	0	7	0	0	19	2	0	1	33	0	65	
5:40 PM	0	0	0	0	0	0	0	10	0	0	31	4	0	4	32	0	81	
5:45 PM	0	0	0	0	0	5	0	4	0	0	22	2	0	5	41	0	79	
5:50 PM	0	0	0	0	0	5	0	7	0	0	36	6	0	9	38	0	101	
5:55 PM	0	0	0	0	0	1	0	1	0	0	17	2	0	6	24	0	51	
Count Total	0	0	0	0	0	69	0	159	1	0	600	93	0	147	1,021	0	2,090	
Peak Hour	0	0	0	0	0	38	0	94	0	0	326	52	0	73	541	0	1,124	

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	1	0	0	1	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	0	0	0	0	0	4:05 PM	0	1	0	0	1	4:05 PM	0	0	0	0	0
4:10 PM	0	0	0	1	1	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	0	1	0	0	1	4:15 PM	0	0	0	1	1	4:15 PM	0	0	0	0	0
4:20 PM	0	0	0	1	1	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	1	1
4:25 PM	0	1	1	0	2	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0	4:30 PM	0	0	1	0	1	4:30 PM	0	0	0	0	0
4:35 PM	0	1	1	0	2	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	0	0	0	0	0	4:50 PM	0	2	0	0	2	4:50 PM	0	0	0	0	0
4:55 PM	0	1	0	1	2	4:55 PM	0	0	0	3	3	4:55 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	0	1	0	0	1	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	0	0	1	1	5:25 PM	0	1	0	0	1	5:25 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	1	0	0	1	5:45 PM	0	1	0	0	1	5:45 PM	0	0	0	0	0
5:50 PM	0	0	0	2	2	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	0	7	2	6	15	Count Total	0	5	1	4	10	Count Total	0	0	0	1	1
Peak Hour	0	3	1	2	6	Peak Hour	0	3	1	3	7	Peak Hour	0	0	0	0	0



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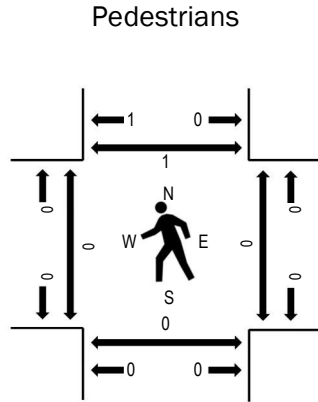
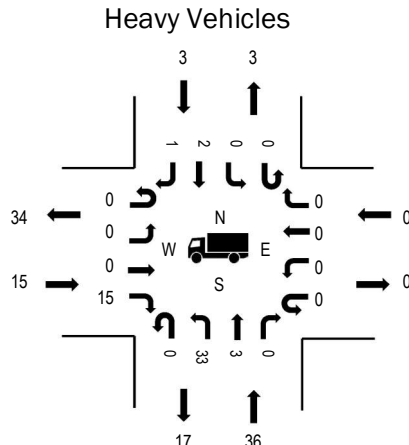
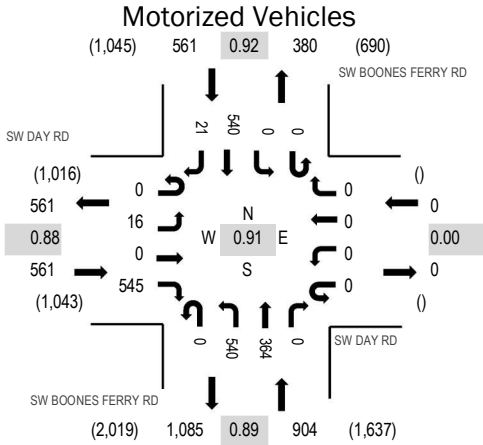
Location: 3 SW BOONES FERRY RD & SW DAY RD PM

Date: Thursday, October 20, 2022

Peak Hour: 04:30 PM - 05:30 PM

Peak 15-Minutes: 04:35 PM - 04:50 PM

Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	2.7%	0.88
WB	0.0%	0.00
NB	4.0%	0.89
SB	0.5%	0.92
All	2.7%	0.91

Traffic Counts - Motorized Vehicles

Interval Start Time	SW DAY RD Eastbound				SW DAY RD Westbound				SW BOONES FERRY RD Northbound				SW BOONES FERRY RD Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	1	0	51	0	0	0	0	0	38	24	0	0	0	54	3	171	2,012
4:05 PM	0	3	0	57	0	0	0	0	0	44	23	0	0	0	39	0	166	2,022
4:10 PM	0	1	0	61	0	0	0	0	0	47	31	0	0	0	48	3	191	2,022
4:15 PM	0	0	0	43	0	0	0	0	0	50	23	0	0	0	44	0	160	2,012
4:20 PM	0	0	0	28	0	0	0	0	0	52	20	0	0	0	57	3	160	2,010
4:25 PM	0	3	0	31	0	0	0	0	0	21	33	0	0	0	41	3	132	1,999
4:30 PM	0	1	0	39	0	0	0	0	0	47	24	0	0	0	50	0	161	2,026
4:35 PM	0	1	0	67	0	0	0	0	0	56	25	0	0	0	37	1	187	2,003
4:40 PM	0	2	0	49	0	0	0	0	0	45	42	0	0	0	42	1	181	1,963
4:45 PM	0	1	0	38	0	0	0	0	0	46	43	0	0	0	59	0	187	1,873
4:50 PM	0	1	0	31	0	0	0	0	0	38	27	0	0	0	51	2	150	1,794
4:55 PM	0	2	0	43	0	0	0	0	0	47	26	0	0	0	47	1	166	1,772
5:00 PM	0	1	0	53	0	0	0	0	0	50	33	0	0	0	39	5	181	1,713
5:05 PM	0	1	0	40	0	0	0	0	0	53	33	0	0	0	37	2	166	
5:10 PM	0	2	0	61	0	0	0	0	0	36	28	0	0	0	49	5	181	
5:15 PM	0	2	0	40	0	0	0	0	0	49	28	0	0	0	39	0	158	
5:20 PM	0	2	0	40	0	0	0	0	0	32	28	0	0	0	45	2	149	
5:25 PM	0	0	0	44	0	0	0	0	0	41	27	0	0	0	45	2	159	
5:30 PM	0	0	0	35	0	0	0	0	0	51	23	0	0	0	28	1	138	
5:35 PM	0	1	0	48	0	0	0	0	0	29	29	0	0	0	39	1	147	
5:40 PM	0	0	0	24	0	0	0	0	0	21	25	0	0	0	21	0	91	
5:45 PM	0	2	0	30	0	0	0	0	0	23	23	0	0	0	28	2	108	
5:50 PM	0	0	0	35	0	0	0	0	0	30	24	0	0	0	36	3	128	
5:55 PM	0	1	0	27	0	0	0	0	0	29	20	0	0	0	29	1	107	
Count Total	0	28	0	1,015	0	0	0	0	0	975	662	0	0	0	1,004	41	3,725	
Peak Hour	0	16	0	545	0	0	0	0	0	540	364	0	0	0	540	21	2,026	

### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	2	2	0	0	4	4:00 PM	0	1	0	0	1	4:00 PM	0	0	0	0	0
4:05 PM	0	6	0	0	6	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	1	5	0	1	7	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	2	1	0	0	3	4:15 PM	0	0	0	1	1	4:15 PM	0	0	0	0	0
4:20 PM	1	4	0	1	6	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	1	2	0	1	4	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	1	5	0	0	6	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	3	7	0	1	11	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	1	1
4:40 PM	0	6	0	0	6	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	0	5	0	0	5	4:45 PM	0	1	0	0	1	4:45 PM	0	0	0	0	0
4:50 PM	1	2	0	0	3	4:50 PM	0	1	0	0	1	4:50 PM	0	0	0	0	0
4:55 PM	2	1	0	1	4	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	0	1	0	0	1	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	2	2	0	0	4	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	2	5	0	0	7	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	2	1	0	0	3	5:15 PM	0	1	0	0	1	5:15 PM	0	0	0	0	0
5:20 PM	2	1	0	0	3	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	0	0	1	1	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	1	2	0	0	3	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	2	1	0	0	3	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	1	0	0	1	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	2	2	0	0	4	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	0	3	0	0	3	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	27	65	0	6	98	Count Total	0	4	0	1	5	Count Total	0	0	0	1	1
Peak Hour	15	36	0	3	54	Peak Hour	0	3	0	0	3	Peak Hour	0	0	0	1	1



(303) 216-2439

www.alltrafficdata.net

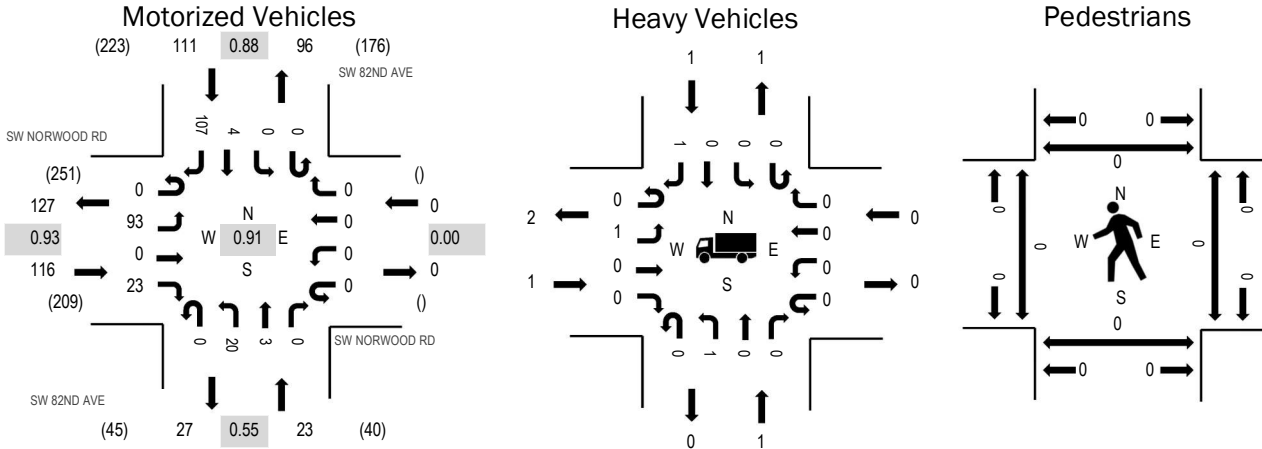
Location: 4 SW 82ND AVE & SW NORWOOD RD PM

Date: Thursday, October 20, 2022

Peak Hour: 04:10 PM - 05:10 PM

Peak 15-Minutes: 04:25 PM - 04:40 PM

Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.9%	0.93
WB	0.0%	0.00
NB	4.3%	0.55
SB	0.9%	0.88
All	1.2%	0.91

Traffic Counts - Motorized Vehicles

Interval Start Time	SW NORWOOD RD Eastbound				SW NORWOOD RD Westbound				SW 82ND AVE Northbound				SW 82ND AVE Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	8	0	3	0	0	0	0	0	1	0	0	0	0	0	5	17	243
4:05 PM	0	7	0	2	0	0	0	0	0	0	0	0	0	0	1	6	16	244
4:10 PM	0	5	0	5	0	0	0	0	0	0	0	0	0	0	0	9	19	250
4:15 PM	0	10	0	2	0	0	0	0	0	2	0	0	0	0	0	9	23	248
4:20 PM	0	7	0	1	0	0	0	0	0	1	0	0	0	0	0	8	17	238
4:25 PM	0	11	0	1	0	0	0	0	0	0	0	0	0	0	0	9	21	243
4:30 PM	0	10	0	1	0	0	0	0	0	1	0	0	0	0	0	12	24	245
4:35 PM	0	7	0	2	0	0	0	0	0	1	0	0	0	0	0	14	24	240
4:40 PM	0	6	0	2	0	0	0	0	0	4	0	0	0	0	2	4	18	231
4:45 PM	0	10	0	1	0	0	0	0	0	5	1	0	0	0	1	0	18	232
4:50 PM	0	9	0	1	0	0	0	0	0	0	0	0	0	0	1	12	23	238
4:55 PM	0	9	0	3	0	0	0	0	0	3	0	0	0	0	0	8	23	233
5:00 PM	0	3	0	2	0	0	0	0	0	2	0	0	0	0	0	11	18	229
5:05 PM	0	6	0	2	0	0	0	0	0	1	2	0	0	0	0	11	22	
5:10 PM	0	5	0	0	0	0	0	0	0	1	0	0	0	0	0	11	17	
5:15 PM	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	10	13	
5:20 PM	0	12	0	1	0	0	0	0	0	1	0	0	0	0	1	7	22	
5:25 PM	0	8	0	1	0	0	0	0	0	0	0	0	0	0	0	14	23	
5:30 PM	0	2	0	2	0	0	0	0	0	2	0	0	0	0	0	13	19	
5:35 PM	0	3	0	1	0	0	0	0	0	1	0	0	0	0	0	10	15	
5:40 PM	0	7	0	0	0	0	0	0	0	3	0	0	0	0	0	9	19	
5:45 PM	0	9	0	2	0	0	0	0	0	1	0	0	0	0	1	11	24	
5:50 PM	0	6	0	2	0	0	0	0	0	1	2	0	0	0	0	7	18	
5:55 PM	0	9	0	1	0	0	0	0	0	3	0	0	0	0	0	6	19	
Count Total	0	171	0	38	0	0	0	0	0	35	5	0	0	0	7	216	472	
Peak Hour	0	93	0	23	0	0	0	0	0	20	3	0	0	0	4	107	250	

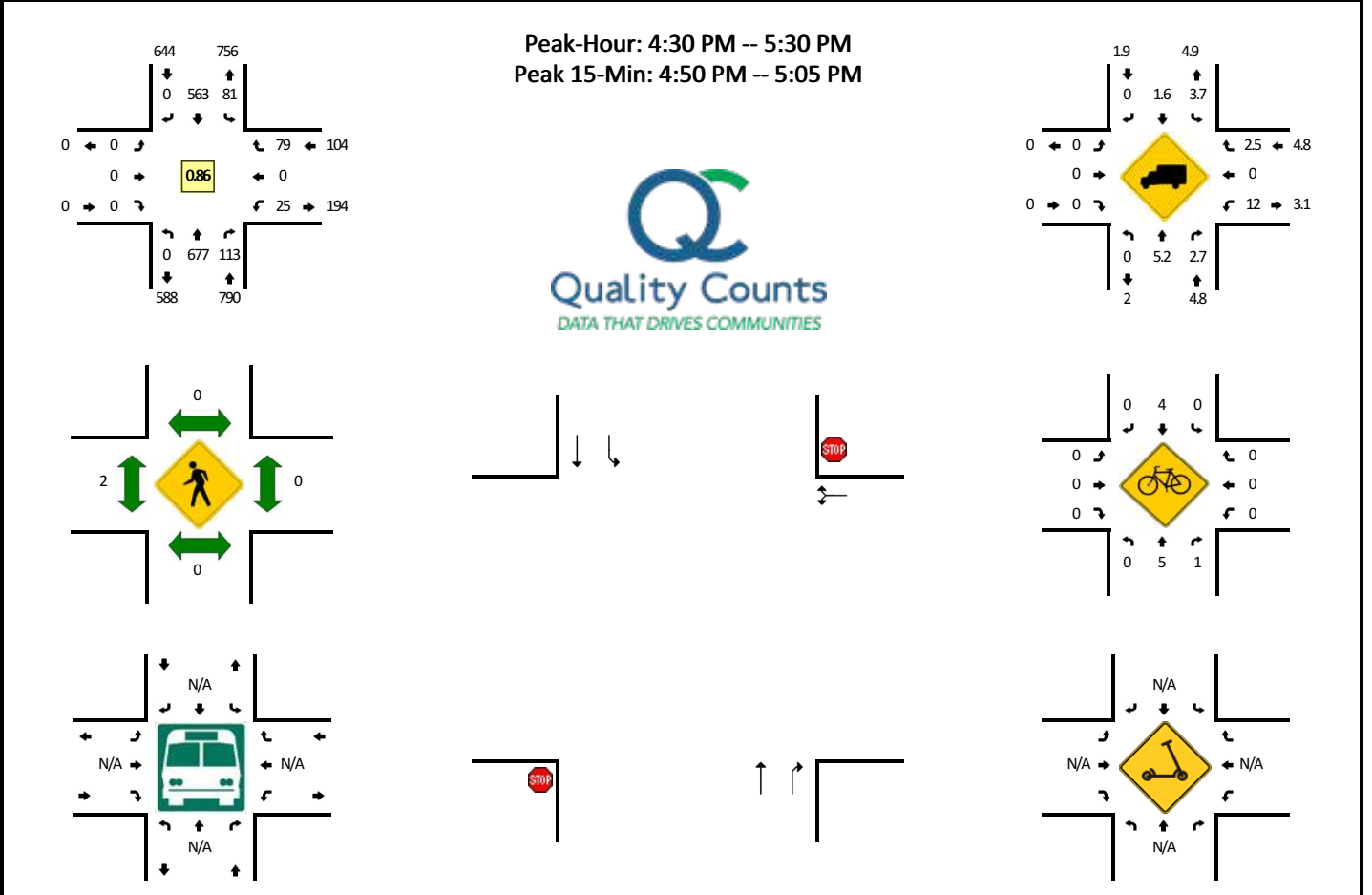


### Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	1	0	0	0	1	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	0	0	0	1	1	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	0	1	0	0	1	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0	5:00 PM	3	0	0	0	3	5:00 PM	0	0	0	0	0
5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	2	2
5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0
5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	1	1	0	1	3	Count Total	3	0	0	0	3	Count Total	0	0	0	2	2
Peak Hour	1	1	0	1	3	Peak Hour	3	0	0	0	3	Peak Hour	0	0	0	0	0

**LOCATION:** SW Boones Ferry Rd -- SW Norwood Rd  
**CITY/STATE:** Tualatin, OR

**QC JOB #:** 15885301  
**DATE:** Wed, Sep 29 2021



5-Min Count Period Beginning At	SW Boones Ferry Rd (Northbound)				SW Boones Ferry Rd (Southbound)				SW Norwood Rd (Eastbound)				SW Norwood Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	20	2	0	4	10	0	0	0	0	0	0	3	0	4	0	43	
7:05 AM	0	18	1	0	2	10	0	0	0	0	0	0	1	0	4	0	36	
7:10 AM	0	14	1	0	5	16	0	0	0	0	0	0	3	0	2	0	41	
7:15 AM	0	12	4	0	1	22	0	0	0	0	0	0	2	0	1	0	42	
7:20 AM	0	15	1	0	2	21	0	0	0	0	0	0	1	0	0	0	40	
7:25 AM	0	33	0	0	2	15	0	0	0	0	0	0	1	0	4	0	55	
7:30 AM	0	26	0	0	2	19	0	0	0	0	0	0	4	0	2	0	53	
7:35 AM	0	16	1	0	4	21	0	0	0	0	0	0	3	0	5	0	50	
7:40 AM	0	23	2	0	1	23	0	0	0	0	0	0	3	0	5	0	57	
7:45 AM	0	34	1	0	3	23	0	0	0	0	0	0	6	0	8	0	75	
7:50 AM	0	37	0	0	5	30	0	0	0	0	0	0	4	0	10	0	86	
7:55 AM	0	35	0	0	1	31	0	0	0	0	0	0	5	0	13	0	85	663
8:00 AM	0	30	3	0	6	27	0	0	0	0	0	0	2	0	6	0	74	694
8:05 AM	0	20	2	0	1	24	0	0	0	0	0	0	4	0	1	0	52	710
8:10 AM	0	25	3	0	2	22	0	0	0	0	0	0	8	0	7	0	67	736
8:15 AM	0	19	0	0	5	18	0	0	0	0	0	0	2	0	3	0	47	741
8:20 AM	0	17	4	0	4	12	0	0	0	0	0	0	0	0	6	0	43	744
8:25 AM	0	24	3	0	1	17	0	0	0	0	0	0	1	0	3	0	49	738
8:30 AM	0	33	3	0	3	20	0	0	0	0	0	0	4	0	9	0	72	757
8:35 AM	0	23	3	0	3	22	0	0	0	0	0	0	2	0	11	0	64	771
8:40 AM	0	14	1	0	4	13	0	0	0	0	0	0	1	0	21	0	54	768
8:45 AM	0	27	0	0	1	13	0	0	0	0	0	0	5	0	20	0	66	759
8:50 AM	0	18	1	0	5	20	0	0	0	0	0	0	3	0	8	0	55	728
8:55 AM	0	22	2	0	7	21	0	0	0	0	0	0	1	0	1	0	54	697
9:00 AM	0	16	2	0	3	19	0	0	0	0	0	0	1	0	1	0	42	665
9:05 AM	0	15	3	0	5	20	0	0	0	0	0	0	1	0	2	0	46	659
9:10 AM	0	20	2	0	2	16	0	0	0	0	0	0	1	0	1	0	42	634
9:15 AM	0	23	4	0	0	25	0	0	0	0	0	0	3	0	7	0	62	649
9:20 AM	0	8	2	0	0	16	0	0	0	0	0	0	0	0	7	0	33	639
9:25 AM	0	20	3	0	1	17	0	0	0	0	0	0	2	0	3	0	46	636
9:30 AM	0	7	0	0	1	26	0	0	0	0	0	0	1	0	2	0	37	601
9:35 AM	0	13	0	0	2	23	0	0	0	0	0	0	2	0	2	0	42	579
9:40 AM	0	8	1	0	1	14	0	0	0	0	0	0	4	0	8	0	36	561
9:45 AM	0	17	3	0	2	23	0	0	0	0	0	0	3	0	3	0	51	546
9:50 AM	0	16	0	0	1	18	0	0	0	0	0	0	1	0	1	0	37	528
9:55 AM	0	16	2	0	2	18	0	0	0	0	0	0	2	0	4	0	44	518
10:00 AM	0	12	1	1	1	23	0	0	0	0	0	0	1	0	1	0	40	516
10:05 AM	0	11	1	0	2	17	0	0	0	0	0	0	4	0	4	0	39	509
10:10 AM	0	14	0	0	3	15	0	0	0	0	0	0	4	0	2	0	38	505



5-Min Count Period Beginning At	SW Boones Ferry Rd (Northbound)				SW Boones Ferry Rd (Southbound)				SW Norwood Rd (Eastbound)				SW Norwood Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
5:30 PM	0	25	5	0	5	37	0	0	0	0	0	0	2	0	19	0	93	1520
5:35 PM	0	32	6	0	8	39	0	0	0	0	0	0	5	0	7	0	97	1499
5:40 PM	0	26	7	0	10	38	0	0	0	0	0	0	1	0	8	0	90	1484
5:45 PM	0	47	7	0	10	43	0	0	0	0	0	0	2	0	10	0	119	1469
5:50 PM	0	23	8	0	7	32	0	0	0	0	0	0	13	0	19	0	102	1423
5:55 PM	0	24	1	0	11	30	0	0	0	0	0	0	6	0	7	0	79	1342
6:00 PM	0	23	4	0	4	20	0	0	0	0	0	0	4	0	13	0	68	1271
6:05 PM	0	19	1	0	5	32	0	0	0	0	0	0	3	0	7	0	67	1192
6:10 PM	0	15	3	0	4	27	0	0	0	0	0	0	1	0	6	0	56	1125
6:15 PM	0	19	7	0	4	27	0	0	0	0	0	0	4	0	6	0	67	1066
6:20 PM	0	17	3	0	3	24	0	0	0	0	0	0	3	0	8	0	58	1002
6:25 PM	0	23	2	0	5	23	0	0	0	0	0	0	2	0	6	0	61	957
6:30 PM	0	19	3	0	2	23	0	0	0	0	0	0	2	0	5	0	54	918
6:35 PM	0	23	2	0	5	27	0	0	0	0	0	0	2	0	3	0	62	883
6:40 PM	0	21	1	0	7	22	0	0	0	0	0	0	1	0	5	0	57	850
6:45 PM	0	26	1	0	5	22	0	0	0	0	0	0	1	0	5	0	60	791
6:50 PM	0	19	0	0	6	24	0	0	0	0	0	0	2	0	7	0	58	747
6:55 PM	0	16	3	0	4	11	0	0	0	0	0	0	2	0	4	0	40	708
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	868	92	0	104	616	0	0	0	0	0	0	20	0	88	0	1788	
Heavy Trucks	0	52	0		8	12	0		0	0	0		4	0	0		76	
Buses																		
Pedestrians		0				0				4				0			4	
Bicycles	0	4	4		0	12	0		0	0	0		0	0	0		20	
Scooters																		
<i>Comments:</i>																		

Report generated on 7/18/2022 2:35 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

## Site Trips

The proposed development includes the construction of 320 detached home lots and 80 attached home lots. A supplemental memorandum addressing potential development of the commercial parcels abutting SW Boones Ferry Road is included in Appendix E. This memorandum includes trip generation for several potential commercial development scenarios of different intensities.

## Trip Generation

To estimate trips that will be generated by the redevelopment, trip equations from the *Trip Generation Manual*<sup>1</sup> were used based on the number of dwelling units (DU). Land Use 210 – *Single-Family Detach Housing* was applied to the 320 detached units in the site while Land Use 220 – *Multifamily Housing (Low-Rise)* was applied to the 80 attached units.

As shown in Table 3, the trip generation calculations show that the proposed Autumn Sunrise Subdivision is estimated to generate 271 trips during the morning peak hour, 358 trips during the evening peak hour, and 3,596 daily trips during the average weekday.

**Table 3: Trip Generation Summary**

ITE Code	Intensity (DU)	Morning Peak Hour			Evening Peak Hour			Daily Trips
		In	Out	Total	In	Out	Total	
Single-Family Detached Housing	320	58	174	232	195	115	310	3,032
Multifamily Housing (Low-Rise)	80	9	30	39	30	18	48	564
<b>Total</b>	<b>400</b>	<b>67</b>	<b>204</b>	<b>271</b>	<b>225</b>	<b>133</b>	<b>358</b>	<b>3,596</b>

*Note: Trip equations were applied for these land uses.*

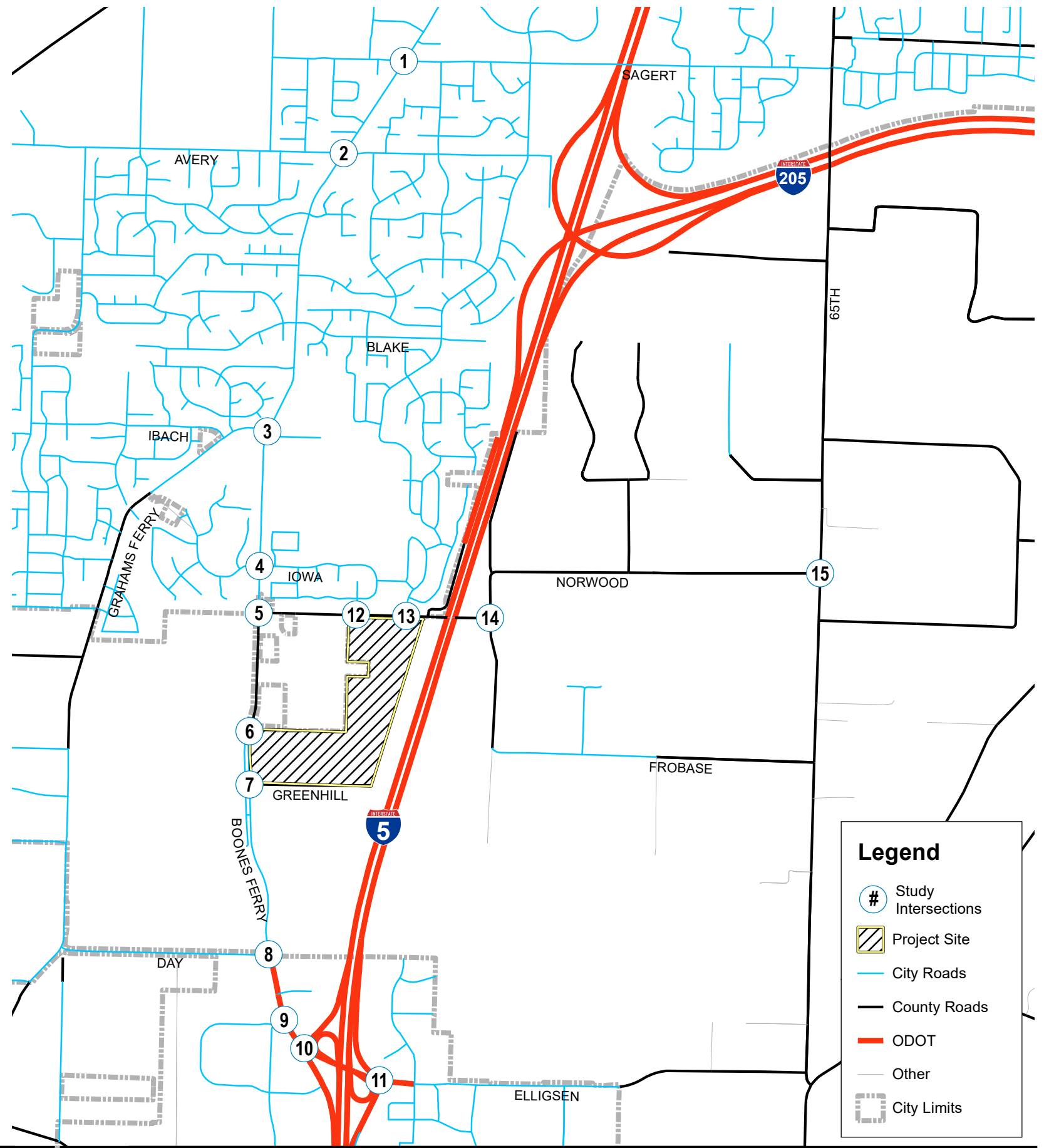
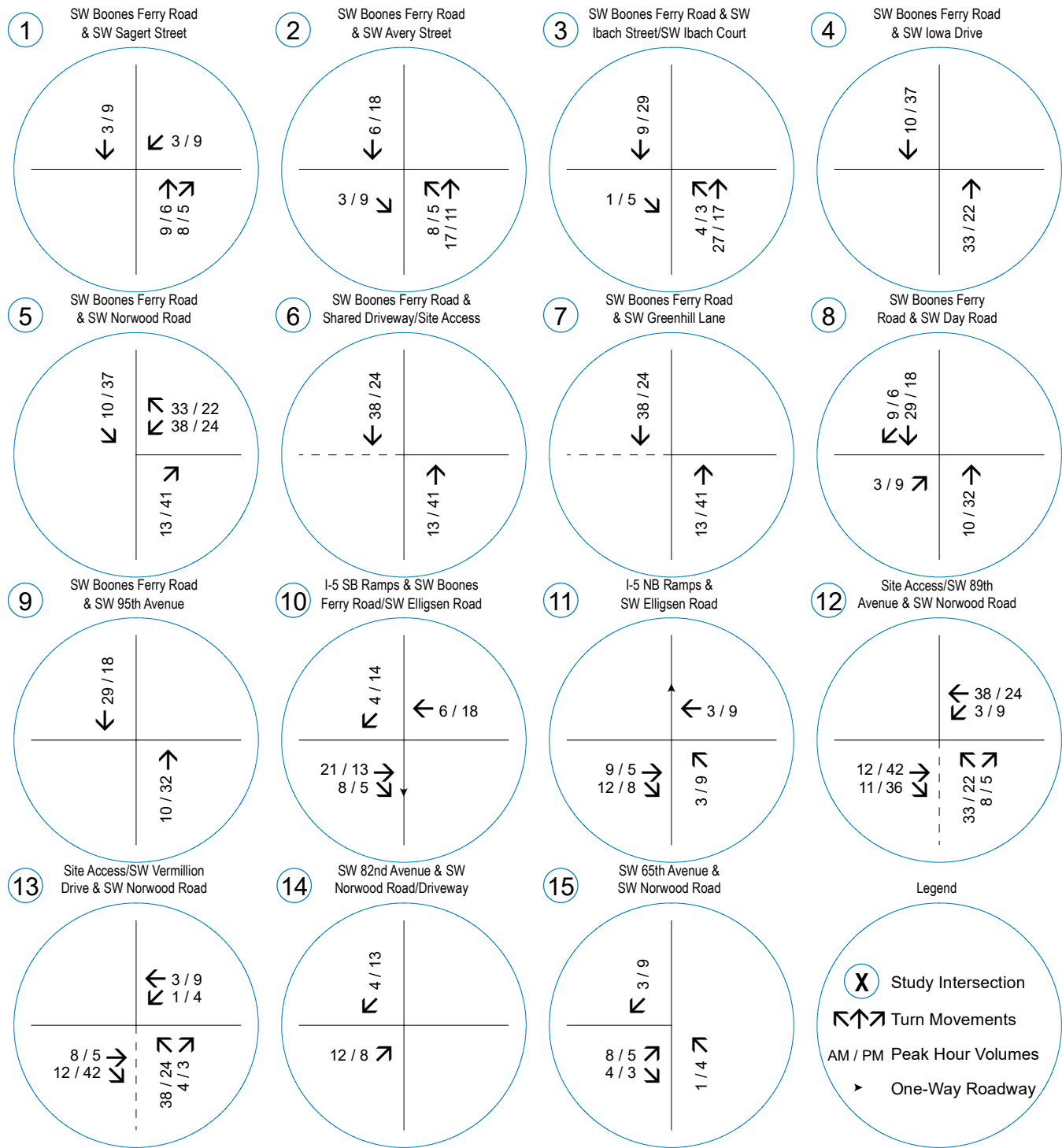
Table 4 presents the number and type of housing units and the trip generation by phase of development. With Phases 1 and 2, all site access will be taken from SW Norwood Road. The site access to SW Boones Ferry Road will be constructed with the completion of Phase 3. Phase 1 is expected to be constructed in year 2023 with each phase completed the subsequent year. Full buildout would occur in year 2026.

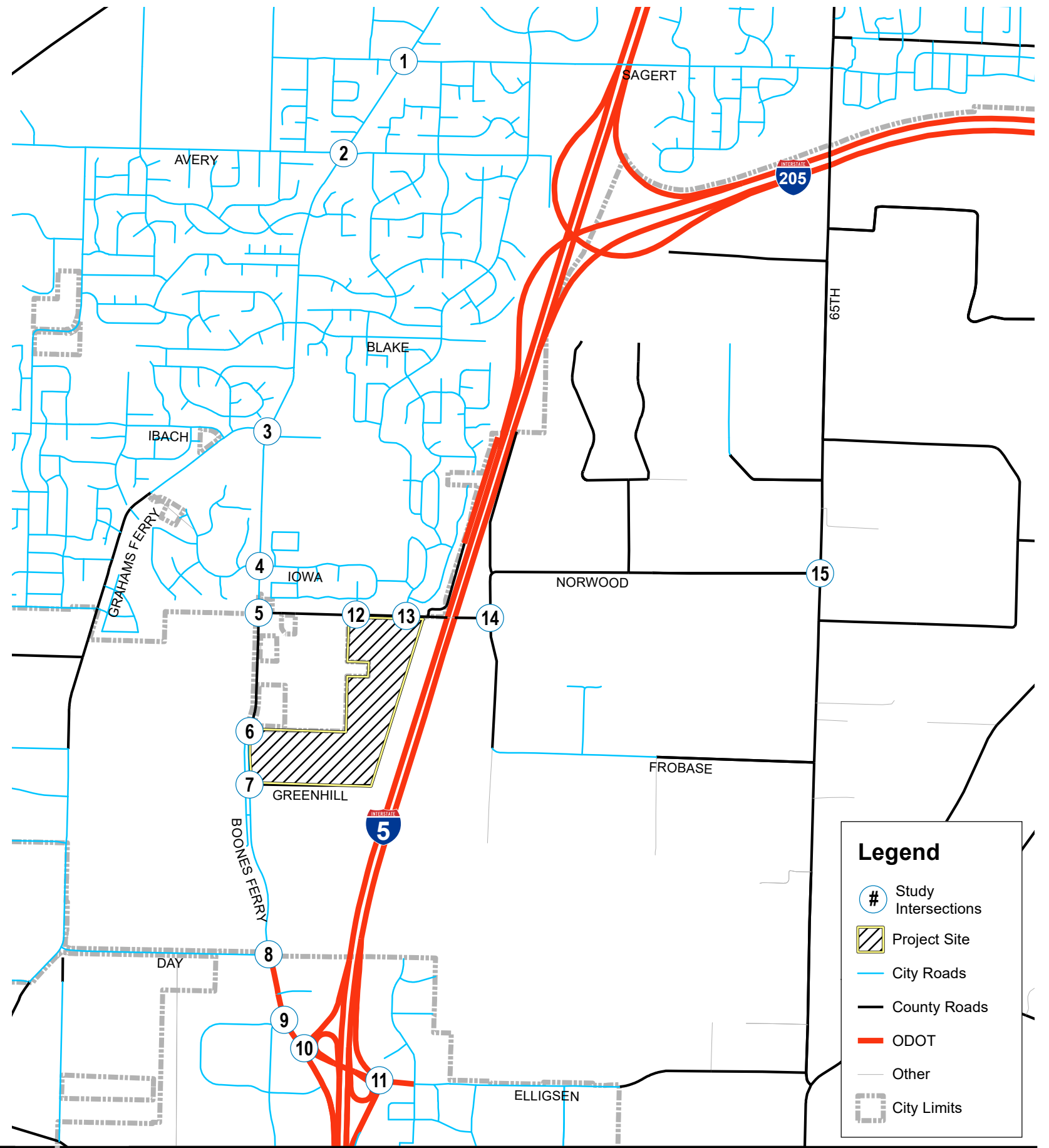
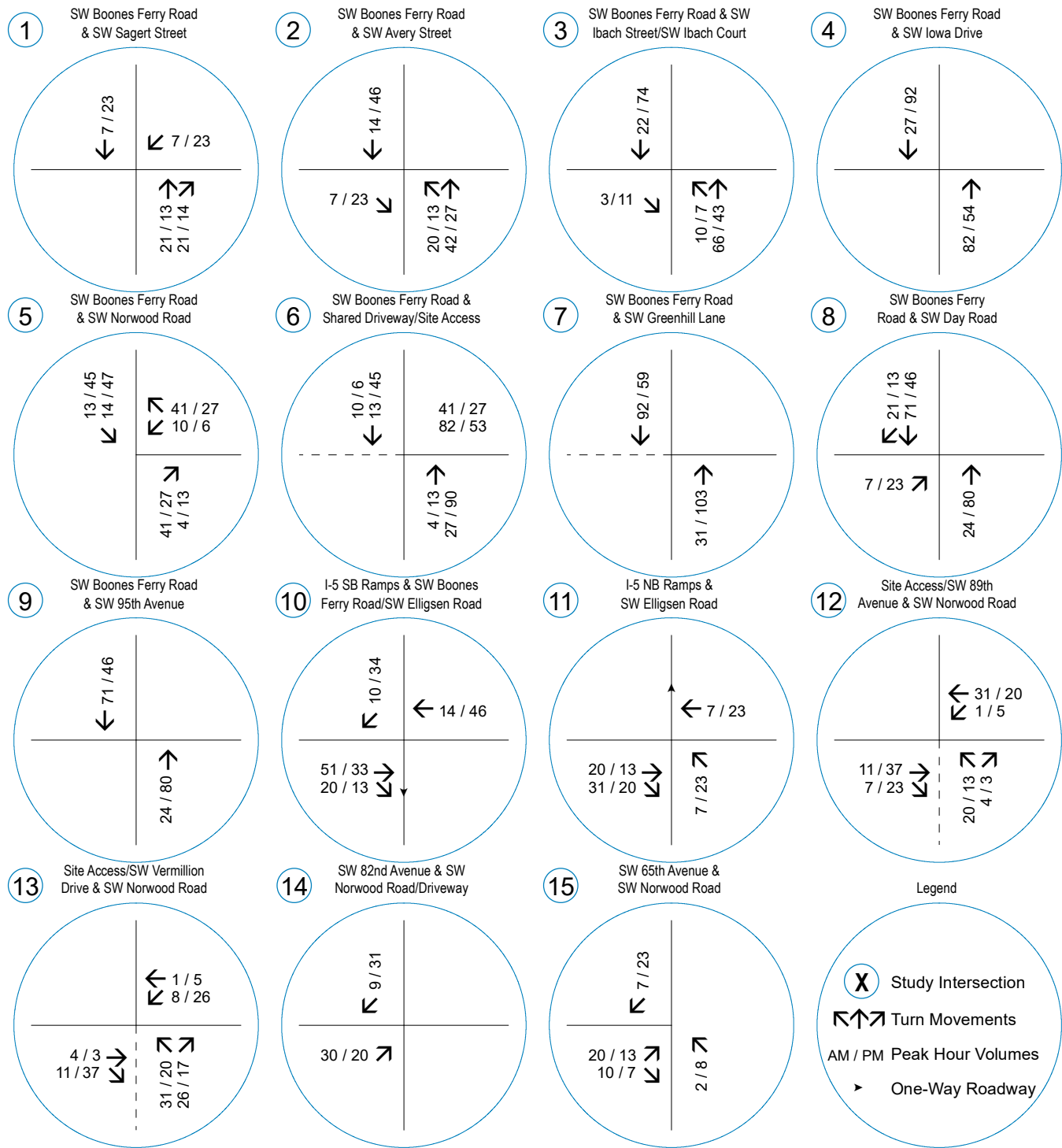
<sup>1</sup> Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 10<sup>th</sup> Edition, 2017.

Table 4: Trip Generation by Phase

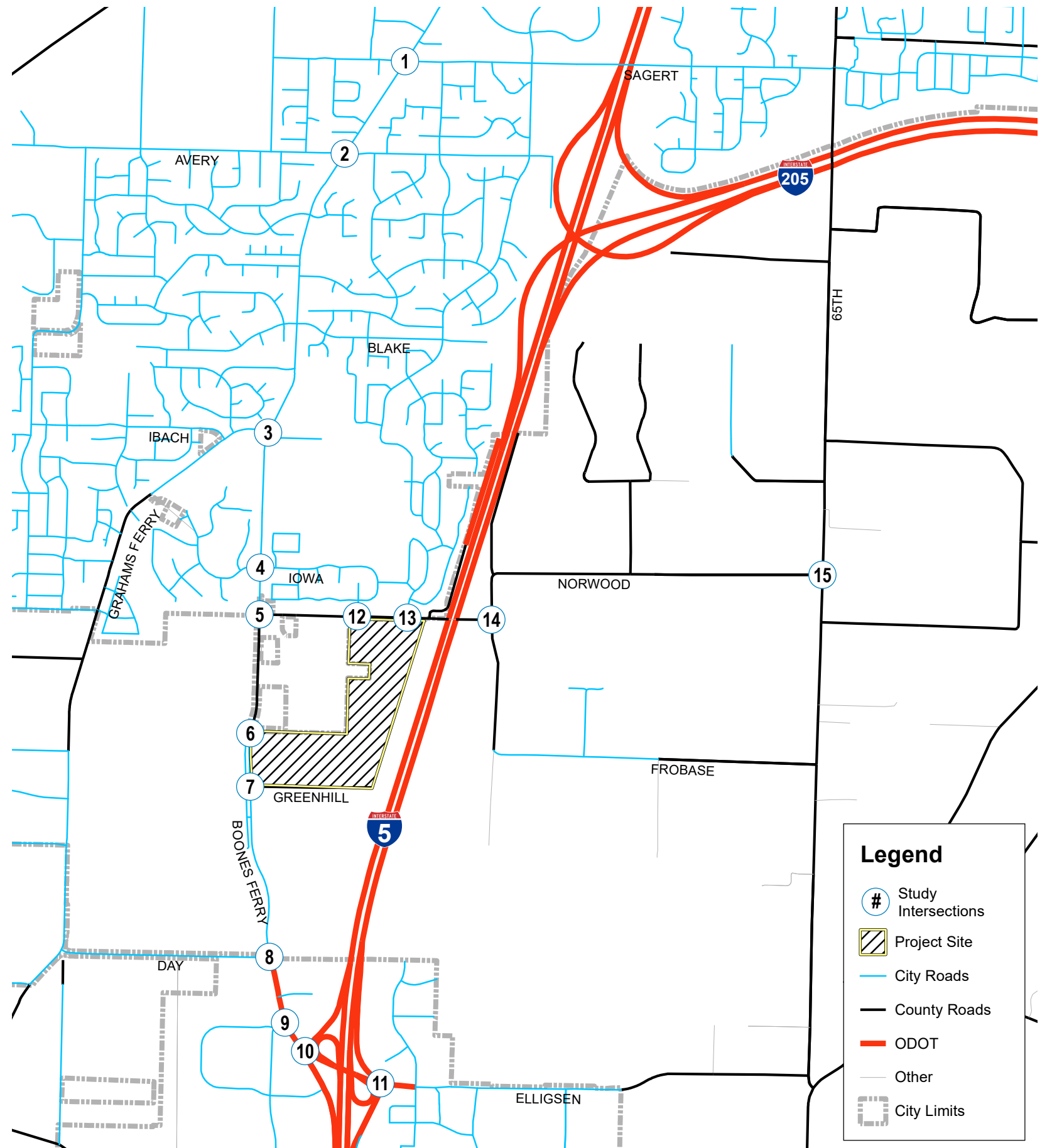
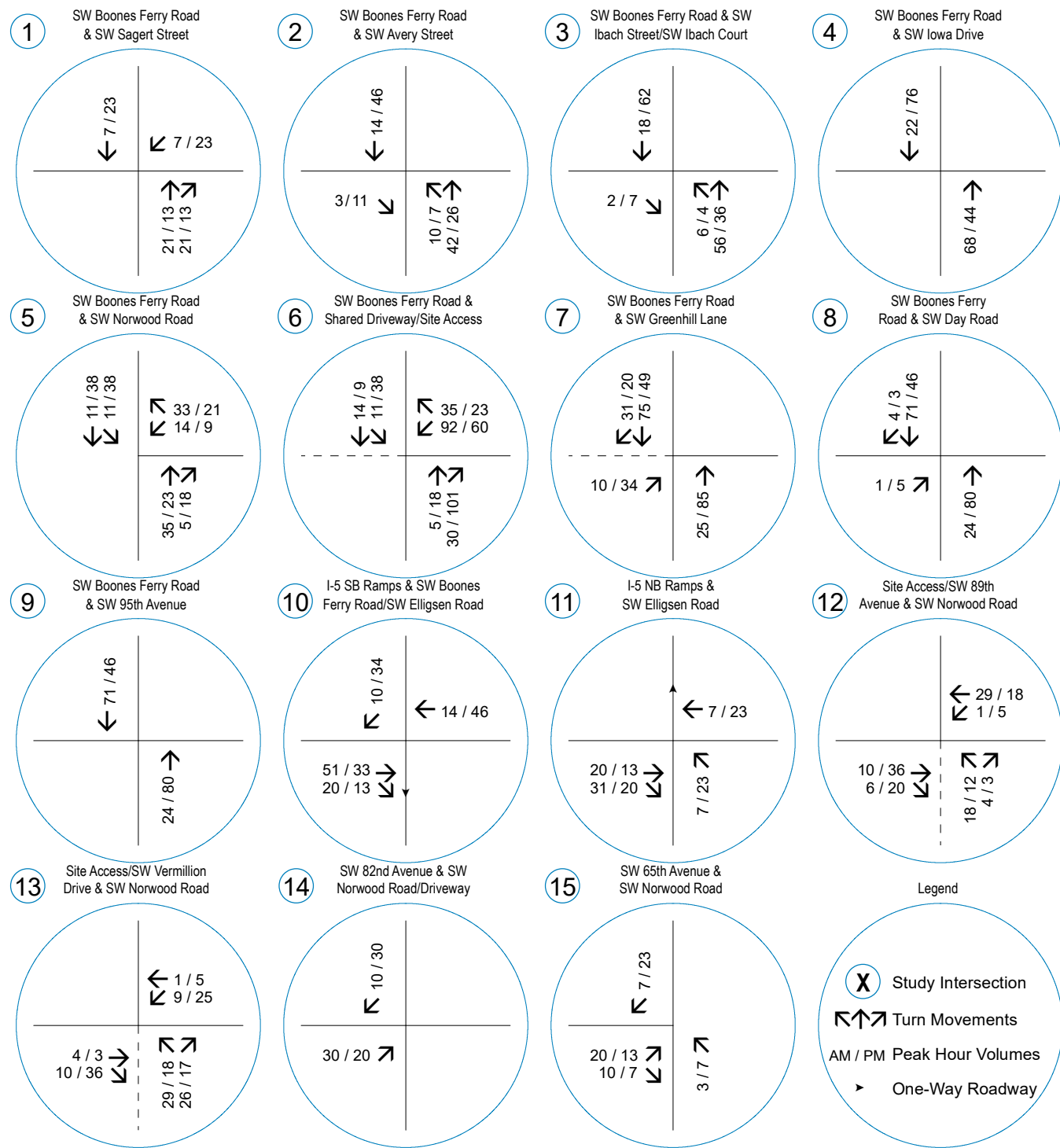
Phase	Intensity (DU)			Morning Peak Hour			Evening Peak Hour			Daily Trips
	Single	Multi	Total	In	Out	Total	In	Out	Total	
1	85	24	109 (27%)	18	55	73	61	36	97	975
2	41	14	55 (14%)	9	28	37	30	18	48	487
3	91	42	133 (33%)	21	65	86	71	42	113	1,158
4	103	0	103 (26%)	19	56	75	63	37	100	976
<i>Subtotal (1-2)</i>	<i>126</i>	<i>38</i>	<i>164 (41%)</i>	<i>27</i>	<i>83</i>	<i>110</i>	<i>91</i>	<i>54</i>	<i>145</i>	<i>1,462</i>
<i>Subtotal (1-3)</i>	<i>217</i>	<i>80</i>	<i>297 (74%)</i>	<i>48</i>	<i>148</i>	<i>196</i>	<i>162</i>	<i>96</i>	<i>258</i>	<i>2,620</i>
<b>Total (1-4)</b>	<b>320</b>	<b>80</b>	<b>400</b>	<b>67</b>	<b>204</b>	<b>271</b>	<b>225</b>	<b>133</b>	<b>358</b>	<b>3,596</b>











**Table 1 Trip Generation Summary**

ITE Land Use	Dwelling Units (#)	Weekday						
		ADT	AM Peak Hour			PM Peak Hour		
			Total	Enter	Exit	Total	Enter	Exit
Mid-Rise Housing (#221)	116							
Generation Rate <sup>1</sup>		5.44	0.36	26%	74%	0.44	61%	39%
Site Trips		<b>631</b>	<b>42</b>	11	31	<b>51</b>	31	20

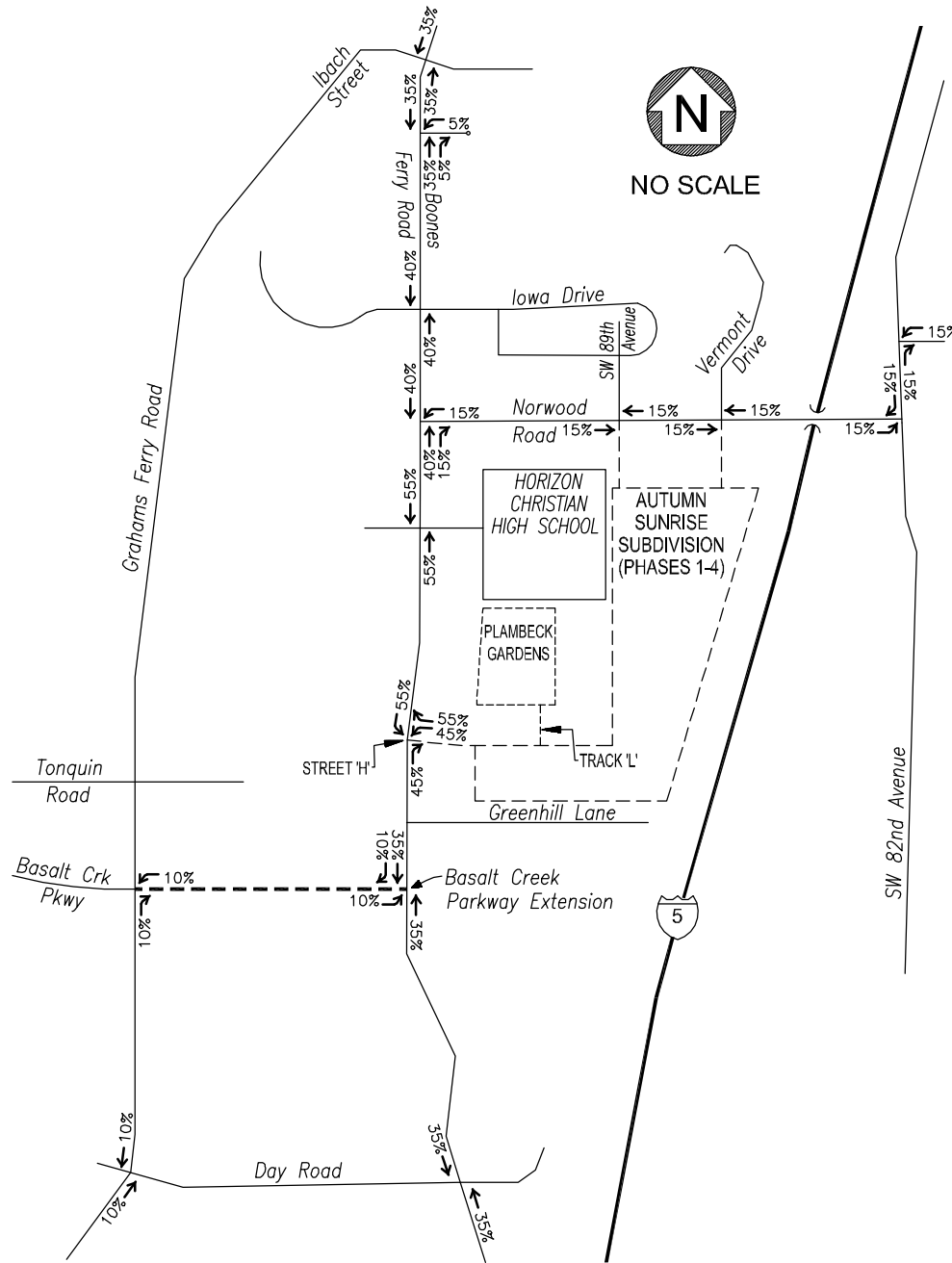
<sup>1</sup> Source: *Trip Generation*, 10th Edition, ITE, 2017, average rates.

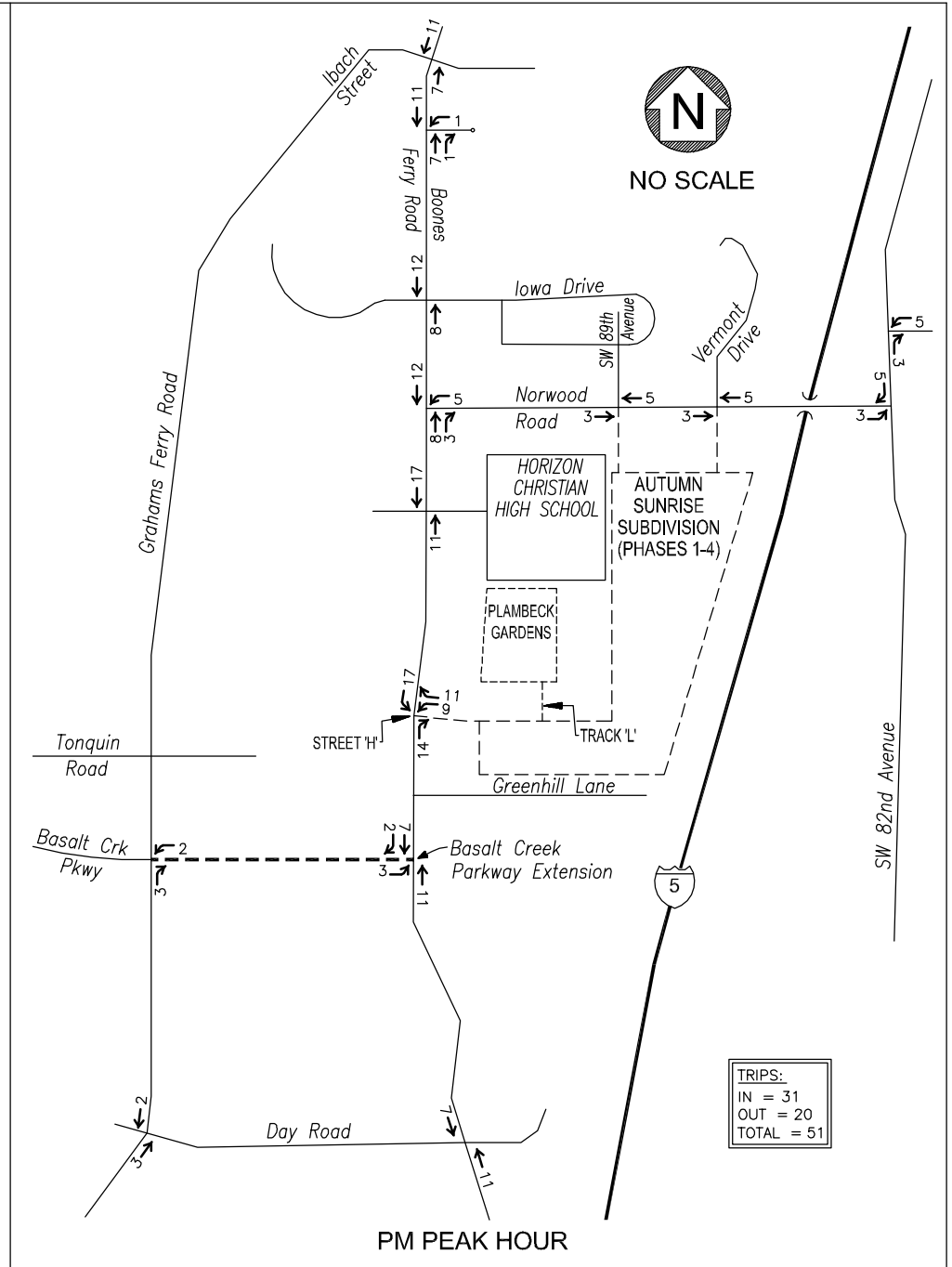
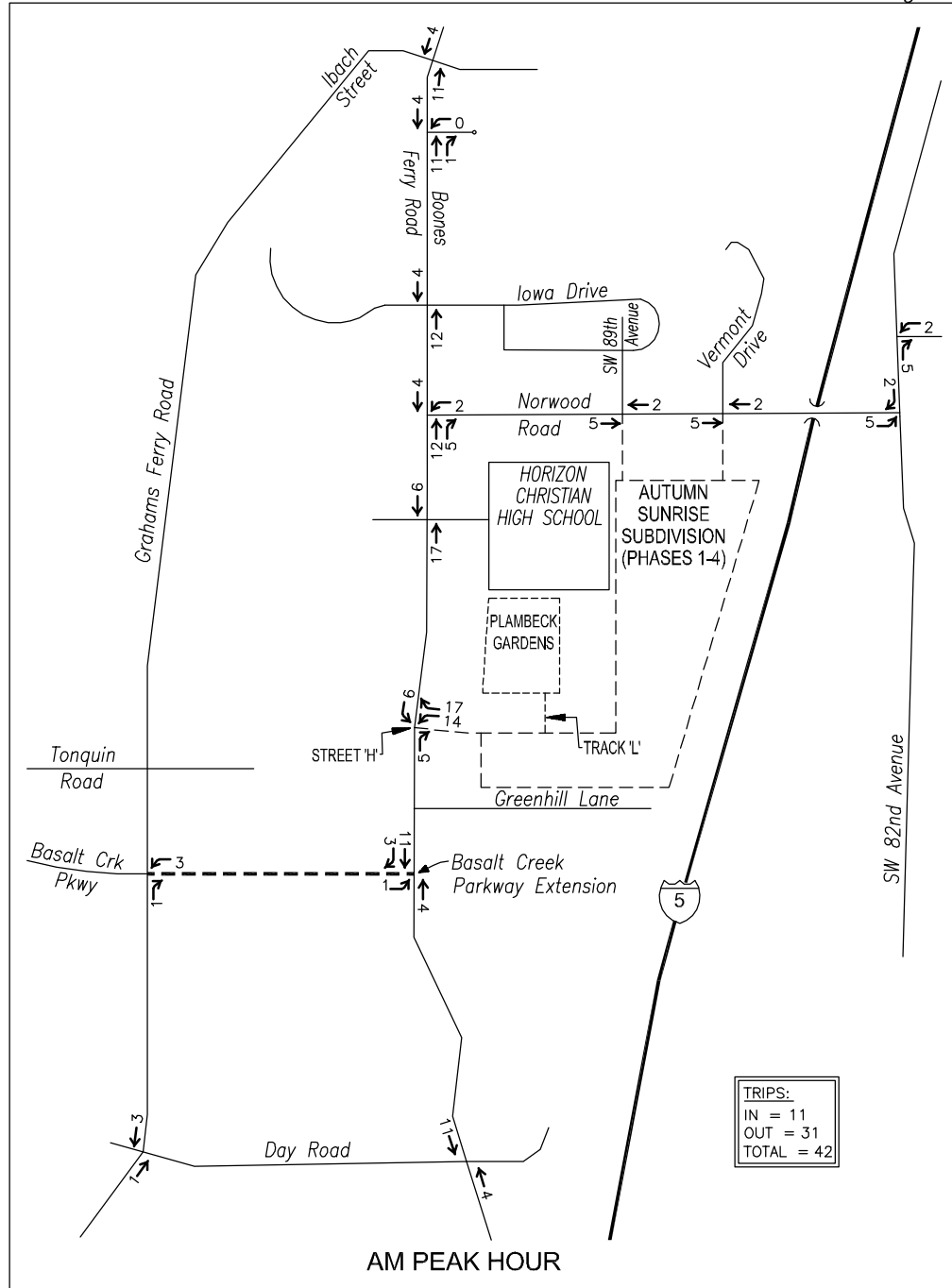
Two existing homes are located on the property site and will be demolished in conjunction with the proposed development. Trip credits totaling 19 daily trips, one AM trip, and two PM trips will result in a net trip generation of 612 daily trips, 41 AM peak hour trips, and 49 PM peak hour trips for Plambeck Gardens.

The Plambeck Gardens trip distribution was based on the existing count data and engineering judgment. This information is presented on Figure 4. The corresponding trip assignments are presented on Figure 5 for the AM & PM peak hours.

### CAPACITY ANALYSIS

Capacity analyses were performed to determine the levels of service for the weekday peak hours. Synchro v11.1 software was used to determine the approach delays and level of service for the study intersections. The program is based on the Highway Capacity Manual (6<sup>th</sup> edition) methodology. Table 2 summarizes the analysis results for the year 2021 existing traffic and for the year 2026 background and total traffic scenarios. Copies of the capacity analysis summaries are included in the appendix.





## Appendix C - Safety

Crash History Data

Sight Distance

Left-Turn Lane Warrant Analysis

Preliminary Signal Warrant Analysis

Detailed Signal Warrant Analysis



OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
URBAN NON-SYSTEM CRASH LISTING

CITY OF TUALATIN, WASHINGTON COUNTY

BOONES FERRY RD and IBACH ST, City of Tualatin, Washington County, 01/01/2016 to 12/31/2020

1 - 2 of 9 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE	SPCL USE	A	S																					
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR	QTY	MOVE	PRTC	INJ	G	E	LICNS	PED									
RD DPT	E	L	G	N	H	R	TIME	FROM	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	TO	P#	TYPE	SVRVTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE				
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRVTY	V#	TYPE	TO	P#	TYPE	SVRVTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE				
02244	N	N	N	#	N	N	04/19/2017	16	SW BOONES FERRY RD	INTER	CROSS	N	N	RAIN	S-1TURN	01	NONE	0	STRGHT										07				
										#																							
										E																							
										R																							
										I																							
										O																							
										R																							
CITY	WE		0						SW IBACH ST	N					TRF	SIGNAL	N	WET	REAR		PRVTE	N	-S						000	00			
N		11A								06		0			N	DAY	INJ			PSNDR	CAR		01	DRVR	INJC	42	F	OR-Y		043	000	07	
N		45	21	38.63		-122	46					28.26																					
										#																							
										E																							
										R																							
										I																							
										O																							
										R																							
										O																							
										R																							
																02	NONE	0	TURN-R														
										#																							
										E																							
										R																							
										I																							
										O																							
										R																							
										O																							
										R																							
																					PRVTE	N	-W						000	00			
																					PSNDR	CAR		01	DRVR	INJC	58	M	OR-Y		000	000	00
										#																							
										E																							
										R																							
										I																							
										O																							
										R																							
										O																							
										R																							
06988	N	N	N	#	N	N	10/13/2016	16	SW BOONES FERRY RD	INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE	9	STRGHT											02			
										#																							
										E																							
										R																							
										I																							
										O																							
										R																							
										O																							
										R																							
CITY	TH		0						SW IBACH ST	S					TRF	SIGNAL	N	WET	TURN		N/A	N	-S						000	00			
N		7P								05		0			N	DLIT	PDO			PSNDR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00	
N		45	21	38.63		-122	46					28.26																					
										#																							
										E																							
										R																							
										I																							
										O																							
										R																							
										O																							
										R																							
																					N/A	N	-S					000	000	00			
																					PSNDR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
										#																							
										E																							
										R																							
										I																							
										O																							
										R																							
										O																							
										R																							
02506	N	N	N	#	N	N	05/01/2017	16	SW BOONES FERRY RD	STRGHT		N	N	CLD	S-1STOP	01	NONE	0	STRGHT											27,29			
										#																							
										E																							
										R																							
										I																							
										O																							
										R																							
										O																							
										R																							
CITY	MO		50						SW IBACH ST	N	(NONE)				TRF	SIGNAL	N	DRY	REAR		PRVTE	N	-S						000	00			
N		3P								06					N	DAY	INJ			PSNDR	CAR		01	DRVR	NONE	17	F	OR-Y		016,026	038	27,29	
N		45	21	39.38		-122	46					27.77																					

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

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TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
URBAN NON-SYSTEM CRASH LISTING  
BOONES FERRY RD and IBACH ST, City of Tualatin, Washington County, 01/01/2016 to 12/31/2020  
3 - 6 of 9 Crash records shown.

CITY OF TUALATIN, WASHINGTON COUNTY

SER#	P	R J S W DATE	CLASS	CITY STREET	INT-TYPE	SPCL USE															
INVEST	E A U I C O DAY	DIST	FIRST STREET	RD CHAR	(MEDIAN) INT-REL	OFFRD WTHR CRASH	TRLR QTY	MOVE	A S												
RD DPT	E L G N H R TIME	FROM	SECOND STREET	DIRECT	LEGS TRAF-	RNDBT SURF COLL	OWNER	FROM	PRTC INJ	G E LICNS	PED										
UNLOC?	D C S V L K LAT	LONG	LRS	LOCTN	(#LANES) CONTL	DRVWY LIGHT SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E X RES	LOC	ERROR	ACT	EVENT	CAUSE					
							02	NONE	0	STOP											
								PRVTE	N -S						011		00				
								PSNGR CAR		01	DRVR	INJC	32 F	OR-Y	000	000	00				
													OR<25								
04137	Y N N N	N N 11/11/2020	16	SW BOONES FERRY RD	STRGHT	N	Y	RAIN	FIX OBJ	01	NONE	0	STRGHT			040,045,010	01				
														<b>Not associated with intersection</b>							
	CITY			WE	325	SW IBACH ST	N	(NONE)	UNKNOWN	N	WET	FIX	PRVTE	N -S		000	040,045,010	00			
	Y			11P		07			N	DLIT	INJ	PSNGR CAR		01	DRVR	INJB	42 M	OTH-Y	047,080,081	017	01
	N	45 21 41.75	-122 46	26.21		(02)												OR>25			
02310	N Y N N	N N 04/08/2016	16	SW BOONES FERRY RD	STRGHT	N	Y	CLR	FIX OBJ	01	NONE	9	STRGHT			040	10				
														<b>Not associated with intersection</b>							
	CITY			FR	500	SW IBACH ST	N	(NONE)	UNKNOWN	N	DRY	FIX	N/A	N -S		000	00				
	Y			1A		08			N	DARK	PDO	PSNGR CAR		01	DRVR	NONE	00 Unk	UNK	000	000	00
	N	45 21 43.41	-122 46	25.13		(02)												UNK			
02457	N N N N	# N 05/15/2018	16	SW BOONES FERRY RD	STRGHT	N	N	CLR	S-STRGHT	01	NONE	9	STRGHT				29				
														<b>Not associated with intersection</b>							
	NONE			TU	150	SW IBACH ST	S	(NONE)	UNKNOWN	N	DRY	REAR	N/A	N -S		000	00				
	N			1P		07			N	DAY	PDO	PSNGR CAR		01	DRVR	NONE	00 Unk	UNK	000	000	00
	N	45 21 36.89	-122 46	28.91		(02)												UNK			
										02	NONE	9	STRGHT								
										N/A	N -S					006	00				
										PSNGR CAR		01	DRVR	NONE	00 Unk	UNK	000	000	000	00	

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CITY OF TUALATIN, WASHINGTON COUNTY

BOONES FERRY RD and IBACH CT, City of Tualatin, Washington County, 01/01/2016 to 12/31/2020  
4 - 5 of 7 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE	SPCL USE	ACT	EVENT	CAUSE																		
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR	QTY	MOVE	A	S											
RD DPT	E	L	G	N	H	R	TIME	FROM	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED								
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRs	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
02020	N	N	N	#	Y	04/10/2017	16	SW BOONES FERRY RD	ALLEY		N	N	N	CLD	O-1 L-TURN	01	NONE	9	STRGHT											02	
# E R R O R																															
Not associated with intersection																															
CITY						MO		350	SW IBACH CT	S	(NONE)	NONE	N	WET	TURN		N/A		S -N											000	00
N						1P			08				N	DAY	PDO		PSNGR CAR			01	DRVR	NONE	00	Unk	UNK		000	000		00	
N						45 21 34.92	-122 46	29.03			(02)																				
# E R R O R																															
																	02	NONE	9	TURN-L											
																	N/A		N -E											019	00
																	PSNGR CAR			01	DRVR	NONE	00	Unk	UNK		000	000		00	
07712	N	N	N	#	N	12/04/2017	19	SW IBACH CT	STRGHT		N	Y	CLD	FIX OBJ	01	NONE	9	STRGHT											054	10	
# E R R O R																															
Not associated with intersection																															
CITY						MO		140	SW BOONES FERRY RD	E	(NONE)	NONE	N	DRY	FIX		N/A		UN-UN											000	00
Y						3P			07				N	DAY	PDO		PSNGR CAR			01	DRVR	NONE	00	Unk	UNK		000	000		00	
N						45 21 37.99	-122 46	26.08			(02)																				
03331	N	N	N	#	N	05/11/2018	16	SW BOONES FERRY RD	STRGHT		N	N	CLR	S-1STOP	01	NONE	0	STRGHT													29
# E R R O R																															
CITY						FR		100	SW IBACH CT	S	(NONE)	NONE	N	DRY	REAR		UNKN		S -N											000	00
N						7A			08				N	DAY	INJ		PSNGR CAR			01	DRVR	NONE	00	Unk	UNK		026	000		29	
N						45 21 37.29	-122 46	28.82			(02)																				
# E R R O R																															
																	PRVTE		S -N											011	00
																	PSNGR CAR			01	DRVR	INJC	47	F	NONE		000	000		00	

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 BOONES FERRY RD and IBACH CT, City of Tualatin, Washington County, 01/01/2016 to 12/31/2020  
 6 - 7 of 7 Crash records shown.

CITY OF TUALATIN, WASHINGTON COUNTY

SER#	INT-DATE	CLASS	CITY STREET	INT-TYPE	SPCL USE	RD CHAR	INT-REL	OFFRD	WTHR	CRASH	TRLR QTY	MOVE	A S	PRTC	INJ	G E LICNS	PED	ERROR	ACT	EVENT	CAUSE	
UNLOC?	D C S V L K LAT	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E X RES	LOC	ERROR	ACT	EVENT	CAUSE	
										02	NONE	0	STOP									
											PRVTE	S -N							011			00
											PSNGR	CAR	02	PSNG	INJC	36	F		000	000		00
00397	01/23/2019	16	SW BOONES FERRY RD	STRGHT		N	N	CLR	S-1STOP	01	NONE	0	STRGHT									29
											Not associated with intersection											
											PRVTE	S -N							000			00
											PSNGR	CAR		01	DRVR	NONE	25	M	OR-Y	026	000	29
											02	NONE	0	STOP								
											PRVTE	S -N								011		00
											PSNGR	CAR		01	DRVR	INJC	16	F	OR-Y	000	000	00
											02	NONE	0	STOP								
											PRVTE	S -N								011		00
											PSNGR	CAR		02	PSNG	INJC	14	F		000	000	00

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
URBAN NON-SYSTEM CRASH LISTING

CITY OF TUALATIN, WASHINGTON COUNTY

BOONES FERRY RD and NORWOOD RD, City of Tualatin, Washington County, 01/01/2016 to 12/31/2020

6 - 8 of 9 Crash records shown.

SER#	INVEST	RD DPT	UNLOC?	S	D	M	P	R	J	S	W	DATE	CLASS	CITY STREET	RD CHAR	INT-TYPE	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE	A	S	PRTC	INJ	G	E	LICNS	PED	ERROR	ACT	EVENT	CAUSE						
	E	A	U	I	C	O	DAY	DIST	FIRST STREET	RD CHAR	(MEDIAN)			LEG	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	TO	P#	TYPE	SVR	TY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE							
									LONG	LRS	LOCTN			(#LANES)	CONTL	DRVWY	LIGHT	SVR	TY																					
																02	NONE	9			STOP																			
06351	N	N	N	#	E	R	R	O																																
NONE																																								
N																																								
N																																								
00560	N	Y	N	#	E	R	R	O																																
NO RPT																																								
Y																																								
N																																								

Not associated with intersection

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

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TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
URBAN NON-SYSTEM CRASH LISTING  
**BOONES FERRY RD and NORWOOD RD, City of Tualatin, Washington County, 01/01/2016 to 12/31/2020**  
1 - 3 of 9 Crash records shown.

CITY OF TUALATIN, WASHINGTON COUNTY

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE	P	TYPE	INJ	A	S	PED	ACT	EVENT	CAUSE						
INVEST	E	A	U	I	C	DAY	DIST	FIRST STREET	RD CHAR	(MEDIAN)	RNDBT	SURF	COLL	TRLR QTY	OWNER	FROM	TO	P#	TYPE	SVR	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
RD DPT	E	L	G	N	H	R	TIME	SECOND STREET	DIRECT	LEGS	TRAF-	DRVWY	LIGHT	SVR	TY	TO	TO	P#	TYPE	SVR	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVR	TY	TO	P#	TYPE	SVR	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
05132	Y	N	N	#	N	08/02/2016	16	SW BOONES FERRY RD	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE	9	TURN-R										08,30		
# E R R O R																														
CITY	TU						0	SW NORWOOD RD	E				STOP SIGN	N	DRY	TURN	N/A		S -E							000		00		
N						12P			06		0		N	DAY	PDO			PSNGR CAR			01	DRVR	NONE	00	Unk	UNK	000	000	00	
N						45 21 13.25	-122 46 29.07												02	NONE	9									
# E R R O R																														
																			N/A		E -W					006		00		
																			SEMI TOW		E -W	01	DRVR	NONE	00	Unk	UNK	000	000	00
08636	N	N	N	#	N	12/14/2016	16	SW BOONES FERRY RD	INTER	3-LEG	N	N	SNOW	O-OTHER	01	NONE	9	TURN-L									124	02		
# E R R O R																														
NONE						WE		SW NORWOOD RD	E				STOP SIGN	N	ICE	TURN	N/A		N -E							000		00		
N						6P			05		0		N	DLIT	PDO			PSNGR CAR			01	DRVR	NONE	00	Unk	UNK	000	000	00	
N						45 21 13.25	-122 46 29.07												02	NONE	9									
# E R R O R																														
																			N/A		S -E					000	000	00		
																			TRUCK		S -E	01	DRVR	NONE	00	Unk	UNK	000	000	00
03180	Y	N	N	#	N	05/31/2017	16	SW BOONES FERRY RD	INTER	3-LEG	N	Y	CLD	FIX OBJ	01	NONE	9	TURN-L									053	01		
# E R R O R																														
CITY	WE						0	SW NORWOOD RD	E				STOP SIGN	N	DRY	FIX	N/A		N -E							000		00		
N						3P			05		0		N	DAY	PDO			PSNGR CAR			01	DRVR	NONE	00	Unk	UNK	000	000	00	
N						45 21 13.25	-122 46 29.07																							

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OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
URBAN NON-SYSTEM CRASH LISTING

CITY OF TUALATIN, WASHINGTON COUNTY

**BOONES FERRY RD and NORWOOD RD, City of Tualatin, Washington County, 01/01/2016 to 12/31/2020**

4 - 5 of 9 Crash records shown.

SER#	P R J S W DATE	CLASS	CITY STREET	INT-TYPE	SPCL USE	ACT	EVENT	CAUSE												
INVEST	E A U I C O DAY	DIST	FIRST STREET	RD CHAR	(MEDIAN)	INT-REL	OFFRD WTHR	CRASH	TRLR QTY	MOVE	A S									
RD DPT	E L G N H R TIME	FROM	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT SURF	COLL	OWNER	FROM	PRTC	INJ	G E LICNS	PED						
UNLOC?	D C S V L K LAT	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E X RES	LOC	ERROR	ACT	EVENT	CAUSE	
04147	Y Y N N 11/11/2020	16	SW BOONES FERRY RD	INTER	3-LEG	N	N	CLR	ANGL-STP	01 NONE 9	TURN-R								30,08	
CITY	WE	0	SW NORWOOD RD	E		UNKNOWN	N	DRY	TURN	N/A	S -E							000	00	
N	1P			06	0		N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk UNK		000	000	00	
N	45 21 13.25	-122 46 29.07																		
										02 NONE 9	STOP									
										N/A PSNGR CAR	E -W		01 DRVR	NONE	00	Unk UNK	000	000	00	
04164	N N N N 11/13/2020	16	SW BOONES FERRY RD	INTER	3-LEG	N	N	RAIN	ANGL-OTH	01 NONE 9	STRGHT								02,03	
NONE	FR	0	SW NORWOOD RD	CN		STOP SIGN	N	WET	TURN	N/A	S -N								000	00
N	6A			02	0		N	DARK	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk UNK		000	000	00	
N	45 21 13.25	-122 46 29.07																		
										02 NONE 9	TURN-L									
										N/A PSNGR CAR	E -S		01 DRVR	NONE	00	Unk UNK	000	000	00	
05839	N N N N 10/29/2018	16	SW BOONES FERRY RD	STRGHT			N	CLD	S-1STOP	01 NONE 9	STRGHT								29	
NONE	MO	115	SW NORWOOD RD	N	(NONE)	UNKNOWN	N	WET	REAR	N/A	N -S								000	00
N	3P			08			N	DAY	PDO	PSNGR CAR		01 DRVR	NONE	00	Unk UNK		000	000	00	
N	45 21 14.61	-122 46 29.08			(02)															

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OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
URBAN NON-SYSTEM CRASH LISTING

CITY OF TUALATIN, WASHINGTON COUNTY

BOONES FERRY RD and NORWOOD RD, City of Tualatin, Washington County, 01/01/2016 to 12/31/2020

9 - 9 of 9 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE	SPCL USE	ACT	EVENT	CAUSE																
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR	QTY	MOVE	A	S									
RD DPT	E	L	G	N	H	R	TIME	FROM	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED						
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE
06392	N	N	N	#	N	N	11/21/2018	16	SW BOONES FERRY RD	STRGHT		N	Y	CLD	FIX OBJ	01	NONE	9	STRGHT								062,079	16	
				E																									
				I																									
				R																									
				O																									
				X																									
COUNTY									WE		1460																		
									SW NORWOOD RD	S	(NONE)	UNKNOWN	N	DRY	FIX	N/A		S -N									000	00	
Y									7A		08			DAWN	PDO	PSNGR CAR			01	DRVR	NONE	00	Unk	UNK		000	000	00	
N									45 20 58.76		-122 46																		
									29.43		(02)																		

Not associated with intersection

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OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
COUNTY ROAD CRASH LISTING

WASHINGTON COUNTY

82ND AVE and NORWOOD RD, City of Outside City Limits, Washington County, 01/01/2016 to 12/31/2020

SER#	P	R	J	S	W	DATE	MILEPNT	COUNTY ROADS	INT-TYPE	SPCL USE	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR QTY	MOVE	A	S	INVEST	E	A	U	I	C	O	DAY	DIST FROM	FIRST STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED	RD DPT	E	L	G	N	H	R	TIME	INTERSECT	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED	UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE
------	---	---	---	---	---	------	---------	--------------	----------	----------	---------	----------	---------	-------	------	-------	----------	------	---	---	--------	---	---	---	---	---	---	-----	-----------	--------------	--------	------	-------	-------	------	------	-------	------	------	-----	---	---	-------	-----	--------	---	---	---	---	---	---	------	-----------	---------------	--------	------	-------	-------	------	------	-------	------	------	-----	---	---	-------	-----	--------	---	---	---	---	---	---	-----	------	-----	-------	----------	-------	-------	-------	-------	----	------	----	----	------	-------	---	---	-----	-----	-------	-----	-------	-------

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OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
COUNTY ROAD CRASH LISTING

WASHINGTON COUNTY

**82ND AVE and NORWOOD RD, City of Outside City Limits, Washington County, 01/01/2016 to 12/31/2020**

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
URBAN NON-SYSTEM CRASH LISTING

CITY OF WILSONVILLE, WASHINGTON COUNTY

DAY RD and BOONES FERRY FR, City of Wilsonville, Washington County, 01/01/2016 to 12/31/2020

1 - 2 of 17 Crash records shown.

SER#	S P R J S W DATE	CLASS	CITY STREET	INT-TYPE	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	TRLR QTY	MOVE	OWNER	FROM	P#	TYPE	INJ	G E LICNS	PED	ERROR	ACT	EVENT	CAUSE
UNLOC?	D C S V L K LAT	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTRY	V#	TYPE	TO	TO	P#	TYPE	SVRTRY	E X RES	LOC	ERROR	ACT	EVENT	CAUSE
82897	N N N N # E R R O R	08/19/2018	16	SW BOONES FERRY FR	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE	0		STRGHT							29
				SW DAY RD	N			TRF SIGNAL	N	UNK	REAR	PRVTE	N -S								000	00
					06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	18 M	OR-Y OR<25		026	000	29
		45 20 25.31 -122 46 24.9												02	NONE	0						
												PRVTE PSNGR CAR	N -S								011 000	00 00
00405	N N N N # E R R O R	01/16/2017	16	SW BOONES FERRY FR	INTER	CROSS	N	N	SNOW	S-1STOP	01	NONE	9		STRGHT						124	29
				SW DAY RD	S			TRF SIGNAL	N	ICE	REAR	N/A	S -N								000	00
					06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk UNK		000	000	00
		45 20 25.3 -122 46 24.9												02	NONE	9						
												N/A PSNGR CAR	S -N								011 000	00 00
80200	N N N N # E R R O R	01/14/2017	16	SW BOONES FERRY FR	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE	9		STRGHT							29
				SW DAY RD	W			TRF SIGNAL	N	ICE	REAR	N/A	W -E								000	00
					06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk UNK		000	000	00
		10A 45 20 25.3 -122 46 24.9																				

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OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION  
 TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
 URBAN NON-SYSTEM CRASH LISTING  
**DAY RD and BOONES FERRY FR, City of Wilsonville, Washington County, 01/01/2016 to 12/31/2020**  
 3 - 5 of 17 Crash records shown.

CITY OF WILSONVILLE, WASHINGTON COUNTY

SER#	P	R J S W DATE	CLASS	CITY STREET	INT-TYPE	SPCL USE																
INVEST	E A U I C O DAY	DIST	FIRST STREET	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR QTY	MOVE											
RD DPT	E L G N H R TIME	FROM	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G E LICNS	PED							
UNLOC?	D C S V L K LAT	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E X RES	LOC	ERROR	ACT	EVENT	CAUSE			
										02 NONE	9	STOP										
										N/A PSNGR CAR	W -E	01 DRVR	NONE	00 Unk	UNK	000	011	000	00			
81394	N N N N #	04/12/2017	16	SW BOONES FERRY FR	INTER	3-LEG	N	N	RAIN	S-OTHER	01 NONE	9	TURN-L						08			
										N/A	S -W								000	00		
NONE		WE	0	SW DAY RD	W			TRF SIGNAL	N	WET	TURN								000	00		
N		8A			05	0		N	DAY	PDO	SEMI TOW	01 DRVR	NONE	00 Unk	UNK	000	000	000	00			
N		45 20 25.3	-122 46	24.9																		
										02 NONE	9	TURN-L										
										N/A PSNGR CAR	S -W	01 DRVR	NONE	00 Unk	UNK	000	000	000	00			
82929	N N N N #	07/09/2020	16	SW BOONES FERRY FR	INTER	3-LEG	N	N	CLR	S-1STOP	01 NONE	0	STRGHT						29			
										PRVTE	W -E								000	00		
NO RPT		TH	0	SW DAY RD	W			TRF SIGNAL	N	DRY	REAR								000	00		
N		4P			06	0		N	DAY	INJ	PSNGR CAR	01 DRVR	NONE	41 M	OR-Y	026	000	000	29			
N		45 20 25.31	-122 46	24.9																		
										02 NONE	0	STOP										
										PRVTE PSNGR CAR	W -E	01 DRVR	INJC	40 M	OR-Y	000	000	000	00			
																			000	00		

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OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF WILSONVILLE, WASHINGTON COUNTY

DAY RD and BOONES FERRY FR, City of Wilsonville, Washington County, 01/01/2016 to 12/31/2020

6 - 7 of 17 Crash records shown.

Table with columns: SER#, P R J S W DATE, CLASS, CITY STREET, INT-TYPE, SPCL USE, UNLOC?, D C S V L K LAT, LONG, LRS, LOCTN, CONTL, DRVWY, LIGHT, SVRTY, V# TYPE, FROM, TO, P# TYPE, INJ, G E LICNS, PED, ERROR, ACT, EVENT, CAUSE. Includes records for 82007, 03857, and 02054.

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OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
URBAN NON-SYSTEM CRASH LISTING  
**DAY RD and BOONES FERRY FR, City of Wilsonville, Washington County, 01/01/2016 to 12/31/2020**  
8 - 9 of 17 Crash records shown.

CITY OF WILSONVILLE, WASHINGTON COUNTY

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE	SPCL USE	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR QTY	MOVE	A S										
INVEST	E	A	U	I	C	O	DAY	DIST	FIRST STREET	RD CHAR	(MEDIAN)	INT-REL	OFFRD	WTHR	CRASH	TRLR QTY	MOVE	A S											
RD DPT	E	L	G	N	H	R	TIME	FROM	SECOND STREET	DIRECT	LEGS	TRAF-	RNDBT	SURF	COLL	OWNER	FROM	PRTC	INJ	G E LICNS	PED								
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E X RES	LOC	ERROR	ACT	EVENT	CAUSE		
																02	NONE	0	STOP										
																	UNKN PSNGR CAR	N -S							000	011 000	013	00 00	
04040	N	N	N	N	#		08/09/2019	16	SW BOONES FERRY FR	STRGHT		Y	N	CLR	S-1STOP	01	NONE	0	STRGHT								013	29	
NO RPT							FR	70	SW DAY RD	N	(NONE)	UNKNOWN	N	DRY	REAR		PRVTE	N -S									000	00	
N							3P			08	(03)		N	DAY	INJ		PSNGR CAR								026	000	29		
N							45 20 26.4	-122 46 25.36																					
																	02	NONE	0	STOP									
																	PRVTE PSNGR CAR	N -S							000	011 000	013	00 00	
																	02	NONE	0	STOP									
																	PRVTE PSNGR CAR	N -S							000	011 000	013	00 00	
																	03	NONE	0	STOP									
																	PRVTE PSNGR CAR	N -S							000	022 000		00 00	
02987	N	N	N	N	#		06/12/2019	16	SW DAY RD	STRGHT		Y	N	CLR	S-STRGHT	01	NONE	9	STRGHT									29	
NONE							WE	40	SW BOONES FERRY FR	W	(NONE)	UNKNOWN	N	DRY	REAR		N/A	W -E									000	00	
N							5P			06	(03)		N	DAY	PDO		PSNGR CAR								000	000	00		
N							45 20 25.3	-122 46 26.24																					

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OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
URBAN NON-SYSTEM CRASH LISTING

CITY OF WILSONVILLE, WASHINGTON COUNTY

DAY RD and BOONES FERRY FR, City of Wilsonville, Washington County, 01/01/2016 to 12/31/2020  
10 - 12 of 17 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE	RD CHAR	OFFRD	WTHR	CRASH	SPCL USE	MOVE	AS	LOC	ERROR	ACT	EVENT	CAUSE								
INVEST	E	A	U	I	C	O	DIST	FIRST STREET	(MEDIAN)	INT-REL	RNDBT	SURF	COLL	TRLR	QTY														
RD DPT	E	L	G	N	H	R	TIME	SECOND STREET	LEGS	TRAF-	DRVBY	LIGHT	SVRTY	OWNER	FROM	PRTC	INJ	G	E	LICNS	PED								
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS	LOCTN	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE		
	#	E	r	r	o	r								02	NONE	9													
														N/A		W -E								000		006		00	
														PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK			000	000	00		
01970	N	N	N	#			05/28/2020	16	SW DAY RD	STRGHT			CLR	S-1STOP	01	NONE	9											29	
NONE																													
N							TH		52	SW BOONES FERRY FR	W		(NONE)	UNKNOWN	N	DRY	REAR		N/A								000	00	
N							6A			07			(02)			DAY	PDO		PSNGR	CAR					000	000	00		
	#	E	r	r	o	r																							
														02	NONE	9													
														N/A		E -W										011	00		
														PSNGR	CAR		01	DRVR	NONE	00	Unk	UNK		000	000	000	00		
84103	N	N	N	#			11/09/2018	16	SW DAY RD	STRGHT			CLR	S-1STOP	01	NONE	0										013	29	
NONE																													
N							FR		115	SW BOONES FERRY FR	W		(NONE)	UNKNOWN	N	DRY	REAR		PRVTE								000	00	
N							4P			08			(02)			DUSK	INJ		PSNGR	CAR					026	000	29		
	#	E	r	r	o	r																							
														02	NONE	0													

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OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
URBAN NON-SYSTEM CRASH LISTING

CITY OF WILSONVILLE, WASHINGTON COUNTY

DAY RD and BEAV-TUALATIN HY, City of Wilsonville, Washington County, 01/01/2016 to 12/31/2020

1 - 2 of 14 Crash records shown.

SER#	P	R	J	S	W	DATE	CLASS	CITY STREET	INT-TYPE	INT-REL	OFFRD	WTHR	CRASH	SPCL USE	MOVE	A	S	PED	ERROR	ACT	EVENT	CAUSE				
INVEST	E	A	U	I	C	O	DIST	FIRST STREET	RD CHAR	(MEDIAN)	RNDBT	SURF	COLL	TRLR QTY	OWNER	FROM	TO	P#	TYPE	INJ	G	E	LICNS			
RD DPT	E	L	G	N	H	R	TIME	SECOND STREET	DIRECT	LEGS	TRAF-	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	INJ	E	X	RES			
UNLOC?	D	C	S	V	L	K	LAT	LONG	LRS	LOCTN	(#LANES)	CONTL	DRVWY	LIGHT	SVRTY	V#	TYPE	TO	P#	TYPE	INJ	E	X	RES		
80420	N	N	N	N	#	02/04/2019	16	SW BEAV-TUALATIN HY	INTER	3-LEG	N	Y	RAIN	FIX OBJ	01 NONE	0	STRGHT							040,053,079	10	
E R R O R																										
COUNTY						MO	0	SW DAY RD	E			TRF SIGNAL	N	WET	FIX	PRVTE	W -E							000	040,053,079	00
N						5A	05		0			N	DLIT	INJ	PSNGR CAR		01	DRVR	INJA	42	M	OR-Y	081	000	10	
N						45 20 25.31	-122 46 24.9																			
06703	N	N	N	N	#	10/04/2016	16	SW BEAV-TUALATIN HY	INTER	3-LEG	N	N	RAIN	O-STRGHT	01 NONE	0	STRGHT								26	
E R R O R																										
COUNTY						TU		SW DAY RD	S			TRF SIGNAL	N	WET	HEAD	PRVTE	S -N							000	00	
N						4P	06		0			N	DAY	INJ	PSNGR CAR		01	DRVR	INJC	55	M	OR-Y	000	000	00	
N						45 20 24.73	-122 46 24.67	014100100S00																		
E R R O R																										
															01 NONE	0	STRGHT									
E R R O R																										
															PRVTE	S -N							000	000	00	
															PSNGR CAR		02	PSNG	INJC	54	F		000	000	00	
															02 NONE	0	STRGHT									
E R R O R																										
															PRVTE	N -S							007	000	00	
															PSNGR CAR		01	DRVR	NONE	45	M	OR-Y	000	000	26	
83471	N	N	N	N	#	09/28/2018	16	SW BEAV-TUALATIN HY	INTER	3-LEG	N	N	CLR	S-1STOP	01 NONE	9	STRGHT							10		
E R R O R																										
NONE						FR	0	SW DAY RD	S			TRF SIGNAL	N	DRY	SS-0	N/A	S -N						000	000	00	
N						4P	06		0			N	DAY	PDO	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00	
N						45 20 25.31	-122 46 24.92																			

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OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION  
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT  
URBAN NON-SYSTEM CRASH LISTING  
DAY RD and BEAV-TUALATIN HY, City of Wilsonville, Washington County, 01/01/2016 to 12/31/2020  
8 - 10 of 14 Crash records shown.

CITY OF WILSONVILLE, WASHINGTON COUNTY

SER#	P	R J S W DATE	CLASS	CITY STREET	INT-TYPE	SPCL USE																	
INVEST	E A U I C O DAY	DIST	FIRST STREET	RD CHAR	(MEDIAN) INT-REL	OFFRD WTHR CRASH	TRLR QTY	MOVE	A S														
RD DPT	E L G N H R TIME	FROM	SECOND STREET	DIRECT	LEGS TRAF-	RNDBT SURF COLL	OWNER	FROM	PRTC INJ	G E LICNS	PED												
UNLOC?	D C S V L K LAT	LONG	LRS	LOCTN	(#LANES) CONTL	DRVWY LIGHT SVRTY	V# TYPE	TO	P# TYPE	SVRTY	E X RES	LOC	ERROR	ACT	EVENT	CAUSE							
							02 NONE	0	STOP														
							PRVTE	N -S						011		00							
							PSNGR	CAR	01	DRVR	INJC	66	F	OR-Y	000	000	00						
82705	N N N N	06/15/2016	16	SW BEAV-TUALATIN HY	STRGHT	N	N	CLR	S-1STOP	01	NONE	0	STRGHT			29							
NONE		WE		SW DAY RD	S	(NONE)	UNKNOWN	N	DRY	REAR						000	00						
N		5P			03			N	DAY	INJ						026	000	29					
N		45 20 24.13	-122 46 24.43	014100100S00		(03)																	
							02 NONE	0	STOP														
							PRVTE	N -S						011		00							
							PSNGR	CAR	01	DRVR	NONE	00	F	OR-Y	000	000	00						
							03 NONE	0	STRGHT														
							PRVTE	N -S						000		00							
							PSNGR	CAR	01	DRVR	NONE	46	F	OR-Y	000	000	00						
06248	N N N N	09/15/2016	16	SW BEAV-TUALATIN HY	STRGHT	N	N	CLR	S-STRGHT	01	NONE	9	STRGHT			27,29							
NONE		TH		SW DAY RD	S	(NONE)	UNKNOWN	N	DRY	REAR						000	00						
N		4P			03			N	DAY	PDO						000	000	00					
N		45 20 24.13	-122 46 24.43	014100100S00		(03)																	
							02 NONE	9	STRGHT														
							N/A	N -S						000		00							
							PSNGR	CAR	01	DRVR	NONE	00	Unk UNK UNK	000	000	000	00						

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### Stopping Sight Distance

Travel Speed 50 mph  
Reaction Time 2.5 seconds  
Acceleration 11.2 ft/sec<sup>2</sup>  
Grade (percent) 0.00%

**SSD 425 feet**

### Reaction Distance

Travel Speed 50 mph  
Travel Speed 73.5 fps  
Reaction Time 2.5 seconds

**Reaction Distance 183.8 feet**

### Braking Distance

Travel Speed 50 mph  
Acceleration 11.2 ft/sec<sup>2</sup>  
Grade (percent) 0.00%

**Braking Distance 239.6 feet**

Note: If grades are less than 3%, no adjustment is needed.



## Intersection Sight Distance

	<i>Left Turn Looking Left</i>	<i>Left Turn Looking Right</i>	<i>Right Turn Looking Left</i>
Approach Speed	50 mph	50 mph	50 mph
Number of Lanes	2 lanes	2 lanes	
Vehicle Type (P/S/C)	P Passenger Car	P Passenger Car	P Passenger Car
Extra Crossing Lanes	0	0	
Time Gap	7.5 seconds	7.5 seconds	6.5 seconds
Intersection Sight Distance	555 feet	555 feet	480 feet
<b>Washington County</b>	<b>500 feet</b>	<b>500 feet</b>	<b>500 feet</b>

### Notes:

- 1) For Approach speed, use the design speed of the roadway (typically 85th percentile speed).
- 2) For Time Gap, use 7.5 seconds for passenger cars, 9.5 seconds for single-unit trucks, and 11.5 seconds for combination trucks.
- 3) The above values are for 2-lane highways without medians and grades of 3 percent or less.
- 4) For grades in excess of 3 percent on the minor street, add .2 seconds for each percent grade.
- 5) For additional lanes, add 0.5 seconds per lane for passenger cars and 0.7 seconds per lane for trucks.



## Left-Turn Lane Warrant Analysis

Project: 22172 - Norwood Apartments  
 Intersection: Site Access on Norwood  
 Date: 2/2/2023  
 Scenario: 2026 Buildout - AM Peak Hour - No BCP Extension

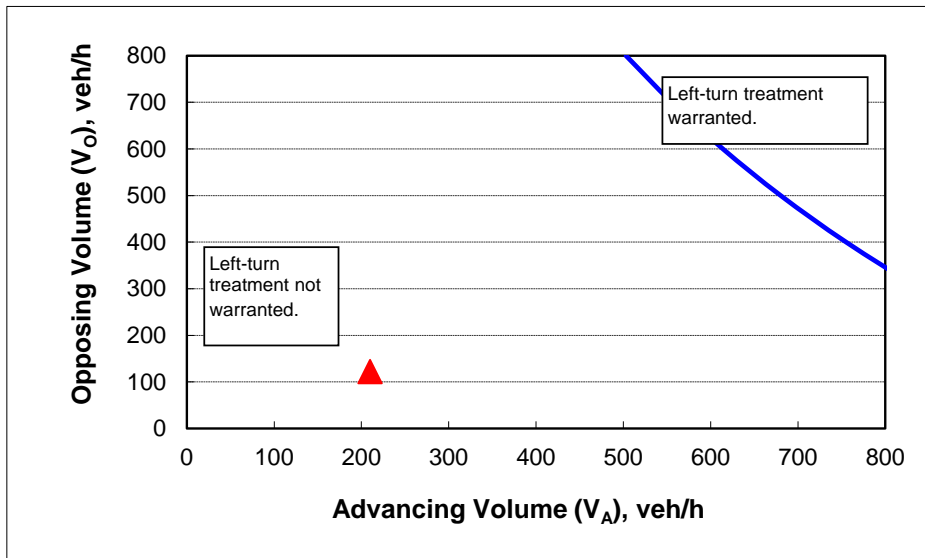
### 2-lane roadway (English)

#### INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	45
Percent of left-turns in advancing volume ( $V_A$ ), %:	2%
Left turns in advancing volume ( $V_A$ ), veh/h:	4
Advancing volume ( $V_A$ ), veh/h:	210
Opposing volume ( $V_O$ ), veh/h:	122

#### OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	1028
Guidance for determining the need for a major-road left-turn bay:	
<b>Left-turn treatment NOT warranted.</b>	



#### CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9



## Left-Turn Lane Warrant Analysis

Project: 22172 - Norwood Apartments  
 Intersection: Site Access on Norwood  
 Date: 2/2/2023  
 Scenario: 2026 Buildout - PM Peak Hour - No BCP Extension

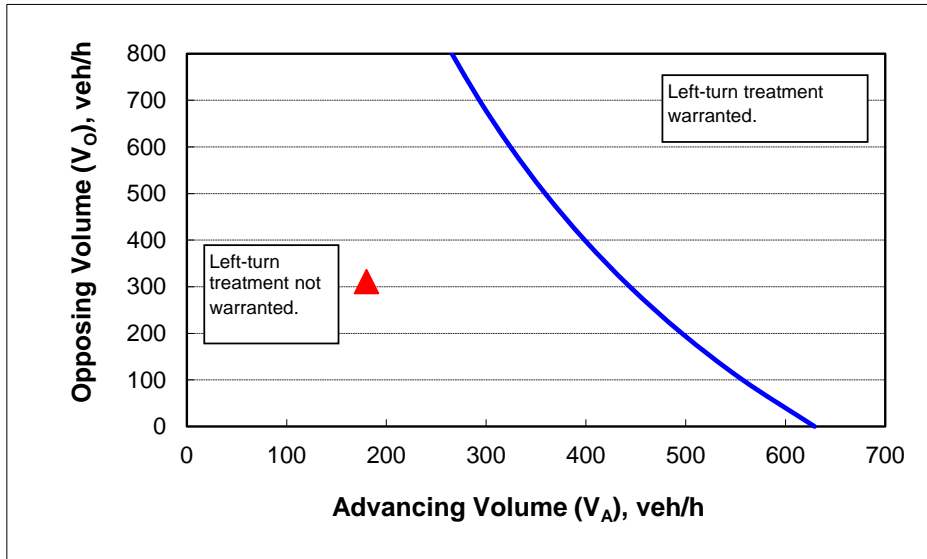
### 2-lane roadway (English)

#### INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	45
Percent of left-turns in advancing volume ( $V_A$ ), %:	7%
Left turns in advancing volume ( $V_A$ ), veh/h:	13
Advancing volume ( $V_A$ ), veh/h:	180
Opposing volume ( $V_O$ ), veh/h:	311

#### OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	439
Guidance for determining the need for a major-road left-turn bay:	
<b>Left-turn treatment NOT warranted.</b>	



#### CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9



## Left-Turn Lane Warrant Analysis

Project: 22172 - Norwood Apartments  
 Intersection: Site Access on Norwood  
 Date: 2/2/2023  
 Scenario: 2026 Buildout - AM Peak Hour - With BCP Extension

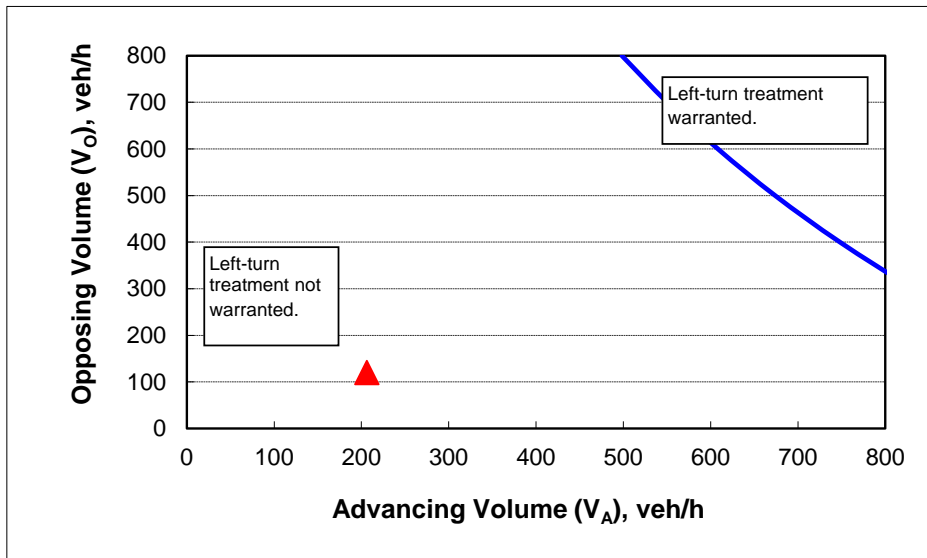
### 2-lane roadway (English)

#### INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	45
Percent of left-turns in advancing volume ( $V_A$ ), %:	2%
Left turns in advancing volume ( $V_A$ ), veh/h:	4
Advancing volume ( $V_A$ ), veh/h:	206
Opposing volume ( $V_O$ ), veh/h:	120

#### OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	1021
Guidance for determining the need for a major-road left-turn bay:	
<b>Left-turn treatment NOT warranted.</b>	



#### CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9



## Left-Turn Lane Warrant Analysis

Project: 22172 - Norwood Apartments  
 Intersection: Site Access on Norwood  
 Date: 2/2/2023  
 Scenario: 2026 Buildout - PM Peak Hour - With BCP Extension

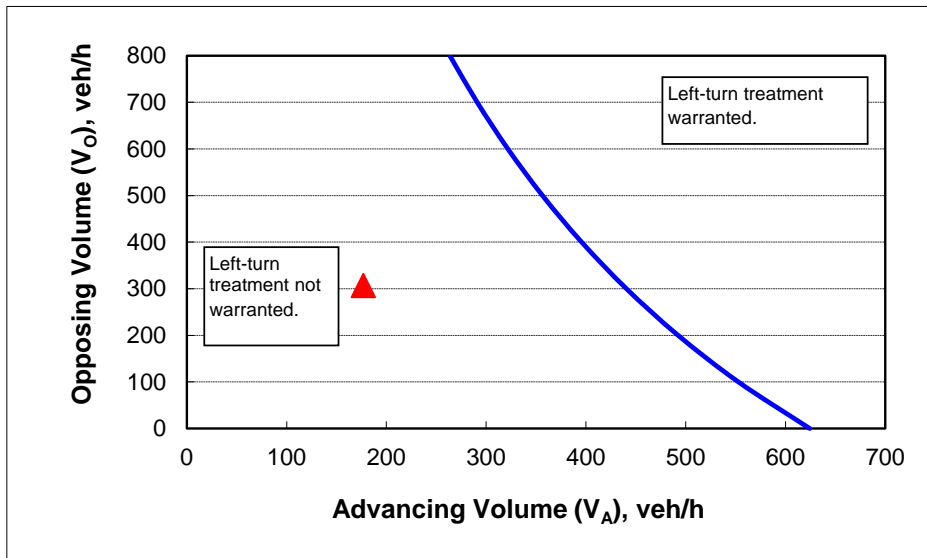
### 2-lane roadway (English)

#### INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	45
Percent of left-turns in advancing volume ( $V_A$ ), %:	7%
Left turns in advancing volume ( $V_A$ ), veh/h:	13
Advancing volume ( $V_A$ ), veh/h:	177
Opposing volume ( $V_O$ ), veh/h:	307

#### OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	437
Guidance for determining the need for a major-road left-turn bay:	
<b>Left-turn treatment NOT warranted.</b>	



#### CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9



## Preliminary Traffic Signal Warrant Analysis

Project: 22172 - Norwood Apartments  
 Date: 2/2/2023  
 Scenario: 2026 Buildout - AM Peak Hour - No BCP Extension - Shared Left-Right

Major Street:	SW Boones Ferry Road	Minor Street:	Norwood Road	
Number of Lanes:	1	Number of Lanes:	1	
AM Peak Hour Volumes:	874	AM Peak Hour Volumes:	274 169 50%	Total Rights RT Discount

Warrant Used:

<u>                    </u>	100 percent of standard warrants used
<u>          X          </u>	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
<u>WARRANT 1, CONDITION A</u>					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
<u>WARRANT 1, CONDITION B</u>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	8,740	6,200	
Minor Street*	1,900	1,850	<b>Yes</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	8,740	9,300	
Minor Street*	1,900	950	<b>No</b>
<i>Combination Warrant</i>			
Major Street	8,740	7,440	
Minor Street*	1,900	1,480	<b>Yes</b>

\* Minor street right-turning traffic volumes reduced by 50%.



## Preliminary Traffic Signal Warrant Analysis

Project: 22172 - Norwood Apartments  
 Date: 2/2/2023  
 Scenario: 2026 Buildout - PM Peak Hour - No BCP Extension - Shared Left-Right

Major Street:	SW Boones Ferry Road	Minor Street:	Norwood Road	
Number of Lanes:	1	Number of Lanes:	1	
PM Peak Hour Volumes:	1498	PM Peak Hour Volumes:	209 140 50%	Total Rights RT Discount

### Warrant Used:

<u>                    </u>	100 percent of standard warrants used
<u>          X          </u>	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
<u>WARRANT 1, CONDITION A</u>					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
<u>WARRANT 1, CONDITION B</u>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	14,980	6,200	
Minor Street*	1,390	1,850	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	14,980	9,300	
Minor Street*	1,390	950	<b>Yes</b>
<i>Combination Warrant</i>			
Major Street	14,980	7,440	
Minor Street*	1,390	1,480	<b>No</b>

\* Minor street right-turning traffic volumes reduced by 50%.



## Preliminary Traffic Signal Warrant Analysis

Project: 22172 - Norwood Apartments  
 Date: 2/2/2023  
 Scenario: 2026 Buildout - AM Peak Hour - With BCP Extension - Shared Left-Right

Major Street:	SW Boones Ferry Road	Minor Street:	Norwood Road	
Number of Lanes:	1	Number of Lanes:	1	
AM Peak Hour Volumes:	1016	AM Peak Hour Volumes:	271 157 50%	Total Rights RT Discount

Warrant Used:

<u>                    </u>	100 percent of standard warrants used
<u>          X          </u>	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
<u>WARRANT 1, CONDITION A</u>					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
<u>WARRANT 1, CONDITION B</u>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	10,160	6,200	
Minor Street*	1,930	1,850	<b>Yes</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	10,160	9,300	
Minor Street*	1,930	950	<b>Yes</b>
<i>Combination Warrant</i>			
Major Street	10,160	7,440	
Minor Street*	1,930	1,480	<b>Yes</b>

\* Minor street right-turning traffic volumes reduced by 50%.





## Preliminary Traffic Signal Warrant Analysis

Project: 22172 - Norwood Apartments  
 Date: 2/2/2023  
 Scenario: 2026 Buildout - PM Peak Hour - With BCP Extension - Shared Left-Right

Major Street:	SW Boones Ferry Road	Minor Street:	Norwood Road	
Number of Lanes:	1	Number of Lanes:	1	
			206	Total
PM Peak		PM Peak	131	Rights
Hour Volumes:	1543	Hour Volumes:	50%	RT Discount

### Warrant Used:

<u>                    </u>	100 percent of standard warrants used
<u>          X          </u>	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
<u>WARRANT 1, CONDITION A</u>					
		100%	70%	100%	70%
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
<u>WARRANT 1, CONDITION B</u>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	15,430	6,200	
Minor Street*	1,410	1,850	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	15,430	9,300	
Minor Street*	1,410	950	<b>Yes</b>
<i>Combination Warrant</i>			
Major Street	15,430	7,440	
Minor Street*	1,410	1,480	<b>No</b>

\* Minor street right-turning traffic volumes reduced by 50%.



## Preliminary Traffic Signal Warrant Analysis

Project: 22172 - Norwood Apartments  
 Date: 2/2/2023  
 Scenario: 2026 Buildout - AM Peak Hour - No BCP Extension - Separate Right-Turn Lane

Major Street:	SW Boones Ferry Road	Minor Street:	Norwood Road	
Number of Lanes:	1	Number of Lanes:	1	
AM Peak Hour Volumes:	874	AM Peak Hour Volumes:	274 169 100%	Total Rights RT Discount

### Warrant Used:

<u>        </u>	100 percent of standard warrants used
<u>    X    </u>	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
<u>WARRANT 1, CONDITION A</u>					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
<u>WARRANT 1, CONDITION B</u>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	8,740	6,200	
Minor Street*	1,050	1,850	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	8,740	9,300	
Minor Street*	1,050	950	<b>No</b>
<i>Combination Warrant</i>			
Major Street	8,740	7,440	
Minor Street*	1,050	1,480	<b>No</b>

\* Minor street right-turning traffic volumes reduced by 100%.



## Preliminary Traffic Signal Warrant Analysis

Project: 22172 - Norwood Apartments  
 Date: 2/2/2023  
 Scenario: 2026 Buildout - PM Peak Hour - No BCP Extension - Separate Right-Turn Lane

Major Street:	SW Boones Ferry Road	Minor Street:	Norwood Road	
Number of Lanes:	1	Number of Lanes:	1	
			209	Total
PM Peak		PM Peak	140	Rights
Hour Volumes:	1498	Hour Volumes:	100%	RT Discount

Warrant Used:

<u>                    </u>	100 percent of standard warrants used
<u>          X          </u>	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
<u>WARRANT 1, CONDITION A</u>					
		100%	70%	100%	70%
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
<u>WARRANT 1, CONDITION B</u>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	14,980	6,200	
Minor Street*	690	1,850	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	14,980	9,300	
Minor Street*	690	950	<b>No</b>
<i>Combination Warrant</i>			
Major Street	14,980	7,440	
Minor Street*	690	1,480	<b>No</b>

\* Minor street right-turning traffic volumes reduced by 100%.



## Preliminary Traffic Signal Warrant Analysis

Project: 22172 - Norwood Apartments  
 Date: 2/2/2023  
 Scenario: 2026 Buildout - AM Peak Hour - With BCP Extension - Separate Right-Turn Lane

Major Street:	SW Boones Ferry Road	Minor Street:	Norwood Road	
Number of Lanes:	1	Number of Lanes:	1	
AM Peak Hour Volumes:	1016	AM Peak Hour Volumes:	271 157 100%	Total Rights RT Discount

### Warrant Used:

<u>                    </u>	100 percent of standard warrants used
<u>          X          </u>	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
<u>WARRANT 1, CONDITION A</u>					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
<u>WARRANT 1, CONDITION B</u>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	10,160	6,200	
Minor Street*	1,140	1,850	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	10,160	9,300	
Minor Street*	1,140	950	<b>Yes</b>
<i>Combination Warrant</i>			
Major Street	10,160	7,440	
Minor Street*	1,140	1,480	<b>No</b>

\* Minor street right-turning traffic volumes reduced by 100%.



## Preliminary Traffic Signal Warrant Analysis

Project: 22172 - Norwood Apartments  
 Date: 2/2/2023  
 Scenario: 2026 Buildout - PM Peak Hour - With BCP Extension - Separate Right-Turn Lane

Major Street:	SW Boones Ferry Road	Minor Street:	Norwood Road	
Number of Lanes:	1	Number of Lanes:	1	
PM Peak Hour Volumes:	1543	PM Peak Hour Volumes:	206 131 100%	Total Rights RT Discount

Warrant Used:

<u>                    </u>	100 percent of standard warrants used
<u>          X          </u>	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
<u>WARRANT 1, CONDITION A</u>					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
<u>WARRANT 1, CONDITION B</u>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	15,430	6,200	
Minor Street*	750	1,850	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	15,430	9,300	
Minor Street*	750	950	<b>No</b>
<i>Combination Warrant</i>			
Major Street	15,430	7,440	
Minor Street*	750	1,480	<b>No</b>

\* Minor street right-turning traffic volumes reduced by 100%.



## Preliminary Traffic Signal Warrant Analysis

Project: 22172 - Norwood Apartments  
 Date: 2/2/2023  
 Scenario: 2026 Buildout - AM Peak Hour - No BCP Extension

Major Street:	Norwood Road	Minor Street:	Site Access	
Number of Lanes:	1	Number of Lanes:	1	
AM Peak Hour Volumes:	338	AM Peak Hour Volumes:	82	Total Rights RT Discount
			12	
			0%	

Warrant Used:

	100 percent of standard warrants used
<u>X</u>	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
Major St.	Minor St.	Warrants	Warrants	Warrants	Warrants
<u>WARRANT 1, CONDITION A</u>					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
<u>WARRANT 1, CONDITION B</u>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	3,380	6,200	
Minor Street*	820	1,850	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	3,380	9,300	
Minor Street*	820	950	<b>No</b>
<i>Combination Warrant</i>			
Major Street	3,380	7,440	
Minor Street*	820	1,480	<b>No</b>

\* Minor street right-turning traffic volumes reduced by 00%.



## Preliminary Traffic Signal Warrant Analysis

Project: 22172 - Norwood Apartments  
 Date: 2/2/2023  
 Scenario: 2026 Buildout - PM Peak Hour - No BCP Extension

Major Street:	Norwood Road	Minor Street:	Site Access	
Number of Lanes:	1	Number of Lanes:	1	
PM Peak Hour Volumes:	491	PM Peak Hour Volumes:	51	Total Rights RT Discount
			8	
			0%	

### Warrant Used:

<u>                    </u>	100 percent of standard warrants used
<u>          X          </u>	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
<u>WARRANT 1, CONDITION A</u>					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
<u>WARRANT 1, CONDITION B</u>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	4,910	6,200	
Minor Street*	510	1,850	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	4,910	9,300	
Minor Street*	510	950	<b>No</b>
<i>Combination Warrant</i>			
Major Street	4,910	7,440	
Minor Street*	510	1,480	<b>No</b>

\* Minor street right-turning traffic volumes reduced by 00%.



## Preliminary Traffic Signal Warrant Analysis

Project: 22172 - Norwood Apartments  
 Date: 2/2/2023  
 Scenario: 2026 Buildout - AM Peak Hour - With BCP Extension

Major Street:	Norwood Road	Minor Street:	Site Access	
Number of Lanes:	1	Number of Lanes:	1	
AM Peak Hour Volumes:	326	AM Peak Hour Volumes:	82	Total Rights RT Discount
			12	
			0%	

### Warrant Used:

<u>                    </u>	100 percent of standard warrants used
<u>          X          </u>	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
<u>WARRANT 1, CONDITION A</u>					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
<u>WARRANT 1, CONDITION B</u>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	3,260	6,200	
Minor Street*	820	1,850	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	3,260	9,300	
Minor Street*	820	950	<b>No</b>
<i>Combination Warrant</i>			
Major Street	3,260	7,440	
Minor Street*	820	1,480	<b>No</b>

\* Minor street right-turning traffic volumes reduced by 00%.





## Preliminary Traffic Signal Warrant Analysis

Project: 22172 - Norwood Apartments  
 Date: 2/2/2023  
 Scenario: 2026 Buildout - PM Peak Hour - With BCP Extension

Major Street:	Norwood Road	Minor Street:	Site Access	
Number of Lanes:	1	Number of Lanes:	1	
PM Peak Hour Volumes:	484	PM Peak Hour Volumes:	51	Total Rights RT Discount
			8	
			0%	

### Warrant Used:

<u>                    </u>	100 percent of standard warrants used
<u>          X          </u>	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
<u>WARRANT 1, CONDITION A</u>					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
<u>WARRANT 1, CONDITION B</u>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	4,840	6,200	
Minor Street*	510	1,850	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	4,840	9,300	
Minor Street*	510	950	<b>No</b>
<i>Combination Warrant</i>			
Major Street	4,840	7,440	
Minor Street*	510	1,480	<b>No</b>

\* Minor street right-turning traffic volumes reduced by 00%.



## Preliminary Traffic Signal Warrant Analysis

Project: 22172 - Norwood Apartments  
 Date: 2/2/2023  
 Scenario: 2026 Buildout - AM Peak Hour - No BCP Extension

Major Street:	82nd Avenue	Minor Street:	Norwood Road	
Number of Lanes:	1	Number of Lanes:	1	
AM Peak Hour Volumes:	155	AM Peak Hour Volumes:	186	Total Rights RT Discount
			10	
			0%	

### Warrant Used:

<u>                    </u>	100 percent of standard warrants used
<u>          X          </u>	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
<u>WARRANT 1, CONDITION A</u>					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
<u>WARRANT 1, CONDITION B</u>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	1,550	6,200	
Minor Street*	1,860	1,850	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	1,550	9,300	
Minor Street*	1,860	950	<b>No</b>
<i>Combination Warrant</i>			
Major Street	1,550	7,440	
Minor Street*	1,860	1,480	<b>No</b>

\* Minor street right-turning traffic volumes reduced by 00%.



## Preliminary Traffic Signal Warrant Analysis

Project: 22172 - Norwood Apartments  
 Date: 2/2/2023  
 Scenario: 2026 Buildout - PM Peak Hour - No BCP Extension

Major Street:	82nd Avenue	Minor Street:	Norwood Road	
Number of Lanes:	1	Number of Lanes:	1	
PM Peak Hour Volumes:	194	PM Peak Hour Volumes:	156	Total Rights RT Discount
			25	
			0%	

### Warrant Used:

<u>                    </u>	100 percent of standard warrants used
<u>          X          </u>	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
<u>WARRANT 1, CONDITION A</u>					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
<u>WARRANT 1, CONDITION B</u>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	1,940	6,200	
Minor Street*	1,560	1,850	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	1,940	9,300	
Minor Street*	1,560	950	<b>No</b>
<i>Combination Warrant</i>			
Major Street	1,940	7,440	
Minor Street*	1,560	1,480	<b>No</b>

\* Minor street right-turning traffic volumes reduced by 00%.



## Preliminary Traffic Signal Warrant Analysis

Project: 22172 - Norwood Apartments  
 Date: 2/2/2023  
 Scenario: 2026 Buildout - AM Peak Hour - With BCP Extension

Major Street:	82nd Avenue	Minor Street:	Norwood Road	
Number of Lanes:	1	Number of Lanes:	1	
AM Peak Hour Volumes:	155	AM Peak Hour Volumes:	188	Total Rights RT Discount
			9	
			0%	

### Warrant Used:

<u>                    </u>	100 percent of standard warrants used
<u>          X          </u>	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
<u>WARRANT 1, CONDITION A</u>					
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
<u>WARRANT 1, CONDITION B</u>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	1,550	6,200	
Minor Street*	1,880	1,850	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	1,550	9,300	
Minor Street*	1,880	950	<b>No</b>
<i>Combination Warrant</i>			
Major Street	1,550	7,440	
Minor Street*	1,880	1,480	<b>No</b>

\* Minor street right-turning traffic volumes reduced by 00%.



## Preliminary Traffic Signal Warrant Analysis

Project: 22172 - Norwood Apartments  
 Date: 2/2/2023  
 Scenario: 2026 Buildout - PM Peak Hour - With BCP Extension

Major Street:	82nd Avenue	Minor Street:	Norwood Road	
Number of Lanes:	1	Number of Lanes:	1	
PM Peak Hour Volumes:	193	PM Peak Hour Volumes:	156	Total Rights RT Discount
			25	
			0%	

### Warrant Used:

<u>                    </u>	100 percent of standard warrants used
<u>          X          </u>	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
<u>WARRANT 1, CONDITION A</u>					
		100%	70%	100%	70%
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
<u>WARRANT 1, CONDITION B</u>					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
<i>Warrant 1</i>			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	1,930	6,200	
Minor Street*	1,560	1,850	<b>No</b>
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	1,930	9,300	
Minor Street*	1,560	950	<b>No</b>
<i>Combination Warrant</i>			
Major Street	1,930	7,440	
Minor Street*	1,560	1,480	<b>No</b>

\* Minor street right-turning traffic volumes reduced by 00%.

TRAFFIC SIGNAL WARRANTS - BASED ON 2009 MUTCD

2/2/2023

INTERSECTION INFORMATION					
City:	Tualatin	Condition:	2026 Background Condition (No BCP Extension)		
Population:	25000		Shared Left-Right Lane		
Intersection Location:					
(Rural/Urban)	Urban		Right-Turn Reduction	50%	
Major Street Name:	Boones Ferry Road	Minor Street Name:	Norwood Road		
Number of Moving		Number of Moving			
Lanes for Each	1	Lanes for Each	1		
Speed:	45 mph	Speed:	45 mph		
Street		Street			
Width:	48 ft	Width:	32 ft		
Direction:	NB SB	Direction:	EB WB		
Hour Beginning:		Hour Beginning:			
12:00 AM		12:00 AM			
1:00 AM		1:00 AM			
2:00 AM		2:00 AM			
3:00 AM		3:00 AM			
4:00 AM		4:00 AM			
5:00 AM		5:00 AM			
6:00 AM		6:00 AM			
7:00 AM	391 325	7:00 AM	0 102	WB LT	WB RT
8:00 AM	383 329	8:00 AM	0 114	45	137
9:00 AM	257 308	9:00 AM	0 62	29	66
10:00 AM	277 302	10:00 AM	0 59	32	54
11:00 AM	331 330	11:00 AM	0 54	29	50
12:00 PM	357 365	12:00 PM	0 73	39	68
1:00 PM	337 378	1:00 PM	0 65	32	65
2:00 PM	405 481	2:00 PM	0 82	44	75
3:00 PM	353 672	3:00 PM	0 97	36	122
4:00 PM	723 805	4:00 PM	0 90	42	95
5:00 PM	712 727	5:00 PM	0 138	63	150
6:00 PM	337 447	6:00 PM	0 93	41	104
7:00 PM		7:00 PM			
8:00 PM		8:00 PM			
9:00 PM		9:00 PM			
10:00 PM		10:00 PM			
11:00 PM		11:00 PM			
24-hour Total	4,863 5,469	24-hour Total	0 1,029		

**Warrants Evaluated:**

- Warrant 1, 8-Hour Vehicular Volume - Evaluated for Conditions A & B
- Warrant 2, 4-Hour Vehicular Volume - Evaluated
- Warrant 3, Peak Hour - Evaluated for Conditions A-2, A-3 (A-1 needs to be evaluated separately), and Condition B
- Warrant 4, Pedestrian Volume - Not Analyzed
- Warrant 5, School Crossing - Not Analyzed
- Warrant 6, Coordinated Signal System - Not Analyzed
- Warrant 7, Accident Experience - Not Analyzed
- Warrant 8, Roadway Network - Not Analyzed
- Warrant 9, Intersection Near a Grade Crossing - Not Analyzed

**WARRANT 1, 8-HOUR VEHICULAR VOLUME**

	MAJOR			EB	MINOR		A	B	A or B	80% A&B
	NB	SB	Total		WB	Max				
4:00 PM	723	805	1,528	0	90	90	N	Y	Y	N
5:00 PM	712	727	1,439	0	138	138	Y	Y	Y	Y
3:00 PM	353	672	1,025	0	97	97	N	Y	Y	N
2:00 PM	405	481	886	0	82	82	N	Y	Y	N
6:00 PM	337	447	784	0	93	93	N	Y	Y	N
8:00 AM	383	329	712	0	114	114	Y	Y	Y	N
7:00 AM	391	325	716	0	102	102	N	Y	Y	N
12:00 PM	357	365	722	0	73	73	N	Y	Y	N
1:00 PM	337	378	715	0	65	65	N	Y	Y	N
11:00 AM	331	330	661	0	54	54	N	Y	Y	N
10:00 AM	277	302	579	0	59	59	N	Y	Y	N
9:00 AM	257	308	565	0	62	62	N	Y	Y	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

**Warrant Requirements:**

Major Street Lanes: 1  
 Minor Street Lanes: 1

**CONDITION A - Minimum Vehicular Volume**

Minimum Volume on Combined Major Street Approaches: 350  
 Minimum Volume on Higher Minor Street Approach: 105

**CONDITION B - Interruption of Continuous Traffic**

Minimum Volume on Combined Major Street Approaches: 525  
 Minimum Volume on Higher Minor Street Approach: 53

IS CONDITION A OF SIGNAL WARRANT 1 MET? NO  
 IS CONDITION B OF SIGNAL WARRANT 1 MET? YES  
 IS COMBINATION OF A OR B MET? YES  
 IS 80% OF CONDITION A AND CONDITION B MET? NO

Note: Signal Warrant 1 is met if either Condition A or Condition B is met.

**WARRANT 2, FOUR HOUR VEHICULAR VOLUME**

	MAJOR			EB	MINOR		Calculated Threshold	
	NB	SB	Total		WB	Max		
4:00 PM	723	805	1,528	0	90	90	60	Y
5:00 PM	712	727	1,439	0	138	138	60	Y
3:00 PM	353	672	1,025	0	97	97	60	Y
2:00 PM	405	481	886	0	82	82	60	Y
6:00 PM	337	447	784	0	93	93	60	Y
8:00 AM	383	329	712	0	114	114	68	Y
7:00 AM	391	325	716	0	102	102	67	Y
12:00 PM	357	365	722	0	73	73	66	Y

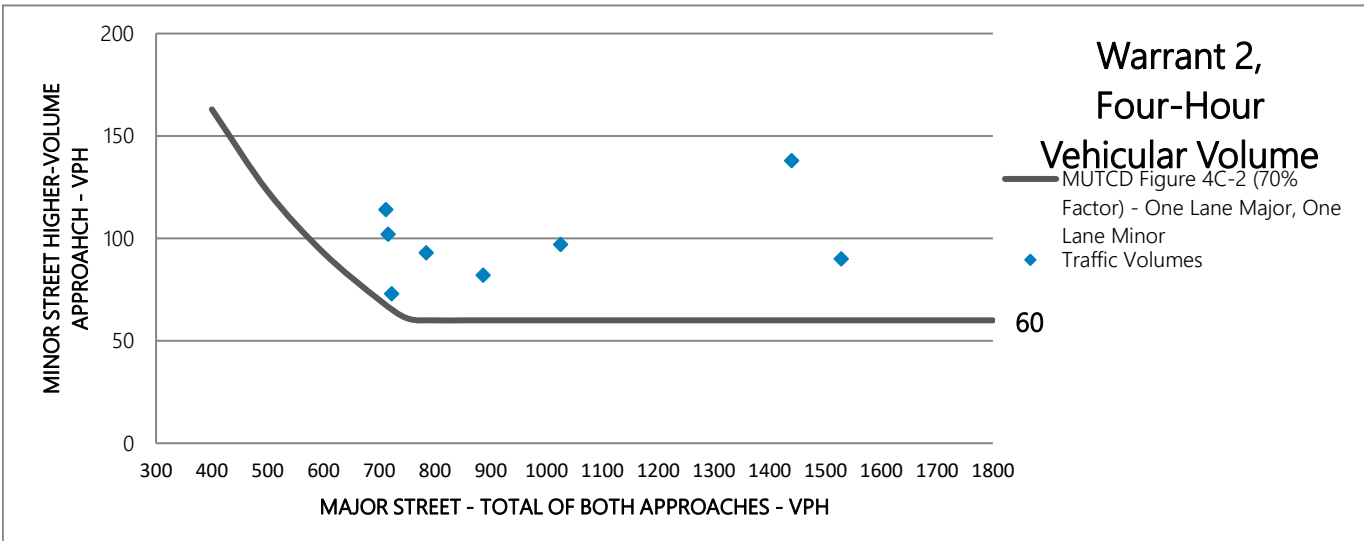
Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

**Warrant Requirements:**

Major Street Lanes: 1

Minor Street Lanes: 1

**IS SIGNAL WARRANT 2 MET? YES**





**WARRANT 3, PEAK HOUR VEHICULAR VOLUME**

	MAJOR			MINOR			Calculated Threshold (B)	A-2&3	B
	NB	SB	Total	EB	WB	Max			
4:00 PM	723	805	1,528	0	90	90	75	N	Y
5:00 PM	712	727	1,439	0	138	138	75	Y	Y
3:00 PM	353	672	1,025	0	97	97	75	N	Y
2:00 PM	405	481	886	0	82	82	95	N	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

**Warrant Requirements:**

Major Street Lanes: 1  
 Minor Street Lanes: 1

**CONDITION A-1 - Stopped Delay**

Cannot be evaluated based on volumes alone. Condition met if traffic on one minor-street approach (one direction only) controlled by STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach.

**CONDITION A-2 - Minor Street Volume**

Minimum Volume on Higher Minor Street Approach: 100

**CONDITION A-3 - Total Approach Volume**

Minimum Volume of Total Approaches: 650

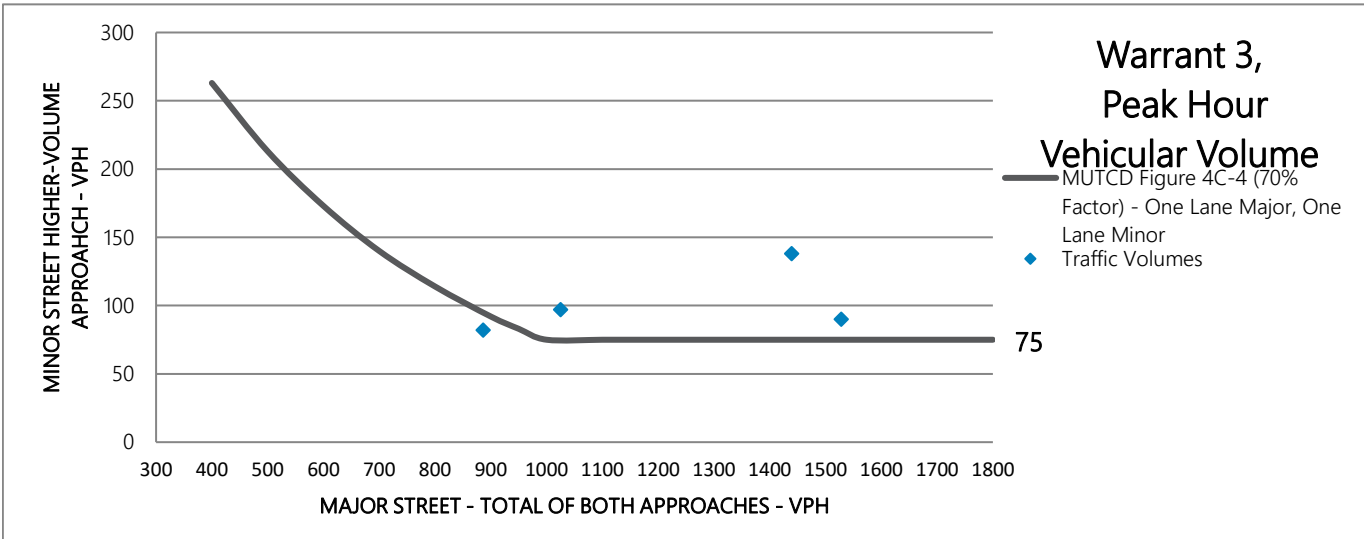
**CONDITION B - Plot of Minor Street Volume (high vol approach) vs. Major Street Volume (Both approaches)**

ARE CONDITIONS A-2 AND A-3 OF SIGNAL WARRANT 3 MET? **YES** *Stopped Delay Needs to be Checked*

Note: All 3 subsections of Condition A must be met to warrant signal.

IS CONDITION B OF SIGNAL WARRANT 3 MET? **YES**

Note: Signal Warrant 3 is met if either Condition A or Condition B is met.



INTERSECTION INFORMATION					
City:	Tualatin	Condition:	2026 Background Condition (No BCP Extension) Separate Right-Turn Lane		
Population:	25000				
Intersection Location:					
(Rural/Urban)	Urban		Right-Turn Reduction	100%	
Major Street Name:	Boones Ferry Road	Minor Street Name:	Norwood Road		
Number of Moving Lanes for Each	1	Number of Moving Lanes for Each	1		
Speed: Street	45 mph	Speed: Street	45 mph		
Width:	48 ft	Width:	32 ft		
Direction:	NB SB	Direction:	EB WB		
Hour Beginning:		Hour Beginning:			
12:00 AM		12:00 AM			
1:00 AM		1:00 AM			
2:00 AM		2:00 AM			
3:00 AM		3:00 AM			
4:00 AM		4:00 AM			
5:00 AM		5:00 AM			
6:00 AM		6:00 AM			
7:00 AM	391 325	7:00 AM	0 51	WB LT	WB RT
8:00 AM	383 329	8:00 AM	0 45	45	137
9:00 AM	257 308	9:00 AM	0 29	29	66
10:00 AM	277 302	10:00 AM	0 32	32	54
11:00 AM	331 330	11:00 AM	0 29	29	50
12:00 PM	357 365	12:00 PM	0 39	39	68
1:00 PM	337 378	1:00 PM	0 32	32	65
2:00 PM	405 481	2:00 PM	0 44	44	75
3:00 PM	353 672	3:00 PM	0 36	36	122
4:00 PM	723 805	4:00 PM	0 42	42	95
5:00 PM	712 727	5:00 PM	0 63	63	150
6:00 PM	337 447	6:00 PM	0 41	41	104
7:00 PM		7:00 PM			
8:00 PM		8:00 PM			
9:00 PM		9:00 PM			
10:00 PM		10:00 PM			
11:00 PM		11:00 PM			
24-hour Total	4,863 5,469	24-hour Total	0 483		

**Warrants Evaluated:**

- Warrant 1, 8-Hour Vehicular Volume - Evaluated for Conditions A & B
- Warrant 2, 4-Hour Vehicular Volume - Evaluated
- Warrant 3, Peak Hour - Evaluated for Conditions A-2, A-3 (A-1 needs to be evaluated separately), and Condition B
- Warrant 4, Pedestrian Volume - Not Analyzed
- Warrant 5, School Crossing - Not Analyzed
- Warrant 6, Coordinated Signal System - Not Analyzed
- Warrant 7, Accident Experience - Not Analyzed
- Warrant 8, Roadway Network - Not Analyzed
- Warrant 9, Intersection Near a Grade Crossing - Not Analyzed

**WARRANT 1, 8-HOUR VEHICULAR VOLUME**

	MAJOR			EB	MINOR		A	B	A or B	80% A&B
	NB	SB	Total		WB	Max				
4:00 PM	723	805	1,528	0	42	42	N	N	N	N
5:00 PM	712	727	1,439	0	63	63	N	Y	Y	N
3:00 PM	353	672	1,025	0	36	36	N	N	N	N
2:00 PM	405	481	886	0	44	44	N	N	N	N
6:00 PM	337	447	784	0	41	41	N	N	N	N
7:00 AM	391	325	716	0	51	51	N	N	N	N
12:00 PM	357	365	722	0	39	39	N	N	N	N
8:00 AM	383	329	712	0	45	45	N	N	N	N
1:00 PM	337	378	715	0	32	32	N	N	N	N
11:00 AM	331	330	661	0	29	29	N	N	N	N
10:00 AM	277	302	579	0	32	32	N	N	N	N
9:00 AM	257	308	565	0	29	29	N	N	N	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

**Warrant Requirements:**

Major Street Lanes: 1  
 Minor Street Lanes: 1

**CONDITION A - Minimum Vehicular Volume**

Minimum Volume on Combined Major Street Approaches: 350  
 Minimum Volume on Higher Minor Street Approach: 105

**CONDITION B - Interruption of Continuous Traffic**

Minimum Volume on Combined Major Street Approaches: 525  
 Minimum Volume on Higher Minor Street Approach: 53

IS CONDITION A OF SIGNAL WARRANT 1 MET? NO  
 IS CONDITION B OF SIGNAL WARRANT 1 MET? NO  
 IS COMBINATION OF A OR B MET? NO  
 IS 80% OF CONDITION A AND CONDITION B MET? NO

Note: Signal Warrant 1 is met if either Condition A or Condition B is met.

**WARRANT 2, FOUR HOUR VEHICULAR VOLUME**

	MAJOR			EB	MINOR		Calculated Threshold	
	NB	SB	Total		WB	Max		
4:00 PM	723	805	1,528	0	42	42	60	N
5:00 PM	712	727	1,439	0	63	63	60	Y
3:00 PM	353	672	1,025	0	36	36	60	N
2:00 PM	405	481	886	0	44	44	60	N
6:00 PM	337	447	784	0	41	41	60	N
7:00 AM	391	325	716	0	51	51	67	N
12:00 PM	357	365	722	0	39	39	66	N
8:00 AM	383	329	712	0	45	45	68	N

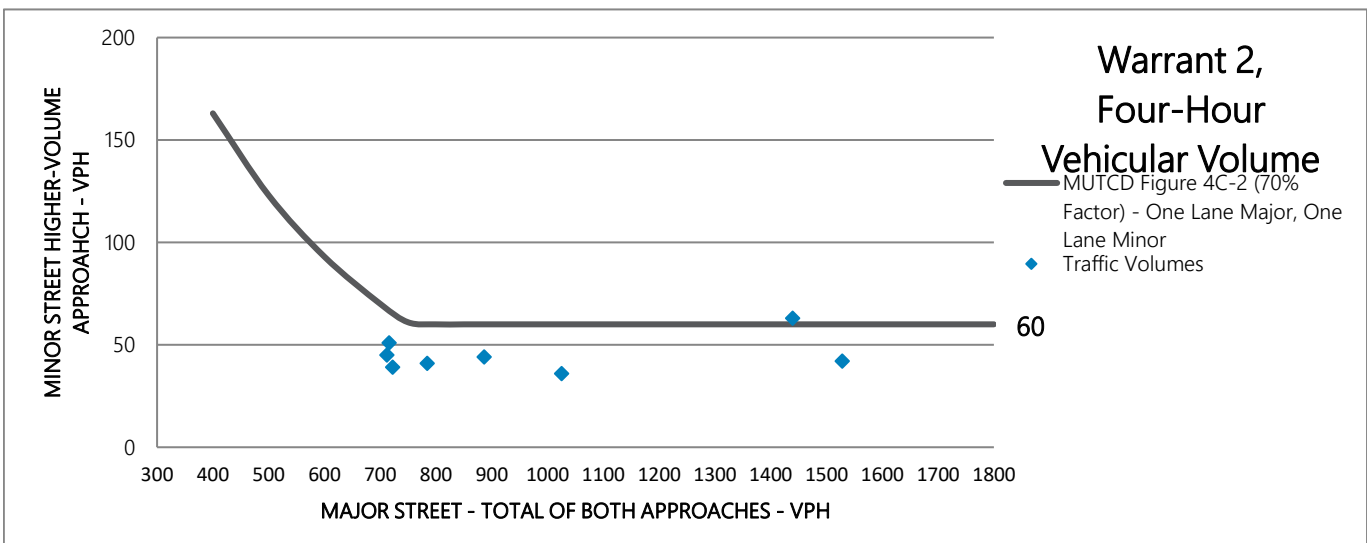
Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

**Warrant Requirements:**

Major Street Lanes: 1

Minor Street Lanes: 1

**IS SIGNAL WARRANT 2 MET? NO**



**WARRANT 3, PEAK HOUR VEHICULAR VOLUME**

	MAJOR			MINOR			Calculated Threshold (B)	A-2&3	B
	NB	SB	Total	EB	WB	Max			
4:00 PM	723	805	1,528	0	42	42	75	N	N
5:00 PM	712	727	1,439	0	63	63	75	N	N
3:00 PM	353	672	1,025	0	36	36	75	N	N
2:00 PM	405	481	886	0	44	44	95	N	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

**Warrant Requirements:**

Major Street Lanes: 1  
 Minor Street Lanes: 1

**CONDITION A-1 - Stopped Delay**

Cannot be evaluated based on volumes alone. Condition met if traffic on one minor-street approach (one direction only) controlled by STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach.

**CONDITION A-2 - Minor Street Volume**

Minimum Volume on Higher Minor Street Approach: 100

**CONDITION A-3 - Total Approach Volume**

Minimum Volume of Total Approaches: 650

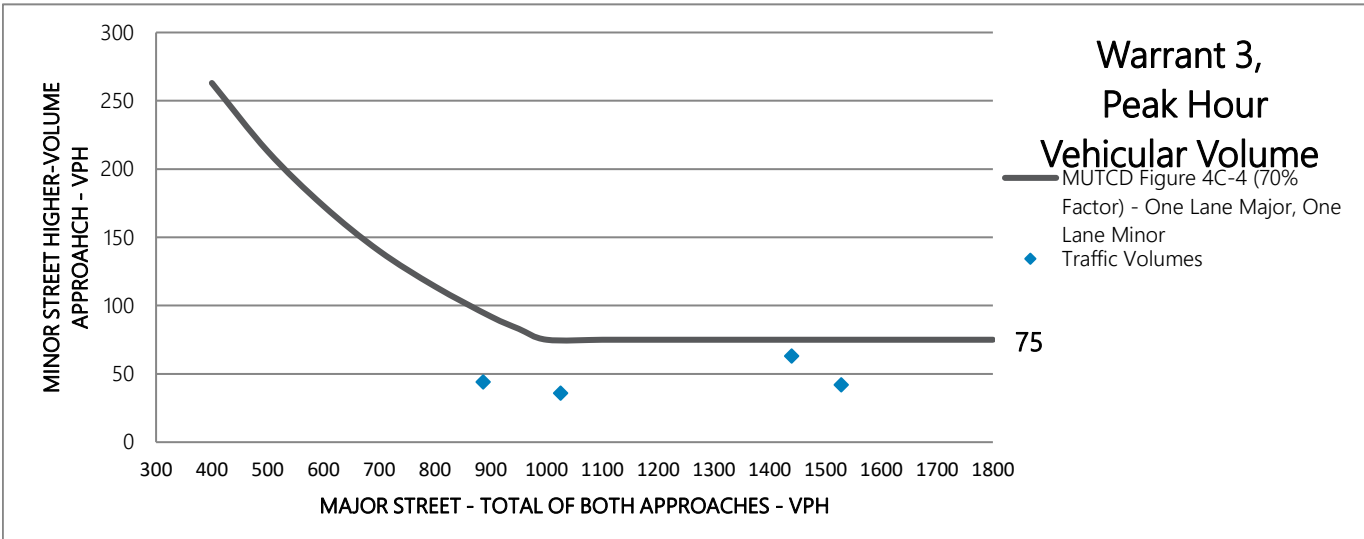
**CONDITION B - Plot of Minor Street Volume (high vol approach) vs. Major Street Volume (Both approaches)**

ARE CONDITIONS A-2 AND A-3 OF SIGNAL WARRANT 3 MET? **NO**

Note: All 3 subsections of Condition A must be met to warrant signal.

IS CONDITION B OF SIGNAL WARRANT 3 MET? **NO**

Note: Signal Warrant 3 is met if either Condition A or Condition B is met.



INTERSECTION INFORMATION					
City:	Tualatin	Condition:	2026 Background Condition with BCP Extension		
Population:	25000		Shared Left-Right Lane		
Intersection Location:					
(Rural/Urban)	Urban		Right-Turn Reduction	50%	
Major Street Name:	Boones Ferry Road	Minor Street Name:	Norwood Road		
Number of Moving Lanes for Each	1	Number of Moving Lanes for Each	1		
Speed: Street	45 mph	Speed: Street	45 mph		
Width:	48 ft	Width:	32 ft		
Direction:	NB SB	Direction:	EB WB		
Hour Beginning:		Hour Beginning:			
12:00 AM		12:00 AM			
1:00 AM		1:00 AM			
2:00 AM		2:00 AM			
3:00 AM		3:00 AM			
4:00 AM		4:00 AM			
5:00 AM		5:00 AM			
6:00 AM		6:00 AM			
7:00 AM	400 337	7:00 AM	0 102	WB LT	WB RT
8:00 AM	397 340	8:00 AM	0 114	45	137
9:00 AM	266 319	9:00 AM	0 62	29	66
10:00 AM	287 314	10:00 AM	0 59	32	54
11:00 AM	343 342	11:00 AM	0 54	29	50
12:00 PM	370 378	12:00 PM	0 73	39	68
1:00 PM	349 391	1:00 PM	0 65	32	65
2:00 PM	420 498	2:00 PM	0 82	44	75
3:00 PM	365 696	3:00 PM	0 97	36	122
4:00 PM	751 834	4:00 PM	0 90	42	95
5:00 PM	737 751	5:00 PM	0 138	63	150
6:00 PM	349 461	6:00 PM	0 93	41	104
7:00 PM		7:00 PM			
8:00 PM		8:00 PM			
9:00 PM		9:00 PM			
10:00 PM		10:00 PM			
11:00 PM		11:00 PM			
24-hour Total	5,034 5,661	24-hour Total	0 1,029		

**Warrants Evaluated:**

- Warrant 1, 8-Hour Vehicular Volume - Evaluated for Conditions A & B
- Warrant 2, 4-Hour Vehicular Volume - Evaluated
- Warrant 3, Peak Hour - Evaluated for Conditions A-2, A-3 (A-1 needs to be evaluated separately), and Condition B
- Warrant 4, Pedestrian Volume - Not Analyzed
- Warrant 5, School Crossing - Not Analyzed
- Warrant 6, Coordinated Signal System - Not Analyzed
- Warrant 7, Accident Experience - Not Analyzed
- Warrant 8, Roadway Network - Not Analyzed
- Warrant 9, Intersection Near a Grade Crossing - Not Analyzed

**WARRANT 1, 8-HOUR VEHICULAR VOLUME**

	MAJOR			EB	MINOR		A	B	A or B	80% A&B
	NB	SB	Total		WB	Max				
4:00 PM	751	834	1,585	0	90	90	N	Y	Y	N
5:00 PM	737	751	1,488	0	138	138	Y	Y	Y	Y
3:00 PM	365	696	1,061	0	97	97	N	Y	Y	N
2:00 PM	420	498	918	0	82	82	N	Y	Y	N
6:00 PM	349	461	810	0	93	93	N	Y	Y	N
8:00 AM	397	340	737	0	114	114	Y	Y	Y	N
7:00 AM	400	337	737	0	102	102	N	Y	Y	N
12:00 PM	370	378	748	0	73	73	N	Y	Y	N
1:00 PM	349	391	740	0	65	65	N	Y	Y	N
11:00 AM	343	342	685	0	54	54	N	Y	Y	N
10:00 AM	287	314	601	0	59	59	N	Y	Y	N
9:00 AM	266	319	585	0	62	62	N	Y	Y	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

**Warrant Requirements:**

Major Street Lanes: 1  
 Minor Street Lanes: 1

**CONDITION A - Minimum Vehicular Volume**

Minimum Volume on Combined Major Street Approaches: 350  
 Minimum Volume on Higher Minor Street Approach: 105

**CONDITION B - Interruption of Continuous Traffic**

Minimum Volume on Combined Major Street Approaches: 525  
 Minimum Volume on Higher Minor Street Approach: 53

IS CONDITION A OF SIGNAL WARRANT 1 MET? NO  
 IS CONDITION B OF SIGNAL WARRANT 1 MET? YES  
 IS COMBINATION OF A OR B MET? YES  
 IS 80% OF CONDITION A AND CONDITION B MET? NO

Note: Signal Warrant 1 is met if either Condition A or Condition B is met.

**WARRANT 2, FOUR HOUR VEHICULAR VOLUME**

	MAJOR			EB	MINOR		Calculated Threshold	
	NB	SB	Total		WB	Max		
4:00 PM	751	834	1,585	0	90	90	60	Y
5:00 PM	737	751	1,488	0	138	138	60	Y
3:00 PM	365	696	1,061	0	97	97	60	Y
2:00 PM	420	498	918	0	82	82	60	Y
6:00 PM	349	461	810	0	93	93	60	Y
8:00 AM	397	340	737	0	114	114	63	Y
7:00 AM	400	337	737	0	102	102	63	Y
12:00 PM	370	378	748	0	73	73	62	Y

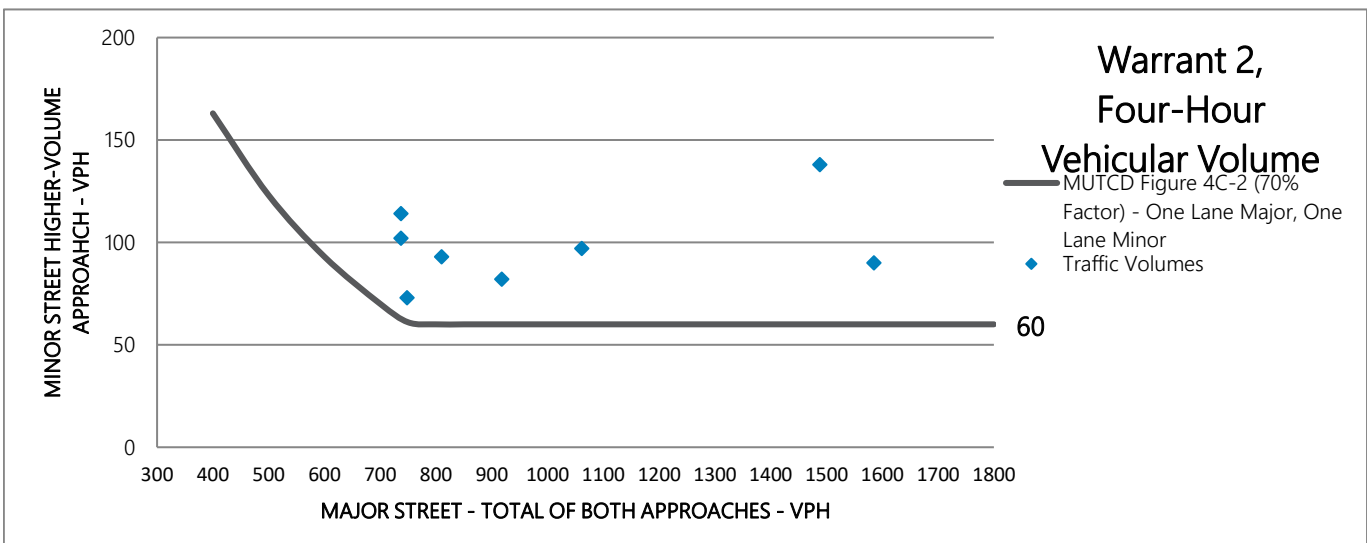
Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

**Warrant Requirements:**

Major Street Lanes: 1

Minor Street Lanes: 1

**IS SIGNAL WARRANT 2 MET? YES**





**WARRANT 3, PEAK HOUR VEHICULAR VOLUME**

	MAJOR			MINOR			Calculated Threshold (B)	A-2&3	B
	NB	SB	Total	EB	WB	Max			
4:00 PM	751	834	1,585	0	90	90	75	N	Y
5:00 PM	737	751	1,488	0	138	138	75	Y	Y
3:00 PM	365	696	1,061	0	97	97	75	N	Y
2:00 PM	420	498	918	0	82	82	89	N	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

**Warrant Requirements:**

Major Street Lanes: 1  
 Minor Street Lanes: 1

**CONDITION A-1 - Stopped Delay**

Cannot be evaluated based on volumes alone. Condition met if traffic on one minor-street approach (one direction only) controlled by STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach.

**CONDITION A-2 - Minor Street Volume**

Minimum Volume on Higher Minor Street Approach: 100

**CONDITION A-3 - Total Approach Volume**

Minimum Volume of Total Approaches: 650

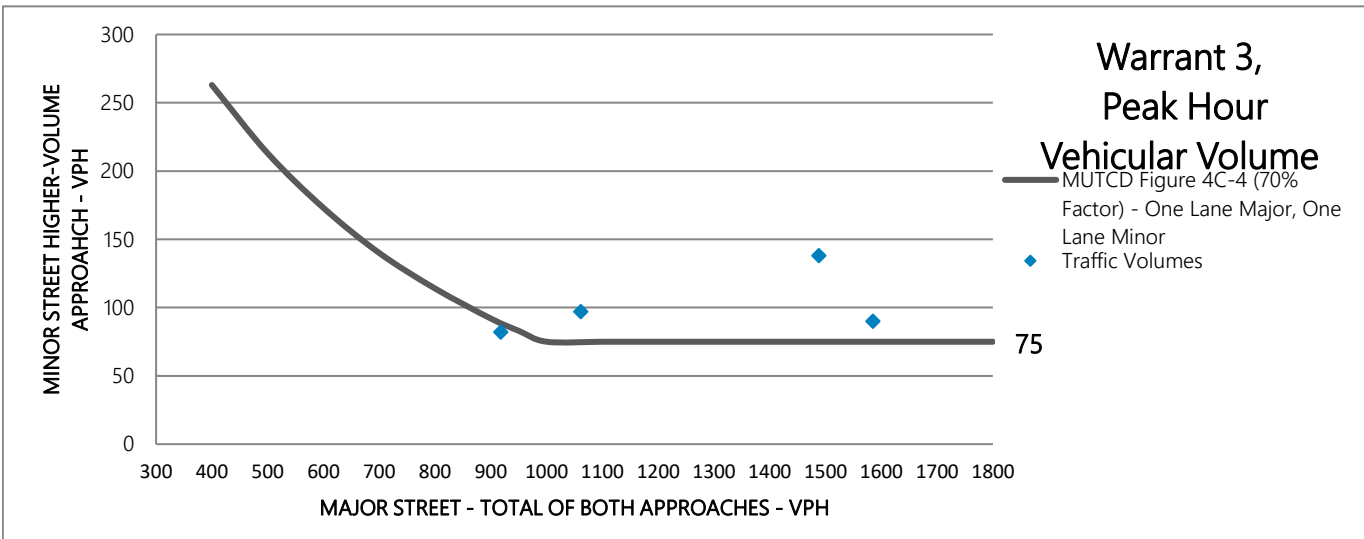
**CONDITION B - Plot of Minor Street Volume (high vol approach) vs. Major Street Volume (Both approaches)**

ARE CONDITIONS A-2 AND A-3 OF SIGNAL WARRANT 3 MET? **YES** *Stopped Delay Needs to be Checked*

Note: All 3 subsections of Condition A must be met to warrant signal.

IS CONDITION B OF SIGNAL WARRANT 3 MET? **YES**

Note: Signal Warrant 3 is met if either Condition A or Condition B is met.



INTERSECTION INFORMATION							
City:	Tualatin		Condition:	2026 Background Condition with BCP Extension			
Population:	25000			Separate Right-Turn Lane			
Intersection Location:	Urban			Right-Turn Reduction	100%		
(Rural/Urban)							
Major Street Name:	Boones Ferry Road		Minor Street Name:	Norwood Road			
Number of Moving Lanes for Each	1		Number of Moving Lanes for Each	1			
Speed: Street	45 mph		Speed: Street	45 mph			
Width:	48 ft		Width:	32 ft			
Direction:	NB SB		Direction:	EB WB			
Hour Beginning:			Hour Beginning:				
12:00 AM			12:00 AM				
1:00 AM			1:00 AM				
2:00 AM			2:00 AM				
3:00 AM			3:00 AM				
4:00 AM			4:00 AM				
5:00 AM			5:00 AM				
6:00 AM			6:00 AM				
7:00 AM	400	337	7:00 AM	0	51	WB LT	WB RT
8:00 AM	397	340	8:00 AM	0	45	45	137
9:00 AM	266	319	9:00 AM	0	29	29	66
10:00 AM	287	314	10:00 AM	0	32	32	54
11:00 AM	343	342	11:00 AM	0	29	29	50
12:00 PM	370	378	12:00 PM	0	39	39	68
1:00 PM	349	391	1:00 PM	0	32	32	65
2:00 PM	420	498	2:00 PM	0	44	44	75
3:00 PM	365	696	3:00 PM	0	36	36	122
4:00 PM	751	834	4:00 PM	0	42	42	95
5:00 PM	737	751	5:00 PM	0	63	63	150
6:00 PM	349	461	6:00 PM	0	41	41	104
7:00 PM			7:00 PM				
8:00 PM			8:00 PM				
9:00 PM			9:00 PM				
10:00 PM			10:00 PM				
11:00 PM			11:00 PM				
24-hour Total	5,034	5,661	24-hour Total	0	483		

**Warrants Evaluated:**

- Warrant 1, 8-Hour Vehicular Volume - Evaluated for Conditions A & B
- Warrant 2, 4-Hour Vehicular Volume - Evaluated
- Warrant 3, Peak Hour - Evaluated for Conditions A-2, A-3 (A-1 needs to be evaluated separately), and Condition B
- Warrant 4, Pedestrian Volume - Not Analyzed
- Warrant 5, School Crossing - Not Analyzed
- Warrant 6, Coordinated Signal System - Not Analyzed
- Warrant 7, Accident Experience - Not Analyzed
- Warrant 8, Roadway Network - Not Analyzed
- Warrant 9, Intersection Near a Grade Crossing - Not Analyzed

**WARRANT 1, 8-HOUR VEHICULAR VOLUME**

	MAJOR			EB	MINOR		A	B	A or B	80% A&B
	NB	SB	Total		WB	Max				
4:00 PM	751	834	1,585	0	42	42	N	N	N	N
5:00 PM	737	751	1,488	0	63	63	N	Y	Y	N
3:00 PM	365	696	1,061	0	36	36	N	N	N	N
2:00 PM	420	498	918	0	44	44	N	N	N	N
6:00 PM	349	461	810	0	41	41	N	N	N	N
7:00 AM	400	337	737	0	51	51	N	N	N	N
12:00 PM	370	378	748	0	39	39	N	N	N	N
8:00 AM	397	340	737	0	45	45	N	N	N	N
1:00 PM	349	391	740	0	32	32	N	N	N	N
11:00 AM	343	342	685	0	29	29	N	N	N	N
10:00 AM	287	314	601	0	32	32	N	N	N	N
9:00 AM	266	319	585	0	29	29	N	N	N	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

**Warrant Requirements:**

Major Street Lanes: 1  
 Minor Street Lanes: 1

**CONDITION A - Minimum Vehicular Volume**

Minimum Volume on Combined Major Street Approaches: 350  
 Minimum Volume on Higher Minor Street Approach: 105

**CONDITION B - Interruption of Continuous Traffic**

Minimum Volume on Combined Major Street Approaches: 525  
 Minimum Volume on Higher Minor Street Approach: 53

IS CONDITION A OF SIGNAL WARRANT 1 MET? NO  
 IS CONDITION B OF SIGNAL WARRANT 1 MET? NO  
 IS COMBINATION OF A OR B MET? NO  
 IS 80% OF CONDITION A AND CONDITION B MET? NO

Note: Signal Warrant 1 is met if either Condition A or Condition B is met.

**WARRANT 2, FOUR HOUR VEHICULAR VOLUME**

	MAJOR			EB	MINOR		Calculated Threshold	
	NB	SB	Total		WB	Max		
4:00 PM	751	834	1,585	0	42	42	60	N
5:00 PM	737	751	1,488	0	63	63	60	Y
3:00 PM	365	696	1,061	0	36	36	60	N
2:00 PM	420	498	918	0	44	44	60	N
6:00 PM	349	461	810	0	41	41	60	N
7:00 AM	400	337	737	0	51	51	63	N
12:00 PM	370	378	748	0	39	39	62	N
8:00 AM	397	340	737	0	45	45	63	N

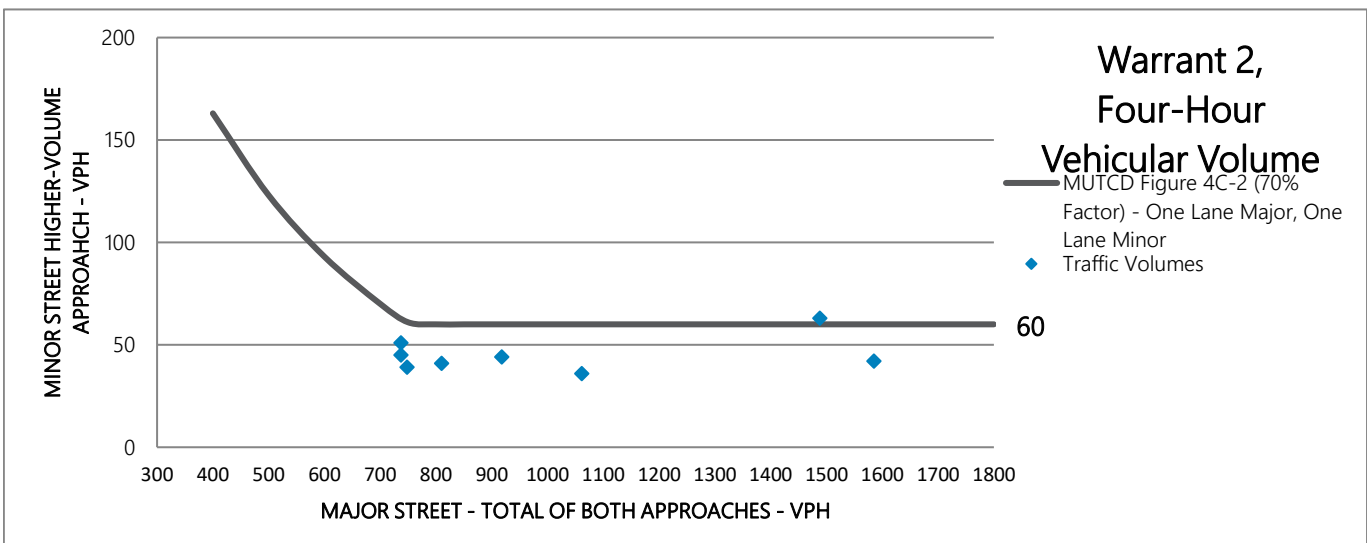
Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

**Warrant Requirements:**

Major Street Lanes: 1

Minor Street Lanes: 1

**IS SIGNAL WARRANT 2 MET? NO**



**WARRANT 3, PEAK HOUR VEHICULAR VOLUME**

	MAJOR			MINOR			Calculated Threshold (B)	A-2&3	B
	NB	SB	Total	EB	WB	Max			
4:00 PM	751	834	1,585	0	42	42	75	N	N
5:00 PM	737	751	1,488	0	63	63	75	N	N
3:00 PM	365	696	1,061	0	36	36	75	N	N
2:00 PM	420	498	918	0	44	44	89	N	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

**Warrant Requirements:**

Major Street Lanes: 1  
 Minor Street Lanes: 1

**CONDITION A-1 - Stopped Delay**

Cannot be evaluated based on volumes alone. Condition met if traffic on one minor-street approach (one direction only) controlled by STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach.

**CONDITION A-2 - Minor Street Volume**

Minimum Volume on Higher Minor Street Approach: 100

**CONDITION A-3 - Total Approach Volume**

Minimum Volume of Total Approaches: 650

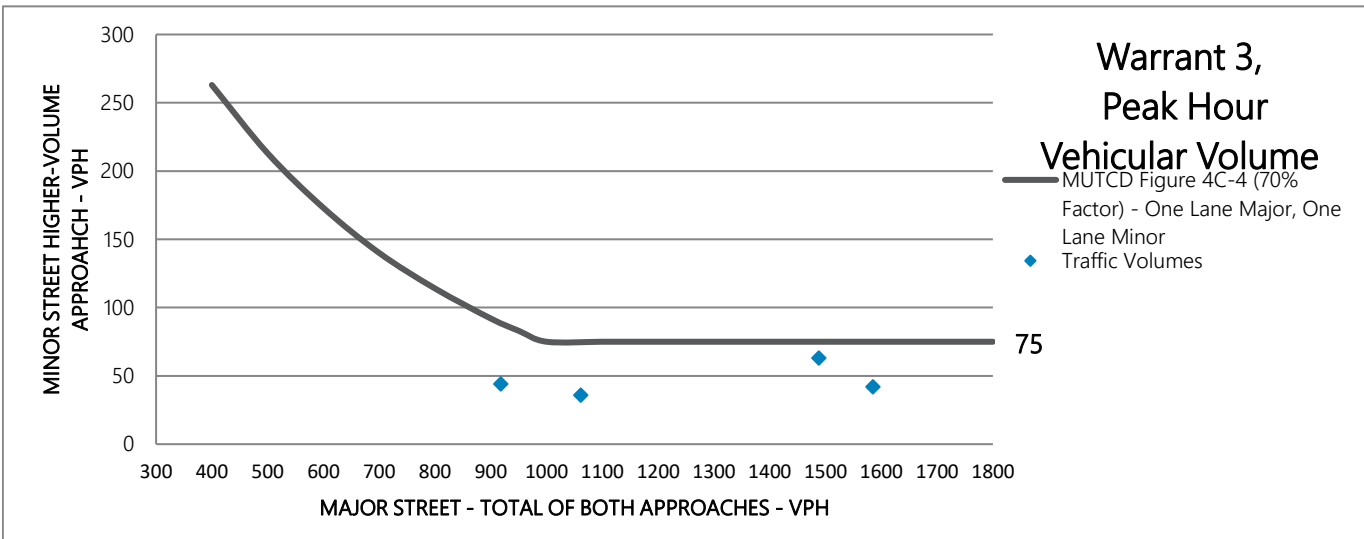
**CONDITION B - Plot of Minor Street Volume (high vol approach) vs. Major Street Volume (Both approaches)**

ARE CONDITIONS A-2 AND A-3 OF SIGNAL WARRANT 3 MET? **NO**

Note: All 3 subsections of Condition A must be met to warrant signal.

IS CONDITION B OF SIGNAL WARRANT 3 MET? **NO**

Note: Signal Warrant 3 is met if either Condition A or Condition B is met.



INTERSECTION INFORMATION					
City:	Tualatin	Condition:	2026 Buildout Condition (No BCP Extension)		
Population:	25000		Shared Left-Right Lane		
Intersection Location:					
(Rural/Urban)	Urban		Right-Turn Reduction	50%	
Major Street Name:	Boones Ferry Road	Minor Street Name:	Norwood Road		
Number of Moving Lanes for Each	1	Number of Moving Lanes for Each	1		
Speed: Street	45 mph	Speed: Street	45 mph		
Width:	48 ft	Width:	32 ft		
Direction:	NB SB	Direction:	EB WB		
Hour Beginning:		Hour Beginning:			
12:00 AM		12:00 AM			
1:00 AM		1:00 AM			
2:00 AM		2:00 AM			
3:00 AM		3:00 AM			
4:00 AM		4:00 AM			
5:00 AM		5:00 AM			
6:00 AM		6:00 AM			
7:00 AM	399 332	7:00 AM	0 166	WB LT	WB RT
8:00 AM	396 341	8:00 AM	0 164	80	168
9:00 AM	269 318	9:00 AM	0 91	49	84
10:00 AM	287 311	10:00 AM	0 88	52	71
11:00 AM	347 344	11:00 AM	0 82	48	67
12:00 PM	376 381	12:00 PM	0 98	56	83
1:00 PM	353 392	1:00 PM	0 91	50	81
2:00 PM	428 502	2:00 PM	0 111	64	93
3:00 PM	381 697	3:00 PM	0 129	58	141
4:00 PM	765 842	4:00 PM	0 123	65	116
5:00 PM	759 769	5:00 PM	0 183	94	178
6:00 PM	377 483	6:00 PM	0 132	68	128
7:00 PM		7:00 PM			
8:00 PM		8:00 PM			
9:00 PM		9:00 PM			
10:00 PM		10:00 PM			
11:00 PM		11:00 PM			
24-hour Total	5,137 5,712	24-hour Total	0 1,458		

**Warrants Evaluated:**

- Warrant 1, 8-Hour Vehicular Volume - Evaluated for Conditions A & B
- Warrant 2, 4-Hour Vehicular Volume - Evaluated
- Warrant 3, Peak Hour - Evaluated for Conditions A-2, A-3 (A-1 needs to be evaluated separately), and Condition B
- Warrant 4, Pedestrian Volume - Not Analyzed
- Warrant 5, School Crossing - Not Analyzed
- Warrant 6, Coordinated Signal System - Not Analyzed
- Warrant 7, Accident Experience - Not Analyzed
- Warrant 8, Roadway Network - Not Analyzed
- Warrant 9, Intersection Near a Grade Crossing - Not Analyzed

**WARRANT 1, 8-HOUR VEHICULAR VOLUME**

	MAJOR			EB	MINOR		A	B	A or B	80% A&B
	NB	SB	Total		WB	Max				
4:00 PM	765	842	1,607	0	123	123	Y	Y	Y	N
5:00 PM	759	769	1,528	0	183	183	Y	Y	Y	Y
3:00 PM	381	697	1,078	0	129	129	Y	Y	Y	N
2:00 PM	428	502	930	0	111	111	Y	Y	Y	N
6:00 PM	377	483	860	0	132	132	Y	Y	Y	Y
8:00 AM	396	341	737	0	164	164	Y	Y	Y	Y
7:00 AM	399	332	731	0	166	166	Y	Y	Y	Y
12:00 PM	376	381	757	0	98	98	N	Y	Y	N
1:00 PM	353	392	745	0	91	91	N	Y	Y	N
11:00 AM	347	344	691	0	82	82	N	Y	Y	N
10:00 AM	287	311	598	0	88	88	N	Y	Y	N
9:00 AM	269	318	587	0	91	91	N	Y	Y	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

**Warrant Requirements:**

Major Street Lanes: 1  
 Minor Street Lanes: 1

**CONDITION A - Minimum Vehicular Volume**

Minimum Volume on Combined Major Street Approaches: 350  
 Minimum Volume on Higher Minor Street Approach: 105

**CONDITION B - Interruption of Continuous Traffic**

Minimum Volume on Combined Major Street Approaches: 525  
 Minimum Volume on Higher Minor Street Approach: 53

IS CONDITION A OF SIGNAL WARRANT 1 MET? NO  
 IS CONDITION B OF SIGNAL WARRANT 1 MET? YES  
 IS COMBINATION OF A OR B MET? YES  
 IS 80% OF CONDITION A AND CONDITION B MET? NO

Note: Signal Warrant 1 is met if either Condition A or Condition B is met.

**WARRANT 2, FOUR HOUR VEHICULAR VOLUME**

	MAJOR			EB	MINOR		Calculated Threshold	
	NB	SB	Total		WB	Max		
4:00 PM	765	842	1,607	0	123	123	60	Y
5:00 PM	759	769	1,528	0	183	183	60	Y
3:00 PM	381	697	1,078	0	129	129	60	Y
2:00 PM	428	502	930	0	111	111	60	Y
6:00 PM	377	483	860	0	132	132	60	Y
8:00 AM	396	341	737	0	164	164	63	Y
7:00 AM	399	332	731	0	166	166	65	Y
12:00 PM	376	381	757	0	98	98	60	Y

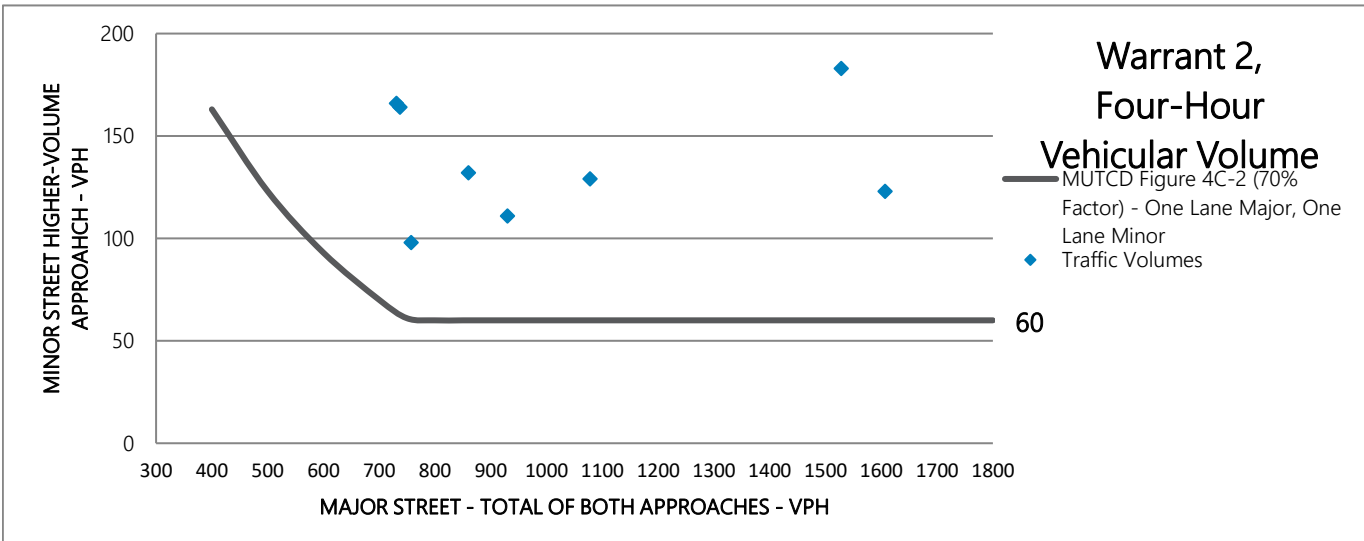
Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

**Warrant Requirements:**

Major Street Lanes: 1

Minor Street Lanes: 1

**IS SIGNAL WARRANT 2 MET? YES**





**WARRANT 3, PEAK HOUR VEHICULAR VOLUME**

	MAJOR			MINOR			Calculated Threshold (B)	<b>A-2&amp;3</b>	<b>B</b>
	NB	SB	Total	EB	WB	Max			
4:00 PM	765	842	1,607	0	123	123	75	Y	Y
5:00 PM	759	769	1,528	0	183	183	75	Y	Y
3:00 PM	381	697	1,078	0	129	129	75	Y	Y
2:00 PM	428	502	930	0	111	111	87	Y	Y

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

**Warrant Requirements:**

Major Street Lanes: 1  
 Minor Street Lanes: 1

**CONDITION A-1 - Stopped Delay**

Cannot be evaluated based on volumes alone. Condition met if traffic on one minor-street approach (one direction only) controlled by STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach.

**CONDITION A-2 - Minor Street Volume**

Minimum Volume on Higher Minor Street Approach: 100

**CONDITION A-3 - Total Approach Volume**

Minimum Volume of Total Approaches: 650

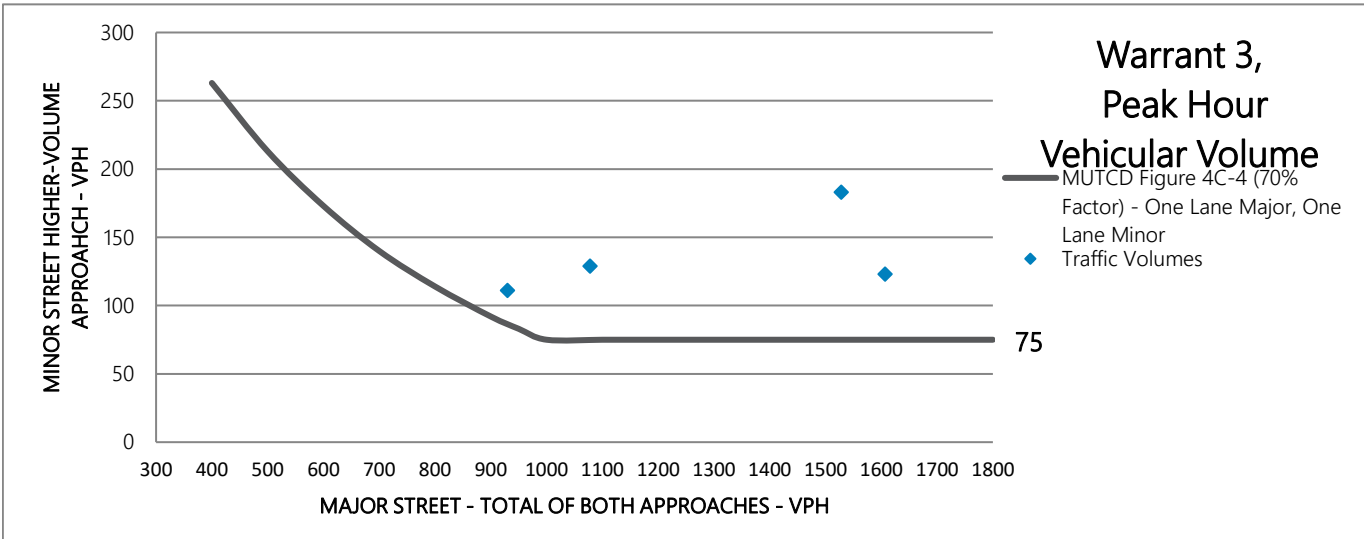
**CONDITION B - Plot of Minor Street Volume (high vol approach) vs. Major Street Volume (Both approaches)**

**ARE CONDITIONS A-2 AND A-3 OF SIGNAL WARRANT 3 MET?** YES *Stopped Delay Needs to be Checked*

Note: All 3 subsections of Condition A must be met to warrant signal.

**IS CONDITION B OF SIGNAL WARRANT 3 MET?** YES

Note: Signal Warrant 3 is met if either Condition A or Condition B is met.



INTERSECTION INFORMATION							
City:	Tualatin		Condition:	2026 Buildout Condition (No BCP Extension)			
Population:	25000			Separate Right-Turn Lane			
Intersection Location:	Urban			Right-Turn Reduction	100%		
(Rural/Urban)							
Major Street Name:	Boones Ferry Road		Minor Street Name:	Norwood Road			
Number of Moving Lanes for Each	1		Number of Moving Lanes for Each	1			
Speed: Street	45 mph		Speed: Street	45 mph			
Width:	48 ft		Width:	32 ft			
Direction:	NB SB		Direction:	EB WB			
Hour Beginning:			Hour Beginning:				
12:00 AM			12:00 AM				
1:00 AM			1:00 AM				
2:00 AM			2:00 AM				
3:00 AM			3:00 AM				
4:00 AM			4:00 AM				
5:00 AM			5:00 AM				
6:00 AM			6:00 AM				
7:00 AM	399	332	7:00 AM	0	95	WB LT	WB RT
8:00 AM	396	341	8:00 AM	0	80	80	168
9:00 AM	269	318	9:00 AM	0	49	49	84
10:00 AM	287	311	10:00 AM	0	52	52	71
11:00 AM	347	344	11:00 AM	0	48	48	67
12:00 PM	376	381	12:00 PM	0	56	56	83
1:00 PM	353	392	1:00 PM	0	50	50	81
2:00 PM	428	502	2:00 PM	0	64	64	93
3:00 PM	381	697	3:00 PM	0	58	58	141
4:00 PM	765	842	4:00 PM	0	65	65	116
5:00 PM	759	769	5:00 PM	0	94	94	178
6:00 PM	377	483	6:00 PM	0	68	68	128
7:00 PM			7:00 PM				
8:00 PM			8:00 PM				
9:00 PM			9:00 PM				
10:00 PM			10:00 PM				
11:00 PM			11:00 PM				
24-hour Total	5,137	5,712	24-hour Total	0	779		

**Warrants Evaluated:**

- Warrant 1, 8-Hour Vehicular Volume - Evaluated for Conditions A & B
- Warrant 2, 4-Hour Vehicular Volume - Evaluated
- Warrant 3, Peak Hour - Evaluated for Conditions A-2, A-3 (A-1 needs to be evaluated separately), and Condition B
- Warrant 4, Pedestrian Volume - Not Analyzed
- Warrant 5, School Crossing - Not Analyzed
- Warrant 6, Coordinated Signal System - Not Analyzed
- Warrant 7, Accident Experience - Not Analyzed
- Warrant 8, Roadway Network - Not Analyzed
- Warrant 9, Intersection Near a Grade Crossing - Not Analyzed

**WARRANT 1, 8-HOUR VEHICULAR VOLUME**

	MAJOR			EB	MINOR		A	B	A or B	80% A&B
	NB	SB	Total		WB	Max				
4:00 PM	765	842	1,607	0	65	65	N	Y	Y	N
5:00 PM	759	769	1,528	0	94	94	N	Y	Y	N
3:00 PM	381	697	1,078	0	58	58	N	Y	Y	N
2:00 PM	428	502	930	0	64	64	N	Y	Y	N
6:00 PM	377	483	860	0	68	68	N	Y	Y	N
7:00 AM	399	332	731	0	95	95	N	Y	Y	N
8:00 AM	396	341	737	0	80	80	N	Y	Y	N
12:00 PM	376	381	757	0	56	56	N	Y	Y	N
1:00 PM	353	392	745	0	50	50	N	N	N	N
11:00 AM	347	344	691	0	48	48	N	N	N	N
10:00 AM	287	311	598	0	52	52	N	N	N	N
9:00 AM	269	318	587	0	49	49	N	N	N	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

**Warrant Requirements:**

Major Street Lanes: 1  
 Minor Street Lanes: 1

**CONDITION A - Minimum Vehicular Volume**

Minimum Volume on Combined Major Street Approaches: 350  
 Minimum Volume on Higher Minor Street Approach: 105

**CONDITION B - Interruption of Continuous Traffic**

Minimum Volume on Combined Major Street Approaches: 525  
 Minimum Volume on Higher Minor Street Approach: 53

IS CONDITION A OF SIGNAL WARRANT 1 MET? NO  
 IS CONDITION B OF SIGNAL WARRANT 1 MET? YES  
 IS COMBINATION OF A OR B MET? NO  
 IS 80% OF CONDITION A AND CONDITION B MET? NO

Note: Signal Warrant 1 is met if either Condition A or Condition B is met.

**WARRANT 2, FOUR HOUR VEHICULAR VOLUME**

	MAJOR			EB	MINOR		Calculated Threshold	
	NB	SB	Total		WB	Max		
4:00 PM	765	842	1,607	0	65	65	60	Y
5:00 PM	759	769	1,528	0	94	94	60	Y
3:00 PM	381	697	1,078	0	58	58	60	N
2:00 PM	428	502	930	0	64	64	60	Y
6:00 PM	377	483	860	0	68	68	60	Y
7:00 AM	399	332	731	0	95	95	65	Y
8:00 AM	396	341	737	0	80	80	63	Y
12:00 PM	376	381	757	0	56	56	60	N

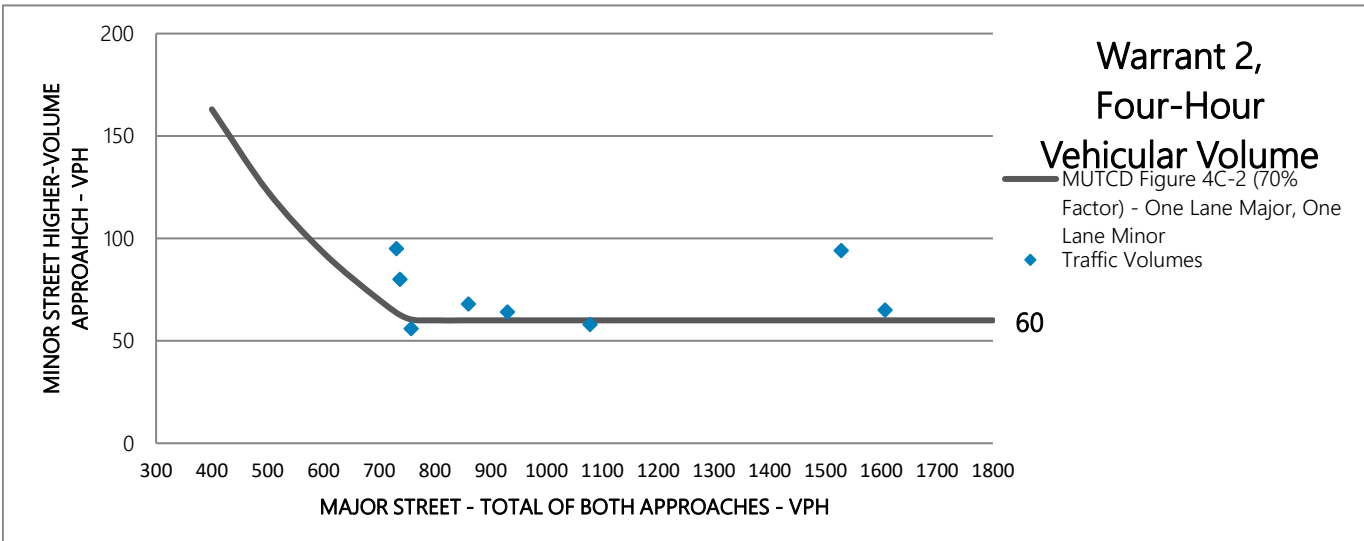
Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

**Warrant Requirements:**

Major Street Lanes: 1

Minor Street Lanes: 1

**IS SIGNAL WARRANT 2 MET? YES**



**WARRANT 3, PEAK HOUR VEHICULAR VOLUME**

	MAJOR			MINOR			Calculated Threshold (B)	A-2&3	B
	NB	SB	Total	EB	WB	Max			
4:00 PM	765	842	1,607	0	65	65	75	N	N
5:00 PM	759	769	1,528	0	94	94	75	N	Y
3:00 PM	381	697	1,078	0	58	58	75	N	N
2:00 PM	428	502	930	0	64	64	87	N	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

**Warrant Requirements:**

Major Street Lanes: 1  
 Minor Street Lanes: 1

**CONDITION A-1 - Stopped Delay**

Cannot be evaluated based on volumes alone. Condition met if traffic on one minor-street approach (one direction only) controlled by STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach.

**CONDITION A-2 - Minor Street Volume**

Minimum Volume on Higher Minor Street Approach: 100

**CONDITION A-3 - Total Approach Volume**

Minimum Volume of Total Approaches: 650

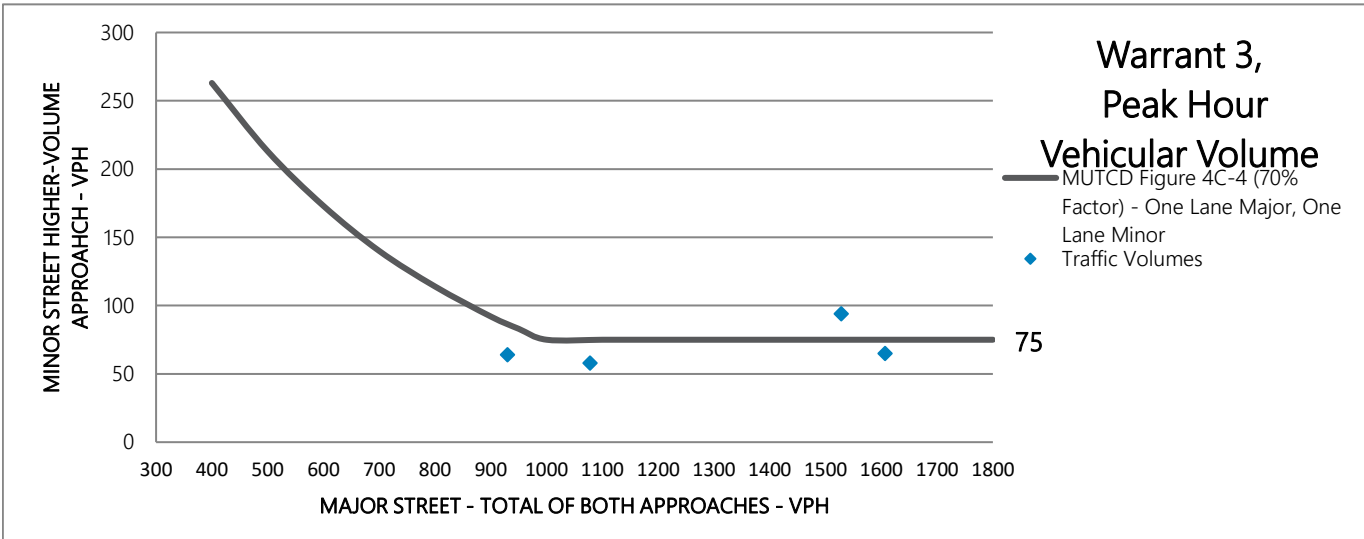
**CONDITION B - Plot of Minor Street Volume (high vol approach) vs. Major Street Volume (Both approaches)**

ARE CONDITIONS A-2 AND A-3 OF SIGNAL WARRANT 3 MET? NO

Note: All 3 subsections of Condition A must be met to warrant signal.

IS CONDITION B OF SIGNAL WARRANT 3 MET? YES

Note: Signal Warrant 3 is met if either Condition A or Condition B is met.



INTERSECTION INFORMATION					
City:	Tualatin		Condition:	2026 Buildout Condition with BCP Extension	
Population:	25000			Shared Left-Right Lane	
Intersection Location:	Urban			Right-Turn Reduction	50%
(Rural/Urban)					
Major Street Name:	Boones Ferry Road		Minor Street Name:	Norwood Road	
Number of Moving Lanes for Each	1		Number of Moving Lanes for Each	1	
Speed: Street	45 mph		Speed: Street	45 mph	
Width:	48 ft		Width:	32 ft	
Direction:	NB SB		Direction:	EB WB	
Hour Beginning:			Hour Beginning:		
12:00 AM			12:00 AM		
1:00 AM			1:00 AM		
2:00 AM			2:00 AM		
3:00 AM			3:00 AM		
4:00 AM			4:00 AM		
5:00 AM			5:00 AM		
6:00 AM			6:00 AM		
7:00 AM	409	344	7:00 AM	0	169
8:00 AM	411	350	8:00 AM	0	166
9:00 AM	279	328	9:00 AM	0	92
10:00 AM	298	322	10:00 AM	0	89
11:00 AM	360	354	11:00 AM	0	84
12:00 PM	391	392	12:00 PM	0	99
1:00 PM	367	404	1:00 PM	0	92
2:00 PM	446	516	2:00 PM	0	112
3:00 PM	397	718	3:00 PM	0	130
4:00 PM	797	866	4:00 PM	0	125
5:00 PM	789	787	5:00 PM	0	185
6:00 PM	393	492	6:00 PM	0	135
7:00 PM			7:00 PM		
8:00 PM			8:00 PM		
9:00 PM			9:00 PM		
10:00 PM			10:00 PM		
11:00 PM			11:00 PM		
24-hour Total	5,337	5,873	24-hour Total	0	1,478

**Warrants Evaluated:**

- Warrant 1, 8-Hour Vehicular Volume - Evaluated for Conditions A & B
- Warrant 2, 4-Hour Vehicular Volume - Evaluated
- Warrant 3, Peak Hour - Evaluated for Conditions A-2, A-3 (A-1 needs to be evaluated separately), and Condition B
- Warrant 4, Pedestrian Volume - Not Analyzed
- Warrant 5, School Crossing - Not Analyzed
- Warrant 6, Coordinated Signal System - Not Analyzed
- Warrant 7, Accident Experience - Not Analyzed
- Warrant 8, Roadway Network - Not Analyzed
- Warrant 9, Intersection Near a Grade Crossing - Not Analyzed

**WARRANT 1, 8-HOUR VEHICULAR VOLUME**

	MAJOR			EB	MINOR		A	B	A or B	80% A&B
	NB	SB	Total		WB	Max				
4:00 PM	797	866	1,663	0	125	125	Y	Y	Y	N
5:00 PM	789	787	1,576	0	185	185	Y	Y	Y	Y
3:00 PM	397	718	1,115	0	130	130	Y	Y	Y	N
2:00 PM	446	516	962	0	112	112	Y	Y	Y	N
6:00 PM	393	492	885	0	135	135	Y	Y	Y	Y
8:00 AM	411	350	761	0	166	166	Y	Y	Y	Y
7:00 AM	409	344	753	0	169	169	Y	Y	Y	Y
12:00 PM	391	392	783	0	99	99	N	Y	Y	N
1:00 PM	367	404	771	0	92	92	N	Y	Y	N
11:00 AM	360	354	714	0	84	84	N	Y	Y	N
10:00 AM	298	322	620	0	89	89	N	Y	Y	N
9:00 AM	279	328	607	0	92	92	N	Y	Y	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

**Warrant Requirements:**

Major Street Lanes: 1  
 Minor Street Lanes: 1

**CONDITION A - Minimum Vehicular Volume**

Minimum Volume on Combined Major Street Approaches: 350  
 Minimum Volume on Higher Minor Street Approach: 105

**CONDITION B - Interruption of Continuous Traffic**

Minimum Volume on Combined Major Street Approaches: 525  
 Minimum Volume on Higher Minor Street Approach: 53

IS CONDITION A OF SIGNAL WARRANT 1 MET? NO  
 IS CONDITION B OF SIGNAL WARRANT 1 MET? YES  
 IS COMBINATION OF A OR B MET? YES  
 IS 80% OF CONDITION A AND CONDITION B MET? NO

Note: Signal Warrant 1 is met if either Condition A or Condition B is met.

**WARRANT 2, FOUR HOUR VEHICULAR VOLUME**

	MAJOR			EB	MINOR		Calculated Threshold	
	NB	SB	Total		WB	Max		
4:00 PM	797	866	1,663	0	125	125	60	Y
5:00 PM	789	787	1,576	0	185	185	60	Y
3:00 PM	397	718	1,115	0	130	130	60	Y
2:00 PM	446	516	962	0	112	112	60	Y
6:00 PM	393	492	885	0	135	135	60	Y
8:00 AM	411	350	761	0	166	166	60	Y
7:00 AM	409	344	753	0	169	169	61	Y
12:00 PM	391	392	783	0	99	99	60	Y

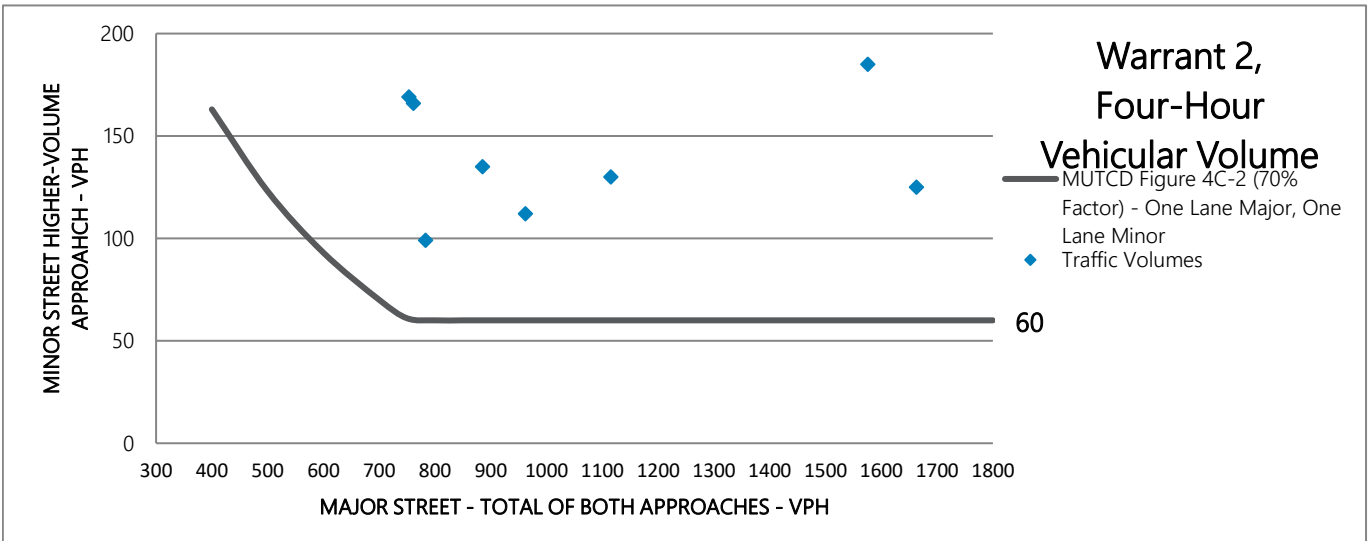
Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

**Warrant Requirements:**

Major Street Lanes: 1

Minor Street Lanes: 1

**IS SIGNAL WARRANT 2 MET? YES**





**WARRANT 3, PEAK HOUR VEHICULAR VOLUME**

	MAJOR			MINOR			Calculated Threshold (B)	<b>A-2&amp;3</b>	<b>B</b>
	NB	SB	Total	EB	WB	Max			
4:00 PM	797	866	1,663	0	125	125	75	Y	Y
5:00 PM	789	787	1,576	0	185	185	75	Y	Y
3:00 PM	397	718	1,115	0	130	130	75	Y	Y
2:00 PM	446	516	962	0	112	112	81	Y	Y

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

**Warrant Requirements:**

Major Street Lanes: 1  
 Minor Street Lanes: 1

**CONDITION A-1 - Stopped Delay**

Cannot be evaluated based on volumes alone. Condition met if traffic on one minor-street approach (one direction only) controlled by STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach.

**CONDITION A-2 - Minor Street Volume**

Minimum Volume on Higher Minor Street Approach: 100

**CONDITION A-3 - Total Approach Volume**

Minimum Volume of Total Approaches: 650

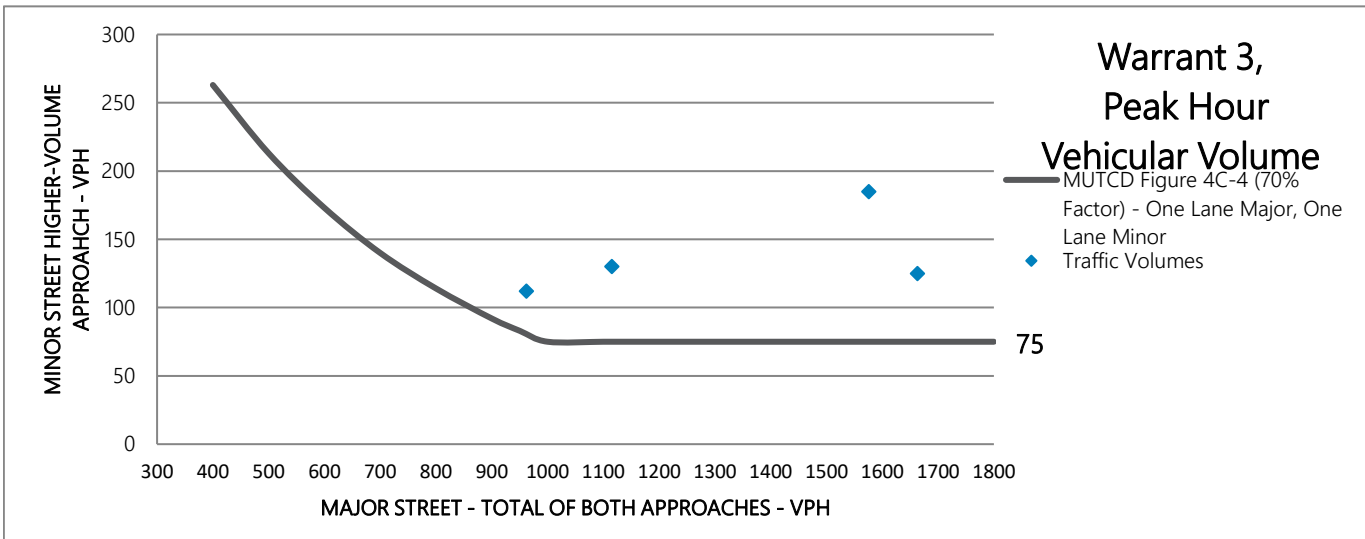
**CONDITION B - Plot of Minor Street Volume (high vol approach) vs. Major Street Volume (Both approaches)**

**ARE CONDITIONS A-2 AND A-3 OF SIGNAL WARRANT 3 MET?** YES *Stopped Delay Needs to be Checked*

Note: All 3 subsections of Condition A must be met to warrant signal.

**IS CONDITION B OF SIGNAL WARRANT 3 MET?** YES

Note: Signal Warrant 3 is met if either Condition A or Condition B is met.



INTERSECTION INFORMATION							
City:	Tualatin		Condition:	2026 Buildout Condition with BCP Extension			
Population:	25000			Separate Right-Turn Lane			
Intersection Location:	Urban			Right-Turn Reduction	100%		
(Rural/Urban)							
Major Street Name:	Boones Ferry Road		Minor Street Name:	Norwood Road			
Number of Moving Lanes for Each	1		Number of Moving Lanes for Each	1			
Speed: Street	45 mph		Speed: Street	45 mph			
Width:	48 ft		Width:	32 ft			
Direction:	NB SB		Direction:	EB WB			
Hour Beginning:			Hour Beginning:				
12:00 AM			12:00 AM				
1:00 AM			1:00 AM				
2:00 AM			2:00 AM				
3:00 AM			3:00 AM				
4:00 AM			4:00 AM				
5:00 AM			5:00 AM				
6:00 AM			6:00 AM				
7:00 AM	409	344	7:00 AM	0	100	WB LT	WB RT
8:00 AM	411	350	8:00 AM	0	84	100	137
9:00 AM	279	328	9:00 AM	0	51	84	164
10:00 AM	298	322	10:00 AM	0	54	51	82
11:00 AM	360	354	11:00 AM	0	51	54	69
12:00 PM	391	392	12:00 PM	0	58	51	65
1:00 PM	367	404	1:00 PM	0	52	58	81
2:00 PM	446	516	2:00 PM	0	66	52	79
3:00 PM	397	718	3:00 PM	0	60	66	91
4:00 PM	797	866	4:00 PM	0	68	60	139
5:00 PM	789	787	5:00 PM	0	98	68	113
6:00 PM	393	492	6:00 PM	0	72	98	174
7:00 PM			7:00 PM			72	125
8:00 PM			8:00 PM				
9:00 PM			9:00 PM				
10:00 PM			10:00 PM				
11:00 PM			11:00 PM				
24-hour Total	5,337	5,873	24-hour Total	0	814		

**Warrants Evaluated:**

- Warrant 1, 8-Hour Vehicular Volume - Evaluated for Conditions A & B
- Warrant 2, 4-Hour Vehicular Volume - Evaluated
- Warrant 3, Peak Hour - Evaluated for Conditions A-2, A-3 (A-1 needs to be evaluated separately), and Condition B
- Warrant 4, Pedestrian Volume - Not Analyzed
- Warrant 5, School Crossing - Not Analyzed
- Warrant 6, Coordinated Signal System - Not Analyzed
- Warrant 7, Accident Experience - Not Analyzed
- Warrant 8, Roadway Network - Not Analyzed
- Warrant 9, Intersection Near a Grade Crossing - Not Analyzed

**WARRANT 1, 8-HOUR VEHICULAR VOLUME**

	MAJOR			EB	MINOR		A	B	A or B	80% A&B
	NB	SB	Total		WB	Max				
4:00 PM	797	866	1,663	0	68	68	N	Y	Y	N
5:00 PM	789	787	1,576	0	98	98	N	Y	Y	N
3:00 PM	397	718	1,115	0	60	60	N	Y	Y	N
2:00 PM	446	516	962	0	66	66	N	Y	Y	N
6:00 PM	393	492	885	0	72	72	N	Y	Y	N
7:00 AM	409	344	753	0	100	100	N	Y	Y	N
8:00 AM	411	350	761	0	84	84	N	Y	Y	N
12:00 PM	391	392	783	0	58	58	N	Y	Y	N
1:00 PM	367	404	771	0	52	52	N	N	N	N
11:00 AM	360	354	714	0	51	51	N	N	N	N
10:00 AM	298	322	620	0	54	54	N	Y	Y	N
9:00 AM	279	328	607	0	51	51	N	N	N	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

**Warrant Requirements:**

Major Street Lanes: 1  
 Minor Street Lanes: 1

**CONDITION A - Minimum Vehicular Volume**

Minimum Volume on Combined Major Street Approaches: 350  
 Minimum Volume on Higher Minor Street Approach: 105

**CONDITION B - Interruption of Continuous Traffic**

Minimum Volume on Combined Major Street Approaches: 525  
 Minimum Volume on Higher Minor Street Approach: 53

IS CONDITION A OF SIGNAL WARRANT 1 MET? NO  
 IS CONDITION B OF SIGNAL WARRANT 1 MET? YES  
 IS COMBINATION OF A OR B MET? YES  
 IS 80% OF CONDITION A AND CONDITION B MET? NO

Note: Signal Warrant 1 is met if either Condition A or Condition B is met.

**WARRANT 2, FOUR HOUR VEHICULAR VOLUME**

	MAJOR			EB	MINOR		Calculated Threshold	
	NB	SB	Total		WB	Max		
4:00 PM	797	866	1,663	0	68	68	60	Y
5:00 PM	789	787	1,576	0	98	98	60	Y
3:00 PM	397	718	1,115	0	60	60	60	Y
2:00 PM	446	516	962	0	66	66	60	Y
6:00 PM	393	492	885	0	72	72	60	Y
7:00 AM	409	344	753	0	100	100	61	Y
8:00 AM	411	350	761	0	84	84	60	Y
12:00 PM	391	392	783	0	58	58	60	N

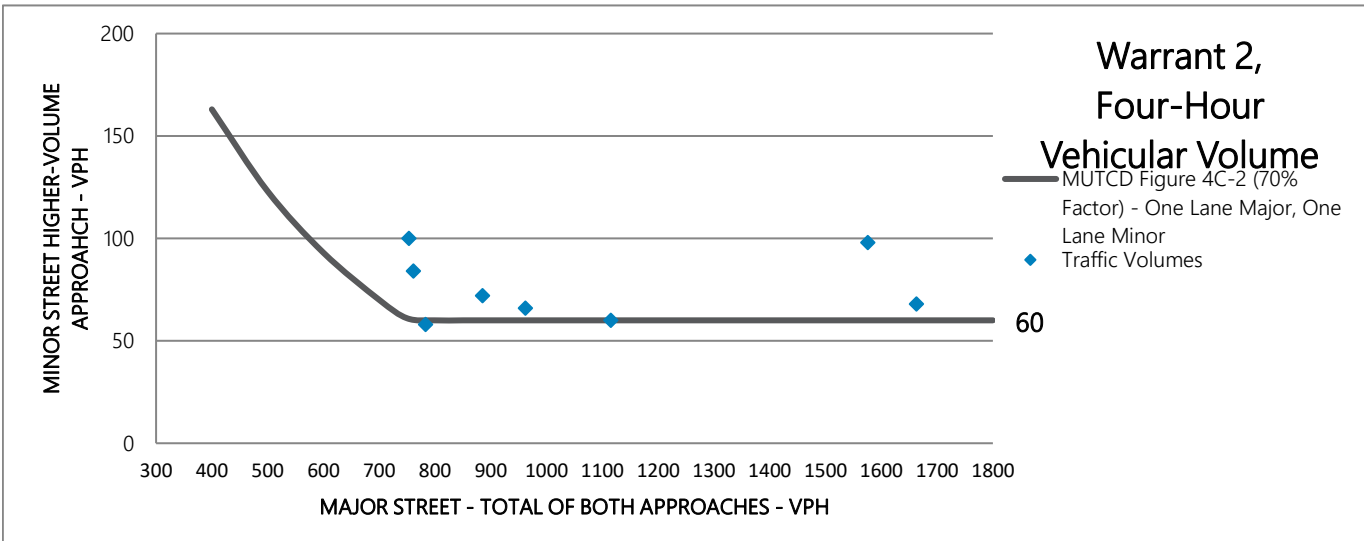
Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

**Warrant Requirements:**

Major Street Lanes: 1

Minor Street Lanes: 1

**IS SIGNAL WARRANT 2 MET? YES**



**WARRANT 3, PEAK HOUR VEHICULAR VOLUME**

	MAJOR			MINOR			Calculated Threshold (B)	A-2&3	B
	NB	SB	Total	EB	WB	Max			
4:00 PM	797	866	1,663	0	68	68	75	N	N
5:00 PM	789	787	1,576	0	98	98	75	N	Y
3:00 PM	397	718	1,115	0	60	60	75	N	N
2:00 PM	446	516	962	0	66	66	81	N	N

Note: The major street has a speed which exceeds 40 mph, therefore these minimum volumes are 70 percent of the regular requirements

**Warrant Requirements:**

Major Street Lanes: 1  
 Minor Street Lanes: 1

**CONDITION A-1 - Stopped Delay**

Cannot be evaluated based on volumes alone. Condition met if traffic on one minor-street approach (one direction only) controlled by STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach.

**CONDITION A-2 - Minor Street Volume**

Minimum Volume on Higher Minor Street Approach: 100

**CONDITION A-3 - Total Approach Volume**

Minimum Volume of Total Approaches: 650

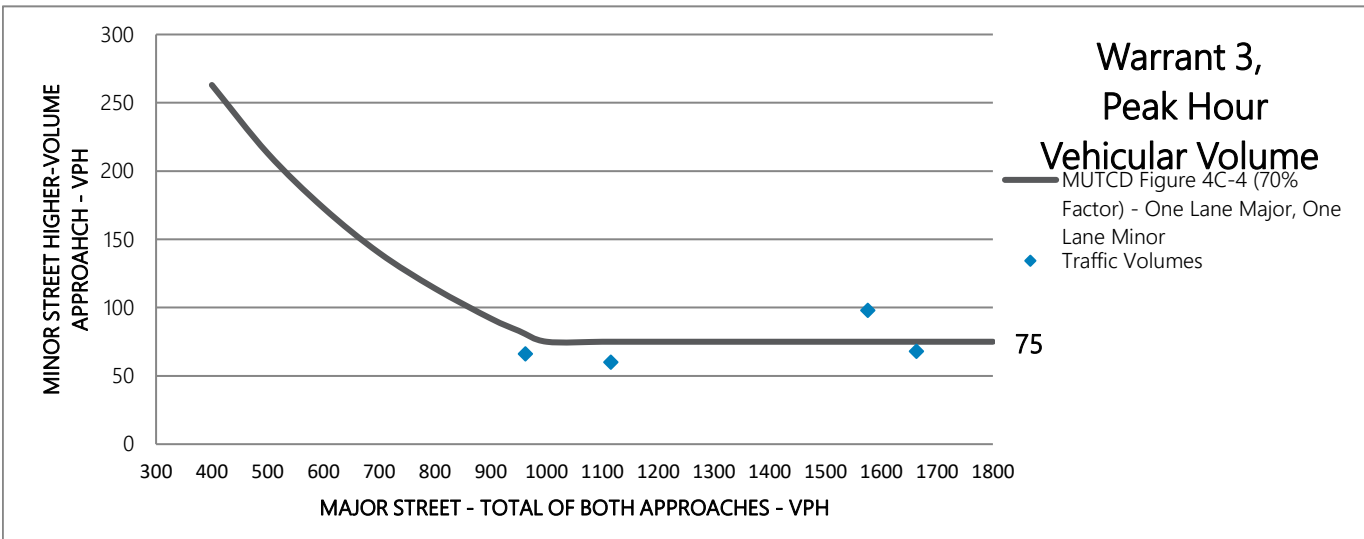
**CONDITION B - Plot of Minor Street Volume (high vol approach) vs. Major Street Volume (Both approaches)**

ARE CONDITIONS A-2 AND A-3 OF SIGNAL WARRANT 3 MET? **NO**

Note: All 3 subsections of Condition A must be met to warrant signal.

IS CONDITION B OF SIGNAL WARRANT 3 MET? **YES**

Note: Signal Warrant 3 is met if either Condition A or Condition B is met.



## Appendix D - Operations

Definitions

Synchro Reports

Queuing Reports





## Level of Service Definitions

Level of service is used to describe the quality of traffic flow. Levels of service A to C are considered good, and rural roads are usually designed for level of service C. Urban streets and signalized intersections are typically designed for level of service D. Level of service E is considered to be the limit of acceptable delay. For unsignalized intersections, level of service E is generally considered acceptable. Here is a more complete description of levels of service:

- *Level of service A:* Very low delay at intersections, with all traffic signal cycles clearing and no vehicles waiting through more than one signal cycle. On highways, low volume and high speeds, with speeds not restricted by other vehicles.
- *Level of service B:* Operating speeds beginning to be affected by other traffic; short traffic delays at intersections. Higher average intersection delay than for level of service A resulting from more vehicles stopping.
- *Level of service C:* Operating speeds and maneuverability closely controlled by other traffic; higher delays at intersections than for level of service B due to a significant number of vehicles stopping. Not all signal cycles clear the waiting vehicles. This is the recommended design standard for rural highways.
- *Level of service D:* Tolerable operating speeds; long traffic delays occur at intersections. The influence of congestion is noticeable. At traffic signals many vehicles stop, and the proportion of vehicles not stopping declines. The number of signal cycle failures, for which vehicles must wait through more than one signal cycle, are noticeable. This is typically the design level for urban signalized intersections.
- *Level of service E:* Restricted speeds, very long traffic delays at traffic signals, and traffic volumes near capacity. Flow is unstable so that any interruption, no matter how minor, will cause queues to form and service to deteriorate to level of service F. Traffic signal cycle failures are frequent occurrences. For unsignalized intersections, level of service E or better is generally considered acceptable.
- *Level of service F:* Extreme delays, resulting in long queues which may interfere with other traffic movements. There may be stoppages of long duration, and speeds may drop to zero. There may be frequent signal cycle failures. Level of service F will typically result when vehicle arrival rates are greater than capacity. It is considered unacceptable by most drivers.



Level of Service Criteria  
For Signalized Intersections

Level of Service (LOS)	Control Delay per Vehicle (Seconds)
A	<10
B	10-20
C	20-35
D	35-55
E	55-80
F	>80

Level of Service Criteria  
For Unsignalized Intersections

Level of Service (LOS)	Control Delay per Vehicle (Seconds)
A	<10
B	10-15
C	15-25
D	25-35
E	35-50
F	>50



## 2022 Existing Conditions

AM Peak Hour Synchro Reports

PM Peak Hour Synchro Reports



# HCM Signalized Intersection Capacity Analysis

## 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

12/12/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	216	1	263	2	1	15	151	469	5	6	471	102
Future Volume (vph)	216	1	263	2	1	15	151	469	5	6	471	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.92			0.95		1.00	1.00		1.00	1.00	0.91
Flpb, ped/bikes	0.96	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.85			0.88		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1694	1472			1576		1787	1840		1805	1827	1429
Flt Permitted	0.74	1.00			0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1325	1472			1543		1787	1840		1805	1827	1429
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	267	1	325	2	1	19	186	579	6	7	581	126
RTOR Reduction (vph)	0	240	0	0	14	0	0	0	0	0	0	47
Lane Group Flow (vph)	267	86	0	0	8	0	186	585	0	7	581	79
Confl. Peds. (#/hr)	24		26	26		24	8		28	28		28
Confl. Bikes (#/hr)												5
Heavy Vehicles (%)	2%	0%	1%	0%	0%	0%	1%	3%	0%	0%	4%	3%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								6
Actuated Green, G (s)	20.5	20.5			20.5		11.4	45.4		1.0	35.0	35.0
Effective Green, g (s)	21.0	21.0			21.0		11.4	46.4		1.0	36.0	36.0
Actuated g/C Ratio	0.26	0.26			0.26		0.14	0.58		0.01	0.45	0.45
Clearance Time (s)	4.5	4.5			4.5		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	2.3	2.3			2.5		2.3	4.3		2.3	4.3	4.3
Lane Grp Cap (vph)	346	384			403		253	1061		22	818	639
v/s Ratio Prot		0.06					c0.10	0.32		0.00	c0.32	
v/s Ratio Perm	c0.20				0.01							0.05
v/c Ratio	0.77	0.22			0.02		0.74	0.55		0.32	0.71	0.12
Uniform Delay, d1	27.5	23.3			22.1		33.1	10.5		39.4	18.0	13.0
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	9.6	0.2			0.0		9.7	0.9		4.8	3.3	0.1
Delay (s)	37.1	23.5			22.1		42.7	11.4		44.2	21.2	13.1
Level of Service	D	C			C		D	B		D	C	B
Approach Delay (s)		29.6			22.1			19.0			20.0	
Approach LOS		C			C			B			C	





















### Intersection Summary

HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	80.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

# HCM 6th Signalized Intersection Summary

## 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

12/12/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	216	1	263	2	1	15	151	469	5	6	471	102
Future Volume (veh/h)	216	1	263	2	1	15	151	469	5	6	471	102
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		0.95	0.97		0.95	1.00		0.97	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1900	1885	1900	1900	1900	1885	1856	1900	1900	1841	1856
Adj Flow Rate, veh/h	267	1	165	2	1	13	186	579	6	7	581	77
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	2	0	1	0	0	0	1	3	0	0	4	3
Cap, veh/h	462	2	393	85	55	325	233	995	10	13	774	623
Arrive On Green	0.26	0.26	0.25	0.25	0.26	0.25	0.13	0.54	0.53	0.01	0.42	0.42
Sat Flow, veh/h	1332	9	1519	79	211	1257	1795	1833	19	1810	1841	1483
Grp Volume(v), veh/h	267	0	166	16	0	0	186	0	585	7	581	77
Grp Sat Flow(s),veh/h/ln	1332	0	1529	1547	0	0	1795	0	1852	1810	1841	1483
Q Serve(g_s), s	11.0	0.0	5.7	0.0	0.0	0.0	6.3	0.0	13.3	0.2	16.8	2.0
Cycle Q Clear(g_c), s	11.5	0.0	5.7	0.5	0.0	0.0	6.3	0.0	13.3	0.2	16.8	2.0
Prop In Lane	1.00		0.99	0.12		0.81	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	462	0	396	453	0	0	233	0	1005	13	774	623
V/C Ratio(X)	0.58	0.00	0.42	0.04	0.00	0.00	0.80	0.00	0.58	0.53	0.75	0.12
Avail Cap(c_a), veh/h	668	0	632	601	0	0	314	0	1650	317	1640	1321
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.5	0.0	19.6	17.6	0.0	0.0	26.6	0.0	9.6	31.1	15.4	11.1
Incr Delay (d2), s/veh	0.7	0.0	0.4	0.0	0.0	0.0	8.2	0.0	0.9	18.5	2.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.0	1.9	0.2	0.0	0.0	3.0	0.0	4.4	0.2	6.5	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.2	0.0	20.0	17.6	0.0	0.0	34.7	0.0	10.5	49.6	17.8	11.3
LnGrp LOS	C	A	C	B	A	A	C	A	B	D	B	B
Approach Vol, veh/h		433			16			771			665	
Approach Delay, s/veh		21.3			17.6			16.3			17.4	
Approach LOS		C			B			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.5	38.1		20.3	12.2	30.4		20.3				
Change Period (Y+Rc), s	4.0	5.0		4.5	4.0	5.0		4.5				
Max Green Setting (Gmax), s	11.0	55.0		25.5	11.0	55.0		22.0				
Max Q Clear Time (g_c+I1), s	2.2	15.3		13.5	8.3	18.8		2.5				
Green Ext Time (p_c), s	0.0	6.2		1.5	0.2	6.6		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				17.9								
HCM 6th LOS				B								

HCM 6th TWSC  
2: SW Boones Ferry Road & SW Norwood Road

12/12/2022

Intersection						
Int Delay, s/veh	3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑	↑	↑	↑
Traffic Vol, veh/h	54	88	359	25	46	274
Future Vol, veh/h	54	88	359	25	46	274
Conflicting Peds, #/hr	0	2	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	65	290	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	3	3	1	8	4	1
Mvmt Flow	67	109	443	31	57	338

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	895	445	0	0	474	0
Stage 1	443	-	-	-	-	-
Stage 2	452	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.14	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.236	-
Pot Cap-1 Maneuver	310	611	-	-	1078	-
Stage 1	645	-	-	-	-	-
Stage 2	639	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	294	610	-	-	1078	-
Mov Cap-2 Maneuver	419	-	-	-	-	-
Stage 1	645	-	-	-	-	-
Stage 2	605	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.4	0	1.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	520	1078
HCM Lane V/C Ratio	-	-	0.337	0.053
HCM Control Delay (s)	-	-	15.4	8.5
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	1.5	0.2

HCM 6th TWSC  
4: SW 82nd Avenue & SW Norwood Road/Driveway

12/12/2022

Intersection												
Int Delay, s/veh	7.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↗
Traffic Vol, veh/h	122	0	8	0	0	0	23	2	0	0	0	104
Future Vol, veh/h	122	0	8	0	0	0	23	2	0	0	0	104
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	-	-	-	15
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	0	0	0	0	0	4	0	0	0	0	0
Mvmt Flow	156	0	10	0	0	0	29	3	0	0	0	133

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	10	0	0	318	318	5	320	323	-
Stage 1	-	-	-	-	-	-	317	317	-	1	1	-
Stage 2	-	-	-	-	-	-	1	1	-	319	322	-
Critical Hdwy	4.12	-	-	4.1	-	-	7.14	6.5	6.2	7.1	6.5	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.218	-	-	2.2	-	-	3.536	4	3.3	3.5	4	-
Pot Cap-1 Maneuver	1622	-	-	1623	-	-	631	602	1084	637	598	0
Stage 1	-	-	-	-	-	-	690	658	-	1027	899	0
Stage 2	-	-	-	-	-	-	1017	899	-	697	655	0
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1622	-	-	1623	-	-	584	544	1084	587	540	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	584	544	-	587	540	-
Stage 1	-	-	-	-	-	-	623	594	-	927	899	-
Stage 2	-	-	-	-	-	-	1017	899	-	627	591	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	7			0			11.6			0		
HCM LOS							B			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	581	1622	-	-	1623	-	-	-	-
HCM Lane V/C Ratio	0.055	0.096	-	-	-	-	-	-	-
HCM Control Delay (s)	11.6	7.5	0	-	0	-	-	0	0
HCM Lane LOS	B	A	A	-	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	0.3	-	-	0	-	-	-	-

# HCM Signalized Intersection Capacity Analysis

## 6: SW Boones Ferry Road & SW Day Road

12/12/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	0	484	0	0	0	504	412	0	0	269	20
Future Volume (vph)	30	0	484	0	0	0	504	412	0	0	269	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.3	4.7				4.9	4.0			4.0	
Lane Util. Factor		1.00	1.00				*0.85	1.00			0.95	
Frbp, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Flpb, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Frt		1.00	0.85				1.00	1.00			0.99	
Flt Protected		0.95	1.00				0.95	1.00			1.00	
Satd. Flow (prot)		1703	1495				2868	1881			3493	
Flt Permitted		0.76	1.00				0.95	1.00			1.00	
Satd. Flow (perm)		1357	1495				2868	1881			3493	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	35	0	563	0	0	0	586	479	0	0	313	23
RTOR Reduction (vph)	0	0	198	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	35	365	0	0	0	586	479	0	0	332	0
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	6%	0%	8%	0%	0%	0%	7%	1%	0%	0%	2%	5%
Turn Type	Perm	NA	pm+ov				Prot	NA		Prot	NA	
Protected Phases		8	1		4		1	6		5	2	
Permitted Phases	8		8	4								
Actuated Green, G (s)		6.3	31.1				24.8	78.8			48.6	
Effective Green, g (s)		6.5	32.5				25.3	80.2			50.0	
Actuated g/C Ratio		0.07	0.34				0.27	0.84			0.53	
Clearance Time (s)		4.5	5.4				5.4	5.4			5.4	
Vehicle Extension (s)		2.5	2.3				2.3	4.4			4.4	
Lane Grp Cap (vph)		92	511				763	1587			1838	
v/s Ratio Prot			c0.19				c0.20	c0.25			0.10	
v/s Ratio Perm		0.03	0.05									
v/c Ratio		0.38	0.71				0.77	0.30			0.18	
Uniform Delay, d1		42.3	27.2				32.1	1.5			11.8	
Progression Factor		1.00	1.00				1.00	1.00			1.00	
Incremental Delay, d2		1.9	4.2				4.4	0.5			0.2	
Delay (s)		44.2	31.4				36.5	2.0			12.0	
Level of Service		D	C				D	A			B	
Approach Delay (s)		32.2			0.0			21.0			12.0	
Approach LOS		C			A			C			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			22.8				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			95.0				Sum of lost time (s)			13.2		
Intersection Capacity Utilization			45.6%				ICU Level of Service			A		
Analysis Period (min)			15									

c Critical Lane Group

# HCM 6th Signalized Intersection Summary

## 6: SW Boones Ferry Road & SW Day Road

12/12/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔		↖↗	↖		↗	↕	↖↗
Traffic Volume (veh/h)	30	0	484	0	0	0	504	412	0	0	269	20
Future Volume (veh/h)	30	0	484	0	0	0	504	412	0	0	269	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1900	1781	1900	1900	1900	1796	1885	1900	1900	1870	1826
Adj Flow Rate, veh/h	35	0	447	0	0	0	586	479	0	0	313	17
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	6	0	8	0	0	0	7	1	0	0	2	5
Cap, veh/h	314	0	629	0	320	0	710	599	0	684	1547	84
Arrive On Green	0.16	0.00	0.17	0.00	0.00	0.00	0.24	0.32	0.00	0.00	0.45	0.44
Sat Flow, veh/h	1440	0	1510	0	1900	0	2908	1885	0	1810	3426	185
Grp Volume(v), veh/h	35	0	447	0	0	0	586	479	0	0	162	168
Grp Sat Flow(s),veh/h/ln	1440	0	1510	0	1900	0	1454	1885	0	1810	1777	1834
Q Serve(g_s), s	2.0	0.0	16.2	0.0	0.0	0.0	18.1	22.1	0.0	0.0	5.2	5.3
Cycle Q Clear(g_c), s	2.0	0.0	16.2	0.0	0.0	0.0	18.1	22.1	0.0	0.0	5.2	5.3
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.10
Lane Grp Cap(c), veh/h	311	0	629	0	320	0	710	599	0	684	802	828
V/C Ratio(X)	0.11	0.00	0.71	0.00	0.00	0.00	0.82	0.80	0.00	0.00	0.20	0.20
Avail Cap(c_a), veh/h	311	0	629	0	320	0	1105	1151	0	684	802	828
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	34.0	0.0	22.9	0.0	0.0	0.0	34.0	29.7	0.0	0.0	15.7	15.8
Incr Delay (d2), s/veh	0.1	0.0	3.5	0.0	0.0	0.0	2.1	10.7	0.0	0.0	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	8.3	0.0	0.0	0.0	6.4	11.4	0.0	0.0	2.1	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.1	0.0	26.4	0.0	0.0	0.0	36.1	40.4	0.0	0.0	16.3	16.3
LnGrp LOS	C	A	C	A	A	A	D	D	A	A	B	B
Approach Vol, veh/h		482			0			1065			330	
Approach Delay, s/veh		27.0			0.0			38.0			16.3	
Approach LOS		C						D			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	28.1	46.9		20.0	40.8	34.2		20.0				
Change Period (Y+Rc), s	* 5.4	* 5.4		4.5	* 5.4	* 5.4		4.5				
Max Green Setting (Gmax), s	* 36	* 29		15.5	* 8.5	* 57		15.5				
Max Q Clear Time (g_c+I1), s	20.1	7.3		0.0	0.0	24.1		18.2				
Green Ext Time (p_c), s	2.6	2.4		0.0	0.0	4.7		0.0				

### Intersection Summary

HCM 6th Ctrl Delay	31.4
HCM 6th LOS	C

### Notes

- User approved pedestrian interval to be less than phase max green.
- \* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM Signalized Intersection Capacity Analysis

## 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

12/12/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	177	3	143	1	1	11	163	596	3	5	608	239
Future Volume (vph)	177	3	143	1	1	11	163	596	3	5	608	239
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5		4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.97			0.96		1.00	1.00		1.00	1.00	0.93
Flpb, ped/bikes	0.98	1.00			1.00		1.00	1.00		0.98	1.00	1.00
Frt	1.00	0.85			0.88		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1588	1413			1451		1624	1643		1587	1710	1356
Flt Permitted	0.75	1.00			0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1251	1413			1435		1624	1643		1587	1710	1356
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	192	3	155	1	1	12	177	648	3	5	661	260
RTOR Reduction (vph)	0	123	0	0	10	0	0	0	0	0	0	77
Lane Group Flow (vph)	192	35	0	0	4	0	177	651	0	5	661	183
Confl. Peds. (#/hr)	12		4	4			12	4		19	19	19
Confl. Bikes (#/hr)			1							2		2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								6
Actuated Green, G (s)	16.9	16.9			16.9		11.6	51.8		0.9	41.1	41.1
Effective Green, g (s)	16.9	16.9			16.9		11.6	51.8		0.9	41.1	41.1
Actuated g/C Ratio	0.20	0.20			0.20		0.14	0.62		0.01	0.49	0.49
Clearance Time (s)	4.5	4.5			4.5		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	2.3	2.3			2.5		2.3	4.3		2.3	4.3	4.3
Lane Grp Cap (vph)	254	287			291		226	1024		17	845	670
v/s Ratio Prot		0.02					c0.11	0.40		0.00	c0.39	
v/s Ratio Perm	c0.15				0.00							0.13
v/c Ratio	0.76	0.12			0.02		0.78	0.64		0.29	0.78	0.27
Uniform Delay, d1	31.2	27.0			26.5		34.5	9.8		40.8	17.3	12.3
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	11.2	0.1			0.0		15.3	1.6		5.6	5.2	0.4
Delay (s)	42.4	27.1			26.5		49.9	11.3		46.3	22.5	12.6
Level of Service	D	C			C		D	B		D	C	B
Approach Delay (s)		35.5			26.5			19.6			19.9	
Approach LOS		D			C			B			B	

### Intersection Summary

HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	83.1	Sum of lost time (s)	13.5
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



# HCM 6th Signalized Intersection Summary

## 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

12/12/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	177	3	143	1	1	11	163	596	3	5	608	239
Future Volume (veh/h)	177	3	143	1	1	11	163	596	3	5	608	239
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.95	0.98		0.97	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1710	1710	1710	1710	1710	1710	1710	1657	1710	1710	1710	1710
Adj Flow Rate, veh/h	192	3	79	1	1	12	177	648	3	5	661	173
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	4	0	0	0	0
Cap, veh/h	353	10	265	60	36	243	214	993	5	9	815	662
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.13	0.60	0.60	0.01	0.48	0.48
Sat Flow, veh/h	1244	51	1334	25	180	1228	1629	1647	8	1629	1710	1390
Grp Volume(v), veh/h	192	0	82	14	0	0	177	0	651	5	661	173
Grp Sat Flow(s),veh/h/ln	1244	0	1385	1433	0	0	1629	0	1655	1629	1710	1390
Q Serve(g_s), s	9.5	0.0	3.5	0.0	0.0	0.0	7.4	0.0	18.0	0.2	23.0	5.2
Cycle Q Clear(g_c), s	10.0	0.0	3.5	0.5	0.0	0.0	7.4	0.0	18.0	0.2	23.0	5.2
Prop In Lane	1.00		0.96	0.07		0.86	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	353	0	275	339	0	0	214	0	998	9	815	662
V/C Ratio(X)	0.54	0.00	0.30	0.04	0.00	0.00	0.83	0.00	0.65	0.58	0.81	0.26
Avail Cap(c_a), veh/h	561	0	506	574	0	0	257	0	1305	257	1349	1096
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.4	0.0	23.8	22.6	0.0	0.0	29.5	0.0	9.1	34.6	15.6	10.9
Incr Delay (d2), s/veh	0.8	0.0	0.4	0.0	0.0	0.0	15.4	0.0	1.2	32.4	3.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	1.1	0.2	0.0	0.0	3.6	0.0	5.2	0.2	8.3	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.2	0.0	24.2	22.7	0.0	0.0	44.9	0.0	10.2	67.0	18.7	11.2
LnGrp LOS	C	A	C	C	A	A	D	A	B	E	B	B
Approach Vol, veh/h		274			14			828				839
Approach Delay, s/veh		26.3			22.7			17.6				17.5
Approach LOS		C			C			B				B
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.4	47.0		18.3	13.2	38.2		18.3				
Change Period (Y+Rc), s	4.0	5.0		4.5	4.0	5.0		4.5				
Max Green Setting (Gmax), s	11.0	55.0		25.5	11.0	55.0		25.5				
Max Q Clear Time (g_c+I1), s	2.2	20.0		12.0	9.4	25.0		2.5				
Green Ext Time (p_c), s	0.0	7.0		1.0	0.1	8.2		0.0				

### Intersection Summary

HCM 6th Ctrl Delay	18.8
HCM 6th LOS	B

HCM 6th TWSC  
 2: SW Boones Ferry Road & SW Norwood Road

12/12/2022

Intersection						
Int Delay, s/veh	2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑	↑	↑	↑
Traffic Vol, veh/h	32	87	502	83	77	552
Future Vol, veh/h	32	87	502	83	77	552
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	65	290	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	0	0	0	0	0
Mvmt Flow	35	96	552	91	85	607

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1329	552	0	0	643	0
Stage 1	552	-	-	-	-	-
Stage 2	777	-	-	-	-	-
Critical Hdwy	6.42	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	171	537	-	-	951	-
Stage 1	577	-	-	-	-	-
Stage 2	453	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	156	537	-	-	951	-
Mov Cap-2 Maneuver	288	-	-	-	-	-
Stage 1	577	-	-	-	-	-
Stage 2	413	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.8	0	1.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	436	951
HCM Lane V/C Ratio	-	-	0.3	0.089
HCM Control Delay (s)	-	-	16.8	9.2
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	1.2	0.3

Intersection												
Int Delay, s/veh	6.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↕
Traffic Vol, veh/h	93	0	23	0	0	0	20	3	0	0	4	107
Future Vol, veh/h	93	0	23	0	0	0	20	3	0	0	4	107
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	-	-	-	15
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	1	0	0	0	0	0	5	0	0	0	0	0
Mvmt Flow	102	0	25	0	0	0	22	3	0	0	4	118





















Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	25	0	0	220	218	13	219	230	-
Stage 1	-	-	-	-	-	-	217	217	-	1	1	-
Stage 2	-	-	-	-	-	-	3	1	-	218	229	-
Critical Hdwy	4.11	-	-	4.1	-	-	7.15	6.5	6.2	7.1	6.5	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.209	-	-	2.2	-	-	3.545	4	3.3	3.5	4	-
Pot Cap-1 Maneuver	1628	-	-	1603	-	-	730	684	1073	741	673	0
Stage 1	-	-	-	-	-	-	779	727	-	1027	899	0
Stage 2	-	-	-	-	-	-	1012	899	-	789	718	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1628	-	-	1603	-	-	691	640	1073	702	630	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	691	640	-	702	630	-
Stage 1	-	-	-	-	-	-	729	680	-	961	899	-
Stage 2	-	-	-	-	-	-	1007	899	-	735	672	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	5.9	0	10.5	10.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	684	1628	-	-	1603	-	-	630	-
HCM Lane V/C Ratio	0.037	0.063	-	-	-	-	-	0.007	-
HCM Control Delay (s)	10.5	7.4	0	-	0	-	-	10.8	0
HCM Lane LOS	B	A	A	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0	-	-	0	-

HCM Signalized Intersection Capacity Analysis  
6: SW Boones Ferry Road & SW Day Road

12/12/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	0	545	0	0	0	540	540	0	0	551	21
Future Volume (vph)	16	0	545	0	0	0	540	540	0	0	551	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0				4.0	4.0			4.0	
Lane Util. Factor		1.00	1.00				*0.85	1.00			0.95	
Frbp, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Flpb, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Frt		1.00	0.85				1.00	1.00			0.99	
Flt Protected		0.95	1.00				0.95	1.00			1.00	
Satd. Flow (prot)		1802	1583				2895	1900			3585	
Flt Permitted		0.80	1.00				0.95	1.00			1.00	
Satd. Flow (perm)		1518	1583				2895	1900			3585	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	18	0	599	0	0	0	593	593	0	0	605	23
RTOR Reduction (vph)	0	0	58	0	0	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	18	541	0	0	0	593	593	0	0	626	0
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)									3			
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	6%	0%	0%	0%	0%	4%
Turn Type	Perm	NA	pm+ov				Prot	NA		Prot	NA	
Protected Phases		8	1		4		1	6		5	2	
Permitted Phases	8		8	4								
Actuated Green, G (s)		4.5	40.4				35.9	90.6			49.3	
Effective Green, g (s)		5.0	43.2				37.3	92.0			50.7	
Actuated g/C Ratio		0.05	0.41				0.36	0.88			0.48	
Clearance Time (s)		4.5	5.4				5.4	5.4			5.4	
Vehicle Extension (s)		2.5	2.3				2.3	4.4			4.4	
Lane Grp Cap (vph)		72	651				1028	1664			1731	
v/s Ratio Prot			c0.30				0.20	c0.31			0.17	
v/s Ratio Perm		0.01	0.05									
v/c Ratio		0.25	0.83				0.58	0.36			0.36	
Uniform Delay, d1		48.2	27.6				27.5	1.2			17.0	
Progression Factor		1.00	1.00				1.00	1.00			1.00	
Incremental Delay, d2		1.3	8.6				0.6	0.6			0.6	
Delay (s)		49.5	36.3				28.0	1.8			17.6	
Level of Service		D	D				C	A			B	
Approach Delay (s)		36.7			0.0			14.9			17.6	
Approach LOS		D			A			B			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			21.1				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			105.0				Sum of lost time (s)			13.0		
Intersection Capacity Utilization			56.3%				ICU Level of Service			B		
Analysis Period (min)			15									
c	Critical Lane Group											

# HCM 6th Signalized Intersection Summary

## 6: SW Boones Ferry Road & SW Day Road

12/12/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔		↖↗	↖		↖	↕	↗
Traffic Volume (veh/h)	16	0	545	0	0	0	540	540	0	0	551	21
Future Volume (veh/h)	16	0	545	0	0	0	540	540	0	0	551	21
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1870	1900	1900	1900	1811	1900	1900	1900	1900	1841
Adj Flow Rate, veh/h	18	0	539	0	0	0	593	593	0	0	605	23
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	2	0	0	0	6	0	0	0	0	4
Cap, veh/h	274	0	635	0	271	0	732	715	0	631	1749	66
Arrive On Green	0.14	0.00	0.15	0.00	0.00	0.00	0.25	0.38	0.00	0.00	0.49	0.48
Sat Flow, veh/h	1435	0	1582	0	1900	0	2932	1900	0	1810	3546	135
Grp Volume(v), veh/h	18	0	539	0	0	0	593	593	0	0	308	320
Grp Sat Flow(s),veh/h/ln	1435	0	1582	0	1900	0	1466	1900	0	1810	1805	1876
Q Serve(g_s), s	1.1	0.0	15.9	0.0	0.0	0.0	20.0	29.7	0.0	0.0	10.9	11.0
Cycle Q Clear(g_c), s	1.1	0.0	15.9	0.0	0.0	0.0	20.0	29.7	0.0	0.0	10.9	11.0
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.07
Lane Grp Cap(c), veh/h	267	0	635	0	271	0	732	715	0	631	890	925
V/C Ratio(X)	0.07	0.00	0.85	0.00	0.00	0.00	0.81	0.83	0.00	0.00	0.35	0.35
Avail Cap(c_a), veh/h	267	0	635	0	271	0	1201	1249	0	631	890	925
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	39.3	0.0	28.6	0.0	0.0	0.0	37.1	29.7	0.0	0.0	16.2	16.3
Incr Delay (d2), s/veh	0.1	0.0	10.3	0.0	0.0	0.0	1.4	10.8	0.0	0.0	1.1	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	13.4	0.0	0.0	0.0	7.1	15.2	0.0	0.0	4.4	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.4	0.0	38.9	0.0	0.0	0.0	38.4	40.5	0.0	0.0	17.3	17.3
LnGrp LOS	D	A	D	A	A	A	D	D	A	A	B	B
Approach Vol, veh/h		557			0			1186			628	
Approach Delay, s/veh		38.9			0.0			39.4			17.3	
Approach LOS		D						D			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	30.2	55.8		19.0	42.5	43.5		19.0				
Change Period (Y+Rc), s	* 5.4	* 5.4		4.5	* 5.4	* 5.4		4.5				
Max Green Setting (Gmax), s	* 42	* 34		14.5	* 8.5	* 68		14.5				
Max Q Clear Time (g_c+I1), s	22.0	13.0		0.0	0.0	31.7		17.9				
Green Ext Time (p_c), s	2.8	4.9		0.0	0.0	6.4		0.0				

### Intersection Summary

HCM 6th Ctrl Delay	33.5
HCM 6th LOS	C

### Notes

User approved pedestrian interval to be less than phase max green.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

## **2026 Background Conditions**

### **No Basalt Creek Parkway Extension**

AM Peak Hour Synchro Reports

PM Peak Hour Synchro Reports

AM Peak Hour Queuing Reports





















PM Peak Hour Queuing Reports



# HCM Signalized Intersection Capacity Analysis

## 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

01/24/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	233	1	287	2	1	16	173	565	5	6	516	110
Future Volume (vph)	233	1	287	2	1	16	173	565	5	6	516	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.92			0.94		1.00	1.00		1.00	1.00	0.91
Flpb, ped/bikes	0.95	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.85			0.88		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1689	1464			1570		1787	1841		1805	1827	1421
Flt Permitted	0.74	1.00			0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1319	1464			1538		1787	1841		1805	1827	1421
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	288	1	354	2	1	20	214	698	6	7	637	136
RTOR Reduction (vph)	0	254	0	0	15	0	0	0	0	0	0	46
Lane Group Flow (vph)	288	101	0	0	8	0	214	704	0	7	637	90
Confl. Peds. (#/hr)	24		26	26		24	8		28	28		28
Confl. Bikes (#/hr)												5
Heavy Vehicles (%)	2%	0%	1%	0%	0%	0%	1%	3%	0%	0%	4%	3%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								6
Actuated Green, G (s)	22.6	22.6			22.6		11.3	49.5		1.0	39.2	39.2
Effective Green, g (s)	23.1	23.1			23.1		11.3	50.5		1.0	40.2	40.2
Actuated g/C Ratio	0.27	0.27			0.27		0.13	0.58		0.01	0.46	0.46
Clearance Time (s)	4.5	4.5			4.5		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	2.3	2.3			2.5		2.3	4.3		2.3	4.3	4.3
Lane Grp Cap (vph)	351	390			410		233	1073		20	848	659
v/s Ratio Prot		0.07					c0.12	0.38		0.00	c0.35	
v/s Ratio Perm	c0.22				0.01							0.06
v/c Ratio	0.82	0.26			0.02		0.92	0.66		0.35	0.75	0.14
Uniform Delay, d1	29.8	25.0			23.4		37.2	12.2		42.5	19.1	13.3
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	13.8	0.2			0.0		36.9	1.7		6.1	4.2	0.2
Delay (s)	43.6	25.2			23.4		74.0	13.9		48.6	23.2	13.4
Level of Service	D	C			C		E	B		D	C	B
Approach Delay (s)		33.4			23.4			27.9			21.8	
Approach LOS		C			C			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			27.3				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			86.6				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			67.0%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

# HCM 6th Signalized Intersection Summary

## 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

01/24/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	233	1	287	2	1	16	173	565	5	6	516	110
Future Volume (veh/h)	233	1	287	2	1	16	173	565	5	6	516	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		0.95	0.97		0.95	1.00		0.97	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1900	1885	1900	1900	1900	1885	1856	1900	1900	1841	1856
Adj Flow Rate, veh/h	288	1	181	2	1	14	214	698	6	7	637	87
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	2	0	1	0	0	0	1	3	0	0	4	3
Cap, veh/h	442	2	390	75	50	326	255	1052	9	13	806	650
Arrive On Green	0.26	0.26	0.25	0.25	0.26	0.25	0.14	0.57	0.56	0.01	0.44	0.44
Sat Flow, veh/h	1330	8	1520	77	195	1270	1795	1836	16	1810	1841	1485
Grp Volume(v), veh/h	288	0	182	17	0	0	214	0	704	7	637	87
Grp Sat Flow(s),veh/h/ln	1330	0	1528	1542	0	0	1795	0	1852	1810	1841	1485
Q Serve(g_s), s	14.3	0.0	7.4	0.0	0.0	0.0	8.5	0.0	19.2	0.3	21.8	2.6
Cycle Q Clear(g_c), s	14.9	0.0	7.4	0.6	0.0	0.0	8.5	0.0	19.2	0.3	21.8	2.6
Prop In Lane	1.00		0.99	0.12		0.82	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	442	0	392	440	0	0	255	0	1061	13	806	650
V/C Ratio(X)	0.65	0.00	0.46	0.04	0.00	0.00	0.84	0.00	0.66	0.53	0.79	0.13
Avail Cap(c_a), veh/h	573	0	542	515	0	0	269	0	1415	271	1406	1135
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.7	0.0	23.2	20.7	0.0	0.0	30.6	0.0	10.8	36.3	17.7	12.3
Incr Delay (d2), s/veh	1.0	0.0	0.5	0.0	0.0	0.0	18.8	0.0	1.1	19.0	2.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	0.0	2.6	0.2	0.0	0.0	4.8	0.0	6.7	0.2	8.8	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.8	0.0	23.8	20.7	0.0	0.0	49.4	0.0	11.9	55.3	20.5	12.4
LnGrp LOS	C	A	C	C	A	A	D	A	B	E	C	B
Approach Vol, veh/h		470			17			918			731	
Approach Delay, s/veh		25.6			20.7			20.7			19.9	
Approach LOS		C			C			C			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.5	46.0		22.8	14.4	36.1		22.8				
Change Period (Y+Rc), s	4.0	5.0		4.5	4.0	5.0		4.5				
Max Green Setting (Gmax), s	11.0	55.0		25.5	11.0	55.0		22.0				
Max Q Clear Time (g_c+I1), s	2.3	21.2		16.9	10.5	23.8		2.6				
Green Ext Time (p_c), s	0.0	7.8		1.4	0.0	7.3		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				21.5								
HCM 6th LOS				C								



HCM 6th TWSC  
 2: SW Boones Ferry Road & SW Norwood Road

01/24/2023

Intersection						
Int Delay, s/veh	4.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↙		↑	↗↘	↘↙	↑
Traffic Vol, veh/h	70	136	426	36	64	302
Future Vol, veh/h	70	136	426	36	64	302
Conflicting Peds, #/hr	0	2	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	65	290	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	3	3	1	8	4	1
Mvmt Flow	86	168	526	44	79	373

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1057	528	0	0	570
Stage 1	526	-	-	-	-
Stage 2	531	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.14
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.236
Pot Cap-1 Maneuver	248	548	-	-	993
Stage 1	591	-	-	-	-
Stage 2	588	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	228	547	-	-	993
Mov Cap-2 Maneuver	362	-	-	-	-
Stage 1	591	-	-	-	-
Stage 2	541	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21.6	0	1.6
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	466	993
HCM Lane V/C Ratio	-	-	0.546	0.08
HCM Control Delay (s)	-	-	21.6	8.9
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	3.2	0.3

Intersection												
Int Delay, s/veh	8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↗
Traffic Vol, veh/h	167	0	9	0	0	0	25	2	0	0	0	123
Future Vol, veh/h	167	0	9	0	0	0	25	2	0	0	0	123
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	-	-	-	15
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	0	0	0	0	0	4	0	0	0	0	0
Mvmt Flow	214	0	12	0	0	0	32	3	0	0	0	158

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	12	0	0	435	435	6	437	441	-
Stage 1	-	-	-	-	-	-	434	434	-	1	1	-
Stage 2	-	-	-	-	-	-	1	1	-	436	440	-
Critical Hdwy	4.12	-	-	4.1	-	-	7.14	6.5	6.2	7.1	6.5	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.218	-	-	2.2	-	-	3.536	4	3.3	3.5	4	-
Pot Cap-1 Maneuver	1622	-	-	1620	-	-	528	517	1083	533	513	0
Stage 1	-	-	-	-	-	-	596	585	-	1027	899	0
Stage 2	-	-	-	-	-	-	1017	899	-	603	581	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1622	-	-	1620	-	-	474	448	1083	477	445	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	474	448	-	477	445	-
Stage 1	-	-	-	-	-	-	517	507	-	890	899	-
Stage 2	-	-	-	-	-	-	1017	899	-	520	504	-





















Approach	EB	WB	NB	SB
HCM Control Delay, s	7.2	0	13.2	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	472	1622	-	-	1620	-	-	-	-
HCM Lane V/C Ratio	0.073	0.132	-	-	-	-	-	-	-
HCM Control Delay (s)	13.2	7.6	0	-	0	-	-	0	0
HCM Lane LOS	B	A	A	-	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	0.5	-	-	0	-	-	-	-

# HCM Signalized Intersection Capacity Analysis

## 6: SW Boones Ferry Road & SW Day Road

01/24/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	0	523	0	0	0	544	463	0	0	358	45
Future Volume (vph)	42	0	523	0	0	0	544	463	0	0	358	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.3	4.7				4.9	4.0			4.0	
Lane Util. Factor		1.00	1.00				*0.85	1.00			0.95	
Frbp, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Flpb, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Frt		1.00	0.85				1.00	1.00			0.98	
Flt Protected		0.95	1.00				0.95	1.00			1.00	
Satd. Flow (prot)		1703	1495				2868	1881			3464	
Flt Permitted		0.76	1.00				0.95	1.00			1.00	
Satd. Flow (perm)		1357	1495				2868	1881			3464	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	49	0	608	0	0	0	633	538	0	0	416	52
RTOR Reduction (vph)	0	0	121	0	0	0	0	0	0	0	8	0
Lane Group Flow (vph)	0	49	487	0	0	0	633	538	0	0	460	0
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	6%	0%	8%	0%	0%	0%	7%	1%	0%	0%	2%	5%
Turn Type	Perm	NA	pm+ov				Prot	NA		Prot	NA	
Protected Phases		8	1		4		1	6		5	2	
Permitted Phases	8		8	4								
Actuated Green, G (s)		6.7	34.4				27.7	78.4			45.3	
Effective Green, g (s)		6.9	35.8				28.2	79.8			46.7	
Actuated g/C Ratio		0.07	0.38				0.30	0.84			0.49	
Clearance Time (s)		4.5	5.4				5.4	5.4			5.4	
Vehicle Extension (s)		2.5	2.3				2.3	4.4			4.4	
Lane Grp Cap (vph)		98	563				851	1580			1702	
v/s Ratio Prot			c0.26				0.22	c0.29			0.13	
v/s Ratio Perm		0.04	0.07									
v/c Ratio		0.50	0.87				0.74	0.34			0.27	
Uniform Delay, d1		42.4	27.4				30.1	1.7			14.2	
Progression Factor		1.00	1.00				1.00	1.00			1.00	
Incremental Delay, d2		2.9	12.9				3.3	0.6			0.4	
Delay (s)		45.3	40.2				33.4	2.3			14.6	
Level of Service		D	D				C	A			B	
Approach Delay (s)		40.6			0.0			19.1			14.6	
Approach LOS		D			A			B			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			24.3				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			95.0				Sum of lost time (s)			13.2		
Intersection Capacity Utilization			51.0%				ICU Level of Service			A		
Analysis Period (min)			15									

c Critical Lane Group

# HCM 6th Signalized Intersection Summary

## 6: SW Boones Ferry Road & SW Day Road

01/24/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔		↔	↔		↔	↔	
Traffic Volume (veh/h)	42	0	523	0	0	0	544	463	0	0	358	45
Future Volume (veh/h)	42	0	523	0	0	0	544	463	0	0	358	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1900	1781	1900	1900	1900	1796	1885	1900	1900	1870	1826
Adj Flow Rate, veh/h	49	0	492	0	0	0	633	538	0	0	416	46
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	6	0	8	0	0	0	7	1	0	0	2	5
Cap, veh/h	314	0	654	0	320	0	758	662	0	623	1403	154
Arrive On Green	0.16	0.00	0.17	0.00	0.00	0.00	0.26	0.35	0.00	0.00	0.44	0.42
Sat Flow, veh/h	1440	0	1510	0	1900	0	2908	1885	0	1810	3224	354
Grp Volume(v), veh/h	49	0	492	0	0	0	633	538	0	0	228	234
Grp Sat Flow(s),veh/h/ln	1440	0	1510	0	1900	0	1454	1885	0	1810	1777	1801
Q Serve(g_s), s	2.8	0.0	16.2	0.0	0.0	0.0	19.5	24.6	0.0	0.0	7.9	8.0
Cycle Q Clear(g_c), s	2.8	0.0	16.2	0.0	0.0	0.0	19.5	24.6	0.0	0.0	7.9	8.0
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.20
Lane Grp Cap(c), veh/h	311	0	654	0	320	0	758	662	0	623	773	784
V/C Ratio(X)	0.16	0.00	0.75	0.00	0.00	0.00	0.83	0.81	0.00	0.00	0.30	0.30
Avail Cap(c_a), veh/h	311	0	654	0	320	0	1105	1151	0	623	773	784
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	34.4	0.0	22.6	0.0	0.0	0.0	33.2	28.0	0.0	0.0	17.4	17.5
Incr Delay (d2), s/veh	0.2	0.0	4.7	0.0	0.0	0.0	3.0	10.5	0.0	0.0	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	9.3	0.0	0.0	0.0	7.0	12.5	0.0	0.0	3.2	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.5	0.0	27.3	0.0	0.0	0.0	36.2	38.4	0.0	0.0	18.4	18.5
LnGrp LOS	C	A	C	A	A	A	D	D	A	A	B	B
Approach Vol, veh/h		541			0			1171			462	
Approach Delay, s/veh		28.0			0.0			37.2			18.4	
Approach LOS		C						D			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	29.7	45.3		20.0	37.6	37.4		20.0				
Change Period (Y+Rc), s	* 5.4	* 5.4		4.5	* 5.4	* 5.4		4.5				
Max Green Setting (Gmax), s	* 36	* 29		15.5	* 8.5	* 57		15.5				
Max Q Clear Time (g_c+I1), s	21.5	10.0		0.0	0.0	26.6		18.2				
Green Ext Time (p_c), s	2.7	3.3		0.0	0.0	5.4		0.0				

### Intersection Summary

HCM 6th Ctrl Delay	30.9
HCM 6th LOS	C

### Notes

User approved pedestrian interval to be less than phase max green.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM Signalized Intersection Capacity Analysis

## 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

12/12/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	191	3	165	1	1	12	183	670	3	5	717	258
Future Volume (vph)	191	3	165	1	1	12	183	670	3	5	717	258
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5		4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.97			0.96		1.00	1.00		1.00	1.00	0.93
Flpb, ped/bikes	0.97	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.85			0.88		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1584	1411			1445		1624	1643		1624	1710	1348
Flt Permitted	0.75	1.00			0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1246	1411			1431		1624	1643		1624	1710	1348
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	208	3	179	1	1	13	199	728	3	5	779	280
RTOR Reduction (vph)	0	142	0	0	10	0	0	0	0	0	0	66
Lane Group Flow (vph)	208	40	0	0	5	0	199	731	0	5	779	214
Confl. Peds. (#/hr)	12		4	4			12	4		19	19	19
Confl. Bikes (#/hr)			1							2		2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								6
Actuated Green, G (s)	19.5	19.5			19.5		11.4	60.0		1.1	49.7	49.7
Effective Green, g (s)	19.5	19.5			19.5		11.4	60.0		1.1	49.7	49.7
Actuated g/C Ratio	0.21	0.21			0.21		0.12	0.64		0.01	0.53	0.53
Clearance Time (s)	4.5	4.5			4.5		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	2.3	2.3			2.5		2.3	4.3		2.3	4.3	4.3
Lane Grp Cap (vph)	258	292			296		196	1047		18	903	711
v/s Ratio Prot		0.03					c0.12	0.44		0.00	c0.46	
v/s Ratio Perm	c0.17				0.00							0.16
v/c Ratio	0.81	0.14			0.02		1.02	0.70		0.28	0.86	0.30
Uniform Delay, d1	35.5	30.4			29.7		41.3	11.1		46.1	19.2	12.5
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	16.0	0.1			0.0		68.3	2.3		4.9	9.0	0.4
Delay (s)	51.5	30.6			29.7		109.7	13.4		51.0	28.2	12.8
Level of Service	D	C			C		F	B		D	C	B
Approach Delay (s)		41.7			29.7			34.0			24.3	
Approach LOS		D			C			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			30.9				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			94.1				Sum of lost time (s)			13.5		
Intersection Capacity Utilization			82.9%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

# HCM 6th Signalized Intersection Summary

## 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

12/12/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	191	3	165	1	1	12	183	670	3	5	717	258
Future Volume (veh/h)	191	3	165	1	1	12	183	670	3	5	717	258
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.95	0.98		0.97	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1710	1710	1710	1710	1710	1710	1710	1657	1710	1710	1710	1710
Adj Flow Rate, veh/h	208	3	103	1	1	13	199	728	3	5	779	193
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	4	0	0	0	0
Cap, veh/h	329	8	262	49	32	241	208	1060	4	9	890	724
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.13	0.64	0.64	0.01	0.52	0.52
Sat Flow, veh/h	1242	39	1342	25	166	1238	1629	1648	7	1629	1710	1392
Grp Volume(v), veh/h	208	0	106	15	0	0	199	0	731	5	779	193
Grp Sat Flow(s),veh/h/ln	1242	0	1381	1429	0	0	1629	0	1655	1629	1710	1392
Q Serve(g_s), s	13.0	0.0	5.8	0.0	0.0	0.0	10.4	0.0	24.3	0.3	34.5	6.6
Cycle Q Clear(g_c), s	13.7	0.0	5.8	0.7	0.0	0.0	10.4	0.0	24.3	0.3	34.5	6.6
Prop In Lane	1.00		0.97	0.07		0.87	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	329	0	269	323	0	0	208	0	1064	9	890	724
V/C Ratio(X)	0.63	0.00	0.39	0.05	0.00	0.00	0.96	0.00	0.69	0.59	0.88	0.27
Avail Cap(c_a), veh/h	455	0	409	465	0	0	208	0	1064	208	1093	890
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.3	0.0	30.2	28.2	0.0	0.0	37.3	0.0	9.8	42.7	18.2	11.5
Incr Delay (d2), s/veh	1.2	0.0	0.6	0.0	0.0	0.0	49.4	0.0	2.2	33.5	7.8	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	1.9	0.3	0.0	0.0	6.9	0.0	7.8	0.2	13.9	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.5	0.0	30.8	28.2	0.0	0.0	86.7	0.0	12.0	76.2	25.9	11.8
LnGrp LOS	C	A	C	C	A	A	F	A	B	E	C	B
Approach Vol, veh/h		314			15			930				977
Approach Delay, s/veh		33.3			28.2			28.0				23.4
Approach LOS		C			C			C				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.5	60.3		21.3	15.0	49.8		21.3				
Change Period (Y+Rc), s	4.0	5.0		4.5	4.0	5.0		4.5				
Max Green Setting (Gmax), s	11.0	55.0		25.5	11.0	55.0		25.5				
Max Q Clear Time (g_c+I1), s	2.3	26.3		15.7	12.4	36.5		2.7				
Green Ext Time (p_c), s	0.0	7.9		1.0	0.0	8.2		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				26.7								
HCM 6th LOS				C								

HCM 6th TWSC  
 2: SW Boones Ferry Road & SW Norwood Road

12/12/2022

Intersection						
Int Delay, s/veh	3.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑	↗	↖	↑
Traffic Vol, veh/h	46	121	557	106	130	631
Future Vol, veh/h	46	121	557	106	130	631
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	65	290	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	0	0	0	0	0
Mvmt Flow	51	133	612	116	143	693

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1591	612	0	0	728
Stage 1	612	-	-	-	-
Stage 2	979	-	-	-	-
Critical Hdwy	6.42	6.2	-	-	4.1
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.3	-	-	2.2
Pot Cap-1 Maneuver	118	497	-	-	885
Stage 1	541	-	-	-	-
Stage 2	364	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	99	497	-	-	885
Mov Cap-2 Maneuver	219	-	-	-	-
Stage 1	541	-	-	-	-
Stage 2	305	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.1	0	1.7
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	368	885
HCM Lane V/C Ratio	-	-	0.499	0.161
HCM Control Delay (s)	-	-	24.1	9.8
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	2.7	0.6

HCM 6th TWSC  
 4: SW 82nd Avenue & SW Norwood Road/Driveway

12/12/2022

Intersection												
Int Delay, s/veh	7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↕
Traffic Vol, veh/h	123	0	25	0	0	0	22	3	0	0	4	152
Future Vol, veh/h	123	0	25	0	0	0	22	3	0	0	4	152
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	-	-	-	15
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	1	0	0	0	0	0	5	0	0	0	0	0
Mvmt Flow	135	0	27	0	0	0	24	3	0	0	4	167

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	27	0	0	287	285	14	286	298	-
Stage 1	-	-	-	-	-	-	284	284	-	1	1	-
Stage 2	-	-	-	-	-	-	3	1	-	285	297	-
Critical Hdwy	4.11	-	-	4.1	-	-	7.15	6.5	6.2	7.1	6.5	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.209	-	-	2.2	-	-	3.545	4	3.3	3.5	4	-
Pot Cap-1 Maneuver	1628	-	-	1600	-	-	659	628	1072	670	617	0
Stage 1	-	-	-	-	-	-	717	680	-	1027	899	0
Stage 2	-	-	-	-	-	-	1012	899	-	727	671	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1628	-	-	1600	-	-	613	575	1072	624	565	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	613	575	-	624	565	-
Stage 1	-	-	-	-	-	-	657	623	-	941	899	-
Stage 2	-	-	-	-	-	-	1007	899	-	662	615	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	6.2	0	11.2	11.4
HCM LOS			B	B





















Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	608	1628	-	-	1600	-	-	565	-
HCM Lane V/C Ratio	0.045	0.083	-	-	-	-	-	0.008	-
HCM Control Delay (s)	11.2	7.4	0	-	0	-	-	11.4	0
HCM Lane LOS	B	A	A	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	0.3	-	-	0	-	-	0	-



# HCM Signalized Intersection Capacity Analysis




















## 6: SW Boones Ferry Road & SW Day Road

12/12/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	0	589	0	0	0	583	646	0	0	629	39
Future Volume (vph)	41	0	589	0	0	0	583	646	0	0	629	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0				4.0	4.0			4.0	
Lane Util. Factor		1.00	1.00				*0.85	1.00			0.95	
Frbp, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Flpb, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Frt		1.00	0.85				1.00	1.00			0.99	
Flt Protected		0.95	1.00				0.95	1.00			1.00	
Satd. Flow (prot)		1802	1583				2895	1900			3570	
Flt Permitted		0.76	1.00				0.95	1.00			1.00	
Satd. Flow (perm)		1436	1583				2895	1900			3570	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	45	0	647	0	0	0	641	710	0	0	691	43
RTOR Reduction (vph)	0	0	45	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	45	602	0	0	0	641	710	0	0	731	0
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)									3			
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	6%	0%	0%	0%	0%	4%
Turn Type	Perm	NA	pm+ov				Prot	NA		Prot	NA	
Protected Phases		8	1		4		1	6		5	2	
Permitted Phases	8		8	4								
Actuated Green, G (s)		6.5	44.3				37.8	88.6			45.4	
Effective Green, g (s)		7.0	47.1				39.2	90.0			46.8	
Actuated g/C Ratio		0.07	0.45				0.37	0.86			0.45	
Clearance Time (s)		4.5	5.4				5.4	5.4			5.4	
Vehicle Extension (s)		2.5	2.3				2.3	4.4			4.4	
Lane Grp Cap (vph)		95	710				1080	1628			1591	
v/s Ratio Prot			c0.32				0.22	c0.37			0.20	
v/s Ratio Perm		0.03	0.06									
v/c Ratio		0.47	0.85				0.59	0.44			0.46	
Uniform Delay, d1		47.2	25.8				26.5	1.7			20.3	
Progression Factor		1.00	1.00				1.00	1.00			1.00	
Incremental Delay, d2		2.7	9.1				0.7	0.9			1.0	
Delay (s)		49.9	34.8				27.2	2.6			21.2	
Level of Service		D	C				C	A			C	
Approach Delay (s)		35.8			0.0			14.2			21.2	
Approach LOS		D			A			B			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			21.5				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			105.0				Sum of lost time (s)			13.0		
Intersection Capacity Utilization			61.8%				ICU Level of Service			B		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM 6th Signalized Intersection Summary  
6: SW Boones Ferry Road & SW Day Road

12/12/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	0	589	0	0	0	583	646	0	0	629	39
Future Volume (veh/h)	41	0	589	0	0	0	583	646	0	0	629	39
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1870	1900	1900	1900	1811	1900	1900	1900	1900	1841
Adj Flow Rate, veh/h	45	0	587	0	0	0	641	710	0	0	691	43
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	2	0	0	0	6	0	0	0	0	4
Cap, veh/h	274	0	662	0	271	0	781	838	0	513	1645	102
Arrive On Green	0.14	0.00	0.15	0.00	0.00	0.00	0.27	0.44	0.00	0.00	0.48	0.46
Sat Flow, veh/h	1435	0	1582	0	1900	0	2932	1900	0	1810	3452	215
Grp Volume(v), veh/h	45	0	587	0	0	0	641	710	0	0	361	373
Grp Sat Flow(s),veh/h/ln	1435	0	1582	0	1900	0	1466	1900	0	1810	1805	1861
Q Serve(g_s), s	2.9	0.0	15.9	0.0	0.0	0.0	21.5	35.0	0.0	0.0	13.7	13.8
Cycle Q Clear(g_c), s	2.9	0.0	15.9	0.0	0.0	0.0	21.5	35.0	0.0	0.0	13.7	13.8
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.12
Lane Grp Cap(c), veh/h	267	0	662	0	271	0	781	838	0	513	860	887
V/C Ratio(X)	0.17	0.00	0.89	0.00	0.00	0.00	0.82	0.85	0.00	0.00	0.42	0.42
Avail Cap(c_a), veh/h	267	0	662	0	271	0	1201	1249	0	513	860	887
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	40.0	0.0	28.3	0.0	0.0	0.0	36.2	26.2	0.0	0.0	18.0	18.1
Incr Delay (d2), s/veh	0.2	0.0	13.6	0.0	0.0	0.0	2.0	10.3	0.0	0.0	1.5	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	15.2	0.0	0.0	0.0	7.7	17.4	0.0	0.0	5.6	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.3	0.0	41.9	0.0	0.0	0.0	38.1	36.5	0.0	0.0	19.5	19.5
LnGrp LOS	D	A	D	A	A	A	D	D	A	A	B	B
Approach Vol, veh/h		632			0			1351			734	
Approach Delay, s/veh		41.8			0.0			37.3			19.5	
Approach LOS		D						D			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	32.0	54.0		19.0	35.7	50.3		19.0				
Change Period (Y+Rc), s	* 5.4	* 5.4		4.5	* 5.4	* 5.4		4.5				
Max Green Setting (Gmax), s	* 42	* 34		14.5	* 8.5	* 68		14.5				
Max Q Clear Time (g_c+I1), s	23.5	15.8		0.0	0.0	37.0		17.9				
Green Ext Time (p_c), s	3.0	5.5		0.0	0.0	7.9		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			33.5									
HCM 6th LOS			C									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Intersection: 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

Movement	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	LTR	L	TR	L	T	R
Maximum Queue (ft)	315	232	40	194	436	138	385	210
Average Queue (ft)	117	95	12	113	179	7	194	69
95th Queue (ft)	248	189	38	194	377	49	325	195
Link Distance (ft)	622	622	761		2493		697	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)				95		105		110
Storage Blk Time (%)				20	13		21	
Queuing Penalty (veh)				116	24		25	

Intersection: 2: SW Boones Ferry Road & SW Norwood Road

Movement	WB	NB	SB
Directions Served	LR	T	L
Maximum Queue (ft)	116	29	55
Average Queue (ft)	49	2	17
95th Queue (ft)	93	26	45
Link Distance (ft)	489	1810	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			290
Storage Blk Time (%)		0	
Queuing Penalty (veh)		0	

Intersection: 4: SW 82nd Avenue & SW Norwood Road/Driveway

Movement	NB
Directions Served	LTR
Maximum Queue (ft)	44
Average Queue (ft)	18
95th Queue (ft)	42
Link Distance (ft)	494
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: SW Boones Ferry Road & SW Day Road

Movement	EB	EB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	L	TR	T	TR
Maximum Queue (ft)	94	238	297	476	201	170	175
Average Queue (ft)	34	114	169	236	53	66	72
95th Queue (ft)	78	204	297	402	143	130	143
Link Distance (ft)	727	727		930	930	1961	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			200			500	
Storage Blk Time (%)			4	15		3	
Queuing Penalty (veh)			11	40		6	

Zone Summary

Zone wide Queuing Penalty: 222

Intersection: 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

Movement	EB	EB	WB	NB	NB	SB	SB	SB	B21
Directions Served	L	TR	LTR	L	TR	L	T	R	T
Maximum Queue (ft)	187	149	41	195	1001	168	604	210	50
Average Queue (ft)	102	67	9	135	393	9	294	127	4
95th Queue (ft)	178	124	34	228	1085	65	532	260	52
Link Distance (ft)	622	622	761		2493		697		2246
Upstream Blk Time (%)							1		
Queuing Penalty (veh)							0		
Storage Bay Dist (ft)				95		105		110	
Storage Blk Time (%)				40	14		28	0	
Queuing Penalty (veh)				268	25		74	1	

Intersection: 2: SW Boones Ferry Road & SW Norwood Road

Movement	WB	NB	SB
Directions Served	LR	R	L
Maximum Queue (ft)	170	13	80
Average Queue (ft)	63	1	38
95th Queue (ft)	134	7	74
Link Distance (ft)	489		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		65	290
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: SW 82nd Avenue & SW Norwood Road/Driveway

Movement	NB	SB
Directions Served	LTR	LT
Maximum Queue (ft)	51	29
Average Queue (ft)	17	3
95th Queue (ft)	43	16
Link Distance (ft)	494	648
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		0
Queuing Penalty (veh)		0

Intersection: 6: SW Boones Ferry Road & SW Day Road

Movement	EB	EB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	L	TR	T	TR
Maximum Queue (ft)	90	369	299	436	223	240	257
Average Queue (ft)	27	156	181	240	66	106	121
95th Queue (ft)	67	274	308	367	178	194	216
Link Distance (ft)	727	727		930	930	1961	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			200			500	
Storage Blk Time (%)			4	17		8	
Queuing Penalty (veh)			10	49		30	

Zone Summary

Zone wide Queuing Penalty: 457

## **2026 Background Conditions With Basalt Creek Parkway Extension**

AM Peak Hour Synchro Reports

PM Peak Hour Synchro Reports

AM Peak Hour Queuing Reports

PM Peak Hour Queuing Reports



HCM Signalized Intersection Capacity Analysis  
 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

01/26/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↔		↖	↗		↖	↗	↖
Traffic Volume (vph)	175	1	286	2	1	16	169	642	5	6	613	82
Future Volume (vph)	175	1	286	2	1	16	169	642	5	6	613	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.92			0.94		1.00	1.00		1.00	1.00	0.91
Flpb, ped/bikes	0.96	1.00			1.00		1.00	1.00		0.97	1.00	1.00
Frt	1.00	0.85			0.88		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1692	1469			1573		1787	1842		1755	1827	1427
Flt Permitted	0.74	1.00			0.93		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1322	1469			1477		1787	1842		1755	1827	1427
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	216	1	353	2	1	20	209	793	6	7	757	101
RTOR Reduction (vph)	0	213	0	0	16	0	0	0	0	0	0	51
Lane Group Flow (vph)	216	141	0	0	7	0	209	799	0	7	757	50
Confl. Peds. (#/hr)	24		26	26		24	8		28	28		28
Confl. Bikes (#/hr)												5
Heavy Vehicles (%)	2%	0%	1%	0%	0%	0%	1%	3%	0%	0%	4%	3%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								6
Actuated Green, G (s)	17.2	17.2			17.2		11.8	51.2		0.7	40.1	40.1
Effective Green, g (s)	17.7	17.7			17.7		11.8	52.2		0.7	41.1	41.1
Actuated g/C Ratio	0.21	0.21			0.21		0.14	0.63		0.01	0.50	0.50
Clearance Time (s)	4.5	4.5			4.5		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	2.3	2.3			2.5		2.3	4.3		2.3	4.3	4.3
Lane Grp Cap (vph)	283	314			316		255	1164		14	909	710
v/s Ratio Prot		0.10					c0.12	0.43		0.00	c0.41	
v/s Ratio Perm	c0.16				0.00							0.04
v/c Ratio	0.76	0.45			0.02		0.82	0.69		0.50	0.83	0.07
Uniform Delay, d1	30.5	28.2			25.6		34.4	9.9		40.8	17.8	10.8
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	10.8	0.6			0.0		17.7	1.9		15.4	7.1	0.1
Delay (s)	41.3	28.8			25.6		52.0	11.8		56.2	24.9	10.9
Level of Service	D	C			C		D	B		E	C	B
Approach Delay (s)		33.5			25.6			20.1			23.5	
Approach LOS		C			C			C			C	

Intersection Summary		
HCM 2000 Control Delay	24.5	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.81	C
Actuated Cycle Length (s)	82.6	Sum of lost time (s)
Intersection Capacity Utilization	71.8%	12.0
Analysis Period (min)	15	ICU Level of Service
		C
c Critical Lane Group		



# HCM 6th Signalized Intersection Summary

## 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

01/26/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	175	1	286	2	1	16	169	642	5	6	613	82
Future Volume (veh/h)	175	1	286	2	1	16	169	642	5	6	613	82
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.94		0.94	0.96		0.94	1.00		0.98	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1900	1885	1900	1900	1900	1885	1856	1900	1900	1841	1856
Adj Flow Rate, veh/h	216	1	180	2	1	14	209	793	6	7	757	52
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	2	0	1	0	0	0	1	3	0	0	4	3
Cap, veh/h	385	2	325	69	43	273	251	1130	9	13	887	718
Arrive On Green	0.22	0.22	0.21	0.21	0.22	0.21	0.14	0.61	0.60	0.01	0.48	0.48
Sat Flow, veh/h	1318	8	1504	69	201	1261	1795	1839	14	1810	1841	1490
Grp Volume(v), veh/h	216	0	181	17	0	0	209	0	799	7	757	52
Grp Sat Flow(s),veh/h/ln	1318	0	1512	1532	0	0	1795	0	1853	1810	1841	1490
Q Serve(g_s), s	10.5	0.0	7.9	0.0	0.0	0.0	8.4	0.0	21.6	0.3	26.8	1.4
Cycle Q Clear(g_c), s	11.2	0.0	7.9	0.6	0.0	0.0	8.4	0.0	21.6	0.3	26.8	1.4
Prop In Lane	1.00		0.99	0.12		0.82	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	385	0	327	375	0	0	251	0	1139	13	887	718
V/C Ratio(X)	0.56	0.00	0.55	0.05	0.00	0.00	0.83	0.00	0.70	0.53	0.85	0.07
Avail Cap(c_a), veh/h	510	0	470	515	0	0	291	0	1276	98	1069	866
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.1	0.0	26.1	23.2	0.0	0.0	31.0	0.0	9.7	36.6	16.9	10.3
Incr Delay (d2), s/veh	0.8	0.0	0.9	0.0	0.0	0.0	15.0	0.0	1.9	19.0	6.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.0	2.8	0.2	0.0	0.0	4.5	0.0	7.4	0.2	11.3	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.8	0.0	27.0	23.2	0.0	0.0	46.0	0.0	11.5	55.7	23.5	10.4
LnGrp LOS	C	A	C	C	A	A	D	A	B	E	C	B
Approach Vol, veh/h		397			17			1008				816
Approach Delay, s/veh		27.4			23.2			18.7				22.9
Approach LOS		C			C			B				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.5	49.5		20.0	14.4	39.7		20.0				
Change Period (Y+Rc), s	4.0	5.0		4.5	4.0	5.0		4.5				
Max Green Setting (Gmax), s	4.0	50.0		22.5	12.0	42.0		22.5				
Max Q Clear Time (g_c+I1), s	2.3	23.6		13.2	10.4	28.8		2.6				
Green Ext Time (p_c), s	0.0	8.7		1.2	0.1	5.9		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				21.8								
HCM 6th LOS				C								

HCM 6th TWSC  
 2: SW Boones Ferry Road & SW Norwood Road

01/26/2023

Intersection						
Int Delay, s/veh	5.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑	↑	↑	↑
Traffic Vol, veh/h	74	128	503	37	61	393
Future Vol, veh/h	74	128	503	37	61	393
Conflicting Peds, #/hr	0	2	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	65	290	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	3	3	1	8	4	1
Mvmt Flow	91	158	621	46	75	485

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1256	623	0	0	667	0
Stage 1	621	-	-	-	-	-
Stage 2	635	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.14	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.236	-
Pot Cap-1 Maneuver	188	484	-	-	913	-
Stage 1	534	-	-	-	-	-
Stage 2	526	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	173	483	-	-	913	-
Mov Cap-2 Maneuver	310	-	-	-	-	-
Stage 1	534	-	-	-	-	-
Stage 2	483	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	27.6	0	1.2
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	401	913
HCM Lane V/C Ratio	-	-	0.622	0.082
HCM Control Delay (s)	-	-	27.6	9.3
HCM Lane LOS	-	-	D	A
HCM 95th %tile Q(veh)	-	-	4.1	0.3

Intersection												
Int Delay, s/veh	8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↗
Traffic Vol, veh/h	167	0	9	0	0	0	25	2	0	0	0	124
Future Vol, veh/h	167	0	9	0	0	0	25	2	0	0	0	124
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	-	-	-	15
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	0	0	0	0	0	4	0	0	0	0	0
Mvmt Flow	214	0	12	0	0	0	32	3	0	0	0	159

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	12	0	0	435	435	6	437	441	-
Stage 1	-	-	-	-	-	-	434	434	-	1	1	-
Stage 2	-	-	-	-	-	-	1	1	-	436	440	-
Critical Hdwy	4.12	-	-	4.1	-	-	7.14	6.5	6.2	7.1	6.5	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.218	-	-	2.2	-	-	3.536	4	3.3	3.5	4	-
Pot Cap-1 Maneuver	1622	-	-	1620	-	-	528	517	1083	533	513	0
Stage 1	-	-	-	-	-	-	596	585	-	1027	899	0
Stage 2	-	-	-	-	-	-	1017	899	-	603	581	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1622	-	-	1620	-	-	474	448	1083	477	445	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	474	448	-	477	445	-
Stage 1	-	-	-	-	-	-	517	507	-	890	899	-
Stage 2	-	-	-	-	-	-	1017	899	-	520	504	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	7.2	0	13.2	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	472	1622	-	-	1620	-	-	-	-
HCM Lane V/C Ratio	0.073	0.132	-	-	-	-	-	-	-
HCM Control Delay (s)	13.2	7.6	0	-	0	-	-	0	0
HCM Lane LOS	B	A	A	-	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	0.5	-	-	0	-	-	-	-

# HCM Signalized Intersection Capacity Analysis

## 5: SW Boones Ferry Road & Basalt Creek Parkway Extension

01/26/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	38	524	454	547	410	104
Future Volume (vph)	38	524	454	547	410	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.97	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1805	1615	1687	1881	1797	
Flt Permitted	0.95	1.00	0.28	1.00	1.00	
Satd. Flow (perm)	1805	1615	501	1881	1797	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	44	609	528	636	477	121
RTOR Reduction (vph)	0	145	0	0	8	0
Lane Group Flow (vph)	44	464	528	636	590	0
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	0%	0%	7%	1%	2%	5%
Turn Type	Prot	pt+ov	pm+pt	NA	NA	
Protected Phases	8	8 1	1	6	2	
Permitted Phases			6			
Actuated Green, G (s)	8.8	37.5	76.3	76.3	47.6	
Effective Green, g (s)	9.3	33.1	77.7	77.7	49.0	
Actuated g/C Ratio	0.10	0.35	0.82	0.82	0.52	
Clearance Time (s)	4.5		5.4	5.4	5.4	
Vehicle Extension (s)	2.5		2.3	4.4	4.4	
Lane Grp Cap (vph)	176	562	718	1538	926	
v/s Ratio Prot	0.02	c0.29	0.19	0.34	0.33	
v/s Ratio Perm			c0.41			
v/c Ratio	0.25	0.83	0.74	0.41	0.64	
Uniform Delay, d1	39.6	28.3	14.5	2.4	16.6	
Progression Factor	1.00	1.00	1.03	1.35	1.00	
Incremental Delay, d2	0.5	9.5	2.8	0.6	3.3	
Delay (s)	40.2	37.8	17.7	3.9	19.9	
Level of Service	D	D	B	A	B	
Approach Delay (s)	37.9			10.1	19.9	
Approach LOS	D			B	B	

### Intersection Summary

HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	12.9
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

# HCM 6th Signalized Intersection Summary

## 5: SW Boones Ferry Road & Basalt Creek Parkway Extension

01/26/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	38	524	454	547	410	104
Future Volume (veh/h)	38	524	454	547	410	104
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1796	1885	1870	1826
Adj Flow Rate, veh/h	44	493	528	636	477	109
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	0	0	7	1	2	5
Cap, veh/h	124	803	847	1597	536	122
Arrive On Green	0.07	0.07	0.44	0.85	0.37	0.35
Sat Flow, veh/h	1810	1610	1711	1885	1466	335
Grp Volume(v), veh/h	44	493	528	636	0	586
Grp Sat Flow(s),veh/h/ln	1810	1610	1711	1885	0	1802
Q Serve(g_s), s	2.2	0.0	16.2	7.4	0.0	29.1
Cycle Q Clear(g_c), s	2.2	0.0	16.2	7.4	0.0	29.1
Prop In Lane	1.00	1.00	1.00			0.19
Lane Grp Cap(c), veh/h	124	803	847	1597	0	658
V/C Ratio(X)	0.36	0.61	0.62	0.40	0.00	0.89
Avail Cap(c_a), veh/h	318	976	847	1597	0	705
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.2	17.2	17.9	1.7	0.0	28.5
Incr Delay (d2), s/veh	1.3	0.6	1.2	0.7	0.0	16.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	7.5	8.3	1.4	0.0	15.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	43.5	17.8	19.2	2.4	0.0	45.1
LnGrp LOS	D	B	B	A	A	D
Approach Vol, veh/h	537			1164	586	
Approach Delay, s/veh	19.9			10.0	45.1	
Approach LOS	B			B	D	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	45.8	38.7			84.5	10.5
Change Period (Y+Rc), s	* 5.4	* 5.4			* 5.4	4.5
Max Green Setting (Gmax), s	* 28	* 36			* 69	16.2
Max Q Clear Time (g_c+I1), s	18.2	31.1			9.4	4.2
Green Ext Time (p_c), s	0.9	2.2			9.2	1.2

### Intersection Summary

HCM 6th Ctrl Delay	21.3
HCM 6th LOS	C

### Notes

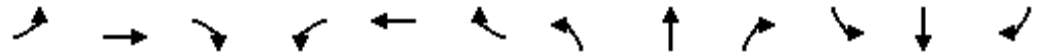
User approved pedestrian interval to be less than phase max green.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM Signalized Intersection Capacity Analysis

## 6: SW Boones Ferry Road & SW Day Road

01/26/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔		↖↗	↕		↖	↕↗	
Traffic Volume (vph)	17	0	261	0	0	0	272	968	0	0	908	15
Future Volume (vph)	17	0	261	0	0	0	272	968	0	0	908	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.3	4.7				4.9	4.0			4.0	
Lane Util. Factor		1.00	1.00				0.97	1.00			0.95	
Frbp, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Flpb, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Frt		1.00	0.85				1.00	1.00			1.00	
Flt Protected		0.95	1.00				0.95	1.00			1.00	
Satd. Flow (prot)		1703	1495				3273	1881			3528	
Flt Permitted		0.87	1.00				0.95	1.00			1.00	
Satd. Flow (perm)		1559	1495				3273	1881			3528	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	20	0	303	0	0	0	316	1126	0	0	1056	17
RTOR Reduction (vph)	0	0	81	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	20	222	0	0	0	316	1126	0	0	1072	0
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	6%	0%	8%	0%	0%	0%	7%	1%	0%	0%	2%	5%
Turn Type	Perm	NA	pm+ov				Prot	NA		Prot	NA	
Protected Phases		8	1		4		1	6		5	2	
Permitted Phases	8		8	4								
Actuated Green, G (s)		4.4	19.6				15.2	80.7			60.1	
Effective Green, g (s)		4.6	21.0				15.7	82.1			61.5	
Actuated g/C Ratio		0.05	0.22				0.17	0.86			0.65	
Clearance Time (s)		4.5	5.4				5.4	5.4			5.4	
Vehicle Extension (s)		2.5	2.3				2.3	4.4			4.4	
Lane Grp Cap (vph)		75	330				540	1625			2283	
v/s Ratio Prot			c0.11				0.10	c0.60			0.30	
v/s Ratio Perm		0.01	0.04									
v/c Ratio		0.27	0.67				0.59	0.69			0.47	
Uniform Delay, d1		43.6	33.9				36.6	2.2			8.5	
Progression Factor		1.00	1.00				1.00	1.00			0.92	
Incremental Delay, d2		1.4	4.6				1.2	2.5			0.5	
Delay (s)		45.0	38.4				37.9	4.6			8.3	
Level of Service		D	D				D	A			A	
Approach Delay (s)		38.8			0.0			11.9			8.3	
Approach LOS		D			A			B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			13.6				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			95.0				Sum of lost time (s)			13.2		
Intersection Capacity Utilization			69.5%				ICU Level of Service			C		
Analysis Period (min)			15									

c Critical Lane Group

# HCM 6th Signalized Intersection Summary

## 6: SW Boones Ferry Road & SW Day Road

01/26/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔		↖↗	↔		↖	↕	↗
Traffic Volume (veh/h)	17	0	261	0	0	0	272	968	0	0	908	15
Future Volume (veh/h)	17	0	261	0	0	0	272	968	0	0	908	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1900	1781	1900	1900	1900	1796	1885	1900	1900	1870	1826
Adj Flow Rate, veh/h	20	0	280	0	0	0	316	1126	0	0	1056	11
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	6	0	8	0	0	0	7	1	0	0	2	5
Cap, veh/h	170	0	302	0	130	0	423	1261	0	229	2408	25
Arrive On Green	0.06	0.00	0.07	0.00	0.00	0.00	0.13	0.67	0.00	0.00	0.67	0.65
Sat Flow, veh/h	1440	0	1510	0	1900	0	3319	1885	0	1810	3602	38
Grp Volume(v), veh/h	20	0	280	0	0	0	316	1126	0	0	521	546
Grp Sat Flow(s),veh/h/ln	1440	0	1510	0	1900	0	1659	1885	0	1810	1777	1863
Q Serve(g_s), s	1.3	0.0	6.7	0.0	0.0	0.0	8.7	46.6	0.0	0.0	13.1	13.1
Cycle Q Clear(g_c), s	1.3	0.0	6.7	0.0	0.0	0.0	8.7	46.6	0.0	0.0	13.1	13.1
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.02
Lane Grp Cap(c), veh/h	167	0	302	0	130	0	423	1261	0	229	1188	1245
V/C Ratio(X)	0.12	0.00	0.93	0.00	0.00	0.00	0.75	0.89	0.00	0.00	0.44	0.44
Avail Cap(c_a), veh/h	167	0	302	0	130	0	667	1429	0	229	1188	1245
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	42.2	0.0	37.3	0.0	0.0	0.0	40.0	12.9	0.0	0.0	7.4	7.4
Incr Delay (d2), s/veh	0.2	0.0	33.2	0.0	0.0	0.0	1.6	9.9	0.0	0.0	1.2	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	8.9	0.0	0.0	0.0	3.6	19.2	0.0	0.0	4.2	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.4	0.0	70.5	0.0	0.0	0.0	41.6	22.8	0.0	0.0	8.6	8.5
LnGrp LOS	D	A	E	A	A	A	D	C	A	A	A	A
Approach Vol, veh/h		300			0			1442			1067	
Approach Delay, s/veh		68.6			0.0			26.9			8.5	
Approach LOS		E						C			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	17.0	67.5		10.5	16.9	67.6		10.5				
Change Period (Y+Rc), s	* 5.4	* 5.4		4.5	* 5.4	* 5.4		4.5				
Max Green Setting (Gmax), s	* 19	* 55		6.0	* 4	* 71		6.0				
Max Q Clear Time (g_c+I1), s	10.7	15.1		0.0	0.0	48.6		8.7				
Green Ext Time (p_c), s	0.9	11.9		0.0	0.0	13.6		0.0				

### Intersection Summary

HCM 6th Ctrl Delay	24.4
HCM 6th LOS	C

### Notes

User approved pedestrian interval to be less than phase max green.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM Signalized Intersection Capacity Analysis

## 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

01/26/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	3	161	1	1	12	180	637	3	5	798	193
Future Volume (vph)	144	3	161	1	1	12	180	637	3	5	798	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5		4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.97			0.96		1.00	1.00		1.00	1.00	0.93
Flpb, ped/bikes	0.98	1.00			1.00		1.00	1.00		0.98	1.00	1.00
Frt	1.00	0.85			0.88		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1761	1568			1607		1805	1825		1762	1900	1500
Flt Permitted	0.75	1.00			0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1386	1568			1587		1805	1825		1762	1900	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	157	3	175	1	1	13	196	692	3	5	867	210
RTOR Reduction (vph)	0	146	0	0	11	0	0	0	0	0	0	48
Lane Group Flow (vph)	157	32	0	0	4	0	196	695	0	5	867	162
Confl. Peds. (#/hr)	12		4	4			12	4		19	19	19
Confl. Bikes (#/hr)			1							2		2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								6
Actuated Green, G (s)	15.1	15.1			15.1		12.8	61.4		0.6	49.2	49.2
Effective Green, g (s)	15.1	15.1			15.1		12.8	61.4		0.6	49.2	49.2
Actuated g/C Ratio	0.17	0.17			0.17		0.14	0.68		0.01	0.54	0.54
Clearance Time (s)	4.5	4.5			4.5		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	2.3	2.3			2.5		2.3	4.3		2.3	4.3	4.3
Lane Grp Cap (vph)	231	261			264		255	1236		11	1031	814
v/s Ratio Prot		0.02					c0.11	0.38		0.00	c0.46	
v/s Ratio Perm	c0.11				0.00							0.11
v/c Ratio	0.68	0.12			0.02		0.77	0.56		0.45	0.84	0.20
Uniform Delay, d1	35.5	32.1			31.5		37.5	7.6		44.8	17.4	10.6
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	6.7	0.1			0.0		12.2	0.8		16.4	6.7	0.2
Delay (s)	42.1	32.2			31.6		49.7	8.4		61.2	24.1	10.8
Level of Service	D	C			C		D	A		E	C	B
Approach Delay (s)		36.9			31.6			17.5			21.7	
Approach LOS		D			C			B			C	

### Intersection Summary

HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	90.6	Sum of lost time (s)	13.5
Intersection Capacity Utilization	77.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



# HCM 6th Signalized Intersection Summary

## 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

01/26/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	144	3	161	1	1	12	180	637	3	5	798	193
Future Volume (veh/h)	144	3	161	1	1	12	180	637	3	5	798	193
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.94	0.97		0.96	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1841	1900	1900	1900	1900
Adj Flow Rate, veh/h	157	3	88	1	1	13	196	692	3	5	867	123
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	4	0	0	0	0
Cap, veh/h	307	8	230	52	29	214	237	1226	5	10	1034	842
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.13	0.67	0.67	0.01	0.54	0.54
Sat Flow, veh/h	1370	50	1474	24	186	1368	1810	1831	8	1810	1900	1548
Grp Volume(v), veh/h	157	0	91	15	0	0	196	0	695	5	867	123
Grp Sat Flow(s),veh/h/ln	1370	0	1524	1578	0	0	1810	0	1839	1810	1900	1548
Q Serve(g_s), s	7.9	0.0	4.3	0.0	0.0	0.0	8.5	0.0	16.1	0.2	30.6	3.2
Cycle Q Clear(g_c), s	8.5	0.0	4.3	0.6	0.0	0.0	8.5	0.0	16.1	0.2	30.6	3.2
Prop In Lane	1.00		0.97	0.07		0.87	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	307	0	238	295	0	0	237	0	1232	10	1034	842
V/C Ratio(X)	0.51	0.00	0.38	0.05	0.00	0.00	0.83	0.00	0.56	0.53	0.84	0.15
Avail Cap(c_a), veh/h	409	0	352	410	0	0	294	0	1585	90	1424	1160
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.0	0.0	30.3	28.8	0.0	0.0	33.9	0.0	7.0	39.7	15.3	9.0
Incr Delay (d2), s/veh	0.8	0.0	0.6	0.1	0.0	0.0	13.1	0.0	0.6	24.8	4.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	1.6	0.2	0.0	0.0	4.4	0.0	5.0	0.2	12.4	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.8	0.0	30.9	28.8	0.0	0.0	47.0	0.0	7.7	64.5	19.5	9.2
LnGrp LOS	C	A	C	C	A	A	D	A	A	E	B	A
Approach Vol, veh/h		248			15			891			995	
Approach Delay, s/veh		32.1			28.8			16.3			18.4	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.4	58.6		17.0	14.5	48.6		17.0				
Change Period (Y+Rc), s	4.0	5.0		4.5	4.0	5.0		4.5				
Max Green Setting (Gmax), s	4.0	69.0		18.5	13.0	60.0		18.5				
Max Q Clear Time (g_c+I1), s	2.2	18.1		10.5	10.5	32.6		2.6				
Green Ext Time (p_c), s	0.0	8.3		0.6	0.2	10.9		0.0				

### Intersection Summary

HCM 6th Ctrl Delay	19.2
HCM 6th LOS	B

### Notes

User approved pedestrian interval to be less than phase max green.

HCM 6th TWSC  
 2: SW Boones Ferry Road & SW Norwood Road

01/26/2023

Intersection						
Int Delay, s/veh	3.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑	↗↘	↘↗	↑
Traffic Vol, veh/h	49	115	523	111	121	714
Future Vol, veh/h	49	115	523	111	121	714
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	65	290	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	0	0	0	0	0
Mvmt Flow	54	126	575	122	133	785

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1626	575	0	0	697
Stage 1	575	-	-	-	-
Stage 2	1051	-	-	-	-
Critical Hdwy	6.42	6.2	-	-	4.1
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.3	-	-	2.2
Pot Cap-1 Maneuver	112	521	-	-	909
Stage 1	563	-	-	-	-
Stage 2	336	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	96	521	-	-	909
Mov Cap-2 Maneuver	211	-	-	-	-
Stage 1	563	-	-	-	-
Stage 2	287	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.4	0	1.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	362	909
HCM Lane V/C Ratio	-	-	0.498	0.146
HCM Control Delay (s)	-	-	24.4	9.6
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	2.7	0.5

HCM 6th TWSC  
 4: SW 82nd Avenue & SW Norwood Road/Driveway

01/26/2023

Intersection												
Int Delay, s/veh	7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↗
Traffic Vol, veh/h	123	0	25	0	0	0	22	3	0	0	4	151
Future Vol, veh/h	123	0	25	0	0	0	22	3	0	0	4	151
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	-	-	-	15
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	1	0	0	0	0	0	5	0	0	0	0	0
Mvmt Flow	135	0	27	0	0	0	24	3	0	0	4	166

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	1	0	0	27	0	0	287	285	14	286	298	-
Stage 1	-	-	-	-	-	-	284	284	-	1	1	-
Stage 2	-	-	-	-	-	-	3	1	-	285	297	-
Critical Hdwy	4.11	-	-	4.1	-	-	7.15	6.5	6.2	7.1	6.5	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.209	-	-	2.2	-	-	3.545	4	3.3	3.5	4	-
Pot Cap-1 Maneuver	1628	-	-	1600	-	-	659	628	1072	670	617	0
Stage 1	-	-	-	-	-	-	717	680	-	1027	899	0
Stage 2	-	-	-	-	-	-	1012	899	-	727	671	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1628	-	-	1600	-	-	613	575	1072	624	565	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	613	575	-	624	565	-
Stage 1	-	-	-	-	-	-	657	623	-	941	899	-
Stage 2	-	-	-	-	-	-	1007	899	-	662	615	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	6.2	0	11.2	11.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	608	1628	-	-	1600	-	-	565	-
HCM Lane V/C Ratio	0.045	0.083	-	-	-	-	-	0.008	-
HCM Control Delay (s)	11.2	7.4	0	-	0	-	-	11.4	0
HCM Lane LOS	B	A	A	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	0.3	-	-	0	-	-	0	-

# HCM Signalized Intersection Capacity Analysis

## 5: SW Boones Ferry Road & Basalt Creek Parkway Extension

01/26/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	69	486	454	614	634	130
Future Volume (vph)	69	486	454	614	634	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1805	1615	1703	1900	1844	
Flt Permitted	0.95	1.00	0.12	1.00	1.00	
Satd. Flow (perm)	1805	1615	213	1900	1844	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	76	534	499	675	697	143
RTOR Reduction (vph)	0	107	0	0	7	0
Lane Group Flow (vph)	76	427	499	675	833	0
Heavy Vehicles (%)	0%	0%	6%	0%	0%	4%
Turn Type	Prot	pt+ov	pm+pt	NA	NA	
Protected Phases	8	8 1	1	6	2	
Permitted Phases			6			
Actuated Green, G (s)	9.5	41.0	85.6	85.6	54.1	
Effective Green, g (s)	10.0	36.6	87.0	87.0	55.5	
Actuated g/C Ratio	0.10	0.35	0.83	0.83	0.53	
Clearance Time (s)	4.5		5.4	5.4	5.4	
Vehicle Extension (s)	2.5		2.3	4.4	4.4	
Lane Grp Cap (vph)	171	562	566	1574	974	
v/s Ratio Prot	0.04	c0.26	c0.23	0.36	0.45	
v/s Ratio Perm			c0.50			
v/c Ratio	0.44	0.76	0.88	0.43	0.86	
Uniform Delay, d1	44.9	30.3	26.6	2.4	21.3	
Progression Factor	1.00	1.00	1.02	1.31	1.00	
Incremental Delay, d2	1.3	5.6	11.8	0.7	9.6	
Delay (s)	46.2	35.9	39.0	3.8	30.9	
Level of Service	D	D	D	A	C	
Approach Delay (s)	37.1			18.7	30.9	
Approach LOS	D			B	C	

Intersection Summary			
HCM 2000 Control Delay	26.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.9
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

# HCM 6th Signalized Intersection Summary

## 5: SW Boones Ferry Road & Basalt Creek Parkway Extension

01/26/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	69	486	454	614	634	130
Future Volume (veh/h)	69	486	454	614	634	130
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1811	1900	1900	1841
Adj Flow Rate, veh/h	76	435	499	675	697	138
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	6	0	0	4
Cap, veh/h	132	641	654	1617	738	146
Arrive On Green	0.07	0.07	0.33	0.85	0.48	0.47
Sat Flow, veh/h	1810	1610	1725	1900	1540	305
Grp Volume(v), veh/h	76	435	499	675	0	835
Grp Sat Flow(s),veh/h/ln	1810	1610	1725	1900	0	1845
Q Serve(g_s), s	4.3	0.0	21.7	8.6	0.0	45.2
Cycle Q Clear(g_c), s	4.3	0.0	21.7	8.6	0.0	45.2
Prop In Lane	1.00	1.00	1.00			0.17
Lane Grp Cap(c), veh/h	132	641	654	1617	0	884
V/C Ratio(X)	0.58	0.68	0.76	0.42	0.00	0.94
Avail Cap(c_a), veh/h	241	738	654	1617	0	896
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.1	26.1	28.8	1.8	0.0	26.1
Incr Delay (d2), s/veh	2.9	1.8	5.0	0.8	0.0	19.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	9.1	11.6	1.9	0.0	23.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	50.0	27.9	33.8	2.6	0.0	45.7
LnGrp LOS	D	C	C	A	A	D
Approach Vol, veh/h	511			1174	835	
Approach Delay, s/veh	31.2			15.9	45.7	
Approach LOS	C			B	D	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	39.0	54.3			93.3	11.7
Change Period (Y+Rc), s	* 5.4	* 5.4			* 5.4	4.5
Max Green Setting (Gmax), s	* 27	* 50			* 82	13.5
Max Q Clear Time (g_c+I1), s	23.7	47.2			10.6	6.3
Green Ext Time (p_c), s	0.4	1.7			10.2	0.9

### Intersection Summary

HCM 6th Ctrl Delay	28.8
HCM 6th LOS	C

### Notes

User approved pedestrian interval to be less than phase max green.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM Signalized Intersection Capacity Analysis

## 6: SW Boones Ferry Road & SW Day Road

01/26/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔		↖↗	↖		↖	↕↔	
Traffic Volume (vph)	14	0	294	0	0	0	292	1046	0	0	1094	14
Future Volume (vph)	14	0	294	0	0	0	292	1046	0	0	1094	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0				4.0	4.0			4.0	
Lane Util. Factor		1.00	1.00				0.97	1.00			0.95	
Frbp, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Flpb, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Frt		1.00	0.85				1.00	1.00			1.00	
Flt Protected		0.95	1.00				0.95	1.00			1.00	
Satd. Flow (prot)		1802	1583				3303	1900			3602	
Flt Permitted		0.83	1.00				0.95	1.00			1.00	
Satd. Flow (perm)		1581	1583				3303	1900			3602	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	15	0	323	0	0	0	321	1149	0	0	1202	15
RTOR Reduction (vph)	0	0	62	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	15	261	0	0	0	321	1149	0	0	1216	0
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)									3			
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	6%	0%	0%	0%	0%	4%
Turn Type	Perm	NA	pm+ov				Prot	NA		Prot	NA	
Protected Phases		8	1		4		1	6		5	2	
Permitted Phases	8		8	4								
Actuated Green, G (s)		4.3	21.8				17.5	90.8			67.9	
Effective Green, g (s)		4.8	24.6				18.9	92.2			69.3	
Actuated g/C Ratio		0.05	0.23				0.18	0.88			0.66	
Clearance Time (s)		4.5	5.4				5.4	5.4			5.4	
Vehicle Extension (s)		2.5	2.3				2.3	4.4			4.4	
Lane Grp Cap (vph)		72	370				594	1668			2377	
v/s Ratio Prot			c0.13				0.10	c0.60			0.34	
v/s Ratio Perm		0.01	0.04									
v/c Ratio		0.21	0.71				0.54	0.69			0.51	
Uniform Delay, d1		48.3	36.9				39.1	2.0			9.2	
Progression Factor		1.00	1.00				1.00	1.00			0.85	
Incremental Delay, d2		1.0	5.3				0.7	2.3			0.5	
Delay (s)		49.3	42.2				39.8	4.3			8.2	
Level of Service		D	D				D	A			A	
Approach Delay (s)		42.5		0.0				12.1			8.2	
Approach LOS		D		A				B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			13.9				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			105.0				Sum of lost time (s)			13.0		
Intersection Capacity Utilization			75.0%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary  
 6: SW Boones Ferry Road & SW Day Road

01/26/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔		↔	↔		↔	↔	
Traffic Volume (veh/h)	14	0	294	0	0	0	292	1046	0	0	1094	14
Future Volume (veh/h)	14	0	294	0	0	0	292	1046	0	0	1094	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1870	1900	1900	1900	1811	1900	1900	1900	1900	1841
Adj Flow Rate, veh/h	15	0	301	0	0	0	321	1149	0	0	1202	15
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	2	0	0	0	6	0	0	0	0	4
Cap, veh/h	157	0	323	0	118	0	447	1287	0	232	2520	31
Arrive On Green	0.06	0.00	0.07	0.00	0.00	0.00	0.13	0.68	0.00	0.00	0.69	0.68
Sat Flow, veh/h	1427	0	1578	0	1900	0	3346	1900	0	1810	3651	46
Grp Volume(v), veh/h	15	0	301	0	0	0	321	1149	0	0	594	623
Grp Sat Flow(s),veh/h/ln	1427	0	1578	0	1900	0	1673	1900	0	1810	1805	1892
Q Serve(g_s), s	1.1	0.0	7.4	0.0	0.0	0.0	9.7	51.8	0.0	0.0	16.0	16.0
Cycle Q Clear(g_c), s	1.1	0.0	7.4	0.0	0.0	0.0	9.7	51.8	0.0	0.0	16.0	16.0
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.02
Lane Grp Cap(c), veh/h	150	0	323	0	118	0	447	1287	0	232	1246	1306
V/C Ratio(X)	0.10	0.00	0.93	0.00	0.00	0.00	0.72	0.89	0.00	0.00	0.48	0.48
Avail Cap(c_a), veh/h	150	0	323	0	118	0	707	1484	0	232	1246	1306
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	46.9	0.0	41.1	0.0	0.0	0.0	43.6	13.8	0.0	0.0	7.5	7.5
Incr Delay (d2), s/veh	0.2	0.0	32.6	0.0	0.0	0.0	1.3	9.7	0.0	0.0	1.3	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	10.3	0.0	0.0	0.0	4.0	21.8	0.0	0.0	5.3	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.1	0.0	73.7	0.0	0.0	0.0	44.9	23.5	0.0	0.0	8.8	8.8
LnGrp LOS	D	A	E	A	A	A	D	C	A	A	A	A
Approach Vol, veh/h		316			0			1470			1217	
Approach Delay, s/veh		72.4			0.0			28.2			8.8	
Approach LOS		E						C			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	18.0	76.5		10.5	19.4	75.1		10.5				
Change Period (Y+Rc), s	* 5.4	* 5.4		4.5	* 5.4	* 5.4		4.5				
Max Green Setting (Gmax), s	* 21	* 63		6.0	* 4	* 81		6.0				
Max Q Clear Time (g_c+I1), s	11.7	18.0		0.0	0.0	53.8		9.4				
Green Ext Time (p_c), s	1.0	15.0		0.0	0.0	15.9		0.0				

Intersection Summary

HCM 6th Ctrl Delay	25.0
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.  
 \* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection: 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

Movement	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	LTR	L	TR	L	T	R
Maximum Queue (ft)	166	272	48	194	488	64	542	210
Average Queue (ft)	82	105	14	115	189	5	257	76
95th Queue (ft)	145	200	41	205	372	36	457	215
Link Distance (ft)	622	622	761		2493		697	
Upstream Blk Time (%)							0	
Queuing Penalty (veh)							0	
Storage Bay Dist (ft)				95		105		110
Storage Blk Time (%)				18	14		30	
Queuing Penalty (veh)				122	24		27	

Intersection: 2: SW Boones Ferry Road & SW Norwood Road

Movement	WB	NB	NB	SB
Directions Served	LR	T	R	L
Maximum Queue (ft)	128	4	4	57
Average Queue (ft)	55	0	0	17
95th Queue (ft)	99	3	3	47
Link Distance (ft)	489	1810		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			65	290
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: SW 82nd Avenue & SW Norwood Road/Driveway

Movement	NB
Directions Served	LTR
Maximum Queue (ft)	44
Average Queue (ft)	18
95th Queue (ft)	41
Link Distance (ft)	494
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	



Intersection: 5: SW Boones Ferry Road & Basalt Creek Parkway Extension

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	93	556	467	310	459
Average Queue (ft)	32	271	191	90	222
95th Queue (ft)	74	462	378	240	398
Link Distance (ft)	1043	1043		899	914
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	575				
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 6: SW Boones Ferry Road & SW Day Road

Movement	EB	EB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	L	TR	T	TR
Maximum Queue (ft)	58	144	225	291	483	274	297
Average Queue (ft)	10	65	78	146	118	106	122
95th Queue (ft)	35	118	188	251	372	219	242
Link Distance (ft)	720	720			930	1011	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			200	200			500
Storage Blk Time (%)			0	2	3	7	
Queuing Penalty (veh)			1	20	9	33	

Zone Summary

Zone wide Queuing Penalty: 236
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Intersection: 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

Movement	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	LTR	L	TR	L	T	R
Maximum Queue (ft)	155	130	34	194	386	72	570	210
Average Queue (ft)	77	63	10	119	160	7	289	124
95th Queue (ft)	134	116	33	201	302	40	485	264
Link Distance (ft)	622	622	761		2493		697	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)				95		105		110
Storage Blk Time (%)				23	11		28	0
Queuing Penalty (veh)				152	20		55	0

Intersection: 2: SW Boones Ferry Road & SW Norwood Road

Movement	WB	NB	SB
Directions Served	LR	R	L
Maximum Queue (ft)	165	22	90
Average Queue (ft)	55	2	34
95th Queue (ft)	120	11	72
Link Distance (ft)	489		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		65	290
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: SW 82nd Avenue & SW Norwood Road/Driveway

Movement	NB	SB
Directions Served	LTR	LT
Maximum Queue (ft)	47	25
Average Queue (ft)	14	4
95th Queue (ft)	38	19
Link Distance (ft)	494	648
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		0
Queuing Penalty (veh)		0

Intersection: 5: SW Boones Ferry Road & Basalt Creek Parkway Extension

Movement	EB	EB	NB	NB	SB	B8
Directions Served	L	R	L	T	TR	T
Maximum Queue (ft)	152	583	577	565	847	15
Average Queue (ft)	61	256	278	111	369	0
95th Queue (ft)	128	446	489	331	679	3
Link Distance (ft)	1043	1043		898	914	1810
Upstream Blk Time (%)					1	
Queuing Penalty (veh)					5	
Storage Bay Dist (ft)			575			
Storage Blk Time (%)			1	0		
Queuing Penalty (veh)			3	2		

Intersection: 6: SW Boones Ferry Road & SW Day Road

Movement	EB	EB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	L	TR	T	TR
Maximum Queue (ft)	53	178	219	298	643	289	310
Average Queue (ft)	10	79	102	161	163	116	141
95th Queue (ft)	34	149	209	274	491	221	252
Link Distance (ft)	723	723			930	1019	
Upstream Blk Time (%)					0		
Queuing Penalty (veh)					0		
Storage Bay Dist (ft)			200	200			500
Storage Blk Time (%)			0	2	5	8	
Queuing Penalty (veh)			1	23	15	43	

Zone Summary

Zone wide Queuing Penalty: 319

## **2026 Buildout Conditions**

### **No Basalt Creek Parkway Extension**

AM Peak Hour Synchro Reports

PM Peak Hour Synchro Reports

AM Peak Hour Queuing Reports





















PM Peak Hour Queuing Reports



# HCM Signalized Intersection Capacity Analysis

## 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

01/24/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	233	1	288	2	1	16	177	592	5	6	524	110
Future Volume (vph)	233	1	288	2	1	16	177	592	5	6	524	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.91			0.94		1.00	1.00		1.00	1.00	0.91
Flpb, ped/bikes	0.95	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.85			0.88		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1688	1464			1569		1787	1841		1805	1827	1420
Flt Permitted	0.74	1.00			0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1319	1464			1537		1787	1841		1805	1827	1420
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	288	1	356	2	1	20	219	731	6	7	647	136
RTOR Reduction (vph)	0	252	0	0	15	0	0	0	0	0	0	44
Lane Group Flow (vph)	288	105	0	0	8	0	219	737	0	7	647	92
Confl. Peds. (#/hr)	24		26	26			24	8		28	28	
Confl. Bikes (#/hr)												5
Heavy Vehicles (%)	2%	0%	1%	0%	0%	0%	1%	3%	0%	0%	4%	3%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								6
Actuated Green, G (s)	22.6	22.6			22.6		11.3	50.2		1.0	39.9	39.9
Effective Green, g (s)	23.1	23.1			23.1		11.3	51.2		1.0	40.9	40.9
Actuated g/C Ratio	0.26	0.26			0.26		0.13	0.59		0.01	0.47	0.47
Clearance Time (s)	4.5	4.5			4.5		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	2.3	2.3			2.5		2.3	4.3		2.3	4.3	4.3
Lane Grp Cap (vph)	349	387			406		231	1079		20	855	665
v/s Ratio Prot		0.07					c0.12	0.40		0.00	c0.35	
v/s Ratio Perm	c0.22				0.01							0.06
v/c Ratio	0.83	0.27			0.02		0.95	0.68		0.35	0.76	0.14
Uniform Delay, d1	30.2	25.4			23.7		37.7	12.4		42.8	19.1	13.2
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	14.2	0.2			0.0		44.2	2.0		6.1	4.2	0.2
Delay (s)	44.4	25.6			23.7		81.9	14.5		48.9	23.4	13.3
Level of Service	D	C			C		F	B		D	C	B
Approach Delay (s)		34.0			23.7			29.9			21.9	
Approach LOS		C			C			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			28.3				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			87.3				Sum of lost time (s)		12.0			
Intersection Capacity Utilization			67.7%				ICU Level of Service			C		
Analysis Period (min)			15									
c	Critical Lane Group											

# HCM 6th Signalized Intersection Summary

## 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

01/24/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	233	1	288	2	1	16	177	592	5	6	524	110
Future Volume (veh/h)	233	1	288	2	1	16	177	592	5	6	524	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		0.95	0.97		0.95	1.00		0.98	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1900	1885	1900	1900	1900	1885	1856	1900	1900	1841	1856
Adj Flow Rate, veh/h	288	1	183	2	1	14	219	731	6	7	647	87
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	2	0	1	0	0	0	1	3	0	0	4	3
Cap, veh/h	438	2	387	74	49	324	259	1062	9	13	812	655
Arrive On Green	0.26	0.26	0.25	0.25	0.26	0.25	0.14	0.58	0.56	0.01	0.44	0.44
Sat Flow, veh/h	1330	8	1519	78	194	1269	1795	1837	15	1810	1841	1486
Grp Volume(v), veh/h	288	0	184	17	0	0	219	0	737	7	647	87
Grp Sat Flow(s),veh/h/ln	1330	0	1528	1541	0	0	1795	0	1852	1810	1841	1486
Q Serve(g_s), s	14.6	0.0	7.7	0.0	0.0	0.0	8.9	0.0	21.0	0.3	22.8	2.6
Cycle Q Clear(g_c), s	15.3	0.0	7.7	0.6	0.0	0.0	8.9	0.0	21.0	0.3	22.8	2.6
Prop In Lane	1.00		0.99	0.12		0.82	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	438	0	390	436	0	0	259	0	1071	13	812	655
V/C Ratio(X)	0.66	0.00	0.47	0.04	0.00	0.00	0.85	0.00	0.69	0.53	0.80	0.13
Avail Cap(c_a), veh/h	559	0	529	503	0	0	263	0	1381	265	1372	1108
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.5	0.0	23.9	21.3	0.0	0.0	31.3	0.0	11.1	37.2	18.1	12.5
Incr Delay (d2), s/veh	1.2	0.0	0.5	0.0	0.0	0.0	20.9	0.0	1.4	19.1	2.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	0.0	2.7	0.2	0.0	0.0	5.2	0.0	7.4	0.2	9.2	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.7	0.0	24.5	21.3	0.0	0.0	52.2	0.0	12.5	56.3	21.0	12.6
LnGrp LOS	C	A	C	C	A	A	D	A	B	E	C	B
Approach Vol, veh/h		472			17			956			741	
Approach Delay, s/veh		26.4			21.3			21.6			20.3	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.5	47.4		23.2	14.8	37.1		23.2				
Change Period (Y+Rc), s	4.0	5.0		4.5	4.0	5.0		4.5				
Max Green Setting (Gmax), s	11.0	55.0		25.5	11.0	55.0		22.0				
Max Q Clear Time (g_c+I1), s	2.3	23.0		17.3	10.9	24.8		2.6				
Green Ext Time (p_c), s	0.0	8.3		1.4	0.0	7.4		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				22.2								
HCM 6th LOS				C								

HCM 6th TWSC  
2: SW Boones Ferry Road & SW Norwood Road

01/24/2023

Intersection						
Int Delay, s/veh	8.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑	↗↘	↘↗	↑
Traffic Vol, veh/h	106	169	426	48	74	302
Future Vol, veh/h	106	169	426	48	74	302
Conflicting Peds, #/hr	0	2	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	65	290	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	3	3	1	8	4	1
Mvmt Flow	131	209	526	59	91	373

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1081	528	0	0	585
Stage 1	526	-	-	-	-
Stage 2	555	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.14
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.236
Pot Cap-1 Maneuver	240	548	-	-	980
Stage 1	591	-	-	-	-
Stage 2	573	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	218	547	-	-	980
Mov Cap-2 Maneuver	351	-	-	-	-
Stage 1	591	-	-	-	-
Stage 2	520	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	33.7	0	1.8
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	450	980
HCM Lane V/C Ratio	-	-	0.754	0.093
HCM Control Delay (s)	-	-	33.7	9.1
HCM Lane LOS	-	-	D	A
HCM 95th %tile Q(veh)	-	-	6.3	0.3

HCM 6th TWSC  
3: Site Access & SW Norwood Road

01/24/2023

Intersection						
Int Delay, s/veh	2.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	100	22	4	206	70	12
Future Vol, veh/h	100	22	4	206	70	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	5	2	2	3	0	0
Mvmt Flow	123	27	5	254	86	15

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	150	0	401
Stage 1	-	-	-	-	137
Stage 2	-	-	-	-	264
Critical Hdwy	-	-	4.12	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.218	-	3.5
Pot Cap-1 Maneuver	-	-	1431	-	609
Stage 1	-	-	-	-	895
Stage 2	-	-	-	-	785
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1431	-	607
Mov Cap-2 Maneuver	-	-	-	-	607
Stage 1	-	-	-	-	895
Stage 2	-	-	-	-	782

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	639	-	-	1431	-
HCM Lane V/C Ratio	0.158	-	-	0.003	-
HCM Control Delay (s)	11.7	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0	-



Intersection												
Int Delay, s/veh	8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↗
Traffic Vol, veh/h	179	0	9	0	0	0	25	2	0	0	0	127
Future Vol, veh/h	179	0	9	0	0	0	25	2	0	0	0	127
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	-	-	-	15
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	0	0	0	0	0	4	0	0	0	0	0
Mvmt Flow	229	0	12	0	0	0	32	3	0	0	0	163

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	12	0	0	465	465	6	467	471	-
Stage 1	-	-	-	-	-	-	464	464	-	1	1	-
Stage 2	-	-	-	-	-	-	1	1	-	466	470	-
Critical Hdwy	4.12	-	-	4.1	-	-	7.14	6.5	6.2	7.1	6.5	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.218	-	-	2.2	-	-	3.536	4	3.3	3.5	4	-
Pot Cap-1 Maneuver	1622	-	-	1620	-	-	504	498	1083	509	494	0
Stage 1	-	-	-	-	-	-	575	567	-	1027	899	0
Stage 2	-	-	-	-	-	-	1017	899	-	581	563	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1622	-	-	1620	-	-	449	427	1083	451	424	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	449	427	-	451	424	-
Stage 1	-	-	-	-	-	-	493	486	-	881	899	-
Stage 2	-	-	-	-	-	-	1017	899	-	496	483	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	7.2	0	13.7	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	447	1622	-	-	1620	-	-	-	-
HCM Lane V/C Ratio	0.077	0.141	-	-	-	-	-	-	-
HCM Control Delay (s)	13.7	7.6	0	-	0	-	-	0	0
HCM Lane LOS	B	A	A	-	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	0.5	-	-	0	-	-	-	-

HCM Signalized Intersection Capacity Analysis  
6: SW Boones Ferry Road & SW Day Road

01/24/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	0	523	0	0	0	544	472	0	0	386	53
Future Volume (vph)	45	0	523	0	0	0	544	472	0	0	386	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.3	4.7				4.9	4.0			4.0	
Lane Util. Factor		1.00	1.00				*0.85	1.00			0.95	
Frbp, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Flpb, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Frt		1.00	0.85				1.00	1.00			0.98	
Flt Protected		0.95	1.00				0.95	1.00			1.00	
Satd. Flow (prot)		1703	1495				2868	1881			3457	
Flt Permitted		0.76	1.00				0.95	1.00			1.00	
Satd. Flow (perm)		1357	1495				2868	1881			3457	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	52	0	608	0	0	0	633	549	0	0	449	62
RTOR Reduction (vph)	0	0	104	0	0	0	0	0	0	0	9	0
Lane Group Flow (vph)	0	52	504	0	0	0	633	549	0	0	502	0
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	6%	0%	8%	0%	0%	0%	7%	1%	0%	0%	2%	5%
Turn Type	Perm	NA	pm+ov				Prot	NA		Prot	NA	
Protected Phases		8	1		4		1	6		5	2	
Permitted Phases	8		8	4								
Actuated Green, G (s)		8.2	35.3				27.1	76.9			44.4	
Effective Green, g (s)		8.4	36.7				27.6	78.3			45.8	
Actuated g/C Ratio		0.09	0.39				0.29	0.82			0.48	
Clearance Time (s)		4.5	5.4				5.4	5.4			5.4	
Vehicle Extension (s)		2.5	2.3				2.3	4.4			4.4	
Lane Grp Cap (vph)		119	577				833	1550			1666	
v/s Ratio Prot			c0.26				0.22	c0.29			0.15	
v/s Ratio Perm		0.04	0.08									
v/c Ratio		0.44	0.87				0.76	0.35			0.30	
Uniform Delay, d1		41.1	27.0				30.7	2.1			14.9	
Progression Factor		1.00	1.00				1.00	1.00			1.00	
Incremental Delay, d2		1.9	13.6				3.7	0.6			0.5	
Delay (s)		42.9	40.6				34.4	2.7			15.4	
Level of Service		D	D				C	A			B	
Approach Delay (s)		40.8			0.0			19.7			15.4	
Approach LOS		D			A			B			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			24.7				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			95.0				Sum of lost time (s)			13.2		
Intersection Capacity Utilization			52.0%				ICU Level of Service			A		
Analysis Period (min)			15									

c Critical Lane Group

# HCM 6th Signalized Intersection Summary

## 6: SW Boones Ferry Road & SW Day Road

01/24/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔		↖↗	↖		↖	↕	
Traffic Volume (veh/h)	45	0	523	0	0	0	544	472	0	0	386	53
Future Volume (veh/h)	45	0	523	0	0	0	544	472	0	0	386	53
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1900	1781	1900	1900	1900	1796	1885	1900	1900	1870	1826
Adj Flow Rate, veh/h	52	0	492	0	0	0	633	549	0	0	449	56
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	6	0	8	0	0	0	7	1	0	0	2	5
Cap, veh/h	314	0	654	0	320	0	758	674	0	612	1382	171
Arrive On Green	0.16	0.00	0.17	0.00	0.00	0.00	0.26	0.36	0.00	0.00	0.44	0.42
Sat Flow, veh/h	1440	0	1510	0	1900	0	2908	1885	0	1810	3176	394
Grp Volume(v), veh/h	52	0	492	0	0	0	633	549	0	0	250	255
Grp Sat Flow(s),veh/h/ln	1440	0	1510	0	1900	0	1454	1885	0	1810	1777	1794
Q Serve(g_s), s	3.0	0.0	16.2	0.0	0.0	0.0	19.5	25.1	0.0	0.0	8.8	8.9
Cycle Q Clear(g_c), s	3.0	0.0	16.2	0.0	0.0	0.0	19.5	25.1	0.0	0.0	8.8	8.9
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.22
Lane Grp Cap(c), veh/h	311	0	654	0	320	0	758	674	0	612	773	780
V/C Ratio(X)	0.17	0.00	0.75	0.00	0.00	0.00	0.83	0.81	0.00	0.00	0.32	0.33
Avail Cap(c_a), veh/h	311	0	654	0	320	0	1105	1151	0	612	773	780
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	34.4	0.0	22.6	0.0	0.0	0.0	33.2	27.7	0.0	0.0	17.6	17.8
Incr Delay (d2), s/veh	0.2	0.0	4.7	0.0	0.0	0.0	3.0	10.4	0.0	0.0	1.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	9.3	0.0	0.0	0.0	7.0	12.7	0.0	0.0	3.5	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.6	0.0	27.3	0.0	0.0	0.0	36.2	38.1	0.0	0.0	18.7	18.9
LnGrp LOS	C	A	C	A	A	A	D	D	A	A	B	B
Approach Vol, veh/h		544			0			1182			505	
Approach Delay, s/veh		28.0			0.0			37.1			18.8	
Approach LOS		C						D			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	29.7	45.3		20.0	37.0	38.0		20.0				
Change Period (Y+Rc), s	* 5.4	* 5.4		4.5	* 5.4	* 5.4		4.5				
Max Green Setting (Gmax), s	* 36	* 29		15.5	* 8.5	* 57		15.5				
Max Q Clear Time (g_c+I1), s	21.5	10.9		0.0	0.0	27.1		18.2				
Green Ext Time (p_c), s	2.7	3.6		0.0	0.0	5.5		0.0				

### Intersection Summary





















HCM 6th Ctrl Delay	30.7
HCM 6th LOS	C

### Notes

- User approved pedestrian interval to be less than phase max green.
- \* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis  
 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

12/12/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	191	3	169	1	1	12	186	684	3	5	745	258
Future Volume (vph)	191	3	169	1	1	12	186	684	3	5	745	258
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5		4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.97			0.96		1.00	1.00		1.00	1.00	0.93
Flpb, ped/bikes	0.97	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.85			0.88		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1583	1410			1444		1624	1643		1624	1710	1346
Flt Permitted	0.75	1.00			0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1246	1410			1430		1624	1643		1624	1710	1346
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	208	3	184	1	1	13	202	743	3	5	810	280
RTOR Reduction (vph)	0	146	0	0	10	0	0	0	0	0	0	62
Lane Group Flow (vph)	208	41	0	0	5	0	202	746	0	5	810	218
Confl. Peds. (#/hr)	12		4	4			12	4		19	19	19
Confl. Bikes (#/hr)			1							2		2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								6
Actuated Green, G (s)	19.7	19.7			19.7		11.3	62.2		1.1	52.0	52.0
Effective Green, g (s)	19.7	19.7			19.7		11.3	62.2		1.1	52.0	52.0
Actuated g/C Ratio	0.20	0.20			0.20		0.12	0.64		0.01	0.54	0.54
Clearance Time (s)	4.5	4.5			4.5		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	2.3	2.3			2.5		2.3	4.3		2.3	4.3	4.3
Lane Grp Cap (vph)	254	287			291		190	1059		18	921	725
v/s Ratio Prot		0.03					c0.12	0.45		0.00	c0.47	
v/s Ratio Perm	c0.17				0.00							0.16
v/c Ratio	0.82	0.14			0.02		1.06	0.70		0.28	0.88	0.30
Uniform Delay, d1	36.7	31.5			30.7		42.6	11.2		47.3	19.5	12.2
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	17.6	0.1			0.0		83.0	2.4		4.9	10.0	0.4
Delay (s)	54.3	31.6			30.7		125.6	13.6		52.2	29.5	12.6
Level of Service	D	C			C		F	B		D	C	B
Approach Delay (s)		43.6			30.7			37.4			25.3	
Approach LOS		D			C			D			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			33.0				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			96.5				Sum of lost time (s)				13.5	
Intersection Capacity Utilization			84.7%				ICU Level of Service				E	
Analysis Period (min)			15									
c Critical Lane Group												

# HCM 6th Signalized Intersection Summary

## 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

12/12/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	191	3	169	1	1	12	186	684	3	5	745	258
Future Volume (veh/h)	191	3	169	1	1	12	186	684	3	5	745	258
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.95	0.98		0.97	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1710	1710	1710	1710	1710	1710	1710	1657	1710	1710	1710	1710
Adj Flow Rate, veh/h	208	3	108	1	1	13	202	743	3	5	810	193
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	4	0	0	0	0
Cap, veh/h	324	7	259	48	32	239	201	1071	4	9	909	740
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.12	0.65	0.65	0.01	0.53	0.53
Sat Flow, veh/h	1242	37	1343	25	165	1238	1629	1649	7	1629	1710	1393
Grp Volume(v), veh/h	208	0	111	15	0	0	202	0	746	5	810	193
Grp Sat Flow(s),veh/h/ln	1242	0	1381	1428	0	0	1629	0	1655	1629	1710	1393
Q Serve(g_s), s	13.4	0.0	6.3	0.0	0.0	0.0	11.0	0.0	25.5	0.3	37.5	6.7
Cycle Q Clear(g_c), s	14.2	0.0	6.3	0.8	0.0	0.0	11.0	0.0	25.5	0.3	37.5	6.7
Prop In Lane	1.00		0.97	0.07		0.87	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	324	0	267	319	0	0	201	0	1076	9	909	740
V/C Ratio(X)	0.64	0.00	0.42	0.05	0.00	0.00	1.00	0.00	0.69	0.59	0.89	0.26
Avail Cap(c_a), veh/h	440	0	396	450	0	0	201	0	1076	201	1058	862
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.6	0.0	31.5	29.2	0.0	0.0	39.0	0.0	9.9	44.1	18.6	11.3
Incr Delay (d2), s/veh	1.3	0.0	0.6	0.0	0.0	0.0	64.1	0.0	2.2	33.6	9.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	0.0	2.1	0.3	0.0	0.0	7.8	0.0	8.2	0.2	15.4	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.9	0.0	32.1	29.3	0.0	0.0	103.0	0.0	12.2	77.8	28.0	11.6
LnGrp LOS	D	A	C	C	A	A	F	A	B	E	C	B
Approach Vol, veh/h		319			15			948			1008	
Approach Delay, s/veh		34.6			29.3			31.5			25.1	
Approach LOS		C			C			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.5	62.8		21.7	15.0	52.2		21.7				
Change Period (Y+Rc), s	4.0	5.0		4.5	4.0	5.0		4.5				
Max Green Setting (Gmax), s	11.0	55.0		25.5	11.0	55.0		25.5				
Max Q Clear Time (g_c+I1), s	2.3	27.5		16.2	13.0	39.5		2.8				
Green Ext Time (p_c), s	0.0	8.0		1.0	0.0	7.7		0.0				

### Intersection Summary

HCM 6th Ctrl Delay	29.1
HCM 6th LOS	C

HCM 6th TWSC  
 2: SW Boones Ferry Road & SW Norwood Road

12/12/2022

Intersection						
Int Delay, s/veh	5.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑	↑	↑	↑
Traffic Vol, veh/h	69	140	557	145	165	631
Future Vol, veh/h	69	140	557	145	165	631
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	65	290	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	0	0	0	0	0
Mvmt Flow	76	154	612	159	181	693

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1667	612	0	0	771	0
Stage 1	612	-	-	-	-	-
Stage 2	1055	-	-	-	-	-
Critical Hdwy	6.42	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	106	497	-	-	853	-
Stage 1	541	-	-	-	-	-
Stage 2	335	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	84	497	-	-	853	-
Mov Cap-2 Maneuver	195	-	-	-	-	-
Stage 1	541	-	-	-	-	-
Stage 2	264	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	37.7	0	2.1
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	329	853
HCM Lane V/C Ratio	-	-	0.698	0.213
HCM Control Delay (s)	-	-	37.7	10.4
HCM Lane LOS	-	-	E	B
HCM 95th %tile Q(veh)	-	-	5	0.8

HCM 6th TWSC  
3: Site Access & SW Norwood Road

12/12/2022

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	236	75	13	167	43	8
Future Vol, veh/h	236	75	13	167	43	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	259	82	14	184	47	9

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	341	0	512
Stage 1	-	-	-	-	300
Stage 2	-	-	-	-	212
Critical Hdwy	-	-	4.12	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.218	-	3.5
Pot Cap-1 Maneuver	-	-	1218	-	525
Stage 1	-	-	-	-	756
Stage 2	-	-	-	-	828
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1218	-	518
Mov Cap-2 Maneuver	-	-	-	-	518
Stage 1	-	-	-	-	756
Stage 2	-	-	-	-	817

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	12.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	544	-	-	1218	-
HCM Lane V/C Ratio	0.103	-	-	0.012	-
HCM Control Delay (s)	12.4	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection												
Int Delay, s/veh	7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↗
Traffic Vol, veh/h	131	0	25	0	0	0	22	3	0	0	4	165
Future Vol, veh/h	131	0	25	0	0	0	22	3	0	0	4	165
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	-	-	-	15
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	1	0	0	0	0	0	5	0	0	0	0	0
Mvmt Flow	144	0	27	0	0	0	24	3	0	0	4	181

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	27	0	0	305	303	14	304	316	-
Stage 1	-	-	-	-	-	-	302	302	-	1	1	-
Stage 2	-	-	-	-	-	-	3	1	-	303	315	-
Critical Hdwy	4.11	-	-	4.1	-	-	7.15	6.5	6.2	7.1	6.5	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.209	-	-	2.2	-	-	3.545	4	3.3	3.5	4	-
Pot Cap-1 Maneuver	1628	-	-	1600	-	-	641	613	1072	652	603	0
Stage 1	-	-	-	-	-	-	701	668	-	1027	899	0
Stage 2	-	-	-	-	-	-	1012	899	-	711	659	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1628	-	-	1600	-	-	594	558	1072	604	549	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	594	558	-	604	549	-
Stage 1	-	-	-	-	-	-	638	608	-	935	899	-
Stage 2	-	-	-	-	-	-	1007	899	-	644	600	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	6.2			0			11.4			11.6		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	589	1628	-	-	1600	-	-	549	-
HCM Lane V/C Ratio	0.047	0.088	-	-	-	-	-	0.008	-
HCM Control Delay (s)	11.4	7.4	0	-	0	-	-	11.6	0
HCM Lane LOS	B	A	A	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	0.3	-	-	0	-	-	0	-























HCM Signalized Intersection Capacity Analysis  
 6: SW Boones Ferry Road & SW Day Road

12/12/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	0	589	0	0	0	583	676	0	0	647	44
Future Volume (vph)	50	0	589	0	0	0	583	676	0	0	647	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0				4.0	4.0			4.0	
Lane Util. Factor		1.00	1.00				*0.85	1.00			0.95	
Frbp, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Flpb, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Frt		1.00	0.85				1.00	1.00			0.99	
Flt Protected		0.95	1.00				0.95	1.00			1.00	
Satd. Flow (prot)		1802	1583				2895	1900			3567	
Flt Permitted		0.76	1.00				0.95	1.00			1.00	
Satd. Flow (perm)		1436	1583				2895	1900			3567	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	55	0	647	0	0	0	641	743	0	0	711	48
RTOR Reduction (vph)	0	0	45	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	0	55	602	0	0	0	641	743	0	0	755	0
Confl. Peds. (#/hr)	1						1					
Confl. Bikes (#/hr)									3			
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	6%	0%	0%	0%	0%	4%
Turn Type	Perm	NA	pm+ov				Prot	NA		Prot	NA	
Protected Phases		8	1		4		1	6		5	2	
Permitted Phases	8		8	4								
Actuated Green, G (s)		8.2	44.3				36.1	86.9			45.4	
Effective Green, g (s)		8.7	47.1				37.5	88.3			46.8	
Actuated g/C Ratio		0.08	0.45				0.36	0.84			0.45	
Clearance Time (s)		4.5	5.4				5.4	5.4			5.4	
Vehicle Extension (s)		2.5	2.3				2.3	4.4			4.4	
Lane Grp Cap (vph)		118	710				1033	1597			1589	
v/s Ratio Prot			c0.30				0.22	c0.39			0.21	
v/s Ratio Perm		0.04	0.08									
v/c Ratio		0.47	0.85				0.62	0.47			0.48	
Uniform Delay, d1		45.9	25.8				27.9	2.2			20.5	
Progression Factor		1.00	1.00				1.00	1.00			1.00	
Incremental Delay, d2		2.1	9.1				0.9	1.0			1.0	
Delay (s)		48.0	34.8				28.8	3.2			21.5	
Level of Service		D	C				C	A			C	
Approach Delay (s)		35.9			0.0			15.0			21.5	
Approach LOS		D			A			B			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			21.9				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			105.0				Sum of lost time (s)			13.0		
Intersection Capacity Utilization			62.4%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary  
6: SW Boones Ferry Road & SW Day Road

12/12/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	0	589	0	0	0	583	676	0	0	647	44
Future Volume (veh/h)	50	0	589	0	0	0	583	676	0	0	647	44
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1870	1900	1900	1900	1811	1900	1900	1900	1900	1841
Adj Flow Rate, veh/h	55	0	587	0	0	0	641	743	0	0	711	48
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	2	0	0	0	6	0	0	0	0	4
Cap, veh/h	274	0	662	0	271	0	781	873	0	480	1635	110
Arrive On Green	0.14	0.00	0.15	0.00	0.00	0.00	0.27	0.46	0.00	0.00	0.48	0.46
Sat Flow, veh/h	1435	0	1582	0	1900	0	2932	1900	0	1810	3432	232
Grp Volume(v), veh/h	55	0	587	0	0	0	641	743	0	0	374	385
Grp Sat Flow(s),veh/h/ln	1435	0	1582	0	1900	0	1466	1900	0	1810	1805	1858
Q Serve(g_s), s	3.6	0.0	15.9	0.0	0.0	0.0	21.5	36.5	0.0	0.0	14.4	14.4
Cycle Q Clear(g_c), s	3.6	0.0	15.9	0.0	0.0	0.0	21.5	36.5	0.0	0.0	14.4	14.4
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.12
Lane Grp Cap(c), veh/h	267	0	662	0	271	0	781	873	0	480	860	885
V/C Ratio(X)	0.21	0.00	0.89	0.00	0.00	0.00	0.82	0.85	0.00	0.00	0.43	0.44
Avail Cap(c_a), veh/h	267	0	662	0	271	0	1201	1249	0	480	860	885
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	40.3	0.0	28.3	0.0	0.0	0.0	36.2	25.2	0.0	0.0	18.1	18.2
Incr Delay (d2), s/veh	0.3	0.0	13.6	0.0	0.0	0.0	2.0	10.3	0.0	0.0	1.6	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	15.2	0.0	0.0	0.0	7.7	17.9	0.0	0.0	5.9	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.6	0.0	41.9	0.0	0.0	0.0	38.1	35.5	0.0	0.0	19.7	19.8
LnGrp LOS	D	A	D	A	A	A	D	D	A	A	B	B
Approach Vol, veh/h		642			0			1384			759	
Approach Delay, s/veh		41.8			0.0			36.7			19.8	
Approach LOS		D						D			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	32.0	54.0		19.0	33.8	52.2		19.0				
Change Period (Y+Rc), s	* 5.4	* 5.4		4.5	* 5.4	* 5.4		4.5				
Max Green Setting (Gmax), s	* 42	* 34		14.5	* 8.5	* 68		14.5				
Max Q Clear Time (g_c+I1), s	23.5	16.4		0.0	0.0	38.5		17.9				
Green Ext Time (p_c), s	3.0	5.6		0.0	0.0	8.4		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			33.3									
HCM 6th LOS			C									
<b>Notes</b>												
User approved pedestrian interval to be less than phase max green.												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Intersection: 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

Movement	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	LTR	L	TR	L	T	R
Maximum Queue (ft)	300	254	60	194	902	34	408	208
Average Queue (ft)	116	91	15	123	277	6	185	57
95th Queue (ft)	225	183	43	213	764	26	331	168
Link Distance (ft)	622	622	761		2493		697	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)				95		105		110
Storage Blk Time (%)				28	15		19	
Queuing Penalty (veh)				175	27		23	

Intersection: 2: SW Boones Ferry Road & SW Norwood Road

Movement	WB	NB	SB
Directions Served	LR	T	L
Maximum Queue (ft)	202	15	62
Average Queue (ft)	71	1	20
95th Queue (ft)	148	8	51
Link Distance (ft)	489	1810	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			290
Storage Blk Time (%)		0	
Queuing Penalty (veh)		0	

Intersection: 3: Site Access & SW Norwood Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	5	60
Average Queue (ft)	0	36
95th Queue (ft)	4	58
Link Distance (ft)	2644	350
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: SW 82nd Avenue & SW Norwood Road/Driveway

Movement	NB
Directions Served	LTR
Maximum Queue (ft)	48
Average Queue (ft)	17
95th Queue (ft)	41
Link Distance (ft)	494
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: SW Boones Ferry Road & SW Day Road

Movement	EB	EB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	L	TR	T	TR
Maximum Queue (ft)	89	244	297	462	204	147	172
Average Queue (ft)	35	115	168	223	51	67	71
95th Queue (ft)	75	213	289	358	145	130	147
Link Distance (ft)	727	727		930	930	1961	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			200				500
Storage Blk Time (%)			3	14		3	
Queuing Penalty (veh)			7	39		6	

Zone Summary

Zone wide Queuing Penalty: 278

Intersection: 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

Movement	EB	EB	WB	NB	NB	SB	SB	SB	B21
Directions Served	L	TR	LTR	L	TR	L	T	R	T
Maximum Queue (ft)	204	146	34	195	964	139	718	210	85
Average Queue (ft)	107	70	9	153	445	9	360	140	4
95th Queue (ft)	174	129	31	229	1176	59	654	276	51
Link Distance (ft)	622	622	761		2493		697		2246
Upstream Blk Time (%)							2		
Queuing Penalty (veh)							0		
Storage Bay Dist (ft)				95		105		110	
Storage Blk Time (%)				49	16		30	0	
Queuing Penalty (veh)				337	29		80	0	

Intersection: 2: SW Boones Ferry Road & SW Norwood Road

Movement	WB	NB	SB
Directions Served	LR	R	L
Maximum Queue (ft)	334	27	113
Average Queue (ft)	128	2	49
95th Queue (ft)	315	14	89
Link Distance (ft)	489		
Upstream Blk Time (%)	1		
Queuing Penalty (veh)	2		
Storage Bay Dist (ft)		65	290
Storage Blk Time (%)		0	
Queuing Penalty (veh)		0	

Intersection: 3: Site Access & SW Norwood Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	49	53
Average Queue (ft)	5	27
95th Queue (ft)	30	49
Link Distance (ft)	2644	350
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: SW 82nd Avenue & SW Norwood Road/Driveway

Movement	EB	NB	SB	SB
Directions Served	LTR	LTR	LT	R
Maximum Queue (ft)	6	43	31	8
Average Queue (ft)	0	18	3	0
95th Queue (ft)	4	41	19	0
Link Distance (ft)	2644	494	648	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				15
Storage Blk Time (%)			0	
Queuing Penalty (veh)			1	

Intersection: 6: SW Boones Ferry Road & SW Day Road

Movement	EB	EB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	L	TR	T	TR
Maximum Queue (ft)	87	341	299	492	313	228	253
Average Queue (ft)	33	148	190	246	87	110	126
95th Queue (ft)	71	268	315	383	227	200	233
Link Distance (ft)	727	727		930	930	1961	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			200				500
Storage Blk Time (%)			3	18		10	
Queuing Penalty (veh)			8	52		36	

Zone Summary

Zone wide Queuing Penalty: 545
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## **2026 Buildout Conditions With Basalt Creek Parkway Extension**

AM Peak Hour Synchro Reports

PM Peak Hour Synchro Reports

AM Peak Hour Queuing Reports

PM Peak Hour Queuing Reports



HCM Signalized Intersection Capacity Analysis  
 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

01/26/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	175	1	287	2	1	16	171	666	5	6	620	82
Future Volume (vph)	175	1	287	2	1	16	171	666	5	6	620	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.92			0.94		1.00	1.00		1.00	1.00	0.91
Flpb, ped/bikes	0.96	1.00			1.00		1.00	1.00		0.97	1.00	1.00
Frt	1.00	0.85			0.88		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1692	1469			1573		1787	1842		1757	1827	1426
Flt Permitted	0.74	1.00			0.93		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1322	1469			1471		1787	1842		1757	1827	1426
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	216	1	354	2	1	20	211	822	6	7	765	101
RTOR Reduction (vph)	0	211	0	0	16	0	0	0	0	0	0	51
Lane Group Flow (vph)	216	144	0	0	7	0	211	828	0	7	765	50
Confl. Peds. (#/hr)	24		26	26		24	8		28	28		28
Confl. Bikes (#/hr)												5
Heavy Vehicles (%)	2%	0%	1%	0%	0%	0%	1%	3%	0%	0%	4%	3%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								6
Actuated Green, G (s)	17.3	17.3			17.3		11.8	51.6		0.7	40.5	40.5
Effective Green, g (s)	17.8	17.8			17.8		11.8	52.6		0.7	41.5	41.5
Actuated g/C Ratio	0.21	0.21			0.21		0.14	0.63		0.01	0.50	0.50
Clearance Time (s)	4.5	4.5			4.5		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	2.3	2.3			2.5		2.3	4.3		2.3	4.3	4.3
Lane Grp Cap (vph)	283	314			315		253	1165		14	912	712
v/s Ratio Prot		0.10					c0.12	0.45		0.00	c0.42	
v/s Ratio Perm	c0.16				0.00							0.04
v/c Ratio	0.76	0.46			0.02		0.83	0.71		0.50	0.84	0.07
Uniform Delay, d1	30.7	28.5			25.8		34.7	10.2		41.0	17.9	10.8
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	10.8	0.6			0.0		19.9	2.3		15.4	7.3	0.1
Delay (s)	41.5	29.1			25.8		54.6	12.5		56.4	25.2	10.9
Level of Service	D	C			C		D	B		E	C	B
Approach Delay (s)		33.8			25.8			21.0			23.8	
Approach LOS		C			C			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			24.9				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			83.1				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			72.3%				ICU Level of Service				C	
Analysis Period (min)			15									
c Critical Lane Group												



# HCM 6th Signalized Intersection Summary

## 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

01/26/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	175	1	287	2	1	16	171	666	5	6	620	82
Future Volume (veh/h)	175	1	287	2	1	16	171	666	5	6	620	82
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.94		0.94	0.96		0.94	1.00		0.98	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1900	1885	1900	1900	1900	1885	1856	1900	1900	1841	1856
Adj Flow Rate, veh/h	216	1	181	2	1	14	211	822	6	7	765	52
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	2	0	1	0	0	0	1	3	0	0	4	3
Cap, veh/h	382	2	323	69	43	271	253	1136	8	13	891	721
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.14	0.62	0.60	0.01	0.48	0.48
Sat Flow, veh/h	1317	8	1503	70	201	1261	1795	1839	13	1810	1841	1491
Grp Volume(v), veh/h	216	0	182	17	0	0	211	0	828	7	765	52
Grp Sat Flow(s),veh/h/ln	1317	0	1511	1531	0	0	1795	0	1853	1810	1841	1491
Q Serve(g_s), s	10.7	0.0	8.1	0.0	0.0	0.0	8.6	0.0	23.1	0.3	27.5	1.4
Cycle Q Clear(g_c), s	11.3	0.0	8.1	0.6	0.0	0.0	8.6	0.0	23.1	0.3	27.5	1.4
Prop In Lane	1.00		0.99	0.12		0.82	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	382	0	325	373	0	0	253	0	1144	13	891	721
V/C Ratio(X)	0.56	0.00	0.56	0.05	0.00	0.00	0.83	0.00	0.72	0.53	0.86	0.07
Avail Cap(c_a), veh/h	504	0	464	509	0	0	288	0	1263	97	1058	857
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.4	0.0	26.5	23.5	0.0	0.0	31.3	0.0	9.9	37.0	17.1	10.3
Incr Delay (d2), s/veh	0.8	0.0	0.9	0.0	0.0	0.0	15.9	0.0	2.2	19.1	7.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.0	2.9	0.2	0.0	0.0	4.6	0.0	8.0	0.2	11.7	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.2	0.0	27.4	23.5	0.0	0.0	47.2	0.0	12.1	56.1	24.1	10.4
LnGrp LOS	C	A	C	C	A	A	D	A	B	E	C	B
Approach Vol, veh/h		398			17			1039			824	
Approach Delay, s/veh		27.8			23.5			19.2			23.5	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.5	50.2		20.1	14.5	40.2		20.1				
Change Period (Y+Rc), s	4.0	5.0		4.5	4.0	5.0		4.5				
Max Green Setting (Gmax), s	4.0	50.0		22.5	12.0	42.0		22.5				
Max Q Clear Time (g_c+I1), s	2.3	25.1		13.3	10.6	29.5		2.6				
Green Ext Time (p_c), s	0.0	9.0		1.2	0.1	5.7		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				22.3								
HCM 6th LOS				C								

HCM 6th TWSC  
 2: SW Boones Ferry Road & SW Norwood Road

01/26/2023

Intersection						
Int Delay, s/veh	11.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑	↗↘	↘↗	↑
Traffic Vol, veh/h	115	156	503	50	70	393
Future Vol, veh/h	115	156	503	50	70	393
Conflicting Peds, #/hr	0	2	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	65	290	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	3	3	1	8	4	1
Mvmt Flow	142	193	621	62	86	485

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1278	623	0	0	683
Stage 1	621	-	-	-	-
Stage 2	657	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.14
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.236
Pot Cap-1 Maneuver	183	484	-	-	901
Stage 1	534	-	-	-	-
Stage 2	514	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	166	483	-	-	901
Mov Cap-2 Maneuver	302	-	-	-	-
Stage 1	534	-	-	-	-
Stage 2	465	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	52.1	0	1.4
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	385	901
HCM Lane V/C Ratio	-	-	0.869	0.096
HCM Control Delay (s)	-	-	52.1	9.4
HCM Lane LOS	-	-	F	A
HCM 95th %tile Q(veh)	-	-	8.5	0.3

HCM 6th TWSC  
3: Site Access & SW Norwood Road

01/26/2023

Intersection						
Int Delay, s/veh	2.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	98	22	4	202	70	12
Future Vol, veh/h	98	22	4	202	70	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	5	2	2	3	0	0
Mvmt Flow	121	27	5	249	86	15
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	148	0	394	135
Stage 1	-	-	-	-	135	-
Stage 2	-	-	-	-	259	-
Critical Hdwy	-	-	4.12	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.218	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1434	-	615	919
Stage 1	-	-	-	-	896	-
Stage 2	-	-	-	-	789	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1434	-	613	919
Mov Cap-2 Maneuver	-	-	-	-	613	-
Stage 1	-	-	-	-	896	-
Stage 2	-	-	-	-	786	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	0.1	11.6			
HCM LOS						B
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	644	-	-	1434	-	
HCM Lane V/C Ratio	0.157	-	-	0.003	-	
HCM Control Delay (s)	11.6	-	-	7.5	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.6	-	-	0	-	

HCM 6th TWSC  
 4: SW 82nd Avenue & SW Norwood Road/Driveway

01/26/2023

Intersection												
Int Delay, s/veh	8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↗
Traffic Vol, veh/h	179	0	9	0	0	0	25	2	0	0	0	128
Future Vol, veh/h	179	0	9	0	0	0	25	2	0	0	0	128
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	-	-	-	15
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	0	0	0	0	0	4	0	0	0	0	0
Mvmt Flow	229	0	12	0	0	0	32	3	0	0	0	164

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	12	0	0	465	465	6	467	471	-
Stage 1	-	-	-	-	-	-	464	464	-	1	1	-
Stage 2	-	-	-	-	-	-	1	1	-	466	470	-
Critical Hdwy	4.12	-	-	4.1	-	-	7.14	6.5	6.2	7.1	6.5	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.14	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.14	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.218	-	-	2.2	-	-	3.536	4	3.3	3.5	4	-
Pot Cap-1 Maneuver	1622	-	-	1620	-	-	504	498	1083	509	494	0
Stage 1	-	-	-	-	-	-	575	567	-	1027	899	0
Stage 2	-	-	-	-	-	-	1017	899	-	581	563	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1622	-	-	1620	-	-	449	427	1083	451	424	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	449	427	-	451	424	-
Stage 1	-	-	-	-	-	-	493	486	-	881	899	-
Stage 2	-	-	-	-	-	-	1017	899	-	496	483	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	7.2	0	13.7	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	447	1622	-	-	1620	-	-	-	-
HCM Lane V/C Ratio	0.077	0.141	-	-	-	-	-	-	-
HCM Control Delay (s)	13.7	7.6	0	-	0	-	-	0	0
HCM Lane LOS	B	A	A	-	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	0.5	-	-	0	-	-	-	-

# HCM Signalized Intersection Capacity Analysis

## 5: SW Boones Ferry Road & Basalt Creek Parkway Extension

01/26/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	41	524	454	557	440	115
Future Volume (vph)	41	524	454	557	440	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.97	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1805	1615	1687	1881	1795	
Flt Permitted	0.95	1.00	0.24	1.00	1.00	
Satd. Flow (perm)	1805	1615	422	1881	1795	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	48	609	528	648	512	134
RTOR Reduction (vph)	0	126	0	0	8	0
Lane Group Flow (vph)	48	483	528	648	638	0
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	0%	0%	7%	1%	2%	5%
Turn Type	Prot	pt+ov	pm+pt	NA	NA	
Protected Phases	8	8 1	1	6	2	
Permitted Phases			6			
Actuated Green, G (s)	8.9	38.7	76.2	76.2	46.4	
Effective Green, g (s)	9.4	34.3	77.6	77.6	47.8	
Actuated g/C Ratio	0.10	0.36	0.82	0.82	0.50	
Clearance Time (s)	4.5		5.4	5.4	5.4	
Vehicle Extension (s)	2.5		2.3	4.4	4.4	
Lane Grp Cap (vph)	178	583	688	1536	903	
v/s Ratio Prot	0.03	c0.30	0.21	0.34	0.36	
v/s Ratio Perm			c0.42			
v/c Ratio	0.27	0.83	0.77	0.42	0.71	
Uniform Delay, d1	39.6	27.7	16.5	2.4	18.2	
Progression Factor	1.00	1.00	1.02	1.34	1.00	
Incremental Delay, d2	0.6	9.3	3.7	0.7	4.6	
Delay (s)	40.2	36.9	20.5	3.9	22.8	
Level of Service	D	D	C	A	C	
Approach Delay (s)	37.2			11.4	22.8	
Approach LOS	D			B	C	

### Intersection Summary

HCM 2000 Control Delay	21.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	12.9
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

# HCM 6th Signalized Intersection Summary

## 5: SW Boones Ferry Road & Basalt Creek Parkway Extension

01/26/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	41	524	454	557	440	115
Future Volume (veh/h)	41	524	454	557	440	115
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1796	1885	1870	1826
Adj Flow Rate, veh/h	48	493	528	648	512	122
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	0	0	7	1	2	5
Cap, veh/h	124	775	807	1597	556	133
Arrive On Green	0.07	0.07	0.42	0.85	0.38	0.37
Sat Flow, veh/h	1810	1610	1711	1885	1453	346
Grp Volume(v), veh/h	48	493	528	648	0	634
Grp Sat Flow(s),veh/h/ln	1810	1610	1711	1885	0	1799
Q Serve(g_s), s	2.4	0.0	17.7	7.6	0.0	31.9
Cycle Q Clear(g_c), s	2.4	0.0	17.7	7.6	0.0	31.9
Prop In Lane	1.00	1.00	1.00			0.19
Lane Grp Cap(c), veh/h	124	775	807	1597	0	689
V/C Ratio(X)	0.39	0.64	0.65	0.41	0.00	0.92
Avail Cap(c_a), veh/h	318	948	807	1597	0	705
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.3	18.4	19.5	1.7	0.0	28.1
Incr Delay (d2), s/veh	1.5	0.8	1.7	0.8	0.0	19.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	7.8	8.8	1.5	0.0	16.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	43.8	19.2	21.2	2.5	0.0	47.6
LnGrp LOS	D	B	C	A	A	D
Approach Vol, veh/h	541			1176	634	
Approach Delay, s/veh	21.4			10.9	47.6	
Approach LOS	C			B	D	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	44.1	40.4			84.5	10.5
Change Period (Y+Rc), s	* 5.4	* 5.4			* 5.4	4.5
Max Green Setting (Gmax), s	* 28	* 36			* 69	16.2
Max Q Clear Time (g_c+I1), s	19.7	33.9			9.6	4.4
Green Ext Time (p_c), s	0.8	1.0			9.4	1.2

### Intersection Summary

HCM 6th Ctrl Delay	23.2
HCM 6th LOS	C

### Notes

User approved pedestrian interval to be less than phase max green.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis  
 6: SW Boones Ferry Road & SW Day Road

01/26/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	0	261	0	0	0	272	977	0	0	936	17
Future Volume (vph)	18	0	261	0	0	0	272	977	0	0	936	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.3	4.7				4.9	4.0			4.0	
Lane Util. Factor		1.00	1.00				0.97	1.00			0.95	
Frbp, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Flpb, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Frt		1.00	0.85				1.00	1.00			1.00	
Flt Protected		0.95	1.00				0.95	1.00			1.00	
Satd. Flow (prot)		1703	1495				3273	1881			3527	
Flt Permitted		0.87	1.00				0.95	1.00			1.00	
Satd. Flow (perm)		1559	1495				3273	1881			3527	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	21	0	303	0	0	0	316	1136	0	0	1088	20
RTOR Reduction (vph)	0	0	72	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	21	231	0	0	0	316	1136	0	0	1107	0
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	6%	0%	8%	0%	0%	0%	7%	1%	0%	0%	2%	5%
Turn Type	Perm	NA	pm+ov				Prot	NA		Prot	NA	
Protected Phases		8	1		4		1	6		5	2	
Permitted Phases	8		8	4								
Actuated Green, G (s)		4.4	19.8				15.4	80.7			59.9	
Effective Green, g (s)		4.6	21.2				15.9	82.1			61.3	
Actuated g/C Ratio		0.05	0.22				0.17	0.86			0.65	
Clearance Time (s)		4.5	5.4				5.4	5.4			5.4	
Vehicle Extension (s)		2.5	2.3				2.3	4.4			4.4	
Lane Grp Cap (vph)		75	333				547	1625			2275	
v/s Ratio Prot			c0.12				0.10	c0.60			0.31	
v/s Ratio Perm		0.01	0.04									
v/c Ratio		0.28	0.69				0.58	0.70			0.49	
Uniform Delay, d1		43.6	33.9				36.5	2.2			8.7	
Progression Factor		1.00	1.00				1.00	1.00			0.87	
Incremental Delay, d2		1.5	5.4				1.1	2.5			0.5	
Delay (s)		45.1	39.3				37.6	4.7			8.1	
Level of Service		D	D				D	A			A	
Approach Delay (s)		39.7		0.0				11.9			8.1	
Approach LOS		D		A				B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			13.6				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			95.0				Sum of lost time (s)			13.2		
Intersection Capacity Utilization			70.0%				ICU Level of Service			C		
Analysis Period (min)			15									

c Critical Lane Group

# HCM 6th Signalized Intersection Summary

## 6: SW Boones Ferry Road & SW Day Road

01/26/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↖		↖	↕	↗
Traffic Volume (veh/h)	18	0	261	0	0	0	272	977	0	0	936	17
Future Volume (veh/h)	18	0	261	0	0	0	272	977	0	0	936	17
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1900	1781	1900	1900	1900	1796	1885	1900	1900	1870	1826
Adj Flow Rate, veh/h	21	0	280	0	0	0	316	1136	0	0	1088	14
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	6	0	8	0	0	0	7	1	0	0	2	5
Cap, veh/h	170	0	303	0	130	0	425	1270	0	221	2399	31
Arrive On Green	0.06	0.00	0.07	0.00	0.00	0.00	0.13	0.67	0.00	0.00	0.67	0.65
Sat Flow, veh/h	1440	0	1510	0	1900	0	3319	1885	0	1810	3592	46
Grp Volume(v), veh/h	21	0	280	0	0	0	316	1136	0	0	538	564
Grp Sat Flow(s),veh/h/ln	1440	0	1510	0	1900	0	1659	1885	0	1810	1777	1861
Q Serve(g_s), s	1.3	0.0	6.7	0.0	0.0	0.0	8.7	47.0	0.0	0.0	13.7	13.7
Cycle Q Clear(g_c), s	1.3	0.0	6.7	0.0	0.0	0.0	8.7	47.0	0.0	0.0	13.7	13.7
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.02
Lane Grp Cap(c), veh/h	167	0	303	0	130	0	425	1270	0	221	1187	1243
V/C Ratio(X)	0.13	0.00	0.92	0.00	0.00	0.00	0.74	0.89	0.00	0.00	0.45	0.45
Avail Cap(c_a), veh/h	167	0	303	0	130	0	695	1429	0	221	1187	1243
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	42.2	0.0	37.3	0.0	0.0	0.0	39.9	12.7	0.0	0.0	7.5	7.5
Incr Delay (d2), s/veh	0.2	0.0	32.6	0.0	0.0	0.0	1.6	10.0	0.0	0.0	1.3	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	8.8	0.0	0.0	0.0	3.6	19.3	0.0	0.0	4.4	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.5	0.0	69.8	0.0	0.0	0.0	41.5	22.7	0.0	0.0	8.8	8.7
LnGrp LOS	D	A	E	A	A	A	D	C	A	A	A	A
Approach Vol, veh/h		301			0			1452			1102	
Approach Delay, s/veh		67.9			0.0			26.8			8.7	
Approach LOS		E						C			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	17.1	67.4		10.5	16.5	68.0		10.5				
Change Period (Y+Rc), s	* 5.4	* 5.4		4.5	* 5.4	* 5.4		4.5				
Max Green Setting (Gmax), s	* 19	* 54		6.0	* 4	* 71		6.0				
Max Q Clear Time (g_c+I1), s	10.7	15.7		0.0	0.0	49.0		8.7				
Green Ext Time (p_c), s	0.9	12.4		0.0	0.0	13.5		0.0				

### Intersection Summary

HCM 6th Ctrl Delay	24.2
HCM 6th LOS	C

### Notes

- User approved pedestrian interval to be less than phase max green.
- \* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



# HCM Signalized Intersection Capacity Analysis

## 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

01/26/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	→			↰		↰	→		↰	→	↰
Traffic Volume (vph)	144	3	163	1	1	12	181	650	3	5	824	193
Future Volume (vph)	144	3	163	1	1	12	181	650	3	5	824	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5		4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frbp, ped/bikes	1.00	0.97			0.96		1.00	1.00		1.00	1.00	0.93
Flpb, ped/bikes	0.98	1.00			1.00		1.00	1.00		0.98	1.00	1.00
Frt	1.00	0.85			0.88		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1760	1567			1607		1805	1825		1762	1900	1499
Flt Permitted	0.75	1.00			0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1386	1567			1586		1805	1825		1762	1900	1499
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	157	3	177	1	1	13	197	707	3	5	896	210
RTOR Reduction (vph)	0	148	0	0	11	0	0	0	0	0	0	45
Lane Group Flow (vph)	157	32	0	0	4	0	197	710	0	5	896	165
Confl. Peds. (#/hr)	12		4	4		12	4		19	19		19
Confl. Bikes (#/hr)			1						2			2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								6
Actuated Green, G (s)	15.3	15.3			15.3		12.8	63.0		0.7	50.9	50.9
Effective Green, g (s)	15.3	15.3			15.3		12.8	63.0		0.7	50.9	50.9
Actuated g/C Ratio	0.17	0.17			0.17		0.14	0.68		0.01	0.55	0.55
Clearance Time (s)	4.5	4.5			4.5		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	2.3	2.3			2.5		2.3	4.3		2.3	4.3	4.3
Lane Grp Cap (vph)	229	259			262		249	1242		13	1045	824
v/s Ratio Prot		0.02					c0.11	0.39		0.00	c0.47	
v/s Ratio Perm	c0.11				0.00							0.11
v/c Ratio	0.69	0.12			0.02		0.79	0.57		0.38	0.86	0.20
Uniform Delay, d1	36.3	32.9			32.3		38.6	7.7		45.7	17.7	10.5
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	7.2	0.1			0.0		15.0	0.8		10.7	7.5	0.2
Delay (s)	43.5	33.0			32.3		53.5	8.5		56.4	25.2	10.7
Level of Service	D	C			C		D	A		E	C	B
Approach Delay (s)		37.9			32.3			18.3			22.6	
Approach LOS		D			C			B			C	

### Intersection Summary

HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	92.5	Sum of lost time (s)	13.5
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

# HCM 6th Signalized Intersection Summary

## 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

01/26/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	144	3	163	1	1	12	181	650	3	5	824	193
Future Volume (veh/h)	144	3	163	1	1	12	181	650	3	5	824	193
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.94	0.97		0.96	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1841	1900	1900	1900	1900
Adj Flow Rate, veh/h	157	3	90	1	1	13	197	707	3	5	896	123
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	4	0	0	0	0
Cap, veh/h	300	8	227	50	29	211	236	1243	5	9	1051	857
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.13	0.68	0.68	0.01	0.55	0.55
Sat Flow, veh/h	1369	49	1474	24	186	1367	1810	1831	8	1810	1900	1549
Grp Volume(v), veh/h	157	0	93	15	0	0	197	0	710	5	896	123
Grp Sat Flow(s),veh/h/ln	1369	0	1523	1577	0	0	1810	0	1839	1810	1900	1549
Q Serve(g_s), s	8.3	0.0	4.6	0.0	0.0	0.0	8.9	0.0	16.8	0.2	33.2	3.2
Cycle Q Clear(g_c), s	8.9	0.0	4.6	0.7	0.0	0.0	8.9	0.0	16.8	0.2	33.2	3.2
Prop In Lane	1.00		0.97	0.07		0.87	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	300	0	235	289	0	0	236	0	1248	9	1051	857
V/C Ratio(X)	0.52	0.00	0.40	0.05	0.00	0.00	0.83	0.00	0.57	0.53	0.85	0.14
Avail Cap(c_a), veh/h	393	0	338	394	0	0	282	0	1522	87	1367	1115
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.5	0.0	31.8	30.1	0.0	0.0	35.4	0.0	7.0	41.4	15.7	9.0
Incr Delay (d2), s/veh	0.9	0.0	0.7	0.1	0.0	0.0	15.1	0.0	0.7	24.9	5.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.0	1.7	0.3	0.0	0.0	4.8	0.0	5.2	0.2	13.7	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.4	0.0	32.4	30.2	0.0	0.0	50.5	0.0	7.7	66.3	20.8	9.2
LnGrp LOS	C	A	C	C	A	A	D	A	A	E	C	A
Approach Vol, veh/h		250			15			907			1024	
Approach Delay, s/veh		33.7			30.2			17.0			19.6	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.4	61.6		17.4	14.9	51.1		17.4				
Change Period (Y+Rc), s	4.0	5.0		4.5	4.0	5.0		4.5				
Max Green Setting (Gmax), s	4.0	69.0		18.5	13.0	60.0		18.5				
Max Q Clear Time (g_c+I1), s	2.2	18.8		10.9	10.9	35.2		2.7				
Green Ext Time (p_c), s	0.0	8.5		0.6	0.1	10.9		0.0				

### Intersection Summary

HCM 6th Ctrl Delay	20.2
HCM 6th LOS	C

### Notes

User approved pedestrian interval to be less than phase max green.

HCM 6th TWSC  
 2: SW Boones Ferry Road & SW Norwood Road

01/26/2023

Intersection						
Int Delay, s/veh	5.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑	↑	↑	↑
Traffic Vol, veh/h	75	131	523	154	152	714
Future Vol, veh/h	75	131	523	154	152	714
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	65	290	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	0	0	0	0	0
Mvmt Flow	82	144	575	169	167	785

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1694	575	0	0	744	0
Stage 1	575	-	-	-	-	-
Stage 2	1119	-	-	-	-	-
Critical Hdwy	6.42	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	102	521	-	-	873	-
Stage 1	563	-	-	-	-	-
Stage 2	312	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	83	521	-	-	873	-
Mov Cap-2 Maneuver	190	-	-	-	-	-
Stage 1	563	-	-	-	-	-
Stage 2	252	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	39.7	0	1.8
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	319	873
HCM Lane V/C Ratio	-	-	0.71	0.191
HCM Control Delay (s)	-	-	39.7	10.1
HCM Lane LOS	-	-	E	B
HCM 95th %tile Q(veh)	-	-	5.1	0.7

HCM 6th TWSC  
3: Site Access & SW Norwood Road

01/26/2023

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	232	75	13	164	43	8
Future Vol, veh/h	232	75	13	164	43	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	255	82	14	180	47	9

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	337	0	504
Stage 1	-	-	-	-	296
Stage 2	-	-	-	-	208
Critical Hdwy	-	-	4.12	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.218	-	3.5
Pot Cap-1 Maneuver	-	-	1222	-	531
Stage 1	-	-	-	-	759
Stage 2	-	-	-	-	832
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1222	-	524
Mov Cap-2 Maneuver	-	-	-	-	524
Stage 1	-	-	-	-	759
Stage 2	-	-	-	-	821

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	12.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	550	-	-	1222	-
HCM Lane V/C Ratio	0.102	-	-	0.012	-
HCM Control Delay (s)	12.3	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

HCM 6th TWSC  
 4: SW 82nd Avenue & SW Norwood Road/Driveway

01/26/2023

Intersection												
Int Delay, s/veh	7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↕
Traffic Vol, veh/h	131	0	25	0	0	0	22	3	0	0	4	164
Future Vol, veh/h	131	0	25	0	0	0	22	3	0	0	4	164
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	-	-	-	15
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	1	0	0	0	0	0	5	0	0	0	0	0
Mvmt Flow	144	0	27	0	0	0	24	3	0	0	4	180

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	27	0	0	305	303	14	304	316	-
Stage 1	-	-	-	-	-	-	302	302	-	1	1	-
Stage 2	-	-	-	-	-	-	3	1	-	303	315	-
Critical Hdwy	4.11	-	-	4.1	-	-	7.15	6.5	6.2	7.1	6.5	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.209	-	-	2.2	-	-	3.545	4	3.3	3.5	4	-
Pot Cap-1 Maneuver	1628	-	-	1600	-	-	641	613	1072	652	603	0
Stage 1	-	-	-	-	-	-	701	668	-	1027	899	0
Stage 2	-	-	-	-	-	-	1012	899	-	711	659	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1628	-	-	1600	-	-	594	558	1072	604	549	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	594	558	-	604	549	-
Stage 1	-	-	-	-	-	-	638	608	-	935	899	-
Stage 2	-	-	-	-	-	-	1007	899	-	644	600	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	6.2	0	11.4	11.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	589	1628	-	-	1600	-	-	549	-
HCM Lane V/C Ratio	0.047	0.088	-	-	-	-	-	0.008	-
HCM Control Delay (s)	11.4	7.4	0	-	0	-	-	11.6	0
HCM Lane LOS	B	A	A	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	0.3	-	-	0	-	-	0	-

# HCM Signalized Intersection Capacity Analysis

## 5: SW Boones Ferry Road & Basalt Creek Parkway Extension

01/26/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	80	486	454	646	653	137
Future Volume (vph)	80	486	454	646	653	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1805	1615	1703	1900	1843	
Flt Permitted	0.95	1.00	0.09	1.00	1.00	
Satd. Flow (perm)	1805	1615	169	1900	1843	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	88	534	499	710	718	151
RTOR Reduction (vph)	0	101	0	0	7	0
Lane Group Flow (vph)	88	433	499	710	862	0
Heavy Vehicles (%)	0%	0%	6%	0%	0%	4%
Turn Type	Prot	pt+ov	pm+pt	NA	NA	
Protected Phases	8	8 1	1	6	2	
Permitted Phases			6			
Actuated Green, G (s)	9.9	41.5	85.2	85.2	53.6	
Effective Green, g (s)	10.4	37.1	86.6	86.6	55.0	
Actuated g/C Ratio	0.10	0.35	0.82	0.82	0.52	
Clearance Time (s)	4.5		5.4	5.4	5.4	
Vehicle Extension (s)	2.5		2.3	4.4	4.4	
Lane Grp Cap (vph)	178	570	542	1567	965	
v/s Ratio Prot	0.05	c0.27	c0.24	0.37	0.47	
v/s Ratio Perm			c0.52			
v/c Ratio	0.49	0.76	0.92	0.45	0.89	
Uniform Delay, d1	44.8	30.0	29.1	2.6	22.4	
Progression Factor	1.00	1.00	0.99	1.23	1.00	
Incremental Delay, d2	1.6	5.5	16.9	0.7	12.4	
Delay (s)	46.4	35.5	45.7	3.9	34.8	
Level of Service	D	D	D	A	C	
Approach Delay (s)	37.1			21.1	34.8	
Approach LOS	D			C	C	

Intersection Summary			
HCM 2000 Control Delay	29.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.9
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

# HCM 6th Signalized Intersection Summary

## 5: SW Boones Ferry Road & Basalt Creek Parkway Extension

01/26/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	80	486	454	646	653	137
Future Volume (veh/h)	80	486	454	646	653	137
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1811	1900	1900	1841
Adj Flow Rate, veh/h	88	435	499	710	718	146
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	6	0	0	4
Cap, veh/h	143	630	622	1605	744	151
Arrive On Green	0.08	0.08	0.32	0.84	0.49	0.47
Sat Flow, veh/h	1810	1610	1725	1900	1532	312
Grp Volume(v), veh/h	88	435	499	710	0	864
Grp Sat Flow(s),veh/h/ln	1810	1610	1725	1900	0	1844
Q Serve(g_s), s	4.9	0.0	23.2	9.7	0.0	47.6
Cycle Q Clear(g_c), s	4.9	0.0	23.2	9.7	0.0	47.6
Prop In Lane	1.00	1.00	1.00			0.17
Lane Grp Cap(c), veh/h	143	630	622	1605	0	896
V/C Ratio(X)	0.61	0.69	0.80	0.44	0.00	0.96
Avail Cap(c_a), veh/h	241	718	622	1605	0	896
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.8	26.6	30.5	2.0	0.0	26.2
Incr Delay (d2), s/veh	3.2	2.1	7.1	0.9	0.0	22.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	9.2	12.3	2.3	0.0	25.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	49.9	28.8	37.6	2.9	0.0	48.9
LnGrp LOS	D	C	D	A	A	D
Approach Vol, veh/h	523			1209	864	
Approach Delay, s/veh	32.3			17.2	48.9	
Approach LOS	C			B	D	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	37.7	55.0			92.7	12.3
Change Period (Y+Rc), s	* 5.4	* 5.4			* 5.4	4.5
Max Green Setting (Gmax), s	* 27	* 50			* 82	13.5
Max Q Clear Time (g_c+I1), s	25.2	49.6			11.7	6.9
Green Ext Time (p_c), s	0.2	0.0			11.1	0.9

### Intersection Summary

HCM 6th Ctrl Delay	30.8
HCM 6th LOS	C

### Notes

User approved pedestrian interval to be less than phase max green.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM Signalized Intersection Capacity Analysis

## 6: SW Boones Ferry Road & SW Day Road

01/26/2023






















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↔		↖	↗		↖	↕	↗
Traffic Volume (vph)	16	0	294	0	0	0	292	1076	0	0	1112	15
Future Volume (vph)	16	0	294	0	0	0	292	1076	0	0	1112	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0				4.0	4.0			4.0	
Lane Util. Factor		1.00	1.00				0.97	1.00			0.95	
Frbp, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Flpb, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Frt		1.00	0.85				1.00	1.00			1.00	
Flt Protected		0.95	1.00				0.95	1.00			1.00	
Satd. Flow (prot)		1803	1583				3303	1900			3601	
Flt Permitted		0.87	1.00				0.95	1.00			1.00	
Satd. Flow (perm)		1651	1583				3303	1900			3601	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	18	0	323	0	0	0	321	1182	0	0	1222	16
RTOR Reduction (vph)	0	0	62	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	18	261	0	0	0	321	1182	0	0	1237	0
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)									3			
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	6%	0%	0%	0%	0%	4%
Turn Type	Perm	NA	pm+ov				Prot	NA		Prot	NA	
Protected Phases		8	1		4		1	6		5	2	
Permitted Phases	8		8	4								
Actuated Green, G (s)		4.1	21.8				17.7	91.0			67.9	
Effective Green, g (s)		4.6	24.6				19.1	92.4			69.3	
Actuated g/C Ratio		0.04	0.23				0.18	0.88			0.66	
Clearance Time (s)		4.5	5.4				5.4	5.4			5.4	
Vehicle Extension (s)		2.5	2.3				2.3	4.4			4.4	
Lane Grp Cap (vph)		72	370				600	1672			2376	
v/s Ratio Prot			c0.13				0.10	c0.62			0.34	
v/s Ratio Perm		0.01	0.04									
v/c Ratio		0.25	0.71				0.54	0.71			0.52	
Uniform Delay, d1		48.5	36.9				38.9	2.0			9.2	
Progression Factor		1.00	1.00				1.00	1.00			0.84	
Incremental Delay, d2		1.3	5.3				0.6	2.5			0.5	
Delay (s)		49.9	42.2				39.5	4.5			8.2	
Level of Service		D	D				D	A			A	
Approach Delay (s)		42.6			0.0			12.0			8.2	
Approach LOS		D			A			B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			13.9				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			105.0				Sum of lost time (s)				13.0	
Intersection Capacity Utilization			76.5%				ICU Level of Service				D	
Analysis Period (min)			15									
c Critical Lane Group												



HCM 6th Signalized Intersection Summary  
 6: SW Boones Ferry Road & SW Day Road

01/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	0	294	0	0	0	292	1076	0	0	1112	15
Future Volume (veh/h)	16	0	294	0	0	0	292	1076	0	0	1112	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1870	1900	1900	1900	1811	1900	1900	1900	1900	1841
Adj Flow Rate, veh/h	18	0	301	0	0	0	321	1182	0	0	1222	16
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	2	0	0	0	6	0	0	0	0	4
Cap, veh/h	164	0	337	0	127	0	460	1313	0	199	2487	33
Arrive On Green	0.06	0.00	0.08	0.00	0.00	0.00	0.14	0.69	0.00	0.00	0.68	0.67
Sat Flow, veh/h	1433	0	1579	0	1900	0	3346	1900	0	1810	3649	48
Grp Volume(v), veh/h	18	0	301	0	0	0	321	1182	0	0	604	634
Grp Sat Flow(s),veh/h/ln	1433	0	1579	0	1900	0	1673	1900	0	1810	1805	1891
Q Serve(g_s), s	1.3	0.0	7.9	0.0	0.0	0.0	9.6	53.4	0.0	0.0	16.8	16.9
Cycle Q Clear(g_c), s	1.3	0.0	7.9	0.0	0.0	0.0	9.6	53.4	0.0	0.0	16.8	16.9
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.03
Lane Grp Cap(c), veh/h	157	0	337	0	127	0	460	1313	0	199	1230	1289
V/C Ratio(X)	0.11	0.00	0.89	0.00	0.00	0.00	0.70	0.90	0.00	0.00	0.49	0.49
Avail Cap(c_a), veh/h	157	0	337	0	127	0	1084	1475	0	199	1230	1289
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	46.6	0.0	40.2	0.0	0.0	0.0	43.2	13.3	0.0	0.0	8.0	8.0
Incr Delay (d2), s/veh	0.2	0.0	24.5	0.0	0.0	0.0	1.2	10.1	0.0	0.0	1.4	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	9.6	0.0	0.0	0.0	4.0	22.2	0.0	0.0	5.7	5.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.8	0.0	64.7	0.0	0.0	0.0	44.4	23.4	0.0	0.0	9.4	9.4
LnGrp LOS	D	A	E	A	A	A	D	C	A	A	A	A
Approach Vol, veh/h		319			0			1503			1238	
Approach Delay, s/veh		63.7			0.0			27.8			9.4	
Approach LOS		E						C			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	18.4	75.6		11.0	17.4	76.6		11.0				
Change Period (Y+Rc), s	* 5.4	* 5.4		4.5	* 5.4	* 5.4		4.5				
Max Green Setting (Gmax), s	* 33	* 51		6.5	* 4	* 80		6.5				
Max Q Clear Time (g_c+I1), s	11.6	18.9		0.0	0.0	55.4		9.9				
Green Ext Time (p_c), s	1.4	13.6		0.0	0.0	15.8		0.0				

Intersection Summary												
HCM 6th Ctrl Delay	24.1											
HCM 6th LOS	C											

Notes

User approved pedestrian interval to be less than phase max green.  
 \* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection: 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

Movement	EB	EB	WB	NB	NB	SB	SB	SB	B21
Directions Served	L	TR	LTR	L	TR	L	T	R	T
Maximum Queue (ft)	198	219	38	194	368	67	560	210	42
Average Queue (ft)	89	97	11	112	168	7	252	61	2
95th Queue (ft)	165	177	36	198	301	40	512	186	23
Link Distance (ft)	622	622	761		2493		697		2246
Upstream Blk Time (%)							1		
Queuing Penalty (veh)							0		
Storage Bay Dist (ft)				95		105		110	
Storage Blk Time (%)				17	14		27	0	
Queuing Penalty (veh)				117	24		25	0	

Intersection: 2: SW Boones Ferry Road & SW Norwood Road

Movement	WB	SB	SB
Directions Served	LR	L	T
Maximum Queue (ft)	245	62	6
Average Queue (ft)	96	18	0
95th Queue (ft)	244	48	4
Link Distance (ft)	489		2493
Upstream Blk Time (%)	1		
Queuing Penalty (veh)	4		
Storage Bay Dist (ft)		290	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Site Access & SW Norwood Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	41	80
Average Queue (ft)	2	34
95th Queue (ft)	22	60
Link Distance (ft)	2644	350
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: SW 82nd Avenue & SW Norwood Road/Driveway

Movement	NB
Directions Served	LTR
Maximum Queue (ft)	41
Average Queue (ft)	18
95th Queue (ft)	40
Link Distance (ft)	494
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: SW Boones Ferry Road & Basalt Creek Parkway Extension

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	89	566	461	375	532
Average Queue (ft)	34	260	198	83	244
95th Queue (ft)	74	436	386	240	445
Link Distance (ft)	1043	1043		899	914
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			575		
Storage Blk Time (%)			0		
Queuing Penalty (veh)			2		

Intersection: 6: SW Boones Ferry Road & SW Day Road

Movement	EB	EB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	L	TR	T	TR
Maximum Queue (ft)	72	186	224	299	654	267	276
Average Queue (ft)	12	68	89	156	139	105	122
95th Queue (ft)	41	135	200	267	452	211	240
Link Distance (ft)	720	720			930	1011	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			200	200			500
Storage Blk Time (%)			0	3	5	7	
Queuing Penalty (veh)			3	29	12	34	

Network Summary

Network wide Queuing Penalty: 249

Intersection: 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

Movement	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	LTR	L	TR	L	T	R
Maximum Queue (ft)	167	166	43	194	470	100	621	210
Average Queue (ft)	81	70	11	114	182	9	303	114
95th Queue (ft)	144	131	36	192	384	59	524	256
Link Distance (ft)	622	622	761		2493		697	
Upstream Blk Time (%)							0	
Queuing Penalty (veh)							0	
Storage Bay Dist (ft)				95		105		110
Storage Blk Time (%)				26	11		28	0
Queuing Penalty (veh)				172	20		56	1

Intersection: 2: SW Boones Ferry Road & SW Norwood Road

Movement	WB	NB	SB
Directions Served	LR	R	L
Maximum Queue (ft)	287	22	95
Average Queue (ft)	94	2	42
95th Queue (ft)	223	12	82
Link Distance (ft)	489		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		65	290
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Site Access & SW Norwood Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	33	50
Average Queue (ft)	5	26
95th Queue (ft)	23	49
Link Distance (ft)	2644	350
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: SW 82nd Avenue & SW Norwood Road/Driveway

Movement	EB	NB	SB
Directions Served	LTR	LTR	LT
Maximum Queue (ft)	6	55	31
Average Queue (ft)	0	15	4
95th Queue (ft)	4	41	20
Link Distance (ft)	2644	494	648
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			0
Queuing Penalty (veh)			0

Intersection: 5: SW Boones Ferry Road & Basalt Creek Parkway Extension

Movement	EB	EB	NB	NB	SB
Directions Served	L	R	L	T	TR
Maximum Queue (ft)	131	568	570	604	696
Average Queue (ft)	61	268	294	128	390
95th Queue (ft)	117	476	506	356	649
Link Distance (ft)	1043	1043		898	914
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			575		
Storage Blk Time (%)			1	0	
Queuing Penalty (veh)			6	0	

Intersection: 6: SW Boones Ferry Road & SW Day Road

Movement	EB	EB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	L	TR	T	TR
Maximum Queue (ft)	57	209	224	299	689	279	311
Average Queue (ft)	11	86	110	173	176	127	156
95th Queue (ft)	37	164	214	286	519	236	275
Link Distance (ft)	723	723			930	1019	
Upstream Blk Time (%)					0		
Queuing Penalty (veh)					0		
Storage Bay Dist (ft)			200	200			500
Storage Blk Time (%)			1	3	6	10	
Queuing Penalty (veh)			6	27	17	56	

Network Summary

Network wide Queuing Penalty: 362
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## 2026 & 2031 Mitigated Conditions

### 2026 Buildout Conditions - No Basalt Creek Parkway Extension

- AM Peak Hour Synchro Reports
- PM Peak Hour Synchro Reports
- AM Peak Hour Queuing Reports
- PM Peak Hour Queuing Reports

### 2026 Buildout Conditions – With Basalt Creek Parkway Extension

- AM Peak Hour Synchro Reports
- PM Peak Hour Synchro Reports
- AM Peak Hour Queuing Reports
- PM Peak Hour Queuing Reports

### 2031 Buildout Conditions - No Basalt Creek Parkway Extension

- AM Peak Hour Synchro Reports
- PM Peak Hour Synchro Reports
- AM Peak Hour Queuing Reports
- PM Peak Hour Queuing Reports



# HCM Signalized Intersection Capacity Analysis

## 2: SW Boones Ferry Road & SW Norwood Road

12/12/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T	T	T	T
Traffic Volume (vph)	105	169	432	53	76	313
Future Volume (vph)	105	169	432	53	76	313
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.99		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.92		1.00	0.85	1.00	1.00
Flt Protected	0.98		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1636		1881	1495	1736	1881
Flt Permitted	0.98		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1636		1881	1495	1736	1881
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	130	209	533	65	94	386
RTOR Reduction (vph)	65	0	0	24	0	0
Lane Group Flow (vph)	274	0	533	41	94	386
Confl. Peds. (#/hr)		2				
Heavy Vehicles (%)	3%	3%	1%	8%	4%	1%
Turn Type	Prot		NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases				2		
Actuated Green, G (s)	15.8		24.3	24.3	6.2	35.5
Effective Green, g (s)	16.8		25.3	25.3	7.2	36.5
Actuated g/C Ratio	0.27		0.41	0.41	0.12	0.60
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	448		776	617	203	1120
v/s Ratio Prot	c0.17		c0.28		c0.05	0.21
v/s Ratio Perm				0.03		
v/c Ratio	0.61		0.69	0.07	0.46	0.34
Uniform Delay, d1	19.4		14.8	10.9	25.2	6.3
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	2.5		2.5	0.0	1.7	0.2
Delay (s)	21.9		17.3	10.9	26.9	6.5
Level of Service	C		B	B	C	A
Approach Delay (s)	21.9		16.6			10.5
Approach LOS	C		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			15.8		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.63			
Actuated Cycle Length (s)			61.3		Sum of lost time (s)	12.0
Intersection Capacity Utilization			54.3%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

# HCM 6th Signalized Intersection Summary

## 2: SW Boones Ferry Road & SW Norwood Road

12/12/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	105	169	432	53	76	313
Future Volume (veh/h)	105	169	432	53	76	313
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1885	1781	1841	1885
Adj Flow Rate, veh/h	130	209	533	65	94	386
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	3	3	1	8	4	1
Cap, veh/h	180	290	709	568	184	1052
Arrive On Green	0.29	0.27	0.38	0.38	0.10	0.56
Sat Flow, veh/h	626	1007	1885	1510	1753	1885
Grp Volume(v), veh/h	340	0	533	65	94	386
Grp Sat Flow(s),veh/h/ln	1638	0	1885	1510	1753	1885
Q Serve(g_s), s	9.7	0.0	12.8	1.5	2.6	5.9
Cycle Q Clear(g_c), s	9.7	0.0	12.8	1.5	2.6	5.9
Prop In Lane	0.38	0.61		1.00	1.00	
Lane Grp Cap(c), veh/h	472	0	709	568	184	1052
V/C Ratio(X)	0.72	0.00	0.75	0.11	0.51	0.37
Avail Cap(c_a), veh/h	788	0	1560	1249	337	2067
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.9	0.0	14.1	10.6	22.0	6.4
Incr Delay (d2), s/veh	2.1	0.0	1.6	0.1	2.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	4.7	0.4	1.1	1.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	19.0	0.0	15.7	10.7	24.2	6.6
LnGrp LOS	B	A	B	B	C	A
Approach Vol, veh/h	340		598			480
Approach Delay, s/veh	19.0		15.2			10.0
Approach LOS	B		B			B
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	9.5	23.5			33.0	19.0
Change Period (Y+Rc), s	5.0	5.0			5.0	5.0
Max Green Setting (Gmax), s	9.0	42.0			56.0	24.0
Max Q Clear Time (g_c+I1), s	4.6	14.8			7.9	11.7
Green Ext Time (p_c), s	0.2	3.8			2.5	2.2

### Intersection Summary

HCM 6th Ctrl Delay	14.4
HCM 6th LOS	B

### Notes

User approved volume balancing among the lanes for turning movement.



# HCM Signalized Intersection Capacity Analysis

## 2: SW Boones Ferry Road & SW Norwood Road

12/12/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙		↑	↗	↘	↓
Traffic Volume (vph)	69	140	557	145	165	631
Future Volume (vph)	69	140	557	145	165	631
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.99		1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.91		1.00	0.85	1.00	1.00
Flt Protected	0.98		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1664		1900	1579	1805	1900
Flt Permitted	0.98		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1664		1900	1579	1805	1900
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	76	154	612	159	181	693
RTOR Reduction (vph)	90	0	0	49	0	0
Lane Group Flow (vph)	140	0	612	110	181	693
Confl. Bikes (#/hr)		1		3		
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%
Turn Type	Prot		NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases				2		
Actuated Green, G (s)	11.6		26.5	26.5	10.2	41.7
Effective Green, g (s)	12.6		27.5	27.5	11.2	42.7
Actuated g/C Ratio	0.20		0.43	0.43	0.18	0.67
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	331		825	685	319	1281
v/s Ratio Prot	c0.08		c0.32		0.10	c0.36
v/s Ratio Perm				0.07		
v/c Ratio	0.42		0.74	0.16	0.57	0.54
Uniform Delay, d1	22.2		14.9	10.9	23.8	5.3
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9		3.6	0.1	2.3	0.5
Delay (s)	23.1		18.6	11.0	26.1	5.7
Level of Service	C		B	B	C	A
Approach Delay (s)	23.1		17.0			10.0
Approach LOS	C		B			A
<b>Intersection Summary</b>						
HCM 2000 Control Delay			14.5		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.64			
Actuated Cycle Length (s)			63.3		Sum of lost time (s)	12.0
Intersection Capacity Utilization			60.9%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

# HCM 6th Signalized Intersection Summary

## 2: SW Boones Ferry Road & SW Norwood Road

12/12/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶		↑	↷	↶	↑
Traffic Volume (veh/h)	69	140	557	145	165	631
Future Volume (veh/h)	69	140	557	145	165	631
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.98		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	76	154	612	159	181	693
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	0	0	0	0	0
Cap, veh/h	112	227	797	660	267	1218
Arrive On Green	0.21	0.19	0.42	0.42	0.15	0.64
Sat Flow, veh/h	533	1080	1900	1574	1810	1900
Grp Volume(v), veh/h	231	0	612	159	181	693
Grp Sat Flow(s),veh/h/ln	1621	0	1900	1574	1810	1900
Q Serve(g_s), s	7.1	0.0	14.8	3.5	5.1	11.1
Cycle Q Clear(g_c), s	7.1	0.0	14.8	3.5	5.1	11.1
Prop In Lane	0.33	0.67		1.00	1.00	
Lane Grp Cap(c), veh/h	340	0	797	660	267	1218
V/C Ratio(X)	0.68	0.00	0.77	0.24	0.68	0.57
Avail Cap(c_a), veh/h	753	0	1483	1229	370	2013
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.9	0.0	13.4	10.1	21.7	5.4
Incr Delay (d2), s/veh	2.4	0.0	1.6	0.2	3.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	5.4	1.0	2.2	2.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	22.3	0.0	15.0	10.3	24.7	5.9
LnGrp LOS	C	A	B	B	C	A
Approach Vol, veh/h	231		771			874
Approach Delay, s/veh	22.3		14.0			9.8
Approach LOS	C		B			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	11.9	26.6			38.5	15.3
Change Period (Y+Rc), s	5.0	5.0			5.0	5.0
Max Green Setting (Gmax), s	10.0	41.0			56.0	24.0
Max Q Clear Time (g_c+I1), s	7.1	16.8			13.1	9.1
Green Ext Time (p_c), s	0.3	4.7			5.5	1.5

### Intersection Summary

HCM 6th Ctrl Delay	13.0
HCM 6th LOS	B

### Notes

User approved volume balancing among the lanes for turning movement.

Intersection: 2: SW Boones Ferry Road & SW Norwood Road

Movement	WB	NB	NB	SB	SB
Directions Served	LR	T	R	L	T
Maximum Queue (ft)	230	245	157	100	142
Average Queue (ft)	75	121	23	43	57
95th Queue (ft)	147	213	85	85	113
Link Distance (ft)	489	1810			2530
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			85	290	
Storage Blk Time (%)		12	0		
Queuing Penalty (veh)		7	0		

Intersection: 2: SW Boones Ferry Road & SW Norwood Road

Movement	WB	NB	NB	SB	SB
Directions Served	LR	T	R	L	T
Maximum Queue (ft)	152	324	185	174	248
Average Queue (ft)	64	165	54	81	101
95th Queue (ft)	119	277	148	141	203
Link Distance (ft)	489	1810			2530
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			85	290	
Storage Blk Time (%)		19	0		0
Queuing Penalty (veh)		28	0		0

# HCM Signalized Intersection Capacity Analysis

## 2: SW Boones Ferry Road & SW Norwood Road

12/12/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T	T	T	T
Traffic Volume (vph)	115	156	503	50	70	393
Future Volume (vph)	115	156	503	50	70	393
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.99		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.92		1.00	0.85	1.00	1.00
Flt Protected	0.98		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1644		1881	1495	1736	1881
Flt Permitted	0.98		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1644		1881	1495	1736	1881
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	142	193	621	62	86	485
RTOR Reduction (vph)	55	0	0	19	0	0
Lane Group Flow (vph)	280	0	621	43	86	485
Confl. Peds. (#/hr)		2				
Heavy Vehicles (%)	3%	3%	1%	8%	4%	1%
Turn Type	Prot		NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases				2		
Actuated Green, G (s)	16.7		28.1	28.1	6.1	39.2
Effective Green, g (s)	17.7		29.1	29.1	7.1	40.2
Actuated g/C Ratio	0.27		0.44	0.44	0.11	0.61
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	441		830	660	187	1147
v/s Ratio Prot	c0.17		c0.33		0.05	c0.26
v/s Ratio Perm				0.03		
v/c Ratio	0.64		0.75	0.07	0.46	0.42
Uniform Delay, d1	21.3		15.3	10.6	27.6	6.8
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	3.0		3.7	0.0	1.8	0.3
Delay (s)	24.2		19.1	10.6	29.4	7.0
Level of Service	C		B	B	C	A
Approach Delay (s)	24.2		18.3			10.4
Approach LOS	C		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			16.7		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.68			
Actuated Cycle Length (s)			65.9		Sum of lost time (s)	12.0
Intersection Capacity Utilization			57.8%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

# HCM 6th Signalized Intersection Summary

## 2: SW Boones Ferry Road & SW Norwood Road

12/12/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑	↗	↖	↗
Traffic Volume (veh/h)	115	156	503	50	70	393
Future Volume (veh/h)	115	156	503	50	70	393
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1885	1781	1841	1885
Adj Flow Rate, veh/h	142	193	621	62	86	485
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	3	3	1	8	4	1
Cap, veh/h	192	261	786	629	168	1099
Arrive On Green	0.28	0.26	0.42	0.42	0.10	0.58
Sat Flow, veh/h	696	946	1885	1510	1753	1885
Grp Volume(v), veh/h	336	0	621	62	86	485
Grp Sat Flow(s),veh/h/ln	1646	0	1885	1510	1753	1885
Q Serve(g_s), s	10.6	0.0	16.3	1.4	2.7	8.2
Cycle Q Clear(g_c), s	10.6	0.0	16.3	1.4	2.7	8.2
Prop In Lane	0.42	0.57		1.00	1.00	
Lane Grp Cap(c), veh/h	455	0	786	629	168	1099
V/C Ratio(X)	0.74	0.00	0.79	0.10	0.51	0.44
Avail Cap(c_a), veh/h	723	0	1424	1140	308	1887
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.0	0.0	14.4	10.1	24.5	6.7
Incr Delay (d2), s/veh	2.4	0.0	1.8	0.1	2.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	6.1	0.4	1.1	2.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	21.4	0.0	16.3	10.2	26.9	6.9
LnGrp LOS	C	A	B	B	C	A
Approach Vol, veh/h	336		683			571
Approach Delay, s/veh	21.4		15.7			9.9
Approach LOS	C		B			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	9.5	27.7			37.2	19.7
Change Period (Y+Rc), s	5.0	5.0			5.0	5.0
Max Green Setting (Gmax), s	9.0	42.0			56.0	24.0
Max Q Clear Time (g_c+I1), s	4.7	18.3			10.2	12.6
Green Ext Time (p_c), s	0.2	4.4			3.3	2.1

### Intersection Summary

HCM 6th Ctrl Delay			14.8			
HCM 6th LOS			B			

### Notes

User approved volume balancing among the lanes for turning movement.

# HCM Signalized Intersection Capacity Analysis

## 2: SW Boones Ferry Road & SW Norwood Road

12/12/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙		↑	↗	↘	↑
Traffic Volume (vph)	75	131	523	154	152	714
Future Volume (vph)	75	131	523	154	152	714
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.99		1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.91		1.00	0.85	1.00	1.00
Flt Protected	0.98		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1670		1900	1578	1805	1900
Flt Permitted	0.98		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1670		1900	1578	1805	1900
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	82	144	575	169	167	785
RTOR Reduction (vph)	77	0	0	56	0	0
Lane Group Flow (vph)	149	0	575	113	167	785
Confl. Bikes (#/hr)		1		3		
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%
Turn Type	Prot		NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases				2		
Actuated Green, G (s)	11.8		25.3	25.3	10.0	40.3
Effective Green, g (s)	12.8		26.3	26.3	11.0	41.3
Actuated g/C Ratio	0.21		0.42	0.42	0.18	0.67
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	344		804	668	319	1263
v/s Ratio Prot	c0.09		c0.30		0.09	c0.41
v/s Ratio Perm				0.07		
v/c Ratio	0.43		0.72	0.17	0.52	0.62
Uniform Delay, d1	21.5		14.8	11.1	23.2	5.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9		3.0	0.1	1.6	1.0
Delay (s)	22.4		17.8	11.2	24.7	6.9
Level of Service	C		B	B	C	A
Approach Delay (s)	22.4		16.3			10.0
Approach LOS	C		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			13.9		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.64			
Actuated Cycle Length (s)			62.1		Sum of lost time (s)	12.0
Intersection Capacity Utilization			58.2%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

## HCM 6th Signalized Intersection Summary

### 2: SW Boones Ferry Road & SW Norwood Road

12/12/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	75	131	523	154	152	714
Future Volume (veh/h)	75	131	523	154	152	714
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.98		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	82	144	575	169	167	785
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	0	0	0	0	0
Cap, veh/h	124	218	774	641	256	1195
Arrive On Green	0.21	0.19	0.41	0.41	0.14	0.63
Sat Flow, veh/h	588	1033	1900	1574	1810	1900
Grp Volume(v), veh/h	227	0	575	169	167	785
Grp Sat Flow(s),veh/h/ln	1628	0	1900	1574	1810	1900
Q Serve(g_s), s	6.4	0.0	12.8	3.6	4.4	13.0
Cycle Q Clear(g_c), s	6.4	0.0	12.8	3.6	4.4	13.0
Prop In Lane	0.36	0.63		1.00	1.00	
Lane Grp Cap(c), veh/h	343	0	774	641	256	1195
V/C Ratio(X)	0.66	0.00	0.74	0.26	0.65	0.66
Avail Cap(c_a), veh/h	815	0	1598	1324	399	2169
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.4	0.0	12.6	9.8	20.3	5.9
Incr Delay (d2), s/veh	2.2	0.0	1.4	0.2	2.8	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	4.5	1.0	1.8	3.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	20.6	0.0	14.0	10.0	23.1	6.5
LnGrp LOS	C	A	B	B	C	A
Approach Vol, veh/h	227		744			952
Approach Delay, s/veh	20.6		13.1			9.4
Approach LOS	C		B			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	11.1	24.4			35.4	14.5
Change Period (Y+Rc), s	5.0	5.0			5.0	5.0
Max Green Setting (Gmax), s	10.0	41.0			56.0	24.0
Max Q Clear Time (g_c+I1), s	6.4	14.8			15.0	8.4
Green Ext Time (p_c), s	0.4	4.5			6.6	1.5

#### Intersection Summary

HCM 6th Ctrl Delay			12.1			
HCM 6th LOS			B			

#### Notes

User approved volume balancing among the lanes for turning movement.



Intersection: 2: SW Boones Ferry Road & SW Norwood Road

Movement	WB	NB	NB	SB	SB
Directions Served	LR	T	R	L	T
Maximum Queue (ft)	190	331	183	92	208
Average Queue (ft)	74	132	27	39	77
95th Queue (ft)	145	247	96	78	154
Link Distance (ft)	489	1810			2530
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			85	290	
Storage Blk Time (%)		13	0		
Queuing Penalty (veh)		7	0		

Intersection: 2: SW Boones Ferry Road & SW Norwood Road

Movement	WB	NB	NB	SB	SB
Directions Served	LR	T	R	L	T
Maximum Queue (ft)	162	365	185	154	286
Average Queue (ft)	69	147	59	77	118
95th Queue (ft)	127	278	150	127	229
Link Distance (ft)	489	1810			2530
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			85	290	
Storage Blk Time (%)		16	0		0
Queuing Penalty (veh)		26	1		0

# HCM Signalized Intersection Capacity Analysis

## 2: SW Boones Ferry Road & SW Norwood Road

12/12/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T	T	T	T
Traffic Volume (vph)	105	169	432	53	76	313
Future Volume (vph)	105	169	432	53	76	313
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.99		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.92		1.00	0.85	1.00	1.00
Flt Protected	0.98		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1636		1881	1495	1736	1881
Flt Permitted	0.98		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1636		1881	1495	1736	1881
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Growth Factor (vph)	110%	110%	105%	110%	110%	105%
Adj. Flow (vph)	143	230	560	72	103	406
RTOR Reduction (vph)	64	0	0	25	0	0
Lane Group Flow (vph)	309	0	560	47	103	406
Confl. Peds. (#/hr)		2				
Heavy Vehicles (%)	3%	3%	1%	8%	4%	1%
Turn Type	Prot		NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases				2		
Actuated Green, G (s)	17.5		26.4	26.4	6.3	37.7
Effective Green, g (s)	18.5		27.4	27.4	7.3	38.7
Actuated g/C Ratio	0.28		0.42	0.42	0.11	0.59
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	464		790	628	194	1116
v/s Ratio Prot	c0.19		c0.30		c0.06	0.22
v/s Ratio Perm				0.03		
v/c Ratio	0.67		0.71	0.07	0.53	0.36
Uniform Delay, d1	20.6		15.6	11.3	27.3	6.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	3.6		2.9	0.1	2.8	0.2
Delay (s)	24.2		18.5	11.4	30.1	7.1
Level of Service	C		B	B	C	A
Approach Delay (s)	24.2		17.7			11.7
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	65.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

# HCM 6th Signalized Intersection Summary

## 2: SW Boones Ferry Road & SW Norwood Road

12/12/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶		↑	↷	↶	↑
Traffic Volume (veh/h)	105	169	432	53	76	313
Future Volume (veh/h)	105	169	432	53	76	313
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1885	1781	1841	1885
Adj Flow Rate, veh/h	143	230	560	72	103	406
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	3	3	1	8	4	1
Cap, veh/h	189	303	723	579	180	1051
Arrive On Green	0.30	0.28	0.38	0.38	0.10	0.56
Sat Flow, veh/h	627	1008	1885	1510	1753	1885
Grp Volume(v), veh/h	374	0	560	72	103	406
Grp Sat Flow(s),veh/h/ln	1639	0	1885	1510	1753	1885
Q Serve(g_s), s	11.7	0.0	14.7	1.7	3.2	6.9
Cycle Q Clear(g_c), s	11.7	0.0	14.7	1.7	3.2	6.9
Prop In Lane	0.38	0.61		1.00	1.00	
Lane Grp Cap(c), veh/h	493	0	723	579	180	1051
V/C Ratio(X)	0.76	0.00	0.77	0.12	0.57	0.39
Avail Cap(c_a), veh/h	725	0	1434	1149	310	1901
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.2	0.0	15.3	11.3	24.2	7.1
Incr Delay (d2), s/veh	2.7	0.0	1.8	0.1	2.8	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.0	5.6	0.5	1.3	2.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	20.9	0.0	17.1	11.4	27.0	7.3
LnGrp LOS	C	A	B	B	C	A
Approach Vol, veh/h	374		632			509
Approach Delay, s/veh	20.9		16.4			11.3
Approach LOS	C		B			B
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	9.8	25.7			35.5	21.0
Change Period (Y+Rc), s	5.0	5.0			5.0	5.0
Max Green Setting (Gmax), s	9.0	42.0			56.0	24.0
Max Q Clear Time (g_c+I1), s	5.2	16.7			8.9	13.7
Green Ext Time (p_c), s	0.2	4.0			2.7	2.2

### Intersection Summary

HCM 6th Ctrl Delay	15.8
HCM 6th LOS	B

### Notes

User approved volume balancing among the lanes for turning movement.

# HCM Signalized Intersection Capacity Analysis

## 2: SW Boones Ferry Road & SW Norwood Road

12/12/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙		↑	↗	↖	↑
Traffic Volume (vph)	69	140	557	145	165	631
Future Volume (vph)	69	140	557	145	165	631
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.99		1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.91		1.00	0.85	1.00	1.00
Flt Protected	0.98		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1664		1900	1579	1805	1900
Flt Permitted	0.98		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1664		1900	1579	1805	1900
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor (vph)	110%	110%	105%	110%	110%	105%
Adj. Flow (vph)	83	169	643	175	199	728
RTOR Reduction (vph)	90	0	0	50	0	0
Lane Group Flow (vph)	162	0	643	125	199	728
Confl. Bikes (#/hr)		1		3		
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%
Turn Type	Prot		NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases				2		
Actuated Green, G (s)	12.4		28.1	28.1	10.5	43.6
Effective Green, g (s)	13.4		29.1	29.1	11.5	44.6
Actuated g/C Ratio	0.20		0.44	0.44	0.17	0.68
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	337		837	696	314	1283
v/s Ratio Prot	c0.10		c0.34		0.11	c0.38
v/s Ratio Perm				0.08		
v/c Ratio	0.48		0.77	0.18	0.63	0.57
Uniform Delay, d1	23.2		15.6	11.2	25.3	5.6
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1		4.3	0.1	4.1	0.6
Delay (s)	24.3		19.9	11.3	29.4	6.2
Level of Service	C		B	B	C	A
Approach Delay (s)	24.3		18.0			11.2
Approach LOS	C		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			15.7		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.67			
Actuated Cycle Length (s)			66.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			64.5%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

# HCM 6th Signalized Intersection Summary

## 2: SW Boones Ferry Road & SW Norwood Road

12/12/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑	↗	↘	↑
Traffic Volume (veh/h)	69	140	557	145	165	631
Future Volume (veh/h)	69	140	557	145	165	631
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.98		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	83	169	643	175	199	728
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	0	0	0	0	0
Cap, veh/h	117	237	810	671	278	1229
Arrive On Green	0.22	0.20	0.43	0.43	0.15	0.65
Sat Flow, veh/h	532	1082	1900	1574	1810	1900
Grp Volume(v), veh/h	253	0	643	175	199	728
Grp Sat Flow(s),veh/h/ln	1620	0	1900	1574	1810	1900
Q Serve(g_s), s	8.7	0.0	17.5	4.3	6.2	13.1
Cycle Q Clear(g_c), s	8.7	0.0	17.5	4.3	6.2	13.1
Prop In Lane	0.33	0.67		1.00	1.00	
Lane Grp Cap(c), veh/h	355	0	810	671	278	1229
V/C Ratio(X)	0.71	0.00	0.79	0.26	0.72	0.59
Avail Cap(c_a), veh/h	678	0	1337	1107	333	1814
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.9	0.0	14.9	11.1	24.0	6.0
Incr Delay (d2), s/veh	2.7	0.0	1.8	0.2	5.8	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	6.6	1.3	2.9	3.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	24.5	0.0	16.7	11.3	29.8	6.5
LnGrp LOS	C	A	B	B	C	A
Approach Vol, veh/h	253		818			927
Approach Delay, s/veh	24.5		15.5			11.5
Approach LOS	C		B			B
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	13.2	29.5			42.6	17.1
Change Period (Y+Rc), s	5.0	5.0			5.0	5.0
Max Green Setting (Gmax), s	10.0	41.0			56.0	24.0
Max Q Clear Time (g_c+I1), s	8.2	19.5			15.1	10.7
Green Ext Time (p_c), s	0.2	4.9			5.9	1.6

### Intersection Summary

HCM 6th Ctrl Delay	14.8
HCM 6th LOS	B

### Notes

User approved volume balancing among the lanes for turning movement.

Intersection: 2: SW Boones Ferry Road & SW Norwood Road

Movement	WB	NB	NB	SB	SB
Directions Served	LR	T	R	L	T
Maximum Queue (ft)	178	294	185	108	154
Average Queue (ft)	81	136	43	49	65
95th Queue (ft)	147	244	132	93	126
Link Distance (ft)	489	1810			2530
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			85	290	
Storage Blk Time (%)		15	0		
Queuing Penalty (veh)		9	1		

Intersection: 2: SW Boones Ferry Road & SW Norwood Road

Movement	WB	NB	NB	SB	SB
Directions Served	LR	T	R	L	T
Maximum Queue (ft)	176	363	185	229	297
Average Queue (ft)	72	169	71	100	105
95th Queue (ft)	133	297	178	182	211
Link Distance (ft)	489	1810			2530
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			85	290	
Storage Blk Time (%)		20	0		0
Queuing Penalty (veh)		33	2		0



## 2040 Conditions with Existing Zoning

AM Peak Hour Synchro Reports

PM Peak Hour Synchro Reports



# HCM Signalized Intersection Capacity Analysis

## 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

01/26/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷			↷		↶	↷		↶	↷	↶
Traffic Volume (vph)	224	1	369	3	1	20	218	723	6	8	700	105
Future Volume (vph)	224	1	369	3	1	20	218	723	6	8	700	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.97			0.96		1.00	1.00		1.00	1.00	0.93
Flpb, ped/bikes	0.98	1.00			1.00		1.00	1.00		0.98	1.00	1.00
Frt	1.00	0.85			0.89		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1765	1565			1613		1805	1824		1770	1900	1507
Flt Permitted	0.74	1.00			0.80		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1376	1565			1290		1805	1824		1770	1900	1507
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	243	1	401	3	1	22	237	786	7	9	761	114
RTOR Reduction (vph)	0	214	0	0	17	0	0	0	0	0	0	58
Lane Group Flow (vph)	243	188	0	0	9	0	237	793	0	9	761	56
Confl. Peds. (#/hr)	12		4	4		12	4		19	19		19
Confl. Bikes (#/hr)			1						2			2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								6
Actuated Green, G (s)	18.0	18.0			18.0		12.3	51.3		0.7	39.7	39.7
Effective Green, g (s)	18.5	18.5			18.5		12.3	52.3		0.7	40.7	40.7
Actuated g/C Ratio	0.22	0.22			0.22		0.15	0.63		0.01	0.49	0.49
Clearance Time (s)	4.5	4.5			4.5		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	2.3	2.3			2.5		2.3	4.3		2.3	4.3	4.3
Lane Grp Cap (vph)	304	346			285		265	1142		14	926	734
v/s Ratio Prot		0.12					c0.13	0.43		0.01	c0.40	
v/s Ratio Perm	c0.18				0.01							0.04
v/c Ratio	0.80	0.54			0.03		0.89	0.69		0.64	0.82	0.08
Uniform Delay, d1	30.7	28.8			25.5		35.0	10.3		41.3	18.3	11.4
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	13.1	1.2			0.0		29.1	2.1		61.6	6.4	0.1
Delay (s)	43.8	30.0			25.5		64.0	12.4		102.8	24.7	11.5
Level of Service	D	C			C		E	B		F	C	B
Approach Delay (s)		35.2			25.5			24.3			23.8	
Approach LOS		D			C			C			C	

### Intersection Summary

HCM 2000 Control Delay	26.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	83.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

# HCM 6th Signalized Intersection Summary

## 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

01/26/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	224	1	369	3	1	20	218	723	6	8	700	105
Future Volume (veh/h)	224	1	369	3	1	20	218	723	6	8	700	105
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	1.00		0.98	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1841	1900	1900	1900	1900
Adj Flow Rate, veh/h	243	1	314	3	1	22	237	786	7	9	761	27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	4	0	0	0	0
Cap, veh/h	291	1	412	60	38	284	253	1061	9	16	858	696
Arrive On Green	0.27	0.27	0.26	0.26	0.27	0.26	0.14	0.58	0.57	0.01	0.45	0.45
Sat Flow, veh/h	1393	5	1536	49	143	1057	1810	1821	16	1810	1900	1542
Grp Volume(v), veh/h	243	0	315	26	0	0	237	0	793	9	761	27
Grp Sat Flow(s),veh/h/ln	1393	0	1541	1249	0	0	1810	0	1837	1810	1900	1542
Q Serve(g_s), s	6.8	0.0	16.1	0.1	0.0	0.0	11.1	0.0	27.2	0.4	31.4	0.8
Cycle Q Clear(g_c), s	23.0	0.0	16.1	16.2	0.0	0.0	11.1	0.0	27.2	0.4	31.4	0.8
Prop In Lane	1.00		1.00	0.12		0.85	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	291	0	414	375	0	0	253	0	1070	16	858	696
V/C Ratio(X)	0.84	0.00	0.76	0.07	0.00	0.00	0.94	0.00	0.74	0.55	0.89	0.04
Avail Cap(c_a), veh/h	291	0	414	375	0	0	253	0	1093	84	954	774
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.4	0.0	29.1	23.6	0.0	0.0	36.5	0.0	13.1	42.3	21.5	13.1
Incr Delay (d2), s/veh	18.1	0.0	7.6	0.1	0.0	0.0	38.9	0.0	3.0	16.6	10.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	0.0	6.7	0.4	0.0	0.0	7.5	0.0	10.4	0.3	15.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.5	0.0	36.7	23.7	0.0	0.0	75.4	0.0	16.1	58.9	31.6	13.2
LnGrp LOS	D	A	D	C	A	A	E	A	B	E	C	B
Approach Vol, veh/h		558			26			1030			797	
Approach Delay, s/veh		44.0			23.7			29.8			31.3	
Approach LOS		D			C			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.8	53.9		27.0	16.0	42.7		27.0				
Change Period (Y+Rc), s	4.0	5.0		4.5	4.0	5.0		4.5				
Max Green Setting (Gmax), s	4.0	50.0		22.5	12.0	42.0		22.5				
Max Q Clear Time (g_c+I1), s	2.4	29.2		25.0	13.1	33.4		18.2				
Green Ext Time (p_c), s	0.0	7.8		0.0	0.0	4.3		0.0				

### Intersection Summary

HCM 6th Ctrl Delay	33.5
HCM 6th LOS	C

### Notes

User approved pedestrian interval to be less than phase max green.

HCM 6th TWSC  
 2: SW Boones Ferry Road & SW Norwood Road

01/26/2023

Intersection						
Int Delay, s/veh	23.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑	↑	↑	↑
Traffic Vol, veh/h	154	206	538	120	129	421
Future Vol, veh/h	154	206	538	120	129	421
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	65	290	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	0	0	0	0	0
Mvmt Flow	169	226	591	132	142	463

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1338	591	0	0	723	0
Stage 1	591	-	-	-	-	-
Stage 2	747	-	-	-	-	-
Critical Hdwy	6.42	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	~ 169	511	-	-	889	-
Stage 1	553	-	-	-	-	-
Stage 2	468	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 142	511	-	-	889	-
Mov Cap-2 Maneuver	272	-	-	-	-	-
Stage 1	553	-	-	-	-	-
Stage 2	393	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	99.5	0	2.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	371	889
HCM Lane V/C Ratio	-	-	1.066	0.159
HCM Control Delay (s)	-	-	99.5	9.8
HCM Lane LOS	-	-	F	A
HCM 95th %tile Q(veh)	-	-	13.8	0.6

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

HCM 6th TWSC  
3: Site Access & SW Norwood Road

01/26/2023

Intersection						
Int Delay, s/veh	2.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	125	124	22	259	101	18
Future Vol, veh/h	125	124	22	259	101	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	137	136	24	285	111	20

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	273	0	538
Stage 1	-	-	-	-	205
Stage 2	-	-	-	-	333
Critical Hdwy	-	-	4.12	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.218	-	3.5
Pot Cap-1 Maneuver	-	-	1290	-	508
Stage 1	-	-	-	-	834
Stage 2	-	-	-	-	731
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1290	-	497
Mov Cap-2 Maneuver	-	-	-	-	497
Stage 1	-	-	-	-	834
Stage 2	-	-	-	-	715

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	14
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	530	-	-	1290	-
HCM Lane V/C Ratio	0.247	-	-	0.019	-
HCM Control Delay (s)	14	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1	-	-	0.1	-

HCM 6th TWSC  
4: SW 82nd Avenue & SW Norwood Road/Driveway

01/26/2023

Intersection												
Int Delay, s/veh	8.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↗
Traffic Vol, veh/h	232	0	12	0	0	0	32	3	0	0	0	181
Future Vol, veh/h	232	0	12	0	0	0	32	3	0	0	0	181
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	-	-	-	15
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	1	0	0	0	0	0	5	0	0	0	0	0
Mvmt Flow	255	0	13	0	0	0	35	3	0	0	0	199

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	13	0	0	518	518	7	519	524	-
Stage 1	-	-	-	-	-	-	517	517	-	1	1	-
Stage 2	-	-	-	-	-	-	1	1	-	518	523	-
Critical Hdwy	4.11	-	-	4.1	-	-	7.15	6.5	6.2	7.1	6.5	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.209	-	-	2.2	-	-	3.545	4	3.3	3.5	4	-
Pot Cap-1 Maneuver	1628	-	-	1619	-	-	463	465	1081	471	461	0
Stage 1	-	-	-	-	-	-	536	537	-	1027	899	0
Stage 2	-	-	-	-	-	-	1014	899	-	544	534	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1628	-	-	1619	-	-	407	392	1081	411	388	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	407	392	-	411	388	-
Stage 1	-	-	-	-	-	-	451	452	-	865	899	-
Stage 2	-	-	-	-	-	-	1014	899	-	455	450	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	7.2			0			14.8			0		
HCM LOS							B			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	406	1628	-	-	1619	-	-	-	-
HCM Lane V/C Ratio	0.095	0.157	-	-	-	-	-	-	-
HCM Control Delay (s)	14.8	7.6	0	-	0	-	-	0	0
HCM Lane LOS	B	A	A	-	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	0.6	-	-	0	-	-	-	-

# HCM Signalized Intersection Capacity Analysis

## 5: SW Boones Ferry Road & Basalt Creek Parkway Extension

01/26/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	73	744	645	639	483	163
Future Volume (vph)	73	744	645	639	483	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1805	1615	1703	1900	3439	
Flt Permitted	0.95	1.00	0.26	1.00	1.00	
Satd. Flow (perm)	1805	1615	459	1900	3439	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	80	818	709	702	531	179
RTOR Reduction (vph)	0	48	0	0	32	0
Lane Group Flow (vph)	80	770	709	702	678	0
Heavy Vehicles (%)	0%	0%	6%	0%	0%	4%
Turn Type	Prot	pt+ov	pm+pt	NA	NA	
Protected Phases	8	8 1	1	6	2	
Permitted Phases			6			
Actuated Green, G (s)	9.4	53.4	75.7	75.7	31.7	
Effective Green, g (s)	9.9	49.0	77.1	77.1	33.1	
Actuated g/C Ratio	0.10	0.52	0.81	0.81	0.35	
Clearance Time (s)	4.5		5.4	5.4	5.4	
Vehicle Extension (s)	2.5		2.3	4.4	4.4	
Lane Grp Cap (vph)	188	833	896	1542	1198	
v/s Ratio Prot	0.04	c0.48	0.33	0.37	0.20	
v/s Ratio Perm			c0.31			
v/c Ratio	0.43	0.92	0.79	0.46	0.57	
Uniform Delay, d1	39.9	21.3	12.5	2.7	25.1	
Progression Factor	1.00	1.00	0.90	0.97	1.00	
Incremental Delay, d2	1.1	15.7	4.3	0.9	1.9	
Delay (s)	41.0	37.0	15.5	3.5	27.1	
Level of Service	D	D	B	A	C	
Approach Delay (s)	37.3			9.5	27.1	
Approach LOS	D			A	C	

Intersection Summary			
HCM 2000 Control Delay		21.9	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio		0.88	
Actuated Cycle Length (s)		95.0	Sum of lost time (s) 12.9
Intersection Capacity Utilization		71.3%	ICU Level of Service C
Analysis Period (min)		15	
c Critical Lane Group			

# HCM 6th Signalized Intersection Summary

## 5: SW Boones Ferry Road & Basalt Creek Parkway Extension

01/26/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	73	744	645	639	483	163
Future Volume (veh/h)	73	744	645	639	483	163
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1811	1900	1900	1841
Adj Flow Rate, veh/h	80	488	709	702	531	174
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	6	0	0	4
Cap, veh/h	141	977	1030	1592	688	225
Arrive On Green	0.08	0.08	0.54	0.84	0.26	0.24
Sat Flow, veh/h	1810	1610	1725	1900	2770	873
Grp Volume(v), veh/h	80	488	709	702	358	347
Grp Sat Flow(s),veh/h/ln	1810	1610	1725	1900	1805	1743
Q Serve(g_s), s	4.1	0.0	21.1	9.0	17.4	17.6
Cycle Q Clear(g_c), s	4.1	0.0	21.1	9.0	17.4	17.6
Prop In Lane	1.00	1.00	1.00			0.50
Lane Grp Cap(c), veh/h	141	977	1030	1592	464	448
V/C Ratio(X)	0.57	0.50	0.69	0.44	0.77	0.77
Avail Cap(c_a), veh/h	229	1055	1030	1592	532	514
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.91	0.91	1.00	1.00
Uniform Delay (d), s/veh	42.2	10.5	13.4	2.0	32.7	33.1
Incr Delay (d2), s/veh	2.6	0.3	1.6	0.8	11.7	12.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	5.3	9.8	1.9	9.0	8.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	44.9	10.8	15.0	2.8	44.3	45.4
LnGrp LOS	D	B	B	A	D	D
Approach Vol, veh/h				1411	705	
Approach Delay, s/veh				8.9	44.9	
Approach LOS				A	D	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	55.1	28.4			83.6	11.4
Change Period (Y+Rc), s	* 5.4	* 5.4			* 5.4	4.5
Max Green Setting (Gmax), s	* 42	* 27			* 74	11.5
Max Q Clear Time (g_c+I1), s	23.1	19.6			11.0	6.1
Green Ext Time (p_c), s	1.5	3.4			10.8	0.9

### Intersection Summary

HCM 6th Ctrl Delay	19.8
HCM 6th LOS	B

### Notes

User approved pedestrian interval to be less than phase max green.

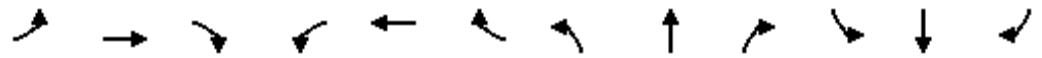
\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



# HCM Signalized Intersection Capacity Analysis

## 6: SW Boones Ferry Road & SW Day Road

01/26/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↔		↖	↕↔		↖	↕↔	
Traffic Volume (vph)	25	0	334	0	0	0	348	1259	0	0	1206	21
Future Volume (vph)	25	0	334	0	0	0	348	1259	0	0	1206	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.3	4.7				4.9	4.0			4.0	
Lane Util. Factor		1.00	1.00				*0.85	0.95			0.95	
Frbp, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Flpb, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Frt		1.00	0.85				1.00	1.00			1.00	
Flt Protected		0.95	1.00				0.95	1.00			1.00	
Satd. Flow (prot)		1803	1583				1447	3610			3598	
Flt Permitted		0.89	1.00				0.95	1.00			1.00	
Satd. Flow (perm)		1687	1583				1447	3610			3598	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	27	0	367	0	0	0	382	1384	0	0	1325	23
RTOR Reduction (vph)	0	0	58	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	27	309	0	0	0	382	1384	0	0	1347	0
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)									3			
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	6%	0%	0%	0%	0%	4%
Turn Type	Perm	NA	pm+ov				Prot	NA		Prot	NA	
Protected Phases		8	1		4		1	6		5	2	
Permitted Phases	8		8	4								
Actuated Green, G (s)		4.3	32.1				27.8	80.8			47.6	
Effective Green, g (s)		4.5	33.5				28.3	82.2			49.0	
Actuated g/C Ratio		0.05	0.35				0.30	0.87			0.52	
Clearance Time (s)		4.5	5.4				5.4	5.4			5.4	
Vehicle Extension (s)		2.5	2.3				2.3	4.4			4.4	
Lane Grp Cap (vph)		79	558				431	3123			1855	
v/s Ratio Prot			c0.17				c0.26	0.38			c0.37	
v/s Ratio Perm		0.02	0.03									
v/c Ratio		0.34	0.55				0.89	0.44			0.73	
Uniform Delay, d1		43.8	24.7				31.8	1.4			17.8	
Progression Factor		1.00	1.00				1.00	1.00			1.10	
Incremental Delay, d2		1.9	0.8				18.9	0.5			1.7	
Delay (s)		45.7	25.6				50.7	1.9			21.2	
Level of Service		D	C				D	A			C	
Approach Delay (s)		27.0			0.0			12.4			21.2	
Approach LOS		C			A			B			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			17.4				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			95.0				Sum of lost time (s)			13.2		
Intersection Capacity Utilization			69.8%				ICU Level of Service			C		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM 6th Signalized Intersection Summary  
 6: SW Boones Ferry Road & SW Day Road

01/26/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔		↔	↔		↔	↔	
Traffic Volume (veh/h)	25	0	334	0	0	0	348	1259	0	0	1206	21
Future Volume (veh/h)	25	0	334	0	0	0	348	1259	0	0	1206	21
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1870	1900	1900	1900	1811	1900	1900	1900	1900	1841
Adj Flow Rate, veh/h	27	0	345	0	0	0	382	1384	0	0	1325	23
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	2	0	0	0	6	0	0	0	0	4
Cap, veh/h	192	0	592	0	160	0	419	1926	0	446	1795	31
Arrive On Green	0.08	0.00	0.09	0.00	0.00	0.00	0.29	0.53	0.00	0.00	0.99	0.96
Sat Flow, veh/h	1435	0	1580	0	1900	0	1466	3705	0	1810	3631	63
Grp Volume(v), veh/h	27	0	345	0	0	0	382	1384	0	0	658	690
Grp Sat Flow(s),veh/h/ln	1435	0	1580	0	1900	0	1466	1805	0	1810	1805	1889
Q Serve(g_s), s	1.7	0.0	8.2	0.0	0.0	0.0	23.9	27.6	0.0	0.0	1.4	1.5
Cycle Q Clear(g_c), s	1.7	0.0	8.2	0.0	0.0	0.0	23.9	27.6	0.0	0.0	1.4	1.5
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.03
Lane Grp Cap(c), veh/h	189	0	592	0	160	0	419	1926	0	446	893	934
V/C Ratio(X)	0.14	0.00	0.58	0.00	0.00	0.00	0.91	0.72	0.00	0.00	0.74	0.74
Avail Cap(c_a), veh/h	189	0	592	0	160	0	480	2679	0	446	893	934
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.62	0.62
Uniform Delay (d), s/veh	41.0	0.0	23.8	0.0	0.0	0.0	32.8	16.8	0.0	0.0	0.3	0.3
Incr Delay (d2), s/veh	0.3	0.0	1.3	0.0	0.0	0.0	19.4	2.3	0.0	0.0	3.4	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	6.0	0.0	0.0	0.0	10.4	11.0	0.0	0.0	1.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.2	0.0	25.1	0.0	0.0	0.0	52.2	19.1	0.0	0.0	3.7	3.6
LnGrp LOS	D	A	C	A	A	A	D	B	A	A	A	A
Approach Vol, veh/h		372			0			1766			1348	
Approach Delay, s/veh		26.2			0.0			26.3			3.6	
Approach LOS		C						C			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	32.0	51.0		12.0	28.3	54.7		12.0				
Change Period (Y+Rc), s	* 5.4	* 5.4		4.5	* 5.4	* 5.4		4.5				
Max Green Setting (Gmax), s	* 31	* 42		7.5	* 4	* 69		7.5				
Max Q Clear Time (g_c+I1), s	25.9	3.5		0.0	0.0	29.6		10.2				
Green Ext Time (p_c), s	0.7	16.7		0.0	0.0	19.7		0.0				

Intersection Summary

HCM 6th Ctrl Delay	17.5
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.  
 \* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM Signalized Intersection Capacity Analysis

## 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

01/26/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	4	207	1	1	15	231	695	4	6	865	247
Future Volume (vph)	184	4	207	1	1	15	231	695	4	6	865	247
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5		4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.97			0.96		1.00	1.00		1.00	1.00	0.92
Flpb, ped/bikes	0.97	1.00			1.00		1.00	1.00		0.98	1.00	1.00
Frt	1.00	0.85			0.88		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1755	1566			1596		1805	1825		1760	1900	1489
Flt Permitted	0.75	1.00			0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1378	1566			1579		1805	1825		1760	1900	1489
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	200	4	225	1	1	16	251	755	4	7	940	268
RTOR Reduction (vph)	0	185	0	0	13	0	0	0	0	0	0	54
Lane Group Flow (vph)	200	44	0	0	5	0	251	759	0	7	940	214
Confl. Peds. (#/hr)	12		4	4			12	4		19	19	19
Confl. Bikes (#/hr)			1							2		2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								6
Actuated Green, G (s)	18.2	18.2			18.2		15.6	70.7		0.7	55.8	55.8
Effective Green, g (s)	18.2	18.2			18.2		15.6	70.7		0.7	55.8	55.8
Actuated g/C Ratio	0.18	0.18			0.18		0.15	0.69		0.01	0.54	0.54
Clearance Time (s)	4.5	4.5			4.5		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	2.3	2.3			2.5		2.3	4.3		2.3	4.3	4.3
Lane Grp Cap (vph)	243	276			278		273	1251		11	1028	805
v/s Ratio Prot		0.03					c0.14	0.42		0.00	c0.49	
v/s Ratio Perm	c0.15				0.00							0.14
v/c Ratio	0.82	0.16			0.02		0.92	0.61		0.64	0.91	0.27
Uniform Delay, d1	40.9	36.0			35.1		43.1	8.7		51.1	21.5	12.7
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	19.1	0.2			0.0		33.3	1.0		70.2	12.5	0.3
Delay (s)	60.0	36.1			35.1		76.4	9.8		121.2	34.0	13.0
Level of Service	E	D			D		E	A		F	C	B
Approach Delay (s)		47.3			35.1			26.3			29.8	
Approach LOS		D			D			C			C	

### Intersection Summary

HCM 2000 Control Delay	31.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	103.1	Sum of lost time (s)	13.5
Intersection Capacity Utilization	86.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

# HCM 6th Signalized Intersection Summary

## 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

01/26/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	184	4	207	1	1	15	231	695	4	6	865	247
Future Volume (veh/h)	184	4	207	1	1	15	231	695	4	6	865	247
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.94	0.98		0.96	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1841	1900	1900	1900	1900
Adj Flow Rate, veh/h	200	4	138	1	1	16	251	755	4	7	940	181
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	4	0	0	0	0
Cap, veh/h	302	7	245	42	26	231	283	1265	7	13	1030	839
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.16	0.69	0.69	0.01	0.54	0.54
Sat Flow, veh/h	1369	43	1483	19	156	1400	1810	1829	10	1810	1900	1548
Grp Volume(v), veh/h	200	0	142	18	0	0	251	0	759	7	940	181
Grp Sat Flow(s),veh/h/ln	1369	0	1526	1575	0	0	1810	0	1839	1810	1900	1548
Q Serve(g_s), s	12.9	0.0	8.5	0.0	0.0	0.0	13.5	0.0	21.5	0.4	44.4	6.0
Cycle Q Clear(g_c), s	13.8	0.0	8.5	1.0	0.0	0.0	13.5	0.0	21.5	0.4	44.4	6.0
Prop In Lane	1.00		0.97	0.06		0.89	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	302	0	252	298	0	0	283	0	1271	13	1030	839
V/C Ratio(X)	0.66	0.00	0.56	0.06	0.00	0.00	0.89	0.00	0.60	0.55	0.91	0.22
Avail Cap(c_a), veh/h	318	0	270	316	0	0	292	0	1299	73	1113	906
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.2	0.0	38.1	34.9	0.0	0.0	40.9	0.0	8.0	49.0	20.5	11.8
Incr Delay (d2), s/veh	4.0	0.0	1.6	0.1	0.0	0.0	25.1	0.0	0.9	20.4	11.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	0.0	3.3	0.4	0.0	0.0	7.8	0.0	7.3	0.2	20.9	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.2	0.0	39.7	35.0	0.0	0.0	66.1	0.0	9.0	69.4	31.8	12.0
LnGrp LOS	D	A	D	C	A	A	E	A	A	E	C	B
Approach Vol, veh/h		342			18			1010			1128	
Approach Delay, s/veh		42.3			35.0			23.2			28.9	
Approach LOS		D			C			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.7	73.5		20.9	19.5	58.7		20.9				
Change Period (Y+Rc), s	4.0	5.0		4.5	4.0	5.0		4.5				
Max Green Setting (Gmax), s	4.0	70.0		17.5	16.0	58.0		17.5				
Max Q Clear Time (g_c+I1), s	2.4	23.5		15.8	15.5	46.4		3.0				
Green Ext Time (p_c), s	0.0	9.4		0.3	0.1	7.3		0.0				

### Intersection Summary

HCM 6th Ctrl Delay	28.5
HCM 6th LOS	C

### Notes

User approved pedestrian interval to be less than phase max green.

HCM 6th TWSC  
 2: SW Boones Ferry Road & SW Norwood Road

01/26/2023

Intersection						
Int Delay, s/veh	10					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑	↑	↑	↑
Traffic Vol, veh/h	83	162	560	161	168	764
Future Vol, veh/h	83	162	560	161	168	764
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	65	290	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	0	0	0	0	0
Mvmt Flow	91	178	615	177	185	840

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1825	615	0	0	792	0
Stage 1	615	-	-	-	-	-
Stage 2	1210	-	-	-	-	-
Critical Hdwy	6.42	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	~ 85	495	-	-	838	-
Stage 1	539	-	-	-	-	-
Stage 2	282	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	~ 66	495	-	-	838	-
Mov Cap-2 Maneuver	166	-	-	-	-	-
Stage 1	539	-	-	-	-	-
Stage 2	220	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	70.2	0	1.9
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	296	838
HCM Lane V/C Ratio	-	-	0.91	0.22
HCM Control Delay (s)	-	-	70.2	10.5
HCM Lane LOS	-	-	F	B
HCM 95th %tile Q(veh)	-	-	8.5	0.8

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

Intersection						
Int Delay, s/veh	1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	297	32	6	210	35	6
Future Vol, veh/h	297	32	6	210	35	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	326	35	7	231	38	7

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	361	0	589
Stage 1	-	-	-	-	344
Stage 2	-	-	-	-	245
Critical Hdwy	-	-	4.12	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.218	-	3.5
Pot Cap-1 Maneuver	-	-	1198	-	474
Stage 1	-	-	-	-	722
Stage 2	-	-	-	-	800
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1198	-	471
Mov Cap-2 Maneuver	-	-	-	-	471
Stage 1	-	-	-	-	722
Stage 2	-	-	-	-	794

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	13
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	495	-	-	1198	-
HCM Lane V/C Ratio	0.091	-	-	0.006	-
HCM Control Delay (s)	13	-	-	8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

HCM 6th TWSC  
4: SW 82nd Avenue & SW Norwood Road/Driveway

01/26/2023

Intersection												
Int Delay, s/veh	7.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↗
Traffic Vol, veh/h	163	0	32	0	0	0	28	4	0	0	5	199
Future Vol, veh/h	163	0	32	0	0	0	28	4	0	0	5	199
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	-	-	-	15
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	1	0	0	0	0	0	5	0	0	0	0	0
Mvmt Flow	179	0	35	0	0	0	31	4	0	0	5	219

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	35	0	0	380	377	18	379	394	-
Stage 1	-	-	-	-	-	-	376	376	-	1	1	-
Stage 2	-	-	-	-	-	-	4	1	-	378	393	-
Critical Hdwy	4.11	-	-	4.1	-	-	7.15	6.5	6.2	7.1	6.5	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.209	-	-	2.2	-	-	3.545	4	3.3	3.5	4	-
Pot Cap-1 Maneuver	1628	-	-	1589	-	-	572	558	1066	582	546	0
Stage 1	-	-	-	-	-	-	639	620	-	1027	899	0
Stage 2	-	-	-	-	-	-	1011	899	-	648	609	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1628	-	-	1589	-	-	518	495	1066	528	484	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	518	495	-	528	484	-
Stage 1	-	-	-	-	-	-	567	550	-	911	899	-
Stage 2	-	-	-	-	-	-	1005	899	-	570	540	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	6.3	0	12.5	12.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	515	1628	-	-	1589	-	-	484	-
HCM Lane V/C Ratio	0.068	0.11	-	-	-	-	-	0.011	-
HCM Control Delay (s)	12.5	7.5	0	-	0	-	-	12.5	0
HCM Lane LOS	B	A	A	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.2	0.4	-	-	0	-	-	0	-

# HCM Signalized Intersection Capacity Analysis

## 5: SW Boones Ferry Road & Basalt Creek Parkway Extension

01/26/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	103	690	645	671	693	190
Future Volume (vph)	103	690	645	671	693	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.97	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1805	1615	1703	1900	3464	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1805	1615	1703	1900	3464	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	113	758	709	737	762	209
RTOR Reduction (vph)	0	20	0	0	23	0
Lane Group Flow (vph)	113	738	709	737	948	0
Heavy Vehicles (%)	0%	0%	6%	0%	0%	4%
Turn Type	Prot	pm+ov	Prot	NA	NA	
Protected Phases	8	1	1	6	2	
Permitted Phases		8				
Actuated Green, G (s)	8.3	55.0	46.7	86.8	34.7	
Effective Green, g (s)	8.8	56.0	48.1	88.2	36.1	
Actuated g/C Ratio	0.08	0.53	0.46	0.84	0.34	
Clearance Time (s)	4.5	5.4	5.4	5.4	5.4	
Vehicle Extension (s)	2.5	2.3	2.3	4.4	4.4	
Lane Grp Cap (vph)	151	861	780	1596	1190	
v/s Ratio Prot	0.06	c0.39	c0.42	0.39	c0.27	
v/s Ratio Perm		0.07				
v/c Ratio	0.75	0.86	0.91	0.46	0.80	
Uniform Delay, d1	47.0	21.1	26.4	2.2	31.1	
Progression Factor	1.00	1.00	0.96	0.65	1.00	
Incremental Delay, d2	17.3	8.3	13.3	0.9	5.6	
Delay (s)	64.4	29.3	38.6	2.3	36.7	
Level of Service	E	C	D	A	D	
Approach Delay (s)	33.9			20.1	36.7	
Approach LOS	C			C	D	

Intersection Summary			
HCM 2000 Control Delay	28.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.9
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



# HCM 6th Signalized Intersection Summary

## 5: SW Boones Ferry Road & Basalt Creek Parkway Extension

01/26/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	103	690	645	671	693	190
Future Volume (veh/h)	103	690	645	671	693	190
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1811	1900	1900	1841
Adj Flow Rate, veh/h	113	428	709	737	762	204
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	6	0	0	4
Cap, veh/h	155	785	708	1592	1096	293
Arrive On Green	0.09	0.09	0.82	1.00	0.39	0.38
Sat Flow, veh/h	1810	1610	1725	1900	2911	754
Grp Volume(v), veh/h	113	428	709	737	489	477
Grp Sat Flow(s),veh/h/ln	1810	1610	1725	1900	1805	1764
Q Serve(g_s), s	6.4	9.0	43.1	0.0	23.8	23.9
Cycle Q Clear(g_c), s	6.4	9.0	43.1	0.0	23.8	23.9
Prop In Lane	1.00	1.00	1.00			0.43
Lane Grp Cap(c), veh/h	155	785	708	1592	703	687
V/C Ratio(X)	0.73	0.54	1.00	0.46	0.70	0.70
Avail Cap(c_a), veh/h	155	785	838	1592	703	687
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.90	0.90	1.00	1.00
Uniform Delay (d), s/veh	46.8	18.8	9.4	0.0	26.8	27.1
Incr Delay (d2), s/veh	15.1	0.6	27.7	0.9	5.6	5.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	7.2	9.0	0.4	11.1	11.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	61.9	19.4	37.1	0.9	32.5	32.9
LnGrp LOS	E	B	F	A	C	C
Approach Vol, veh/h	541			1446	966	
Approach Delay, s/veh	28.3			18.6	32.7	
Approach LOS	C			B	C	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	49.2	42.8			92.0	13.0
Change Period (Y+Rc), s	* 5.4	* 5.4			* 5.4	4.5
Max Green Setting (Gmax), s	* 50	* 32			* 87	8.5
Max Q Clear Time (g_c+I1), s	45.1	25.9			2.0	11.0
Green Ext Time (p_c), s	0.9	3.8			12.0	0.0

### Intersection Summary

HCM 6th Ctrl Delay	25.0
HCM 6th LOS	C

### Notes

User approved pedestrian interval to be less than phase max green.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM Signalized Intersection Capacity Analysis

## 6: SW Boones Ferry Road & SW Day Road

01/26/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↔		↖	↕↔		↖	↕↔	
Traffic Volume (vph)	19	0	376	0	0	0	374	1297	0	0	1364	19
Future Volume (vph)	19	0	376	0	0	0	374	1297	0	0	1364	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0				4.0	4.0			4.0	
Lane Util. Factor		1.00	1.00				*0.85	0.95			0.95	
Frbp, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Flpb, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Frt		1.00	0.85				1.00	1.00			1.00	
Flt Protected		0.95	1.00				0.95	1.00			1.00	
Satd. Flow (prot)		1803	1583				1447	3610			3601	
Flt Permitted		0.95	1.00				0.95	1.00			1.00	
Satd. Flow (perm)		1808	1583				1447	3610			3601	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	21	0	413	0	0	0	411	1425	0	0	1499	21
RTOR Reduction (vph)	0	0	51	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	21	362	0	0	0	411	1425	0	0	1519	0
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)									3			
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	6%	0%	0%	0%	0%	4%
Turn Type	Perm	NA	pm+ov				Prot	NA		Prot	NA	
Protected Phases		8	1		4		1	6		5	2	
Permitted Phases	8		8	4								
Actuated Green, G (s)		3.7	35.6				31.9	91.4			54.1	
Effective Green, g (s)		4.2	38.4				33.3	92.8			55.5	
Actuated g/C Ratio		0.04	0.37				0.32	0.88			0.53	
Clearance Time (s)		4.5	5.4				5.4	5.4			5.4	
Vehicle Extension (s)		2.5	2.3				2.3	4.4			4.4	
Lane Grp Cap (vph)		72	578				458	3190			1903	
v/s Ratio Prot			c0.20				c0.28	0.39			c0.42	
v/s Ratio Perm		0.01	0.03									
v/c Ratio		0.29	0.63				0.90	0.45			0.80	
Uniform Delay, d1		49.0	27.4				34.2	1.2			20.2	
Progression Factor		1.00	1.00				1.00	1.00			0.89	
Incremental Delay, d2		1.6	1.7				19.6	0.5			2.2	
Delay (s)		50.6	29.1				53.8	1.6			20.1	
Level of Service		D	C				D	A			C	
Approach Delay (s)		30.1			0.0			13.3			20.1	
Approach LOS		C			A			B			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			18.0				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			105.0				Sum of lost time (s)			13.0		
Intersection Capacity Utilization			74.8%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

# HCM 6th Signalized Intersection Summary

## 6: SW Boones Ferry Road & SW Day Road

01/26/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕		↗	↕↗		↗	↕↗	
Traffic Volume (veh/h)	19	0	376	0	0	0	374	1297	0	0	1364	19
Future Volume (veh/h)	19	0	376	0	0	0	374	1297	0	0	1364	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1870	1900	1900	1900	1811	1900	1900	1900	1900	1841
Adj Flow Rate, veh/h	21	0	391	0	0	0	411	1425	0	0	1499	21
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	2	0	0	0	6	0	0	0	0	4
Cap, veh/h	159	0	602	0	119	0	453	1961	0	473	1874	26
Arrive On Green	0.06	0.00	0.07	0.00	0.00	0.00	0.31	0.54	0.00	0.00	1.00	1.00
Sat Flow, veh/h	1433	0	1578	0	1900	0	1466	3705	0	1810	3645	51
Grp Volume(v), veh/h	21	0	391	0	0	0	411	1425	0	0	742	778
Grp Sat Flow(s),veh/h/ln	1433	0	1578	0	1900	0	1466	1805	0	1810	1805	1891
Q Serve(g_s), s	1.5	0.0	7.5	0.0	0.0	0.0	28.3	31.3	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.5	0.0	7.5	0.0	0.0	0.0	28.3	31.3	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.03
Lane Grp Cap(c), veh/h	152	0	602	0	119	0	453	1961	0	473	928	972
V/C Ratio(X)	0.14	0.00	0.65	0.00	0.00	0.00	0.91	0.73	0.00	0.00	0.80	0.80
Avail Cap(c_a), veh/h	152	0	602	0	119	0	503	2816	0	473	928	972
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.50	0.50
Uniform Delay (d), s/veh	47.0	0.0	26.8	0.0	0.0	0.0	34.9	18.1	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	2.2	0.0	0.0	0.0	18.6	2.4	0.0	0.0	3.7	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	8.0	0.0	0.0	0.0	12.1	12.7	0.0	0.0	1.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.3	0.0	29.0	0.0	0.0	0.0	53.4	20.5	0.0	0.0	3.7	3.6
LnGrp LOS	D	A	C	A	A	A	D	C	A	A	A	A
Approach Vol, veh/h		412			0			1836			1520	
Approach Delay, s/veh		30.0			0.0			27.9			3.6	
Approach LOS		C						C			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	36.4	58.0		10.6	33.4	61.0		10.6				
Change Period (Y+Rc), s	* 5.4	* 5.4		4.5	* 5.4	* 5.4		4.5				
Max Green Setting (Gmax), s	* 35	* 49		6.1	* 4	* 81		6.1				
Max Q Clear Time (g_c+I1), s	30.3	2.0		0.0	0.0	33.3		9.5				
Green Ext Time (p_c), s	0.7	22.2		0.0	0.0	22.4		0.0				

### Intersection Summary

HCM 6th Ctrl Delay	18.3
HCM 6th LOS	B

### Notes

User approved pedestrian interval to be less than phase max green.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

## 2040 Conditions with Proposed Zoning





















AM Peak Hour Synchro Reports

PM Peak Hour Synchro Reports



HCM Signalized Intersection Capacity Analysis  
 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

01/26/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	1	367	3	1	20	218	711	6	8	663	105
Future Volume (vph)	224	1	367	3	1	20	218	711	6	8	663	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.97			0.96		1.00	1.00		1.00	1.00	0.93
Flpb, ped/bikes	0.98	1.00			1.00		1.00	1.00		0.98	1.00	1.00
Frt	1.00	0.85			0.89		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1766	1566			1614		1805	1824		1771	1900	1508
Flt Permitted	0.74	1.00			0.82		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1376	1566			1327		1805	1824		1771	1900	1508
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	243	1	399	3	1	22	237	773	7	9	721	114
RTOR Reduction (vph)	0	223	0	0	17	0	0	0	0	0	0	60
Lane Group Flow (vph)	243	177	0	0	9	0	237	780	0	9	721	54
Confl. Peds. (#/hr)	12		4	4		12	4		19	19		19
Confl. Bikes (#/hr)			1						2			2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								6
Actuated Green, G (s)	17.8	17.8			17.8		12.4	49.5		0.7	37.8	37.8
Effective Green, g (s)	18.3	18.3			18.3		12.4	50.5		0.7	38.8	38.8
Actuated g/C Ratio	0.22	0.22			0.22		0.15	0.62		0.01	0.48	0.48
Clearance Time (s)	4.5	4.5			4.5		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	2.3	2.3			2.5		2.3	4.3		2.3	4.3	4.3
Lane Grp Cap (vph)	308	351			297		274	1130		15	904	717
v/s Ratio Prot		0.11					c0.13	0.43		0.01	c0.38	
v/s Ratio Perm	c0.18				0.01							0.04
v/c Ratio	0.79	0.51			0.03		0.86	0.69		0.60	0.80	0.08
Uniform Delay, d1	29.8	27.6			24.7		33.7	10.3		40.3	18.0	11.6
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	12.0	0.7			0.0		23.2	2.0		40.9	5.4	0.1
Delay (s)	41.7	28.3			24.7		56.9	12.3		81.2	23.4	11.7
Level of Service	D	C			C		E	B		F	C	B
Approach Delay (s)		33.4			24.7			22.7			22.5	
Approach LOS		C			C			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			25.4				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			81.5				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			80.2%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

# HCM 6th Signalized Intersection Summary

## 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

01/26/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	224	1	367	3	1	20	218	711	6	8	663	105
Future Volume (veh/h)	224	1	367	3	1	20	218	711	6	8	663	105
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.96	1.00		0.98	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1841	1900	1900	1900	1900
Adj Flow Rate, veh/h	243	1	312	3	1	22	237	773	7	9	721	27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	4	0	0	0	0
Cap, veh/h	308	1	423	63	40	301	260	1042	9	16	832	675
Arrive On Green	0.28	0.28	0.27	0.27	0.28	0.27	0.14	0.57	0.56	0.01	0.44	0.44
Sat Flow, veh/h	1393	5	1537	54	145	1095	1810	1821	16	1810	1900	1541
Grp Volume(v), veh/h	243	0	313	26	0	0	237	0	780	9	721	27
Grp Sat Flow(s),veh/h/ln	1393	0	1542	1294	0	0	1810	0	1837	1810	1900	1541
Q Serve(g_s), s	7.4	0.0	15.5	0.1	0.0	0.0	10.8	0.0	26.4	0.4	28.7	0.8
Cycle Q Clear(g_c), s	23.0	0.0	15.5	15.6	0.0	0.0	10.8	0.0	26.4	0.4	28.7	0.8
Prop In Lane	1.00		1.00	0.12		0.85	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	308	0	424	396	0	0	260	0	1052	16	832	675
V/C Ratio(X)	0.79	0.00	0.74	0.07	0.00	0.00	0.91	0.00	0.74	0.55	0.87	0.04
Avail Cap(c_a), veh/h	308	0	424	396	0	0	260	0	1120	87	977	792
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.8	0.0	27.8	22.6	0.0	0.0	35.3	0.0	13.3	41.3	21.3	13.4
Incr Delay (d2), s/veh	12.3	0.0	6.2	0.1	0.0	0.0	33.3	0.0	2.9	16.5	8.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	0.0	6.3	0.4	0.0	0.0	7.0	0.0	10.1	0.3	13.4	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.0	0.0	34.0	22.7	0.0	0.0	68.6	0.0	16.2	57.8	29.4	13.5
LnGrp LOS	D	A	C	C	A	A	E	A	B	E	C	B
Approach Vol, veh/h		556			26			1017			757	
Approach Delay, s/veh		39.3			22.7			28.4			29.2	
Approach LOS		D			C			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.8	51.9		27.0	16.0	40.6		27.0				
Change Period (Y+Rc), s	4.0	5.0		4.5	4.0	5.0		4.5				
Max Green Setting (Gmax), s	4.0	50.0		22.5	12.0	42.0		22.5				
Max Q Clear Time (g_c+I1), s	2.4	28.4		25.0	12.8	30.7		17.6				
Green Ext Time (p_c), s	0.0	7.7		0.0	0.0	4.9		0.0				

### Intersection Summary

HCM 6th Ctrl Delay	31.1
HCM 6th LOS	C

### Notes

User approved pedestrian interval to be less than phase max green.

HCM 6th TWSC  
 2: SW Boones Ferry Road & SW Norwood Road

01/26/2023

Intersection						
Int Delay, s/veh	13.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑	↑	↑	↑
Traffic Vol, veh/h	137	192	538	60	87	421
Future Vol, veh/h	137	192	538	60	87	421
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	65	290	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	0	0	0	0	0
Mvmt Flow	151	211	591	66	96	463

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1246	591	0	0	657	0
Stage 1	591	-	-	-	-	-
Stage 2	655	-	-	-	-	-
Critical Hdwy	6.42	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	192	511	-	-	940	-
Stage 1	553	-	-	-	-	-
Stage 2	517	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	172	511	-	-	940	-
Mov Cap-2 Maneuver	308	-	-	-	-	-
Stage 1	553	-	-	-	-	-
Stage 2	464	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	56.1	0	1.6
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	401	940
HCM Lane V/C Ratio	-	-	0.902	0.102
HCM Control Delay (s)	-	-	56.1	9.3
HCM Lane LOS	-	-	F	A
HCM 95th %tile Q(veh)	-	-	9.4	0.3

HCM 6th TWSC  
 3: Site Access & SW Norwood Road

01/26/2023

Intersection						
Int Delay, s/veh	2.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	125	22	4	259	70	12
Future Vol, veh/h	125	22	4	259	70	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	137	24	4	285	77	13

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	161	0	442
Stage 1	-	-	-	-	149
Stage 2	-	-	-	-	293
Critical Hdwy	-	-	4.12	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.218	-	3.5
Pot Cap-1 Maneuver	-	-	1418	-	577
Stage 1	-	-	-	-	884
Stage 2	-	-	-	-	762
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1418	-	575
Mov Cap-2 Maneuver	-	-	-	-	575
Stage 1	-	-	-	-	884
Stage 2	-	-	-	-	760

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	607	-	-	1418	-
HCM Lane V/C Ratio	0.148	-	-	0.003	-
HCM Control Delay (s)	12	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0	-



HCM 6th TWSC  
4: SW 82nd Avenue & SW Norwood Road/Driveway

01/26/2023

Intersection												
Int Delay, s/veh	8.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↗
Traffic Vol, veh/h	226	0	12	0	0	0	32	3	0	0	0	163
Future Vol, veh/h	226	0	12	0	0	0	32	3	0	0	0	163
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	-	-	-	15
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	1	0	0	0	0	0	5	0	0	0	0	0
Mvmt Flow	248	0	13	0	0	0	35	3	0	0	0	179

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	13	0	0	504	504	7	505	510	-
Stage 1	-	-	-	-	-	-	503	503	-	1	1	-
Stage 2	-	-	-	-	-	-	1	1	-	504	509	-
Critical Hdwy	4.11	-	-	4.1	-	-	7.15	6.5	6.2	7.1	6.5	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.209	-	-	2.2	-	-	3.545	4	3.3	3.5	4	-
Pot Cap-1 Maneuver	1628	-	-	1619	-	-	473	473	1081	481	469	0
Stage 1	-	-	-	-	-	-	545	545	-	1027	899	0
Stage 2	-	-	-	-	-	-	1014	899	-	554	541	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1628	-	-	1619	-	-	417	400	1081	421	397	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	417	400	-	421	397	-
Stage 1	-	-	-	-	-	-	461	461	-	869	899	-
Stage 2	-	-	-	-	-	-	1014	899	-	465	458	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	7.2	0	14.6	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	415	1628	-	-	1619	-	-	-	-
HCM Lane V/C Ratio	0.093	0.153	-	-	-	-	-	-	-
HCM Control Delay (s)	14.6	7.6	0	-	0	-	-	0	0
HCM Lane LOS	B	A	A	-	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	0.5	-	-	0	-	-	-	-

# HCM Signalized Intersection Capacity Analysis

## 5: SW Boones Ferry Road & Basalt Creek Parkway Extension

01/26/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	57	744	645	595	470	159
Future Volume (vph)	57	744	645	595	470	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1805	1615	1703	1900	3438	
Flt Permitted	0.95	1.00	0.27	1.00	1.00	
Satd. Flow (perm)	1805	1615	480	1900	3438	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	63	818	709	654	516	175
RTOR Reduction (vph)	0	52	0	0	32	0
Lane Group Flow (vph)	63	766	709	654	659	0
Heavy Vehicles (%)	0%	0%	6%	0%	0%	4%
Turn Type	Prot	pt+ov	pm+pt	NA	NA	
Protected Phases	8	8 1	1	6	2	
Permitted Phases			6			
Actuated Green, G (s)	9.2	53.2	75.9	75.9	31.9	
Effective Green, g (s)	9.7	48.8	77.3	77.3	33.3	
Actuated g/C Ratio	0.10	0.51	0.81	0.81	0.35	
Clearance Time (s)	4.5		5.4	5.4	5.4	
Vehicle Extension (s)	2.5		2.3	4.4	4.4	
Lane Grp Cap (vph)	184	829	905	1546	1205	
v/s Ratio Prot	0.03	c0.47	0.33	0.34	0.19	
v/s Ratio Perm			c0.31			
v/c Ratio	0.34	0.92	0.78	0.42	0.55	
Uniform Delay, d1	39.7	21.4	11.9	2.5	24.8	
Progression Factor	1.00	1.00	0.90	0.97	1.00	
Incremental Delay, d2	0.8	15.8	4.0	0.8	1.8	
Delay (s)	40.5	37.1	14.7	3.2	26.6	
Level of Service	D	D	B	A	C	
Approach Delay (s)	37.4			9.2	26.6	
Approach LOS	D			A	C	

Intersection Summary			
HCM 2000 Control Delay	21.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	12.9
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

# HCM 6th Signalized Intersection Summary

## 5: SW Boones Ferry Road & Basalt Creek Parkway Extension

01/26/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	57	744	645	595	470	159
Future Volume (veh/h)	57	744	645	595	470	159
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1811	1900	1900	1841
Adj Flow Rate, veh/h	63	488	709	654	516	170
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	6	0	0	4
Cap, veh/h	126	984	1053	1608	676	222
Arrive On Green	0.07	0.07	0.55	0.85	0.25	0.24
Sat Flow, veh/h	1810	1610	1725	1900	2766	876
Grp Volume(v), veh/h	63	488	709	654	348	338
Grp Sat Flow(s),veh/h/ln	1810	1610	1725	1900	1805	1742
Q Serve(g_s), s	3.2	0.0	20.2	7.7	16.9	17.1
Cycle Q Clear(g_c), s	3.2	0.0	20.2	7.7	16.9	17.1
Prop In Lane	1.00	1.00	1.00			0.50
Lane Grp Cap(c), veh/h	126	984	1053	1608	457	441
V/C Ratio(X)	0.50	0.50	0.67	0.41	0.76	0.77
Avail Cap(c_a), veh/h	229	1075	1053	1608	532	514
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.92	0.92	1.00	1.00
Uniform Delay (d), s/veh	42.6	10.3	12.6	1.7	32.8	33.2
Incr Delay (d2), s/veh	2.3	0.3	1.4	0.7	11.4	12.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	5.2	9.3	1.5	8.7	8.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	44.9	10.6	14.0	2.4	44.2	45.3
LnGrp LOS	D	B	B	A	D	D
Approach Vol, veh/h				1363	686	
Approach Delay, s/veh				8.4	44.7	
Approach LOS				A	D	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	56.3	28.0			84.4	10.6
Change Period (Y+Rc), s	* 5.4	* 5.4			* 5.4	4.5
Max Green Setting (Gmax), s	* 42	* 27			* 74	11.5
Max Q Clear Time (g_c+I1), s	22.2	19.1			9.7	5.2
Green Ext Time (p_c), s	1.6	3.5			9.6	0.9

### Intersection Summary

HCM 6th Ctrl Delay	19.3
HCM 6th LOS	B

### Notes

User approved pedestrian interval to be less than phase max green.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM Signalized Intersection Capacity Analysis

## 6: SW Boones Ferry Road & SW Day Road

01/26/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↔		↖	↕↔		↖	↕↔	
Traffic Volume (vph)	23	0	334	0	0	0	348	1217	0	0	1193	21
Future Volume (vph)	23	0	334	0	0	0	348	1217	0	0	1193	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.3	4.7				4.9	4.0			4.0	
Lane Util. Factor		1.00	1.00				*0.85	0.95			0.95	
Frbp, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Flpb, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Frt		1.00	0.85				1.00	1.00			1.00	
Flt Protected		0.95	1.00				0.95	1.00			1.00	
Satd. Flow (prot)		1803	1583				1447	3610			3598	
Flt Permitted		0.89	1.00				0.95	1.00			1.00	
Satd. Flow (perm)		1687	1583				1447	3610			3598	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	25	0	367	0	0	0	382	1337	0	0	1311	23
RTOR Reduction (vph)	0	0	58	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	25	309	0	0	0	382	1337	0	0	1333	0
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)									3			
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	6%	0%	0%	0%	0%	4%
Turn Type	Perm	NA	pm+ov				Prot	NA		Prot	NA	
Protected Phases		8	1		4		1	6		5	2	
Permitted Phases	8		8	4								
Actuated Green, G (s)		4.3	32.1				27.8	80.8			47.6	
Effective Green, g (s)		4.5	33.5				28.3	82.2			49.0	
Actuated g/C Ratio		0.05	0.35				0.30	0.87			0.52	
Clearance Time (s)		4.5	5.4				5.4	5.4			5.4	
Vehicle Extension (s)		2.5	2.3				2.3	4.4			4.4	
Lane Grp Cap (vph)		79	558				431	3123			1855	
v/s Ratio Prot			c0.17				c0.26	0.37			c0.37	
v/s Ratio Perm		0.01	0.03									
v/c Ratio		0.32	0.55				0.89	0.43			0.72	
Uniform Delay, d1		43.8	24.7				31.8	1.4			17.7	
Progression Factor		1.00	1.00				1.00	1.00			1.11	
Incremental Delay, d2		1.7	0.8				18.9	0.4			1.7	
Delay (s)		45.4	25.6				50.7	1.8			21.3	
Level of Service		D	C				D	A			C	
Approach Delay (s)		26.8			0.0			12.7			21.3	
Approach LOS		C			A			B			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			17.6				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			95.0				Sum of lost time (s)			13.2		
Intersection Capacity Utilization			69.4%				ICU Level of Service			C		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM 6th Signalized Intersection Summary  
6: SW Boones Ferry Road & SW Day Road

01/26/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↔		↖	↕		↗	↕	
Traffic Volume (veh/h)	23	0	334	0	0	0	348	1217	0	0	1193	21
Future Volume (veh/h)	23	0	334	0	0	0	348	1217	0	0	1193	21
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1870	1900	1900	1900	1811	1900	1900	1900	1900	1841
Adj Flow Rate, veh/h	25	0	345	0	0	0	382	1337	0	0	1311	23
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	2	0	0	0	6	0	0	0	0	4
Cap, veh/h	192	0	592	0	160	0	419	1872	0	473	1795	31
Arrive On Green	0.08	0.00	0.09	0.00	0.00	0.00	0.29	0.52	0.00	0.00	0.99	0.96
Sat Flow, veh/h	1435	0	1580	0	1900	0	1466	3705	0	1810	3630	64
Grp Volume(v), veh/h	25	0	345	0	0	0	382	1337	0	0	652	682
Grp Sat Flow(s),veh/h/ln	1435	0	1580	0	1900	0	1466	1805	0	1810	1805	1889
Q Serve(g_s), s	1.6	0.0	8.2	0.0	0.0	0.0	23.9	26.9	0.0	0.0	1.4	1.5
Cycle Q Clear(g_c), s	1.6	0.0	8.2	0.0	0.0	0.0	23.9	26.9	0.0	0.0	1.4	1.5
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.03
Lane Grp Cap(c), veh/h	189	0	592	0	160	0	419	1872	0	473	893	934
V/C Ratio(X)	0.13	0.00	0.58	0.00	0.00	0.00	0.91	0.71	0.00	0.00	0.73	0.73
Avail Cap(c_a), veh/h	189	0	592	0	160	0	480	2679	0	473	893	934
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.62	0.62
Uniform Delay (d), s/veh	40.9	0.0	23.8	0.0	0.0	0.0	32.8	17.5	0.0	0.0	0.3	0.3
Incr Delay (d2), s/veh	0.2	0.0	1.3	0.0	0.0	0.0	19.4	2.4	0.0	0.0	3.3	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	6.0	0.0	0.0	0.0	10.4	10.8	0.0	0.0	1.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.2	0.0	25.1	0.0	0.0	0.0	52.2	19.9	0.0	0.0	3.6	3.5
LnGrp LOS	D	A	C	A	A	A	D	B	A	A	A	A
Approach Vol, veh/h		370			0			1719			1334	
Approach Delay, s/veh		26.2			0.0			27.0			3.5	
Approach LOS		C						C			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	32.0	51.0		12.0	29.7	53.3		12.0				
Change Period (Y+Rc), s	* 5.4	* 5.4		4.5	* 5.4	* 5.4		4.5				
Max Green Setting (Gmax), s	* 31	* 42		7.5	* 4	* 69		7.5				
Max Q Clear Time (g_c+I1), s	25.9	3.5		0.0	0.0	28.9		10.2				
Green Ext Time (p_c), s	0.7	16.4		0.0	0.0	18.9		0.0				

Intersection Summary

HCM 6th Ctrl Delay	17.8
HCM 6th LOS	B

Notes

- User approved pedestrian interval to be less than phase max green.
- \* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis  
 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

01/26/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗			↔		↖	↗		↖	↗	↖
Traffic Volume (vph)	184	4	208	1	1	15	231	696	4	6	880	247
Future Volume (vph)	184	4	208	1	1	15	231	696	4	6	880	247
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5		4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.97			0.96		1.00	1.00		1.00	1.00	0.92
Flpb, ped/bikes	0.97	1.00			1.00		1.00	1.00		0.97	1.00	1.00
Frt	1.00	0.85			0.88		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1755	1566			1596		1805	1825		1760	1900	1489
Flt Permitted	0.75	1.00			0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1378	1566			1579		1805	1825		1760	1900	1489
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	200	4	226	1	1	16	251	757	4	7	957	268
RTOR Reduction (vph)	0	186	0	0	13	0	0	0	0	0	0	53
Lane Group Flow (vph)	200	44	0	0	5	0	251	761	0	7	957	215
Confl. Peds. (#/hr)	12		4	4			12	4		19	19	19
Confl. Bikes (#/hr)			1							2		2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								6
Actuated Green, G (s)	18.2	18.2			18.2		15.6	71.7		0.7	56.8	56.8
Effective Green, g (s)	18.2	18.2			18.2		15.6	71.7		0.7	56.8	56.8
Actuated g/C Ratio	0.17	0.17			0.17		0.15	0.69		0.01	0.55	0.55
Clearance Time (s)	4.5	4.5			4.5		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	2.3	2.3			2.5		2.3	4.3		2.3	4.3	4.3
Lane Grp Cap (vph)	240	273			276		270	1256		11	1036	812
v/s Ratio Prot		0.03					c0.14	0.42		0.00	c0.50	
v/s Ratio Perm	c0.15				0.00							0.14
v/c Ratio	0.83	0.16			0.02		0.93	0.61		0.64	0.92	0.27
Uniform Delay, d1	41.5	36.5			35.5		43.7	8.7		51.6	21.7	12.6
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	20.7	0.2			0.0		35.8	1.0		70.2	13.5	0.3
Delay (s)	62.2	36.6			35.6		79.5	9.7		121.7	35.2	12.8
Level of Service	E	D			D		E	A		F	D	B
Approach Delay (s)		48.5			35.6			27.0			30.8	
Approach LOS		D			D			C			C	

Intersection Summary		
HCM 2000 Control Delay	32.3	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.91	C
Actuated Cycle Length (s)	104.1	Sum of lost time (s)
Intersection Capacity Utilization	87.2%	13.5
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		E

# HCM 6th Signalized Intersection Summary

## 1: SW Boones Ferry Road & SW Ibach Street/SW Ibach Court

01/26/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	184	4	208	1	1	15	231	696	4	6	880	247
Future Volume (veh/h)	184	4	208	1	1	15	231	696	4	6	880	247
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.94	0.98		0.96	1.00		0.97	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1841	1900	1900	1900	1900
Adj Flow Rate, veh/h	200	4	139	1	1	16	251	757	4	7	957	181
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	4	0	0	0	0
Cap, veh/h	300	7	243	41	26	230	282	1270	7	13	1036	844
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.69	0.69	0.01	0.55	0.55
Sat Flow, veh/h	1369	43	1483	19	156	1400	1810	1829	10	1810	1900	1548
Grp Volume(v), veh/h	200	0	143	18	0	0	251	0	761	7	957	181
Grp Sat Flow(s),veh/h/ln	1369	0	1525	1575	0	0	1810	0	1839	1810	1900	1548
Q Serve(g_s), s	13.1	0.0	8.7	0.0	0.0	0.0	13.6	0.0	21.7	0.4	46.3	6.0
Cycle Q Clear(g_c), s	14.0	0.0	8.7	1.0	0.0	0.0	13.6	0.0	21.7	0.4	46.3	6.0
Prop In Lane	1.00		0.97	0.06		0.89	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	300	0	250	296	0	0	282	0	1277	13	1036	844
V/C Ratio(X)	0.67	0.00	0.57	0.06	0.00	0.00	0.89	0.00	0.60	0.55	0.92	0.21
Avail Cap(c_a), veh/h	314	0	266	312	0	0	288	0	1282	72	1097	894
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.8	0.0	38.7	35.5	0.0	0.0	41.5	0.0	8.0	49.7	20.9	11.8
Incr Delay (d2), s/veh	4.3	0.0	1.9	0.1	0.0	0.0	26.0	0.0	1.0	20.4	12.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	0.0	3.4	0.4	0.0	0.0	8.0	0.0	7.4	0.2	22.1	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.1	0.0	40.6	35.5	0.0	0.0	67.5	0.0	9.0	70.1	33.7	12.0
LnGrp LOS	D	A	D	D	A	A	E	A	A	E	C	B
Approach Vol, veh/h		343			18			1012			1145	
Approach Delay, s/veh		43.2			35.5			23.5			30.5	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.7	74.7		21.0	19.7	59.8		21.0				
Change Period (Y+Rc), s	4.0	5.0		4.5	4.0	5.0		4.5				
Max Green Setting (Gmax), s	4.0	70.0		17.5	16.0	58.0		17.5				
Max Q Clear Time (g_c+I1), s	2.4	23.7		16.0	15.6	48.3		3.0				
Green Ext Time (p_c), s	0.0	9.5		0.2	0.0	6.4		0.0				

### Intersection Summary

HCM 6th Ctrl Delay	29.4
HCM 6th LOS	C

### Notes

User approved pedestrian interval to be less than phase max green.

HCM 6th TWSC  
 2: SW Boones Ferry Road & SW Norwood Road

01/26/2023

Intersection						
Int Delay, s/veh	12.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑	↑	↑	↑
Traffic Vol, veh/h	89	164	560	186	186	764
Future Vol, veh/h	89	164	560	186	186	764
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	65	290	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	0	0	0	0	0
Mvmt Flow	98	180	615	204	204	840

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1863	615	0	0	819
Stage 1	615	-	-	-	-
Stage 2	1248	-	-	-	-
Critical Hdwy	6.42	6.2	-	-	4.1
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.3	-	-	2.2
Pot Cap-1 Maneuver	~ 80	495	-	-	818
Stage 1	539	-	-	-	-
Stage 2	271	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	~ 60	495	-	-	818
Mov Cap-2 Maneuver	156	-	-	-	-
Stage 1	539	-	-	-	-
Stage 2	204	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	91	0	2.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	281	818
HCM Lane V/C Ratio	-	-	0.989	0.25
HCM Control Delay (s)	-	-	91	10.9
HCM Lane LOS	-	-	F	B
HCM 95th %tile Q(veh)	-	-	10	1

Notes  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon



HCM 6th TWSC  
3: Site Access & SW Norwood Road

01/26/2023

Intersection						
Int Delay, s/veh	1.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	297	75	13	210	43	8
Future Vol, veh/h	297	75	13	210	43	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	326	82	14	231	47	9

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	408	0	626
Stage 1	-	-	-	-	367
Stage 2	-	-	-	-	259
Critical Hdwy	-	-	4.12	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.218	-	3.5
Pot Cap-1 Maneuver	-	-	1151	-	451
Stage 1	-	-	-	-	705
Stage 2	-	-	-	-	789
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1151	-	445
Mov Cap-2 Maneuver	-	-	-	-	445
Stage 1	-	-	-	-	705
Stage 2	-	-	-	-	778

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	13.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	471	-	-	1151	-
HCM Lane V/C Ratio	0.119	-	-	0.012	-
HCM Control Delay (s)	13.7	-	-	8.2	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

HCM 6th TWSC  
 4: SW 82nd Avenue & SW Norwood Road/Driveway

01/26/2023

Intersection												
Int Delay, s/veh	7.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	↗
Traffic Vol, veh/h	165	0	32	0	0	0	28	4	0	0	5	206
Future Vol, veh/h	165	0	32	0	0	0	28	4	0	0	5	206
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	-	-	-	15
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	1	0	0	0	0	0	5	0	0	0	0	0
Mvmt Flow	181	0	35	0	0	0	31	4	0	0	5	226

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1	0	0	35	0	0	384	381	18	383	398	-
Stage 1	-	-	-	-	-	-	380	380	-	1	1	-
Stage 2	-	-	-	-	-	-	4	1	-	382	397	-
Critical Hdwy	4.11	-	-	4.1	-	-	7.15	6.5	6.2	7.1	6.5	-
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.209	-	-	2.2	-	-	3.545	4	3.3	3.5	4	-
Pot Cap-1 Maneuver	1628	-	-	1589	-	-	569	555	1066	579	543	0
Stage 1	-	-	-	-	-	-	636	617	-	1027	899	0
Stage 2	-	-	-	-	-	-	1011	899	-	645	607	0
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1628	-	-	1589	-	-	515	492	1066	525	481	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	515	492	-	525	481	-
Stage 1	-	-	-	-	-	-	563	547	-	910	899	-
Stage 2	-	-	-	-	-	-	1005	899	-	567	538	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	6.3	0	12.5	12.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	512	1628	-	-	1589	-	-	481	-
HCM Lane V/C Ratio	0.069	0.111	-	-	-	-	-	0.011	-
HCM Control Delay (s)	12.5	7.5	0	-	0	-	-	12.6	0
HCM Lane LOS	B	A	A	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.2	0.4	-	-	0	-	-	0	-

# HCM Signalized Intersection Capacity Analysis

## 5: SW Boones Ferry Road & Basalt Creek Parkway Extension

01/26/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	109	690	645	690	697	192
Future Volume (vph)	109	690	645	690	697	192
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.9	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.97	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1805	1615	1703	1900	3463	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1805	1615	1703	1900	3463	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	120	758	709	758	766	211
RTOR Reduction (vph)	0	19	0	0	23	0
Lane Group Flow (vph)	120	739	709	758	954	0
Heavy Vehicles (%)	0%	0%	6%	0%	0%	4%
Turn Type	Prot	pm+ov	Prot	NA	NA	
Protected Phases	8	1	1	6	2	
Permitted Phases		8				
Actuated Green, G (s)	8.4	55.1	46.7	86.7	34.6	
Effective Green, g (s)	8.9	56.1	48.1	88.1	36.0	
Actuated g/C Ratio	0.08	0.53	0.46	0.84	0.34	
Clearance Time (s)	4.5	5.4	5.4	5.4	5.4	
Vehicle Extension (s)	2.5	2.3	2.3	4.4	4.4	
Lane Grp Cap (vph)	152	862	780	1594	1187	
v/s Ratio Prot	0.07	c0.38	c0.42	0.40	c0.28	
v/s Ratio Perm		0.07				
v/c Ratio	0.79	0.86	0.91	0.48	0.80	
Uniform Delay, d1	47.1	21.0	26.4	2.3	31.3	
Progression Factor	1.00	1.00	0.96	0.65	1.00	
Incremental Delay, d2	22.5	8.2	13.3	0.9	5.8	
Delay (s)	69.7	29.3	38.6	2.4	37.1	
Level of Service	E	C	D	A	D	
Approach Delay (s)	34.8			19.9	37.1	
Approach LOS	C			B	D	

### Intersection Summary

HCM 2000 Control Delay	28.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	12.9
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

# HCM 6th Signalized Intersection Summary

## 5: SW Boones Ferry Road & Basalt Creek Parkway Extension

01/26/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	109	690	645	690	697	192
Future Volume (veh/h)	109	690	645	690	697	192
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1811	1900	1900	1841
Adj Flow Rate, veh/h	120	428	709	758	766	206
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	6	0	0	4
Cap, veh/h	155	785	708	1592	1095	294
Arrive On Green	0.09	0.09	0.82	1.00	0.39	0.38
Sat Flow, veh/h	1810	1610	1725	1900	2907	756
Grp Volume(v), veh/h	120	428	709	758	492	480
Grp Sat Flow(s),veh/h/ln	1810	1610	1725	1900	1805	1764
Q Serve(g_s), s	6.8	9.0	43.1	0.0	24.0	24.1
Cycle Q Clear(g_c), s	6.8	9.0	43.1	0.0	24.0	24.1
Prop In Lane	1.00	1.00	1.00			0.43
Lane Grp Cap(c), veh/h	155	785	708	1592	703	687
V/C Ratio(X)	0.77	0.54	1.00	0.48	0.70	0.70
Avail Cap(c_a), veh/h	155	785	838	1592	703	687
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	0.90	0.90	1.00	1.00
Uniform Delay (d), s/veh	47.0	18.8	9.4	0.0	26.9	27.2
Incr Delay (d2), s/veh	20.5	0.6	27.7	0.9	5.7	5.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	7.2	9.0	0.4	11.2	11.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	67.5	19.4	37.1	0.9	32.6	33.0
LnGrp LOS	E	B	F	A	C	C
Approach Vol, veh/h	548			1467	972	
Approach Delay, s/veh	29.9			18.4	32.8	
Approach LOS	C			B	C	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	49.2	42.8			92.0	13.0
Change Period (Y+Rc), s	* 5.4	* 5.4			* 5.4	4.5
Max Green Setting (Gmax), s	* 50	* 32			* 87	8.5
Max Q Clear Time (g_c+I1), s	45.1	26.1			2.0	11.0
Green Ext Time (p_c), s	0.9	3.7			12.6	0.0

### Intersection Summary

HCM 6th Ctrl Delay	25.2
HCM 6th LOS	C

### Notes

User approved pedestrian interval to be less than phase max green.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM Signalized Intersection Capacity Analysis

## 6: SW Boones Ferry Road & SW Day Road

01/26/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↔		↖	↕↔		↖	↕↔	
Traffic Volume (vph)	20	0	376	0	0	0	374	1315	0	0	1368	19
Future Volume (vph)	20	0	376	0	0	0	374	1315	0	0	1368	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0				4.0	4.0			4.0	
Lane Util. Factor		1.00	1.00				*0.85	0.95			0.95	
Frbp, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Flpb, ped/bikes		1.00	1.00				1.00	1.00			1.00	
Frt		1.00	0.85				1.00	1.00			1.00	
Flt Protected		0.95	1.00				0.95	1.00			1.00	
Satd. Flow (prot)		1802	1583				1447	3610			3601	
Flt Permitted		0.95	1.00				0.95	1.00			1.00	
Satd. Flow (perm)		1807	1583				1447	3610			3601	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	22	0	413	0	0	0	411	1445	0	0	1503	21
RTOR Reduction (vph)	0	0	51	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	22	362	0	0	0	411	1445	0	0	1523	0
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)									3			
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	6%	0%	0%	0%	0%	4%
Turn Type	Perm	NA	pm+ov				Prot	NA		Prot	NA	
Protected Phases		8	1		4		1	6		5	2	
Permitted Phases	8		8	4								
Actuated Green, G (s)		3.7	35.6				31.9	91.4			54.1	
Effective Green, g (s)		4.2	38.4				33.3	92.8			55.5	
Actuated g/C Ratio		0.04	0.37				0.32	0.88			0.53	
Clearance Time (s)		4.5	5.4				5.4	5.4			5.4	
Vehicle Extension (s)		2.5	2.3				2.3	4.4			4.4	
Lane Grp Cap (vph)		72	578				458	3190			1903	
v/s Ratio Prot			c0.20				c0.28	0.40			c0.42	
v/s Ratio Perm		0.01	0.03									
v/c Ratio		0.31	0.63				0.90	0.45			0.80	
Uniform Delay, d1		49.0	27.4				34.2	1.2			20.2	
Progression Factor		1.00	1.00				1.00	1.00			0.89	
Incremental Delay, d2		1.8	1.7				19.6	0.5			2.2	
Delay (s)		50.7	29.1				53.8	1.6			20.1	
Level of Service		D	C				D	A			C	
Approach Delay (s)		30.2			0.0			13.2			20.1	
Approach LOS		C			A			B			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			17.9				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			105.0				Sum of lost time (s)			13.0		
Intersection Capacity Utilization			74.9%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

# HCM 6th Signalized Intersection Summary

## 6: SW Boones Ferry Road & SW Day Road

01/26/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔		↔	↔		↔	↔	
Traffic Volume (veh/h)	20	0	376	0	0	0	374	1315	0	0	1368	19
Future Volume (veh/h)	20	0	376	0	0	0	374	1315	0	0	1368	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1870	1900	1900	1900	1811	1900	1900	1900	1900	1841
Adj Flow Rate, veh/h	22	0	391	0	0	0	411	1445	0	0	1503	21
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	2	0	0	0	6	0	0	0	0	4
Cap, veh/h	158	0	602	0	119	0	453	1985	0	461	1874	26
Arrive On Green	0.06	0.00	0.07	0.00	0.00	0.00	0.31	0.55	0.00	0.00	1.00	1.00
Sat Flow, veh/h	1428	0	1578	0	1900	0	1466	3705	0	1810	3645	51
Grp Volume(v), veh/h	22	0	391	0	0	0	411	1445	0	0	744	780
Grp Sat Flow(s),veh/h/ln	1428	0	1578	0	1900	0	1466	1805	0	1810	1805	1891
Q Serve(g_s), s	1.5	0.0	7.5	0.0	0.0	0.0	28.3	31.5	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.5	0.0	7.5	0.0	0.0	0.0	28.3	31.5	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	0.00		0.00	1.00		0.00	1.00		0.03
Lane Grp Cap(c), veh/h	152	0	602	0	119	0	453	1985	0	461	928	972
V/C Ratio(X)	0.15	0.00	0.65	0.00	0.00	0.00	0.91	0.73	0.00	0.00	0.80	0.80
Avail Cap(c_a), veh/h	152	0	602	0	119	0	503	2816	0	461	928	972
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.49	0.49
Uniform Delay (d), s/veh	47.1	0.0	26.8	0.0	0.0	0.0	34.9	17.7	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	2.2	0.0	0.0	0.0	18.6	2.4	0.0	0.0	3.7	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	8.0	0.0	0.0	0.0	12.1	12.7	0.0	0.0	0.9	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.4	0.0	29.0	0.0	0.0	0.0	53.4	20.1	0.0	0.0	3.7	3.5
LnGrp LOS	D	A	C	A	A	A	D	C	A	A	A	A
Approach Vol, veh/h		413			0			1856			1524	
Approach Delay, s/veh		30.0			0.0			27.5			3.6	
Approach LOS		C						C			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	36.4	58.0		10.6	32.7	61.7		10.6				
Change Period (Y+Rc), s	* 5.4	* 5.4		4.5	* 5.4	* 5.4		4.5				
Max Green Setting (Gmax), s	* 35	* 49		6.1	* 4	* 81		6.1				
Max Q Clear Time (g_c+I1), s	30.3	2.0		0.0	0.0	33.5		9.5				
Green Ext Time (p_c), s	0.7	22.3		0.0	0.0	22.8		0.0				

### Intersection Summary

HCM 6th Ctrl Delay	18.2
HCM 6th LOS	B

### Notes

User approved pedestrian interval to be less than phase max green.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

## 2040 Mitigated Conditions

### 2040 Conditions with Existing Zoning

- AM Peak Hour Synchro Reports
- PM Peak Hour Synchro Reports

### 2040 Conditions with Proposed Zoning

- AM Peak Hour Synchro Reports
- PM Peak Hour Synchro Reports



# HCM Signalized Intersection Capacity Analysis

## 2: SW Boones Ferry Road & SW Norwood Road

01/26/2023



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T	T	T	T
Traffic Volume (vph)	154	206	538	120	129	421
Future Volume (vph)	154	206	538	120	129	421
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.99		1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.92		1.00	0.85	1.00	1.00
Flt Protected	0.98		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1681		1900	1578	1805	1900
Flt Permitted	0.98		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1681		1900	1578	1805	1900
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	169	226	591	132	142	463
RTOR Reduction (vph)	54	0	0	36	0	0
Lane Group Flow (vph)	341	0	591	96	142	463
Confl. Bikes (#/hr)		1		3		
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%
Turn Type	Prot		NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases				2		
Actuated Green, G (s)	18.7		28.9	28.9	8.9	42.8
Effective Green, g (s)	19.7		29.9	29.9	9.9	43.8
Actuated g/C Ratio	0.28		0.42	0.42	0.14	0.61
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	463		794	659	249	1163
v/s Ratio Prot	c0.20		c0.31		c0.08	0.24
v/s Ratio Perm				0.06		
v/c Ratio	0.74		0.74	0.15	0.57	0.40
Uniform Delay, d1	23.5		17.6	12.9	28.8	7.1
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	6.0		3.8	0.1	3.1	0.2
Delay (s)	29.6		21.4	13.0	31.9	7.3
Level of Service	C		C	B	C	A
Approach Delay (s)	29.6		19.8			13.1
Approach LOS	C		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			19.7		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.71			
Actuated Cycle Length (s)			71.5		Sum of lost time (s)	12.0
Intersection Capacity Utilization			66.6%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						



# HCM 6th Signalized Intersection Summary

## 2: SW Boones Ferry Road & SW Norwood Road

01/26/2023



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘		↑	↗	↘	↑
Traffic Volume (veh/h)	154	206	538	120	129	421
Future Volume (veh/h)	154	206	538	120	129	421
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.98		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	169	226	591	132	142	463
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	0	0	0	0	0
Cap, veh/h	203	272	751	622	210	1098
Arrive On Green	0.29	0.27	0.40	0.40	0.12	0.58
Sat Flow, veh/h	701	937	1900	1573	1810	1900
Grp Volume(v), veh/h	396	0	591	132	142	463
Grp Sat Flow(s),veh/h/ln	1642	0	1900	1573	1810	1900
Q Serve(g_s), s	13.7	0.0	16.5	3.3	4.5	8.2
Cycle Q Clear(g_c), s	13.7	0.0	16.5	3.3	4.5	8.2
Prop In Lane	0.43	0.57		1.00	1.00	
Lane Grp Cap(c), veh/h	476	0	751	622	210	1098
V/C Ratio(X)	0.83	0.00	0.79	0.21	0.68	0.42
Avail Cap(c_a), veh/h	679	0	1352	1119	299	1792
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.4	0.0	16.0	12.1	25.6	7.1
Incr Delay (d2), s/veh	6.0	0.0	1.9	0.2	3.8	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	0.0	6.4	1.0	2.0	2.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	26.3	0.0	17.9	12.2	29.4	7.4
LnGrp LOS	C	A	B	B	C	A
Approach Vol, veh/h	396		723			605
Approach Delay, s/veh	26.3		16.9			12.5
Approach LOS	C		B			B
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	11.0	27.9			38.9	21.5
Change Period (Y+Rc), s	5.0	5.0			5.0	5.0
Max Green Setting (Gmax), s	9.0	42.0			56.0	24.0
Max Q Clear Time (g_c+I1), s	6.5	18.5			10.2	15.7
Green Ext Time (p_c), s	0.1	4.4			3.1	0.9

### Intersection Summary

HCM 6th Ctrl Delay	17.5
HCM 6th LOS	B

### Notes

User approved volume balancing among the lanes for turning movement.

# HCM Signalized Intersection Capacity Analysis

## 2: SW Boones Ferry Road & SW Norwood Road

01/25/2023



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T	R	R	L
Traffic Volume (vph)	83	162	560	161	168	764
Future Volume (vph)	83	162	560	161	168	764
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.99		1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.91		1.00	0.85	1.00	1.00
Flt Protected	0.98		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1666		1900	1579	1805	1900
Flt Permitted	0.98		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1666		1900	1579	1805	1900
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	91	178	615	177	185	840
RTOR Reduction (vph)	85	0	0	44	0	0
Lane Group Flow (vph)	184	0	615	133	185	840
Confl. Bikes (#/hr)		1		3		
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%
Turn Type	Prot		NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases				2		
Actuated Green, G (s)	12.9		27.3	27.3	10.2	42.5
Effective Green, g (s)	13.9		28.3	28.3	11.2	43.5
Actuated g/C Ratio	0.21		0.43	0.43	0.17	0.67
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	354		822	683	309	1263
v/s Ratio Prot	c0.11		c0.32		0.10	c0.44
v/s Ratio Perm				0.08		
v/c Ratio	0.52		0.75	0.19	0.60	0.67
Uniform Delay, d1	22.8		15.6	11.5	25.0	6.6
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3		3.8	0.1	3.1	1.3
Delay (s)	24.1		19.3	11.6	28.1	7.9
Level of Service	C		B	B	C	A
Approach Delay (s)	24.1		17.6			11.6
Approach LOS	C		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			15.5		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.69			
Actuated Cycle Length (s)			65.4		Sum of lost time (s)	12.0
Intersection Capacity Utilization			63.3%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

# HCM 6th Signalized Intersection Summary

## 2: SW Boones Ferry Road & SW Norwood Road

01/25/2023



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑	↗	↖	↑
Traffic Volume (veh/h)	83	162	560	161	168	764
Future Volume (veh/h)	83	162	560	161	168	764
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.98		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	91	178	615	177	185	840
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	0	0	0	0	0
Cap, veh/h	120	235	796	659	264	1209
Arrive On Green	0.22	0.20	0.42	0.42	0.15	0.64
Sat Flow, veh/h	547	1070	1900	1574	1810	1900
Grp Volume(v), veh/h	270	0	615	177	185	840
Grp Sat Flow(s),veh/h/ln	1622	0	1900	1574	1810	1900
Q Serve(g_s), s	8.7	0.0	15.5	4.1	5.4	16.0
Cycle Q Clear(g_c), s	8.7	0.0	15.5	4.1	5.4	16.0
Prop In Lane	0.34	0.66		1.00	1.00	
Lane Grp Cap(c), veh/h	356	0	796	659	264	1209
V/C Ratio(X)	0.76	0.00	0.77	0.27	0.70	0.69
Avail Cap(c_a), veh/h	730	0	1437	1190	358	1950
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.6	0.0	13.9	10.6	22.6	6.6
Incr Delay (d2), s/veh	3.3	0.0	1.6	0.2	3.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	5.7	1.2	2.4	4.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	23.9	0.0	15.5	10.8	26.4	7.3
LnGrp LOS	C	A	B	B	C	A
Approach Vol, veh/h	270		792			1025
Approach Delay, s/veh	23.9		14.5			10.7
Approach LOS	C		B			B
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	12.1	27.3			39.3	16.2
Change Period (Y+Rc), s	5.0	5.0			5.0	5.0
Max Green Setting (Gmax), s	10.0	41.0			56.0	24.0
Max Q Clear Time (g_c+I1), s	7.4	17.5			18.0	10.7
Green Ext Time (p_c), s	0.1	4.8			7.3	0.7

### Intersection Summary

HCM 6th Ctrl Delay	13.9
HCM 6th LOS	B

### Notes

User approved volume balancing among the lanes for turning movement.

# HCM Signalized Intersection Capacity Analysis

## 2: SW Boones Ferry Road & SW Norwood Road

01/26/2023



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T	T	T	T
Traffic Volume (vph)	137	192	538	60	87	421
Future Volume (vph)	137	192	538	60	87	421
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.99		1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.92		1.00	0.85	1.00	1.00
Flt Protected	0.98		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1679		1900	1579	1805	1900
Flt Permitted	0.98		1.00	1.00	0.95	1.00
Satd. Flow (perm)	1679		1900	1579	1805	1900
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	151	211	591	66	96	463
RTOR Reduction (vph)	56	0	0	18	0	0
Lane Group Flow (vph)	306	0	591	48	96	463
Confl. Bikes (#/hr)		1		3		
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%
Turn Type	Prot		NA	Perm	Prot	NA
Protected Phases	8		2		1	6
Permitted Phases				2		
Actuated Green, G (s)	17.1		27.2	27.2	6.2	38.4
Effective Green, g (s)	18.1		28.2	28.2	7.2	39.4
Actuated g/C Ratio	0.28		0.43	0.43	0.11	0.60
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	463		818	679	198	1142
v/s Ratio Prot	c0.18		c0.31		0.05	c0.24
v/s Ratio Perm				0.03		
v/c Ratio	0.66		0.72	0.07	0.48	0.41
Uniform Delay, d1	21.0		15.4	11.0	27.4	6.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	3.5		3.2	0.0	1.9	0.2
Delay (s)	24.5		18.6	11.0	29.3	7.1
Level of Service	C		B	B	C	A
Approach Delay (s)	24.5		17.8			10.9
Approach LOS	C		B			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			16.9		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.67			
Actuated Cycle Length (s)			65.5		Sum of lost time (s)	12.0
Intersection Capacity Utilization			62.7%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

# HCM 6th Signalized Intersection Summary

## 2: SW Boones Ferry Road & SW Norwood Road

01/26/2023



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶		↑	↷	↶	↑
Traffic Volume (veh/h)	137	192	538	60	87	421
Future Volume (veh/h)	137	192	538	60	87	421
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.98		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	151	211	591	66	96	463
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	0	0	0	0	0
Cap, veh/h	189	264	764	632	185	1097
Arrive On Green	0.28	0.26	0.40	0.40	0.10	0.58
Sat Flow, veh/h	682	953	1900	1574	1810	1900
Grp Volume(v), veh/h	363	0	591	66	96	463
Grp Sat Flow(s),veh/h/ln	1640	0	1900	1574	1810	1900
Q Serve(g_s), s	11.3	0.0	14.8	1.4	2.8	7.5
Cycle Q Clear(g_c), s	11.3	0.0	14.8	1.4	2.8	7.5
Prop In Lane	0.42	0.58		1.00	1.00	
Lane Grp Cap(c), veh/h	453	0	764	632	185	1097
V/C Ratio(X)	0.80	0.00	0.77	0.10	0.52	0.42
Avail Cap(c_a), veh/h	749	0	1492	1236	331	1978
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.7	0.0	14.2	10.2	23.3	6.5
Incr Delay (d2), s/veh	3.3	0.0	1.7	0.1	2.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	0.0	5.5	0.4	1.2	2.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	22.0	0.0	15.9	10.3	25.5	6.7
LnGrp LOS	C	A	B	B	C	A
Approach Vol, veh/h	363		657			559
Approach Delay, s/veh	22.0		15.4			10.0
Approach LOS	C		B			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	9.6	26.0			35.6	19.1
Change Period (Y+Rc), s	5.0	5.0			5.0	5.0
Max Green Setting (Gmax), s	9.0	42.0			56.0	24.0
Max Q Clear Time (g_c+I1), s	4.8	16.8			9.5	13.3
Green Ext Time (p_c), s	0.1	4.2			3.1	0.9

### Intersection Summary

HCM 6th Ctrl Delay	15.0
HCM 6th LOS	B

### Notes

User approved volume balancing among the lanes for turning movement.

# HCM Signalized Intersection Capacity Analysis

## 2: SW Boones Ferry Road & SW Norwood Road

01/25/2023



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑	↗	↖	↑
Traffic Volume (vph)	89	164	560	186	186	764
Future Volume (vph)	89	164	560	186	186	764
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.99		1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.91		1.00	0.85	1.00	1.00
Flt Protected	0.98		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1668		1900	1579	1805	1900
Flt Permitted	0.98		1.00	1.00	0.18	1.00
Satd. Flow (perm)	1668		1900	1579	341	1900
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	98	180	615	204	204	840
RTOR Reduction (vph)	77	0	0	53	0	0
Lane Group Flow (vph)	201	0	615	151	204	840
Confl. Bikes (#/hr)		1		3		
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%
Turn Type	Prot		NA	Perm	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases				2	6	
Actuated Green, G (s)	13.5		27.8	27.8	41.2	41.2
Effective Green, g (s)	13.5		27.8	27.8	41.2	41.2
Actuated g/C Ratio	0.21		0.43	0.43	0.64	0.64
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	348		816	678	407	1209
v/s Ratio Prot	c0.12		0.32		0.07	c0.44
v/s Ratio Perm				0.10	0.25	
v/c Ratio	0.58		0.75	0.22	0.50	0.69
Uniform Delay, d1	23.0		15.6	11.6	8.6	7.7
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3		4.0	0.2	1.0	1.8
Delay (s)	25.4		19.5	11.8	9.6	9.4
Level of Service	C		B	B	A	A
Approach Delay (s)	25.4		17.6			9.4
Approach LOS	C		B			A
<b>Intersection Summary</b>						
HCM 2000 Control Delay			14.6		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.73			
Actuated Cycle Length (s)			64.7		Sum of lost time (s)	15.0
Intersection Capacity Utilization			67.3%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

# HCM 6th Signalized Intersection Summary

## 2: SW Boones Ferry Road & SW Norwood Road

01/25/2023



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	89	164	560	186	186	764
Future Volume (veh/h)	89	164	560	186	186	764
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.98		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	98	180	615	204	204	840
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	0	0	0	0	0
Cap, veh/h	120	219	781	647	409	1154
Arrive On Green	0.21	0.21	0.41	0.41	0.10	0.61
Sat Flow, veh/h	571	1049	1900	1574	1810	1900
Grp Volume(v), veh/h	279	0	615	204	204	840
Grp Sat Flow(s),veh/h/ln	1626	0	1900	1574	1810	1900
Q Serve(g_s), s	8.9	0.0	15.4	4.8	3.1	17.0
Cycle Q Clear(g_c), s	8.9	0.0	15.4	4.8	3.1	17.0
Prop In Lane	0.35	0.65		1.00	1.00	
Lane Grp Cap(c), veh/h	340	0	781	647	409	1154
V/C Ratio(X)	0.82	0.00	0.79	0.32	0.50	0.73
Avail Cap(c_a), veh/h	655	0	1531	1268	518	2018
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.6	0.0	14.0	10.9	10.1	7.5
Incr Delay (d2), s/veh	4.9	0.0	1.8	0.3	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	5.7	1.4	0.9	4.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	25.5	0.0	15.8	11.2	11.1	8.4
LnGrp LOS	C	A	B	B	B	A
Approach Vol, veh/h	279		819			1044
Approach Delay, s/veh	25.5		14.6			8.9
Approach LOS	C		B			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	10.7	27.5			38.2	16.4
Change Period (Y+Rc), s	5.0	5.0			5.0	5.0
Max Green Setting (Gmax), s	9.0	44.0			58.0	22.0
Max Q Clear Time (g_c+I1), s	5.1	17.4			19.0	10.9
Green Ext Time (p_c), s	0.2	5.1			7.4	0.7

### Intersection Summary

HCM 6th Ctrl Delay	13.3
HCM 6th LOS	B

### Notes

User approved volume balancing among the lanes for turning movement.



DATE: March 7, 2023  
REQUEST: Norwood Apartments Transportation Review  
TASK NO: Tualatin On-Call Task 5 (P#21208-009)  
REVIEWER: Amanda Deering, PE, DKS Associates

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DKS Associates has reviewed the transportation impact study (TIS) for the proposed Norwood Apartments residential development<sup>1</sup>. The proposed project is located south of Norwood Road and east of Boones Ferry Road in Tualatin, Oregon. The general comments are based on a review of the TIS analysis.

## TIS REVIEW

Key comments and issues related to the proposed project include:

- Overall, all required topics are covered in the TIS and look technically sufficient.
- This proposed development proposes to have its primary access on Norwood Road. The access location would meet the Washington County access spacing standard according to the site plan provided.
- Existing volumes were based on counts collected in 2022. No adjustments were made to these volumes since it is assumed volumes have returned to a consistent level post the impacts of the COVID-19 pandemic.
- The development is proposing to build 276 multifamily units. The apartment building is designed to have four floors which would qualify for the mid-rise multifamily rate in ITE, however to be more conservative and assume more trips would be added the low-rise multifamily rate was used (LUC 220).
- There are two existing single-family homes on part of the development parcel that will be demolished. Accounting for those trip credits, the development will generate 107 AM peak hour trips, 137 PM peak hour trips, and 1,826 daily trips.
  - Trip generation provided in the TIS cites the ITE Trip Generation Manual 10<sup>th</sup> edition. The most current edition is the 11<sup>th</sup> edition (September 2021). However, a comparison of rates shows the same trip generation for LUC 220.

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<sup>1</sup> Norwood Apartments Transportation Impact Analysis, Lancaster Mobley, February 2023.



- Trip distribution provided in the TIS is based on patterns used for the adjacent approved developments (Autumn Sunrise and Plambeck Gardens).
  - The TIS shows 45% to the south, 15% to the east and 40% to the north
- Note that future build volumes include two scenarios: one with the completion of the Basalt Creek Parkway (BCP) extension project and one without. It is assumed that 13 percent of project trips will be shifted from the north and south to use the extension when it is complete. This analysis of the extension shows some intersections will have slightly less delay and some will have slightly more delay, depending on how travelers reroute.
- A review of the most recent five years of ODOT collision data (2016-2020) was performed for the study intersections. The Boones Ferry Road/Norwood Road intersection has an observed crash rate at the 90<sup>th</sup> percentile rate for the state. While it doesn't exceed the rate, it does have the potential to become a safety issue. The predominant crash type at this intersection was turning.
- Highway capacity manual (HCM) operations were performed using the 6<sup>th</sup> edition methodology. The build year analyzed was 2026. All study intersections operate within mobility standards except for Boones Ferry Road/Norwood Road under the 2026 buildout with BCP scenario. Implementing a traffic signal would mitigate this issue.
  - Additionally queuing analysis was performed for the build year scenarios. The westbound 95<sup>th</sup> percentile queue at Boones Ferry Road/Norwood Road would extend to 325 feet under the 2026 buildout PM peak hour scenario. This queue length could be mitigated with a signal so no nearby driveways are blocked.
- Traffic signal warrants (both preliminary and MUTCD peak hour) show that a traffic signal at Boones Ferry Road/Norwood Road would be met. In this case the preferred configuration of the signal is to have separate left and right turn lanes in the westbound direction. Under this assumption the detailed 8-hour, 4-hour, and peak hour warrants would be met under the 2026 build conditions with or without the BCP extension.
  - Norwood Road is classified as a collector per Washington County which has a 2 or 3 lane cross-section as needed. Note right-of-way may need to be acquired for the left turn lane at the intersection.
- The site plan shows appropriate frontage improvements and on-site pedestrian connectivity via sidewalks and crossings.
- The total number of parking spaces provided on site is not noted. This will have to be reviewed with application review. In the future, it is recommended to address parking standards and whether the number provided meets standard in the TIS.
- The proposed mitigation of a signal at Boones Ferry Road/Norwood Road should include a separate striped westbound left turn lane for safety reasons, consistent with the functional classification. It is recommended the westbound left turn run on a separate phase to protect the pedestrians on the south crosswalk, which is directly adjacent to a transit stop. A leading pedestrian interval could also be used and a northbound right turn overlap could be implemented to shorten the right turn queue length.
  - The turn pocket storage at the intersection should be based on the 2040 build scenario Synchro analysis. For the westbound left turn pocket this would be approximately 150 feet

and for the northbound right turn pocket this would extend the existing turn lane storage to 200 feet assuming no right turn overlap.<sup>2</sup>

## TPR REVIEW

This section reviews the Transportation Planning Rule (TPR) analysis.

- The development is proposed on two parcels with the existing zoning medium low density residential (RML) and institutional (IN). Since the development proposes to change the land use to high density/high rise residential (RH-HR), a reasonable worst-case analysis must be performed to show no significant impact of the zone change per the Transportation Planning Rule.
- The trip generation comparison for the zone change shows the reasonable worst case build out of the two subject parcels under both the existing and proposed zoning.
  - For the existing zone this includes 25 dwelling units of single-family housing (attached, LUC 215). Per the City, this is a higher assumption than could be built here. The applicant should change this to 15 single family attached dwelling units. The institutional zone assumes building a K-8 private school<sup>3</sup>. This would complement the adjacent use of private high school in the parcel to the east. This seems reasonable. It is unlikely that a higher use such as a community college would be built on this small parcel.
  - For the proposed zoning, multi-family housing low rise is used, as discussed in the TIS.
  - Overall the trip generation comparison shows a decrease of 157 trips in the AM peak hour due to less contributing school traffic and an increase of 60 trips in the PM peak hour. There is an increase of 636 daily trips which is over the 450 trip threshold set by ODOT which requires operational analysis to determine if there are significant impacts from this zone change.
- Operations analysis was performed for the existing and proposed zoning scenarios under year 2040 conditions. The study intersections generally performed slightly better in the AM peak hour and the same or slightly worse in the PM peak hour under the proposed zoning. Under both zoning scenarios the intersection of Boones Ferry Road/Norwood Road would fail without signalization. This triggers OAR 660-012-0060 section (1)(c)(C). With signalization the intersection performs at LOS B and v/c ratio 0.73 under the proposed zoning. Thus, with the proposed mitigation of signalization, the analysis concludes the significant effect due to the proposed zoning change is mitigated per OAR 660-012-0660(2)(d).
- The benefit to the public of this zone change is that it will require the development to build a new signal as mitigation which would decrease existing delays at the intersection and increase safety at an intersection with existing crash risks. It will create a safer, protected crossing for pedestrians to access the nearby transit stop and the future park to the west. Additionally, it will allow for more housing to be built to address some of the housing needs in Tualatin.

---

<sup>2</sup> Note that this analysis assumes a shared westbound left and right turn lane. The City may request the applicant to update this analysis to reflect the separated westbound left turn lane and to reflect year 2040. This is from the year 2031 reports in the appendix.

<sup>3</sup> Note this land use (LUC 530) has a small sample size and should be used with caution. However it does yield a more conservative trip rate than public elementary school.

December 16, 2022

City of Tualatin - Engineering Department  
18880 SW Martinazzi Ave  
Tualatin, OR 97062



**Subject: Norwood Multi-Family Utility Capacity Analysis**

---

The purpose of this letter is to assess the capacity of the existing sanitary sewer, stormwater, and water systems following the development of the subject site. The proposed development is located southeast of the intersection of SW Norwood Road and SW Boones Ferry Road and consists of existing institutional (Horizon Church) and single-family residential properties. Assumed frontage improvements in this analysis are per conversations with City staff and the Pre-Application Meeting Summary provided by City staff.

Analysis of the sanitary sewer system consisted of a review of the City's InfoSWMM sanitary sewer model for the Martinazzi Basin and the City's 2019 Sanitary Sewer Master Plan (SSMP). Analysis of the downstream stormwater system consisted of an assessment of predeveloped and post-developed conditions in the storm main downstream of the subject. Last, the analysis of the existing water system consisted of coordination with City staff on a hydraulic model to assess the serviceability of the site.

#### **Sanitary Sewer System**

For the purpose of analyzing the Norwood Multi-Family private sanitary sewer system, wastewater flows were determined by utilizing the West Yost Associates *South Tualatin Sewer Study*, dated September 2010. Per the South Tualatin Sewer Study, the wastewater unit flow factor of 200 gpd per dwelling unit was used in the sewer capacity analysis. Peak wet weather flow (PWWF) was calculated by multiplying average dry weather flow by a 2.2 peaking factor and adding an Inflow and Infiltration (I&I) factor of 4,000 gpd per acre (gpad). Last, the pipe capacity was determined by Manning's equation and verified with the values from the City's InfoSWMM model.

The InfoSWMM model was originally prepared by Jacobs Engineering as part of the City's 2019 Sanitary Sewer Master Plan (SSMP). This model was then provided to AKS to analyze the downstream sanitary system impacts for the neighboring Autumn Sunrise Subdivision, including the scenarios and existing flows and capacities shown in Exhibit A. For the subject development, the Martinazzi Basin (East of SW Boones Ferry Road, North of SW Norwood Road, and West of I-5) was analyzed to determine whether the existing downstream sanitary system had sufficient capacity to convey the net increase in flow for this multi-family development.

Per the attached Figures 1 & 2, the subject site will extend a public sanitary sewer main line in SW Boones Ferry Road, to the site upstream of conduit #98435 in the InfoSWMM model and 2019 SSMP. The subbasin downstream of this line was analyzed until the line size increased from 8" to 12", located downstream of conduit #1706. This is the same point where the southwestern portion of the Martinazzi Basin converges with the southeastern portion, which includes the neighboring Autumn Sunrise subdivision development and Horizon Church.

Excluding the existing scenario, the resulting PWWF was added to the modeled flows for each scenario in the City's InfoSWMM model. The remaining pipe capacity was determined for each conduit to assess the overall capacity of the system post-development. Per the summary in the attached Exhibit A, each conduit

has sufficient capacity in the 2025, 2035, and Full Build-Out scenarios to convey the increase in flow from the subject development.

### **Water System**

Per the Water System Capacity Analysis memorandum prepared by Murraysmith, upon completion of the planned city noted capital improvement projects and developer-constructed improvements, adequate water service for domestic and fire suppression will be available for this project. Refer to the memorandum in the attached Exhibit B for additional information.

### **Stormwater System**

Per the attached Figure 3, the proposed development will connect to the existing 18" public stormwater main in SW Boones Ferry Road via a new public storm manhole. Per Figure 4, the contributing basins for this analysis include portions of SW Boones Ferry Road, portions of SW Norwood Road, and the subject site. The subject site will utilize a combination of an existing on-site stormwater pond and a new detention facility to satisfy water quantity and hydromodification requirements. Additionally, as part of the anticipated frontage improvements to SW Norwood Road, new public facilities will be implemented to detain stormwater in accordance with CWS water quantity and hydromodification requirements.

The attached HydroCAD report in Exhibit C analyzes the existing storm system's capacity post-development. However, the site will be required to satisfy water quantity and hydromodification requirements per Clean Water Services (CWS) standards. Since the release from the subject site and SW Norwood Road following anticipated frontage improvements will be required to be less than or equal to the predeveloped condition, the predeveloped condition was used in this analysis. Additionally, a lower curve number for redeveloped impervious area will be used in the predeveloped analysis per CWS standards, therefore post-developed release rates will be less than the rates in the provided calculations. Per the attached HydroCAD report, the existing stormwater system downstream of the site will have sufficient capacity to convey runoff from the proposed development in accordance with CWS standards.

Sincerely,

**AKS ENGINEERING & FORESTRY, LLC**



Austin Cole, PE  
12965 SW Herman Road, Suite 100  
Tualatin, OR 97062  
(503) 563-6151 | [colea@aks-eng.com](mailto:colea@aks-eng.com)



RENEWS: DECEMBER 31, 2023

### **Attachments**

Sanitary Sewer Post-Developed Conduit Summary	(Exhibit A)
Murraysmith Water Capacity Memorandum	(Exhibit B)
HydroCad Analysis	(Exhibit C)
Conduit Map	(Figure 1)
Preliminary Sanitary Sewer Layout	(Figure 2)
Preliminary Stormwater Layout	(Figure 3)
Preliminary Basin Map	(Figure 4)



## Memorandum

**Date:** September 11, 2022

**Project:** 20-2737, On-Call Water System Analysis

**To:** Ms. Kim McMillan, PE – Community Development Director  
Mr. Tony Doran – Engineering Associate  
City of Tualatin

**From:** Brian Ginter, PE

**Re:** 9300 SW Norwood – Water System Capacity Analysis

---

### Introduction

As requested, this memorandum has been prepared to present the findings of our analysis of the water service to the proposed multi-family development located at 9300 SW Norwood Road, southeast of the intersection of Boones Ferry Road and Norwood Road. This memorandum presents the findings of this analysis for the City's use in determining the water system improvements necessary to meet fire flow and pressure requirements.

### Analysis and Conclusions

MurraySmith performed a review of the water service requirements associated with this development, and confirmed that the proposed multi-family develop does not require further analysis since prior analyses of proposed developments in the vicinity (Autumn Sunrise Subdivision and the Community Partners for Affordable Housing – Plambeck Gardens), have already defined water service availability and required water system improvements.

With the completion of the following planned improvements, a combination of City capital improvement projects and developer-constructed improvements, adequate water service for domestic and fire suppression is available at the proposed development.

- An 18-inch diameter B-level water line in Boones Ferry Road (to Norwood) being designed by AKS as a City CIP. The line extends east on Norwood to the B Level Reservoir/C Level Pump Station site.
- Lennar will upsize additional lines for the C-level, either by adding a new line across the Norwood frontage of the Autumn Sunrise development or upsizing the internal lines (following the street layout).

- CPAH is required by COAs to extend a 12-inch diameter C-level water line down Boones Ferry Road, from Norwood Road to their south property line.
- Autumn Sunrise will be installing upsized C-level lines from Norwood Road, through the development, out to BFR via Mahogany/Salinan, and then north to connect to the line CPAH will be installing in BFR.

If the proposed development at 9300 SW Norwood Road occurs prior to the completion of these improvements, it may impact the availability of water service.

## Memorandum

To: **City of Tualatin**

Copy: **Vista Residential Partners**

From: **Jennifer Danziger**

Date: **January 30, 2023**

Subject: **Norwood Apartments – Conceptual Future Access on SW Boones Ferry Road**

### Introduction

The proposed Norwood Apartments project includes the development of a 276-unit apartment complex on a site located south of SW Norwood Road and east of SW Boones Ferry Road in Tualatin, Oregon. The project site consists of tax map 2S135D lots 108 and 106. Lot 108 includes a 1.0-acre parcel located at 9300 SW Norwood Road and is currently occupied by one single-family home that currently takes access from SW Norwood Road. Lot 106 includes an 8.2-acre portion of the parcel located at 23370 SW Boones Ferry Road, which is part of the Horizon Christian School property, which has existing accesses on both SW Norwood Road and SW Boones Ferry Road.

Future access to the site will be provided via one new driveway along SW Norwood Road. An emergency access connection to the Horizon School circulation network will be provided. The site location is shown in Figure 1: Project Location (Source: City of Tualatin Interactive Zoning Map) with the project site outlined in yellow.

### Adjacent Properties

The proposed development abuts three parcels (tax map 2S135D lots 101, 102, and 109) with frontage along SW Boones Ferry Road. These parcels are outlined in red on Figure 1. Two of these parcels, Tax Lots 101 and 102, currently have direct access on SW Boones Ferry Road while Tax Lot 109 has direct access on SW Norwood Road.



Figure 1: Project Location (Source: City of Tualatin Interactive Zoning Map)

## Future Access Concept

SW Boones Ferry Road is an arterial in Washington County. Per CDC Section 501-8.5B, the access spacing on an arterial is 600 feet and direct access shall be from collectors or other arterial streets.

With the potential redevelopment of these properties at some time in the future, private access to SW Boones Ferry Road will not be permitted and alternative access will be required. Taking access through the proposed Norwood Apartments development is not appropriate as the internal network is designed to accommodate parking and circulation, not through traffic from other development. Connecting to the Horizon School Access Road would involve traversing the water quality facilities serving the school property. Therefore, Exhibit A illustrates a preliminary site access concept to demonstrate how future access could be provided for these three parcels.

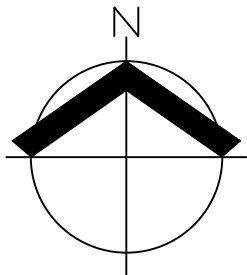
The exhibit shows a local street access developed along the property line between Tax Lots 101 and 102 that would connect with SW Boones Ferry Road approximately 523 feet south of SW Norwood Road and 443 feet north of the Horizon School access. It is not possible to meet the 600-foot spacing requirement while the Horizon School has an access on SW Boones Ferry Road but this location is likely to be beyond any queuing that would occur with future signalization of the SW Boones Ferry Road & SW Norwood Road intersection, thus no conflict exists. This concept would also allow for a north-south connection that could serve Tax Lot 109 as well.

### *Attachments:*

*Exhibit A: Preliminary Site Access Concept*







SCALE: 1" = 150 FEET



ORIGINAL PAGE SIZE: 8.5" x 11"

DATE: 12/07/2022

**PRELIMINARY SITE ACCESS CONCEPT**

EXHIBIT  
**A**

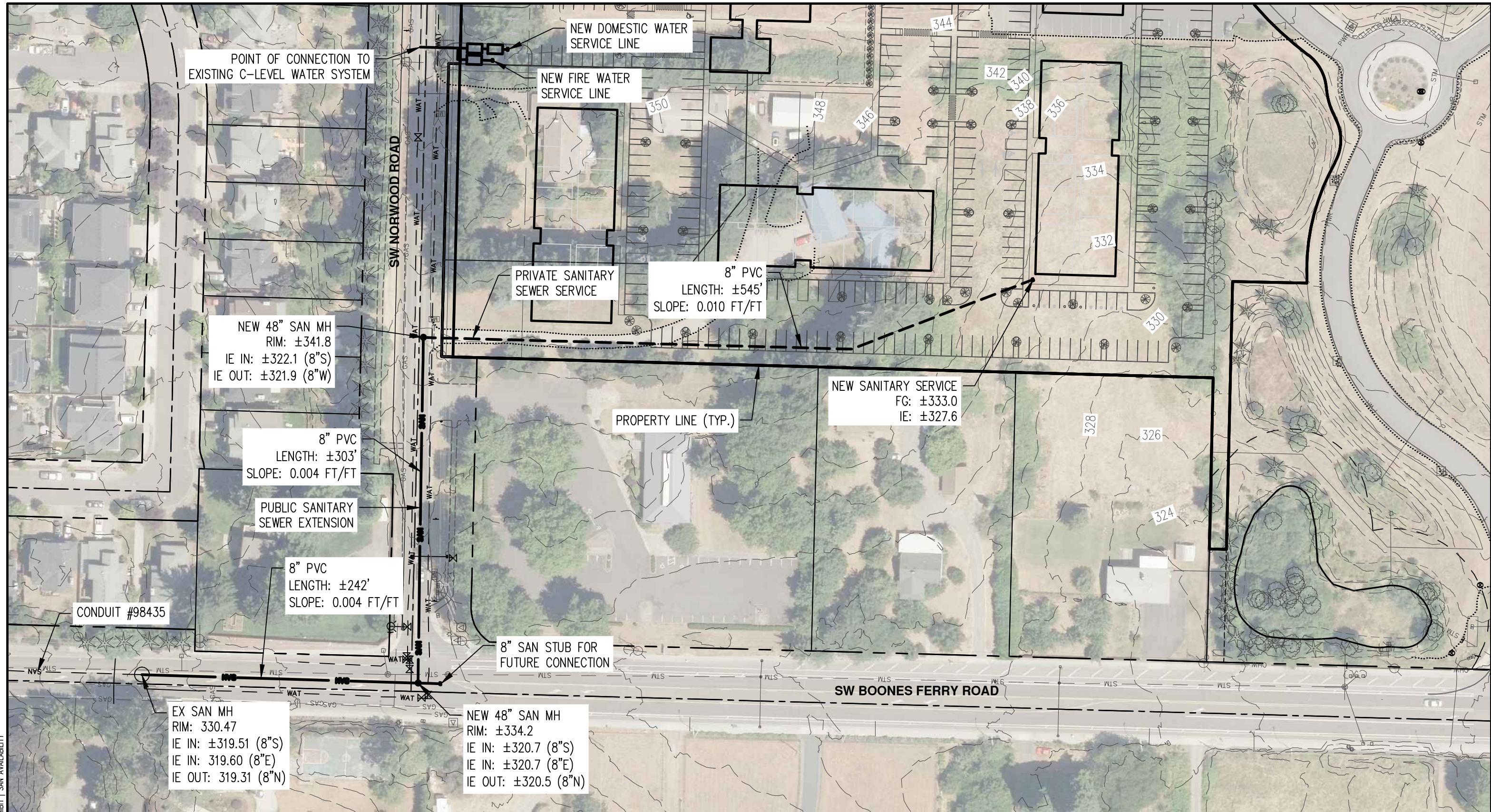
AKS ENGINEERING & FORESTRY, LLC  
 12965 SW HERMAN RD, STE 100  
 TUALATIN, OR 97062  
 503.563.6151 WWW.AKS-ENG.COM



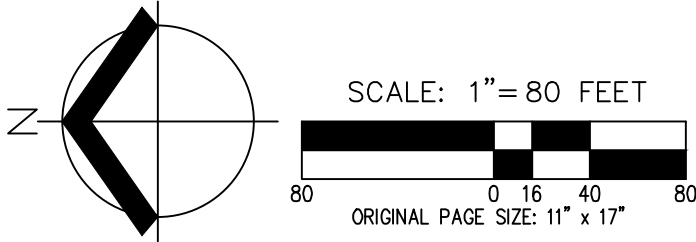
DRWN: JLG  
 CHKD: AMC  
 AKS JOB:  
 8723



DWG: 8723\_20221205 SANITARY CAPACITY EXHIBIT | SAN AVAILABILITY



DATE: 12/16/2022



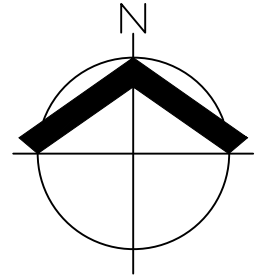
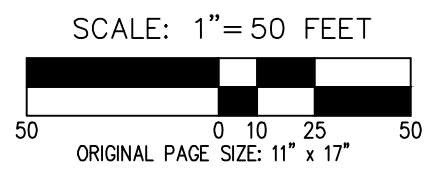
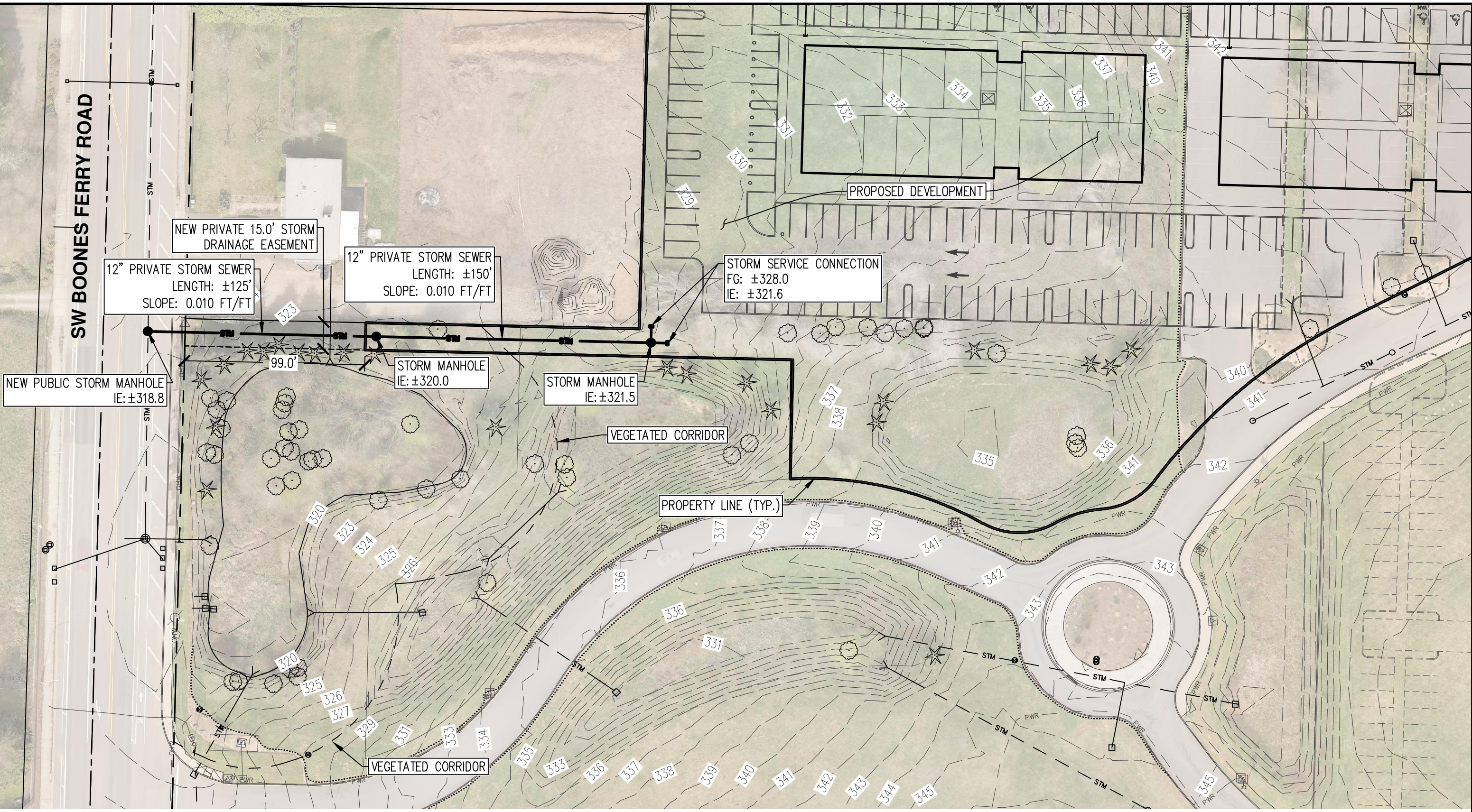
<b>PRELIMINARY SANITARY SEWER LAYOUT</b>		FIGURE
<b>NORWOOD MULTI-FAMILY</b>		<b>2</b>
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD #100 TUALATIN, OR 97062 503.563.6151 WWW.AKS-ENG.COM		DRWN: JAM CHKD: AMC AKS JOB: 8723





DWG: 8723 20220908 STORM AVAILABILITY EXHIBIT | STORM LAYOUT

SW BOONES FERRY ROAD

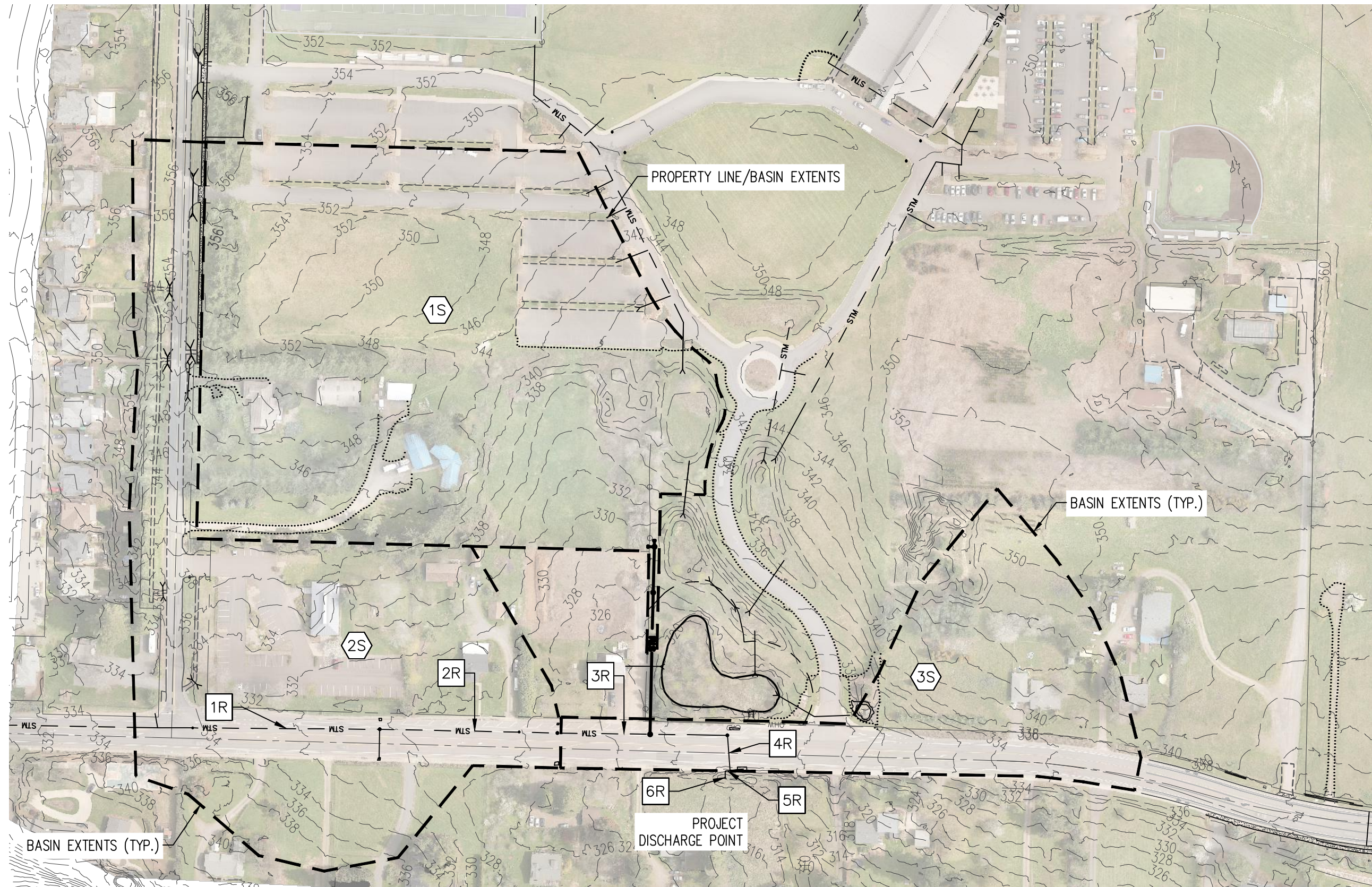


DATE: 12/16/2022

<b>PRELIMINARY STORMWATER LAYOUT</b>		FIGURE
<b>NORWOOD MULTI-FAMILY</b>		<b>3</b>
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD #100 TUALATIN, OR 97062 503.563.6151 WWW.AKS-ENG.COM		DRWN: JAM CHKD: AMC AKS JOB: 8723

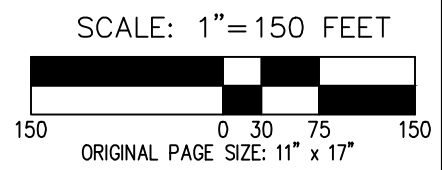
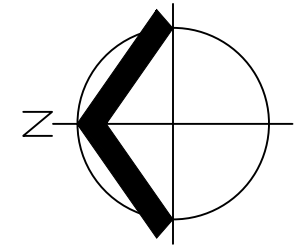






DWG: 8723\_20220518 PRELIMINARY DRAINAGE EXHIBIT | EX-A

DATE: 12/16/2022



<b>PRELIMINARY BASIN MAP</b>		FIGURE
<b>NORWOOD MULTI-FAMILY</b>		<b>4</b>
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151    WWW.AKS-ENG.COM		DRWN: JAM CHKD: AMC AKS JOB: <b>8723</b>





**NORWOOD MULTI-FAMILY DEVELOPMENT  
SANITARY PIPE CAPACITY CALCULATIONS**



Client: Vista Residential Partners  
Project: Norwood Multi-Family  
AKS Job No.: 8723  
Date: 12/16/2022  
Done By: AMC

Post-Developed Private System Flow Calculations		
Peak Daily Flow (GPM)	I/I (GPM)	PWWF (GPM)
38.33	25.53	109.86

CONDUIT ID	PIPE INFO			SCENARIO										
	SIZE (IN)	SLOPE (FT/FT)	PIPE CAPACITY	EXISTING		2025			2035			FULL BUILDOUT		
				MODEL	REMAINING CAPACITY	MODEL	MODEL + PWWF	REMAINING CAPACITY	MODEL	MODEL + PWWF	REMAINING CAPACITY	MODEL	MODEL + PWWF	REMAINING CAPACITY
98435	8	0.0435	1130.87	6.52	1124.35	6.73	116.59	1014.28	6.73	116.59	1014.28	6.73	116.59	1014.28
98691	8	0.0474	1181.41	9.38	1172.03	9.74	119.60	1061.81	9.74	119.60	1061.81	9.74	119.60	1061.81
98690	8	0.0121	595.91	13.80	582.11	14.24	124.10	471.81	14.24	124.10	471.81	14.24	124.10	471.81
98685	8	0.0077	474.31	19.09	455.22	19.70	129.56	344.75	19.70	129.56	344.75	19.70	129.56	344.75
98689	8	0.0029	291.02	16.06	274.96	16.60	126.46	164.56	16.60	126.46	164.56	16.60	126.46	164.56
98688	8	0.0046	368.24	8.44	359.80	8.92	118.78	249.46	8.92	118.78	249.46	8.92	118.78	249.46
98686	8	0.0038	334.93	2.76	332.17	3.04	112.90	222.03	3.04	112.90	222.03	3.04	112.90	222.03
98687	8	0.0052	389.34	0.53	388.81	0.64	110.50	278.84	0.64	110.50	278.84	0.64	110.50	278.84
98314	8	0.0066	439.46	40.13	399.33	42.97	152.83	286.63	42.97	152.83	286.63	42.97	152.83	286.63
98957	8	0.0041	347.77	40.62	307.15	43.37	153.23	194.54	43.37	153.23	194.54	43.37	153.23	194.54
99426	8	0.0440	360.63	40.12	320.51	43.04	152.90	207.73	43.04	152.90	207.73	43.04	152.90	207.73
99427	8	0.0072	459.06	33.89	425.17	37.13	146.99	312.07	37.13	146.99	312.07	37.13	146.99	312.07
99041	8	0.0042	352.57	35.39	317.18	39.02	148.88	203.69	39.02	148.88	203.69	39.02	148.88	203.69
99040	8	0.0039	336.61	16.82	319.79	19.17	129.03	207.58	19.17	129.03	207.58	19.17	129.03	207.58
99408	8	0.0483	1192.08	11.65	1180.43	13.48	123.34	1068.74	13.48	123.34	1068.74	13.48	123.34	1068.74
98951	8	0.0047	370.07	5.36	364.71	6.74	116.60	253.47	6.74	116.60	253.47	6.74	116.60	253.47
98594	8	0.0070	452.22	18.01	434.21	19.92	129.78	322.44	19.92	129.78	322.44	19.92	129.78	322.44
98593	8	0.0060	420.11	15.44	404.67	16.64	126.50	293.61	16.64	126.50	293.61	16.64	126.50	293.61
98596	8	0.0058	411.38	14.82	396.56	15.83	125.69	285.69	15.83	125.69	285.69	15.83	125.69	285.69
98592	8	0.0585	1312.35	22.84	1289.51	24.13	133.99	1178.36	24.13	133.99	1178.36	24.13	133.99	1178.36
98290	8	0.0273	896.20	22.61	873.59	23.84	133.70	762.50	23.84	133.70	762.50	23.84	133.70	762.50
1706	10	0.0096	964.40	26.36	938.04	27.57	137.43	826.97	27.57	137.43	826.97	27.57	137.43	826.97
1705	12	0.0034	935.23	34.45	900.78	34.45	144.31	790.92	34.45	144.31	790.92	34.45	144.31	790.92

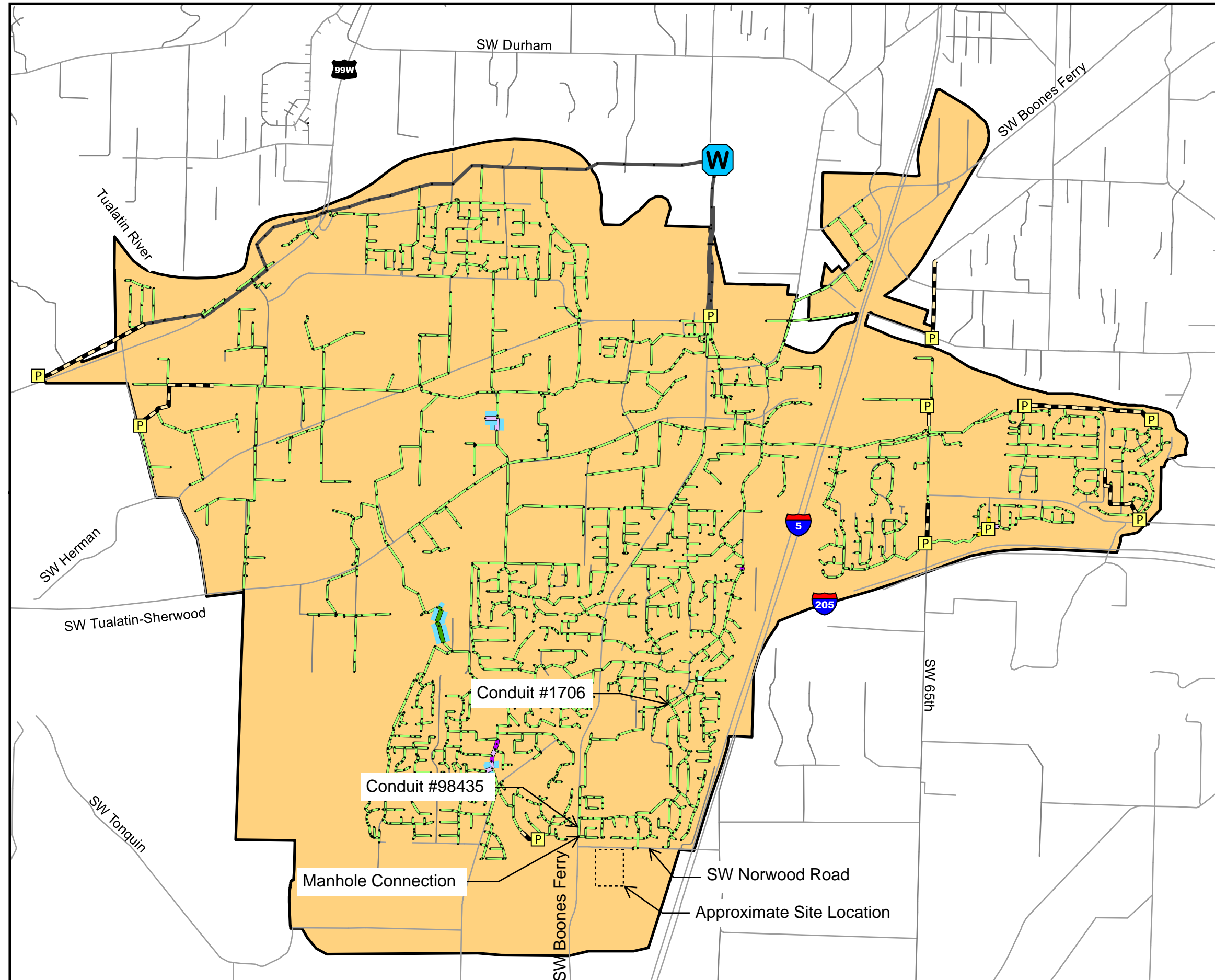
**MODEL = RESULTANT FLOW FROM CITY INFOSWMM MODEL**

**MODEL + AWWF = MODEL + POST-DEVELOPED PWWF**

**REMAINING CAPACITY = PIPE CAPACITY - (MODEL + PWWF)**

Figure 1

# Conduit Map

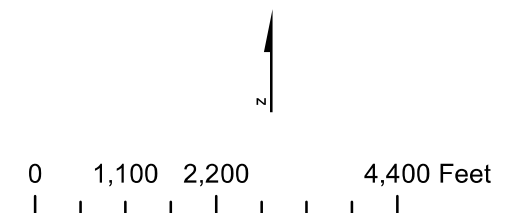


## LEGEND

- Durham AWWTF
- Pump Station
- UGB
- CWS Interceptor  
(Not Evaluated in this Plan)
- Force Main

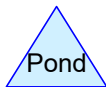
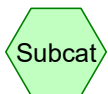
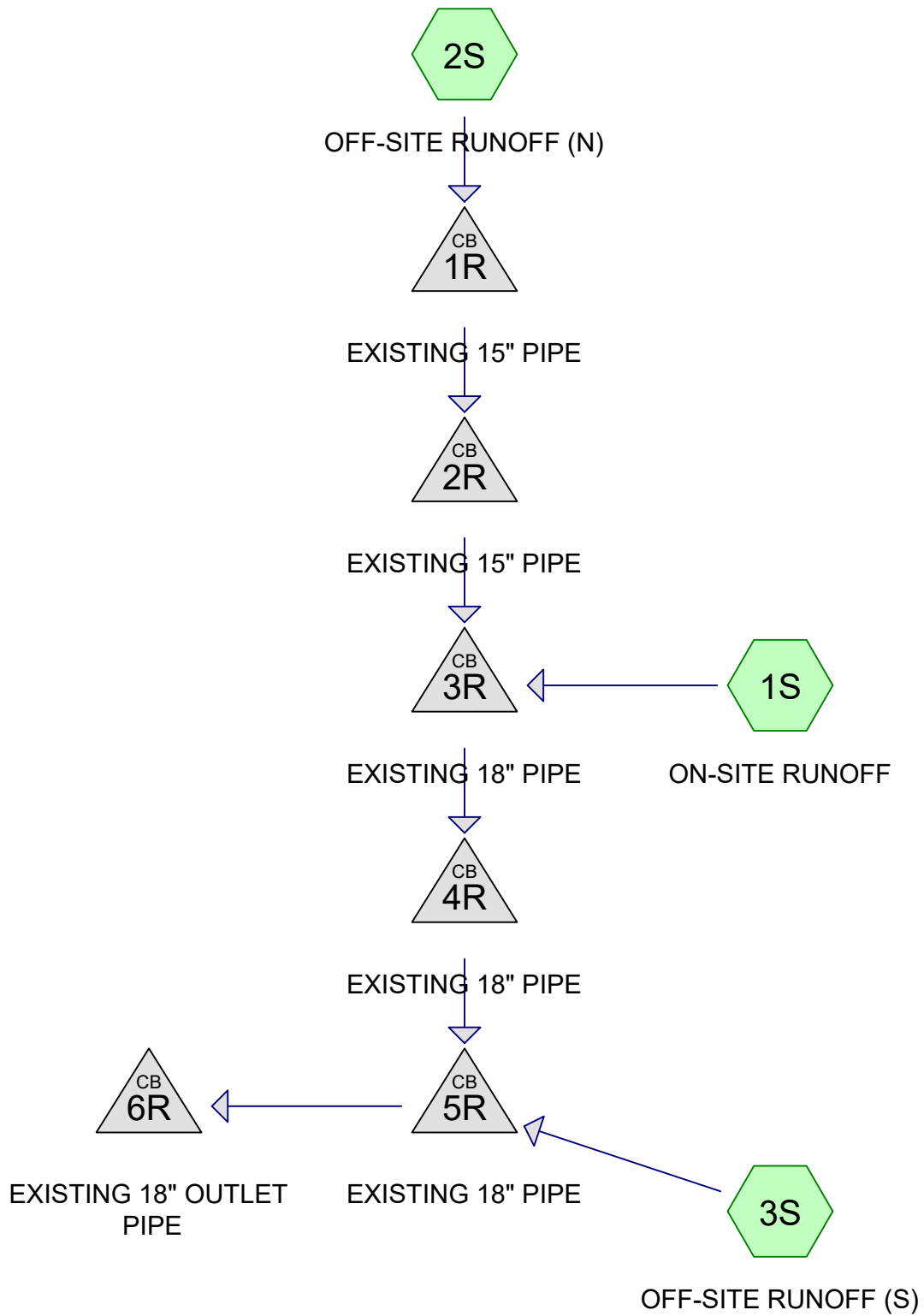
Category	Priority	Description
LS	1	Flooding, steep HGL
LH	2	Flooding
HS	3	0-3' freeboard, steep HGL
HH	4	0-3' freeboard
IS	5	3-10' freeboard, steep HGL
IH	6	3-10' freeboard
DS	7	10'+ freeboard, steep HGL
DH	8	10'+ freeboard
OK	9	No surcharging
Backwater	N/A	Capacity limited downstream

Note: This study recommends upgrades for deficiencies of priorities 1, 2, or 3. Backwater condition is not prioritized but can be another indication of where upgrades are needed.



### FIGURE 3-3 Existing System Deficiencies

City of Tualatin Sewer Master Plan



**Routing Diagram for 8723 STORM CAPACITY HYDROCAD**  
 Prepared by {enter your company name here}, Printed 12/12/2022  
 HydroCAD® 10.00-22 s/n 05095 © 2018 HydroCAD Software Solutions LLC

# 8723 STORM CAPACITY HYDROCAD

Prepared by {enter your company name here}

HydroCAD® 10.00-22 s/n 05095 © 2018 HydroCAD Software Solutions LLC

Printed 12/12/2022

Page 2

## Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
6.650	98	Impervious (1S, 2S, 3S)
6.950	71	Pervious (1S)
5.600	64	Pervious (2S, 3S)
<b>19.200</b>	<b>78</b>	<b>TOTAL AREA</b>



**Summary for Subcatchment 1S: ON-SITE RUNOFF**

Runoff = 2.74 cfs @ 8.01 hrs, Volume= 1.455 af, Depth= 1.90"

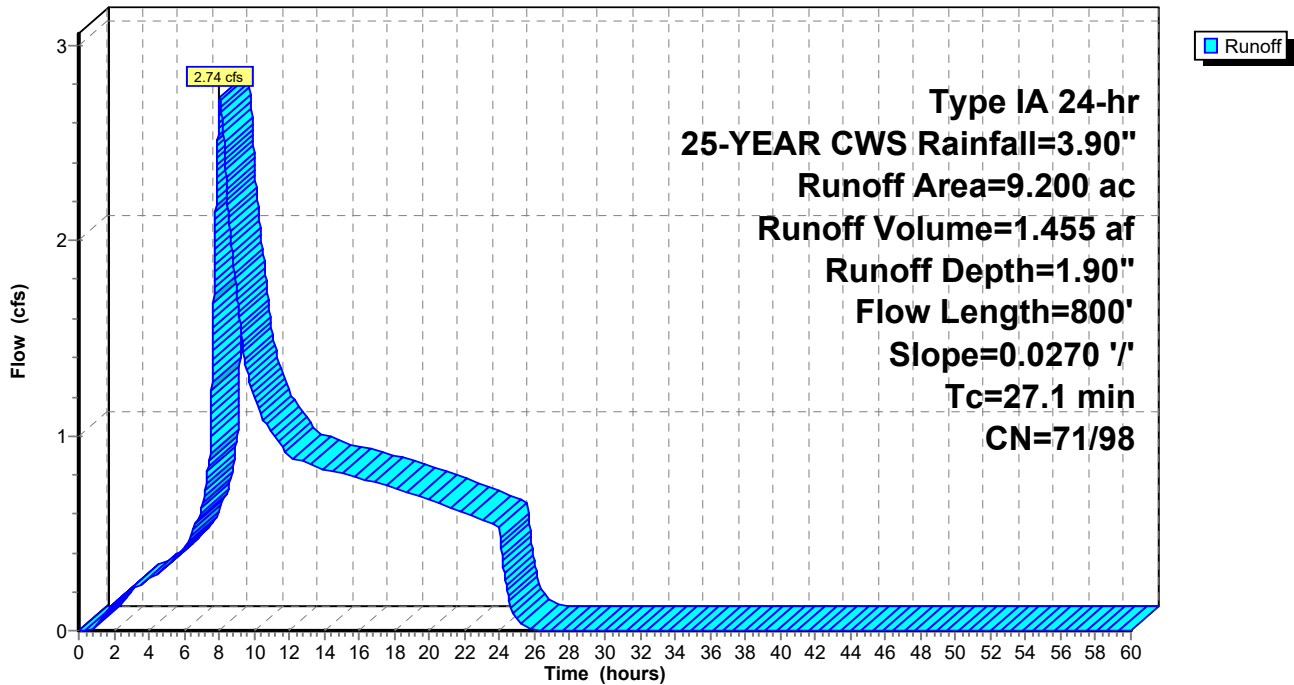
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Type IA 24-hr 25-YEAR CWS Rainfall=3.90"

Area (ac)	CN	Description
* 2.250	98	Impervious
* 6.950	71	Pervious
9.200	78	Weighted Average
6.950	71	75.54% Pervious Area
2.250	98	24.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.7	300	0.0270	0.21		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.50"
3.4	500	0.0270	2.46		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
27.1	800	Total			

**Subcatchment 1S: ON-SITE RUNOFF**

Hydrograph



**Summary for Subcatchment 2S: OFF-SITE RUNOFF (N)**

Runoff = 2.52 cfs @ 8.01 hrs, Volume= 1.168 af, Depth= 2.12"

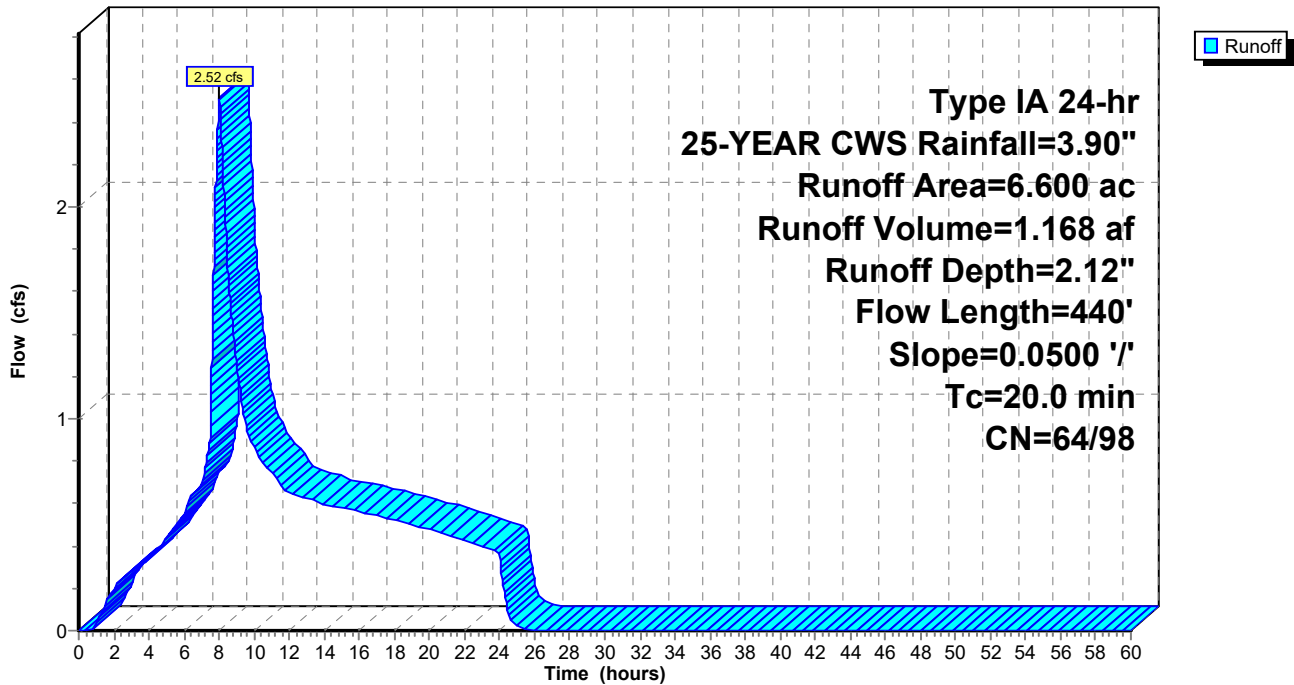
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Type IA 24-hr 25-YEAR CWS Rainfall=3.90"

Area (ac)	CN	Description
* 2.900	98	Impervious
* 3.700	64	Pervious
6.600	79	Weighted Average
3.700	64	56.06% Pervious Area
2.900	98	43.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.5	300	0.0500	0.27		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.50"
1.5	140	0.0500	1.57		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
20.0	440	Total			

**Subcatchment 2S: OFF-SITE RUNOFF (N)**

Hydrograph



**Summary for Subcatchment 3S: OFF-SITE RUNOFF (S)**

Runoff = 1.30 cfs @ 8.00 hrs, Volume= 0.603 af, Depth= 2.13"

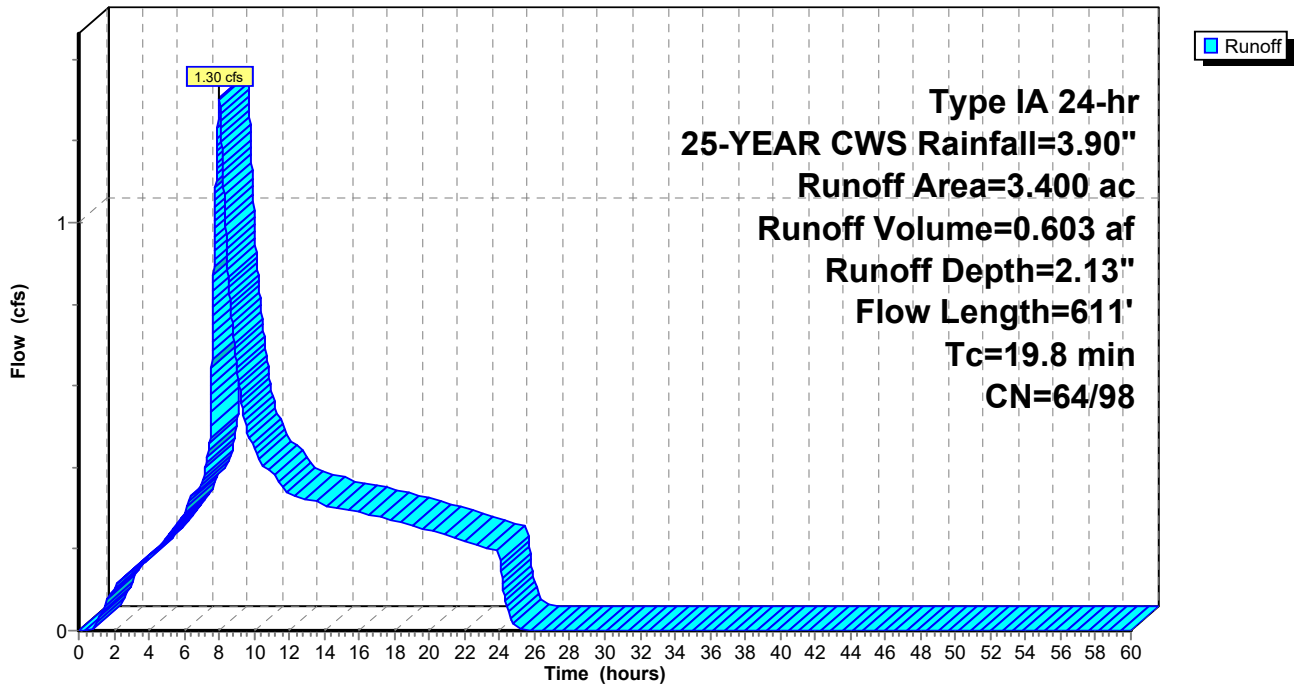
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
Type IA 24-hr 25-YEAR CWS Rainfall=3.90"

Area (ac)	CN	Description
* 1.500	98	Impervious
* 1.900	64	Pervious
3.400	79	Weighted Average
1.900	64	55.88% Pervious Area
1.500	98	44.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.5	300	0.0500	0.27		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.50"
1.3	311	0.0400	4.06		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
19.8	611	Total			

**Subcatchment 3S: OFF-SITE RUNOFF (S)**

Hydrograph



**Summary for Pond 1R: EXISTING 15" PIPE**

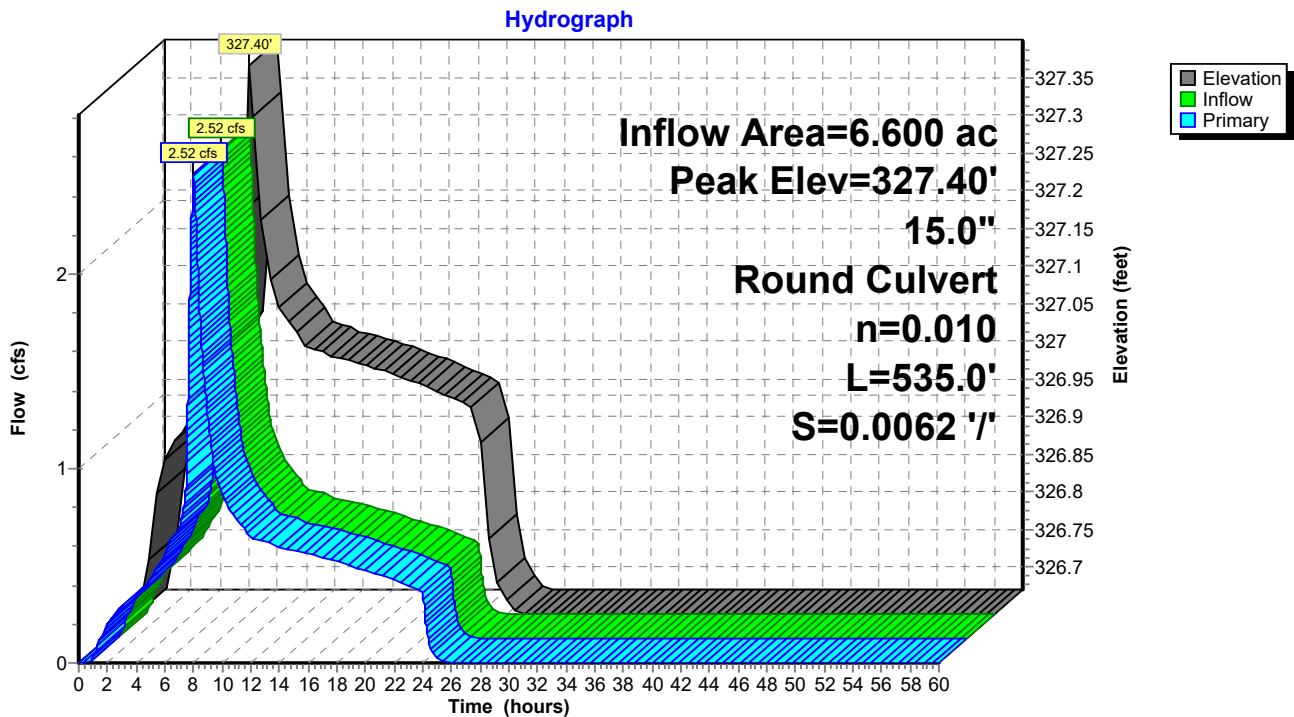
Inflow Area = 6.600 ac, 43.94% Impervious, Inflow Depth = 2.12" for 25-YEAR CWS event  
 Inflow = 2.52 cfs @ 8.01 hrs, Volume= 1.168 af  
 Outflow = 2.52 cfs @ 8.01 hrs, Volume= 1.168 af, Atten= 0%, Lag= 0.0 min  
 Primary = 2.52 cfs @ 8.01 hrs, Volume= 1.168 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 327.40' @ 8.01 hrs

Device #	Routing	Invert	Outlet Devices
#1	Primary	326.67'	<b>15.0" Round Culvert</b> L= 535.0' Ke= 0.200 Inlet / Outlet Invert= 326.67' / 323.33' S= 0.0062 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

**Primary OutFlow** Max=2.52 cfs @ 8.01 hrs HW=327.40' (Free Discharge)  
 ↑1=Culvert (Barrel Controls 2.52 cfs @ 4.88 fps)

**Pond 1R: EXISTING 15" PIPE**



**Summary for Pond 2R: EXISTING 15" PIPE**

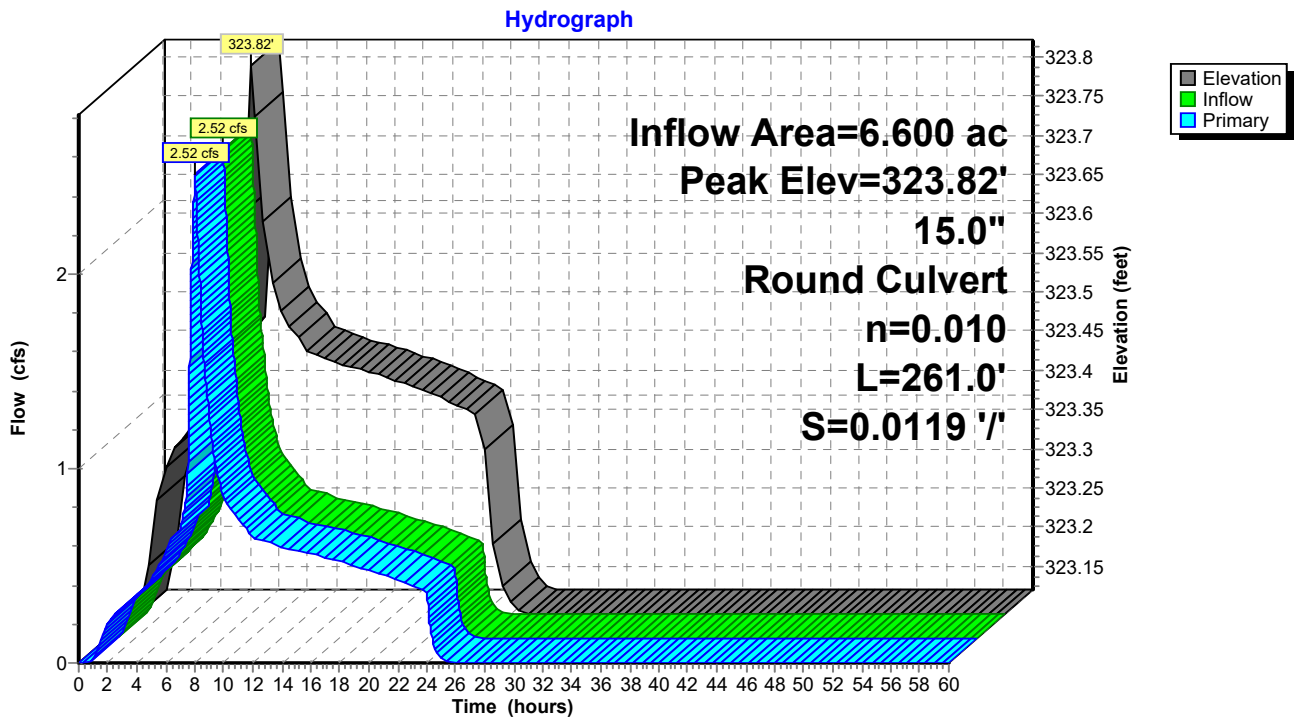
Inflow Area = 6.600 ac, 43.94% Impervious, Inflow Depth = 2.12" for 25-YEAR CWS event  
 Inflow = 2.52 cfs @ 8.01 hrs, Volume= 1.168 af  
 Outflow = 2.52 cfs @ 8.01 hrs, Volume= 1.168 af, Atten= 0%, Lag= 0.0 min  
 Primary = 2.52 cfs @ 8.01 hrs, Volume= 1.168 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 323.82' @ 8.01 hrs

Device #	Routing	Invert	Outlet Devices
#1	Primary	323.12'	<b>15.0" Round Culvert</b> L= 261.0' Ke= 0.200 Inlet / Outlet Invert= 323.12' / 320.02' S= 0.0119 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf

**Primary OutFlow** Max=2.52 cfs @ 8.01 hrs HW=323.82' (Free Discharge)  
 ↑1=Culvert (Inlet Controls 2.52 cfs @ 3.56 fps)

**Pond 2R: EXISTING 15" PIPE**



**Summary for Pond 3R: EXISTING 18" PIPE**

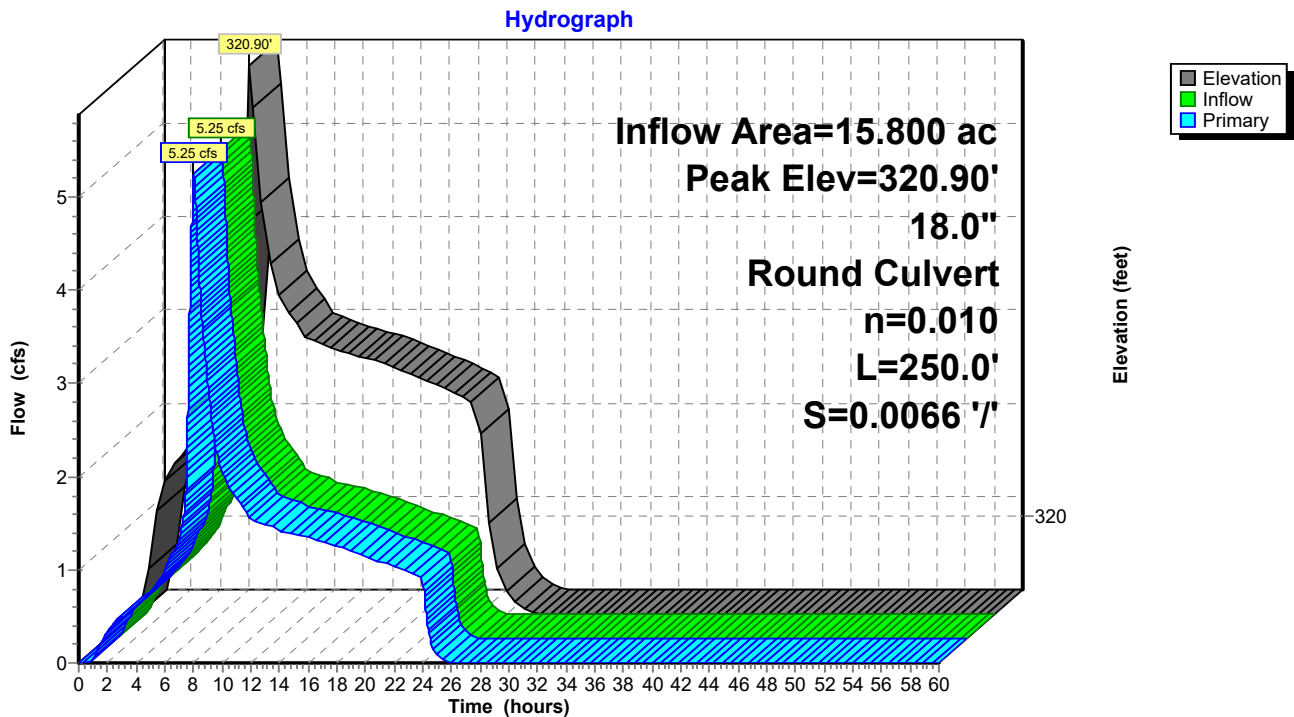
Inflow Area = 15.800 ac, 32.59% Impervious, Inflow Depth = 1.99" for 25-YEAR CWS event  
 Inflow = 5.25 cfs @ 8.01 hrs, Volume= 2.624 af  
 Outflow = 5.25 cfs @ 8.01 hrs, Volume= 2.624 af, Atten= 0%, Lag= 0.0 min  
 Primary = 5.25 cfs @ 8.01 hrs, Volume= 2.624 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 320.90' @ 8.01 hrs

Device #	Routing	Invert	Outlet Devices
#1	Primary	319.86'	<b>18.0" Round Culvert</b> L= 250.0' Ke= 0.200 Inlet / Outlet Invert= 319.86' / 318.20' S= 0.0066 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

**Primary OutFlow** Max=5.25 cfs @ 8.01 hrs HW=320.90' (Free Discharge)  
 ↑1=Culvert (Barrel Controls 5.25 cfs @ 5.68 fps)

**Pond 3R: EXISTING 18" PIPE**



**Summary for Pond 4R: EXISTING 18" PIPE**

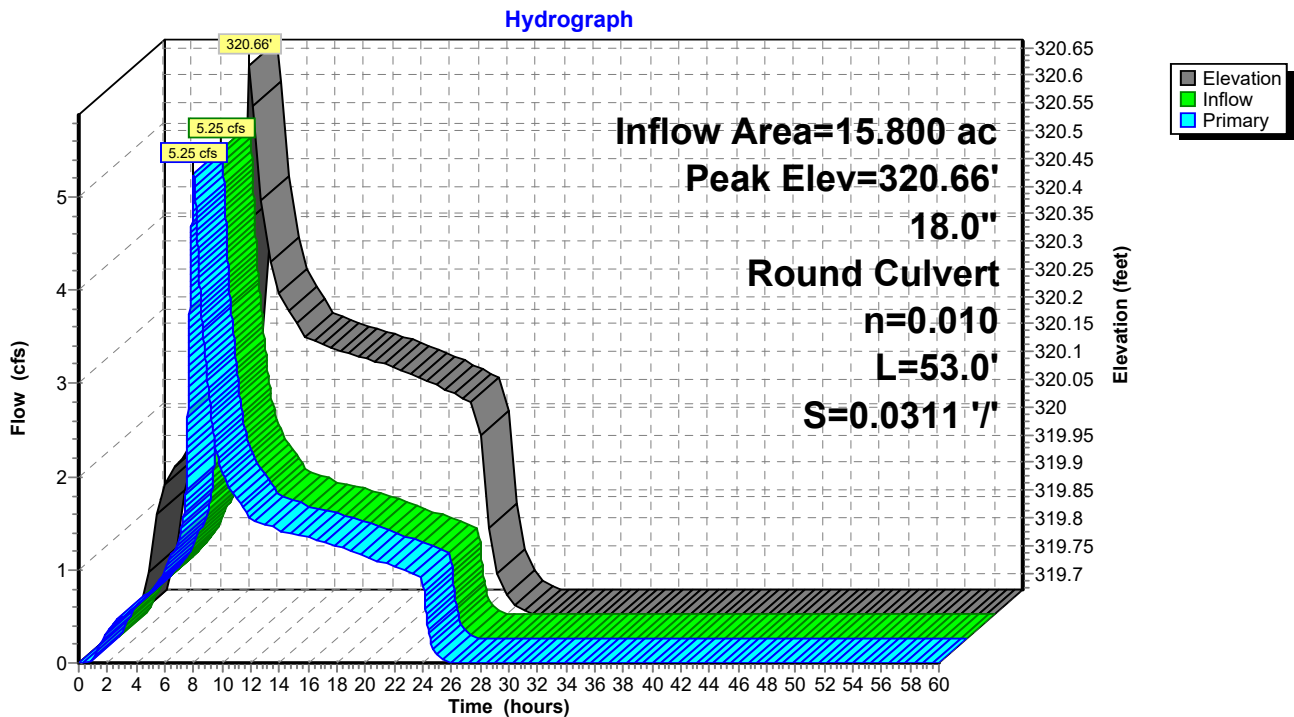
Inflow Area = 15.800 ac, 32.59% Impervious, Inflow Depth = 1.99" for 25-YEAR CWS event  
 Inflow = 5.25 cfs @ 8.01 hrs, Volume= 2.624 af  
 Outflow = 5.25 cfs @ 8.01 hrs, Volume= 2.624 af, Atten= 0%, Lag= 0.0 min  
 Primary = 5.25 cfs @ 8.01 hrs, Volume= 2.624 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 320.66' @ 8.01 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	319.67'	<b>18.0" Round Culvert</b> L= 53.0' Ke= 0.200 Inlet / Outlet Invert= 319.67' / 318.02' S= 0.0311 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

**Primary OutFlow** Max=5.25 cfs @ 8.01 hrs HW=320.66' (Free Discharge)  
 ↑1=Culvert (Inlet Controls 5.25 cfs @ 4.24 fps)

**Pond 4R: EXISTING 18" PIPE**



**Summary for Pond 5R: EXISTING 18" PIPE**

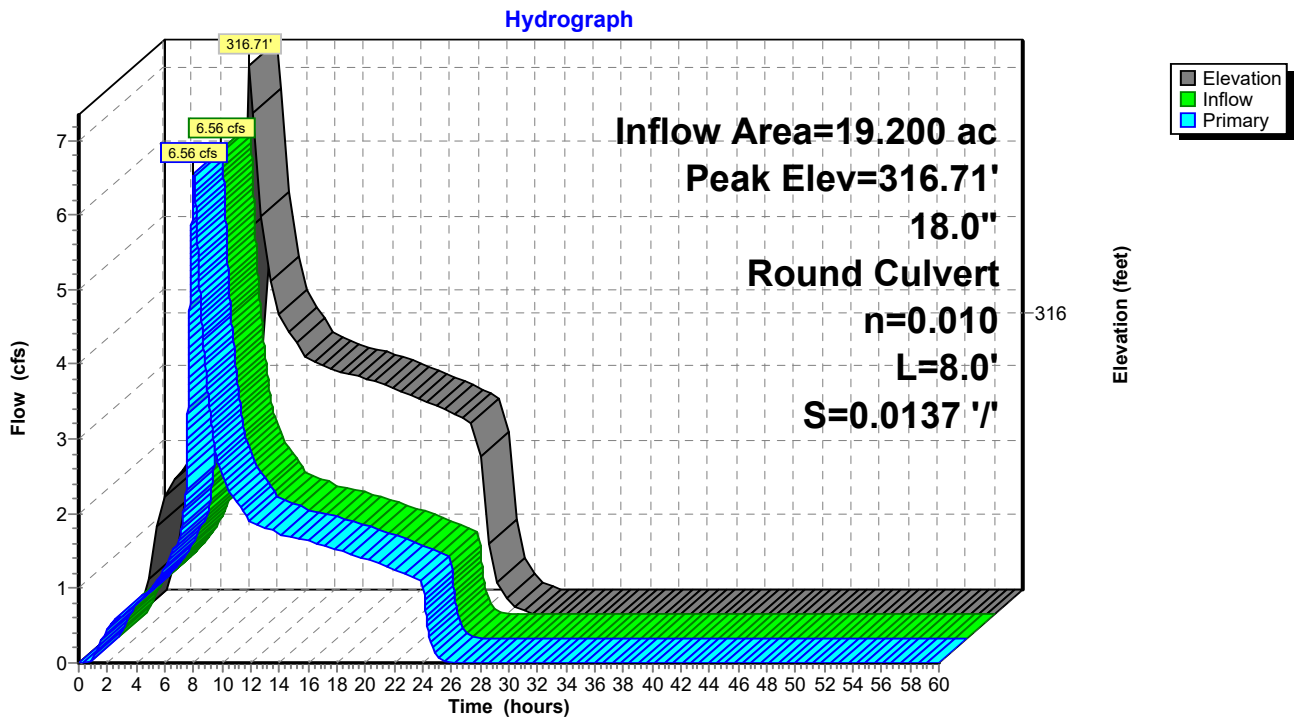
Inflow Area = 19.200 ac, 34.64% Impervious, Inflow Depth = 2.02" for 25-YEAR CWS event  
 Inflow = 6.56 cfs @ 8.01 hrs, Volume= 3.227 af  
 Outflow = 6.56 cfs @ 8.01 hrs, Volume= 3.227 af, Atten= 0%, Lag= 0.0 min  
 Primary = 6.56 cfs @ 8.01 hrs, Volume= 3.227 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 316.71' @ 8.01 hrs

Device #	Routing	Invert	Outlet Devices
1	Primary	315.28'	<b>18.0" Round Culvert</b> L= 8.0' Ke= 0.200 Inlet / Outlet Invert= 315.28' / 315.17' S= 0.0137 '/' Cc= 0.900 n= 0.010, Flow Area= 1.77 sf

**Primary OutFlow** Max=6.55 cfs @ 8.01 hrs HW=316.70' (Free Discharge)  
 ↑1=Culvert (Barrel Controls 6.55 cfs @ 4.87 fps)

**Pond 5R: EXISTING 18" PIPE**





**Summary for Pond 6R: EXISTING 18" OUTLET PIPE**

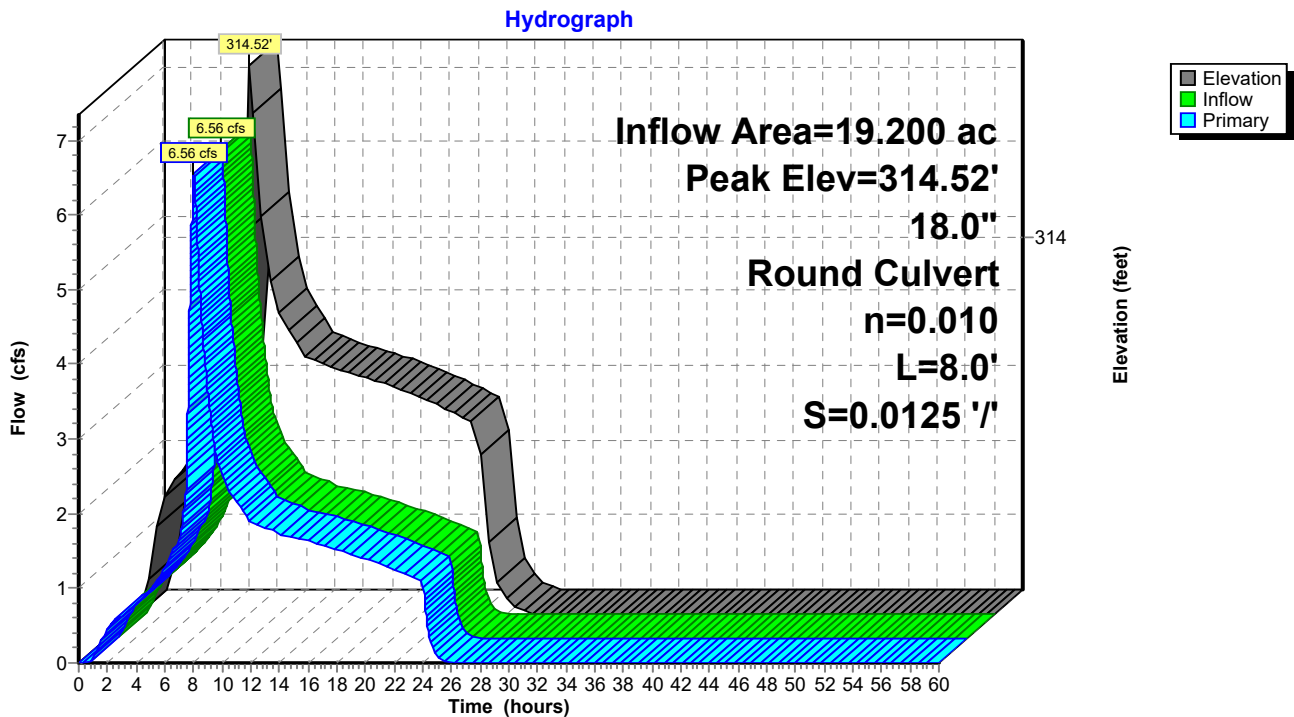
Inflow Area = 19.200 ac, 34.64% Impervious, Inflow Depth = 2.02" for 25-YEAR CWS event  
 Inflow = 6.56 cfs @ 8.01 hrs, Volume= 3.227 af  
 Outflow = 6.56 cfs @ 8.01 hrs, Volume= 3.227 af, Atten= 0%, Lag= 0.0 min  
 Primary = 6.56 cfs @ 8.01 hrs, Volume= 3.227 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs  
 Peak Elev= 314.52' @ 8.01 hrs

Device #1	Routing	Invert	Outlet Devices
	Primary	313.08'	<b>18.0" Round Culvert</b> L= 8.0' Ke= 0.200 Inlet / Outlet Invert= 313.08' / 312.98' S= 0.0125 '/' Cc= 0.900 n= 0.010 Concrete pipe, straight & clean, Flow Area= 1.77 sf

**Primary OutFlow** Max=6.55 cfs @ 8.01 hrs HW=314.52' (Free Discharge)  
 ↑1=Culvert (Barrel Controls 6.55 cfs @ 4.83 fps)

**Pond 6R: EXISTING 18" OUTLET PIPE**



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# Tualatin

## Housing Production Strategy

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August 10 2021

Prepared for: City of Tualatin

Final Report

**ECONorthwest**

ECONOMICS • FINANCE • PLANNING

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# Acknowledgements

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# Executive Summary

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This report presents a housing production strategy (HPS) for the City of Tualatin. A housing production strategy is intended to include goals and strategic actions to work together to achieve equitable outcomes for all residents of Tualatin, with an emphasis on improving outcomes for underserved communities, people with lower incomes, and people in state and federal protected classes.<sup>1</sup> This report is intended to meet the requirements of OAR 660-008, as described within the report.

The HPS is intended to address the housing needs identified in the *Tualatin Housing Needs Analysis* (HNA) in 2019, which concluded that Tualatin has very limited land to accommodate future housing growth and that housing needs are changing as a result of demographic changes and need for affordable housing. Specifically, the HNA concluded:

- **Tualatin is forecasted to increase its housing by about 1,014 new dwelling units between 2020 and 2040.**
- **Changes in demographic characteristics will drive need for new housing.** The HNA forecast that Tualatin would need more attached and multifamily housing in the future than the current housing stock provides. The factors driving the shift in types of housing needed in Tualatin include changes in demographics, such as growing senior populations, and the household formation of young adults.

**Tualatin has an existing deficit of housing that is affordable to low and moderate-income households and is likely to have similar future deficits.** Tualatin's existing deficit of housing to meet the needs of extremely low to low-income households indicates a need for subsidized affordable housing for renters and affordable homeownership. Moderate income households may benefit from a wider range of housing types, but housing types alone do not necessarily bring the cost down for renters or homeowners. Without the types of solutions proposed in this report, lack of affordability will continue to be a problem and will possibly grow, in the future, if incomes continue to grow at a slower rate than housing costs.

- **Tualatin has a limited amount of vacant, unconstrained buildable residential land, particularly for higher-density multifamily housing.** Tualatin has about 244 acres of vacant, unconstrained buildable land. About 64% of vacant land is in Low Density Residential, 29% is in Medium Low Density Residential, and 8% of land in areas that allow higher-density multifamily housing such as Medium High Density, High Density, High Density High-Rise, and commercial area.

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<sup>1</sup> Federal protected classes include race, color, national origin, gender, familial status, and disability. Oregon's additional protected classes include marital status, source of income, sexual orientation, and status as a domestic violence survivor. Under Fair Housing laws, it is illegal to deny access to housing based on the characteristics of people within these protected classes.



- **Tualatin cannot accommodate all of its housing needs on existing vacant land.** Tualatin has a land deficit of seven acres and four acres in the Medium High Density and High Density High Rise Plan Designations, of 7 acres and 4 acres respectively.

The HPS is intended to establish a framework for the evaluation and potential development of policies and strategic actions that address the housing needs described above over a six-year period. Key findings of the HPS are that Tualatin needs:

- **Increased housing diversity.** Nearly two-thirds of Tualatin’s housing stock is single-family detached housing. The City’s demographic and socioeconomic characteristics suggest a need for a wide variety of housing types to meet the needs of a growing and diverse pool of existing and future residents.
- **Greater housing affordability and availability for homeowners.** Tualatin’s homeownership stayed static from 2000 to 2017 at about 55%, however, it was lower than Washington County’s (61%) and the Portland Region’s (60%) homeownership rate. These statistics highlight a potential need for greater homeownership opportunities as homeownership continues to be one of the most effective (and primary ways) for households and individuals to build wealth.
- **Greater housing affordability and availability for renters.** Competition for lower-priced affordable units in Tualatin is strong and many cannot afford these rents or housing sales prices without cost burdening themselves. In the 2013-2017 period, about 56% of Tualatin’s renters were cost burdened, with 26% severely cost burdened.<sup>2</sup> Renters, especially those with lower incomes, are at risk of being displaced through increases in rental costs.
- **Increased income-restricted regulated, emergency, and supportive housing.** Tualatin has about 604 rent-restricted affordable housing units (accounting for about 5% of Tualatin’s housing stock) but has about 1,753 households experiencing severe housing cost burden in the city. Washington County has about 530 people experiencing homelessness, about 300 of whom are unsheltered. About 44 people experiencing homelessness are estimated to live in the Tualatin and Tigard area.
- **Need for housing for people to live and work in Tualatin.** Tualatin’s Economic Opportunities Analysis report (December 2019) reported that 93% of people working in Tualatin lived in another community (such as Portland, Tigard, Beaverton, or Hillsboro) and commuted into Tualatin each day. Some people who work in Tualatin can afford rent or homeownership in Tualatin, but some would be cost burdened in Tualatin.

This analysis finds disproportionate housing needs for seniors, people of color, people with one or more disabilities, and people experiencing homelessness. Washington County’s Consolidated

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<sup>2</sup> A household is said to be cost burdened if they spend 30% or more of their gross income on housing costs. A household is said to be severely cost burdened if they spend 50% or more of their gross income on housing costs.

Plan identifies all of these groups as a priority with special housing needs. The following groups have greater-than-average housing needs:

- **Seniors.** People 65 years of age and older are disproportionately cost burdened compared to the average household—many living on fixed incomes in a region with increasing housing costs. Over the next twenty years, people over 65 years are expected to be the fastest-growing age group. As this group grows, Tualatin will need more housing that is affordable, physically accessible, and in proximity to needed services (such as nearby health care or in-home assistance). Seniors will also need improved access to housing without discrimination, especially seniors of color.
- **People of color.** About 25% of Tualatin’s population identified as a person of color, who are more likely to be cost burdened when compared to the average household. Broadly, the housing needs for many people of color in Tualatin include improved access to affordable housing units, assistance to avoid displacement, access to housing in locations with “high opportunity” (such as areas near jobs, transit, or services), and access to housing without discrimination.
- **People with disabilities.** Across the Portland Region, people with one or more disabilities experience disproportionate cost burden. Housing needs of people with one or more disabilities vary by type of disability. But in general, housing needs include improved access to an affordable unit, improved physical access to housing units, access to housing with needed services, and access to housing without discrimination.
- **People experiencing homelessness.** People experiencing homelessness are disproportionately affected by the lack of affordable housing. Housing needs for people experiencing homelessness vary by reason for homelessness. In Washington County, the primary reason cited for experiencing homelessness was inability to afford housing. The broad housing needs for this group include the need for immediate assistance (e.g., rent support), permanent supportive housing (with services), and improved access to an affordable unit.

## Summary of Goals and Strategic Actions

The HPS presents goals and strategic actions to address the housing needs described above. Implementation of the HPS is expected to occur over a six-year period. Each strategic action will require further consideration, such as additional analysis, engagement of consultants, changes to existing standards or programs, discussions with decision makers, or public hearings. The City may be unable to or not chose to implement some strategic actions because of new information that arises from a detailed evaluation of the specifics of each strategic action. In that case, the City may identify a different action (or actions) to meet the specific housing need addressed by the strategic action.

Exhibit 1 presents a summary of the goals and strategic actions and includes the following information:

- **Goal or strategic action.** This is either the text of the goal or a short summary of the strategic action. Chapter 3 of the report presents additional information about each goal and a description of each strategic action.
- **Incomes of populations served by each strategic action.** Income is based on Median Family Income (MFI) as defined by the US Department of Housing and Urban Services (HUD) for Washington County. The example below is for a family of four people. The HUD terms used to describe housing by income group are:
  - Extremely Low Income: Less than 30% MFI, \$28,000 or less for a family of four
  - Very Low Income: 31% to 50% of MFI, \$28,000 to \$46,000 for a family of four
  - Low Income: 51% to 80% of MFI, \$46,000 to \$74,000 for a family of four
  - Moderate Income: 81% to 120% of MFI, \$74,000 to \$110,000 for a family of four
  - High Income: 121% of MFI or more, \$110,000 or more for a family of four
- **Potential magnitude of the action for producing new housing.** This is an estimate of the amount of new housing that may be produced over the six-year period as a result of each strategic action. The magnitudes of impact are:
  - A **low** magnitude is anticipated production of 1% or less of the needed new units (1,014 units) or about 10 dwelling units over the six-year period. A low magnitude does not mean a strategic action is unimportant. Some strategic actions are necessary but not sufficient to produce new housing.
  - A **moderate** magnitude is anticipated production of 1% to 5% of the needed new units (1,014 units) or about 10 to 50 dwelling units over the six-year period.
  - A **high** magnitude is anticipated production of 5% or more of the needed new units (1,014 units) or 50 or more dwelling units over the six-year period.
- **Expected year of adoption.** The HPS will be implemented over a six-year period. Each strategic action will be evaluated, and if the City chooses to implement it, then it would be adopted or would have some other official acknowledgement that the City is going to execute the strategic action.

Exhibit 1. Summary of Goals and Strategic Actions

Goal and Strategic Actions	Income Levels Served (MFI)	Magnitude of Impact	Expected Year of Adoption
<b>1. Affordable Housing: Strongly prioritize, encourage, and support affordable rental housing development to increase affordable housing for households earning 0-60% Median Family Income.</b>			
1.a Evaluate a Low-Income Housing Property Tax Exemption Program for Affordable Rental Housing	0-60%	Moderate	2023
1.b Evaluate Changes to Systems Development Charges	0-80%	Low	2026
1.c Evaluate Implementation of a Construction Excise Tax (CET)	Mostly 0-60% Possibly 61-80%	Moderate	2025
1.d Evaluate Support for Affordable and Workforce Rental Housing as part of Urban Renewal	0-80%	Moderate to large	2022
1.e Evaluate Financial Resources for Local Contributions to Affordable Housing Development	0-60%	Moderate	2026
1.f Evaluate Buildable or Redevelopable Public and Institutional Land Potentially Suitable for Affordable Housing	0-60%	Moderate	2023
1.g Evaluate Development Code Changes to Allow and Support Other Affordable Rental Housing Types in Tualatin	0-80%	Indirect, low	2024
1.h Evaluate Municipal Code, Development Code, Public Works Construction Code, and Building Code Processes to Make Building Affordable Housing Easier	0-60%	Low	2024
<b>2. Affordable Homeownership: Encourage and support affordable homeownership to create opportunities for wealth creation.</b>			
2.a Evaluate Impediments to Homeownership and Their Removal	0-120%	Indirect, low	2024
2.b Partner to Encourage Education about Homeownership Opportunities	0-120%	Low to moderate	2022
2.c Partner with Organizations that Develop Affordable Ownership Housing	0-80%	Low to moderate	2023
2.d Evaluate Development Code to Encourage Diverse Housing Types for Affordable Homeownership	0-120%	Indirect, low	2024
<b>3. Preservation of Regulated Affordable Housing: Preserve affordable housing to prevent the loss of existing affordable housing units and to prevent resident displacement.</b>			
3.a Evaluate How to Support Preservation of Regulated Affordable Rental Housing	0-60%	Moderate	2025
3.b Evaluate Developing a Healthy Housing Initiative for Multifamily Housing	0-80%	Moderate to large	2024

Goal and Strategic Actions	Income Levels Served (MFI)	Magnitude of Impact	Expected Year of Adoption
4. Preservation of Naturally Occurring Affordable Housing (NOAH): Preserve naturally occurring affordable housing, where possible, to prevent loss of affordable units and to mitigate resident displacement.			
4.a Evaluate Development of Incentives to Preserve Low-Cost Rentals for Below-Market-Rate Privately Owned Rental Housing	0-80%	Moderate	2026
4.b Evaluate Using the Multiple Unit Property Tax Exemption to Slow Rental Cost Increases	0-80%	Moderate	2026
5. Housing for Underserved Communities: Implement housing policies, projects, programs, and partnerships to further support racial and social equity.			
5.a Consider Development of a Funding Action Plan to Implement the HPS with Attention to Equity	Emphasis on 120% and below	Indirect, large	2023
5.b Evaluate Impediments to Fair Housing to Create an Analysis of Impediments	All income groups	Moderate	2024
5.c Evaluate Ways to Best Ensure Opportunities for Education about Fair Housing Are Provided	All income groups	Moderate	No adoption needed
5.d Evaluate Strategies to Encourage Diverse Housing Types in High-Opportunity Neighborhoods	0-80%	Moderate	2024
6. Workforce Housing: Encourage, plan for, and support the development of workforce housing for households earning 61-80% Median Family Income for both owner and renter, in order to increase the jobs-housing balance, reduce commute time, and provide attainable housing for workers in Tualatin.			
6.a Evaluate Ways to Incentivize Inclusion of Workforce Housing Units within New Multifamily Rental Development	61-80%	Moderate	2026
6.b Evaluate Potential Partnerships with Employers on Employer-Assisted Housing	Less than 120%	Low to moderate	No adoption needed
6.c Evaluate City Partnership to Participate in a Land Bank	0-80%	Low to moderate	2024
7. Housing Stabilization: Prevent and address homelessness to provide safe living conditions for everyone living in Tualatin.			
7.a Evaluate Opportunities to Partner on a Local Rental and Utility Assistance Program	0-80%	Moderate	No adoption needed
7.b Evaluate Ways to Develop Housing Options and Services to Address and Prevent Houselessness	0-30%	Moderate	2026
8. Housing Rehabilitation: Plan for and support housing programs and initiatives that are responsive to the safety and health needs of households earning 0-80% of Median Family Income.			

Goal and Strategic Actions	Income Levels Served (MFI)	Magnitude of Impact	Expected Year of Adoption
8.a Evaluate Establishing Local Housing Rehabilitation Program	0-80%	Low to moderate	2026
8.b Evaluate the Implementation of a Healthy Housing Initiative for Single-Family Housing	0-80%	Moderate to large	2024
9. Accessible Design and Other Specialized Design: Encourage and support Universal Design, Lifelong Housing Certification, and other similar standards.			
9.a Evaluate the Development of Specialized Design Standards and Incentives to Accommodate Special Needs	For Standards: All income groups For Incentives: income qualifying level TBD.	Low	2024
10. Mixed-Use Housing and Redevelopment: Encourage and support development of mixed-use, mixed-income, and multifamily housing in commercial zones and urban renewal areas for households earning 0-80% Median Family Income.			
10.a Evaluate Redevelopment Opportunities for the Creation of Mixed-Use Development Districts to Support Development of Affordable Housing and Workforce Housing	0-80%	Large	2022
10.b Evaluate Opportunities for Conversion of Commercial Buildings to Residential Uses	0-80%	Low to moderate	2023
10.c Evaluate Opportunities to Rezone Land for Mixed-Use	All income groups	Large	2022
10.d Evaluate Establishing Incentives to Support Mixed-Use Development, such as the Vertical Housing Tax Abatement	Typically, over 80% unless affordable housing	Moderate	2023
11. Regulatory and Zoning Changes: Increase housing development opportunities through regulatory and zoning changes to accommodate a diverse range of housing types and price points to meet the housing needs in Tualatin.			
11.a Evaluate Updating Density Standards for Multifamily Housing in Medium-Density, High-Density, and Mixed-Use Zones	All income groups	Large	2022

Goal and Strategic Actions	Income Levels Served (MFI)	Magnitude of Impact	Expected Year of Adoption
11.b Evaluate Opportunities to Rezone Lower-Density Residential Land to Higher Density	All income groups	Moderate to large	2022
11.c Evaluate the Feasibility of Targeted Reductions to Off-Street Parking Requirements	All income levels	Moderate	2022
11.d Evaluate Updating Code to Allow Small Dwelling Unit Developments	Less than 100%	Low	2024
11.e Evaluate Adopting an Expedited Permitting Process for Affordable Rental Housing and Affordable Homeownership	0-80%	Low to moderate	2023
11.f Evaluate Providing Additional Engagement and Information to Developers of Affordable Housing	0-60%	Low to moderate	2022
12. Transportation and Public Infrastructure: Plan for and develop transportation and public infrastructure to support affordable housing, workforce housing, mixed-use housing, and mixed-income housing.			
12.a Evaluate Ways to Prioritize Capital Improvements Programming for Affordable and Workforce Housing	0-80%	Moderate	2023



# 1. Introduction

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A Housing Production Strategy is intended to include goals and strategic actions to work together to achieve equitable outcomes for all residents of Tualatin, with an emphasis on improving outcomes for underserved communities, people with lower incomes, and people in state and federal protected classes. Fair housing law is intended to provide access to housing choice for everyone, free from discrimination. Federal protected classes are: race, color, national origin, gender, familial status, and disability. Oregon's additional protected classes are: marital status, source of income, sexual orientation, and status as a domestic violence survivor. Under Fair Housing laws, it is illegal to deny access to housing based on the characteristics of people within these protected classes.

The Tualatin Housing Production Strategy presents information about Tualatin's housing needs (including the housing needs of people disproportionately affected by insufficient access to affordable housing) and presents goals and strategic actions to address these housing needs. This report is intended to meet the requirements of OAR 660-008, which are presented below.

## Background

Tualatin is a city with a unique role and location within the Portland Region. The city is located at the southern portion of the region, along Interstate 5 and very near the intersection of Interstate 5 and Interstate 205. Tualatin had about 27,200 residents in 2020 and approximately 40,500 employees at businesses located in Tualatin.<sup>3</sup> Commuting is common in the Portland Region and in Tualatin. In Tualatin, approximately 93% of working people commute out and 7% of working people who live in Tualatin also work in Tualatin.<sup>4</sup>

Tualatin completed the Tualatin Housing Needs Analysis (HNA) in 2019, which concluded that Tualatin has very limited land to accommodate future housing growth and that housing needs are changing as a result of demographic changes and the need for affordable housing.<sup>5</sup> Specifically, the analysis concluded:

- **Tualatin is forecasted to increase its housing by about 1,014 new dwelling units between 2020 and 2040.** This is anticipated to occur within the city limits (571 new households) and in the Basalt Creek Area (443 new households).

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<sup>3</sup> The population estimate from the Portland State University Population Research Center Annual Population Estimate. The employment estimate is based on the Tualatin Economic Opportunities Analysis report.

<sup>4</sup> US Census Bureau, Census On the Map, 2015

<sup>5</sup> Throughout this report, we use information from the Tualatin Housing Needs Analysis report, which is largely based on information from the 2013-2017 US Census Bureau American Community Survey. We updated data about housing sales costs and rents, as they have changed meaningfully since completion of the Housing Needs Analysis. This report does not incorporate data specifically about the impacts of the COVID-19 pandemic on housing affordability because newer information is unavailable on a city level. It is reasonable to assume that, since completion of the HNA, more households are struggling to afford housing.



- **Changes in demographic characteristics will drive the need for new housing.** The HNA forecast that Tualatin would need more attached and multifamily housing in the future than the current housing stock provides. The HNA forecast that 40% of new housing would be single-family detached, 15% single-family attached, and 45% multifamily. The factors driving the shift in types of housing needed in Tualatin include changes in demographics. The aging of senior populations and the household formation of young adults will drive demand for renter and owner-occupied housing, such as small single-family detached housing, town houses, duplexes, and apartments/condominiums. Both groups may prefer housing in walkable neighborhoods with access to services.
- **Tualatin has an existing deficit of housing that is affordable to low and moderate-income households and is likely to have similar future deficits.** Tualatin’s existing deficit of housing to meet the needs of extremely low to low-income households indicates a need for subsidized affordable housing for renters and affordable homeownership. Moderate income households may benefit from a wider range of housing types, but housing types alone do not necessarily bring the cost down for renters or homeowners. As of 2017, about 37% of Tualatin’s households were cost burdened,<sup>6</sup> including a cost-burden rate of 56% for renter households. As the Tualatin HNA was completed prior to the occurrence of the Covid-19 pandemic in 2020-2021, and the data in this report is based largely on that HNA, it does not include cost-burden data for that more recent period. It is reasonable to assume that, since completion of the HNA, more households are struggling to afford housing.

Exhibit 2 shows that 31% of Tualatin’s households had incomes less than 50% of MFI (\$41,000) and cannot afford a two-bedroom apartment at Washington County’s Fair Market Rent (FMR) of \$1,330 in 2018.

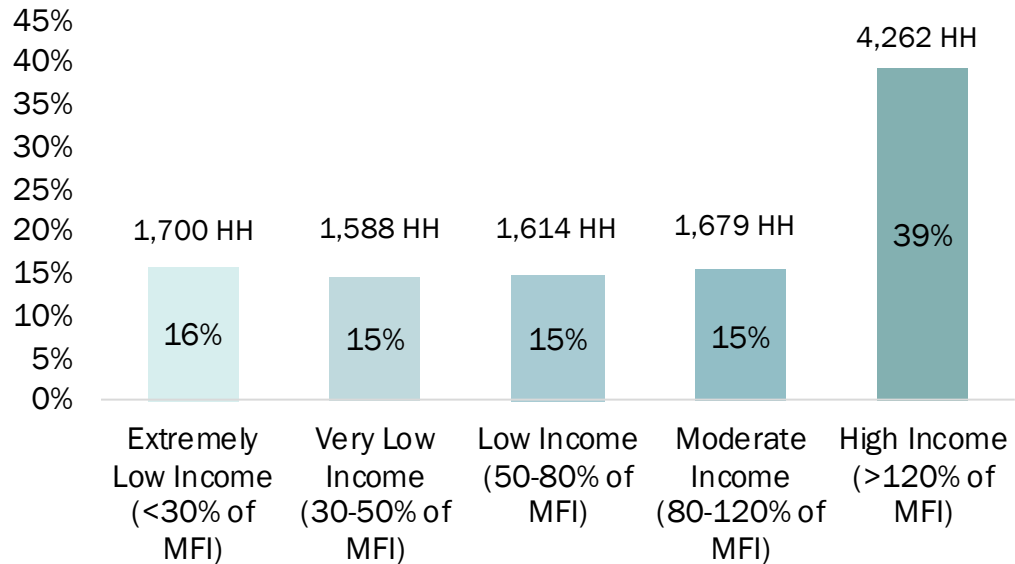
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<sup>6</sup> A household is considered cost burdened if they pay 30% or more of their gross income on housing costs, such as rent, selected utilities like electricity and heating, and mortgage/interest/insurance. A household is severely cost burdened if they spend 50% or more of their gross income on housing costs

**Exhibit 2 Share of Households, by Median Family Income (MFI) for Washington County (\$81,400), Tualatin, 2018**

Source: US Department of Housing and Urban Development, Washington County, 2018. US Census Bureau, 2013-2017 ACS Table 19001.

Note: Exhibit 2 was based on information from Tualatin's Housing Needs Analysis, with corrections (to fix errors) to the number of existing dwelling units in each income category.



Without the types of solutions proposed in Chapter 3 of this report, lack of affordability will continue to be a problem and will possibly grow in the future if incomes continue to grow at a slower rate than housing costs. Under the current conditions, 307 of the forecasted new households will have incomes of \$40,700 (in 2018 dollars) or less (50% of MFI income or less). These households cannot afford market-rate housing and have the largest unmet housing need. Another 151 new households will have incomes between \$40,700 and \$65,120 (51% to 80% of MFI). All tiers of low-income households need access to subsidized affordable housing or stable below-market-rate housing to be able to afford housing.

- Tualatin has a limited amount of vacant, unconstrained buildable residential land, particularly for higher-density multifamily housing.** Tualatin has about 244 acres of buildable, unconstrained vacant land. About 64% of vacant land is in Low Density Residential and 29% is in Medium Low Density Residential, both of which allow single-family detached housing and will allow multifamily housing types (such as duplexes, triplexes, quadplexes, and town houses) when the City implements HB 2001. This leaves a very small amount of land (about 19 acres) in areas that allow higher-density multifamily housing such as Medium High Density, High Density, High Density High-Rise, and commercial area.
- Tualatin cannot accommodate all of its housing needs on existing vacant land.** Tualatin has a deficit of land in the Medium High Density and High Density High Rise Plan Designations, of 7 acres and 4 acres respectively. The deficits may be addressed in multiple ways, such as by re-zoning land, increasing densities allowed in Plan

Designations with deficits, or by accommodating housing in Plan Designations with surpluses. These options are included in the strategic actions in this report.

## Housing Production Strategy Purpose

The Housing Production Strategy is intended to establish a framework for the evaluation and potential development of policies and strategic actions that address Tualatin’s housing needs. Throughout this report, we discuss housing income based on Median Family Income (MFI) as defined by the US Department of Housing and Urban Services (HUD) for Washington County. The example below is for a family of four people. The information used in this report is generally from the Tualatin HNA, which presents data current as of 2018.<sup>7</sup> The information about Median Family Income below (and throughout the report) use the 2020 MFI for Washington County (\$92,000). The HUD terms used to describe housing by income group are:<sup>8</sup>

- Extremely-Low Income: Less than 30% MFI or \$28,000 or less for a family of four
- Very-Low Income: 31% to 50% of MFI or \$28,000 to \$46,000 for a family of four
- Low Income: 51% to 80% of MFI or \$46,000 to \$74,000 for a family of four
- Moderate Income: 81% to 120% of MFI or \$74,000 to \$110,000 for a family of four
- High Income: 121% of MFI or more \$110,000 or more for a family of four

Throughout this report, the term “workforce housing” is used. In this report, it generally refers to housing affordable at 61% to 80% of MFI.

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<sup>7</sup> The date ranges for data vary, with much of the information from the HNA from the U.S. Census 2013-2017 period. In some cases, the report presents data from the 2000 or 2010 Decennial Census to provide historical context. In some cases the report uses more updated data for things like housing sales prices, rents, median family income, people experiencing homelessness, and other subjects.

<sup>8</sup> The actual income limits on specific affordable housing programs, such as LIHTC or CDBG HOME, vary by program. As the City implements the strategic actions presented in this report, the City will need to understand the income limitations of different programs.

## Requirements of a Housing Production Strategy

OAR 660-008 describes the requirements of a Housing Production Strategy (HPS) in sections 660-008-0050 through 660-008-0070. This section briefly describes these requirements and review by staff with the Department of Land Conservation and Development (DLCD).

The HPS is required to include the following information. We have noted what chapter this information is included in this report:

- **Contextualized Housing Need and Engagement** (Chapter 2 in this report) should provide information about the socioeconomic and demographic trends of households in Tualatin, the policies the City has adopted to meet housing needs, and a summary of engagement the City has had with stakeholders about housing needs.
- **Strategies to Meet Future Housing Need** (Chapter 3 in this report) identifies specific actions, measures, and policies needed to address housing needs identified in Tualatin's HNA report.
- **Achieving Fair and Equitable Housing Outcomes** (Chapter 4 in this report) evaluates the entire list of strategies to achieve equitable outcomes. The valuation considers factors such as location of housing, affirmatively furthering Fair Housing, facilitating housing choice, identifying housing options for residents experiencing homelessness, supporting development of affordable housing, and increasing housing stability.

The City is required to submit the HPS to DLCD after its adoption by the City Council. Then the City is required to monitor progress on implementation of the HPS and progress on production of housing related to the policies and strategic actions in this report. Linking housing development directly to implementation of the strategic actions in this report may be challenging and difficult to quantify. But City staff will be able to report changes in building activity that occurs before and after implementation of specific strategic actions and will be able to provide qualitative feedback on implementation of strategic actions based on development of partnerships and discussions with stakeholders.

Tualatin will be required to submit a report to DLCD three years after the City adopts the HPS, which includes:

- A **summary** of the strategic actions taken by that time. For strategic actions not adopted on the schedule in the HPS, the City must provide an explanation of the circumstances that posed a barrier to implementation and a plan for addressing the need identified in the strategy.
- An **evaluation** of the efficacy of the strategic actions that the City has implemented for meeting the needs in the HNA and whether the strategic actions are moving the City to achieve more fair and equitable housing outcomes.

Implementation of the HPS will take time because each strategic action will require further consideration, such as additional analysis, engagement of consultants, changes to existing

standards or programs, discussions with decision-makers, or public hearings. The City may be unable to or chose not to implement some strategic actions because of new information that arises from a detailed evaluation of the specifics of each strategic action.

If the City is unable to or chooses not to implement a strategic action within 90 days of the timeline proposed in the HPS, the City must notify DLCD about the action(s) that the City is taking to address this issue. The City may propose an alternative schedule for implementing the strategic action or may identify a different action (or actions) to meet the specific housing need addressed by this strategic action.

## Structure of the Report

This report is organized as follows:

- **Chapter 2. Contextualizing Housing Need** summarizes the findings about housing need in Tualatin, with a focus on housing need at varying income levels and housing needs of specific groups of people
- **Chapter 3. Strategies to Meet Future Housing Need** presents the proposed goals and strategic actions to meet the housing need described in Chapter 2.
- **Chapter 4. Evaluation of the Housing Production Strategy for Achieving Fair and Equitable Housing Outcomes** presents an evaluation of the HPS through considerations of the location of housing, Fair Housing, housing choice, and other factors.
- **Appendix A. Contextualizing Tualatin's Housing Needs** presents the data and analysis necessary to understand Tualatin's housing needs in more detail.

## 2. The Need for Housing in Tualatin

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### Introduction

The Tualatin Housing Needs Analysis (HNA) describes the housing needs of current and future residents of Tualatin based on demographic and socioeconomic characteristics, such as age and income. It does not provide detailed data about housing needs for other demographic characteristics, such as race, ethnicity, people with one or more disabilities, or people experiencing homelessness.<sup>9</sup>

This chapter provides additional information about the housing needs by income, age, race, ethnicity, disability and for people experiencing homelessness. It uses standard sources of information from the U.S. Census. It adds information from other sources, such as Oregon’s Housing and Community Services Department, the United States Department of Housing and Urban Development, RLIS, Redfin, Costar, the City of Tualatin, and the Washington County Consortia 2020-2024 Consolidated Plan.

This chapter presents a description of the housing needs that the Housing Production Strategy is intended to address, as well as existing policies to address Tualatin’s housing needs. It ends with a summary of the existing and expected barriers to development of needed housing.

### Summary of Tualatin’s Housing Needs

Appendix A provides detailed information about housing needs in Tualatin. Appendix A includes discussion of housing need related to demographics and socioeconomic characteristics of people in Tualatin, housing market conditions and trends, housing affordability, and information about outreach and engagement by City staff. This section summarizes these housing needs briefly. For more details about housing needs and the sources of information for this analysis, please refer to Appendix A.

- **Increased housing diversity.** Nearly two-thirds of Tualatin’s housing stock is single-family detached housing. Tualatin is a relatively young and ethnically diverse city. While Tualatin comprises many families with and without children, the senior population across the region is growing. Tualatin serves as an important employment hub in the Portland Metro area, drawing workers from across the region. The City’s demographic and socioeconomic characteristics suggest a need for a wide variety of housing types to meet the needs of a growing and diverse pool of existing and future residents. Feedback from stakeholders (in Appendix A) indicated that they think Tualatin needs to allow a wider range of housing types, such as more town homes,

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<sup>9</sup> Inclusion of detailed information about housing needs for other demographic characteristics—such as race, ethnicity, people with disabilities, or people experiencing homelessness—was not a requirement of the HNA when the Tualatin HNA was completed. This information is required by the HPS, so it has been included in this report.

mixed-use development, duplexes, triplexes, cottage clusters, multigenerational housing, accessory dwelling units, and high-rise apartments (structures that are six to eight stories in height).

- **Greater housing affordability and availability for homeowners.** Tualatin’s homeownership stayed static from 2000 to 2017 at about 55%, however, it was lower than Washington County’s (61%) and the Portland Region’s (60%) homeownership rates. These statistics highlight a potential need for greater homeownership opportunities as homeownership continues to be one of the most effective (and primary ways) for households and individuals to build wealth. In addition, renter households are more likely to be at risk of displacement than homeowners, particularly in Oregon.<sup>10</sup> Plans to increase homeownership can help to prevent displacement due to rising rental costs. Median sales prices in Tualatin continue to increase (more than doubling in Tualatin between 2012 and 2020) consistent with the region, putting homeownership out of reach for many households in the city.
- **Greater housing affordability and availability for renters.** Based on a survey of currently available rental properties in Tualatin, the typical asking rent ranged from about \$1,125 for a one-bedroom unit to more than \$2,000 per month for a three-bedroom unit. These costs are affordable to households earning 55% to 98% of the region’s MFI (about \$45,000 to \$80,000).

Competition for lower-priced affordable units is strong, and many cannot afford these rents or housing sales prices without cost burdening themselves. In the 2013-2017 period, about 56% of Tualatin’s renters were cost burdened, with 26% severely cost burdened.<sup>11</sup> Renters, especially those with lower incomes, are at risk of being displaced through increases in rental costs. Anecdotal discussions with stakeholders in Tualatin suggest that rising rents are causing people to move out of the city to find more affordable housing.

- **Increased income-restricted regulated, emergency, and supportive housing.** Tualatin has about 604 rent-restricted affordable housing units (accounting for about 5% of Tualatin’s housing stock) but has about 1,753 households experiencing severe housing cost burden in the city. Washington County has about 530 people experiencing homelessness, about 300 of whom are unsheltered. Tualatin’s Continuum of Care region has 111 emergency shelter beds, 10 safe haven beds, 119 transitional shelter beds, and 725 permanently supportive housing beds supporting persons experiencing homelessness in the region. However, in 2019, 44% of people experiencing homelessness

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<sup>10</sup> In Oregon, homeowners are largely insulated from the financial effects of market changes due to the property taxation system, which decouples market sales prices from assessed values, meaning that rising home values only impact property tax amounts in very limited circumstances. However, even after recent changes to state law providing greater protection for renters, renters are still much more vulnerable to changing market conditions and are subject to the decisions of the property owner regarding redevelopment, remodels, rent increases, etc.

<sup>11</sup> A household is said to be cost burdened if they spend 30% or more of their gross income on housing costs. A household is said to be severely cost burdened if they spend 50% or more of their gross income on housing costs.



in the region were unsheltered and about 211 students in the Tualatin/Tigard School District experienced homelessness in some form in the 2018-19 school year (many of them doubled-up<sup>12</sup>).

- **Need for housing for people to live and work in Tualatin.** Tualatin’s Economic Opportunities Analysis report (December 2019) reported that 93% of people working in Tualatin lived in another community (such as Portland, Tigard, Beaverton, or Hillsboro) and commuted into Tualatin each day. Some people who work in Tualatin can afford rent or homeownership in Tualatin, but some would be cost burdened in Tualatin.
  - *Lower wage.* A household with 1.8 employees in lower-paying sectors, such as retail (with an average pay of \$28,300), would have an income of about 55% of the region’s MFI. This household would be unlikely to afford homeownership. They may be able to afford monthly rent of about \$1,250, such as a one-bedroom unit in Tualatin. They would not be able to afford a larger unit with two or more bedrooms. This household would likely either live in an overcrowded unit (because a one-bedroom unit is too small for a family of four) or be cost burdened so that they could have a dwelling unit big enough for their household.
  - *Average wage.* The average wage at a job in Tualatin was about \$57,300 in 2017. Assuming about 1.8 jobs per household,<sup>13</sup> the average wage for a household with jobs in Tualatin would be approximately \$103,000. This income would put the household at about 119% of the region’s MFI. A household with this income could afford a house between \$360,000 and \$412,000. While this is below the median sales price of \$491,000, a household with this income may be able to afford a lower-cost home in Tualatin.
  - *Higher wage.* A household with 1.8 employees in higher-paying sectors, such as manufacturing and health care (which has an average pay of \$73,400), would have an income of about 144% of the region’s MFI. This household could afford to rent or own and could afford the median sales price of \$491,000 in Tualatin.

Throughout this analysis, we discuss housing needs for specific populations, such as people of color. The reason for this discussion is that the housing needs of these populations are different from other groups in Tualatin. The Washington County Consolidated Plan describes the issue in the following way:

“Analyses persistently demonstrate that some population groups, including communities of color and people with disabilities, experience disproportionately high housing cost burdens, are less likely to be homeowners, are disproportionately represented in the criminal justice system, have a school

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<sup>12</sup> “Doubled-up” refers to the sharing of other persons’ housing due to loss of housing or economic hardship.

<sup>13</sup> This assumption is based on information about jobs per household for the Portland Region, including Clackamas County, Washington County, and Multnomah County. We use this estimate because commuting trends make it difficult to estimate jobs per household in Tualatin, given that so many workers commute into Tualatin for work.



achievement gap and experience other disparities relative to health, wellbeing, wealth, income and life outcomes. In deciding on priorities, the County sought opportunities to address persistent historic imbalances, consider systemic causes and advance a more equitable and fair housing system.”<sup>14</sup>

This analysis finds disproportionate housing needs for seniors, people of color, people with one or more disabilities, and people experiencing homelessness. Washington County’s Consolidated Plan identifies all of these groups as a priority with special housing needs.

- **Seniors.** People 65 years of age and older are disproportionately cost burdened compared to the average household—many living on fixed incomes in a region with increasing housing costs.<sup>15</sup> About 62% of people aged 65 years of age and older are rent burdened in the Portland Region, compared to an overall average of 46% of renter households cost burden in the Portland Region.<sup>16</sup> Over the next twenty years, people over 65 years are expected to be the fastest-growing age group. As this group grows, Tualatin will need more housing that is affordable, physically accessible, and in proximity to needed services (such as nearby health care or in-home assistance). Seniors will also need improved access to housing without discrimination, especially seniors of color.
- **People of color.** About 25% of Tualatin’s population identified as a person of color. In the Portland Region, about 55% of renter households that identified as Latino and 52% of renter households that identified as a non-Asian person of color were cost burdened.<sup>17</sup> Latinos are the largest ethnic group in Tualatin (16% of the population) and have the lowest median income (\$30,761) of any race or ethnicity in Tualatin.<sup>18</sup> Broadly, the housing needs for many people of color in Tualatin include improved access to affordable housing units, assistance to avoid displacement, access to housing in locations with “high opportunity” (such as areas near jobs, transit, or services), and access to housing without discrimination.
- **People with disabilities.** Across the Portland Region, people with one or more disabilities experience disproportionate cost burden. In particular, 53% of renters in the

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<sup>14</sup> 2020-2024 Consolidated Plan for Washington County and the Cities of Beaverton and Hillsboro, Executive Summary, page 3.

<sup>15</sup> Some seniors have accumulated wealth, which is not accounted for in this analysis. Information about accumulated wealth is available at the national level but not at the state or city level.

<sup>16</sup> Rent burden by these groups is less available and accurate for Tualatin, given the small size of the city and the quality of available data. As a result, this section presents rent burden for these groups in the Portland Region based on analysis from the report *Implementing a Regional Housing Needs Analysis Methodology in Oregon: Approach, Results, and Initial Recommendations* by ECONorthwest, March 2021.

<sup>17</sup> This information is not available on a city-by-city basis from the US Census ACS. This statistic is pulled from a statewide analysis from the report *Implementing a Regional Housing Needs Analysis Methodology in Oregon: Approach, Results, and Initial Recommendations* by ECONorthwest, August 2020.

<sup>18</sup> Tualatin’s largest community of color is Latino, with about 4,475 Latino people living in Tualatin. Other people of color living in Tualatin are Asian (1,013 people), two or more races (795 people), Black or African American (364 people), Native Hawaiian or Pacific Islander (127 people), American Indian or Alaska Native (103 people), and some other race (54 people).

Portland Region with a hearing or vision disability and 65% of renters with a disability other than a hearing or vision-based disability are cost burdened, compared to the average rate of cost burden for all households in the region at 46%. Housing needs of people with one or more disabilities vary by type of disability, but in general housing needs include improved access to an affordable unit, improved physical access to housing units, access to housing with needed services, and access to housing without discrimination—especially for people with one or more disabilities who are also seniors and/or people of color. Feedback from stakeholders (documented in Appendix A) indicates that people with disabilities have a difficult time finding accessible housing, such as housing that is physically accessible.

- **People experiencing homelessness.** People experiencing homelessness are disproportionately affected by the lack of affordable housing. There were 307 people who identified as homeless and unsheltered in Washington County and 44 people in the Tigard/Tualatin area in 2020.<sup>19</sup> In addition, 16% of households in Tualatin are at risk of homelessness because they have income at or below 30% of MFI. More than 90% of these households are cost burdened and likely many are severely cost burdened. Housing needs for people experiencing homelessness vary by reason for homelessness. In Washington County, the primary reason people cited for experiencing homelessness was inability to afford housing. The broad housing needs for this group includes needs for immediate assistance (including rent support), permanent supportive housing (including supportive housing with services), and improved access to an affordable unit. The housing needs of people experiencing homelessness who are also a senior, disabled, or a Person of Color include the housing needs of those groups as well. The housing needs for people at-risk of becoming homeless may be the same as for people experiencing homelessness.

## Stakeholder Engagement

The HPS uses stakeholder involvement that was conducted over the last two years: interviews with stakeholders as a part of the Tualatin 2040 engagement process, Tualatin HNA, and public events about severely rent-burdened communities.<sup>20</sup> The key issues identified through stakeholder engagement included the need for an increased variety of housing options (especially multifamily housing), the need for more affordable housing for both renter and owner-occupied housing, the need for housing for people who work at jobs in Tualatin, changes to the Development Code to support development of these housing types, the need for

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<sup>19</sup> This is based on the annual Point-in-Time (PIT) data. The PIT count is a snapshot of individuals experiencing homelessness on a single night in a community. Though the PIT count is not a comprehensive survey, it serves as a measure of homelessness at a given point of time and is used for policy and funding decisions.

<sup>20</sup> Annual meetings about severely rent-burdened communities are required in Oregon by HB 4006 or Oregon Laws 2018 Chapter 47. A "severely rent-burdened city" is a city where at least 25 percent of the renter households in the city are severely rent burdened. Tualatin has been designated by the State as a severely rent-burdened city since 2019.

redevelopment and creation of complete neighborhoods, and housing need for specific groups like people with disabilities and people of color.

Appendix A presents a full summary of the stakeholder input from these events. These issues have been incorporated into the goals and strategic actions presented in Chapter 3.

## Housing Needs Addressed by the Housing Production Strategy

The housing market produces some types of housing without need for public intervention, such as development of single-family detached housing. The HPS focuses on housing that may require public intervention to ensure production. This section describes the housing needs that are the focus of the HPS: development of income-restricted affordable housing, housing for moderate-income households, and housing to meet the special needs of specific groups. This section describes Tualatin’s housing needs based on analyses from the *Tualatin Housing Needs Analysis* report (December 2019)<sup>21</sup> and Appendix A, which includes an analysis of unmet housing needs for underserved groups. The analysis shows income and housing affordability based on the 2020 MFI for Washington County (\$92,000).

The housing needs in Exhibit 3 are the basis for the goals and strategic actions presented in Chapter 3.

Exhibit 3. Tualatin’s Housing Needs that Are Addressed in the HPS

Description of Need	Tualatin’s Housing Need
<b>New housing to accommodate population growth</b>	The HNA projects growth of <b>1,014</b> new dwelling units in Tualatin between 2020 and 2040.
<b>Housing Need by Income</b>	
Existing households <sup>22</sup>	Extremely Low Income (< 30% MFI): <b>1,700</b> households (16% of households) Very Low Income (30-50% MFI): <b>1,588</b> households (15% of households) Low Income (50-80% MFI): <b>1,614</b> households (15% of households) Moderate Income (80-120% MFI): <b>1,679</b> households (15% of households)
New households <sup>23</sup>	Extremely Low Income: <b>159</b> households (16% of new households) Very Low Income: <b>148</b> households (15% of new households) Low Income: <b>151</b> households (15% of new households)

<sup>21</sup> <https://www.tualatinoregon.gov/sites/default/files/fileattachments/planning/page/22631/hna.pdf>

<sup>22</sup> The HPS does not anticipate building new units for all existing households in Tualatin that have problems affording housing costs. But the HPS does propose actions to stabilize the housing costs of existing lower-income households and may result in development of housing that is more affordable to these households, enabling them to stay in Tualatin. Information about lower-income households and cost burden for existing households illustrates the existing housing need in Tualatin.

<sup>23</sup> This assumes that future residents of Tualatin have an income distribution that is the same as existing residents. Given the fact that incomes have grown at a relatively slow pace over the last two decades in comparison to housing costs (especially home sales prices), this seems like a conservative assumption about the future affordability of housing.

<p>Housing Needs for Extremely Low (&lt; 30% MFI) and Very Low–Income (30-50% MFI) Households</p>	<p>Moderate Income: <b>157</b> households (15% of new households)</p> <p>At a minimum, Tualatin has housing need for:</p> <ul style="list-style-type: none"> <li>▪ <b>307</b> households earning less than 50% of MFI <ul style="list-style-type: none"> <li>▪ Tualatin also has <b>3,288</b> existing households earning less than 50% of MFI.</li> </ul> </li> <li>▪ These households can afford rents (including basic utility costs) of not more than <b>\$1,150</b> per month. <ul style="list-style-type: none"> <li>▪ A household would need to earn <b>\$58,000</b> to afford average multifamily rent of <b>\$1,450</b> for a 2-bedroom unit (about 63% of MFI for a family of four).</li> </ul> </li> <li>▪ Meeting the housing needs of these households will require a combination of preserving existing income-restricted affordable housing and developing new income-restricted affordable housing. Development of income-restricted affordable housing typically requires extensive subsidy, with funding from the State, region, or County, in addition to any support from the City and other partners.</li> </ul>
<p>Housing Needs for Low-Income (50-80% MFI) Households</p>	<p>At a minimum, Tualatin has housing need for:</p> <ul style="list-style-type: none"> <li>▪ <b>151</b> households earning between 50% and 80% of MFI <ul style="list-style-type: none"> <li>▪ Tualatin also has <b>1,614</b> existing households earning between 50% and 80% of MFI.</li> </ul> </li> <li>▪ These households can afford rents (including basic utility costs) of between <b>\$1,150</b> and <b>\$1,850</b> per month. <ul style="list-style-type: none"> <li>▪ A household would need to earn <b>\$58,000</b> to afford average multifamily rent of <b>\$1,450</b> for a 2-bedroom unit (about 63% of MFI for a family of four).</li> <li>▪ Households with this income range are likely to live in rental housing predominantly and can likely afford a range of costs from below-average rent to average or above-average rent in Tualatin.</li> </ul> </li> <li>▪ Meeting the housing needs of these households will require a combination of preserving existing “naturally occurring affordable housing” and developing new income-restricted affordable housing in this price range. Development of new housing affordable in this price range generally requires some subsidy or public support, such as tax exemptions, government funding (typically from the State, region, or County, with some level of local contribution being critical), reduced systems development charges, low interest loans, philanthropic contributions, or other financial support. Funding for rental housing for households at 61% MFI and above is very scarce. Homeownership opportunities for this income range will likely be related to housing developed by nonprofit organizations, possibly</li> </ul>

	with some form of subsidy, such as land donation, discounted land leasing, and land banking.
Housing Needs for Moderate-Income (80-120% MFI) Households	<p>At a minimum, Tualatin has housing need for:</p> <ul style="list-style-type: none"> <li>▪ <b>157</b> households earning between 80% and 120% of MFI <ul style="list-style-type: none"> <li>▪ Tualatin also has <b>1,679</b> existing households earning between 80% and 120% of MFI</li> </ul> </li> <li>▪ These households can afford rents (including basic utility costs) of between <b>\$1,850</b> and <b>\$2,750</b> per month. <ul style="list-style-type: none"> <li>▪ These households can afford rents higher than the average multifamily rent (<b>\$1,450</b>) for a two-bedroom unit, and many of these households can afford the typical multifamily rent for a three-bedroom unit (\$2,000 to \$2,400).</li> <li>▪ These households cannot afford the median sales prices of \$491,000 in Tualatin but can likely afford lower-cost housing in the Tualatin housing market.</li> <li>▪ Some households with income in the higher part of this range are likely to live in rental housing and some are likely to be homeowners. Households with incomes in the lower part of this income range may need assistance in attaining homeownership.</li> </ul> </li> <li>▪ Meeting the housing needs of these households will be a combination of development of rental housing (without subsidy from local or state government) and lower-cost housing for homeownership. Some homeownership opportunities for this income range will likely be related to housing developed by nonprofit organizations, possible with some subsidy, such as land donation, discounted land leasing, land banking, or a community land trust. Development of smaller and more affordable housing units, such as cottage housing, may provide opportunities for homeownership (without subsidy) for households in this group with higher incomes.</li> </ul>
<b>Housing Need of Specific Populations</b>	
Housing Needs of People of Color	<p>Blacks, Latinos, American Indian or Alaska Natives, and Native Hawaiian or Pacific Islanders are more likely to rent their homes and live in multifamily housing than the overall average in Tualatin. People of color are more frequently cost burdened than the average in the Portland Region.</p> <p>About <b>19%</b> of Tualatin’s population identified as Black, Latino, American Indian or Alaska Native, or Native Hawaiian or Pacific Islander. Meeting the housing needs of these households will require addressing the affordability issues, discussed above, as well as ensuring that people of color have access to housing without discrimination. This will require increasing awareness of Fair Housing rules for property owners and managers, tenants, City decision</p>

	<p>makers, and City staff. It will also require careful decision-making to change policies that have created barriers to housing access for people of color.</p>
<p>Housing Need of People with Disabilities</p>	<p>Disabilities include those that are visible, such as ambulatory or vision disabilities, and those that are not readily apparent, such as self-care, independent-living, or cognitive disabilities. Other conditions may require special accommodations, such as disabling diseases or mental health conditions.</p> <p>The Census reports that about <b>10%</b> of Tualatin’s population has disabilities, such as ambulatory, vision, hearing, cognitive, self-care, or independent-living disabilities. Meeting the housing needs of these households will require addressing the affordability issues, discussed above, as well as ensuring that people with disabilities have access to housing that addresses their disability and that they have access to housing without discrimination. This will require increasing awareness of Fair Housing rules for property owners and managers, tenants, City decision makers, and City staff. It will also require approaches that encourage development of housing with specialized design standards to accommodate special needs.</p>
<p>Housing Need of People Experiencing Homelessness</p>	<p>The number of people experiencing homelessness in Tualatin is not clearly known. In part, this number is not known because people experiencing homelessness may move between neighboring cities, such as between Tigard and Tualatin.</p> <p>There were approximately <b>307</b> people experiencing homelessness in Washington County in 2020, <b>44</b> of whom were unsheltered in the Tigard and Tualatin area. Meeting the housing needs of people experiencing homelessness can range from emergency assistance (including rent and utility assistance), rapid rehousing, inclusion of local shelter, permanent supportive housing (including supportive housing with services), and improved access to an affordable housing unit (as discussed above).</p>

## Existing Policies to Address Tualatin’s Housing Needs

This section lists existing measures that Tualatin has implemented to support housing development and presents preliminary draft measures (or policies or strategies) that may be included in the HPS.

This City of Tualatin has the following housing measures (goals, policies, or strategies) currently in place to address Tualatin’s housing needs. These measures include:

- Prohibiting single-family detached housing in most high-density zones in Tualatin.
- Allowing one or more accessory dwelling units (ADUs) in residential zones per lot.<sup>24</sup>
- Applying density standards uniformly across zones that allow dwelling units on fee simple lots and on multifamily sites.
- Ensuring decisions about the types and locations of housing are data-driven and focused on equitable outcomes instead of the best outcomes for those with the most money and/or privilege.
- Removing open space/common amenity requirements for low-density residential.
- Providing information to small, local developers to help them understand land use permitting processes and give them a sense of clarity and certainty about the requirements, so they can better provide smaller-scale housing. Tualatin’s existing measures generally focus on land use efficiency, such as allowing development of denser housing types, or measures to reduce development costs, such as removing open space requirements for some housing development. By and large, the types of policies that Tualatin has yet to adopt are policies to support:
  - Development of affordable rental housing and preservation of affordable housing stock to prevent displacement of existing residents.
  - Prevention and reduction of homelessness.
  - Expansion of workforce owner and rental housing to increase the jobs housing balance.
  - Expansion of housing for people with special needs and seniors, and the development of housing to meet the cultural needs of diverse populations.
  - Greater availability of diverse housing types through regulatory or zoning changes, including mixed-use housing and redevelopment in commercial areas.
  - Planning for and developing transportation and public infrastructure to support affordable housing, workforce housing, and mixed-use housing development.

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<sup>24</sup> Although, Tualatin’s ADU provisions are not yet compliant in regard to HB 2001 off-street parking requirements.



## Existing and Expected Barriers to Development of Needed Housing

Barriers to development of needed housing in Tualatin include:

- **Land for housing.** Tualatin has a limited amount of unconstrained, vacant buildable residential land (244 acres) within the city (including in the Basalt Creek Planning Area). About 62% of this buildable land is within the Basalt Creek Planning Area, which is in the process of annexation. The City expects infrastructure development sufficient to support residential development over time. The concentration of buildable land in Basalt Creek may slow new residential development in Tualatin until this area is ready for development.

More than 90% of Tualatin's unconstrained, vacant buildable land is Low Density or Medium Low Density Residential, providing limited opportunities for development of multifamily housing. Tualatin has 1 acre of unconstrained vacant buildable land that is Medium High Density, 17 acres of High Density, and no unconstrained High Density High Rise Residential land. These are the areas where multifamily housing with five or more units per structure can be built. Scarcity of vacant land, especially for multifamily development, is one of Tualatin's primary barriers to development of needed housing.

- **Complexity and expense of redevelopment.** While Tualatin is able to identify areas that may be ripe for redevelopment (including areas for 4 to 6-story multifamily housing), the costs and complexity of redevelopment are substantial. Barriers to redevelopment include higher site acquisition and preparation costs (sometimes including negotiating with multiple landowners), higher construction costs for 4 to 6-story development (compared to 2 to 3-story development), and costs of upgrades to infrastructure (such as roads, water, stormwater, or sewer) to support increased development density. In a suburban environment, rents may not be high enough to justify these higher development costs. In addition, a number of the sites that the City has identified as potential redevelopment opportunities are located in a floodplain, which precludes federal funding for affordable housing from being used on those sites, or have other site-specific constraints that create challenges for development.
- **Regulatory barriers to multifamily housing.** In addition to a lack of land for multifamily development, existing development regulations for multifamily housing do not support efficient development or redevelopment of the type of housing the zones are intended to allow. Standards that force lower densities reduce the viability of both unregulated affordable housing and income-restricted affordable housing, and they make it even more challenging to build on the few smaller sites that are zoned for multifamily housing.
- **Funding and resources to support development of affordable housing.** Developing income-restricted housing for households with incomes 60% and below of MFI nearly always requires state, local, and/or philanthropic subsidy so that it can cover the costs of



development and operations with restricted rents. Developing new housing affordable to households with incomes of 51% to 80% of MFI also typically requires government subsidy and/or funding from sources such as nonprofits. One of the key barriers to development of affordable housing is identifying sufficient funding to support its development. Options for funding affordable housing development include direct funding (i.e., monetary contributions for housing), contributions of land, and cost reductions (e.g., tax abatements or waiving fees).

- **Capacity of the income-restricted development community to support development of affordable housing.** Capacity for development of affordable housing includes developers willing and able to develop income-restricted housing, such as nonprofits with the capacity to support development of affordable housing. There may be some capacity constraints for development of income-restricted affordable housing based on nonprofit developer capacity. However, availability of funding to support development of affordable housing is more of an issue.
- **Staff capacity to implement the Housing Production Strategy.** Implementing the strategic actions in the HPS will take a considerable amount of City staff capacity. If staff do not have sufficient capacity to work on the items in the HPS, that may slow or halt implementation of the HPS. Insufficient staff time to implement the HPS could be a barrier to development of needed housing. The amount of staff time needed to implement the HPS will only become clear as the City begins the evaluation of each strategic action to determine how much additional research and public engagement will be needed.
- **Need for ongoing engagement to understand housing needs.** Ongoing community engagement, especially with underserved communities or people with specialized housing need, is necessary to ensure that the City understands the current housing needs of these groups. Engagement has been more difficult than usual during the COVID-19 pandemic, especially with underserved communities because they are disproportionately negatively impacted by the pandemic. This is a potential barrier to needed housing development if the City does not have staff capacity to maintain this engagement or is unable to establish relationships with the communities in question.

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## 3. Strategies to Meet Future Housing Need

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### Developing the Housing Production Strategy

Development of the HPS required attention to a variety of factors, such as the City's housing policy objectives, funding sources to support housing development, and factors that affect both housing development and the range of impact of the strategic actions.

#### Housing Policy Objectives

The Tualatin 2040 project, which included the Tualatin Housing Needs Analysis, resulted in an update to Tualatin's Comprehensive Plan and set new housing goals, policies, and strategic actions. These goals and policies, as well as the housing needs documented in Exhibit 3, are part of the basis of the goals and strategic actions presented in this chapter. In addition, the HPS requirements place more emphasis on equitable housing, fair housing, and underserved communities. These requirements have also provided part of the basis for the goals and strategic actions in this chapter. The high-level housing goals in Tualatin's Comprehensive Plan are:

- **Goal 3.1 Housing Supply.** Ensure that a 20-year land supply is designated and has urban services planned to support the housing types and densities identified in the Housing Needs Analysis.
- **Goal 3.2 Housing for All.** Encourage development and preservation of housing that is affordable for all households in Tualatin.
- **Goal 3.3 Affordable Housing.** Encourage the establishment of funding sources to support development of affordable housing and related public infrastructure.
- **Goal 3.4 Redevelopment.** Encourage timely strategic planning and redevelopment in Tualatin to create new mixed-use residential and commercial planning districts.
- **Goal 3.5 Housing and Transportation.** Encourage development and redevelopment in Tualatin that supports all modes of transportation, including walking, biking, and mass transit.
- **Goal 3.6 Residential Growth.** Residential growth by annexation or expansion to the Urban Planning Area or Urban Growth Boundary will be coordinated with local, state, and regional governments, districts, and stakeholders.

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## Funding Sources and Incentives

**Potential Funding Sources.** One of the key challenges in implementing financial actions in the HPS is likely to be the availability of funding. Funding is needed for staff time to evaluate the feasibility of implementing the HPS, but it is also needed in the form of financial contribution, waiver, or forgone revenue to support development of units, preservation of housing, and redevelopment. Identifying realistic funding sources will be necessary to achieve the outcomes of the HPS, increasing access to housing in Tualatin, especially for low-income households and underserved communities. Strategic Action 5.a is intended as a way to develop a specific funding action plan for implanting the HPS.

Potential local sources of funding could include implementation of a Construction Excise Tax (CET) in Strategic Action 1.c, evaluating other local sources of funding in Strategic Action 1.e, evaluating how to support preservation of regulated affordable housing in Strategic Action 3.a, use of Urban Renewal to support housing development in Strategic Action 10.a, and evaluating the prioritizing of Capital Improvements Programming in Strategic Action 12.a.

Other funding sources may include Washington County's Housing Authority, Metro's grant programs, the State of Oregon's Housing and Community Services Department, other state agencies that fund infrastructure, other programs necessary to support housing development, and other private and nonprofit organizations.

**Potential Incentives.** Financial incentives are also a critical part of a successful strategy for equitable housing production. In the HPS, potential incentives include property tax exemption in Strategic Action 1.a, changes to Systems Development Charges in Strategic Action 1.b, development of incentives to preserve low-cost rentals for below-market-rate privately owned rental housing in Strategic Action 4.a, Multiple Unit Property Tax Exemption to slow rental cost increases in Strategic Action 4.b, evaluating ways to incentivize inclusion of workforce housing units within new multifamily rental development in Strategic Action 6.a, evaluating the development of specialized design standards and incentives to accommodate special needs in Strategic Action 9.a, and evaluating incentives to support mixed-use development like Vertical Housing Tax Abatement in strategic action 10.d.

## Partnerships

Partnerships will also play an important role in supporting housing development. For example, Strategic Action 2.c is about partnering to develop affordable housing for homeownership, Strategic Action 6.b is about partnering with employers on employee-assisted housing, 6.c is about partnerships for land banking, and 7.a is about partnering on existing rental and utility assistance programs.

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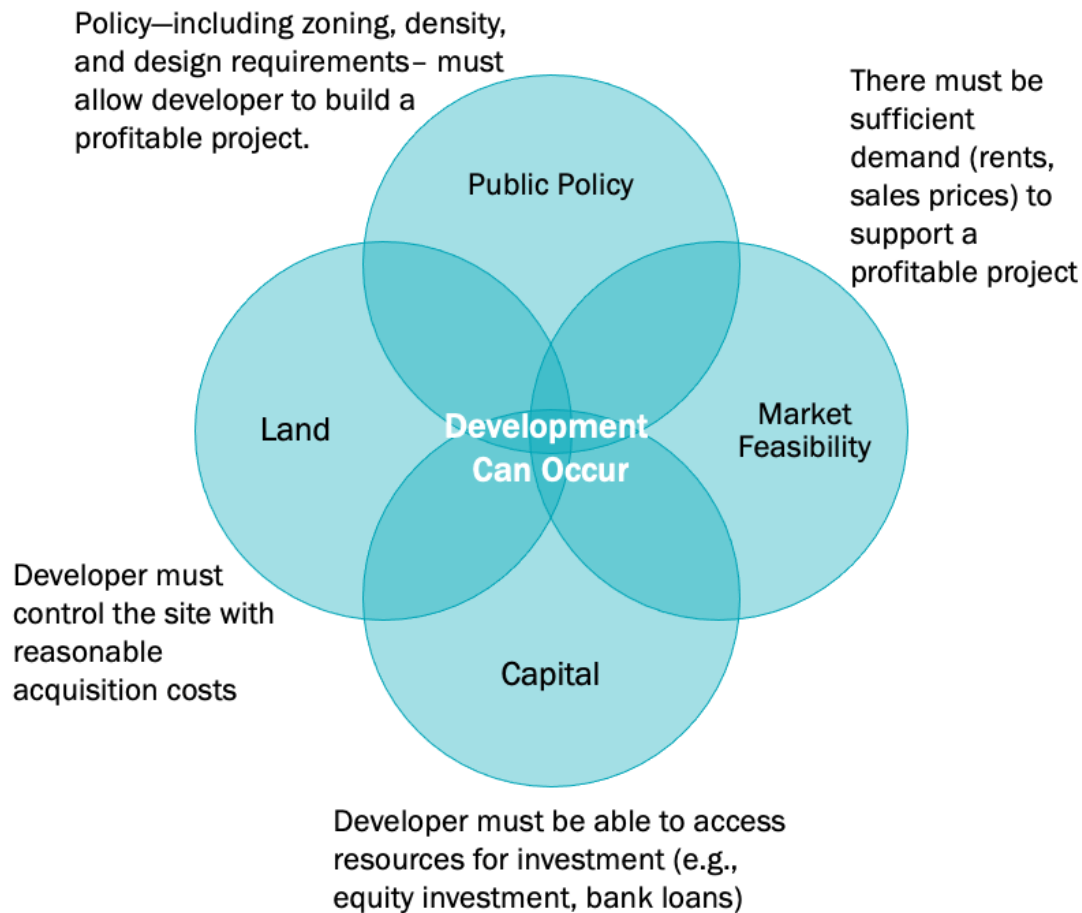
## Considerations for Implementing the Housing Production Strategy

In evaluating the implementation of potential strategic actions, it will be important to consider supporting and leveraging the private market's ability to delivery market-rate development at a variety of price points, due to the limited public funding available to support income-restricted housing. In other words, increasing the overall supply of available housing units plays a significant role in overall housing affordability, including increasing opportunities for providing for those at the lower end of the income spectrum as well as historically underserved communities. The emphasis in the HPS is on production of housing that is affordable below 80% of MFI because that need is difficult or impossible to meet through market-rate housing development without public subsidy, such as many of the strategic actions proposed in the HPS. In addition, the HPS has an additional emphasis on the housing needs of underserved communities.

In an area with relatively low housing production per capita, the City has some influence over market-rate development through fees, charges, and development restrictions, despite the number of factors that the City does not control. The graphic in Exhibit 4 illustrates how four factors must intersect so that development can occur and where the City has most influence.

Tualatin does not control all of these factors entirely. Public policy at the local level is shaped through regional policy (by Metro) and the state. Land is generally controlled by the individual landowners, and development of infrastructure necessary to make land development can be prohibitively expensive. Market feasibility is largely affected by market forces, such as construction costs and achievable rents. Access to capital is largely controlled by investors and banks. However, Tualatin can directly influence public policy (through its Development Code) and availability of land (through zoning, density, planning for new land needed for housing, redevelopment, and infrastructure planning). Tualatin can also have a limited influence on market feasibility (through policies that reduce costs like tax abatements or waiving fees).

Exhibit 4. Four Necessary Factors that Allow Development of New Market-Rate Housing  
Source: ECONorthwest

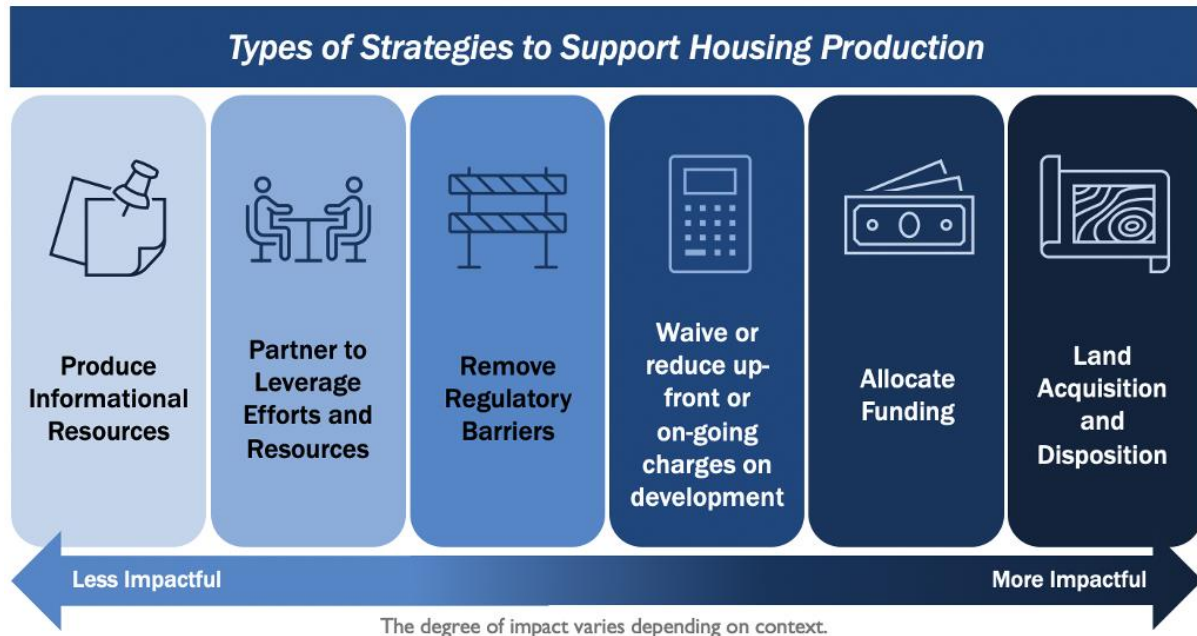


These factors all suggest that Tualatin should consider a wide range of strategic actions. Exhibit 5 shows the range of strategies, characterizing some strategies as more impactful and some as less impactful. More impactful strategies are those that provide funding or direct resources to support housing development (like land acquisition and disposition). These strategies are more impactful because funding and resources are the greatest constraint on development of income-restricted affordable housing (such as housing affordable to households with incomes below 80% of MFI).

While removing regulatory barriers and forming partnerships are shown as less impactful strategies, they are often necessary (but not sufficient on their own) to support housing development. For example, Tualatin’s HPS includes a strategic action (10.a) about redevelopment opportunities for creation of mixed-use development districts that supports development of affordable and workforce housing. This strategic action assumes that development densities will allow buildings that are four to six stories tall, with at least 80 dwelling units per acre. However, Tualatin’s Development Code does not allow for development of buildings that tall or at those densities. Strategic Action 11.a proposes to remove that regulatory barrier and allow taller and denser residential and mixed-use development.

This example also underscores the fact that many of the strategic actions presented in this chapter build on each other. While a partnership on its own may not be sufficient to support development of housing, it may be key when combined with other strategic actions.

Exhibit 5. Types of Strategies to Support Housing Production  
Source: ECONorthwest



As part of development of the strategic actions in this report, ECONorthwest conducted interviews with the following developers, to assess potential use of key strategies: Alma Flores with REACH CDC, Community Development Partners, and Community Partners for Affordable Housing. In addition, ECONorthwest staff frequently discuss the types of strategies discussed in this document with developers in the Portland Region, as well as other developers across Oregon. What we learned from these interviews, as well as other work done for similar projects, is reflected in the goals and strategic actions in this report.

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## Goals and Strategic Actions

This section presents the goals and proposed strategies for inclusion in the HPS. The goals are intended to clearly describe the intended outcome(s) of the strategic actions, as they relate to Tualatin's Comprehensive Plan. For each strategic action, we include the following information, most of which is required by OAR 660-008-0050:

- A description of the strategic action
- The type of action
- A rationale for inclusion of the strategic action
- The anticipated impact of each strategic action, including:
  - Populations served by the strategic action
  - Income level addressed by the strategic action
  - Housing tenure, either owner or renter
  - Potential Impacts
    - Estimate of production of new units as a result of implementing the strategic action
    - Potential negative impact of the strategic action if it is successfully implemented
  - Magnitude of the action for producing new housing
    - A **low** magnitude is anticipated production of 1% or less of the needed new units (1,014 units) or about 10 dwelling units over the six-year period. A low magnitude does not mean a strategic action is unimportant. Some strategic actions are necessary but not sufficient to produce new housing.
    - A **moderate** magnitude is anticipated production of 1% to 5% of the needed new units (1,014 units) or about 10 to 50 dwelling units over the six-year period.
    - A **high** magnitude is anticipated production of 5% or more of the needed new units (1,014 units) or 50 or more dwelling units over the six-year period.
- Timeline for adoption and implementation of the strategic action, including:
  - A timeline for adoption of the strategic action, which is when the city would adopt the strategic action or otherwise officially decide to implement the strategic action.
  - A timeline for implementation of the strategic action, which is when the city would begin to use or allow use of the strategic action.
  - Time frame of the impact, which is the time period when the impact occurs.
- Implementation steps summarize the steps for implementing the strategic action at a high level.
- Lead agency and potential partners provide information about who will be responsible for implementing the strategic action.

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- Funding or revenue implications provide high-level implications of the strategic action.

## Implementation Schedule for Strategic Actions

Exhibit 6 presents a draft schedule for implementation of the Housing Production Strategy. The table shows each of the 12 goals with the strategic actions below. Each strategic action will go through a period of evaluation, then potentially adoption and implementation. The activities for each of these are described below.

- **Evaluation:** All strategic actions will require some level of evaluation prior to implementation, which may range from simple logistics (including information on a website) to complicated coordination between multiple internal and external stakeholders (adoption of a construction excise tax). The evaluation period will occur during the time in the tables shown in a teal color, before adoption.
- **Adoption:** This occurs when the City takes official action to adopt (or uses another official acknowledgement that the City is going to execute on the strategic action). The table shows the expected time of adoption in the time period represented by a teal color and “A” in the table.
- **Implementation:** This occurs when the City officially allows the strategic action to be used, represented by a brown color and “I” in the table.



Exhibit 6. Schedule for Evaluating, Adopting, and Implementing the Strategic Actions

Goal and Strategic Actions	On-Going 2021	2022	2023	2024	2025	2026	2027	Beyond 2027
1. Affordable Housing: Strongly prioritize, encourage, and support affordable rental housing development to increase affordable housing for households earning 0-60% Median Family Income.								
1.a Evaluate a Low-Income Housing Property Tax Exemption Program for Affordable Rental Housing			A	I				
1.b Evaluate Changes to Systems Development Charges						A	I	
1.c Evaluate Implementation of a Construction Excise Tax (CET)					A	I		
1.d Evaluate Support for Affordable and Workforce Rental Housing as part of Urban Renewal		A	I					
1.e Evaluate Financial Resources for Local Contributions to Affordable Housing Development						A	I	
1.f Evaluate Buildable or Redevelopable Public and Institutional Land Potentially Suitable for Affordable Housing				A	I			
1.g Evaluate Development Code Changes to Allow and Support Other Affordable Rental Housing Types in Tualatin					A, I			
1.h Evaluate Municipal Code, Development Code, Public Works Construction Code, and Building Code Processes to Make Building Affordable Housing Easier					A, I			
2. Affordable Homeownership: Encourage and support affordable homeownership to create opportunities for wealth creation.								
2.a Evaluate Impediments to Homeownership and their Removal					A	I		
2.b Partner to Encourage Education about Homeownership Opportunities		A	I					
2.c Partner with Organizations that Develop Affordable Ownership Housing				A	I			
2.d Evaluate Development Code to Encourage Diverse Housing Types for Affordable Homeownership					A, I			
3. Preservation of Regulated Affordable Housing: Preserve affordable housing to prevent the loss of existing affordable housing units and to prevent resident displacement.								

Goal and Strategic Actions	On-Going 2021	2022	2023	2024	2025	2026	2027	Beyond 2027
3.a Evaluate How to Support Preservation of Regulated Affordable Rental Housing					A	I		
3.b Evaluate Developing a Healthy Housing Initiative for Multifamily Housing				A	I			
4. Preservation of Naturally Occurring Affordable Housing (NOAH): Preserve naturally occurring affordable housing, where possible, to prevent loss of affordable units and to mitigate resident displacement.								
4.a Evaluate Development of Incentives to Preserve Low-Cost Rentals for Below-Market-Rate Privately Owned Rental Housing						A	I	
4.b Evaluate Using the Multi-Unit Property Tax Exemption to Slow Rental Cost Increases						A	I	
5. Housing for Underserved Communities: Implement housing policies, projects, programs, and partnerships to further support racial and social equity.								
5.a Consider Development of a Funding Action Plan to Implement the HPS with Attention to Equity			A	I		U <sup>25</sup>		
5.b Evaluate Impediments to Fair Housing to Create an Analysis of Impediments				A	I			
5.c Evaluated Ways to Best Ensure Opportunities for Education about Fair Housing Are Provided			I					
5.d Evaluated Strategies to Encourage Diverse Housing Types in High-Opportunity Neighborhoods					A, I			
6. Workforce Housing: Encourage, plan for, and support the development of workforce housing for households earning 61-80% Median Family Income, for both owner and renter, in order to increase the jobs-housing balance, reduce commute time and provide attainable housing for workers in Tualatin.								
6.a Evaluate Ways to Incentivize Inclusion of Workforce Housing Units within New Multifamily Rental Development						A	I	

<sup>25</sup> The Funding Action Plan will likely need to be updated by about 2026.

Goal and Strategic Actions	On-Going 2021	2022	2023	2024	2025	2026	2027	Beyond 2027
6.b Evaluate Potential Partnerships with Employers on Employer-Assisted Housing					I			
6.c Evaluate City Partnership to Participate in a Land Bank				A	I			
7. Housing Stabilization: Prevent and address homelessness to provide for safe living conditions for everyone living in Tualatin.								
7.a Evaluate Opportunities to Partner on a Local Rental and Utility Assistance Program	P <sup>26</sup>	I						
7.b Evaluate Ways to Develop Housing Options and Services to Address and Prevent Houselessness						A	I	
8. Housing Rehabilitation: Plan for and support housing programs and initiatives that are responsive to the safety and health needs of households earning 0-80% of Median Family Income.								
8.a Evaluate Establishing Local Housing Rehabilitation Program						A	I	
8.b Evaluate the Implementation of a Healthy Housing Initiative for Single-Family Housing					A	I		
9. Accessible Design and Other Specialized Design: Encourage and support Universal Design, Lifelong Housing Certification, and other similar standards.								
9.a Evaluate the Development of Specialized Design Standards and Incentives to Accommodate Special Needs					A	I		
10. Mixed-Use Housing and Redevelopment: Encourage and support development of mixed-use, mixed-income, and multifamily housing in commercial zones and urban renewal areas for households earning 0-80% of Median Family Income.								
10.a Evaluate Redevelopment Opportunities for the Creation of Mixed-Use Development Districts to Support Development of Affordable Housing and Workforce Housing			A	I				
10.b Evaluate Opportunities for Conversion of Commercial Buildings to Residential Uses			A	I				

<sup>26</sup> The City is piloting a test for this Strategic Action through December 2021, with potential extension of the partnership into 2022 and beyond.

Goal and Strategic Actions	On-Going 2021	2022	2023	2024	2025	2026	2027	Beyond 2027
10.c Evaluate Opportunities to Rezone Land for Mixed-Use		A	I					
10.d Evaluate Establishing Incentives to Support Mixed-Use Development, such as the Vertical Housing Tax Abatement			A	I				
11. Regulatory and Zoning Changes: Increase housing development opportunities through regulatory and zoning changes to accommodate a diverse range of housing types and price points to meet the housing needs in Tualatin.								
11.a Evaluate Updating Density Standards for Multifamily Housing in Medium-Density, High-Density, and Mixed-Use Zones	A	I						
11.b Evaluate Opportunities to Rezone Lower-Density Residential Land to Higher Density	A	I						
11.c Evaluate the Feasibility of Targeted Reductions to Off-Street Parking Requirements		A	I					
11.d Evaluate Updating Code to Allow Small Dwelling Unit Developments					A, I			
11.e Evaluate Adopting an Expedited Permitting Process for Affordable Rental Housing and Affordable Homeownership			A	I				
11.f Evaluate Providing Additional Engagement and Information to Developers of Affordable Housing	A	I						
12. Transportation and Public Infrastructure: Plan for and develop transportation and public infrastructure to support affordable housing, workforce housing, mixed-use housing, and mixed-income housing.								
12.a Evaluate Ways to Prioritize Capital Improvements Programming for Affordable and Workforce Housing				A	I			

## Goals and Strategic Actions

This section presents Goals 1 to 12 and the strategic actions associated with each goal.

**Goal 1. Affordable Housing:** Strongly prioritize, encourage, and support affordable rental housing development to increase affordable housing for households earning 0-60% Median Family Income.

We recommend that the City pursue the following goal, which supports Goals 3.2 and 3.3 in the Comprehensive Plan:

- Strongly prioritize, encourage, support, and promote the development of affordable rental housing for households earning 0-60% Median Family Income.

Implementing this goal would require developing an affordable rental housing program to encourage and support affordable housing development for households earning 0-60% Median Family Income. The strategic actions to evaluate and potentially implement this goal are described below. The City may choose to adopt this goal or the results of the strategic actions into the Comprehensive Plan in the future.

1.a Evaluate a Low-Income Housing Property Tax Exemption Program for Affordable Rental Housing	
Description	Type of Action
<p>Evaluate a property tax exemption program for affordable rental housing.</p> <p>Two tax exemptions programs could be used to support affordable housing:</p> <ul style="list-style-type: none"> <li>▪ <b>Low-Income Rental Housing Exemption:</b> Would provide a 20-year, renewable property tax exemption for rental housing for low-income households (60% of area median income and below). Housing need not be owned or operated by a nonprofit entity; if it is not, only housing built after the program is adopted is eligible. The exemption could also apply to land held for future affordable housing development. Only the City's taxes would be exempted unless there is sufficient support from overlapping taxing districts. Requires that savings be passed on to tenants through rent reductions.</li> <li>▪ <b>Nonprofit Low-Income Rental Housing Exemption:</b> Would provide a full property tax exemption for new and existing</li> </ul>	<p>Adopt a Tax Exemption to Reduce Ongoing Charges on Development</p>

affordable housing owned and operated by a nonprofit organization for as long as the property meets eligibility criteria. Tenants must initially qualify at 60% of area median income or below, but once qualified, existing tenant incomes may rise to as much as 80% of area median income over time. The exemption could also apply to land held by a nonprofit for future affordable housing development. Only the City's taxes would be exempted unless there is sufficient support from overlapping taxing districts.

The evaluation would include a conclusion as to which of the two available options under state statute is better suited to the needs of housing providers in Tualatin.

<p><b>Rationale</b></p>	<p>With very thin margins for rents in affordable housing developments to be able to cover operating costs (even with subsidies), eliminating the cost of property taxes is an important way to improve the viability of affordable housing. Affordable housing providers sometimes use alternative means to secure tax exemptions (e.g., partnership with the local Housing Authority), but the alternatives add complexity to an already complex process. A locally enabled tax exemption also demonstrates local support for affordable housing development, which can help with securing state and federal funds.</p>
<p><b>Anticipated Impact</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Extremely low income, very low-income, and low-income renter households</li> <li>▪ <b>Income:</b> 0-60% of Median Family Income</li> <li>▪ <b>Housing tenure:</b> Rental</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units).</b> If this incentive were used for one to two apartment buildings at 50 to 150 units each, this strategy could contribute to development of 50 to 300 affordable units.</li> <li>- <b>Equitable Outcomes:</b> This is an opportunity to provide equitable housing for low-income households by serving, for example, underserved communities, people with disabilities, and people with special needs, increasing diversity in neighborhoods.</li> </ul> </li> <li>▪ <b>Potential Financial Impact:</b> The City will forgo some property tax income for these properties for the duration of the exemption. This reduces some revenue for city services and some revenue for participating taxing districts.</li> <li>▪ <b>Magnitude:</b> Moderate</li> </ul>

<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> June 30, 2023</li> <li>▪ <b>Implementation to commence:</b> 2023</li> <li>▪ <b>Time frame of impact:</b> The property tax exemption can be used after adoption for as long as the City offers the tax exemption.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Evaluate viability of adoption, including an analysis of the pros and cons of the two tax exemptions.</li> <li>▪ Seek input from overlapping taxing districts on their willingness to support the exemption.</li> <li>▪ Discuss topic with City Council at work sessions and in public hearings. City Council may choose to adopt exemption by resolution or ordinance following a public hearing.</li> <li>▪ Follow up with overlapping taxing districts to request that they pass resolutions to support the exemption.</li> <li>▪ If supported, select one of the tax exemptions for adoption.</li> </ul>
<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division and City of Tualatin Finance Department</li> <li>▪ <b>Partners:</b> Overlapping Taxing Districts</li> </ul>
<b>Funding or Revenue Implications</b>	Tax exemptions reduce general fund revenues for all overlapping taxing districts, including the City.

## 1.b Evaluate Changes to Systems Development Charges

Description	Type of Action
<p>Evaluate options for potential changes to System Development Charges (SDCs) and Transportation Development Tax (TDT) to support development of affordable housing.</p> <ul style="list-style-type: none"> <li>▪ <b>SDCs</b> are fees collected when new development and some redevelopment occurs within the City. Revenues are used to fund growth-related capital improvements.</li> <li>▪ <b>TDT</b> is a voter-approved charge imposed on new development and redevelopment within Washington County (including its cities) to help pay for the impact development has on the transportation system.</li> </ul> <p>The City of Tualatin has limited control over SDCs because most are collected on behalf of other service districts and providers, who determine the rates and rate structures. The parks and water SDCs are set by the City. The primary opportunity for changes to SDC is with the parks SDC, which recently went through a review and update process. The water SDC is based on meter size, which makes meaningful changes in SDCs challenging, especially for multiunit projects. Tualatin does not have control over the rate or rate structure for Washington County’s TDT, though the City does receive a share of the revenue.</p> <p>The City of Tualatin could evaluate changes to its parks and water SDCs by reducing, deferring, and/or financing SDCs at a low interest rate for regulated affordable housing or other needed housing types.</p>	<p>Evaluate Change to Fee Schedules to Reduce Charges on Development</p>
<p><b>Rationale</b></p>	<p>Changes to the City’s parks or water SDC rates or methodology could reduce up-front costs for developers of regulated affordable housing and/or encourage specific types of housing development (e.g., smaller units).</p>
<p><b>Anticipated Impact</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Extremely low income, very low-income, and low-income renter households</li> <li>▪ Extremely low, very low, and low-income owner households</li> <li>▪ <b>Income:</b> 0-80% of Median Family Income</li> <li>▪ <b>Housing tenure:</b> Owner and Renter</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> Tualatin can have an impact on its parks and water SDCs and can backfill the costs to</li> </ul> </li> </ul>



	<p>County TDTs.</p> <ul style="list-style-type: none"> <li>- While reducing parks or water SDCs could provide some support for affordable housing development, on its own this action is unlikely to directly result in development of new affordable housing, but it may serve to attract affordable housing developers to Tualatin with this cost reduction.</li> <li>- <b>Equitable Outcomes:</b> Providing incentives like SDC reductions supports the development of equitable housing.</li> <li>▪ <b>Potential Financial Impact:</b> The City will likely need to make up revenue forgone through the changes to SDCs, such as by backfilling with TDTs.</li> <li>▪ <b>Magnitude:</b> Low</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 31, 2026</li> <li>▪ <b>Implementation to commence:</b> 2027</li> <li>▪ <b>Time frame of impact:</b> Changes to SDCs will impact development of needed housing if changes are adopted and in use by 2027.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Evaluate options for deferral or financing of parks or water SDCs for affordable housing under the existing methodology, working with current planning and finance divisions.</li> <li>▪ At the next update to the parks or water SDC methodology, evaluate options to offer full or partial exemptions for affordable housing and/or to adjust the residential rate structure to offer lower rates for smaller units.</li> </ul>
<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency</b> City of Tualatin Parks and Recreation Department, City of Tualatin Finance Department, and City of Tualatin Planning Division.</li> </ul>
<b>Funding or Revenue Implications</b>	<p>Changes may reduce or delay SDC revenue to the City.</p>

## 1.c Evaluate Implementation of a Construction Excise Tax

Description	Type of Action
<p>Evaluate a Construction Excise Tax (CET), a tax assessed on new development and expansions as a percent of the permit value.</p> <p>State statute defines the allowed uses of CET funds and the allowed maximum tax rate. The City of Tualatin could levy a CET on commercial, industrial, and/or residential development. Tualatin has limited land for new residential development within City limits at present; however, revenues from a CET levied on commercial or industrial development could be used for housing programs. At least half of the revenue from a CET on commercial and industrial development would need to be used for local housing programs (capital or programmatic services), but the other half is unrestricted (capital or programmatic services); revenue from a CET on housing would need to go toward housing, with certain percentages toward various specific categories of expenditures.</p> <p>At least eight jurisdictions in Oregon have adopted a CET to fund affordable housing. Most are using or plan to use the revenues to offer grants and/or loans as flexible gap financing for affordable housing development. While it can be used to pay for services, capacity building, etc., the variable nature of the revenues makes it challenging to fund ongoing commitments.</p>	<p>Establish a CET to Allocate Funding</p>
<p><b>Rationale</b></p>	<p>CET is one of few options to generate locally controlled funding for affordable housing and could be implemented without a public vote. Industrial development has been strong in Tualatin in recent years. If this continues, a CET on commercial and industrial development could potentially generate enough revenue to allow the City to fund some of its other equitable housing and related strategies.</p>
<p><b>Anticipated Impact</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Depends on how revenue is used, but would be for extremely low, very low, and low-income and underserved communities.</li> <li>▪ <b>Income:</b> Depends on how revenue is used, but most likely directed toward 0-60% of Median Family Income, however, could be used to meet other income groups, such as contribution to homeownership for households at 61-80% of Median Family Income.</li> <li>▪ <b>Housing tenure:</b> Renter or owner</li> </ul>

	<ul style="list-style-type: none"> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> Based on analysis by ECONorthwest, a 0.5-1% CET on commercial and industrial development could generate roughly \$200,000-400,000 per year. While this would cover the full cost of only a few units of affordable housing per year, it could pay for SDCs and TDT on roughly 100 units per year. If used as gap financing, it could potentially contribute to funding one or two affordable housing developments per year.</li> <li>- <b>Equitable Outcomes:</b> Developing funding sources like CET can support equitable housing programs and development, such as affordable housing and workforce housing.</li> </ul> </li> <li>▪ <b>Potential Financial Impact:</b> Homebuyers and businesses that pay the CET will have slightly higher costs for their homes and for commercial or industrial development. The increase in home prices will not exceed 1% as a result of the CET and may be smaller if the City establishes a CET below 1%.</li> <li>▪ <b>Magnitude:</b> Moderate</li> </ul>
<p><b>Timeline</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 31, 2025</li> <li>▪ <b>Implementation to commence:</b> 2026</li> <li>▪ <b>Time frame of impact:</b> If a CET is implemented in 2026, it may take several years for funds to accumulate to an amount that could be used to support development of housing.</li> </ul>
<p><b>Implementation Steps</b></p>	<ul style="list-style-type: none"> <li>▪ Evaluate potential approach. Include projections on potential revenue and what programmatic goals could be accomplished with revenue. Include SWOT analysis for both residential and commercial/industrial.</li> <li>▪ Engage with developers, major employers, and the business community in Tualatin to evaluate tolerance for a CET on commercial and industrial development and where there are shared interests in supporting local housing production.</li> <li>▪ Seek direction on whether to proceed with adoption from City Council at work sessions.</li> <li>▪ Tualatin City Council could impose the CET by adoption of an ordinance or resolution that conforms to the requirements of ORS 320.192–ORS 320.195.</li> <li>▪ If directed, create a plan for the use of CET funds.</li> </ul>
<p><b>Lead Agency and Potential Partners</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division and City of Tualatin Finance Department</li> <li>▪ <b>Partners:</b> Local developers, Chamber of Commerce, major</li> </ul>

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	employers, and the Tualatin business community
<b>Funding or Revenue Implications</b>	<p>Adopting a CET would provide funding for other strategies. ECONorthwest conducted a preliminary estimate of CET revenue via a backward-looking analysis using the City of Tualatin’s permit database for new residential and commercial/industrial construction from the last five years. The results of this analysis are summarized in Appendix B.</p> <p>Because a percentage (4%) of the revenue can be applied to the City’s costs for administering the program, there should be minimal additional cost for the City.</p>

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## 1.d Evaluate Support for Affordable and Workforce Rental Housing as Part of Urban Renewal

Description	Type of Action
<p>Evaluate the potential to specifically identify affordable housing (for instance, housing affordable at 0-60% of MFI and workforce affordable housing at 61-80% of MFI) as a goal of existing or future Urban Renewal Plans. As applicable, identify specific affordable housing programs, projects, and/or supportive infrastructure to be included with urban renewal plan(s).</p> <p>TIF funding for affordable housing or other equitable housing would need to gain approval through the City’s Urban Renewal process and be consistent with the State Oregon Revised Statute (ORS) 457.</p> <p>TIF (for urban renewal districts) is used as a way to make strategic public investments that spur development in areas where it might not otherwise occur. When successful, the new development leads to an increase in property value and property tax revenue. The increment of new tax revenue from within the district (from the time the district is established) is captured and used to pay off bonds (or directly pay) for the public investments in the area. When the bonds are paid off, the entire valuation of the district is returned to the general property tax rolls. While regulated affordable housing is often tax exempt and does not generate additional tax revenue, some jurisdictions allocate a portion of TIF revenues to fund affordable housing to support equitable development within the TIF district. TIF can be invested in the form of low interest loans and/or grants for housing projects or a variety of capital investments.</p> <p><b>Additional Context:</b> The City of Tualatin is in the process of evaluating two potential new TIF districts: (District 1) the Basalt Creek and Southwest Industrial Area and (District 2) the North Study Area, Bridgeport Village, Town Commons, I-5 Corridor and Tualatin-Sherwood Road. The City also recently modified plans for an existing district (Leveton). While much of the land included in these areas is planned for industrial and commercial use, portions of the potential new districts are planned for residential or mixed-use development. These could be appropriate locations for new affordable housing rehabilitation or mixed-income housing.</p> <p>District 1 potential total TIF revenue over 30 years is estimated to be between \$28.4 million and \$55.5 million, depending on future growth in assessed value in the area.</p>	<p>Evaluate Affordable Housing Support as Part of Urban Renewal</p>

District 2 potential total TIF revenue over 30 years is estimated to be between \$248.2 million and \$362.7 million, depending on future growth in assessed value in the area.

District 1 is slated to be established in fall of 2021 and District 2 in approximately two years. In determining the resources for affordable housing from TIF, the City would want to consider the specific housing needs of each district. TIF funding for District 1 may be focused more on infrastructure funding to pay for infrastructure needed to support new development. For District 2, the amount of TIF used for housing could be a larger share of TIF funding, as this district may be focused on housing redevelopment.

<p><b>Rationale</b></p>	<p>TIF is one of few available locally controlled sources of funding to build or improve housing. In addition, investing a share of TIF revenues into affordable or mixed-income housing within an area that is a focus for local investment helps support inclusive and equitable housing development in that area.</p>
<p><b>Anticipated Impact</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Extremely low income, very low-income, low-income, and moderate-income households</li> <li>▪ <b>Income:</b> 0-80% of Median Family Income</li> <li>▪ <b>Housing tenure:</b> Renter or Owner</li> <li>▪ <b>Potential Benefits:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> Urban renewal TIF is the largest source of funding over time that could be made available for affordable housing development. The amount of housing production depends on the funds raised and allotted through urban renewal. TIF can only be spent on capital projects, not operations.</li> <li>- <b>Equitable Outcomes:</b> Establishing TIF funding for equitable housing may have the greatest impact over time of any single funding sources on equitable housing development in the city to be used to develop affordable housing, workforce housing, mixed-use housing, and mixed-income housing and related infrastructure.</li> </ul> </li> <li>▪ <b>Potential Financial Impact:</b> The financial impacts of a URA are borne by overlapping taxing districts, not by individual taxpayers. The financial capacity of two potential new districts on the horizon in Tualatin would not be available immediately but would build slowly over time. In pursuing this strategic action in Tualatin, it will be important to get an early start on setting goals and priorities for TIF funding for affordable housing and other</li> </ul>

	<p>equitable housing before the URA districts are established.</p> <ul style="list-style-type: none"> <li>▪ <b>Magnitude:</b> Moderate to Large</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 32, 2022</li> <li>▪ <b>Implementation to commence:</b> 2022</li> <li>▪ <b>Time frame of impact:</b> It would likely be at least 5 to 10 years before there is sufficient revenue in the Urban Renewal District to have enough funds to make significant investment in housing.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ As part of urban renewal planning for the two potential new districts, evaluate inclusion of affordable housing as a policy. Additionally, identify affordable housing programs, projects, and/or supportive infrastructure.</li> <li>▪ Proceed with the planning and adoption processes already underway for the two potential new districts, including establishing priorities for the areas, identifying project lists, confirming financial feasibility, preparing required plan documents, and holding adoption hearings.</li> </ul>
<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division and City of Tualatin Finance Department</li> <li>▪ <b>Partners:</b> Tualatin Development Commission; Overlapping taxing districts</li> </ul>
<b>Funding or Revenue Implications</b>	<p>TIF results in foregone tax revenue for the City and other overlapping taxing districts for several decades for a variety of types of development investment, though it can (and should) grow the tax base in the long term by supporting development that would not otherwise have occurred.</p>

## 1.e Evaluate Financial Resources for Local Contributions to Affordable Housing Development

Description	Type of Action
<p>Evaluate, develop, and promote financial resources for local contribution to affordable housing development. Funds from this effort could be contributed to a Housing Trust Fund Initiative.</p> <p>The City of Tualatin could consider funding sources including foundation grants, private gifts, or other sources to assist with funding contributions to support affordable housing development. The City may consider other sources of funding, such as money from the City’s General Fund, Local Option Levy, Cannabis Tax revenues, and other funding sources.</p> <p>Local contributions to affordable housing development are often critical in helping to fill the funding gap for these projects and to compete successfully for other government funding and foundation grants.</p>	<p>Collect Revenue to Allocate Funding to Housing Programs</p>
<b>Rationale</b>	<p>These funds can be used to support incentives and support for affordable housing development, such as tax exemptions.</p>
<b>Anticipated Impact</b>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Extremely low income, very low-income, and low-income households</li> <li>▪ <b>Income:</b> 0-60% of Median Family Income</li> <li>▪ <b>Housing tenure:</b> Renter</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> The amount of housing production depends on the funds raised and contributed through these resources.</li> <li>- <b>Equitable Outcomes:</b> Local contributions to affordable housing development could help underserved communities and demonstrate the City’s commitment to equity.</li> </ul> </li> <li>▪ <b>Potential Financial Impact:</b> Funds spent on affordable housing will be unavailable for other city services, however, these funds may not have been able to be successfully raised otherwise.</li> <li>▪ <b>Magnitude:</b> Moderate</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 31, 2026</li> <li>▪ <b>Implementation to commence:</b> 2027</li> <li>▪ <b>Time frame of impact:</b> If this strategic action is implemented in</li> </ul>



	<p>2026, it may take several years for funds to accumulate to an amount that could be used to support development of housing.</p>
<p><b>Implementation Steps</b></p>	<ul style="list-style-type: none"> <li>▪ Identify financial sources that the City could use to support affordable housing development.</li> <li>▪ Develop a Housing Trust Fund as a place to collect funds.</li> <li>▪ Continue to raise funds over time.</li> </ul>
<p><b>Lead Agency and Potential Partners</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division and Finance Department</li> <li>▪ <b>Partners:</b> State/Federal Agencies, State and National Foundations</li> </ul>
<p><b>Funding or Revenue Implications</b></p>	<p>Evaluating, developing, and promoting financial resources for local contribution is a comparatively low-cost strategy, primarily relying on the use of staff time.</p> <p>If the City uses General Fund revenue or revenue from other taxes, such as Cannabis Tax revenues, the money from these sources would not be available of use for other purposes in Tualatin.</p>

## 1.f Evaluate Buildable or Redevelopable Public and Institutional Land Potentially Suitable for Affordable Housing

Description	Type of Action
<p>Periodically evaluate and maintain an inventory of potentially buildable or redevelopable surplus or excess land owned by public agencies and/or institutions to determine its suitability to support development of income-restricted, publicly subsidized, affordable housing.</p> <p>As the facilities needs of public agencies or institutions change over time, properties may not be needed for their originally intended purpose. Also, sometimes sites that are still serving their intended purpose are larger than needed, and the unused portion could be converted to other uses. When these opportunities come up, the City can capitalize on them to support development of affordable housing, but this requires forethought, an intentional approach, and aligning policies and procedures around surplus and excess land and facilities management. Other public agencies and institutions (including religious institutions) may also have land that they no longer need and are willing to make available for affordable housing. Some may be legally required to sell surplus and excess property at fair market value, but others may have flexibility for how they dispose of this land and may be willing to partner with the City to consider opportunities to use this land for affordable housing.</p>	<p>Adopt a Policy or Program to Support Land Acquisition and Disposition</p>
<p><b>Rationale</b></p>	<p>Four primary factors influence housing development: (1) ability to secure suitable land, including acquisition costs; (2) access to capital, including equity and bank loans; (3) public policy, such as zoning, density, and design requirements; and (4) market conditions, including depth of demand and rents/sales prices. This strategy allows the City of Tualatin to directly influence the ability to secure land for affordable housing, by offering particular properties only to affordable housing developers. It can also influence the cost of land, by buying down prices to support affordable housing.</p>
<p><b>Anticipated Impact</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Extremely and very low-income households</li> <li>▪ <b>Income:</b> 0-60% of Median Family Income</li> <li>▪ <b>Housing tenure:</b> Renter</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> The amount of housing production depends on the size and number of properties that</li> </ul> </li> </ul>

	<p>can be converted to affordable housing as a result of this strategy. If this strategy identified 0.5 to 3 acres of surplus or excess land over the eight-year planning horizon, at 30 to 60 units per acre, this strategy could produce between 15 and 180 units of affordable housing.</p> <ul style="list-style-type: none"> <li>- <b>Equitable Outcomes:</b> Land acquisition and land donation for affordable housing development could result in project feasibility by buying down the cost of the overall project; this could contribute to much needed housing for low-income households.</li> <li>▪ <b>Potential Risk:</b> If certain public land is used for affordable housing, it may not be able to be used for other city functions. However, if the land is deemed surplus or excess land, it may not be needed for other city functions. If the land is owned by an institution, such as a church, it may be able to be used, purchased, or donated for affordable housing.</li> <li>▪ <b>Magnitude:</b> Moderate</li> </ul>
<p><b>Timeline</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 31, 2023</li> <li>▪ <b>Implementation to commence:</b> 2024</li> <li>▪ <b>Time frame of impact:</b> Land may be available to support affordable housing development immediately after adoption of this strategic action (or possibly before it is completed). It is also possible that no land will be available by adoption and that land will become available in the future through implementing this strategic action, especially with potential future conversations with land owned by institutions.</li> </ul>
<p><b>Implementation Steps</b></p>	<ul style="list-style-type: none"> <li>▪ Inventory City-owned land within Tualatin that may be suitable for affordable housing development and determine what land is currently surplus or excess or may be deemed so in the next few years.</li> <li>▪ Reach out to other public agencies and institutions, including faith-based organizations, that own land within Tualatin to determine if these entities are willing to include their lands in the inventory.</li> <li>▪ Review policies and procedures related to surplus and excess lands to determine whether changes or refinements are needed to enable or encourage them to be made available for affordable housing and to establish protocols for how affordable housing developers would be selected when land is available.</li> </ul>

<p><b>Lead Agency and Potential Partners</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division</li> <li>▪ <b>Partners:</b> Public agencies and/or institutions, including faith-based organizations, in Tualatin; affordable housing developers; City of Tualatin Finance Department; other divisions at the City of Tualatin (as needed)</li> </ul>
<p><b>Funding or Revenue Implications</b></p>	<p>Leveraging currently owned surplus and excess lands does not require direct funding, other than staff time to manage the process. Coordination with other partners primarily requires staff time; however, if the City were to acquire land from partners to control the disposition process, this would require funding.</p> <p>Disposing of surplus and excess land could relieve the City’s existing upkeep costs on those lands, but the City may forego revenue by selling the property at below-market value.</p> <p>Depending on whether the affordable housing development is tax exempt (e.g., Housing Authority) or subject to a City-controlled tax exemption, it is possible that after development, the City of Tualatin could experience an increase in their tax base.</p>

## 1.g Evaluate Development Code Changes to Allow and Support Other Affordable Rental Housing Types in Tualatin

Description	Type of Action
<p>Evaluate Development Code Changes to allow and support development of other affordable rental housing types in Tualatin that provide affordable housing, beyond the required housing types in House Bill 2001.</p> <p>Other housing options may include dwelling units designed for multiple unrelated individuals living in the same dwelling with shared kitchen and bathrooms such as “adult dorms”; small-scale homes (dwelling units between 100 and 500 square feet); and other innovative, small housing types (such as cargo containers). Allowing and clarifying standards for a diverse array of housing types would require development of clear and objective standards for these housing types.<sup>27</sup></p> <p>In addition, Tualatin’s Development Code does not currently allow small-scale dwellings, such as those at 100 to 500 square feet in size, at densities that would support development of this housing type as affordable housing.</p>	<p>Evaluate Change to Zoning Code</p>
<p><b>Rationale</b></p>	<p>Further diversifying Tualatin’ housing stock gives residents and prospective residents a wider range of housing options to meet their financial needs and housing preferences.</p>
<p><b>Anticipated Impact</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Extremely low and very low-income, low-income, and moderate-income households</li> <li>▪ <b>Income:</b> 0-80% of Median Family Income</li> <li>▪ <b>Housing tenure:</b> Renter</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> This action would not directly result in production of new affordable housing units. However, it is a crucial step in the process necessary to open up more opportunities for production of potentially more affordable types of housing in Tualatin.</li> </ul> </li> </ul>

<sup>27</sup> Tualatin’s Development Code defines household living as “the residential occupancy of a dwelling unit by a family or household, where the dwelling unit is self-contained with cooking, sleeping, and bathroom facilities.” In addition, Tualatin’s Development Code defines a household as “one or more persons related by blood, marriage, domestic partnership, legal adoption or guardianship, plus not more than five additional persons, who live together in one dwelling unit.” These definitions limit options for living situations with separate living quarters but with shared kitchen and bathrooms (such as “adult dorms”), in situations that do not qualify as group living (as defined by Tualatin’s Development Code).

	<ul style="list-style-type: none"> <li>- <b>Equitable Outcomes:</b> This is an opportunity to provide more options for lower-cost housing, which may help underserved communities, people with disabilities, and people with special needs, increasing diversity in neighborhoods.</li> <li>▪ <b>Potential Risk:</b> Allowing smaller units may increase density in existing neighborhoods, with the potential to cause concern for some of the existing residents, while others may welcome it.</li> <li>▪ <b>Magnitude:</b> Indirect, small</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 31, 2024</li> <li>▪ <b>Implementation to commence:</b> 2024 or early 2025</li> <li>▪ <b>Time frame of impact:</b> Impact is small. Impact may be greater if changing the Development Code would allow market-rate and regional affordable housing providers to utilize the new wider range of housing types in Tualatin.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Review Development Code to identify and clarify innovative and diverse housing types in the Development Code. Consider housing definitions, types of units permitted, lot dimensions, height standards, and other related standards.</li> <li>▪ Revise Development Code as needed.</li> </ul>
<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division</li> <li>▪ <b>Partners:</b> Development community</li> </ul>
<b>Funding or Revenue Implications</b>	<p>Evaluating zoning code changes for allowed uses is a comparatively low-cost strategy, primarily relying on the use of staff time.</p>

**1.h Evaluate Municipal Code, Development Code, Public Works Construction Code, and Building Code Processes to Make Building Affordable Housing Easier**

Description	Type of Action
<p>Evaluate the City’s Municipal, Development, Public Works Construction, and Building Codes processes to identify opportunities to make it easier to develop and build affordable housing. This could include updating the modifications or variance process and requirements, including making allowing modification or variance processes for affordable housing to have a simpler review process than typical, such as not requiring hearings. It could also include prioritizing review of regulated affordable housing development proposals to the maximum extent possible, while also meeting state-required timelines for review of other development proposals.</p> <p>The City has varying administrative roles in land use and building permitting processes. The City could look for opportunities to reduce or expedite these processes, resulting in improved customer service and reduced development timelines. This strategy could include updating the modifications/variance processes and requirements, which would result in making modification/variance processes for affordable housing simpler and quicker (e.g., not requiring hearings).</p>	<p>Evaluate Change to Zoning Code and Other Development Processes</p>

<b>Rationale</b>	Enable easier development of regulated affordable housing in Tualatin. Enable quicker development time frames by demonstrating responsiveness to affordable housing developer needs.
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<b>Anticipated Impact</b>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Extremely and very low-income households</li> <li>▪ <b>Income:</b> 0-60% of Median Family Income</li> <li>▪ <b>Housing tenure:</b> Renter</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> In and of itself, this strategic action is not likely to result in development of more housing. It may make affordable housing more feasible to develop by decreasing the permitting time and may be helpful by attracting affordable housing developers to develop in Tualatin.</li> <li>- <b>Equitable Outcomes:</b> This is an opportunity to provide more options for lower-cost housing, which may help underserved communities, people with disabilities, and people with special needs, increasing diversity in neighborhoods.</li> </ul> </li> </ul>
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	<ul style="list-style-type: none"> <li>▪ <b>Potential Risk:</b> This strategic action may result in faster review of affordable housing development, possibly decreasing opportunities for public input. Expediting permitting processes for affordable housing may result in minor increases in the time needed for the permitting processes of other development.</li> <li>▪ <b>Magnitude:</b> Low</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 31, 2024</li> <li>▪ <b>Implementation to commence:</b> 2024 or early 2025</li> <li>▪ <b>Time frame of impact:</b> The strategic action can begin to take effect once it is adopted and implemented in the Municipal Code.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Work with City Council to develop goals for the length of time the permitting process may take.</li> <li>▪ Identify inefficiencies in the permitting process and make the necessary changes to streamline procedures.</li> <li>▪ Develop a system to measure and monitor the time it takes for affordable housing proposals to get through the City’s development processes.</li> <li>▪ Survey applicants periodically to assess services and areas for improvement.</li> </ul>
<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division</li> <li>▪ <b>Partners:</b> City of Tualatin Engineering and Building Divisions and Legal Services Department</li> </ul>
<b>Funding or Revenue Implications</b>	<p>Evaluating Development Code and process changes is a comparatively low-cost strategy, primarily relying on the use of staff time. If additional staff time were needed to support faster review/permitting times, that may require additional funding for the applicable division.</p>



Goal 2. Affordable Homeownership: Encourage and support affordable homeownership to create opportunities for wealth creation.

We recommend that the City pursue the following goal, which supports the existing Goal 3.2, Policy 3.2.1, and Goal 3.3 in the Comprehensive Plan:

- Encourage and support affordable homeownership education and development to increase equitable opportunities for homeownership and generational wealth creation.

The strategic actions to evaluate and potentially implement this goal are described below. The City may choose to adopt this goal or the results of the strategic actions into the Comprehensive Plan in the future.

<b>2.a Evaluate Impediments to Homeownership and Their Removal</b>	
<b>Description</b>	<b>Type of Action</b>
<p>Work with development stakeholder to develop a comprehensive review of the impediments to homeownership opportunities and evaluate actionable steps to remove those impediments.</p> <p>Barriers to homeownership and impediments may include saving for a down payment, access to down payment assistance, poor credit scores restricting households’ ability to obtain a mortgage, underproduction of homes for sale relative to demand, and lack of affordable homeownership opportunities (particularly in markets with rising home sales prices).</p> <p>The City may form partnerships with organizations that remove barriers by providing financial assistance, such as down payment assistance or paying down interest rates.</p>	<p>Remove Impediments</p>
<b>Rationale</b>	<p>Homeownership is one of the most effective (and primary ways) for households and individuals to build wealth. Further, renter households are more likely to be at risk of displacement than homeowners.</p>
<b>Anticipated Impact</b>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Extremely low and very low–income, low-income, and moderate-income households</li> <li>▪ <b>Income:</b> 0-120% of Median Family Income</li> <li>▪ <b>Housing tenure:</b> Owner</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> This strategic action does not directly result in production of new housing but is intended to</li> </ul> </li> </ul>

	<p>make it easier for residents to afford homeownership.</p> <ul style="list-style-type: none"> <li>- <b>Equitable Outcomes:</b> Removing barriers to homeownership opportunities can increase equitable outcomes by making it easier for households with lower incomes to become homeowners.</li> <li>▪ <b>Potential Risk:</b> Impacts are likely to have no negative impact.</li> <li>▪ <b>Magnitude:</b> Indirect, small</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 31, 2024</li> <li>▪ <b>Implementation to commence:</b> 2025</li> <li>▪ <b>Time frame of impact:</b> The strategic action can begin to take effect when it is adopted and implemented, once the impediments to homeownership are removed.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Work with partners to better understand impediments to homeownership in Tualatin.</li> <li>▪ Develop programs or partnerships to lower or remove barriers to homeownership</li> <li>▪ Provide outreach to eligible, prospective program participants to connect them with homeownership programs.</li> </ul>
<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division Department</li> <li>▪ <b>Partners:</b> Oregon Housing and Community Services; Portland Housing Center or other nonprofits (e.g., Oregon Housing Alliance, Housing Oregon, etc.)</li> </ul>
<b>Funding or Revenue Implications</b>	<p>Establishing partnerships and identifying impediments to homeownership are comparatively low-cost strategies, primarily relying on the use of staff time.</p>

## 2.b Partner to Encourage Education about Homeownership Opportunities

Description	Type of Action
<p>Partner with a nonprofit homeownership education program.</p> <p>Consider partnering with the Portland Housing Center (or other nonprofit) to promote homeownership educational opportunities and to help refer interested people to the program. The Portland Housing Center may be a suitable partner as they currently provide guidance, financial services, and home buyer education to Portland-area residents.</p> <p>Tualatin may provide support to renters in their pursuit of becoming homeowners. The City may also provide support to residents in manufactured housing parks (who own their home but not the lot) to form a cooperative (a group of people organized for the purpose of owning and operating a housing park for the benefit of its members on a not-for-profit basis).</p>	<p>Establish Partnerships</p>
<p><b>Rationale</b></p>	<p>Responsible homeownership is one of the most effective (and primary ways) for households and individuals to build wealth. Further, in Oregon, renter households are more likely to be at risk of displacement than homeowners.</p>
<p><b>Anticipated Impact</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Extremely low income, very low-income, low-income, and moderate-income households</li> <li>▪ <b>Income:</b> 0-120% of Median Family Income</li> <li>▪ <b>Housing tenure:</b> Owner</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> This strategic action does not directly result in production of new housing but is intended to make it easier for residents to afford homeownership.</li> <li>- <b>Equitable Outcomes:</b> The City partnering with a homeownership education organization could result in new households actively planning with support for first-time homeownership and potentially attaining it. This could open up new opportunities for underserved communities as well as low-income and moderate-income households and others who are interested yet may never have had access to homeownership education and the possibility of wealth creation.</li> </ul> </li> <li>▪ <b>Potential Risk:</b> There are likely to be no or minor negative</li> </ul>

	<p>impacts.</p> <ul style="list-style-type: none"> <li>▪ <b>Magnitude:</b> Low to moderate</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> June 30, 2022</li> <li>▪ <b>Implementation to commence:</b> 2022</li> <li>▪ <b>Time frame of impact:</b> The strategic action can begin to have impacts when the partnerships are formed and the strategic action has begun to be implemented.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Review state homeownership resources.</li> <li>▪ Establish a partnership with a nonprofit focused on encouraging and supporting homeownership opportunities in the Portland Region.</li> <li>▪ Identify opportunities to help Tualatin residents achieve homeownership.</li> <li>▪ Provide outreach to residents who rent in Tualatin to support their efforts in achieving homeownership.</li> <li>▪ Consider offering a workshop or series of workshops on homeownership in coordination with partner organizations.</li> </ul>
<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division Department</li> <li>▪ <b>Partners:</b> Portland Housing Center or other nonprofits (e.g., Oregon Housing Alliance, Housing Oregon, etc.); Oregon Housing and Community Services.</li> </ul>
<b>Funding or Revenue Implications</b>	<p>Encouraging residents to pursue homeownership education is a comparatively low-cost strategy, primarily relying on the use of staff time and/or community partners with support from staff to reach out to prospective/interested residents.</p>

## 2.c Partner with Organizations that Develop Affordable Ownership Housing

Description	Type of Action
<p>Explore partnership opportunities with a homeownership development organization, such as Habitat for Humanity or a land trust like Proud Ground, that develops and constructs affordable homes to own for households earning 0-80% Median Family Income.</p> <p>Habitat for Humanity (Portland Region) builds homes purposed for affordable homeownership for qualified, low-income families. Proud Ground is a community land trust that provides permanently affordable housing opportunities through funding that creates affordable home buying opportunities and management of real estate to ensure it remains permanently affordable. Tualatin could partner with these or other affordable housing development organizations, for example, by offering surplus or excess land (see Action 1.f), helping to identify suitable land, assisting with the assemblage of land, and providing support on funding applications for homeownership development in Tualatin or local gap funding contribution if funds are available such as through a Housing Trust Fund.</p>	<p>Establish Partnerships</p>
<p><b>Rationale</b></p>	<p>Increase the supply of housing available for homeownership for households with income below 80% of MFI.</p>
<p><b>Anticipated Impact</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Extremely low income, very low-income, low-income, and moderate-income households</li> <li>▪ <b>Income:</b> 0-80% of Median Family Income</li> <li>▪ <b>Housing tenure:</b> Owner</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> The amount of housing to be produced over a six-year period as a result of this is likely to be on the order of 10 to 30 units, depending on the land or funds the City has to contribute to this effort.</li> <li>- <b>Equitable Outcomes:</b> The City partnering with a homeownership development organization could result in increased opportunities for homeownership for households that cannot generally afford homeownership. This could open up new opportunities for underserved communities as well as low-income and moderate-income households and others who are interested in homeownership and the possibility of wealth creation.</li> </ul> </li> <li>▪ <b>Potential Risk:</b> There are likely to be no or minor negative</li> </ul>

	<p>impacts.</p> <ul style="list-style-type: none"> <li>▪ <b>Magnitude:</b> Low to moderate</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 31, 2023</li> <li>▪ <b>Implementation to commence:</b> 2024</li> <li>▪ <b>Time frame of impact:</b> The strategic action can begin to have impacts when the partnerships are formed and the strategic action has begun to be implemented.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Establish a partnership with a homeownership development organization to support development of affordable homeownership opportunities.</li> <li>▪ Identify funds (or land in Strategic Action 1.f) available to support affordable homeownership development</li> </ul>
<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division</li> <li>▪ <b>Partners:</b> Habitat for Humanity, Proud Ground, or other homeownership development organizations</li> </ul>
<b>Funding or Revenue Implications</b>	<p>Revenue implications vary depending on the amount of monetary support the City of Tualatin is willing to provide. Monetary support would reduce division budgets or general fund dollars unless a new funding source (tax or fee) is established/enacted.</p>

## 2.d Evaluate Development Code to Encourage Diverse Housing Types for Affordable Homeownership

Description	Type of Action
<p>Evaluate Development Code changes to allow and support development of other affordable ownership housing types in Tualatin that provide affordable housing, beyond the required housing types in House Bill 2001.</p> <p>Other housing options may include dwelling units designed for multiple unrelated individuals living in the same dwelling with shared kitchen and bathrooms such as cohousing; small-scale homes (dwelling units between 100 and 500 square feet); and other innovative, small housing types (such as cargo containers). Allowing and clarifying standards for a diverse array of housing types would require development of clear and objective standards for these housing types.<sup>28</sup></p> <p>In addition, Tualatin’s Development Code does not currently allow small-scale dwellings, such as those at 100 to 500 square feet in size, at densities that would support development of this housing type as affordable housing.</p>	<p>Making Zoning Code Changes</p>
<p><b>Rationale</b></p>	<p>Comparatively small dwelling units can help meet identified housing needs for Tualatin’s workforce, particularly affordable homeownership opportunities.</p>
<p><b>Anticipated Impact</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Extremely low income, very low-income, low-income, and moderate-income households</li> <li>▪ <b>Income:</b> 0-120% of Median Family Income</li> <li>▪ <b>Housing tenure:</b> Owner</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> This action would not directly result in production of new units. But it is necessary to remove barriers to production of more types of housing in Tualatin.</li> <li>- <b>Equitable Outcomes:</b> This is an opportunity to provide more</li> </ul> </li> </ul>

<sup>28</sup> Tualatin’s Development Code defines household living as “the residential occupancy of a dwelling unit by a family or household, where the dwelling unit is self-contained with cooking, sleeping, and bathroom facilities.” In addition, Tualatin’s Development Code defines a household as “one or more persons related by blood, marriage, domestic partnership, legal adoption or guardianship, plus not more than five additional persons, who live together in one dwelling unit.” These definitions limits options for living situations with separate living quarters but with shared kitchen and bathrooms (such as “adult dorms”), in situations that do not qualify as group living (as defined by Tualatin’s Development Code).

	<p>lower-cost homeownership opportunities, which may help underserved communities and lower-income households, increasing diversity in neighborhoods.</p> <ul style="list-style-type: none"> <li>▪ <b>Potential Risk:</b> Allowing smaller units may increase density in existing neighborhoods, with the potential to cause concern for some of the existing residents but may be welcomed by other residents.</li> <li>▪ <b>Magnitude:</b> Indirect, small</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 31, 2024</li> <li>▪ <b>Implementation to commence:</b> 2024 or early 2025</li> <li>▪ <b>Time frame of impact:</b> The strategic action can begin to take effect once it is adopted and implemented in the Development Code.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Review Development Code to identify and clarify innovative and diverse housing types in the Development Code. Consider housing definitions, types of units permitted, lot dimensions, height standards, and other related standards.</li> <li>▪ Revise Development Code as needed.</li> </ul>
<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division</li> <li>▪ <b>Partners:</b> Development community</li> </ul>
<b>Funding or Revenue Implications</b>	<p>Evaluating zoning code changes for allowed uses is a comparatively low-cost strategy, primarily relying on the use of staff time.</p>



Goal 3. Preservation of Regulated Affordable Housing: Preserve affordable housing to prevent the loss of existing affordable housing units and to prevent resident displacement.

We recommend that the City pursue the following goal, which supports the existing Goals 3.2 and 3.3 in the Comprehensive Plan:

- Preserve affordable housing to prevent the loss of existing affordable housing units and to prevent resident displacement.
- Ensure and support no net loss for affordable housing in the City through preservation of one-for-one unit replacement that will retain at least the current number of housing units affordable to households at or below 60% of area Median Family Income (MFI). The City would track and report on the no net loss of affordable housing annually and ensure there are affordability agreements to maintain long-term affordability.

The strategic actions to evaluate and potentially implement this goal are described below. The City may choose to adopt this goal or the results of the strategic actions into the Comprehensive Plan in the future.

<b>3.a Evaluate How to Support Preservation of Regulated Affordable Rental Housing</b>	
<b>Description</b>	<b>Type of Action</b>
<p>Encourage and support preservation of affordable rental housing for households earning 0-60% Median Family Income, working with the State and affordable housing partners to ensure no net loss of regulated affordable housing units.</p> <p>Two of Tualatin's three regulated housing properties have Low-Income Housing Tax Credit (LIHTC) projects that are privately owned and expire in 7 and 10 years, respectively. With nothing in place to protect from loss of these units upon expiration of the LIHTC, especially with the expansion of urban renewal districts and planning for redevelopment, these units could be lost.</p> <p>The City could, at a minimum, track the expiration of the tax credits for these properties. Recent state legislation established a regulatory framework for multifamily rental housing developments with expiring affordability restrictions across a range of state funding programs. Owners must give notice to local government and the state when affordability restrictions will expire, and owners must provide the</p>	<p>Adopt a Program</p>

opportunity for the state, local government, or designee to make an offer to purchase the property and to match a competing offer.<sup>29</sup>

The City could also develop a program to enforce a policy about no net loss of regulated affordable housing, in addition to tracking expiration of the tax credits. If the City develops a policy to avoid losing regulated affordable housing, it will need to identify how to support and enforce that policy, as discussed below.

Two of Tualatin's three regulated housing properties have Low-Income Housing Tax Credit (LIHTC) projects that are privately owned and expire in 7 and 10 years, respectively. Preserving affordability of these properties is a priority for the City. The legislation mentioned above can make it easier for Tualatin to track these properties. The City may also want to have outreach to these property owners to establish relationships with them and better understand their intentions when the tax credits are near to expiration.

For these or other properties in a similar situation, the City could work to identify organizations (e.g., nonprofit affordable housing providers) that might be willing and able to acquire the properties if the owners seek to sell or convert them to market rate. The City could also reach out to the property owner before the end of the affordability period to offer technical assistance with preservation options and make them aware of any City programs or incentives available at that time to support maintaining affordability (e.g., tax exemptions).

<b>Rationale</b>	Preservation of existing and expiring regulated affordable housing is a more cost-effective strategy to maintain the supply than building new affordable housing.
<b>Anticipated Impact</b>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Extremely low and very low-income residents and households</li> <li>▪ <b>Income:</b> 0-60% of Median Family Income</li> <li>▪ <b>Housing tenure:</b> Renter</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> Tualatin has three regulated affordable housing units with a total of 604 income-restricted units. One of these developments (with 100 units made affordable through the LIHTC) is set to expire in January 2028. Preserving this development, for example, could maintain 100</li> </ul> </li> </ul>

<sup>29</sup> Oregon Housing and Community Services (OHCS), "Preservation Compliance (for Owners)," <https://www.oregon.gov/ohcs/compliance-monitoring/Pages/push.aspx>. Accessed 3/18/21.

	<p>units of affordable housing in the city, resulting in no net loss of regulated affordable housing units, which is a significantly positive impact. However, this strategy would not directly result in the production of new units.</p> <ul style="list-style-type: none"> <li>- <b>Equitable Outcomes:</b> Residents living in affordable housing with tax credits coming up for expiration may be particularly vulnerable to displacement. Preservation and no net loss policies for regulated affordable housing may offer a level of protection from displacement for low-income and vulnerable residents living in affordable housing.</li> <li>- <b>Potential Risk:</b> There are likely to be no or minor negative impacts.</li> </ul> <ul style="list-style-type: none"> <li>▪ <b>Magnitude:</b> Moderate</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 31, 2025</li> <li>▪ <b>Implementation to commence:</b> 2026</li> <li>▪ <b>Time frame of impact:</b> This strategic action will begin to take effect in 2026. The impact will really be felt as the existing tax exemptions begin to expire on a property-by-property basis, which will begin to occur after this strategic action is implemented.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Reach out to the GSL Properties (property owners of Terrace View, Tualatin Meadows, and Woodridge) to learn their plans for these properties once affordability restrictions expire. If ownership has changed, then reach out to current property owner.</li> <li>▪ The City may offer assistance or connect the property owner to other supportive options should any of these properties be at risk for converting back to market rate.</li> </ul>
<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division</li> <li>▪ <b>Partners:</b> GSL Properties and other property owners of affordable housing in Tualatin.</li> </ul>
<b>Funding or Revenue Implications</b>	<p>Outreach to a single property owner is a low-cost strategy, primarily relying on the use of staff time. Depending on the program, a no net loss policy may involve a funding source to carry it out, such as CET.</p>

### 3.b Evaluate Developing a Healthy Housing Initiative for Multifamily Housing

Description	Type of Action
<p>Evaluate developing a Healthy Housing Initiative to address life safety, mold, lead, and ventilation issues for multifamily housing.</p> <p>A Healthy Housing Initiative could involve proactive inspection of renter-occupied multifamily properties to identify issues similar to those mentioned above. In addition, this initiative could include an educational component to provide information on how to prevent these issues from developing and funding plan to address the issues identified through inspections.</p> <p>This strategic action would be connected with Action 8.b, a Healthy Housing Initiative for Single-Family Housing</p>	<p>Implement a Program to Provide Financial Resources</p>

<p><b>Rationale</b></p>	<p>To improve older multifamily properties in Tualatin that are lower cost, unregulated, and deteriorating. The City needs this housing stock, and it is important that housing stays affordable while ensuring habitable and healthy conditions for residents.</p>
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<p><b>Anticipated Impact</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Extremely low and very low-income, and low-income</li> <li>▪ <b>Income:</b> 0-80% Median Family Income</li> <li>▪ <b>Housing tenure:</b> Rental</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> This action focuses on addressing safety problems in existing housing, not producing new housing. If this action is used to assist 10 to 25 households per year, it may help 60 to 150 households over the 6-year period for the HPS.</li> <li>- <b>Equitable Outcomes:</b> Residents living in rental housing in poor condition are more likely to have lower incomes and fewer housing choices. Supporting a Healthy Housing Initiative can improve the conditions of rental housing, which may help protect vulnerable residents.</li> </ul> </li> <li>▪ <b>Potential Risk:</b> Most negative impacts would be borne by the property owner to address identified deficiencies, though there likely would be positive impacts for the property owner too, such as property value increases and longer-term renters, resulting in increased revenue. If the property owner makes substantial changes to the housing and must bear the entire cost, that may</li> </ul>
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	<p>result in increased rents without some form of rent control agreement.</p> <ul style="list-style-type: none"> <li>▪ <b>Magnitude:</b> Moderate to large, depending on the outreach of the program</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 31, 2024</li> <li>▪ <b>Implementation to commence:</b> 2025</li> <li>▪ <b>Time frame of impact:</b> The strategic action can begin to take effect once it is adopted and implemented.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Evaluate the benefit of establishing a Healthy Housing Initiative with interested stakeholders and the public. Conduct outreach to housing consumers and property owners/managers of older, multifamily rental properties to gauge interest in resources and to identify questions/concerns about a potential inspection program.</li> <li>▪ If the initiative is deemed important, draft code language that covers mold, lead, ventilation, and other healthy/safety issues.</li> <li>▪ Develop an educational component of the program in coordination with the Community Development Department with representation between Planning, Building, and Engineering.</li> <li>▪ Establish program parameters: How can residents file complaints? How are inspections administered? How are alleged issues communicated to property owners? How are mitigation requests enforced?</li> <li>▪ Establish source of funds to administer the program.</li> <li>▪ Discuss topic with City Council at work sessions and in a public hearing if desired. Tualatin City Council may adopt the program and code language via ordinance.</li> </ul>
<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division</li> <li>▪ <b>Partners:</b> Washington County Public Housing Authority, Community Alliance of Tenants (CAT)</li> </ul>
<b>Funding or Revenue Implications</b>	<p>A source of funds to administer the program may be needed, such as CET funds. Alternatively, some additional staff time may be needed if the program is primarily informational.</p>

Goal 4. Preservation of Naturally Occurring Affordable Housing (NOAH): Preserve naturally occurring affordable housing, where possible, to prevent loss of affordable units and to mitigate resident displacement.

We recommend that the City pursue the following goal, which supports the existing Goals 3.2 and 3.3 in the Comprehensive Plan:

- Preserve naturally occurring affordable housing to prevent loss of affordable units and to prevent and mitigate resident displacement.

Implementing this goal will require developing a program to preserve “naturally occurring affordable housing” through acquisition, low interest loans/revolving loan fund for preservation, code enforcement, or other approaches. The strategic actions to evaluate and potentially implement this goal are described below. The City may choose to adopt this goal or the results of the strategic actions into the Comprehensive Plan in the future.

4.a Evaluate Development of Incentives to Preserve Low-Cost Rentals for Below-Market-Rate Privately Owned Rental Housing	
Description	Type of Action
<p>Evaluate options to assist with needed improvements to existing low-cost rental housing where the housing is in poor condition. The options may include a tax abatement (such as the Multi-Unit Property Tax Exemption), low interest loan program, or other financial incentives for low-cost market-rate apartments that agree to make needed improvements (e.g., to address code violations or health/safety issues) without displacing existing residents or agree to stabilize or reduce rents.</p> <p>Needed improvements may include addressing code violations or health/safety issues. The City would need to ensure they only grant financial incentives to property owners who agree to stabilize/reduce rents or not displace existing residents.</p> <p>Much of the rental housing in Tualatin that is affordable to low and moderate-income households is older, privately owned rental housing that is not subject to affordability restrictions. This housing may have deferred maintenance issues as a result of a lack of resources to make improvements and pay for repairs (or, in some cases, owner neglect). The City could work with property owners of low-cost unregulated rental housing to support needed repairs without displacing tenants. This could include:</p> <ul style="list-style-type: none"> <li>▪ Offer low interest loans and/or grants to property owners for</li> </ul>	<p>Establish Financial Incentives</p>

<p>repairs and major rehabilitation, providing they do not displace residents.</p> <ul style="list-style-type: none"> <li>▪ Evaluate reducing regulatory requirements and permitting challenges for owners seeking to improve older rental housing.</li> <li>▪ Provide information/technical assistance to smaller property owners regarding state and local resources to support weatherization and healthy housing.</li> <li>▪ Use the Multi-Unit Property Tax Exemption (Action 4.b) to support rehabilitation of multifamily housing, as described in Action 4.b.</li> </ul> <p>The City may want to begin implementing this strategic action with a limited scope pilot program to test and fine tune this program.</p>	
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<b>Rationale</b>	This action focuses on improvement of the condition of existing housing. Keeping low-cost unregulated housing both habitable and affordable reduces the need for subsidized new construction.
<b>Anticipated Impact</b>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Extremely low income, very low-income, and low-income</li> <li>▪ <b>Income:</b> 0-80% of Median Family Income</li> <li>▪ <b>Housing tenure:</b> Renter</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> This strategy is not anticipated to produce new units, but it could improve the quality of the city’s existing supply of low-cost, regulated rental units.</li> <li>- <b>Equitable Outcomes:</b> Preservation mechanisms would protect these vulnerable populations from housing displacement.</li> </ul> </li> <li>▪ <b>Potential Risk:</b> If there are not effective mechanisms in place to ensure that housing will be affordable for the populations served, the rents may increase, making the housing less affordable and potentially displacing tenants.</li> <li>▪ <b>Magnitude:</b> Moderate</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 31, 2026</li> <li>▪ <b>Implementation to commence:</b> 2027</li> <li>▪ <b>Time frame of impact:</b> The strategic action can begin to take effect once it is adopted and implemented, as the incentives start to be used.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Define eligibility for this program based on income. Eligibility requirements should tell whether all units in the multifamily building serve households with incomes 80% of MFI or less or whether a minimum percentage of units should be rented to</li> </ul>



	<p>households with incomes below 80% of MFI. In addition, the City should determine whether assistance goes to the property owner or another entity</p> <ul style="list-style-type: none"> <li>▪ Develop a list of lower-cost, unregulated rental housing, including property locations, number of units per development, and property owner contact information.</li> <li>▪ Evaluate programs, technical assistance opportunities, regulatory changes, and other options to support property improvements. This step can include multiple approaches, as noted in the description of this action.</li> <li>▪ Reach out to property owners (identified in Step 1). Gauge their interest in improving the safety, health, and stability of their property. Determine what kinds of improvements their properties might need and what resources would be most useful to them.</li> <li>▪ Refine and implement programs, technical assistance opportunities, regulatory changes, and other options (identified in Step 2) based on feedback from property owners.</li> <li>▪ Connect interested property owners to established programs and opportunities.</li> <li>▪ Seek additional federal funding through the US Department of Housing and Urban Development’s (HUD’s) Lead Hazard Control and Healthy Homes program</li> </ul>
<p><b>Lead Agency and Potential Partners</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division</li> <li>▪ <b>Partners:</b> Property owners of low-cost, unregulated rental housing</li> </ul>
<p><b>Funding or Revenue Implications</b></p>	<p>Amending permitting and regulatory requirements or providing technical assistance and information are comparatively low-cost strategies, primarily relying on the use of staff time. Providing low interest loans, grants, or implementing the MUPTE tax exemption would require a funding source to backfill program dollars awarded/loaned. Implementing a new program such as the HUD Lead Hazard Control and Healthy Homes program would take extensive administrative and partner resources to meet federal regulatory requirements, including performance measures.</p>



## 4.b Evaluate Using the Multiple Unit Property Tax Exemption to Slow Rental Cost Increases

Description	Type of Action
<p>Evaluate the Multi-Unit Property Tax Exemption (MUPTE) as a tool to incentivize rehabilitation of existing low-cost unregulated affordable multifamily without displacing or increasing rents for existing tenants. The savings from the tax exemption could help the property owner pay for the costs of rehabilitation over time.</p> <p>To qualify, owners of multifamily rental properties who are applying for MUPTE would need to enter into a contract with a public agency (such as the City of Tualatin) that would set affordability restrictions; the terms of the affordability restrictions can be set by the City, and there are no specific income/affordability requirements in the state statute that enable the program. The City must also show that the exemption is necessary to preserve or establish low-income units.<sup>30</sup> The exemption applies to the improvement value of the property (not the land value). The exemption is initially for 10 years (per statute), but it could be extended for as long as the housing is subject to the affordability contract.</p> <p>The exemption would apply only to the City’s portion of property taxes unless taxing districts representing 51% or more of the combined levying authority (including the City’s tax rate) agree to support the exemption.</p>	<p>Adopt a Tax Exemption to Reduce Ongoing Charges on Development</p>
<p><b>Rationale</b></p>	<p>The MUPTE program is flexible and eligibility criteria can be set locally, allowing the City to target solutions to meet its needs. It can offer an incentive for mixed-income housing, providing a way to leverage private, market-rate development to expand affordable housing.</p>
<p><b>Anticipated Impact</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Extremely low income, very low-income, and low-income households</li> <li>▪ <b>Income:</b> 0-80% of Median Family Income</li> <li>▪ <b>Housing tenure:</b> Rental</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> If this incentive was used for one to two existing apartment buildings at about 150 units</li> </ul> </li> </ul>

<sup>30</sup> The statute does not specify how to show that the exemption is necessary.

	<p>each, if 10-20% of units were affordable, this strategy could result in 30 to 60 units below market rate.</p> <ul style="list-style-type: none"> <li>- <b>Equitable Outcomes:</b> This strategic action would preserve naturally occurring affordable housing for tenants, such as those vulnerable to displacement or housing instability if rents increased or rent discounts were not offered.</li> <li>▪ <b>Potential Risk:</b> The City and participating taxing districts would forgo property tax income for the properties that qualify for MUPTE. This would reduce some revenue for city services and for participating taxing districts.</li> <li>▪ <b>Magnitude:</b> Moderate</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 31, 2026</li> <li>▪ <b>Implementation to commence:</b> 2027</li> <li>▪ <b>Time frame of impact:</b> The strategic action can begin to take effect once it is adopted and implemented, when property owners begin to apply for the tax exemption.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Determine desired eligibility criteria (e.g., affordability requirements and any other public benefit requirements).</li> <li>▪ Seek input from overlapping taxing districts on their willingness to support the exemption.</li> <li>▪ Discuss topic with City Council at work sessions and in public hearings. City Council may choose to adopt MUPTE by resolution or ordinance following a public hearing.</li> <li>▪ Follow up with overlapping taxing districts to request that they pass resolutions to support the exemption.</li> </ul>
<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division and City of Tualatin Finance Department</li> <li>▪ <b>Partners:</b> Overlapping Taxing Districts</li> </ul>
<b>Funding or Revenue Implications</b>	<p>MUPTE reduces general fund revenues for all overlapping taxing districts. The City of Tualatin must weigh the loss of tax revenue against value of the rent discounts offered by qualifying development.</p>

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Goal 5. Housing for Underserved Communities: Implement housing policies, projects, programs, and partnerships to further support racial and social equity.

We recommend that the City pursue the following goal, which supports the existing Goal 3.2 and Goal 3.3 in the Comprehensive Plan:

- Implement all City housing policies with consideration for racial and social equity, which recognizes historical inequities in housing to underserved communities and aims to rectify inequities going forward by establishing an equitable housing program and a measurable action plan toward equitable housing.
- City of Tualatin affirmatively furthers access to decent, affordable housing in locations near the services and destinations to thrive, ensuring equal access for underserved communities.
- Promote access to opportunity by encouraging and supporting affordable housing, workforce housing, mixed-use housing, and mixed-income housing that meets the cultural needs of diverse populations by providing multiple unit sizes, types, and tenure options in high-opportunity areas.

The strategic actions to evaluate and potentially implement this goal are described below. The City may choose to adopt this goal or the results of the strategic actions into the Comprehensive Plan in the future.

5.a

**Consider Development of a Funding Action Plan to Implement the HPS with Attention to Equity**

Description	Type of Action
<p>Consider development of a funding action plan that would include how best to implement the strategic actions in the Housing Production Strategy (HPS) through considerations of equity.</p> <p>Implementing housing policies in an equitable way goes beyond affordability – it aims to ensure all people have housing choices that are diverse, high quality, physically accessible, and reasonably priced with access to opportunities, services, and amenities (e.g., transit, schools, childcare, food, and parks). These issues are addressed throughout the 12 goals and the strategic actions in the HPS.</p> <p>A key to implementing the HPS with consideration of equity is identifying and securing resources to implement the HPS. The City could develop an action plan that refines the schedule described in the HPS and develop a confirmed budget with identified funding sources for the implementation of the HPS. This action plan could be adopted by City Council.</p> <p>Part of implementation of the HPS could be ongoing outreach to underserved communities to get feedback on prioritization of action and resources called for in the HPS. This outreach could build on the Equity Resolution adopted by the City Council on February 22, 2021, that confirms the City of Tualatin’s commitment to local actions that promote equity and other equity planning the City has recently been engaged in.</p> <p>A part of implementing the HPS will be assessing, aligning, and updating the strategic questions, perhaps at the three-year point of the HPS. Key questions that the City could consider at this point include:</p> <ul style="list-style-type: none"> <li>• Is there a need to reprioritize the strategic actions based on changing conditions or feedback from stakeholders, including underserved communities?</li> <li>• Are additional actions needed to address new or changing conditions?</li> <li>• How will the City fund implementation of the HPS?</li> <li>• Is staff capacity sufficient to meaningfully advance the strategic actions?</li> </ul>	<p>Develop a Funding Action Plan</p>

- What benefits has the City seen from its efforts to date? Are the City’s residents, especially its lower-income residents and communities of color, seeing a return on the investments that the City has made?

These and other questions could be addressed as part of developing the funding action plan.

<b>Rationale</b>	The purpose of a HPS is to increase access to housing with an emphasis on low and moderate-income households but also to further racial and social equity.
<b>Anticipated Impact</b>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Low-income and moderate-income households, underserved communities, communities of color, other state and federal protected classes</li> <li>▪ <b>Income:</b> Emphasis on households with incomes below 120% of Median Family Income</li> <li>▪ <b>Housing tenure:</b> Renter or Owner</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> This strategy alone would not result in additional units, but it may result in better housing outcomes for more people.</li> <li>- <b>Equitable Outcomes:</b> This strategic action is aimed at developing an equitable action plan to support the HPS work. This may need to be done in two phases (as noted in Exhibit 6) as the evaluation of funding resources and incentives are planned to occur over the course of the six-year HPS. This process may raise community awareness and increase participation from underserved communities.</li> </ul> </li> <li>▪ <b>Potential Risk:</b> The strategy will require explicit consideration of funding sources, which may raise issues and considerable dialogue regarding specific funding strategies. This is not necessarily negative, but it could be challenging.</li> <li>▪ <b>Magnitude:</b> Indirect, large</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> June 30, 2023</li> <li>▪ <b>Implementation to commence:</b> 2023</li> <li>▪ <b>Time frame of impact:</b> This strategic action will begin to have impact when adopted. However, the funding plan resulting from this strategic action is central to the implementation of other parts of HPS.</li> </ul>

<p><b>Implementation Steps</b></p>	<ul style="list-style-type: none"> <li>▪ Identify City’s overarching policy objectives for equity and understand how housing equity fits into those objectives.</li> <li>▪ Develop a public engagement plan that can guide conversations with the community, stakeholders, housing producers, and service providers. Focus conversations on opportunities and constraints related to equitable development and the priorities of the strategic actions in the HPS to build equity.</li> <li>▪ Through these conversations, identify and document recommendations for prioritization of resources and strategic actions to achieve more equitable housing outcomes.</li> <li>▪ Identify specific sources of funding for implementing the HPS and establish a budget for implementing each action.</li> <li>▪ Report on the findings of engagement and implementation progress of the HPS, with recommendations for consideration by the Tualatin City Council.</li> <li>▪ Tualatin City Council should revisit prioritization of the strategic actions in the HPS based on these findings.</li> </ul>
<p><b>Lead Agency and Potential Partners</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division</li> <li>▪ <b>Partners:</b> Underserved communities in Tualatin, Tualatin TuaLatinos (previously the Diversity Task Force), all residents of Tualatin, Tigard-Tualatin School District, Washington County Housing Authority, Metro, area developers, service providers, nonprofits, and residents of Tualatin.</li> </ul>
<p><b>Funding or Revenue Implications</b></p>	<p>Research and development of an analysis to impediments is a time-intensive analysis, primarily relying on the use of staff time. The City may consider approaching Metro about funding this type of outreach, as it is closely connected with the equitable housing planning grants that Metro has made since 2016. The next grant funding cycle will start in fall 2021.</p>

## 5.b Evaluate Impediments to Fair Housing to Create an Analysis of Impediments

Description	Type of Action
<p>Evaluate impediments to Fair Housing and create an Analysis of Impediments, starting with Washington County’s Analysis of Impediments completed in May 2020.<sup>31</sup></p> <p>Fair housing is the right to choose housing free from unlawful discrimination. An analysis of impediments to fair housing is a process that recipients of grant funds from the US Department of Housing and Urban Development (HUD) must go through to receive funds. Jurisdictions can choose to conduct this analysis to affirmatively further fair housing on their own.</p> <p>An analysis of impediments would identify fair housing issues in Tualatin (in the context of Washington County), the factors that contribute to those issues, and strategies to address those issues. Among other topics, the analysis would consider patterns of segregation, racial/ethnic concentrations of poverty, and disproportionate access to opportunity and housing needs.</p> <p>The analysis concludes with a set of recommendations to inform future policies that will promote fair housing choice and inclusivity.</p>	<p>Conduct Research and Develop Policy Recommendations</p>
<b>Rationale</b>	<p>Improving fair housing is foundational to family success and helps to achieve broader equity goals.</p>
<b>Anticipated Impact</b>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Low-income, moderate-income, and high-income residents and households, communities of color, and all state and federal protected classes</li> <li>▪ <b>Income:</b> All income groups</li> <li>▪ <b>Housing tenure:</b> Renter or Owner</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> This strategy alone would not result in additional units, but it may result in better housing outcomes for more people.</li> <li>- <b>Equitable Outcomes:</b> Likely to increase community awareness regarding fair and equitable housing and inform future policies.</li> </ul> </li> <li>▪ <b>Potential Risk:</b> This strategic action may raise challenging issues</li> </ul>

<sup>31</sup> <https://www.co.washington.or.us/CommunityDevelopment/Planning/upload/FinalAI.pdf>

	<p>and considerable community dialogue, but it is also likely to result in increased community awareness and a useful set of recommendations.</p> <ul style="list-style-type: none"> <li>▪ <b>Magnitude:</b> Moderate</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 31, 2024</li> <li>▪ <b>Implementation to commence:</b> 2025</li> <li>▪ <b>Time frame of impact:</b> The strategic action will begin to have impact once the analysis is completed and the impediments begin to be removed.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Establish a planning process to develop an analysis of impediments, following HUD guidelines. Establish recommendations to resolve impediments.</li> <li>▪ Conduct public and stakeholder outreach to gather feedback on the recommendations.</li> <li>▪ Pursue action with City Council, should the plan’s recommendations lead to a desire to revise or adopt new policies.</li> </ul>
<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division</li> <li>▪ <b>Partners:</b> City Council, Tigard-Tualatin School District, Washington County, Metro, Oregon Housing and Community Services, area developers, service providers, nonprofits, and regional foundations.</li> </ul>
<b>Funding or Revenue Implications</b>	<p>Research and development of an analysis to impediments is a time-intensive analysis, primarily relying on the use of staff time. If the City hires a consultant to complete the analysis, the amount of staff time required to complete the analysis will decrease and the City will need to fund the cost of the consultant’s analysis. The City should consider hiring a consultant to complete this analysis and assist community engagement. The consultant should have considerable expertise in fair housing and fair housing analysis.</p>



## 5.c

## Evaluate Ways to Best Ensure Opportunities for Education about Fair Housing Are Provided

Description	Type of Action
<p>Ensure there are opportunities for education about Fair Housing for residents, property owners, property managers, those involved in real estate transactions, Tualatin City staff, Tualatin Planning Commission, and Tualatin City Council. The City could contract with the Fair Housing Council of Oregon to conduct these trainings.</p>	<p>Provide Education</p>
<b>Rationale</b>	<p>Education about Fair Housing is important to preventing and addressing housing discrimination.</p>
<b>Anticipated Impact</b>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Low-income, moderate-income, and high-income residents and households, communities of color, and all state and federal protected classes.</li> <li>▪ <b>Income:</b> All income levels</li> <li>▪ <b>Housing tenure:</b> Renter or Owner</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> This strategy alone would not result in additional units, but it may result in better housing outcomes for more people.</li> <li>- <b>Equitable Outcomes:</b> This strategic action is likely to raise community awareness about this topic and help to prevent discrimination.</li> </ul> </li> <li>▪ <b>Potential Risk:</b> There are likely to be no or minor negative impacts.</li> <li>▪ <b>Magnitude:</b> Moderate</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> No need for adoption or official action, as this strategic action is about forming a partnership.</li> <li>▪ <b>Implementation to commence:</b> 2023</li> <li>▪ <b>Time frame of impact:</b> The strategic action can begin to have impacts when the partnerships are formed and the strategic action has begun to be implemented.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Partner with the Fair Housing Council of Oregon to identify educational needs and conduct trainings. These trainings should occur on a regular basis, such as every few years.</li> <li>▪ Tualatin could provide written Fair Housing information for residents, property managers, property owners, and those involved with real estate transactions.</li> </ul>

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<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"><li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division</li><li>▪ <b>Partners:</b> Fair Housing Council of Oregon</li></ul>
<b>Funding or Revenue Implications</b>	By partnering with the Fair Housing Council of Oregon, this is likely to be a lower-cost strategy, primarily relying on the use of staff time to coordinate education opportunities and funding to pay for the trainings.

## 5.d Evaluate Strategies to Encourage Diverse Housing Types in High-Opportunity Neighborhoods

Description	Type of Action
<p>Encourage development of diverse housing types in high-opportunity neighborhoods, such as neighborhoods with high environmental quality and access to transit, jobs, good schools, parks, and open spaces.</p> <p>Enable developments that support multiple unit sizes, types, and tenure options to promote diverse housing options in high-opportunity neighborhoods. Use an analysis of “access to opportunity” to decide which zones or locations (via zoning overlay) where this is appropriate. The purpose of this strategy is to promote access to opportunity to households with a range of backgrounds and incomes. This strategy may work well with the incentives for development of affordable and workforce housing.</p>	<p>Provide Education</p>
<p><b>Rationale</b></p>	<p>Reverse historical patterns of racial, ethnic, cultural, and socioeconomic exclusion.</p>
<p><b>Anticipated Impact</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Extremely low income, very low-income, low-income, and moderate-income households, communities of color, and all state and federal protected classes</li> <li>▪ <b>Income:</b> 0-80% of Median Family Income</li> <li>▪ <b>Housing Tenure:</b> Renter</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> This strategy may result in a modest increase in development of new diverse housing types that are smaller in size across the city, especially on small infill lots.</li> <li>- <b>Equitable Outcomes:</b> By locating a diverse range of smaller housing types in high-opportunity areas, it may increase access to amenities for households at 80% MFI and below to better schools, parks, modes of transportation, health-care facilities, shopping, and other neighborhood amenities they might not otherwise have had access to.</li> </ul> </li> <li>▪ <b>Potential Risk:</b> Allowing more diverse housing types may increase density in existing neighborhoods, with the potential to cause concern by some of the existing residents.</li> <li>▪ <b>Magnitude:</b> Moderate</li> </ul>

<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 31, 2024</li> <li>▪ <b>Implementation to commence:</b> 2024 or early 2025</li> <li>▪ <b>Time frame of impact:</b> The strategic action can begin to take effect once it is adopted and implemented. It may take some years after implementation for development resulting from this strategic action to begin to occur.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Identify high-opportunity areas and capacity in these areas to accommodate a range of housing types.</li> <li>▪ Evaluate incentives and regulatory changes that would support diverse housing in opportunity areas, such as MUPTE or a property tax exemption for regulated affordable housing.</li> <li>▪ Talk with developers about the incentives most likely to incent them to develop a wider variety of housing types in identified opportunity areas.</li> </ul>
<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> Tualatin Planning Division</li> <li>▪ <b>Partners:</b> Developers of affordable housing, workforce housing, and market-rate housing.</li> </ul>
<b>Funding or Revenue Implications</b>	<p>This is a comparatively low-cost strategy, primarily relying on the use of staff time.</p>

Goal 6. Workforce Housing: Encourage, plan for, and support the development of workforce housing for households earning 61%-80% Median Family Income, for both owner and renter, in order to increase the jobs-housing balance, reduce commute time, and provide attainable housing for workers in Tualatin.

We recommend that the City pursue the following goal, which supports the existing Goal 3.2 in the Comprehensive Plan:

- Encourage, plan for, and support the development of workforce owner and rental housing, 61-80% Median Family Income to increase the jobs-housing balance, reduce commute time, and provide attainable housing for workers in Tualatin.

The strategic actions to evaluate and potentially implement this goal are described below. The City may choose to adopt this goal or the results of the strategic actions into the Comprehensive Plan in the future.

6.a Evaluate Ways to Incentivize Inclusion of Workforce Housing Units within New Multifamily Rental Development	
Description	Type of Action
<p>Evaluate the feasibility of establishing a tax abatement for new multifamily development that includes a portion of units affordable between 61 and 80% of Median Family Income under the Multi-Unit Property Tax Exemption program (MUPTE).</p> <p>The state-authorized, locally implemented MUPTE program would allow Tualatin to offer a partial property tax exemption (limited to the value of the housing, not the land) for multifamily development that meets specific, established criteria by the City, such as having an affordability agreement with the City of Tualatin or another public agency.<sup>32</sup> The terms of the affordability agreement could be set by the City – there are no specific income/affordability requirements in the state statute that enables the program. The exemption would apply only to the City’s portion of property taxes, unless taxing districts representing 51% or more of the combined levying authority (including the City’s tax rate) agree to support the exemption. It would last for 10 years or longer if the affordability agreement remains in place. The City would need to seek support from overlapping taxing districts to offer the exemption for all property taxes (not just the City’s portion).</p>	<p>Adopt a Tax Exemption</p>

<sup>32</sup> If the abatement were being applied to a project that does not have state or federal affordability requirements, the City could enter into the contract directly with the property owner or seek to partner with Washington County, which would administer the affordability agreement.

The City could explore using MUPTE in two possible ways:

- To incentivize mixed-income development through inclusion of below-market units in otherwise market-rate developments.
- To incentivize owners of existing low-cost unregulated affordable housing to rehabilitate properties without displacing existing tenants or escalating rents (Strategic Action 4.b).

<b>Rationale</b>	The MUPTE program is flexible and eligibility criteria can be set locally, allowing the City to target the housing to meet its needs. It can offer an incentive for mixed-income housing, providing a way to leverage private, market-rate development to expand affordable housing.
<b>Anticipated Impact</b>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Low-income residents and households</li> <li>▪ <b>Income:</b> 61-80% of Median Family Income</li> <li>▪ <b>Housing tenure:</b> Renters</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> If this incentive was used for one to two apartment buildings at about 150 units each and 10-20% of units were affordable to low-income households,<sup>33</sup> this strategy could result in 30 to 60 workforce-affordable units.</li> <li>- <b>Equitable Outcomes:</b> Provides the opportunity for mixed income in multifamily housing, with a portion of units affordable to low-income residents.</li> </ul> </li> <li>▪ <b>Potential Risk:</b> The City and participating taxing districts would forgo some property tax income for the duration of the exemption, reducing some revenue for city services and revenue for participating taxing districts.</li> <li>▪ <b>Magnitude:</b> Moderate</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 31, 2026</li> <li>▪ <b>Implementation to commence:</b> 2027</li> <li>▪ <b>Time frame of impact:</b> The strategic action can begin to take effect once it is adopted and implemented, when property owners begin to apply for the tax exemption.</li> </ul>

<sup>33</sup> Where jurisdictions are trying to incentivize or require mixed-income housing, it is typically structured so that a certain percentage of units in the building (e.g., 10% to 25%) meet a certain affordability level (e.g., 61% to 80% of MFI).

<p><b>Implementation Steps</b></p>	<ul style="list-style-type: none"> <li>▪ Determine desired eligibility criteria (e.g., affordability requirements and any other public benefit requirements).</li> <li>▪ Seek input from overlapping taxing districts on their willingness to support the exemption.</li> <li>▪ Discuss topic with City Council at work sessions and in public hearings. City Council may choose to adopt MUPTE by resolution or ordinance following a public hearing.</li> <li>▪ Follow up with overlapping taxing districts to request that they pass resolutions to support the exemption.</li> </ul>
<p><b>Lead Agency and Potential Partners</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division</li> <li>▪ <b>Partners:</b> Tualatin Finance Department and Overlapping Taxing Districts</li> </ul>
<p><b>Funding or Revenue Implications</b></p>	<p>MUPTE reduces general fund revenues for all overlapping taxing districts. The City of Tualatin must weigh the loss of tax revenue against value of the rent discounts offered by qualifying development.</p>

6.b

Evaluate Potential Partnerships with Employers on Employer-Assisted Housing

Description	Type of Action
<p>Evaluate the potential for the City to partner with one or more area employers to develop an Employer Assisted Housing program.</p> <p>Employer Assisted Housing can take many forms, such as: short-term relocation assistance, medium-term rental assistance, and homeownership assistance (such as down payment assistance).</p> <p>The City could talk with major employers to identify opportunities to partner with or support employers who are interested in developing an employer-assisted housing program. The City's role in development of an Employer Assisted Housing program could be to provide support and information to employers and help them connect with partners who can assist them in developing a program.</p>	<p>Establish Partnerships</p>
<p><b>Rationale</b></p>	<p>Brings local businesses into the discussion of housing needs and efforts to encourage housing development.</p>
<p><b>Anticipated Impact</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Employees working in Tualatin who also desires to live in Tualatin</li> <li>▪ <b>Income:</b> Generally less than 120% of MFI</li> <li>▪ <b>Housing tenure:</b> Renter or owner</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> Depends on interest and employer’s funding potential. An employer may provide rental assistance or down payment assistance for a few employees. Alternatively, a single employer developing a moderate-size apartment complex could produce 20 to 40 units of housing.</li> <li>- <b>Equitable Outcomes:</b> There is a significant need for workforce housing in Tualatin, so that workers employed here— particularly in the industrial and commercial sectors— can also afford to live here. This strategic action may help to meet that need.</li> </ul> </li> <li>▪ <b>Potential Risk:</b> There are likely to be no or minor negative impacts.</li> <li>▪ <b>Magnitude:</b> Low to moderate depending on interest from employers</li> </ul>



<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> No need for adoption or official action, as this strategic action is about forming a partnership.</li> <li>▪ <b>Implementation to commence:</b> 2025</li> <li>▪ <b>Time frame of impact:</b> The strategic action can begin to have impacts when the partnerships are formed and the strategic action has begun to be implemented.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Evaluate the potential to periodically host an employer roundtable or focus group to educate, discuss, and work through Tualatin’s housing issues.</li> <li>▪ Inquire if employer-supported housing programs would be of interest to larger employers in Tualatin. What questions do they have about how such a program would function?</li> <li>▪ Identify ways the City could help interested employers establish an employer-assisted housing program.</li> </ul>
<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division</li> <li>▪ <b>Partners:</b> Larger employers in Tualatin; Chamber of Commerce</li> </ul>
<b>Funding or Revenue Implications</b>	<p>Unless the City wishes to financially support an employer-assisted housing program, this strategy could be a comparatively low-cost option, primarily relying on the use of staff time.</p>

## 6.c Evaluate City Partnership to Participate in a Land Bank

Description	Type of Action
<p>Evaluate potential partnerships with organization(s) to establish or support a land bank for affordable housing, workforce housing, mixed-use housing, or combination of these types.</p> <p>Land banks can take several forms. Many are administered by a nonprofit or nongovernmental entity with a mission of managing a portfolio of properties to support affordable housing development over many years or decades. A land bank could be set up to manage financial and administrative resources, including strategic property disposal, for the explicit purpose of supporting affordable housing development. Cities can partner with nonprofits or manage their own land banks. Cities may also donate, sell, or lease publicly owned land for the development of affordable housing, even without a formal “land bank” organization. Another source of land for a land bank is religious institutions.</p> <p>If Tualatin determines it is able to contribute publicly owned land or work with partners on land contributions (such as religious institutions), then this action will connect to Strategic Action 1.f.</p>	<p>Establish Partnerships</p>
<p><b>Rationale</b></p>	<p>Land banks support affordable housing development by reducing or eliminating land cost from development.</p>
<p><b>Anticipated Impact</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Extremely low income, very low-income, low-income, and moderate-income households</li> <li>▪ <b>Income:</b> 0-80% of Median Family Income</li> <li>▪ <b>Housing tenure:</b> Renter or Owner</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> If this incentive were used for one to two apartment buildings at about 75 units each, and if all of these units were affordable at 80% of MFI or less, this strategy could result in a mix of units affordable to households below 60% of MFI as well as units affordable to households between 61% and 80% of MFI.</li> </ul> </li> </ul> <p>Alternatively, potential lands could be evaluated for their use to develop affordable owner-occupied housing, likely in housing types such as single-family detached units, town houses, cottage housing, duplexes, triplexes, or quadplexes. If</p>

	<p>Tualatin had about two to five acres of land for land banking for these types of units, that may result in 20 to 45 units, assuming densities of 10 to 15 dwelling units per acre.</p> <ul style="list-style-type: none"> <li>- <b>Equitable Outcomes:</b> Land banking is proposed for the purpose of efficiently developing affordable housing and/or workforce housing.</li> <li>▪ <b>Potential Risk:</b> If public land is used for affordable housing, typically it cannot be used for other city functions. However, if the land were identified as surplus or excess, it would likely not be needed for city functions. If institutional land (such as church land) were land banked, this would not impact city functions.</li> <li>▪ <b>Magnitude:</b> Low to moderate as Tualatin has a highly limited land supply</li> </ul>
<p><b>Timeline</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 31, 2024</li> <li>▪ <b>Implementation to commence:</b> 2025</li> <li>▪ <b>Time frame of impact:</b> The strategic action can begin to have impacts when the partnerships are formed and the strategic action has begun to be implemented.</li> </ul>
<p><b>Implementation Steps</b></p>	<ul style="list-style-type: none"> <li>▪ Evaluate use of existing GIS tools to inventory publicly and privately owned properties (including properties owned by faith-based organizations) in areas well suited for a land bank purpose.</li> <li>▪ Partner with and contribute funds or land to an existing nonprofit land bank or participate in the formation of a new nonprofit land bank if one does not exist with sufficient capacity to serve Tualatin.</li> <li>▪ Incorporate publicly owned land into a bank or acquire new land to incorporate.</li> </ul>
<p><b>Lead Agency and Potential Partners</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division</li> <li>▪ <b>Partners:</b> Nonprofit Land Bank; public agencies and/or institutions, including faith-based organizations in Tualatin; affordable housing developers; City of Tualatin Finance Department; and other divisions at the City of Tualatin (as needed)</li> </ul>
<p><b>Funding or Revenue Implications</b></p>	<p>Partnering is the most administratively efficient and cost-efficient approach to implementing this strategy. If the City is contributing land to the land bank at low or no cost, then the City is forgoing realizing the value of the land if it were sold on the open market.</p>

Goal 7. Housing Stabilization: Prevent and address homelessness to provide safe living conditions for everyone living in Tualatin.

We recommend that the City pursue the following goal, which supports the existing Goals 3.2 and 3.3 in the Comprehensive Plan:

- Prevent and address homelessness to provide safe living conditions for everyone living in Tualatin.

The strategic actions to evaluate and potentially implement this goal are described below. The City may choose to adopt this goal or the results of the strategic actions into the Comprehensive Plan in the future.

7.a Evaluate Opportunities to Partner on a Local Rental and Utility Assistance Program	
Description	Type of Action
<p>Evaluate opportunities to partner with an agency that provides rental and utility assistance partnership to stabilize households and prevent people from losing their homes.</p> <p>The City is currently exploring a partnership or collaboration with the Community Action Agency, including targeted outreach to underserved communities. For rental assistance, the household must be under 80% of Area Median Income. For utility assistance, the household must be under 60% of Oregon’s median income. They are two separate programs. The City is in a trial period of this partnership with the Community Action Agency, which lasts through December 2021. The partnership may be extended beyond that date.</p>	<p>Establish Partnerships</p>
Rationale	<p>Rental and utility assistance can provide stability to households at risk of homelessness or loss of utility services.</p>
Anticipated Impact	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Extremely low income, very low-income, and low-income households</li> <li>▪ <b>Income:</b> Under 80% of Area Median Income for rental assistance and under 60% of Oregon Median Income for utility assistance.</li> <li>▪ <b>Housing tenure:</b> Renter</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> This strategy will not directly result in the production of more units.</li> <li>- <b>Equitable Outcomes:</b> The rental and utility assistance partnership in the planning stages includes targeted outreach</li> </ul> </li> </ul>

	<p>to historically underserved communities and households in low-income census tracts.</p> <ul style="list-style-type: none"> <li>▪ <b>Potential Risk:</b> There are likely to be no or minor negative impacts.</li> <li>▪ <b>Magnitude:</b> Moderate</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> This action may not be adopted, as it is a partnership.</li> <li>▪ <b>Implementation to commence:</b> 2021, with potential extension of the partnership into 2022 and beyond</li> <li>▪ <b>Time frame of impact:</b> The strategic action can begin to have impacts when the partnerships are formed and the strategic action has begun to be implemented.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Work with the Community Action Agency to develop a memorandum of understanding for a rent and utility assistance partnership to support lower-income households in Tualatin.</li> </ul>
<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division; Tualatin Finance Department</li> <li>▪ <b>Partners:</b> Community Action of Washington County, nonprofit agency</li> </ul>
<b>Funding or Revenue Implications</b>	<p>Unless the City financially supports the rental and utility assistance program, this strategy is a comparatively low-cost option, primarily relying on the use of staff time, possibly using City phones for volunteers to carry out the targeted outreach.</p>

## 7.b

### Evaluate Ways to Develop Housing Options and Services to Address and Prevent Houselessness

Description	Type of Action
<p>Evaluate partnering with agencies and nonprofit organizations that provide housing and services to people experiencing houselessness to address and prevent homelessness.</p> <p>Explore establishing partnerships, programs, or opportunities to rapidly rehouse people experiencing homelessness.</p>	<p>Establish Partnerships</p>
<b>Rationale</b>	<p>To improve livelihoods by reducing the number of people experiencing homelessness in Tualatin and Washington County.</p>
<b>Anticipated Impact</b>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Extremely low income residents and people currently experiencing houselessness</li> <li>▪ <b>Income:</b> 0-30% of Median Family Income</li> <li>▪ <b>Housing tenure:</b> Renter</li> <li>▪ <b>Potential Impacts:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> This strategy may not result in production of new units in itself, but it may lead to partnerships that will support production of new units.</li> <li>- <b>Equitable Outcomes:</b> This strategic action may result in partnering with another jurisdiction or organization to serve people experiencing houselessness.</li> </ul> </li> <li>▪ <b>Potential Risk:</b> There are likely to be no or minor negative impacts.</li> <li>▪ <b>Magnitude:</b> Moderate</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 31, 2026</li> <li>▪ <b>Implementation to commence:</b> 2027</li> <li>▪ <b>Time frame of impact:</b> The strategic action can begin to have impacts when the partnerships are formed and the strategic action has begun to be implemented.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Contact staff with City of Tigard to understand what Tigard plans to do around providing services to address and prevent houselessness. Evaluate whether there are opportunities to partner with Tigard.</li> <li>▪ Contact Washington County to explore options for a partnership with the County to provide services to address and prevent houselessness.</li> </ul>

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<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"><li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division</li><li>▪ <b>Partners:</b> City of Tigard; Washington County</li></ul>
<b>Funding or Revenue Implications</b>	This strategy will depend primarily on staff outreach to Tigard and Washington County to explore options for partnerships. It could result in development of programs that have financial implications for the City, but none are proposed in this strategic action at this point.

Goal 8. Housing Rehabilitation: Plan for and support housing programs and initiatives that are responsive to the safety and health needs of households earning 0-80% of Median Family Income.

We recommend that the City pursue the following goal, which supports the existing Goal 3.2, Policy 3.2.1, and Goal 3.3 in the Comprehensive Plan:

- Plan for and support housing programs and initiatives that are responsive to the safety and health needs of households earning 0-80% of Median Family Income.

Implementing this policy will require researching, evaluating, and developing a housing rehabilitation program, for both ownership and rental housing, suitable for Tualatin. The strategic actions to evaluate and potentially implement this goal are described below. The City may choose to adopt this goal or the results of the strategic actions into the Comprehensive Plan in the future.

### 8.a Evaluate Establishing Local Housing Rehabilitation Program

Description	Type of Action
<p>Evaluate the feasibility of establishing a local housing rehabilitation program to improve housing safety and health conditions for households earning 80% or less of the Median Family Income.</p> <p>Much of the rental housing in Tualatin that is affordable to low and moderate-income households is older, privately owned housing that is not subject to affordability restrictions. This housing may have deferred maintenance issues as a result of a lack of resources to make improvements and pay for repairs (or, in some cases, owner neglect). The City can work with property owners of low-cost unregulated rental housing to support needed repairs without displacing tenants. This could include:</p> <ul style="list-style-type: none"> <li>Offer low interest loans and/or grants to property owners for repairs and major rehabilitation, providing they do not displace residents.</li> <li>Explore reducing regulatory and permitting requirements in the Development Code to identify and reduce challenges for owners seeking to improve older rental housing.</li> <li>Provide information/technical assistance to smaller property owners regarding state and local resources to support weatherization and healthy housing.</li> <li>Use the Multi-Unit Property Tax Exemption (Action 4.b) to support rehabilitation, as described in Action 4.b.</li> </ul>	<p>Develop a Program</p>



<b>Rationale</b>	Keeping low-cost unregulated housing both habitable and affordable reduces the need for subsidized new construction.
<b>Anticipated Impact</b>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Extremely low income, very low-income, and low-income households</li> <li>▪ <b>Income:</b> 0-80% of Median Family Income</li> <li>▪ <b>Housing tenure:</b> Renter</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> This strategy is not anticipated to produce new units, but it is intended to preserve and may improve the quality of the City’s existing supply of low-cost, regulated rental units. It may also result in improved health and safety for the residents in the existing units.</li> <li>- <b>Equitable Outcomes:</b> Improves housing safety and health conditions for households earning 80% or less of the Median Family Income.</li> </ul> </li> <li>▪ <b>Potential Risk</b> Most negative impacts would be borne by the property owner to address identified deficiencies. However, property may also have positive impacts, such as an increase in property value and longer-term renters. If the property owner makes substantial changes to the housing, that may increase rents (making it less affordable) or encourage conversion to owner-occupied housing.</li> <li>▪ <b>Magnitude:</b> Low to moderate</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 31, 2026</li> <li>▪ <b>Implementation to commence:</b> 2027</li> <li>▪ <b>Time frame of impact:</b> The strategic action can begin to take effect once it is adopted and implemented, as the incentives start to be used.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Maintain and enhance the existing list of lower-cost, unregulated rental housing, including property locations, number of units per development, and property owner contact information.</li> <li>▪ Evaluate programs, technical assistance opportunities, regulatory changes, and other options to support property improvements. This step can include multiple approaches, as noted in the description of this action.</li> <li>▪ Reach out to property owners (identified in Step 1). Gauge their interest in improving the safety, health, and stability of their property. Determine what kinds of improvements their properties might need and what resources would be most useful to them.</li> <li>▪ Refine and implement programs, technical assistance</li> </ul>

	<p>opportunities, regulatory changes, and other options (identified in Step 2) based on feedback from property owners.</p> <ul style="list-style-type: none"> <li>▪ Connect interested property owners to established programs and opportunities.</li> <li>▪ Seek additional federal funding through the US Department of Housing and Urban Development’s (HUD’s) Lead Hazard Control and Healthy Homes program.</li> </ul>
<p><b>Lead Agency and Potential Partners</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Community Development Department, City of Tualatin Finance Department, and City of Tualatin Building Division and Engineering Division.</li> <li>▪ <b>Partners:</b> Overlapping taxing districts (if using MUPTE), Washington County Public Housing Authority, and Community Alliance of Tenants (CAT)</li> </ul>
<p><b>Funding or Revenue Implications</b></p>	<p>Providing low interest loans, grants, or implementing the MUPTE tax exemption will require a funding source to backfill program dollars awarded/loaned. Implementing a new program such as the HUD Lead Hazard Control and Healthy Homes program would take extensive administrative and partner resources to meet federal regulatory requirements, including performance measures.</p>

## 8.b Evaluate the Implementation of a Healthy Housing Initiative for Single-Family Housing

Description	Type of Action
<p>Evaluate the development of a Healthy Housing Initiative to address life safety, mold, lead and ventilation issues for single-family housing.</p> <p>A Healthy Housing Initiative could involve proactive inspection of single-family properties to identify issues similar to those mentioned above. In addition, this initiative could include an educational component to provide information on how to prevent these issues from developing and funding to address the issues identified in the inspections.</p> <p>This strategic action could be connected with Strategic Action 3.b, a Healthy Housing Initiative for Multifamily housing.</p>	<p>Implement a Program to Provide Financial Resources</p>
<p><b>Rationale</b></p>	<p>To improve older single-family properties in Tualatin that are lower cost, unregulated, and deteriorating. The City needs this housing stock, and it is important that housing stays affordable while ensuring habitable and healthy conditions for residents.</p>
<p><b>Anticipated Impact</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Extremely low income, very low-income, low-income, and moderate-income households</li> <li>▪ <b>Income:</b> 0-80% of Median Family Income</li> <li>▪ <b>Housing tenure:</b> Rental or owner</li> <li>▪ <b>Potential Benefits:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> This action focuses on addressing safety problems in existing housing, not producing new housing. If this action is used to assist 10 to 25 households per year, it may help 60 to 150 households over the 6-year period for the HPS.</li> <li>- <b>Equitable Outcomes:</b> Improves health and safety conditions in housing for qualifying households at 80% MFI or below.</li> </ul> </li> <li>▪ <b>Potential Risk:</b> Most negative impacts would be borne by the property owner to address identified deficiencies. However, the property owner may experience positive impacts too, such as increased property value and longer-term renters. If the property owner makes substantial changes to the housing, that may increase rents (making it less affordable) or encourage conversion to owner-occupied housing.</li> <li>▪ <b>Magnitude:</b> Moderate to large, depending on the outreach of the program</li> </ul>

<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 31, 2024</li> <li>▪ <b>Implementation to commence:</b> 2025</li> <li>▪ <b>Time frame of impact:</b> The strategic action can begin to take effect once it is adopted and implemented.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Evaluate the benefit of establishing a Healthy Housing Initiative with interested stakeholders and the public. Conduct outreach to housing consumers and property owners/managers of older, single-family rental to gauge interest in resources and to identify questions/concerns about a potential inspection program. Consider initial grant research funding source, such as the Robert Wood Johnson Foundation. <a href="https://www.rwjf.org/en/how-we-work/grants-and-grant-programs.html">https://www.rwjf.org/en/how-we-work/grants-and-grant-programs.html</a></li> <li>▪ If the initiative is deemed important, draft code language that covers mold, lead, ventilation, and other healthy/safety issues.</li> <li>▪ Develop an educational component of the program in coordination with the Community Development Department with representation between Planning, Building, and Engineering.</li> <li>▪ Establish program parameters: How can residents file complaints? How are inspections administered? How are alleged issues communicated to property owners? How are mitigation requests enforced?</li> <li>▪ Establish source of funds to administer the program.</li> <li>▪ Discuss topic with City Council at work sessions and in a public hearing if desired. Tualatin City Council may adopt the program and code language via ordinance.</li> </ul>
<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Community Development Department</li> <li>▪ <b>Partners:</b> Washington County Public Housing Authority, Community Alliance of Tenants (CAT), AARP</li> </ul>
<b>Funding or Revenue Implications</b>	<p>A source of funds to administer the program may be needed, such as CET funds. Alternatively, some additional staff time may be needed if the program is primarily informational.</p>

**Goal 9. Accessible Design and Other Specialized Design: Encourage and support Universal Design, Lifelong Housing Certification, and other similar standards.**

We recommend that the City pursue the following goal, which supports the existing Goal 3.2 and Policy 3.2.1 and Goal 3.3 in the Comprehensive Plan:

- Encourage and support Universal Design, Lifelong Housing Certification, and other similar standards.

The strategic actions to evaluate and potentially implement this goal are described below. The City may choose to adopt this goal or the results of the strategic actions into the Comprehensive Plan in the future.

<b>9.a Evaluate the Development of Specialized Design Standards and Incentives to Accommodate Special Needs</b>	
Description	Type of Action
<p>Research and evaluate development of standards in the City’s development, building, and municipal codes to increase development of housing accessible for people with disabilities and other populations that need housing with specialized design.</p> <p>Disabilities include those that are visible, such as ambulatory or vision disabilities, and those that are not readily apparent, such as self-care, independent living, or cognitive disabilities. Other conditions may require special accommodations, such as disabling diseases or mental health conditions.</p> <p>Standards to accommodate special needs may include universal design components (e.g., basic accessibility features; security or communication systems; easily traversed floors; remote control features; accessible lavatories, sinks, and counters; accessible bathtubs and showers; variable height counters and accessible work surfaces; and hearing and visual impairment aids).</p> <p>Provide incentives in the Development Code to increase the number of units designed to meet Universal Design, Lifelong Housing Certification, and other similar standards. This strategy could include preapproved plan sets (e.g., single-family detached and attached homes with barrier-free universal design),<sup>34</sup> within the context of the</p>	<p>Develop Code Standards and Develop Incentives</p>

<sup>34</sup> It may be that these types of plan sets become commonly used among different cities in Oregon, not necessarily developed from the ground up for each city.

American with Disabilities Act (ADA) and Federal Housing Administration (FHA) rules.

One option could be to use the Oregon Lifelong Housing Certification program,<sup>35</sup> which lists accessibility at different levels of accessible design elements, such as “visitor accessible” (which is basic accessibility for visitors) and “enhanced accessible” (which is accessible for a person in a wheel chair for the central living floor). Consider offering path-of-travel improvements like curb ramps on the adjoining street/sidewalk.

In consultation with the Building Department, the City may decrease charges (plan check fee) by 50% for preapproved plans and that the review to approve time would be three days, rather than potentially several weeks.

<b>Rationale</b>	Provide more options for people to live independently or in a housing setting of their choice.
<b>Anticipated Impact</b>	<ul style="list-style-type: none"><li>▪ <b>Populations served:</b> Seniors and people with disabilities</li><li>▪ <b>Income:</b> Standards may apply to All Income Groups; Use of incentives may apply only to income qualifying households</li><li>▪ <b>Housing tenure:</b> Renter and Owner</li><li>▪ <b>Potential Benefit:</b><ul style="list-style-type: none"><li>- <b>Housing Production (new units):</b> This strategy will not directly result in the production of new units, but it may increase the number of new units that have accessibility features incorporated into the design—or it may increase the number of units remodeled with accessibility features.</li><li>- <b>Equitable Outcomes:</b> Serves people with disabilities, people with special needs, and seniors to provide housing accessibility, many of whom may also be low income.</li></ul></li><li>▪ <b>Potential Risk:</b> There should be minimal negative impact if the strategic action is implemented as described above. If the City requires special design standards for all new housing (which is not recommended), that may increase housing development costs and decrease housing affordability.</li><li>▪ <b>Magnitude:</b> Low</li></ul>

<sup>35</sup> The Rogue Valley Council of Government’s Lifelong Housing Certification Project is a “voluntary certification process for evaluating the accessibility and/or adaptability of homes. Developed in partnership with AARP Oregon, the project is designed to help meet the growing market demand for accessible housing in our region and to enable older adults and people with disabilities to age in place safely and independently.” Information about this certification program can be found at: <https://rvcog.org/home/sds-2/lifelong-housing-program/#:~:text=The%20Lifelong%20Housing%20Certification%20Project,call%20541%2D423%2D1383>.

<p><b>Timeline</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 31, 2024</li> <li>▪ <b>Implementation to commence:</b> 2025</li> <li>▪ <b>Time frame of impact:</b> The strategic action can begin to take effect once it is adopted and implemented in the Development Code.</li> </ul>
<p><b>Implementation Steps</b></p>	<ul style="list-style-type: none"> <li>▪ Develop an incentive program and source of funding to increase the number of dwelling units designed accessibly.</li> <li>▪ Work with developers to gather feedback on program parameters and interest.</li> <li>▪ Implement program (and potentially a new funding source) through council action.</li> </ul>
<p><b>Lead Agency and Potential Partners</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Community Development Department</li> <li>▪ <b>Partners:</b> Home Builders Association of Metropolitan Portland; Fair Housing Council of Oregon; AARP</li> </ul>
<p><b>Funding or Revenue Implications</b></p>	<p>Developing preapproved plans may require hiring consultants to develop the plans. Lowering the fee to review the preapproved plans should be commensurate with the lower staff effort to review the plans.</p>

Goal 10. Mixed-Use Housing and Redevelopment: Encourage and support development of mixed-use, mixed-income, and multifamily housing in commercial zones and urban renewal areas for households earning 0-80% of Median Family Income.

We recommend that the City pursue the following goal, which supports the existing Goal 3.2, Goal 3.3, Goal 3.4, and Policy 3.4.1 and Policy 3.4.2 in the Comprehensive Plan:

- Encourage and support development of mixed-use, mixed-income, and multifamily housing in commercial zones and urban renewal areas for households earning 0-80% of Median Family Income.

This goal includes affordable housing (0-60% of Median Family Income) and may include workforce housing (61-80% of Median Family Income). Development of mixed-use housing will likely also result in development of housing affordable above 80% of Median Family Income. The strategic actions to evaluate and potentially implement this goal are described below. The City may choose to adopt this goal or the results of the strategic actions into the Comprehensive Plan in the future.

**10.a Evaluate Redevelopment Opportunities for the Creation of Mixed-Use Development Districts to Support Development of Affordable Housing and Workforce Housing**

Description	Type of Action
<p>Identify and evaluate redevelopment opportunities to create mixed-use districts, which could include an area master planning process to guide development.</p> <p>A key finding of the Housing Needs Analysis is that Tualatin has limited land for development of multifamily housing and projects deficits of land to accommodate new housing in the Medium High Density and High Density / High Rise plan designations. The Economic Opportunities Analysis finds that Tualatin has limited land for commercial development. The COVID 19 pandemic has resulted in closure of businesses, which will leave existing buildings with vacant spaces and lessen the pressure for development of new commercial space, at least in the next two to five years.</p> <p>To address the need for more land for multifamily housing development and commercial uses, the City could identify several areas within Tualatin for redevelopment into mixed-use areas, with a mixture of higher-density housing and employment uses such as retail, office, and commercial services. These may be underutilized commercial or industrial areas ripe for mixed-use or mixed-income redevelopment. Two of these areas may already be identified through</p>	<p>Develop a Planning Process and Redevelopment Plans for Mixed-Use Districts</p>



planning for Urban Renewal Districts: District 1 is the Basalt Creek and Southwest Industrial Area and District 2 is the North Study Area, Bridgeport Village, Town Commons, I-5 Corridor, and Tualatin-Sherwood Road. The City has yet to have discussions about funding for affordable housing in these areas.

The City could engage the community in developing a vision for redeveloping the selected areas. The planning to implement this vision could be developed through redevelopment plans that show how the property will be redeveloped into a vibrant area with a mixture of uses, connections with Tualatin’s automotive and pedestrian/bicycle transportation networks, and a variety of housing types. The redevelopment plans would typically include working with landowners to ensure they are supportive of the plans, as well as incorporating stakeholder and citizen input into the vision for the district and the formation of the redevelopment plans.

A key aim would be to ensure equitable funding for affordable housing development to serve households earning 0-60% of Median Family Income and to consider opportunities for workforce housing at 61-80% of Median Family Income in mixed-use districts and urban renewal areas through redevelopment. To ensure that the districts provide opportunities for development of income-restricted affordable housing and consider workforce housing (housing affordable for rent between 61% and 80% of MFI), the City could evaluate opportunities to implement strategic actions such as 1.a (property tax exemption for income-restricted housing), 1.d (planning for Urban Renewal), 1.f (public and other land for affordable housing), 6.a (inclusion of workforce housing in multifamily development), and regulatory actions in Policy 11.

<b>Rationale</b>	Creating mixed-use districts would provide opportunity for development of new multifamily housing in areas with commercial services and access to some types of jobs.
<b>Anticipated Impact</b>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Low-income, moderate-income, and high-income residents</li> <li>▪ <b>Income:</b> Inclusive of income-restricted housing development that will serve 0-60% of Median Family Income and workforce housing at 61-80% of Median Family Income.</li> <li>▪ <b>Housing tenure:</b> Renter or Owner</li> <li>▪ <b>Potential Impacts:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> The amount of housing</li> </ul> </li> </ul>

	<p>production depends on the size and number of properties that are redeveloped. If this strategy identified 5 acres of land for residential redevelopment over the six-year planning horizon, at 80 units per acre (assuming 4 to 6 story buildings), this strategy could produce between 400 units of housing. Achieving this density will require changes to the Tualatin Development Code to allow this level of density.</p> <ul style="list-style-type: none"> <li>- <b>Equitable Outcomes:</b> Equitable funding for housing development for affordable housing and workforce housing in mixed-use districts and urban renewal areas through redevelopment.</li> <li>▪ <b>Potential Risk:</b> Redevelopment could displace existing residents. Lower-income residents may be most vulnerable to redevelopment and urban renewal, unless housing preservation actions are taken and affordable housing investments are made to offset displacement.</li> <li>▪ <b>Magnitude:</b> Large</li> </ul>
<p><b>Timeline</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 31, 2022</li> <li>▪ <b>Implementation to commence:</b> 2023</li> <li>▪ <b>Time frame of impact:</b> It would likely be at least 5 to 10 years before there is sufficient revenue in the Urban Renewal District to have enough funds to make significant investment in housing. The strategic action may have impact sooner for redevelopment that does not depend on Urban Renewal.</li> </ul>
<p><b>Implementation Steps</b></p>	<ul style="list-style-type: none"> <li>▪ Identify and evaluate areas within Tualatin for redevelopment into mixed-use areas, which may be Urban Renewal District 1 and District 2 and additional areas.</li> <li>▪ Engage the community in developing a vision for redeveloping the selected areas.</li> <li>▪ Use available tools, such as Urban Renewal, to support redevelopment of these areas.</li> <li>▪ Identify opportunities for supporting development of income-restricted affordable housing. Also consider opportunities for workforce housing. Funding for housing affordable in the 61-80% MFI is limited and may be difficult to find.</li> <li>▪ Identify land to rezone for mixed-use (see Strategic Action 10.b), as part of the redevelopment planning.</li> <li>▪ Identify infrastructure improvements necessary to support development of the mixed-use district. Incorporate these improvements and costs into the City’s capital improvements plan.</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Develop the policies and development standards necessary to support development of a mixed-use district.</li> <li>▪ Work with the Planning Commission and City Council to adopt the redevelopment plans and begin implementing them.</li> </ul>
<p><b>Lead Agency and Potential Partners</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division</li> <li>▪ <b>Partners:</b> City of Tualatin Finance Department, City of Tualatin Engineering and Building Division, and Developers</li> </ul>
<p><b>Funding or Revenue Implications</b></p>	<p>Developing and implementing plans for mixed-use districts will take substantial staff time and may require hiring consultants. Developing mixed-use district plans will have broader funding implications, especially for infrastructure development.</p>

## 10.b Evaluate Opportunities for Conversion of Commercial Buildings to Residential Uses

Description	Type of Action
<p>Identify and evaluate opportunities for housing above ground-floor retail, which would require an update to the Development Code to allow more housing above ground-floor retail in commercial areas.</p> <p>Tualatin has several underutilized commercial buildings, such as stores that have closed, that could be appropriate for redevelopment. The City could work with landowners to evaluate opportunities for redeveloping vacant buildings for new housing.</p> <p>The City could consider opportunities to support redevelopment of underutilized commercial buildings as part of developing a mixed-use district and redevelopment in Strategic Action 10.a. Implementing this action may depend, in part, on use of tools such as urban renewal (Strategic Action 1.d) to address infrastructure deficiencies or support development of affordable housing</p> <p>The City could also consider opportunities for conversion of some ground-floor retail to allow housing on the ground floor. This strategic action would be connected closely to Strategic Action 10.a, as a part of developing a mixed-use district and supporting development of income-restricted affordable housing and potentially workforce affordable housing.</p>	<p>Implement a Program</p>
<p><b>Rationale</b></p>	<p>Reusing vacant commercial buildings provides additional opportunities for housing, as well as making better use of an unused site.</p>
<p><b>Anticipated Impact</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Extremely low income, very low-income, and low-income households</li> <li>▪ <b>Income:</b> 0-80% of Median Family Income</li> <li>▪ <b>Housing tenure:</b> Predominantly renter housing with some opportunities for owner-occupied housing</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> One existing building is about 60,500 square feet. Assuming that 75% of the building is used for housing (and the remainder used for shared spaces, like hallways), they may reasonably be converted into 56 units approximately 800 square feet in size or 37 units approximately 1,200 square feet in size. Two other older existing buildings</li> </ul> </li> </ul>

	<p>that could be converted to housing are in the town center area and just west of town center and include: one at 15,000 square feet and the other 10,000 square feet. Under the same assumptions as above, these buildings together may result in 16 to 24 dwelling units.</p> <ul style="list-style-type: none"> <li>- <b>Equitable Outcomes:</b> Potential to provide housing for all income ranges.</li> <li>▪ <b>Potential Risk:</b> There are likely to be no or minor negative impacts.</li> <li>▪ <b>Magnitude:</b> Low to moderate</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> June 30, 2023</li> <li>▪ <b>Implementation to commence:</b> 2023</li> <li>▪ <b>Time frame of impact:</b> The strategic action can begin to take effect once it is adopted and implemented, but redevelopment will depend on when the building owners move forward.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Identify one or more vacant buildings that could be converted to residential uses.</li> <li>▪ Discuss interest in converting vacant buildings to residential uses with the owners or assess the owners’ interest in selling the buildings.</li> <li>▪ Act as a convener between the owners and potential developers.</li> <li>▪ Assist with the development process to make it easier for redevelopment to occur. This development may require a rezone from a commercial zone into a mixed-use zone where housing is allowed.</li> <li>▪ Pursue the appropriate process for permitting the reuse of the building(s)</li> </ul>
<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division</li> <li>▪ <b>Partners:</b> Property owners of buildings considered for redevelopment and possibly adjacent/nearby property owners</li> </ul>
<b>Funding or Revenue Implications</b>	<p>Developing and implementing plans for conversion of vacant buildings for residential use will require staff time and may require City support for rezoning.</p>

## 10.c Evaluate Opportunities to Rezone Land for Mixed-Use

Description	Type of Action
<p>Identify and evaluate opportunities to rezone commercial or industrial land for mixed-use that includes employment and residential uses.</p> <p>In development of the mixed-use districts (Strategic Action 10.a), the City could identify opportunities to rezone underutilized land to a mixed-use zone. In addition, the City may identify other opportunities to rezone underutilized land to support mixed-use development in areas not included in the new mixed-use districts.</p>	<p>Make Change to Zoning Map</p>
<b>Rationale</b>	<p>This would help to address Tualatin’s limited residential land base and to increase the supply of land that can accommodate residential uses outright.</p>
<b>Anticipated Impact</b>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Low-income, moderate-income, and high-income residents and households</li> <li>▪ <b>Income:</b> All income levels</li> <li>▪ <b>Housing tenure:</b> Predominantly renter housing with some opportunities for owner-occupied housing</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> The amount of housing production depends on the size and number of properties that are redeveloped. If this strategy identified 2 to 5 acres of land for residential redevelopment over the six-year planning horizon, at 80 units per acre (assuming 4 to 6 story buildings), this strategy could produce between 40 and 160 units of housing. Achieving this density will require changes to the Tualatin Development Code to allow this level of density.</li> <li>- <b>Equitable Outcomes:</b> Potential to provide mixed-use housing that is inclusive of affordable and workforce housing.</li> </ul> </li> <li>▪ <b>Potential Risk:</b> If successfully implemented, rezoning land could displace existing residents. Lower-income residents may be most vulnerable to rezoning, unless housing preservation actions are taken in conjunction with rezoning.</li> <li>▪ <b>Magnitude:</b> Large</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 31, 2022</li> <li>▪ <b>Implementation to commence:</b> 2022</li> <li>▪ <b>Time frame of impact:</b> The strategic action can begin to take effect once land is rezoned.</li> </ul>

<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Establish criteria to identify land to rezone for mixed-use (employment and residential) purposes.</li> <li>▪ Pursue a public process (with public hearings) to implement the zone change.</li> </ul>
<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division</li> <li>▪ <b>Partners:</b> Property owners of land considered for rezoning as well as adjacent/nearby property owners</li> </ul>
<b>Funding or Revenue Implications</b>	<p>This strategy would rely on use of staff time but may also require funds to hire a consultant to comply with the Transportation Planning Rule.</p>

**10.d Evaluate Establishing Incentives to Support Mixed-Use Development, such as the Vertical Housing Tax Abatement**

Description	Type of Action
<p>Identify, evaluate, and promote potential financial incentives for developers of mixed-use housing. Evaluate feasibility of adopting the Vertical Housing Tax Abatement within urban renewal districts or mixed-use zones.</p> <p>This program would provide a partial exemption of property taxes for multistory, mixed-use developments (residential over commercial space) for 10 years, which reduces operating costs and improves development feasibility.</p> <p>Using this program, a jurisdiction could subsidize mixed-use projects to encourage dense development or redevelopment by providing a partial property tax exemption on the building value for qualified developments. The exemption varies in accordance with the number of residential floors on a mixed-use project with a maximum property tax exemption of 80% of improvement value over 10 years. An additional property tax exemption on the land may be given if some or all of the residential housing is for low-income persons (80% of area median income or below), but this is uncommon. The Vertical Housing Tax Abatement helps to support affordable housing by providing retail opportunities nearer to income-restricted building. There is no tax exemption on the nonresidential component.</p> <p>The exemption is only available within areas designated by the City as a vertical housing development zone. The City must consider the potential for displacement of households within a proposed vertical housing development zone before designating the zone.</p> <p>Once the zone is established, a developer may apply for the Vertical Housing Tax Abatement program for eligible projects.</p>	<p>Adopt a Tax Exemption</p>
<b>Rationale</b>	<p>This tax abatement offers incentives for market-rate, mixed-income, and affordable housing, with greater incentives for affordable/mixed-income housing. It incents higher-density development, as well as mixed-income and mixed-use development.</p>
<b>Anticipated Impact</b>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> All populations potentially</li> <li>▪ <b>Income:</b> Typically over 80% of Median Family Income unless applied to affordable housing (which is unusual)</li> </ul>



	<ul style="list-style-type: none"> <li>▪ <b>Housing tenure:</b> Renter</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> If this incentive were used for one to two mixed-use apartment buildings at 50 to 150 units each with 25% of units affordable at less than 80% of Median Family Income, this strategy could contribute to development of 50 to 300 units.</li> <li>- <b>Equitable Outcomes:</b> Supports mixed-use housing, which may include workforce housing with retail or other uses.</li> </ul> </li> <li>▪ <b>Potential Risk:</b> The City and participating taxing districts would forgo property tax income for the duration of the exemption for the buildings where the exemption is granted, reducing revenue for city services and revenue for participating taxing districts. This tax abatement may disproportionately benefit moderate and high-income households, who can afford the rents in mixed-use housing unless affordable housing units are part of the mix.</li> <li>▪ <b>Magnitude:</b> Moderate</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 31, 2023</li> <li>▪ <b>Implementation to commence:</b> 2024</li> <li>▪ <b>Time frame of impact:</b> The strategic action can begin to take effect once it is adopted and implemented, when property owners begin to apply for the tax exemption.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Evaluate the feasibility of and potential locations for establishing a Vertical Housing Tax Abatement Zone.</li> <li>▪ If considering designating areas within existing or proposed urban renewal districts, consider potential impacts of the tax abatement on urban renewal financial forecasts.</li> <li>▪ Evaluate likely impacts of the tax exemption on feasibility of desired mixed-use development.</li> <li>▪ Evaluate impacts of the exemption and the potential resulting development on displacement for vulnerable populations.</li> <li>▪ Discuss topic with City Council at work sessions and in public hearings.</li> <li>▪ Notify overlapping taxing districts and offer the opportunity to opt out of having their rate included in the exemption.</li> </ul>
<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division</li> <li>▪ <b>Partners:</b> City of Tualatin Finance Department, developers</li> </ul>

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**Funding or Revenue Implications**

The Vertical Housing Tax Abatement results in foregone general fund revenues for all overlapping taxing districts (unless they opt out). However, it can still increase tax revenue if new development occurs that would not otherwise, because the commercial portion is taxable immediately and the residential portion is added to the tax rolls when the abatement expires. If applied within an urban renewal district, the tax abatement instead affects the tax increment revenue to the district and does not necessarily directly affect the overlapping taxing districts.

Goal 11. Regulatory and Zoning Changes: Increase housing development opportunities through regulatory and zoning changes to accommodate a diverse range of housing types and price points to meet the housing needs in Tualatin.

We recommend that the City pursue the following goal, which supports the existing Policy 3.1.2, Goal 3.2, Policy 3.2.1, and Goal 3.3 in the Comprehensive Plan:

- Increase housing development opportunities through regulatory and zoning changes to accommodate a diverse range of housing types and price points to meet Tualatin's housing needs as identified in the current adopted Housing Needs Analysis.

The strategic actions to evaluate and potentially implement this goal are described below. The City may choose to adopt this goal or the results of the strategic actions into the Comprehensive Plan in the future.

<b>11.a Evaluate Updating Density Standards for Multifamily Housing in Medium-Density, High-Density, and Mixed-Use Zones</b>	
<b>Description</b>	<b>Type of Action</b>
<p>Evaluate the feasibility of increasing maximum densities—which would require corresponding revisions to other standards, including maximum lot coverage and minimum front setbacks—to create the opportunity for more efficient multifamily development in zones that allow it outright (High Density, High Density High-Rise, Medium Density High, Medium Density Low, and MUCOD (mixed-use zone)).</p> <p>Initial feasibility analysis indicates that existing densities for multifamily are too low to allow for efficient development or redevelopment of the type of housing the zones are intended to allow. At least one of the High Density and/or High Density High-Rise zones, as well as MUCOD, should allow for efficient 4 to 6 story buildings, and at least one zone (e.g. High Density and/or Medium Density High) should allow for efficient 2-3 story apartment buildings. Updates in the Medium Density High and Medium Density Low zones should be informed by changes to comply with HB 2001.</p> <p>One consideration in increasing density could be proximity to transit service and transit stations. Areas closer to transit, particularly high-capacity/high-frequency transit stations, may provide opportunities for increases of density in the Medium-Density, High-Density, and mixed-use zones. Areas near transit or transit stations may be places where density could be increased and parking requirements (in Strategic Action 11.c) could be decreased somewhat.</p>	<p>Adopt Zoning Code Changes</p>

<b>Rationale</b>	<p>Increasing densities and revising zoning standards allows more efficient use of buildable land, which may be particularly effective in areas with access to transit or near to transit stations. Given Tualatin’s shortage of buildable land, allowing taller multifamily buildings will provide important opportunities for housing development.</p>
<b>Anticipated Impact</b>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Extremely low income, very low-income, low-income, moderate-income, and high-income households</li> <li>▪ <b>Income:</b> All income levels</li> <li>▪ <b>Housing tenure:</b> Predominantly renter, possibly some owner units</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> Tualatin has 16 acres of High Density and no acres of High Density High-Rise land, according to the Tualatin Housing Needs Analysis. If the City increased densities in these zones (from the current maximum density of 25 units per acre in High Density and 30 dwelling units per acre High Density High-Rise) to at least 80 units per acre (assuming 4 to 6 story buildings), that would allow for an additional 1,280 dwelling units to be built in High Density. If land is re-zoned to High Density High-Rise, that would allow for additional development at these higher densities.</li> <li>- <b>Equitable Outcomes:</b> May open up opportunity for development of affordable rental multifamily housing or workforce housing.</li> </ul> </li> <li>▪ <b>Potential Risk:</b> Allowing higher-density development may cause concern for some existing residents.</li> <li>▪ <b>Magnitude:</b> Large</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> June 30, 2022</li> <li>▪ <b>Implementation to commence:</b> 2022</li> <li>▪ <b>Time frame of impact:</b> The strategic action can begin to take effect once it is adopted and implemented in the Development Code.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Evaluate conceptual feasibility with stakeholders and the public, identifying opportunities to alleviate resident concerns about traffic and parking as well as those associated with allowing taller buildings and denser development.</li> <li>▪ Evaluate potential transportation and other public utility system impacts of potential changes.</li> <li>▪ Draft revised zoning standard amendments, providing opportunities for public comment and discussions with planning</li> </ul>

	<p>commissioners and city councilors.</p> <ul style="list-style-type: none"> <li>▪ Work with Tualatin’s Planning Commission and City Council to adopt the revised standards into the Development Code.</li> </ul>
<p><b>Lead Agency and Potential Partners</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Community Development Department</li> <li>▪ <b>Partners:</b> City of Tualatin Public Works Department, area developers, property owners, and adjacent/nearby property owners and residents.</li> </ul>
<p><b>Funding or Revenue Implications</b></p>	<p>Revising zoning standards would rely on staff time and hiring a consultant to analyze the impacts of density increases on transportation and other public utility systems.</p> <p>For areas near transit or transit stations, Tualatin could apply for one of Metro’s Transit-Oriented Development (TOD) grants to implement this strategic action.</p>

## 11.b Evaluate Opportunities to Rezone Lower-Density Residential Land to Higher Density

Description	Type of Action
<p>Evaluate and identify opportunities to re-zone Residential Low Density and Residential Medium Low-Density residential land for higher-density housing in selected areas.</p> <p>The Tualatin Housing Needs Analysis report showed that Tualatin has very little buildable land in the following zones: Medium High Density, High Density, and High Density High-Rise zones. The report identified a seven acre deficit of land in the Medium High Density zone and a four acre deficit in the High Density High-Rise zone for development through 2040.</p>	<p>Adopt Zoning Code Changes</p>
<p><b>Rationale</b></p>	<p>This could help to address Tualatin’s limited residential land base and to increase the supply of land that can accommodate residential uses at higher densities.</p>
<p><b>Anticipated Impact</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Low-income, moderate-income, and high-income residents and households</li> <li>▪ <b>Income:</b> All income levels</li> <li>▪ <b>Housing tenure:</b> Predominantly renter housing with some opportunities for owner-occupied housing</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> The amount of housing production depends on the size and number of properties that are rezoned. If this strategy identified 2 to 5 acres of land for residential redevelopment over the six-year planning horizon, at 70 to 150 units per acre (assuming 4 to 6-story buildings), this strategy could produce between 140 and 750 units of housing from land zoned Low Density.</li> <li>- <b>Equitable Outcomes:</b> May open up opportunity for development of affordable rental multifamily housing or workforce housing.</li> </ul> </li> <li>▪ <b>Potential Risk:</b> Rezoning land could displace existing residents. Lower-income residents may be most vulnerable to rezoning, unless affordable housing preservation actions are taken in conjunction with rezoning.</li> <li>▪ <b>Magnitude:</b> Moderate to large, depending on the amount of land rezoned</li> </ul>

<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> June 30, 2022</li> <li>▪ <b>Implementation to commence:</b> 2022</li> <li>▪ <b>Time frame of impact:</b> The strategic action can begin to take effect once it is adopted and implemented in the Development Code.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Establish criteria to identify land to rezone for higher-density residential uses.</li> <li>▪ Pursue a public process (with public hearings) to implement the zone changes.</li> </ul>
<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division</li> <li>▪ <b>Partners:</b> Property owners of land considered for rezoning as well as adjacent/nearby property owners</li> </ul>
<b>Funding or Revenue Implications</b>	<p>Revising density standards is a comparatively low-cost strategy, primarily relying on the use of staff time.</p>

## 11.c Evaluate the Feasibility of Targeted Reductions to Off-Street Parking Requirements

Description	Type of Action
<p>Evaluate the feasibility of providing off-street parking reductions targeted for multifamily and/or affordable housing, particularly in conjunction with nearby transit availability.</p> <p>Current parking ratios for multifamily create an additional potential obstacle to higher-density/efficient development, particularly for affordable housing and zones that are intended for higher-density housing (four or more stories in height). High parking ratios for retail and restaurants may also present an obstacle to mixed-use development.</p> <p>Tualatin could consider allowing reduction of parking requirements near transit and affordable housing with tenants who generally own fewer cars, like seniors. In addition, the City should consider allowing public on-street parking in rights-of-way within a certain radius to count toward off-street parking requirements.</p> <p>This strategic action should be implemented in conjunction with the increases to density in High Density and High Density High-Rise zones, in Strategic Action 11a, because the strategic actions work together to achieve higher densities.</p>	<p>Adopt Zoning Code Changes</p>
<b>Rationale</b>	<p>Reducing parking requirements reduces costs and can allow a development to fit more units on a site, making public resources go further.</p>
<b>Anticipated Impact</b>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Low-income, moderate-income, and high-income households</li> <li>▪ <b>Income:</b> All income levels</li> <li>▪ <b>Housing tenure:</b> Renter</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> This strategy may not produce units in itself. But it may support development of more affordable units, especially in conjunction with Strategic Action 11.a.</li> <li>- <b>Equitable Outcomes:</b> Allowing parking reductions may benefit affordable housing developments that will serve a percentage of tenants that do not own cars, such as seniors in some cases.</li> </ul> </li> <li>▪ <b>Potential Risk:</b> Reducing off-street parking requirements may</li> </ul>



	<p>cause concern for existing residents. For lower-income residents to benefit, this action should be taken in conjunction with development of affordable housing.</p> <ul style="list-style-type: none"> <li>▪ <b>Magnitude:</b> Moderate</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 31, 2022</li> <li>▪ <b>Implementation to commence:</b> 2023</li> <li>▪ <b>Time frame of impact:</b> The strategic action can begin to take effect once it is adopted and implemented in the Development Code.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Evaluate off-street parking requirements for multifamily housing to identify opportunities for reduction in parking requirements.</li> <li>▪ Evaluate how potential amendments would affect the type and amount of multifamily housing that would be feasible to build in Tualatin.</li> <li>▪ Adopt revised parking standards by amending the Development Code.</li> </ul>
<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division</li> <li>▪ <b>Partners:</b> Development Community</li> </ul>
<b>Funding or Revenue Implications</b>	<p>Amending the City’s Development Code is a comparatively low-cost strategy, primarily relying on the use of staff time.</p>

## 11.d Evaluate Updating Code to Allow Small Dwelling Unit Developments

Description	Type of Action
<p>Tualatin should evaluate the potential to update its development, municipal, and building codes to allow small-scale units with affordable housing income limits that are not part of HB 2001. This could be accomplished by allowing land division where small lots or parcels are created below the standard lot/parcel size for dwelling units that are limited in size.</p> <p>Tualatin could consider this in the context of new cottage cluster regulations because of the similar development type. This would involve calculating density differently for the dwelling units due to their limited size.</p> <p>For example:</p> <ul style="list-style-type: none"> <li>▪ Dwelling units 600 square feet or smaller: 0.25 of a dwelling unit.</li> <li>▪ Dwelling units 601 to 1,200 square feet: 0.50 of a dwelling unit.</li> </ul> <p>This strategy may result in housing opportunity for households at 60% of MFI or lower. But this strategic action is not expected to result in income-restricted housing on its own. It is more likely to produce housing affordable at 61% to 100% of MFI.</p>	<p>Adopt Zoning Code Changes</p>
<p><b>Rationale</b></p>	<p>Provides greater opportunity for development of housing affordable to low and moderate-income households.</p>
<p><b>Anticipated Impact</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Extremely low income, very low-income, low-income, and moderate-income households</li> <li>▪ <b>Income:</b> 100% of MFI or less.</li> <li>▪ <b>Housing tenure:</b> Renter and owner</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> If this strategy resulted in development of one acre for small dwelling units over the six-year planning horizon, at 10 to 15 units per acre, this strategy could produce between 10 and 15 units of housing. This may represent a pilot of this policy.</li> <li>- <b>Equitable Outcomes:</b> May produce small number of units of housing that could serve lower-income households.</li> </ul> </li> <li>▪ <b>Potential Risk:</b> Allowing smaller units may increase density in existing neighborhoods, with the potential to cause concern for some existing residents.</li> </ul>

	<ul style="list-style-type: none"> <li>▪ <b>Magnitude:</b> Low</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 31, 2024</li> <li>▪ <b>Implementation to commence:</b> 2024 or early 2025</li> <li>▪ <b>Time frame of impact:</b> The strategic action can begin to take effect once it is adopted and implemented in the Development Code.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Revise Tualatin’s Development Code to allow these smaller units, including revising the density standards.</li> <li>▪ Pursue a public process (with public hearings) to implement the zone changes.</li> </ul>
<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division</li> <li>▪ <b>Partners:</b> Small-scale housing developers and builders, lenders</li> </ul>
<b>Funding or Revenue Implications</b>	Amending the City’s Development Code is a comparatively low-cost strategy, primarily relying on the use of staff time.

## 11.e Evaluate Adopting an Expedited Permitting Process for Affordable Rental Housing and Affordable Homeownership

Description	Type of Action
<p>Evaluate adopting an expedited and/or priority review process for review of development proposed for affordable rental housing at 0-60% of Median Family Income and affordable homeownership at 80% of Median Family Income and below.</p> <p>Such a process could consider projects with direct or indirect funding from local, state, or federal government as essential and projects with long-term affordability covenants through tax abatement or inclusionary requirements as high priority. Assigning a designated staff person to shepherd these projects through the development and construction process in order to expedite them is likely to be essential.</p>	<p>Make Development Process Changes</p>
<b>Rationale</b>	<p>Expedited permitting of both land use applications and building permits would help to reduce costs and financial vulnerabilities of development and construction of affordable housing.</p>
<b>Anticipated Impact</b>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Extremely low income, very low-income, low-income, and moderate-income households</li> <li>▪ <b>Income:</b> 0-80% of Median Family Income</li> <li>▪ <b>Housing tenure:</b> Renter or Owner</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> This action will not directly result in development of more units but may make it easier to develop affordable housing.</li> <li>- <b>Equitable Outcomes:</b> Beneficial to affordable housing development, as it can save on costs and construction time.</li> </ul> </li> <li>▪ <b>Potential Risk:</b> This strategic action may allow less time for comment on affordable housing development. Expediting permitting processes for affordable housing may result in minor increases in the time needed for the permitting processes of other development.</li> <li>▪ <b>Magnitude:</b> Low to moderate</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> June 30, 2023</li> <li>▪ <b>Implementation to commence:</b> 2023</li> <li>▪ <b>Time frame of impact:</b> The strategic action can begin to take effect once it is adopted and implemented in the Development Code</li> </ul>

<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Plan and carry out public engagement to get input on changes in the permitting system.</li> <li>▪ Pursue public decision-making process to make the changes to the permitting system.</li> </ul>
<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Community Development Department</li> <li>▪ <b>Partners:</b> Local and Regional Development Community</li> </ul>
<b>Funding or Revenue Implications</b>	<p>Amending the City’s permitting process is a comparatively low-cost strategy, primarily relying on the use of staff time.</p>

## 11.f Evaluate Providing Additional Engagement and Information to Developers of Affordable Housing

Description	Type of Action
<p>The City could evaluate the establishment of a formalized information source (i.e., an FAQ) or additional engagement opportunities specific to developers of affordable housing. The City informally provides information to small, local developers to help them understand land use permitting processes and to give developers a sense of clarity and certainty about the requirements so they can better provide smaller-scale housing at an affordable level.</p> <p>The City could create a formal process to provide this information to include all housing developers, especially aimed at those that can produce housing affordable at 80% of Median Family Income and below. The City could promote development of this housing through a City program with a variety of venues such as a developers' roundtable hosted by the Mayor, informational sessions with developers, promotion of incentives and funding resources, and more. These activities are intended to engage, inform, and build relationships with developers to attract them to do business in Tualatin.</p>	<p>Develop Processes and Materials</p>
<p><b>Rationale</b></p>	<p>Building relationships with developers, providing quality information to them, and offering incentives and networking opportunities to developers and those in the development community are effective ways to support development in Tualatin.</p>
<p><b>Anticipated Impact</b></p>	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Extremely low income and very low-income households</li> <li>▪ <b>Income:</b> 0-60% of Median Family Income</li> <li>▪ <b>Housing tenure:</b> Renter or Owner</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> This action is aimed at attracting more affordable and workforce housing developers to Tualatin and may generate a fair amount of interest in housing for households at 0-80% of MFI, resulting in more development that would otherwise not have come here.</li> <li>- <b>Equitable Outcomes:</b> Cultivating relationships with affordable housing and workforce housing developers to develop equitable housing.</li> </ul> </li> <li>▪ <b>Potential Risk:</b> There are likely to be no or minor negative</li> </ul>

	<p>impacts.</p> <ul style="list-style-type: none"> <li>▪ <b>Magnitude:</b> Low to moderate</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> June 30, 2022</li> <li>▪ <b>Implementation to commence:</b> 2022</li> <li>▪ <b>Time frame of impact:</b> The strategic action can begin to take effect once it is adopted and implemented in the Development Code.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Prepare materials and presentations intended to engage, inform, and educate developers about housing development in Tualatin and share what we have to offer in Tualatin.</li> <li>▪ Meet with developers in a series of lively roundtable events to inform and interest them in Tualatin development opportunities and offer new incentives where possible. Gather feedback from the developers and development community.</li> <li>▪ Continue to develop relationships with the development community and to update materials and presentations as needed.</li> </ul>
<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> Tualatin Planning Division</li> <li>▪ <b>Partners:</b> Local and Regional Development Community</li> </ul>
<b>Funding or Revenue Implications</b>	<p>Developing materials and presentations for roundtable events about Tualatin’s housing development opportunities and process may be labor intensive for staff.</p>

Goal 12. Transportation and Public Infrastructure: Plan for and develop transportation and public infrastructure to support affordable housing, workforce housing, mixed-use housing, and mixed-income housing.

We recommend that the City pursue the following goal, which supports the existing Policy 3.1.5, Policy 3.1.6, Policy 3.1.7, and Goal 3.5 in the Comprehensive Plan:

- Plan for and develop transportation and public infrastructure to support affordable housing, workforce housing, and mixed-use housing.

The strategic action to evaluate and potentially implement this goal is described below. The City may choose to adopt this goal or the results of the strategic actions into the Comprehensive Plan in the future.

12.a Evaluate Ways to Prioritize Capital Improvements Programming for Affordable and Workforce Housing	
Description	Type of Action
<p>Evaluate ways to prioritize capital improvements programming (CIP) for affordable housing, workforce housing, and mixed-use housing with a component that includes a specified percentage of units for each of these types of housing.</p> <p>The City could coordinate housing planning, CIP planning, and public facilities planning to ensure projects that support development of needed housing types are prioritized. For example, implementing new sewer master plans or new stormwater plans in areas targeted for future housing expansions. This type of coordinated planning could make it easier to understand infrastructure costs. It would also enable the City and developers to plan for more development capacity in areas ripe for higher-density housing.</p>	<p>Improve CIP Planning Processes</p>
Rationale	<p>The City could prioritize work in a CIP and public facilities planning so that projects that support development of needed housing can be constructed sooner.</p>
Anticipated Impact	<ul style="list-style-type: none"> <li>▪ <b>Populations served:</b> Extremely low income, very low-income, and low-income households</li> <li>▪ <b>Income:</b> 0-80% of Median Family Income</li> <li>▪ <b>Housing tenure:</b> Renter or Owner</li> <li>▪ <b>Potential Benefit:</b> <ul style="list-style-type: none"> <li>- <b>Housing Production (new units):</b> This strategy alone will not result in additional units, but it will improve coordination and</li> </ul> </li> </ul>



	<p>commitment to production of housing.</p> <ul style="list-style-type: none"> <li>- <b>Equitable Outcomes:</b> Prioritizing capital improvements programming (CIP) for affordable housing, workforce housing, and mixed-use housing supports equitable housing development.</li> <li>▪ <b>Potential Risk:</b> Funds spent on needed affordable, workforce, and mixed-used housing will be unavailable for other city infrastructure priorities. However, coordinated planning could result in a more integrated and efficient approach to planning for needed housing and infrastructure.</li> <li>▪ <b>Magnitude:</b> Moderate</li> </ul>
<b>Timeline</b>	<ul style="list-style-type: none"> <li>▪ <b>Timeline for adoption:</b> December 31, 2023</li> <li>▪ <b>Implementation to commence:</b> 2024</li> <li>▪ <b>Time frame of impact:</b> The strategic action will begin to have impact with changes to funding of infrastructure to support affordable housing.</li> </ul>
<b>Implementation Steps</b>	<ul style="list-style-type: none"> <li>▪ Identify priority areas for infrastructure investment.</li> <li>▪ Determine the types of infrastructure funding needs (specific projects and costs) in priority areas.</li> <li>▪ Update the City’s CIP and respective public facility plans by listing needed infrastructure projects in these documents and establishing an implementation schedule for these projects.</li> </ul>
<b>Lead Agency and Potential Partners</b>	<ul style="list-style-type: none"> <li>▪ <b>Lead Agency:</b> City of Tualatin Planning Division</li> <li>▪ <b>Partners:</b> City of Tualatin Public Works Department</li> </ul>
<b>Funding or Revenue Implications</b>	<p>Coordinated infrastructure planning is a comparatively low-cost strategy, primarily relying on the use of staff time.</p>

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## 4. Evaluation: Achieving Fair and Equitable Housing Outcomes

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This chapter presents an evaluation of the goals and strategic actions for achieving fair and equitable housing outcomes. It also includes a discussion of monitoring the outcomes of Tualatin's HPS.

### Evaluation of the Goals and Strategic Actions

OAR 660-008 requires an evaluation of all the HPS for achieving the following types of outcomes. The discussion below provides a brief evaluation of each of the expected outcomes for the goals and strategic actions of the HPS, with a focus on housing opportunities for federal and state protected classes.<sup>36</sup> This is not intended to be an exhaustive evaluation of how each strategic action addresses these outcomes but a high-level overview of the HPS as a whole.

- **Affordable Homeownership.** This criteria focuses on strategic actions that support production of housing affordable for homeownership and includes actions to support development of housing affordable at less than 120% of MFI. Many of the strategic actions in the HPS support development of affordable housing for homeownership through partnerships, fair housing, rehabilitation programs, removing regulatory barriers to development of affordable ownership housing, and capital improvements necessary to support affordable ownership housing. Some of the strategic actions within the HPS that support affordable homeownership include:
  - The strategic actions in Goal 2 are focused on production of affordable housing for homeownership. These strategic actions are intended to work together to identify and remove barriers to homeownership, provide education to residents of Tualatin about homeownership, make regulatory changes that make it easier to develop affordable housing for homeownership, and partner with organizations that build affordable ownership housing.
  - The strategic actions in Goal 5 focus on increasing equity in the City's housing policies. Strategic Action 5.a focuses on identifying funding sources to support the actions within the HPS, including those that support development of affordable ownership housing. Other strategic actions in Goal 5 support Fair Housing goals, which includes development of affordable ownership housing.
  - Strategic Action 8.b supports rehabilitation of single-family housing, which includes ownership housing for households with income below 80% of MFI. Rehabilitation

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<sup>36</sup> Federal protected classes are: race, color, national origin, gender, familial status, and disability. Oregon's additional protected classes are: marital status, source of income, sexual orientation, and status as a domestic violence survivor. Under Fair Housing laws, it is illegal to deny access to housing in based on the characteristics of people within these protected classes.

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- may be necessary to improve housing conditions to allow people to continue to live in their housing.
- Goal 11 includes proposals for regulatory and zoning changes that support development of affordable ownership housing. These changes include allowing for development of small dwelling units, expediting permitting processes for affordable homeownership, and providing additional information to developers of affordable housing to make development in Tualatin easier.
  - Strategic Action 12.a is intended to prioritize capital improvements for affordable housing, including ownership housing. Without infrastructure (such as roads, sewer, or water), vacant land cannot be developed for affordable ownership housing at the densities envisioned in the *Tualatin Housing Needs Analysis*.
  - **Affordable Rental Housing.** Supporting affordable rental housing includes actions to support production of both income-restricted affordable housing (affordable to households with incomes below 60% of MFI) and privately developed affordable housing (affordable for households with incomes between 61% and 80% of MFI). Strategic actions within the HPS that support affordable rental housing development include:
    - The strategic actions in Goal 1 are focused on production of income-restricted affordable rental housing, with the exception of Strategic Action 1.d, which also includes workforce affordable housing. These strategic actions work together to support production of income-restricted affordable housing through proposal of actions that may reduce development or operational costs (property tax exemptions, changes to systems development charge changes, and identification of public or institutional land at low or no cost), increase funds available to support development of income-restricted affordable housing (a Construction Excise Tax, use of Urban Renewal, and identification of other sources of funding), and potential regulatory changes.
    - The strategic actions in Goals 3 and 4 are focused on preservation of existing affordable housing, both income-restricted and naturally occurring affordable housing.
    - The strategic actions in Goal 5 focus on increasing equity in the City's housing policies. Strategic Action 5.a focuses on identifying funding sources to support the actions within the HPS, including those that support development of affordable rental housing. Other strategic actions in Goal 5 support Fair Housing goals, which includes development of affordable rental housing.
    - The strategic actions in Goal 6 support development of workforce housing, which includes affordable rental housing.
    - Goal 7 supports housing stabilization, which includes strategic actions to provide rental and utility assistance.

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- Strategic actions within Goal 10 support mixed-use development and redevelopment, with a focus on development of affordable housing. Given the small amount of vacant land for multifamily development in Tualatin, developing rental housing will require development of mixed-use housing and redevelopment.
  - Goal 11 includes proposals for regulatory and zoning changes that support development of affordable rental housing. These changes include allowing for increases in the development of higher-density multifamily housing, upzoning of lower-density land to higher-density zones to increase the amount of land where multifamily housing can be built, potential targeted reductions of off-street parking requirements, expediting permitting processes for affordable rental housing, and providing additional information to developers of affordable housing to make development in Tualatin easier.
  - Strategic Action 12.a is intended to prioritize capital improvements for affordable housing, including ownership housing. Without infrastructure (such as roads, sewer, or water), vacant land cannot be developed for affordable rental housing at the densities envisioned in the *Tualatin Housing Needs Analysis*.
  - **Housing Stability.** Increasing housing stability includes actions that increase the stability of existing households and preventing displacement by mitigating gentrification resulting from public investments or redevelopment. Strategic actions within the HPS that address housing stability include:
    - Part of increasing housing stability will be preservation of existing housing, rehabilitation of housing, and development of more affordable ownership and rental housing. These items are discussed above.
    - Goal 7 supports housing stabilization, which includes strategic actions to provide rental and utility assistance and identifying housing options and services to address and prevent homelessness.
    - The descriptions of strategic actions under Goal 10 discuss the potential for displacement of existing residents through redevelopment. Through redevelopment planning, the City will need to be careful to avoid displacing existing residents through redevelopment. Urban Renewal District 2 has a mix of uses, including apartment buildings, commercial buildings, and public buildings. As the City plans for redevelopment here, the City will need to take care not to displace existing residents.
  - **Housing Options for People Experiencing Homelessness.** Increasing options for people experiencing homelessness includes working with partners and identifying ways to address homelessness and strategic actions that reduce the risk of households becoming homeless (especially for households with income below 30% of MFI). Strategic actions within the HPS that provide options for people experiencing homelessness include:

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- Part of providing options for people experiencing homelessness is development of income-restricted affordable housing, which is the focus of Goal 1 (as described above). The strategic actions in Goal 1 are also intended to provide affordable housing options for people at risk of becoming homeless, such as households with incomes below 30% of MFI.
  - Strategic Action 7.b is to evaluate development of options for provision of housing and services necessary to address and prevent homelessness.
  - **Housing Choice.** Increasing housing choice involves increasing access to housing for communities of color, low-income communities, people with disabilities, and other state and federal protected classes. Increasing housing choice also means increasing access to existing or new housing that is located in neighborhoods with healthy, safe environments and high-quality community amenities, schooling, and employment and business opportunities. Strategic actions within the HPS that increase housing choice include:
    - Increasing housing choice for state and federal protected classes involves preservation of existing housing, rehabilitation of housing, and development of more affordable ownership and rental housing. These items are discussed above.
    - The regulatory changes proposed in Goal 11 also support increases in housing choice for state and federal protected classes through supporting development of additional housing, which may be located in high-opportunity neighborhoods.
    - Strategic Action 5.d addresses housing choice directly through an evaluation of strategies to encourage development of diverse housing types in high-opportunity neighborhoods.
    - Strategic Actions 5.b and 5.c address Fair Housing issues, with the intention of increasing housing choice for state and federal protected classes.
  - **Location of Housing.** Diversifying the location of housing requires increasing options for residential development that is compact, in mixed-use neighborhoods, and available to people within state and federal protected classes. This measure is intended, in part, to meet statewide greenhouse gas emission reduction goals. Strategic actions within the HPS that support development of compact, mixed-use neighborhoods include:
    - Goal 10 proposes strategic actions that increase options for development of compact housing in mixed-use neighborhoods. The strategic actions include evaluating opportunities for redevelopment and creation of mixed-use districts, conversion of unused commercial buildings to residential uses, evaluating land to rezone for mixed-use development, and a tax exemption to support mixed-use development.
    - Strategic actions in Goal 11 support diversifying the location of housing through evaluation of actions that increase multifamily development densities, upzone lower-density land, target reductions of off-street parking requirements, and allow smaller dwelling unit development.

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- **Fair Housing.** Supporting Fair Housing is accomplished by increasing access to housing for people part of state and federal protected classes, affirmatively furthering fair housing, addressing disparities on access to housing opportunity for underserved communities, and decreasing patterns of segregations or concentrations of poverty. Strategic actions within the HPS that further Fair Housing goals include:
    - Production of affordable rental and homeownership housing, increasing housing stability, identifying housing options for people experiencing homelessness, and increasing housing choice are all part of supporting Fair Housing. These issues are addressed above.
    - The strategic actions in Goal 5 focus on increasing equity in the City’s housing policies and Fair Housing. Strategic Action 5.a focuses on identifying funding sources to support the actions within the HPS. Strategic Actions 5.b and 5.c address Fair Housing issues, with the intention of increasing housing choice for state and federal protected classes. Strategic Action 5.d addresses housing choice directly through an evaluation of strategies to encourage development of diverse housing types in high-opportunity neighborhoods.

Taken together, the goals and strategic actions included in Tualatin’s Housing Production Strategy are intended to work together to achieve equitable outcomes for all residents of Tualatin, with an emphasis on improving outcomes for historically underserved communities, households with lower income, and people in state and federal protected classes.

## Monitoring Outcomes of the HPS

This is Tualatin’s first HPS. As a result, the City is required to describe how it will measure the implementation and progress of the HPS. This section focuses on these issues.

Tualatin is required to report progress on implementation of the HPS to DLCD every three years.<sup>37</sup> This report must include:

- **A summary of the actions taken to implement the HPS.** There may be strategic actions that the City has not implemented on the schedule for the first three years of the HPS (i.e., actions expected to be adopted by December 31, 2024). If so, the City needs to provide an explanation of the barriers to implementation and a plan for addressing the need that the strategic action was intended to address. That plan could include identification of other strategic actions in the HPS that will meet the identified need, or it could include development of a new strategic action to meet the need.
- **A reflection of the efficacy of the strategic actions the City has implemented.** This reflection should discuss the outcomes the City is observing from the strategic actions they have implemented to date and could include expectations for future outcomes.

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<sup>37</sup> This report is due to DLCD no later than December 31 three years after Tualatin adopts its HPS.

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- **A reflection of the efficacy of the strategic actions in the context of the outcomes described above.** The section evaluates the goals and strategic actions in the HPS for expected outcomes such as increasing housing options for affordable homeownership, affordable rental housing, housing stability, housing options for people experiencing homelessness, housing choice, location of housing, and fair housing. The report should describe whether the goals and strategic actions implemented have resulted in the outcomes described above.

In addition, Tualatin is required to report about strategic actions that will not be adopted on the schedule presented in Exhibit 6. The City must notify DLCD that it will be unable to adopt the strategic action within 90 days of the end of the timeline to implement the strategic action. This notice must identify the actions or combinations of actions that the City will take to address the need that the strategic action was intended to address. This could include identification of other strategic actions in the HPS that will meet the identified need, or it could include development of a new strategic action to meet the need.

Tualatin proposes to monitor the impact of the HPS through the following measures. Tualatin staff will conduct a briefing to City Council every two years to discuss implementation of the HPS and the outcomes resulting from the strategic actions in the HPS.

- Number of new regulated affordable units built in Tualatin
- Loss of existing regulated affordable housing units
- Number of regulated affordable housing units that Tualatin contributed funding to, including the sources of funding or tax exemption
- Number of nonregulated affordable housing units that Tualatin contributed funding to, including the sources of funding or tax exemption
- Types of new units built
  - The types should at least include single-family detached, single-family attached, duplexes, triplexes, quadplexes, and multifamily with five or more units.
  - The types could be further disaggregated to include cottage housing, manufactured housing, accessory dwelling units, duplexes, triplexes, quadplexes, residential multifamily with five or more units, and mixed-use multifamily with five or more units.
- Densities of new units built by housing type and zone, considering the difference between the maximum allowed density and the built density
- Location of new units built
- Regulatory changes to allowable density by zone
- Code amendments that are made to remove barriers to development of housing



- 
- Partnerships formed as a result of the HPS, including number of people served by the partnerships
  - Changes in the characteristics of Tualatin’s population, such as changes in:<sup>38</sup>
    - Median household income
    - Percent of population in communities of color
    - Percent of renters
    - Percent of renter households cost burdened and severely cost burdened
    - Percent of owner households cost burdened and severely cost burdened
  - Changes in housing prices, such as:
    - Changes in median rent<sup>39</sup>
    - Changes in median sales price<sup>40</sup>

When Tualatin produces its next HPS in six years, the City will be required to summarize the efficacy of each strategic action included in this HPS. The information resulting from these measures will help Tualatin to summarize the outcomes and efficacy of the strategic actions in this HPS.

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<sup>38</sup> The best source of data for these indicators is the US Census’ American Community Survey Five-Year Estimate. These estimates naturally have some variation year over year and that variation may not indicate an actual change. The City should look at the change in these indicators over a period of at least 3 years or longer.

<sup>39</sup> The best existing source of data for rent is the US Census’ American Community Survey Five-Year Estimate. The City should look at the change in these indicators over a period of at least 3 years or longer. The City may also want to discuss change in rents with knowledgeable stakeholders to get current information about rents.

<sup>40</sup> The US Census’ American Community Survey Five-Year Estimate provides data about home values, but that data is not as reliable as other data about home sales. The City may be able to collect data about home sales from a source like Redfin or Zillow. Alternatively, the City may be able to work with a real estate professional who is able to provide median sales price data periodically.



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# Appendix A: Contextualizing Tualatin’s Housing Needs

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In 2019, Tualatin completed its Housing Needs Analysis for the 2020-2040 period.<sup>41</sup> The analysis found that Tualatin could not accommodate all of its housing needs on lands designated for residential use. Tualatin had a deficit of land in the Medium High Density and High-Density High-Rise Plan Designations, of seven acres (or 109 dwelling units) and four acres (or 101 dwelling units), respectively. The analysis also found that Tualatin had an unmet need for housing for extremely low income, very low-income, low-income, and moderate-income households—indicating a need for a wider range of housing types for renters and homeowners.

To build on Tualatin’s recent planning efforts, including development of the Housing Needs Analysis, the City applied for a grant with the Department of Land Conservation and Development in 2020 to produce a prototype Housing Production Strategy. The Housing Production Strategy will craft policy measures and actions to address Tualatin’s housing needs, meet the City’s housing goals, and effect positive change in the community.

To contextualize Tualatin’s housing needs, this memorandum summarizes relevant data from Tualatin’s Housing Needs Analysis, Statewide Regional Housing Needs Analysis,<sup>42</sup> the Washington County Consolidated Plan,<sup>43</sup> and other available sources to describe current and future housing needs in the context of population and market trends in Tualatin. Where appropriate, this memorandum also draws on information gathered through engagement with housing producers and consumers, including underrepresented communities, through recent outreach efforts conducted by the City of Tualatin.

As a part of providing context to better understand Tualatin’s housing needs, this memorandum presents information about housing in Tualatin for race, ethnicity, age, disability status, and other characteristics of the community to understand disproportionate housing impacts on different groups.

## Data Used in This Analysis

Throughout this analysis, data from multiple well-recognized and reliable data sources were used. One of the key sources for housing and household data is the US Census. This report primarily uses data from two Census sources:<sup>44</sup>

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<sup>41</sup> ECONorthwest. (December 2019). City of Tualatin Housing Needs Analysis, Final Report.

<sup>42</sup> ECONorthwest. (August 2020). Implementing a Regional Housing Needs Analysis Methodology in Oregon: Approach, Results, and Initial Recommendations.

<sup>43</sup> Root Policy Research. (May 15, 2020). Washington County – Beaverton – Hillsboro 2020-2024 Consolidated Plan.

<sup>44</sup> It is worth commenting on the methods used for the American Community Survey. The American Community Survey (ACS) is a national survey that uses continuous measurement methods. It uses a sample of about 3.54 million

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- The **Decennial Census**, which is completed every ten years and is a survey of *all* households in the United States. The Decennial Census is considered the best available data for information such as demographics (e.g., number of people, age distribution, or ethnic or racial composition), household characteristics (e.g., household size and composition), and housing occupancy characteristics. As of 2010, the Decennial Census does not collect more detailed household information, such as income, housing costs, housing characteristics, and other important household information. Decennial Census data is available for 2000 and 2010.
  - The **American Community Survey (ACS)**, which is completed every year and is a *sample* of households in the United States. The ACS collects detailed information about households, including demographics (e.g., number of people, age distribution, ethnic or racial composition, country of origin, language spoken at home, and educational attainment), household characteristics (e.g., household size and composition), housing characteristics (e.g., type of housing unit, year unit built, or number of bedrooms), housing costs (e.g., rent, mortgage, utility, and insurance), housing value, income, and other characteristics.

This report uses data from the 2013-2017 ACS for Tualatin and comparison areas primarily. Where information is available and relevant, we report information from the 2000 and 2010 Decennial Census. Among other data points noted throughout this analysis, this report also includes data from Oregon’s Housing and Community Services Department, the United States Department of Housing and Urban Development, RLIS, Redfin, Costar, the City of Tualatin, and the Washington County Consortia 2020-2024 Consolidated Plan.

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households to produce annually updated estimates for the same small areas (census tracts and block groups) formerly surveyed via the Decennial Census long-form sample. It is also important to keep in mind that all ACS data are estimates that are subject to sample variability. This variability is referred to as “sampling error” and is expressed as a band or “margin of error” (MOE) around the estimate.

This report uses Census and ACS data because, despite the inherent methodological limits, they represent the most thorough and accurate data available to assess housing needs. We consider these limitations in making interpretations of the data and have strived not to draw conclusions beyond the quality of the data.

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## Existing Measures, Policies, or Strategies that Address Tualatin’s Housing Needs

This City of Tualatin has the following housing measures (or policies or strategies) currently in place to address Tualatin’s housing needs. These measures include:

- Prohibited single-family detached housing in most high-density zones in Tualatin.
- Allowed one or more accessory dwelling units (ADUs) in residential zones per lot.<sup>45</sup>
- Applied density standards uniformly across zones that allow dwelling units on fee simple lots and on multifamily sites.
- Ensured decisions about type and location of housing are data-driven and focused on equitable outcomes instead of the best outcomes for those with the most money and/or privilege.
- Removed open space/common amenity requirements for low-density residential.
- Provided information to small, local developers to help them understand land use permitting processes and to give developers a sense of clarity and certainty about the requirements so they can better provide smaller-scale housing.

Tualatin’s existing measures generally focus on land use efficiency (such as allowing development of denser housing types) or measures to reduce development costs (such as removing open space requirements for some housing development). By and large, the types of policies that Tualatin has yet to adopt include policies to support:

- Development of affordable rental housing for households with incomes at or below 60% of Median Family Income (MFI).
- Preservation of affordable housing stock to prevent loss of affordable housing units and displacement of existing residents.
- Development and preservation of affordable housing for homeownership, including rehabilitation of existing housing.
- Expansion of workforce owner and rental housing to increase the jobs-housing balance.
- Increased racial and social equity for housing.
- Prevention and reduction of homelessness.
- Expansion of accessible housing and housing for people with special needs.
- Planning for mixed-use housing and redevelopment.
- Greater availability of diverse housing types through regulatory or zoning changes, including mixed-use housing and redevelopment in commercial areas.

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<sup>45</sup> Tualatin’s ADU provisions are not yet compliant in regard to HB 2001 off-street parking requirements.

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- Planning for and developing transportation and public infrastructure to support affordable housing, workforce housing, and mixed-use housing development.

## Summary of Tualatin's Housing Needs

Tualatin's primary housing needs, as described in the remainder of this memorandum, are:

- **Greater housing affordability and availability for renters.** Based on a survey of currently available rental properties in Tualatin, the typical asking rent for a two-bedroom apartment ranged from \$1,125 for a one-bedroom unit to more than \$2,000 per month for a three-bedroom unit. These costs are affordable to households earning 55% to 98% of the region's MFI (about \$45,000 to \$80,000). Competition for affordable units is strong and many cannot afford these rents without cost burdening themselves. In the 2013-2017 period, about 56% of Tualatin's renters were cost burdened, with 26% severely cost burdened.<sup>46</sup> Renters, especially those with lower incomes, are at risk of being displaced through increases in rental costs.
- **Greater housing affordability and availability for renters.** Based on a survey of currently available rental properties in Tualatin, the typical asking rent for a two-bedroom apartment was about \$1,125 to more than \$2,000 per month. These costs are affordable to households earning 55% to 98% of the region's MFI (about \$45,000 to \$80,000). Competition for affordable units is strong and many cannot afford these rents without cost burdening themselves. In the 2013-2017 period, about 56% of Tualatin's renters were cost burdened or severely cost burdened.
- **Housing diversity.** Tualatin is a relatively young and ethnically diverse city. While Tualatin comprises many families with and without children, the senior population across the region is growing. Tualatin serves as an important employment hub in the Portland Metro area, drawing workers from across the region. These characteristics suggest a need for a wide variety of housing types to meet the needs of a growing and diverse pool of existing and future residents.
- **Government-subsidized, emergency, and supportive housing.** Tualatin has about 604 rent-restricted affordable housing units (accounting for about 5% of Tualatin's housing stock), despite having about 1,753 households experiencing severe housing cost burden in the city. Tualatin's Continuum of Care region has 111 emergency shelter beds, 10 safe haven beds, 119 transitional shelter beds, and 725 permanently supportive housing beds supporting persons experiencing homelessness in the region. However, in 2019, 44% of people experiencing homelessness in the region were unsheltered and about 211

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<sup>46</sup> A household is said to be cost burdened if they spend 30% or more of their gross income on housing costs. A household is said to be severely cost burdened if they spend 50% or more of their gross income on housing costs.

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students in the Tualatin/Tigard School District experienced homelessness in some form in the 2018-19 school year (many of them doubled-up<sup>47</sup>).

Throughout this analysis, we discuss housing needs for specific populations, such as people of color. The reason for this discussion is that the housing needs of these populations are different from other groups in Tualatin. The Washington County Consolidated Plan describes the issue in the following way:

“Analyses persistently demonstrate that some population groups, including communities of color and people with disabilities, experience disproportionately high housing cost burdens, are less likely to be homeowners, are disproportionately represented in the criminal justice system, have a school achievement gap and experience other disparities relative to health, wellbeing, wealth, income and life outcomes. In deciding on priorities, the County sought opportunities to address persistent historic imbalances, consider systemic causes and advance a more equitable and fair housing system.”<sup>48</sup>

This analysis finds disproportionate housing needs in Tualatin for seniors, people of color, people with one or more disabilities, and people experiencing homelessness.

- **Seniors.** People 65 years of age and older tend to be disproportionately cost burdened compared to the average household—many living on fixed incomes in a region with increasingly growing housing costs.<sup>49</sup> About 62% of people aged 65 years of age and older are rent burdened in the Portland Region. Over the next twenty years, people over 65 years are expected to be the fastest-growing age group. As this group grows, Tualatin will need more housing that is affordable, physically accessible, and has needed services. Seniors will also need improved access to housing without discrimination, especially seniors who are also people of color.
- **People of Color.** About 55% of renter households that identified as Latino and 52% of renter households that identified as a non-Asian person of color were cost burdened in the Portland Region.<sup>50</sup> Latino is the largest ethnic or racial group in Tualatin (16% of the population) and has the lowest median income (\$30,761) of any race or ethnicity in Tualatin. Broadly, the housing needs for many people of color in Tualatin include improved access to affordable units, access to housing in locations with “high

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<sup>47</sup> “Doubled-up” refers to the sharing of other persons’ housing due to loss of housing or economic hardship.

<sup>48</sup> 2020-2024 Consolidated Plan for Washington County and the Cities of Beaverton and Hillsboro, Executive Summary, page 3.

<sup>49</sup> Some seniors have accumulated wealth, which is not accounted for in this analysis. Information about accumulated wealth is available at the national level but not at the state or city level.

<sup>50</sup> This information is not available on a city-by-city basis from the US Census ACS. This statistic is pulled from a statewide analysis from the report *Implementing a Regional Housing Needs Analysis Methodology in Oregon: Approach, Results, and Initial Recommendations* by ECONorthwest, August 2020.

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opportunity” (such as areas near jobs, transit, services, or high-quality education), and access to housing without discrimination.

- **People with disabilities.** Across the Portland Region, people with one or more disabilities experience disproportionate cost burden. In particular, 53% of renters in the Portland Region with a hearing or vision disability and 65% of renters with a disability other than a hearing or vision-based disability are cost burdened, compared to the average rate of cost burden for all households in the region at 46%. Housing needs of people with disabilities vary by type of disability, but in general, housing needs include a need for improved access to an affordable unit, improved physical access to housing units, access to housing with needed services, and access to housing without discrimination, especially for people with disabilities who are also people of color.
- **People experiencing homelessness.** People experiencing homelessness are disproportionately affected by lack of affordable housing. Three hundred seven people were identified as homeless and unsheltered in Washington County and 44 people were identified in the Tigard/Tualatin area in 2020. Housing needs for people experiencing homelessness vary by reason for homelessness. In Washington County, the primary reason people cited for experiencing homelessness was inability to afford housing. The broad housing needs for this group include needs for emergency assistance (including rent support), permanent supportive housing (including with supportive housing with services), and improved access to an affordable unit.

In addition to these needs, findings from public and stakeholder outreach helped to identify the following specific housing needs, as described later in this memorandum:

- ADA-accessible housing units and housing units developed with universal design components such as basic accessibility features; security or communication systems; easily traversed floors; remote control features; accessible lavatories, sinks, and counters; accessible bathtubs and showers; variable height counters and accessible work surfaces; and hearing and visual impairment aids.
- Wider range of housing types, such as more town homes and row houses, mixed-use development, duplexes, triplexes, cottage clusters, multigenerational housing, accessory dwelling units, and high-rise apartments (structures that are six to eight stories in height).
- Housing in mixed-use neighborhoods with access to transit, jobs, green space, and entertainment.
- Support for seniors to age in place.
- Housing options for households earning \$50,000 or less.
- Higher-quality housing.

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- Access to housing without discrimination.<sup>51</sup>

Discussions with stakeholders provided input on existing and expected barriers to development of needed housing, includes:

- High cost of land due to limited availability of sites (including larger sizes) that can accommodate new development.
- Increasingly high construction costs and competition for materials and labor.
- Zoning and development constraints, including lot size, height, density, and parking limitations/requirements.
- Competition for national or state grants and loans to subsidize affordable housing development.
- Developer willingness and financial ability to produce “needed” housing.

## Overview of Housing Needs in Washington County

The Washington County Consolidated Plan for 2020 to 2024 presents additional information to provide context for Tualatin’s housing needs. The groups with special housing needs in Washington County are elderly households, households with disabilities, and households with mental illness and/or substance abuse disorders. The section below presents a summary of the housing need for people in these groups. More information is available in Appendix D of the Washington County Consolidated Plan report.

- **Elderly and frail elderly.** In Washington County, between 8,000 and 20,000 elderly and frail elderly have unaddressed housing needs out of 95,000 individuals in 56,960 households that have at least one person 62 or older. About 21,000 households (38%) have a housing and supportive service need, and 25,000 households earn less than 80% of MFI and are very low income (an increase from the last Consolidated Plan). About 6,000 households in this group are extremely low income, earning less than 30% MFI. The primary concern of seniors who own their own home or live in market-rate rental housing is managing rising costs on fixed incomes. Affordable housing wait lists for seniors may be longer than their life expectancy, especially if they need a ground-floor unit. Moderate income seniors have no options for help. Lack of access to transportation is also a significant challenge for most seniors.
- **Persons with disabilities.** In Washington County, there are 57,605 households that have an individual with a self-care limitation, independent living limitation, and/or physical disability, representing 26% of households in the entire County. Another 18,200

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<sup>51</sup> Issues around housing discrimination were additionally identified through the help of focus groups during production of the Washington County Consolidated Plan: Washington County, Beaverton, Hillsboro. (August 2020). *2020-2024 Consolidated Plan for Washington County and the Cities of Beaverton and Hillsboro*, Volume 1.



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households have an individual with a cognitive limitation, representing 8% of households in the entire County.

- **Persons with mental illness and/or substance abuse disorders.** In Washington County, many as 40,000 have unaddressed substance abuse in need of treatment. According to the state data base on affordable housing, there are only three developments in Washington County that serve persons with substance abuse; these have a total of 84 beds.
- **Survivors of domestic violence.** In Washington County, there are an estimated 500 to 1000 housing units or supports needed.<sup>52</sup>

Some of the housing priorities in the Washington County Consolidated Plan include:

- Priorities for housing, including:
  - Increase the inventory of deeply affordable rental housing in good condition
  - Increase the inventory of accessible and visitable housing to serve elderly persons and those with disabilities
  - Improve the quality of affordable ownership housing in good condition and with accessibility features
  - Improve access to ownership for low to moderate income households through home buyer assistance programs/products and by helping increase the affordable ownership inventory
- Special needs priorities for elderly and frail; persons with disabilities; persons with mental illness and substance abuse challenges (includes those who are justice involved); adults and youth at risk and experiencing homelessness (including youth leaving the foster system); large families; agricultural workers; extremely low and very low-income households
- Neighborhood and community development priorities to expand transit to better serve persons with disabilities, elderly persons, and those without a car; expand the inventory of facilities servicing people experiencing homelessness; support household stabilization and displacement mitigation; and invest in public infrastructure and facilities that stabilize communities and support a variety of community needs and cultures.
- Public service priorities to fund supportive services and community-serving nonprofits and support educational and outreach activities focused on landlord-tenant and fair housing activities.

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<sup>52</sup> 2020-2024 Consolidated Plan for Washington County and the Cities of Beaverton and Hillsboro, Appendix D.



# Demographic and Socioeconomic Characteristics Affecting Tualatin’s Housing Needs

This section describes unmet housing needs in Tualatin by age, race and ethnicity, disability, household size and composition, and household income.

## Age of People in Tualatin

Population growth is the primary driver of growth in housing. Between 2000 and 2020, Tualatin’s population grew by about 4,404 people, with most of the growth occurring in the early 2000s. Over that period, Tualatin grew at a slower rate than Washington County and Oregon.

Growth in Tualatin’s senior population, as well as other age cohorts, will continue to shape the city’s housing needs. Seniors account for 16% of Tualatin’s existing population, and Washington County expects to have more than 75,000 more people over 60 years old by 2040 than in 2020.

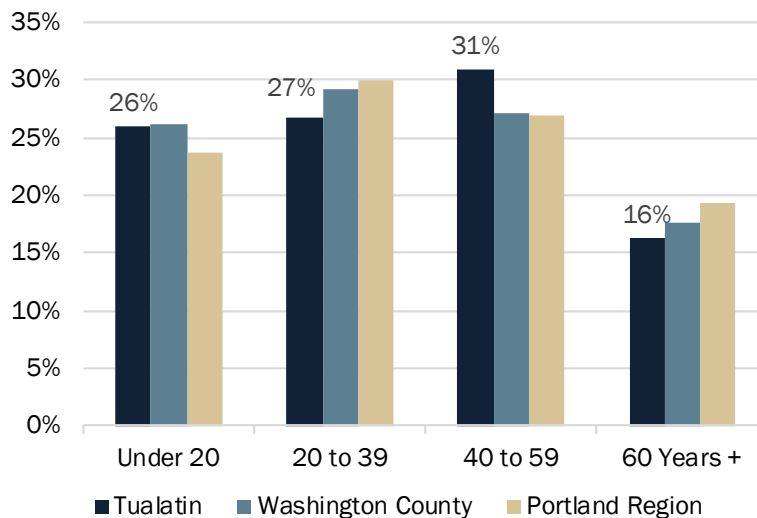
Growth in the number of seniors will result in demand for housing types specific to seniors, such as small and easy-to-maintain dwellings, assisted-living facilities, or age-restricted developments. Senior households will make a variety of housing choices, including remaining in their homes as long as they are able, downsizing to smaller single-family homes (detached and attached) or multifamily units, moving in with family, or moving into group housing (such as assisted-living facilities or nursing homes) as their health declines.

**In the 2013-2017 period, about 16% of Tualatin’s residents were over 60 years old.**

Tualatin had a slightly smaller share of people over the age of 60 than Washington County and Portland Region.

Exhibit 7. Population Distribution by Age, Tualatin, Washington County, and the Portland Region, 2013-2017

Source: US Census Bureau, 2013-2017 ACS, Table B01001.

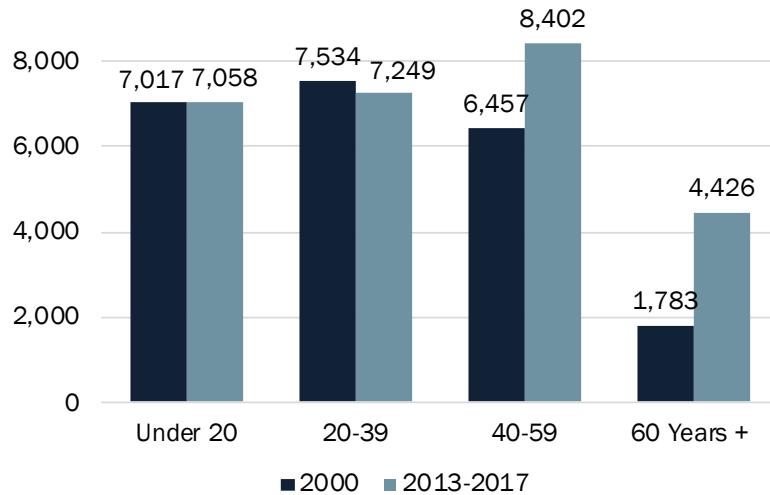


**Between 2000 and 2013-2017, people over 60 years old had the largest increase, adding 2,643 people.**

Over the next 20 years (2020 to 2040), the population aged 60 and older in Washington County is forecast to grow by 62% (75,217 people).

**Exhibit 8. Population Distribution by Age, Tualatin, 2013-2017**

Source: US Census Bureau, 2000 Decennial Census Table P012 and 2013-2017 ACS, Table B01001.



## Race and Ethnicity

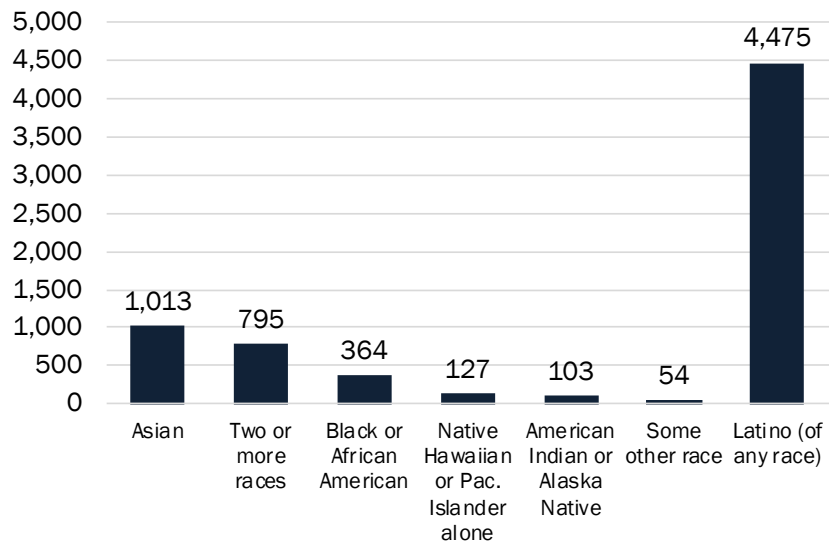
Understanding race and ethnicity characteristics<sup>53</sup> in Tualatin is important for understanding housing needs because people of color often face discrimination when looking for housing.

**About 2,400 people identify as a race other than white in Tualatin. Nearly 4,500 people identify as Latino.**

Not shown in the exhibit are the 23,694 people identifying as white in Tualatin.

**Exhibit 9. Population by Race/Ethnicity, Tualatin, 2013-2017**

Source: US Census Bureau, 2013-2017 ACS, Table B03002.



<sup>53</sup> The US Census Bureau considers race and ethnicity as two distinct concepts. Latino is an ethnicity and not a race, meaning individuals who identify as Latino may be of any race.

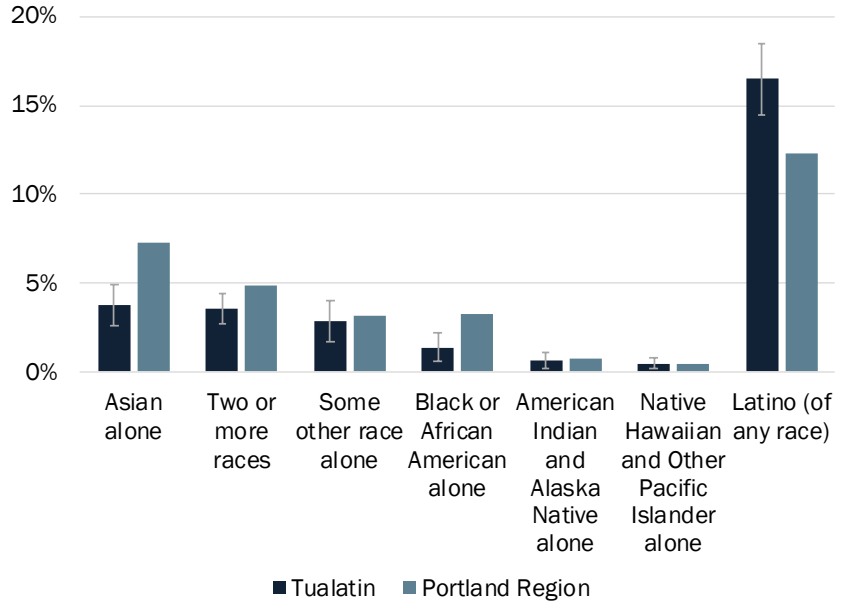
Residents who identify as Latino (of any race) account for 16% of Tualatin's population. The largest racial group in Tualatin is the Asian community, which accounts for 4% of Tualatin's population.

Not shown in this exhibit is about 74% of Tualatin's population and 72% of the Portland Region's population identifying as white.

Exhibit 10. Share of Population by Race and Ethnicity (Percent of Total Population), Tualatin, and the Portland Region, 2013-2017

Source: US Census Bureau, 2013-2017 ACS, Table B03002.

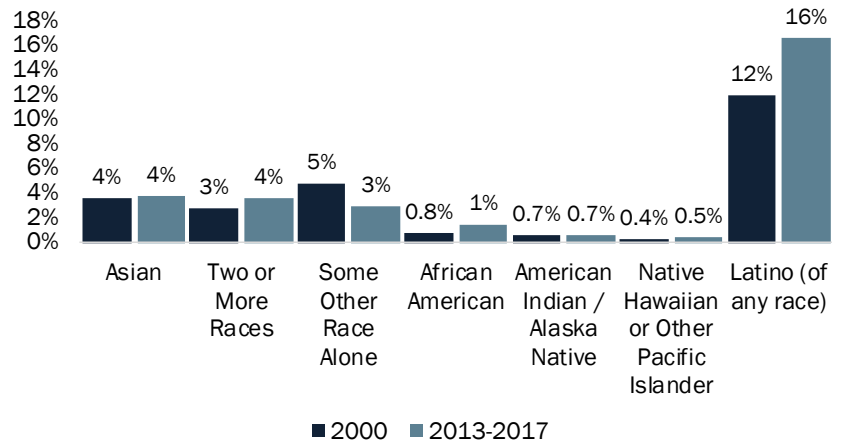
Note: Gray bars denote the potential upper and lower bound of the estimate using the margin of error reported by the Census.



The share of Tualatin's households that identified as Latino (of any race) increased from 2,701 people in 2000 to 4,475 people in 2017, consistent with regional trends.

Exhibit 11. Change in Population by Race/Ethnicity as a Percent of the Total Population, Tualatin, 2000 and 2013-2017

Source: US Census Bureau, 2013-2017 ACS, Table B01001.



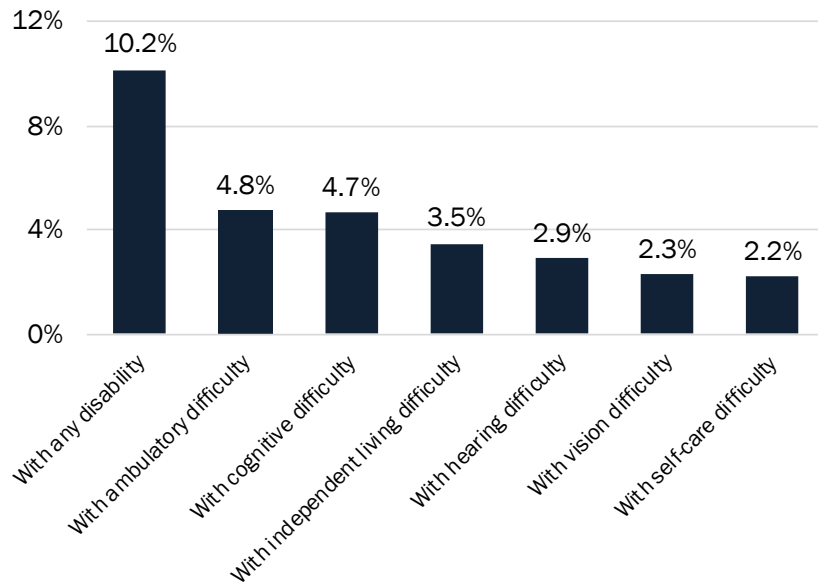
## People with One or More Disabilities

People with one or more disabilities have special housing needs because they may need housing that is physically accessible, that meets the needs of people with a cognitive disability, or that has specialized services.

**People with disabilities comprise about 10% of Tualatin’s population, or 2,800 people.**

**Exhibit 12. Share of Population with a Disability by Type of Disability, Tualatin, 2013-2017**

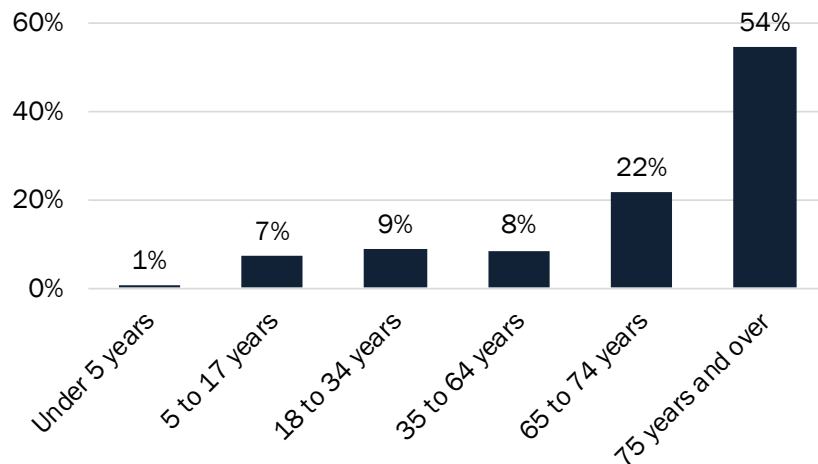
Source: US Census Bureau, 2013-2017 ACS 5-Year Estimate, Table S1810. Note that an individual can have more than one disability.



**The likelihood of having a disability increases with age. In Tualatin, over half the population that was 75 years and older had one or more disabilities.**

**Exhibit 13. Share of Population with a Disability by Age Group, Tualatin, 2013-2017**

Source: US Census Bureau, 2013-2017 ACS 5-Year Estimate, Table S1810



## Household Size and Composition

Housing need varies by household size and composition. The housing needs of a single-person household are different than those of a multigenerational family. Tualatin's households are smaller than Washington County's households.

**Tualatin's average household size was smaller than Washington County's and Clackamas County's, but larger than Multnomah County's.**

**Exhibit 14. Average Household Size, Tualatin, Washington County, Clackamas County, Multnomah County, 2013-2017**

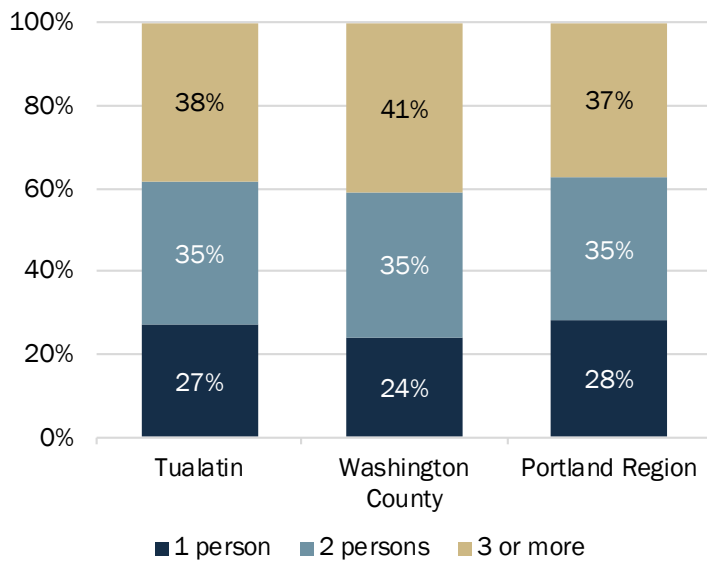
Source: US Census Bureau, 2013-2017 ACS 5-Year Estimate, Table B25010.



**About 62% of Tualatin's households were 1 or 2-person households, compared to 59% of Washington County's and 63% of the Portland Region's households.**

**Exhibit 15. Household Size, Tualatin, Washington County, and Portland Region, 2013-2017**

Source: US Census Bureau, 2013-2017 ACS 5-Year Estimate, Table B25010.

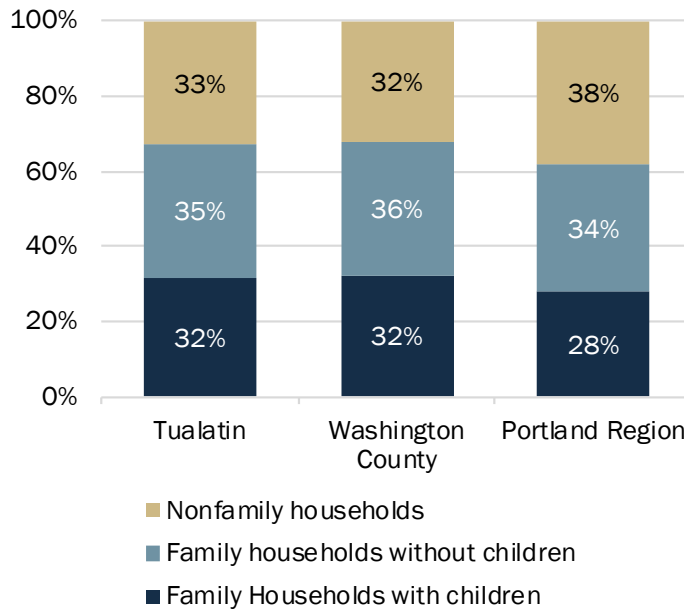


**Tualatin had a similar household composition to Washington County. Compared to the Portland Region, Tualatin had a smaller share of nonfamily households and a larger share of family households with children.**

About a third of Tualatin's households were nonfamily households (i.e., 1-person households and households composed of roommates).

**Exhibit 16. Household Composition, Tualatin, Washington County, and Portland Region, 2013-2017**

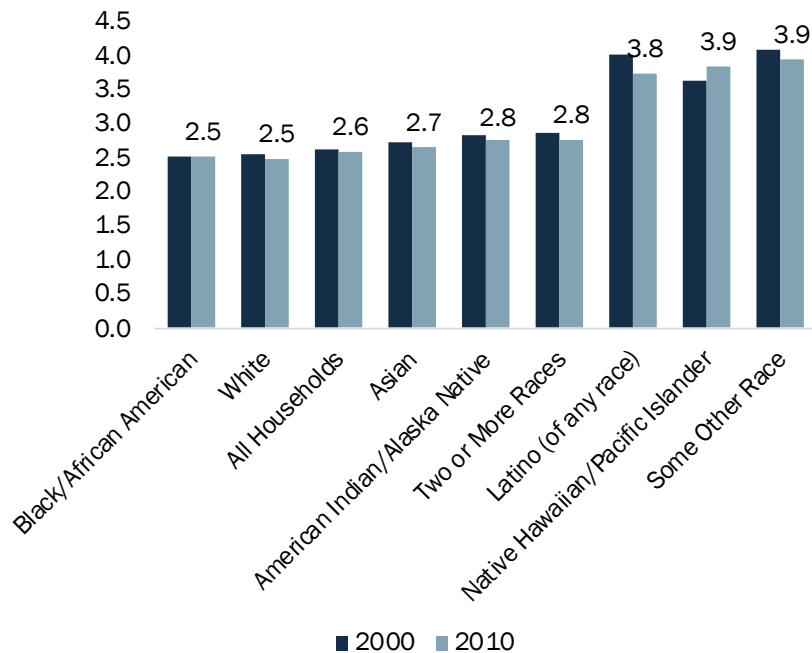
Source: US Census Bureau, 2013-2017 ACS 5-Year Estimate, Table DP02.



**Tualatin's households that identified as Black/African American and white had smaller household sizes than other racial or ethnic groups.**

**Exhibit 17. Historical Average Household Size Trends by Race and Ethnicity, Tualatin, 2000 and 2010**

Source: US Census Bureau, 2013-2017 ACS 5-Year Estimate, Table B25010.



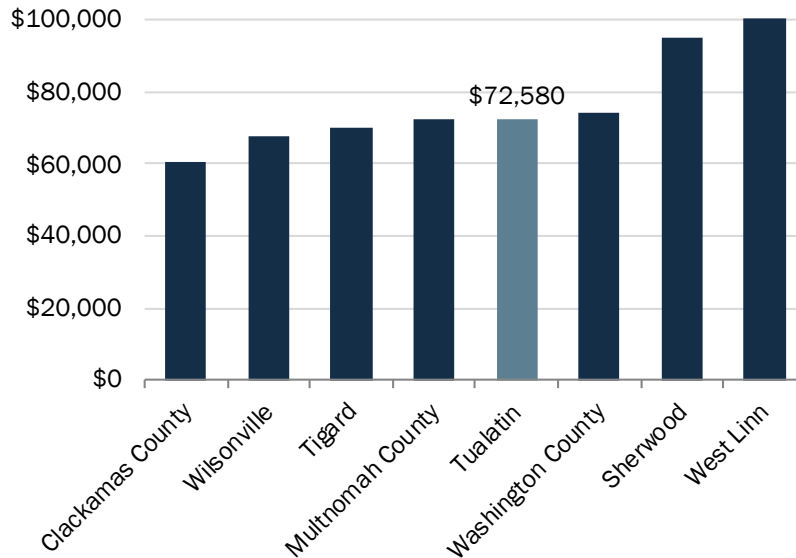
## Household Income

Income is one of the key determinants in housing choice and household ability to afford housing. Income for residents living in Tualatin was lower than the Washington County median income and the state’s median income.

**Over the 2013-2017 period, Tualatin’s median household income (MHI) was \$1,453 below that of Washington County’s.**

**Exhibit 18. Median Household Income, Tualatin, Washington County, and Comparison Regions, 2013-2017**

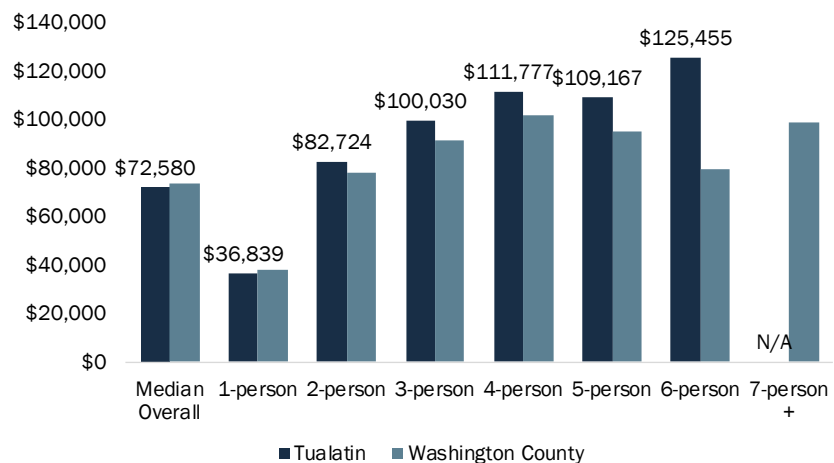
Source: US Census Bureau, 2013-2017 ACS 5-Year Estimate, Table B25119.



**In Tualatin, household income tends to increase with household size, peaking with households with four to six people.**

**Exhibit 19. Household Income by Household Size, Tualatin and Washington County, 2013-2017**

Source: US Census Bureau, 2013-2017 ACS 5-Year Estimate, Table B19019.



**Median household income was comparatively lower for households over 65 years in Tualatin and the county.**

In Tualatin, median household income for householders 65 years and older was \$57,073, compared to the overall median of \$81,118 in the 2014-2018 period.

However, older households may have wealth and savings not reflected in this statistic.

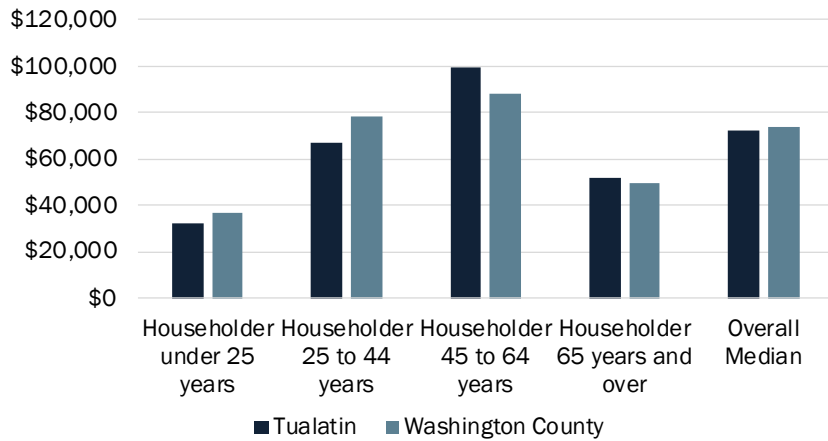
**Household income varies among households with different races and ethnicity.**

In Tualatin, median household income was proportionately higher for households with an Asian-identifying head of household.

The median household income was proportionately lower than the overall average for households with a head of household identifying as Latino or some other race.

**Exhibit 20. Median Household Income by Age, Tualatin, 2013-2017**

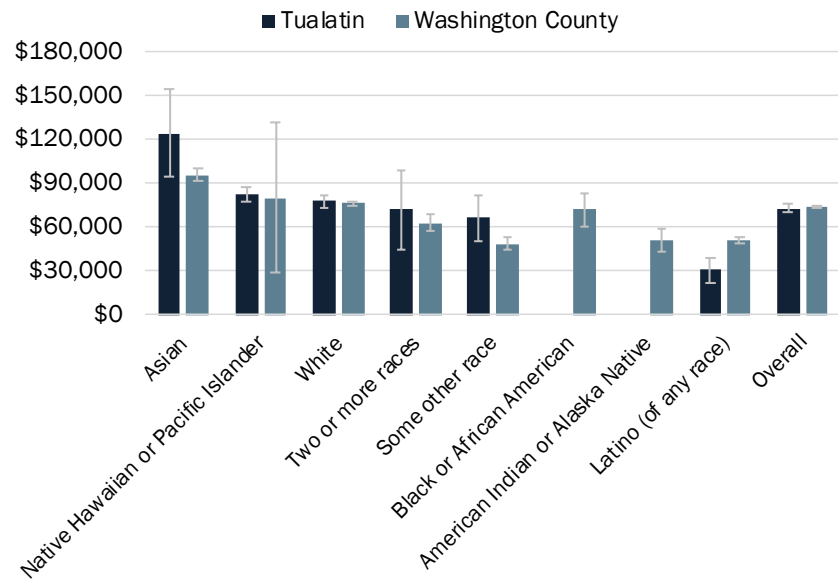
Source: US Census Bureau, 2013-2017 ACS 5-Year Estimate, Table B19049.



**Exhibit 21. Median Household Income by Race and Ethnicity for the Head of Household, Tualatin and Washington County, 2013-2017**

Source: US Census Bureau, 2013-2017 ACS 5-Year Estimate, Table S1903.

Note: In Tualatin, data was not available for heads of households identifying as Black or African American and as American Indian or Alaska Native. Gray bars denote the potential upper and lower bound of the estimate using the margin of error reported by the Census.





## Housing Market Conditions and Trends

An analysis of housing market conditions and trends in Tualatin provides insight into the functioning of the local housing market. The housing types used in this analysis are consistent with needed housing types as defined in ORS 197.303:

- **Single-family detached** includes single-family detached units, manufactured homes on lots and in mobile home parks, and accessory dwelling units.
- **Single-family attached** is all structures with a common wall where each dwelling unit occupies a separate lot, such as row houses or town houses.
- **Multifamily** is all attached structures (e.g., duplexes, triplexes, quadplexes, and structures with five or more units) other than single-family detached units, manufactured units, or single-family attached units.

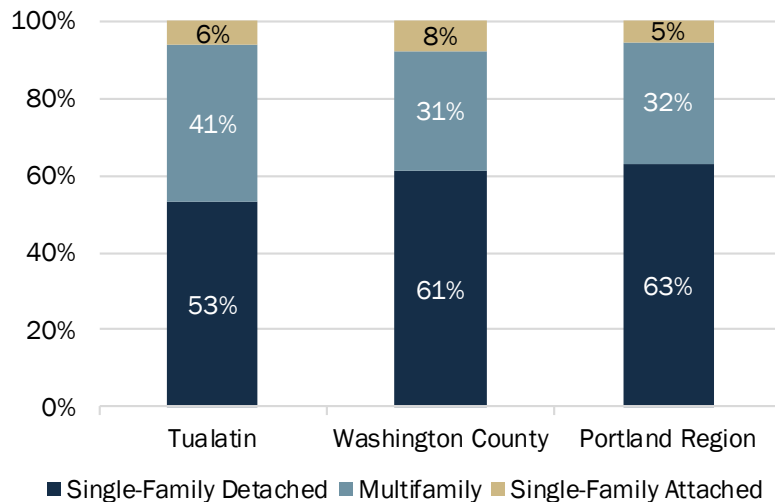
### Existing Housing Stock

According to the 2013-2017 American Community Survey (ACS) from the US Census, Tualatin had 11,329 dwelling units, an increase of 2,110 dwelling units from 2000. In that time, about 771 units of multifamily housing were built in Tualatin, accounting for 37% of the 2,110 new units over that period.

**Tualatin had a smaller share of single-family detached housing and a larger share of multifamily housing than Washington County and the Portland Region.**

Exhibit 22. Housing Mix, Tualatin, Washington County, Portland Region, 2013-2017

Source: US Census Bureau, 2013-2017 ACS Table B25024.



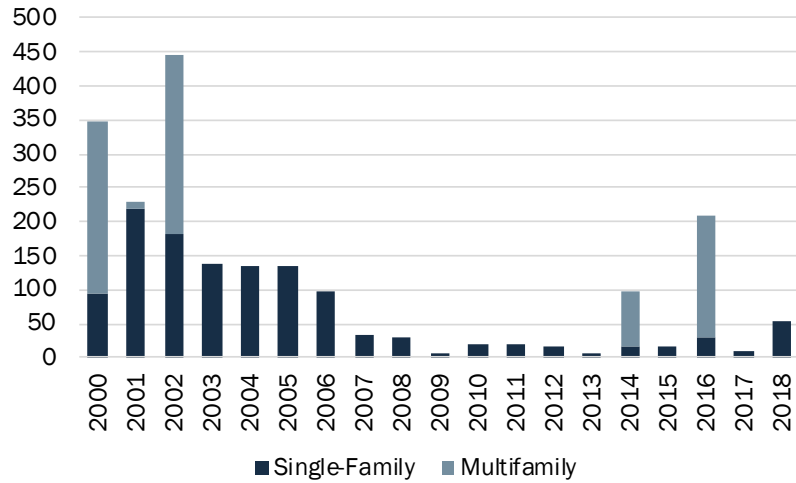
**Development of multifamily housing was strong and cyclical in Tualatin.**

Between 2000 and 2016, 789 new multifamily units were developed in Tualatin. Between 2000 and 2018, 1,262 new single-family units were developed in Tualatin.

Note: The single-family category includes detached and attached single-family homes. The multifamily category is inclusive of all multifamily types (duplexes to larger units).

**Exhibit 23. Units Built by Year and Type of Unit, Tualatin, 2000 to 2016/2018<sup>54</sup>**

Source: RLIS (data pulled November 2020).



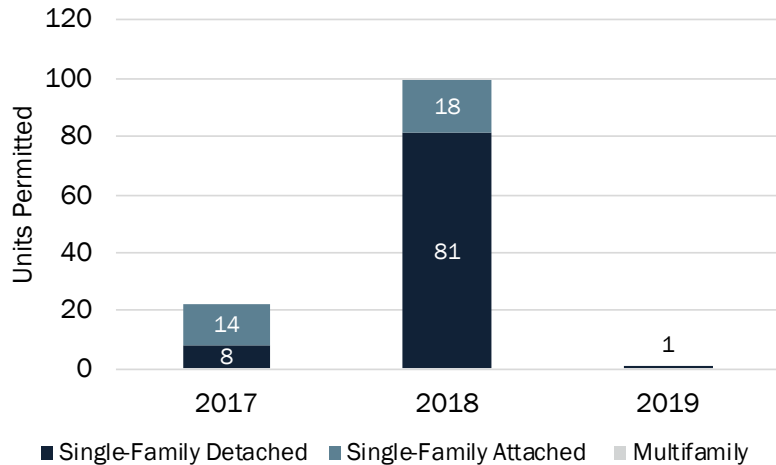
**In the last three years, mostly single-family detached housing has been permitted in Tualatin.**

In 2019, a 264-unit apartment complex began the permitting process.

Another 116-unit affordable housing apartment complex is currently in process to annex to Tualatin.

**Exhibit 24. Units Permitted, Tualatin, 2017, 2018, 2019**

Source: City of Tualatin Permit Database.



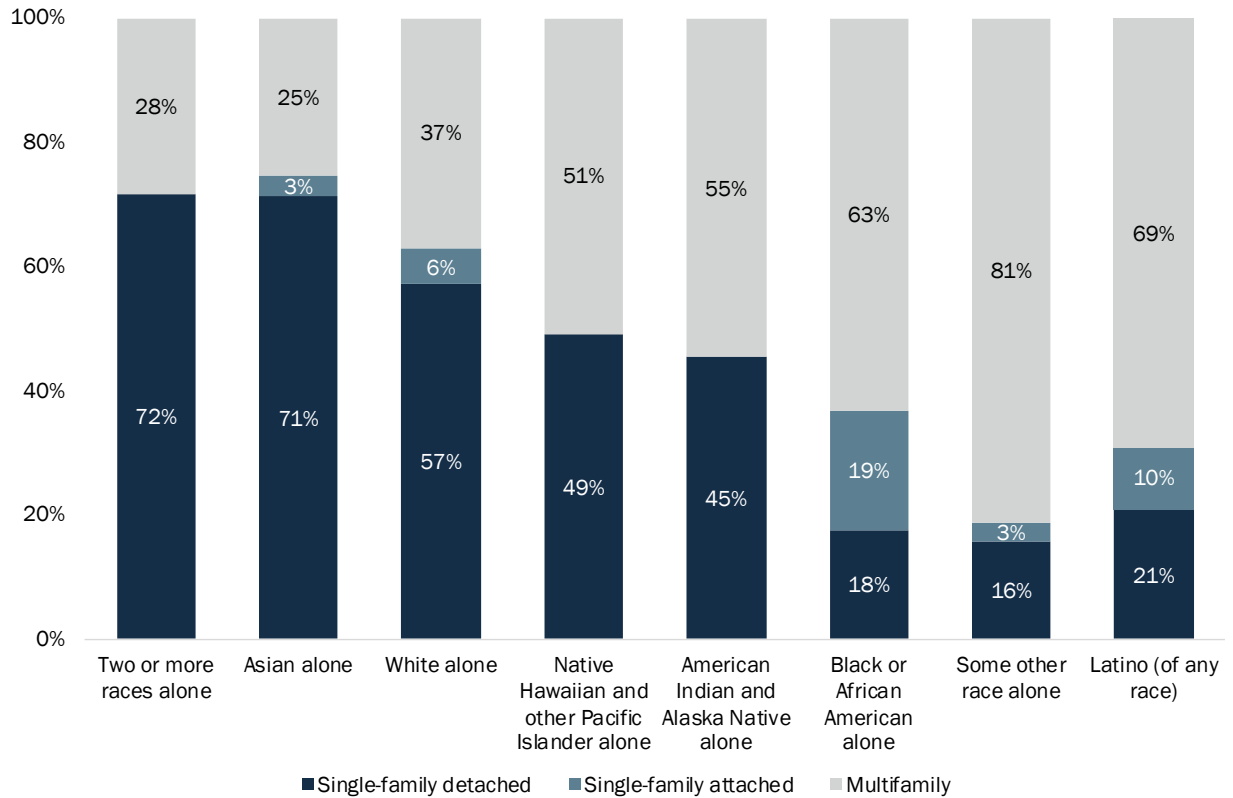
<sup>54</sup> A disclaimer about RLIS data: data for single-family and multifamily units is updated by Metro periodically. In Tualatin, RLIS data for multifamily units represents development through 2016 and the RLIS data for single-family units represents development through 2018.

Exhibit 25 shows that households that identified as Two or More Races or Asian were most likely to live in single-family detached housing (72% and 71%, respectively). The people most likely to live in multifamily housing were Black, at 63% of households; Latinos (of any race), at 70% of households; and people identifying as some other race, at 81% of households.

While this exhibit reflects the types of housing these groups *currently* live in and/or what they can currently afford to live in, it may not reflect their housing preferences.

**Exhibit 25. Housing Mix by Race and Ethnicity, Tualatin 2013-2017**

Source: US Census Bureau, 2013-2017 ACS Table B25032 B-H, I.



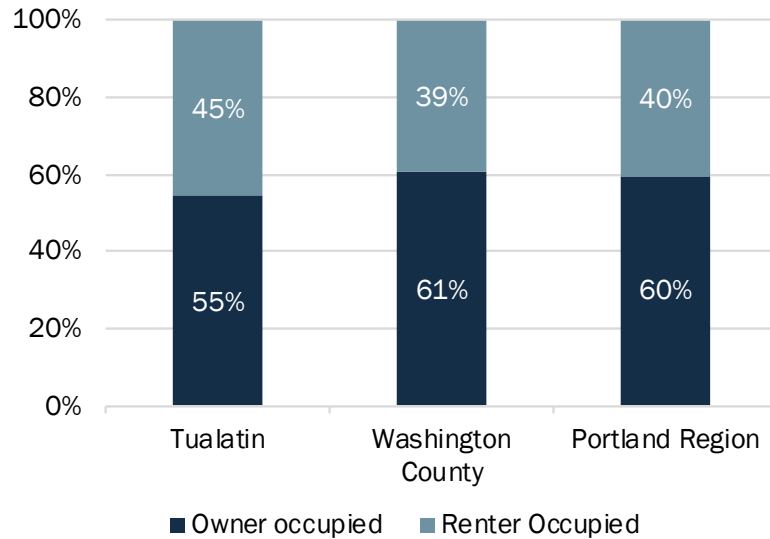
## Housing Tenure

Housing tenure describes whether a dwelling is owner or renter-occupied. In 2000 as well as in the 2013-2017 period, 55% of Tualatin’s housing stock was owner occupied and 45% was renter occupied.

**Tualatin had a lower homeownership rate than Washington County and the Portland Region by 6 percentage points.**

**Exhibit 26. Tenure, Occupied Units, Tualatin, Washington County, and Portland Region, 2013-2017**

Source: US Census Bureau, 2013-2017 ACS 5-Year Estimates, Table B24003.

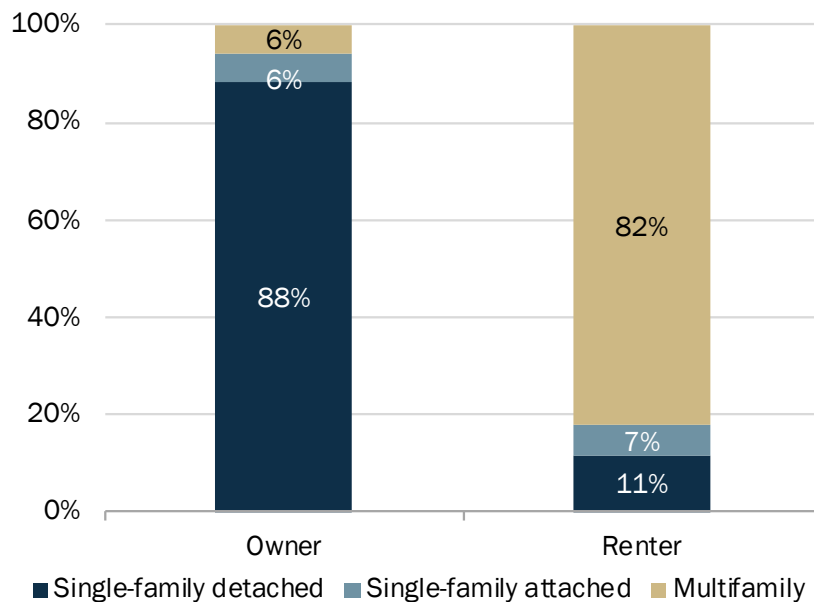


**Most of Tualatin homeowners (88%) lived in single-family detached housing.**

In comparison, most of Tualatin renters (82%) lived in multifamily housing.

**Exhibit 27. Housing Units by Type and Tenure, Tualatin, 2013-2017**

Source: US Census Bureau, 2013-2017 ACS Table B25032.

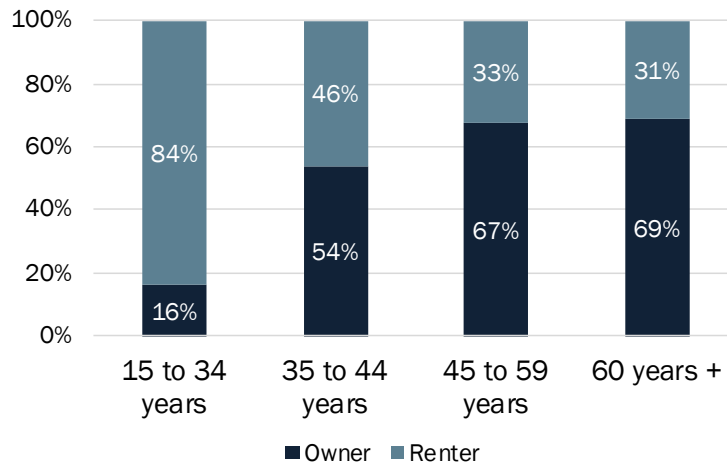


**Tualatin's household homeownership rate increases with age.**

In Tualatin, nearly 70% of householders over the age of 60 owned their own home.

**Exhibit 28. Housing Tenure by Age of the Head of Household, Tualatin, 2013-2017**

Source: US Census Bureau, 2013-2017 ACS Table B25007.

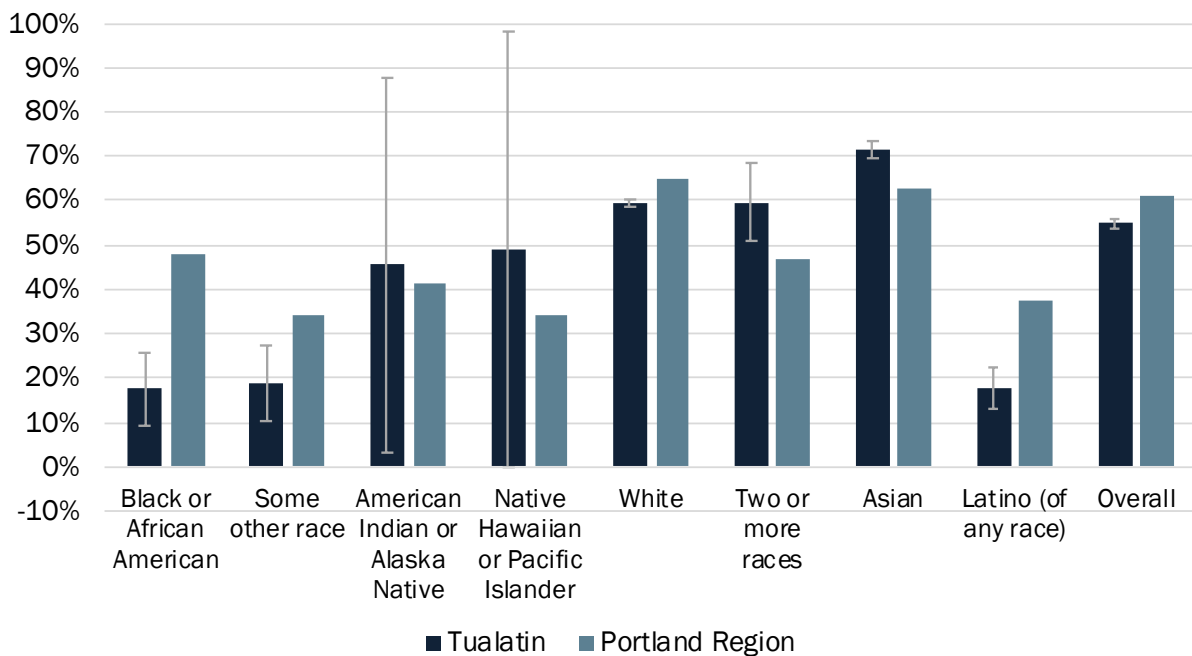


As Exhibit 29 shows, in Tualatin, the homeownership rates were lowest for households with a Black/African American or Latino-identifying head of household.

**Exhibit 29. Homeownership Rate by Head of Households' Race and Ethnicity, Tualatin and Washington County, 2013-2017**

Source: US Census Bureau, 2013-2017 ACS Table B25003 and B25003 B-I.

Note: Gray bars denote the potential upper and lower bound of the estimate using the margin of error reported by the Census. For American Indian or Alaska Native and Native Hawaiian or Pacific Islander, the margin of error is very large in Tualatin because those populations are so small in Tualatin.



## Vacancy Rates

Housing vacancy is a measure of housing that is available to prospective renters and buyers. It is also a measure of unutilized housing stock. The Census defines vacancy as "unoccupied housing units . . . determined by the terms under which the unit may be occupied, e.g., for rent, for sale, or for seasonal use only."

According to the 2013-2017 Census, the vacancy rate in Tualatin was the lowest at 4.3%, compared to 4.8% for Washington County and 5.5% for the Portland Region.

**Tualatin's homeowner vacancy rate is lower than its rental and overall vacancy rates.**

Exhibit 30. Vacancy Rate by Tenure, Tualatin, 2013-2017

Source: US Census Bureau 2013-2017 ACS Table DP04.

<b>Homeowner</b>	<b>1.4%</b> of Total Dwelling Units
<b>Rental</b>	<b>3.7%</b> of Total Dwelling Units
<b>Total</b>	<b>4.3%</b> of Total Dwelling Units

**As of 2013-2017, less than half a percent of Tualatin's dwelling units were vacant for seasonal, recreational, or occasional use (e.g., short-term rentals or vacation homes).**

Exhibit 31. Vacancy for Seasonal, Recreational, or Occasional Use, Tualatin, 2000 and 2013-2017<sup>55</sup>

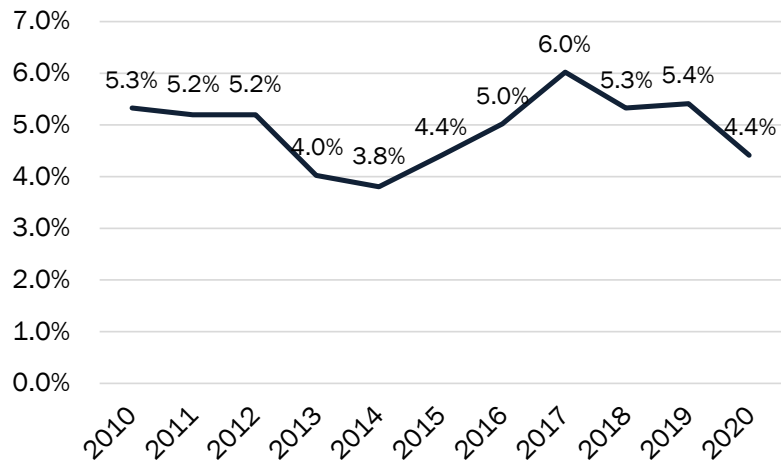
Source: US Census Bureau, 2000 Decennial Census SF1 Table H005, 2013-2017 ACS Table B25004.

<b>2000</b>	<b>43 Units</b>	<b>0.5%</b> of Total Dwelling Units
<b>2013-2017</b>	<b>44 Units</b>	<b>0.4%</b> of Total Dwelling Units

**Tualatin's multifamily vacancy rate was 4.4% in 2020, down from Tualatin's 10-year high of 6.0% in 2017.**

Exhibit 32. Average Multifamily Vacancy Rate, Tualatin, 2010-2020

Source: CoStar.



<sup>55</sup> Short-term rentals (commercial lodging) are not an allowed use in Tualatin's residential zones.

## Rent-Restricted and Emergency Housing

Governmental agencies offer subsidies to support housing development for extremely low income, very low-income, and low-income households. Tualatin has three rent-restricted housing developments, with 604 subsidized units. These 604 units represented about 5.3% of Tualatin’s total housing stock in the 2013-2017 period. In addition to these rent-restricted units, and as of August 5, 2019, households in Tualatin utilized 113 of Washington County Housing Authority’s Housing Choice Vouchers.<sup>56</sup>

### Exhibit 33. Government-Assisted Housing, Tualatin, 2020

Source: Oregon Housing and Community Services, Affordable Housing Inventory in Oregon.

Housing Developments	Total Units	Affordable Units	Population Served	Government Subsidy Type	Affordability Contract Expiration
Terrace View	100	100	Family	LIHTC 4%	January 2028
Tualatin Meadows	240	240	Family	LIHTC 4%	January 2031
Woodridge	264	264	Family	OHCS Grants	March 2049
<b>Total</b>	<b>604</b>	<b>604</b>			

The Beaverton/Washington County Continuum of Care region has 240 emergency, safe haven, and transitional housing beds and 725 permanent housing beds for people experiencing homelessness.

### Exhibit 34. Facilities and Housing Targeted to Households Experiencing Homelessness, Hillsboro, Beaverton/Washington County Continuum of Care Region, 2019

Source: HUD 2019 Continuum of Care Homeless Assistance Programs, Housing Inventory Count Report, Hillsboro, Beaverton/Washington County Continuum of Care.

Population Served	Emergency, Safe Haven, and Transitional Beds			Permanent Housing Beds
	Emergency Shelter	Safe Haven	Transitional Housing	
Households with Adult(s) and Children	103	-	41	341
Households with Only Adults	6	10	78	384
Unaccompanied Youth	2	-	-	-

<sup>56</sup> More information about Housing Choice Vouchers:

[https://www.hud.gov/program\\_offices/public\\_indian\\_housing/programs/hcv/about/fact\\_sheet](https://www.hud.gov/program_offices/public_indian_housing/programs/hcv/about/fact_sheet)

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## Manufactured Housing Communities

Manufactured homes provide a source of affordable housing in Tualatin. They provide a form of homeownership that can be made available to low and moderate-income households. Cities are required to plan for manufactured homes—both on lots and in parks. Exhibit 35 shows that Tualatin has two manufactured housing parks, with a total of 178 spaces within its city limits.

Exhibit 35. Inventory of Mobile/Manufactured Home Parks, Tualatin City Limits, March 2019

Source: Oregon Manufactured Dwelling Park Directory.

Name	Location	Type	Total Spaces	Vacant Spaces	Plan Designation
Angel Haven	18485 SW Pacific Dr	Senior	129	2	RML
Willow Glen	9700 SW Tualatin Rd	Family	49	1	RML
<b>Total</b>			<b>178</b>	<b>3</b>	

## People Experiencing Homelessness

According to HUD’s 2019 Homeless Assessment Report, across the United States, people experiencing homelessness increased. People experiencing *unsheltered* homelessness increased across all racial groups, among women and girls, and for people 25 and older.<sup>57</sup> Oregon had the second-highest rate of people experiencing unsheltered homelessness in the United States (64% of total people experiencing homelessness), behind California only. Oregon also had the largest change in homelessness by state (an increase of 1,400 people or 10% change from 2018-2019), again behind California. The following exhibits provide local estimates of homelessness in Tualatin’s region.

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<sup>57</sup> The US Department of Housing and Urban Development. (2019). The 2019 Annual Homeless Assessment Report (AHAR) to Congress. Office of Community Planning and Development.

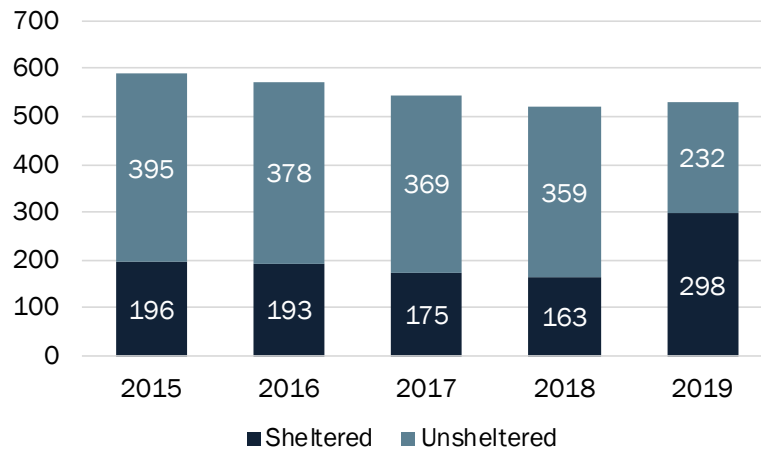


**In 2019, Tualatin's Continuum of Care (CoC) district counted 530 people experiencing homelessness in their annual Point-in-Time estimate.**

In 2019, 44% of the people experiencing homelessness were unsheltered, down from 67% in 2015.

**Exhibit 36. Homelessness Estimate (Sheltered and Unsheltered), Hillsboro/Beaverton/Washington County CoC, 2015-2019**

Source: Annual Homeless Assessment Report (AHAR) PIT data.



**About 44 people were experiencing unsheltered homelessness in the Tigard/Tualatin area in 2020.**

Proportioning out these individuals using population, this analysis estimates that about 15 individuals experienced homeless in Tualatin.

**Exhibit 37. Unsheltered Homelessness, Washington County and Tualatin/Tigard Area, 2020**

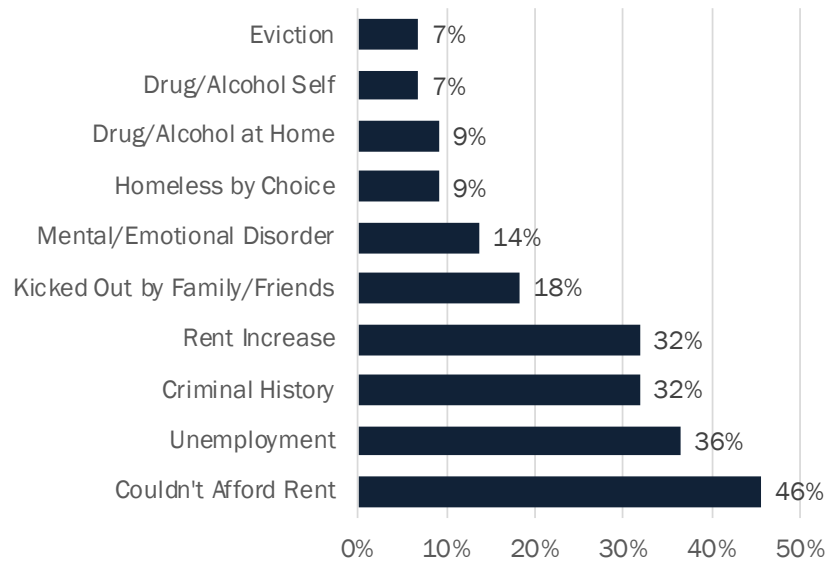
Source: Washington County Department of Housing Services, PIT data. Portland State University Population Estimates for Tualatin and Tigard Area.

<b>Washington County</b>	<b>307<sup>58</sup></b> Unsheltered People	<b>33%</b> Chronic Homeless	<b>18%</b> Domestic Violence
<b>Tualatin / Tigard Area</b>	<b>44</b> Unsheltered People	<b>27%</b> Chronic Homeless	<b>14%</b> Domestic Violence
<b>Tualatin</b>	<b>15</b> Estimated Unsheltered People	-	-

**The primary reason for homelessness in the Tigard/Tualatin area was inability to afford rent.**

**Exhibit 38. Reason for Unsheltered Homelessness, Tualatin/Tigard Area, 2020**

Source: Washington County Department of Housing Services, from the PIT 2020 Tigard Tualatin Presentation. Exhibit remade by ECONorthwest for readability.



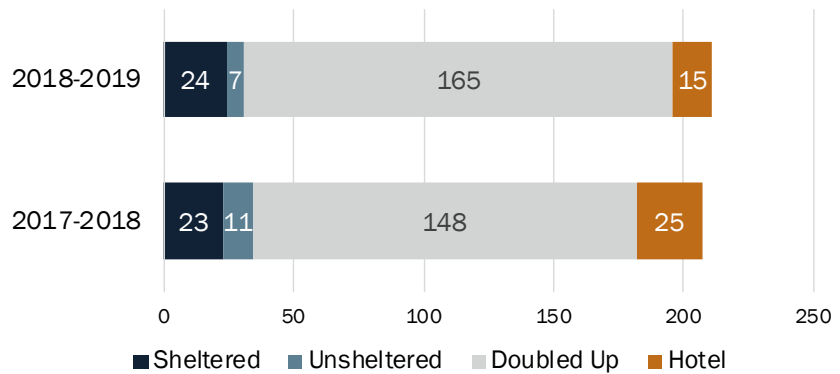
<sup>58</sup> The PIT count is a snapshot of individuals experiencing homelessness on a single night in a community. Though the PIT count is not a comprehensive survey, it serves as a measure of homelessness at a given point in time and is used for policy and funding decisions.

From the 2017-18 school year to the 2018-19 school year, student homelessness increased from 207 students to 211 students, resulting in an increase of four students.

Of the 211 students in 2018-19 experiencing homelessness, 36 were unaccompanied youth (17%).

Exhibit 39. Students Homeless by Living Situation, Tigard/Tualatin School District, 2017-2018 and 2018-2019

Source: McKinney Vento, Homeless Student Data.



Based on the Oregon's Regional Housing Needs Analysis, Tualatin will need 252 housing units to accommodate people experiencing homelessness in the 2020-2040 period.

Exhibit 40. Estimate of Housing Need for People Experiencing Homelessness, Tualatin, 2020 to 2040

Source: From the Report *Implementing a Regional Housing Needs Analysis Methodology in Oregon: Approach, Results, and Initial Recommendations* by ECONorthwest, August 2020.

**252 Dwelling Units**

New Units Need for People Experiencing Homelessness (2020-2040)

**13 Dwelling Units**

Annual Average

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## Housing Affordability Considerations

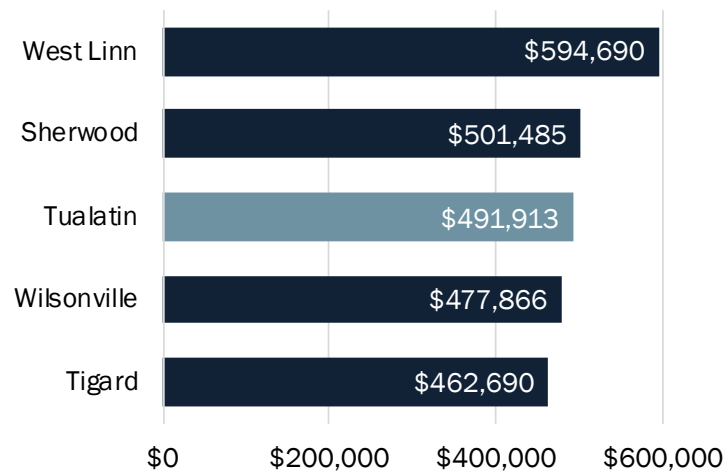
This section describes changes in sales prices, rents, and housing affordability in Tualatin. It uses cities in the region, as well as Washington County and Oregon, as comparisons. Both housing sales prices and rents have increased steadily in Tualatin and the greater region over the last several years.

### Housing Costs

**In 2020, Tualatin's annual median home sales price was \$491,913, or \$102,777 less than West Linn's and \$29,223 more than Tigard's median home sales price.**

Exhibit 41. Median Home Sales Price, Tualatin and Comparison Cities, 2020 Annual Median

Source: Redfin.

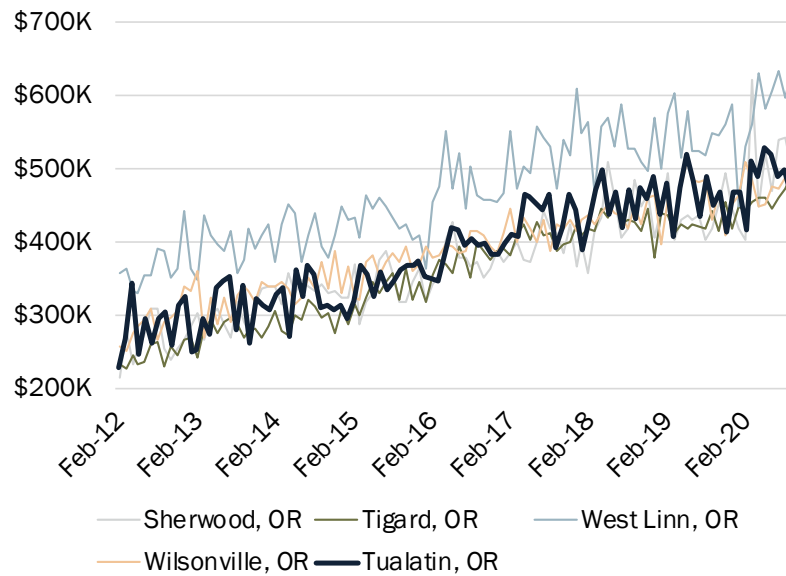


**Over the last decade, median home sales prices have marched upward in Tualatin and comparison cities. In 2020, Tualatin’s median home sales price was \$491,913.**

Between February 2012 and 2020, home sales prices increased by \$261,913 (114%) in Tualatin, consistent with changes in sales prices in nearby cities.

**Exhibit 42. Median Sales Price, Single-Family housing, Tualatin and Comparison Cities, February 2012–September 2020**

Source: Redfin.

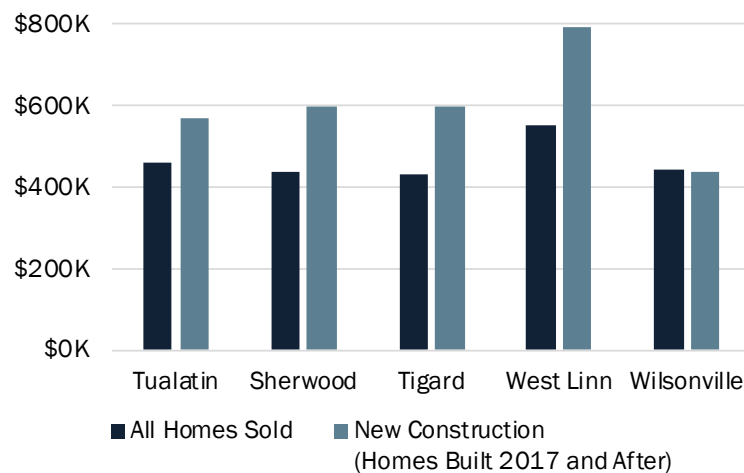


**Newly built homes generally have higher prices than existing housing.**

In Tualatin, the median sales price of all homes sold since 2017 (including existing housing) was \$461,204, compared to \$566,900 for new homes sold (i.e., new construction—homes built since 2017).

**Exhibit 43. New Construction Price Premium, Tualatin and Comparison Cities, January 2017 through September 2020**

Source: Redfin.



## Renter Costs

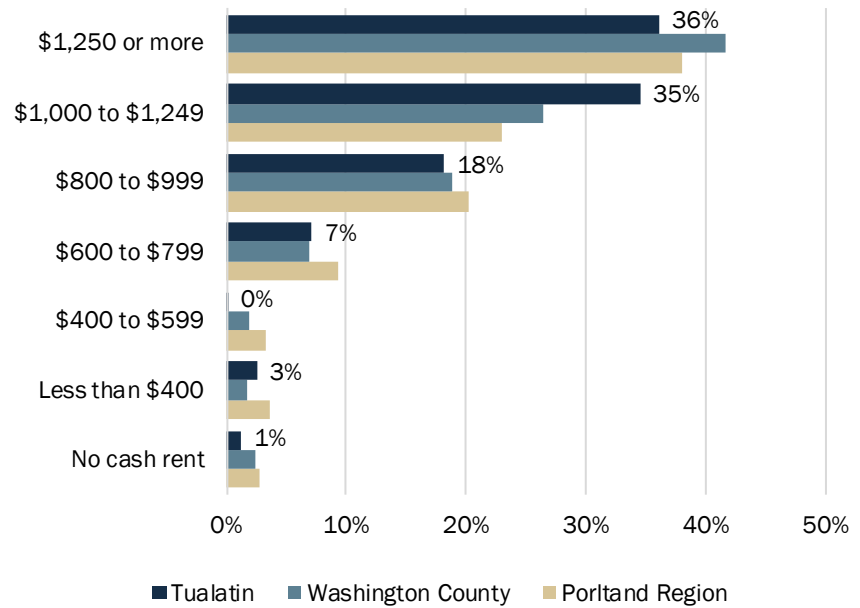
Rental costs are increasing in Tualatin. According to the US Census and ACS, median gross rents in Tualatin increased from \$768 in 2000 to \$1,154 in the 2013-2017 period.

**Most renters in Tualatin paid more than \$1,000 per month in rent.**

About 36% of Tualatin’s renters paid \$1,250 or more in gross rent per month, a smaller share than renters across Washington County (42%) and the Portland Region (38%).

**Exhibit 44. Gross Rent, Tualatin, Washington County, and Portland Region, 2013-2017**

Source: US Census Bureau, 2013-2017 ACS Table B25063.



**The average asking rent per unit has increased steadily for all bedroom sizes since 2010.**

The asking rent for a 2-bedroom unit in Tualatin increased from \$873 in 2010 to \$1,334 in 2019, an increase of \$461 (53% change).

**Exhibit 45. Average Multifamily Asking Rent by Bedroom Size, Tualatin, 2010 through 2019<sup>59</sup>**

Source: CoStar.

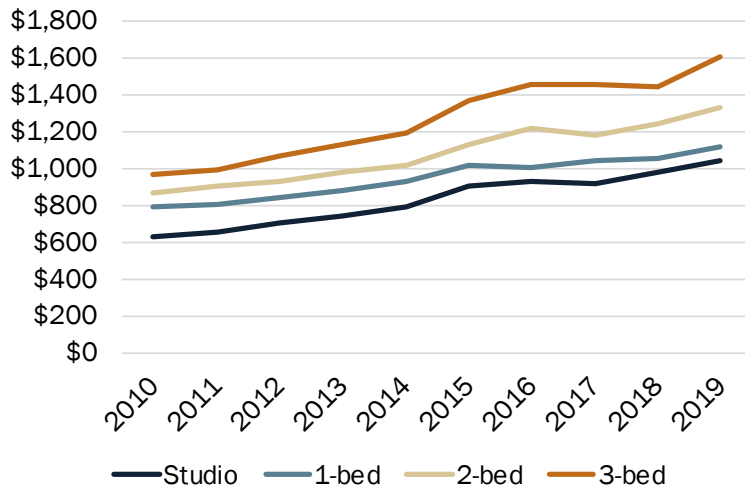


Exhibit 46 presents the findings of an assessment of available rental properties advertised on Apartments.com as of December 2020. The rental costs for these developments likely have

<sup>59</sup> This analysis excludes units with four or more bedrooms, as there is highly limited observations in the CoStar inventory for Tualatin.

higher asking rents compared to all rental housing in Tualatin. This is because Apartments.com (and similar platforms) are more likely to include listings for newer, professionally managed, larger apartment buildings (those typically priced with a premium). Exhibit 46 shows a broader, more complete picture of housing costs for renters in Tualatin than Census or CoStar data alone.

#### Exhibit 46. Rent Survey Findings, Tualatin, December 2020

Source: Apartments.com and Portland Housing Bureau.

Housing Development	Rent Range	1-bedroom	2-bedrooms	3-bedrooms
Alden	\$1,269 - \$1,729	\$1,269 - \$1,369	\$1,445 - \$1,545	\$1,679 - \$1,729
Arya at Hedges Creek	\$1,373 - \$2,446	\$1,373 - \$1,684	\$1,478 - \$2,022	\$1,756 - \$2,446
Chelan	\$950 - \$1,295	\$950 - \$1,025	\$1,125 - \$1,175	\$1,250 - \$1,295
Eddylane at Bridgeport	\$1,187 - \$2,991	\$1,348 - \$1,872	\$1,755 - \$2,991	\$2,305 - \$2,350
Forest Rim Apartments	\$1,295 - \$1,885	\$1,295 - \$1,575	\$1,495 - \$1,855	\$1,885
River Lofts	\$1,375 - \$1,877	n/a	\$1,375 - \$1,877	n/a
Stonethrow Apartments	\$1,360 - \$4,948	\$1,360 - \$4,942	\$1,590 - \$4,948	n/a
Tualatin Heights	\$1,336 - \$1,508	n/a	\$1,336 - \$1,508	n/a
Affordable Rents				
30% MFI	\$518 - \$718	\$518	\$621	\$718
50% MFI	\$863 - \$1,197	\$863	\$1,036	\$1,197
80% MFI	\$1,382 - \$1,916	\$1,382	\$1,658	\$1,916
100% MFI	\$1,726 - \$2,394	\$1,726	\$2,072	\$2,394

## Housing Cost Burden

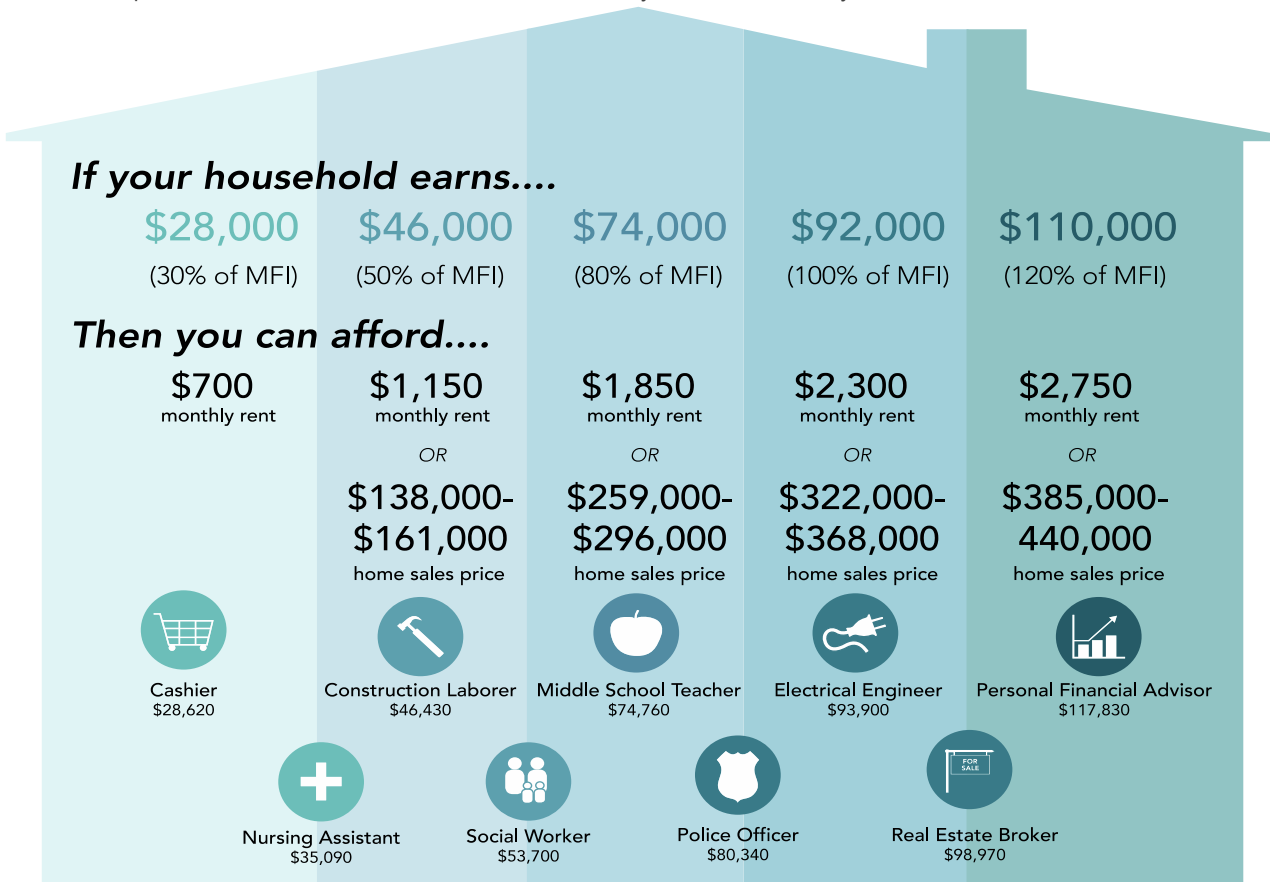
Financially attainable housing costs for households across the income spectrum in Washington County are identified in Exhibit 47. For example, a household earning Median Family Income in Washington County (about \$92,000 per year for a family of four) can afford a monthly rent of about \$2,300,<sup>60</sup> or a home roughly valued between \$322,000 and \$368,000, without cost burdening themselves.

A household would need to earn about \$140,500 a year (153% of MFI for a family of four) to afford the median sales price of a home in Tualatin (\$491,913). A household would need to earn about \$58,000 (63% of MFI for a family of four) to afford the rent on a two-bedroom apartment in Tualatin (\$1,450).

<sup>60</sup> Note that Median Family Income for the region is different than median household income (MHI) for Tualatin (see Exhibit 18). MFI is determined by HUD for each metropolitan area and nonmetropolitan county. It is adjusted by family size—in that 100% MFI is adjusted for a family of four. MHI is a more general term. MHI includes the income of the householder and all other individuals 15 years old and over in the household, whether they are related to the householder or not.

Exhibit 47. Financially Attainable Housing, by Median Family Income (MFI) for Washington County (\$92,000), Tualatin, 2020

Source: US Department of HUD 2020. Note: MFI is Median Family Income for a family of 4.





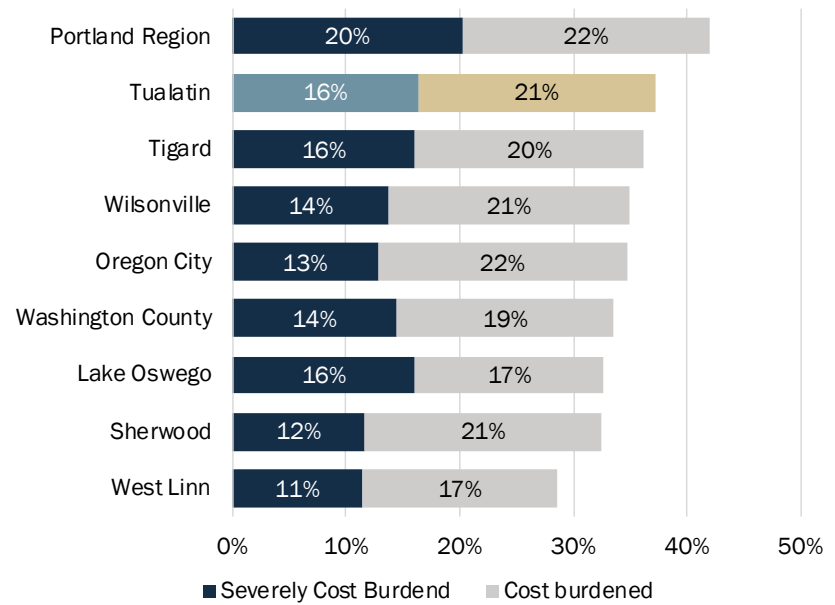
Because the local housing market cannot produce income-restricted, subsidized affordable housing at sufficient levels — and because it cannot often produce moderate-income/workforce housing without subsidy — many households in Tualatin are cost burdened (as Exhibit 48 to Exhibit 51 show). A household is defined by HUD as cost burdened if their housing costs exceed 30% of their gross income.<sup>61</sup> A household that spends 50% or more of their gross income on housing costs is considered to be severely cost burdened by HUD and the State of Oregon.

**Overall, about 37% of all households in Tualatin were cost burdened.**

In the 2013-2017 period, Tualatin had one of the highest rates of cost-burdened households relative to other comparison areas.

**Exhibit 48. Housing Cost Burden, Tualatin, Washington County, and Comparison Areas, 2013-2017**

Source: US Census Bureau, 2013-2017 ACS Tables B25091 and B25070.



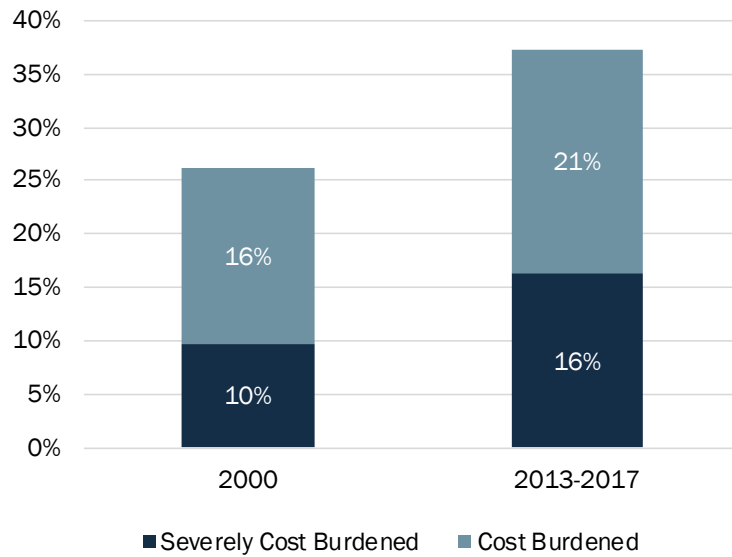
<sup>61</sup> US Department of Housing and Urban Development (HUD). See [https://www.huduser.gov/portal/pdredge/pdr\\_edge\\_featd\\_article\\_092214.html](https://www.huduser.gov/portal/pdredge/pdr_edge_featd_article_092214.html)

**From 2000 to the 2013-2017 period, the share of cost-burdened and severely cost burdened households in Tualatin grew by 11%.**

Tualatin has also experienced a substantial rise in its renters who are severely cost burdened. In the 2014-2018 time period, 27% of Tualatin’s renters were severely cost burdened,<sup>62</sup> compared to 26% in the 2013-2017 time period.

**Exhibit 49. Change in Housing Cost Burden, Tualatin, 2000 to 2013-2017**

Source: US Census Bureau, 2000 Decennial Census, Tables H069 and H094 and 2013-2017 ACS Tables B25091 and B25070.

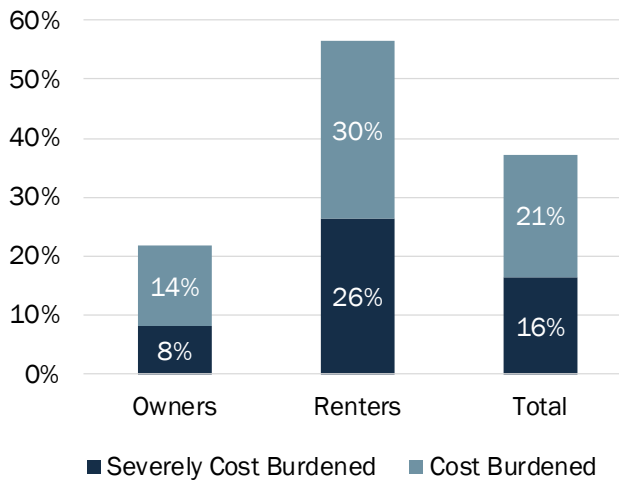


**Renters were more likely to be cost burdened than homeowners.**

In the 2013-2017 period, about 56% of Tualatin’s renters were cost burdened or severely cost burdened, compared to 22% of homeowners.

**Exhibit 50. Housing Cost Burden by Tenure, Tualatin, 2013-2017**

Source: US Census Bureau, 2013-2017 ACS Tables B25091 and B25070.



<sup>62</sup> Oregon Department of Land Conservation and Development. “Severe Rent Burden in Oregon 2020,” 2020.

**Nearly all renter households earning less than \$35,000 per year were cost burdened.**

Most households earning between \$35,000 and \$50,000 per year were cost burdened.

**Exhibit 51. Cost-Burdened Renter Households, by Household Income, Tualatin, 2013-2017**

Source: US Census Bureau, 2013-2017 ACS Table B25074.

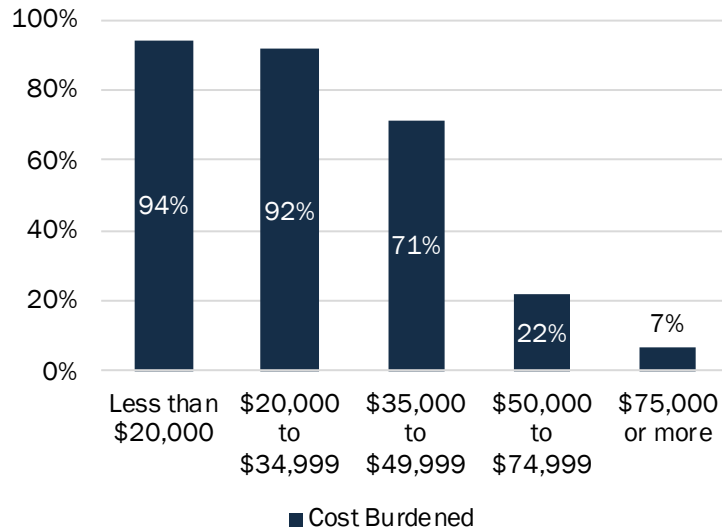


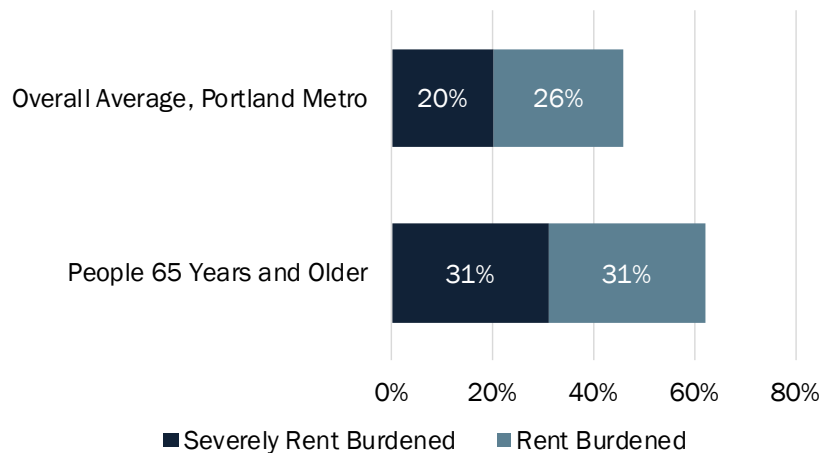
Exhibit 52 through Exhibit 54 present information about cost burden among different populations for the Portland Region. This information is not available on a city-by-city basis and is pulled from a statewide analysis from the report *Implementing a Regional Housing Needs Analysis Methodology in Oregon: Approach, Results, and Initial Recommendations* by ECONorthwest, August 2020.

**Renters 65 years of age and older are disproportionately cost burdened compared to the Portland Region average.**

Over 60% of renters aged 65 and older are cost burdened.

**Exhibit 52. Cost-Burdened Renter Households, for People 65 Years of Age and Older, Portland Region, 2018**

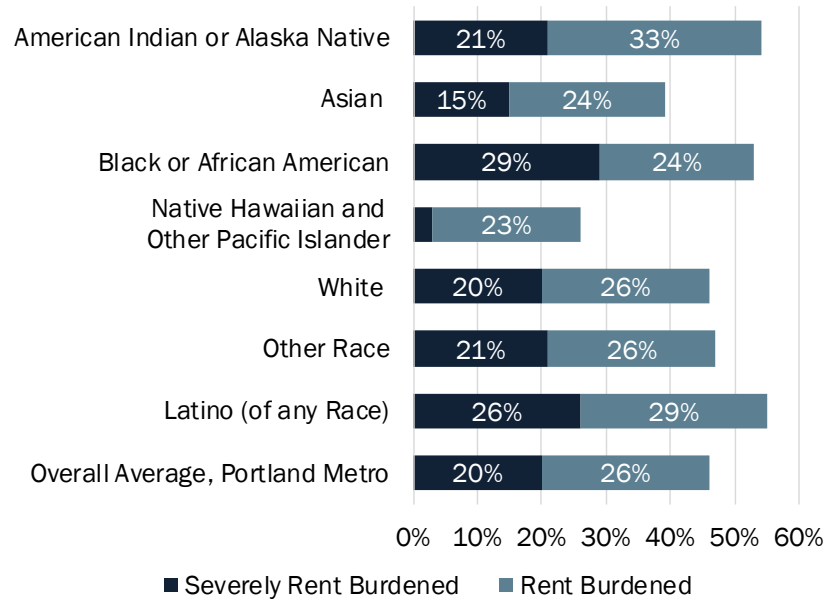
Source: US Census, 2018 ACS 1-Year PUMS Estimates. From the Report *Implementing a Regional Housing Needs Analysis Methodology in Oregon: Approach, Results, and Initial Recommendations* by ECONorthwest, March 2021.



Compared to the average renter household in the Portland Region, those that identified as American Indian or Alaska Native, Black or African American, and Latino were disproportionately cost burdened.

**Exhibit 53. Cost-Burdened Renter Households, by Race and Ethnicity, Portland Region, 2018**

Source: US Census, 2018 ACS 1-Year PUMS Estimates. From the Report *Implementing a Regional Housing Needs Analysis Methodology in Oregon: Approach, Results, and Initial Recommendations* by ECONorthwest, March 2021.



**Renters with one or more disabilities in the Portland Region are disproportionately cost burdened.**

About 46% of renters in the Portland Region are cost burdened, compared to 53% of renters with a hearing or vision disability and 65% of renters with a disability other than a hearing or vision-based disability in the Portland Region.

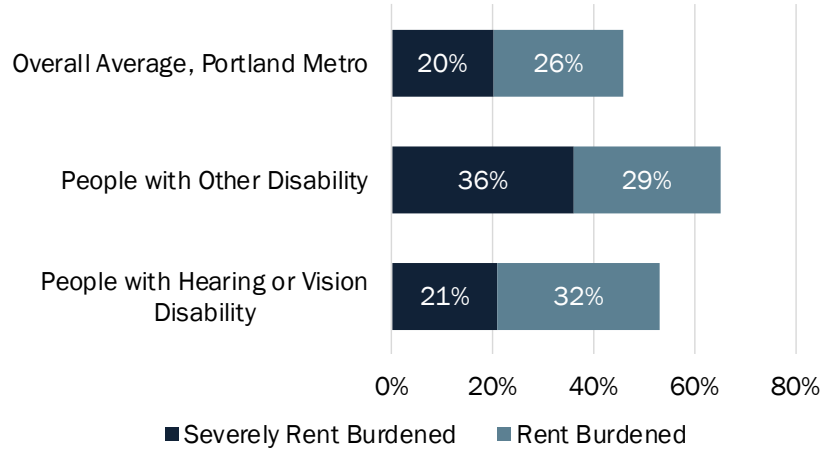
Other disabilities include self-care difficulty (having difficulty bathing or dressing), independent living difficulty (having difficulty doing errands alone), ambulatory difficulty (having serious difficulty walking or climbing stairs), and cognitive difficulty (having difficulty remembering, concentrating, or making decisions).

**Those designated as “other family household,” which includes single-parent households, are disproportionately cost burdened.**

About 55% of renters in other family households, such as single-parent households, are cost burdened more frequently than the overall average in the region.

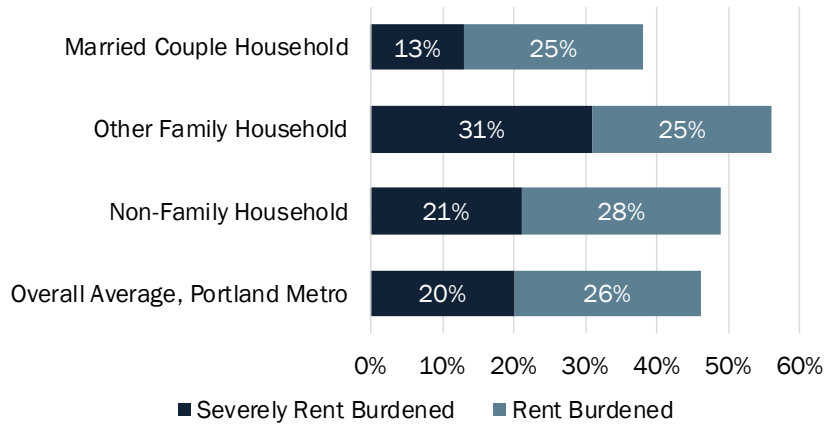
**Exhibit 54. Cost-Burdened Renter Households, for People with Disabilities, Portland Region, 2018**

Source: US Census, 2018 ACS 1-Year PUMS Estimates. From the Report *Implementing a Regional Housing Needs Analysis Methodology in Oregon: Approach, Results, and Initial Recommendations* by ECONorthwest, March 2021.



**Exhibit 55. Cost-Burdened Renter Households, by Household Type, Portland Region, 2018**

Source: US Census, 2018 ACS 1-Year PUMS Estimates. From the Report *Implementing a Regional Housing Needs Analysis Methodology in Oregon: Approach, Results, and Initial Recommendations* by ECONorthwest, March 2021.



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## Findings from Outreach and Engagement

The following is a summary of outreach and engagement efforts sponsored by the City of Tualatin in 2018 through 2020. The summary relates to matters of housing—and in particular, housing production. The following synthesizes the key findings of each effort.

- **Individual Interview (April 3, 2019).** As part of Tualatin’s 2040 engagement, the City of Tualatin interviewed a person with a physical disability. The interviewee identified several concerns related to accessibility—not only access to housing but access to parking, parks, street crossings, sidewalks, and other amenities. They indicated that people in wheelchairs require doors/entryways with suitable clearance, dwelling units on the first floor or within a structure with an elevator, park spaces without woodchips, sidewalks with space for passing (e.g., sandwich boards or tree root issues can make sidewalks inaccessible). They indicated concern with vision clearance regulations in the code—an important ADA safety and ongoing maintenance issue to evaluate. The interview identified a need to increase Tualatin’s supply of affordable housing options, particularly near grocery store options, as well as a need to address mold issues in apartments.<sup>63</sup>
- **Summary of interviews with 15 participants from (April 1 to April 29, 2019) and a group stakeholder interview with Tualatin Aging Task Force (May 13, 2019).** Findings from the following group and individual interviews identified a concern for Tualatin’s lack of affordable and workforce housing. Participants showed support for a diversity of housing types to provide more affordable options. Housing types of interest included town homes and row houses, mixed-use development, duplexes, triplexes, and accessory dwelling units. Some participants also showed interest in high-rise apartments (structures that are six to eight stories in height) and concern for large housing types (i.e., McMansions).
- **Technical Advisory Committee Meetings for Tualatin’s HNA and EOA.** The City of Tualatin convened a Technical Advisory Committee (TAC) in April 2019 to provide input on the Housing Needs Analysis (HNA), Economic Needs Analysis (EOA), and related strategy documents. The TAC met four times with the last meeting held on September 25, 2019. The TAC focused on the technical approach and methodology for HNA and EOA. The TAC comprised City staff with expertise related to city planning and development code regulation as well as county, regional, and state agencies and experts in the housing and economic development field.

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<sup>63</sup> The City of Tualatin has considered implementing a rental housing inspection program within the city, but none have been implemented to date. In general, newer rental housing in Tualatin is quite adequate, suggesting that housing quality may be more of a challenge for older buildings.

The City of Tualatin has, however, received four complaints for mold in 2019. Three complaints were in apartment buildings and one complaint at a rental house. Tualatin has no city ordinance to address mold, and those that submitted complaints were told to contact (or recontact) their property management/property owner, a mold abatement company, and/or legal counsel.

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- **Community Advisory Committee Meetings for Tualatin’s HNA and EOA.** A 16-member Community Advisory Committee (CAC) was convened by the City of Tualatin in March 2019 to provide policy input on the HNA, EOA, and related strategy documents. The CAC met seven times with the last meeting held on September 26, 2019. The CAC provided input to guide the City’s housing and economic policies with a focus on developing strategies and actions that could lead to possible changes to the Comprehensive Plan and Development Code regulations. Desirable housing outcomes brainstormed by the CAC included:
    - Housing/jobs balance
    - Housing planning that is inclusive of all households
    - Variety of housing options
    - Multifamily opportunities
    - Complete neighborhoods - mixed-use
    - Flexible plan designations - universal design standards
    - Livability/walkability
    - Enable small-scale developers
    - Support for aging in place
    - Access to max/transit
    - Renter/homeowner affordability
    - More rental opportunities
    - Housing location and quality
    - Multigenerational housing
    - Flexible zoning standards
    - Think creatively about potential solutions to affordable housing issues
    - Address affordability
  
  - **Pop-up Event and Online Survey (July–August 2019):** In the summer of 2019, the City of Tualatin hosted a pop-event and disseminated an online survey to gather input on housing and non-housing-related concerns. Key findings of these efforts include:
    - Respondents identified three preferred actions to meet affordable housing needs: offer incentives for affordable housing, improve connections to jobs/services to reduce costs, and allow more types of homes. For households making \$50,000 and below, rent control and incentives for affordable housing were of great interest. For people of color, allowing more types of homes and obtaining land for new housing were of great interest.
    - Respondents’ top three desired choices for new housing types: small homes, town homes, cottage courtyard, in addition to work-from-home (home-business) arrangements. For households making \$50,000 and below, small homes and cottage courtyards were of great interest. For people of color, the greatest preference was for home-businesses and small homes.
    - Respondents’ top three non-housing priority topics were improving connectivity, increasing and protecting green space, and increasing opportunities for jobs and entertainment. For households making \$50,000 and below, the preference was increasing and protecting green space and increasing opportunities for jobs and entertainment. For people of color, it was improving connectivity and increasing opportunities for jobs and entertainment.

- 
- **Under One Roof Luncheon (September 2019).** The City of Tualatin held two severely rent burdened public events. The Under One Roof Luncheon was the first event attended by 40 community members, representing a diverse group of people that included affordable housing residents, housing service providers, and elected officials. The event included a discussion with a panel of housing experts. The experts recommended the following actions for the City of Tualatin to address affordable housing needs: review what land is already in public control, reform the zoning (especially parking and density), and be ready for not-in-my-backyard (NIMBY) concerns. Luncheon participants agreed that affordable housing is a complex issue and a coalition is needed to address these issues. It was determined that the coalition should include housing experts and advocates within the community. The major theme from participant feedback was a desire to achieve greater land use efficiencies, accomplished by improving transportation connectivity or increasing the location of jobs, businesses, services, and green spaces near housing. During the question-and-answer portion of the event, community members commented on housing options and services that could be further explored: housing vouchers, shared/transitional housing, tiny homes, mobile or manufactured homes, and immediate assistance.
  - **Our Home, Our Health Event (September 2020).** Our Home, Our Health event was Tualatin’s second severely rent burdened event. It included a keynote speaker from the American Association of Retired Persons (AARP) in Oregon on the connection between housing and health and story sharing from two members of Tualatin’s Diversity Task Force. Participants expressed concerns for poor quality housing (e.g., conditions that lead to mold) and concerns for the City’s lack of affordable housing. Families are working multiple jobs and choosing between housing and food to get by. Participants commented on and shared possible solutions to these issues, which are summarized below:
    - Resolve issues related to legally undocumented persons residing in Tualatin.
    - Solve this problem: making a little too much money to qualify for assistance, yet not being able to survive on what you make.
    - Invite people of color in.
    - Ensure people are able to participate in programs without fear of being reported.
    - Provide local rental assistance.
    - Support new affordable housing.
    - Economically stabilize sites.
    - Implement rent control.
    - Enable shared housing options.
    - Relax regulations to support development of affordable housing.
    - Commit to livability and accessibility.



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- Continue to extend eviction moratorium.
  - Consider short and long-term solutions.
  - Solve for housing instability, which particularly has long-term impacts on children.

## Key Terms in the HPS

This appendix presents applicable key terms used in Tualatin’s Contextualizing Housing Needs memorandum. Per the Department of Land Conservation and Development, the following key terms will be incorporated into the definitions section of OAR 660-008 (if they are not already):

- **Consumers of Needed Housing:** any person who inhabits or is anticipated to inhabit Needed Housing, as described in the definition of “Needed Housing” in ORS 197.303.
- **Housing Production Strategy Report:** the report cities must adopt within one year of their deadline to complete an updated Housing Capacity Analysis, pursuant to OAR 660-008-0050.
- **Housing Production Strategy:** a specific tool, action, policy, or measure a city will implement to meet the housing needs described in an adopted Housing Capacity Analysis. A Housing Production Strategy is one component of a Housing Production Strategy Report.
- **Needed Housing:** housing types determined to meet the need shown for housing within an urban growth boundary at particular price ranges and rent levels, including (but not limited to) renter and owner-occupied attached and detached single-family housing, multifamily housing, and manufactured homes.
- **Producers of Needed Housing:** developers, builders, service providers, or other persons or entities providing materials and funding needed to build housing. Producers of Needed Housing may include non-profit organizations or public entities.
- **Unmet Housing Needed:** occurs when housing need determined pursuant to ORS 197.296 (3)(b) is greater than the housing capacity (i.e., buildable, residential land is insufficient to accommodate demand for housing).

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# Appendix B: Construction Excise Tax Analysis

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This appendix presents an analysis of a Construction Excise Tax (CET) for Tualatin.

DATE: February 17, 2021  
TO: City of Tualatin  
FROM: Becky Hewitt, Sadie DiNatale, and Angelica True, ECONorthwest  
SUBJECT: Summary of Construction Excise Tax Analysis

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The Department of Land Conservation and Development contracted ECONorthwest to develop a Housing Production Strategy (HPS) for the City of Tualatin. This memorandum presents preliminary research for one strategy of the HPS. The findings documented in this memorandum may later become a section or appendix of the final HPS report.

This project is funded by Oregon general fund dollars through the Department of Land Conservation and Development. The contents of this document do not necessarily reflect the views or policies of the State of Oregon.

## Construction Excise Tax

The City of Tualatin is considering a range of strategies and actions to meet its housing production goals. One such action is implementation of a Construction Excise Tax (CET). To understand the potential trade-offs of implementing a CET in Tualatin, this memorandum describes what a CET is and how it works. In addition, it summarizes an analysis of the potential revenue impacts of implementing a CET. The final section outlines potential next steps for the City of Tualatin to consider.

## How It Works, Fiscal Impacts, Pros and Cons

### How It Works

In 2016, the Oregon Legislature passed Senate Bill 1533, which permits cities to adopt a construction excise tax (CET) on the value of new construction projects to raise funds for affordable housing projects. The tax is limited to 1% of the permit value on residential construction with no cap on the rate applied to commercial and industrial construction. A number of cities of various sizes in Oregon have adopted a CET.

**Construction Excise Tax:**  
Levies a tax on new construction projects to fund housing programs and/or investments. It can be applied to residential and/or commercial and industrial development.

The allowed uses for CET funding are defined by state statute:

- 
- The City may retain up to 4% of funds to cover administrative costs. The funds remaining must be allocated as follows, depending on whether the CET is on residential or commercial and industrial development:
  - For a residential CET:
    - 50% must be used for developer incentives (e.g., permit fee and SDC waivers,<sup>64</sup> tax abatements, or finance-based incentives). The City would have to offer incentives but could cover the costs or foregone revenues with CET funds.
    - 35% may be used flexibly for affordable housing programs, as defined by the jurisdiction.
    - 15% is not available to the city and flows instead to Oregon Housing and Community Services for homeownership programs that provide down payment assistance.
  - For a commercial/industrial CET:
    - 50% of the funds must be used for housing-related programs, as defined by the jurisdiction (note that these funds are not necessarily limited to affordable housing).
    - The remaining 50% is unrestricted.

## Fiscal Impacts/Who Pays

The source for CET funds is new development. The statute exempts public buildings, regulated affordable housing, places of worship, public and private hospitals, agricultural buildings, nonprofit facilities, long-term care facilities, residential care facilities, and continuing care retirement communities.<sup>65</sup> The City can exempt other types of development if desired.

## Pros and Cons

### Pros:

- Offers the ability to link industrial or other employment investments, which generate new jobs and demand for new housing, with funding for housing development.
- CET is a flexible funding source, especially for funds derived from commercial/industrial development.
- Program funds can fund administration of the CET as well as staff time needed to administer programs funded by CET.

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<sup>64</sup> Note that while these are called “waivers,” they are really subsidies, since the fees would still be paid by CET revenues rather than by the developer.

<sup>65</sup> Oregon Revised Statute 320.173

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## Cons:

- CET increases development costs in an environment where many developers are already seeking relief from system development charges. Depending on the rates imposed, CET could have an impact on feasibility. More research would be necessary to understand the potential magnitude of the impact.
- Where demand is high relative to supply, additional fees on residential development may be passed on to tenants or home buyers through higher housing costs.
- Because CET revenue is development derived, it will fluctuate with market cycles and will not be a steady source of revenue for affordable housing when limited development is occurring.

## Summary of CET Analysis for Tualatin

This section summarizes ECONorthwest's CET analysis for Tualatin.

### Estimating Revenue Potential

#### Methodology Overview

There is no statutory cap on the CET rate applied on commercial and industrial construction. Therefore, this analysis assumed a range of potential rates that the City could apply on this development type: 0.3%, 0.5%, 1%, and 2%. The CET rate applied on residential construction is capped at 1%. Therefore, this analysis assumed a range of potential rates that the City could apply on this development type under the 1% threshold: 0.3%, 0.5%, .75%, and 1%.

After establishing a range of rates, the analysis assessed what revenue would look like based on historical building permit values for each respective development type (i.e., commercial and industrial development over the last five years and residential development over the last five years).

Based on the statutory regulations about how the CET funds can be expended, we allocated the projected revenue forecasts as follows:

- **Commercial/Industrial Construction:** (1) 4% to administrative costs, (2) 50% of the balance after subtracting administrative costs to housing-related programs (i.e., 48% of the total), and (3) 50% of the balance after subtracting administrative costs to an unrestricted use (i.e., 48% of the total).
- **Residential Construction:** (1) 4% administrative costs, (2) 15% of the balance after subtracting administrative costs to OHCS (i.e., 14% of the total), (3) 35% of the balance after subtracting administrative costs to affordable housing programs (i.e., 34% of the total), and (4) 50% of the balance after subtracting administrative costs to developer incentives (i.e., 48% of the total).

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## Results: Historical Permit Values

One way to estimate CET revenue is a backward-looking analysis. If the City of Tualatin had charged CET fees on recent development that had occurred, how much revenue might have the City collected (assuming the permitting activity had been unchanged as a result of that CET)?

Building permits for residential development and commercial/industrial development in Tualatin fluctuated from year to year over the last five years. Exhibit 56 summarizes annual total permit values for new residential and commercial/industrial construction as well as additions that increase square feet (excluding exempt development) in 2020 dollars.<sup>66</sup> The annual average over the five-year period (2016-2020) for residential development is about **\$10m in qualifying permit value** in 2020 dollars. The annual average over the five-year period for commercial and industrial development is about **\$41.8m in qualifying permit value** in 2020 dollars.

### Exhibit 56. Residential Building Permit and Commercial/Industrial Building Permit Values by Year (2016 to 2020), (in 2020 dollars)

Source: ECONorthwest analysis of City of Tualatin permit data.

Note: The large bump in residential permit valuation in 2018 is primarily due to the City of Tualatin permitting an above-average number of residential developments (101 total permits in 2018, compared to 11, 12, 35, and 37 total permits in other years). The large bump in commercial/industrial valuation in 2020 is predominately due to a new industrial structure permitted on Blake Street with a permit value of \$90m (2020\$).

Year	Commercial and Industrial Building Permit Valuation (2020\$)	Residential Building Permit Valuation (2020\$)
2016	\$17,166,894	\$9,304,128
2017	\$11,042,600	\$6,270,048
2018	\$53,020,643	\$32,351,852
2019	\$14,918,542	\$1,257,071
2020	\$112,883,996	\$926,520
<b>Annual Average</b>	<b>\$41,806,535</b>	<b>\$10,021,924</b>
<b>Total (2016-2020)</b>	<b>\$209,032,675</b>	<b>\$50,109,618</b>

Next, the analysis calculated the revenue that the City would have generated if it had a CET in place during the 2016 to 2020 period (assuming the permitting activity had been unchanged as a result of that CET) using the different CET rates listed previously.

Exhibit 57 and Exhibit 58 show potential CET revenue for commercial/industrial development. This analysis shows that under the highest rate tested (2%), the average annual CET revenue over this period would have been about \$836,100.

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<sup>66</sup> ECONorthwest used the Construction Cost Index published by Engineering News Record to inflate permit values to 2020 dollars.

Exhibit 59 and Exhibit 60 show potential CET revenue for residential development. This analysis shows that under the highest rate tested (1%), the average annual CET revenue over this period would have been about \$100,200.

Under either development type, the minimum CET revenue collected in a slow year would have varied little with the different rates, while the maximum collected in a “busy” year would have varied substantially.

Exhibit 57. Potential Annual Commercial/Industrial CET Revenue by Year and Rate (2016 to 2020)  
 Source: ECONorthwest analysis of City of Tualatin permit data.

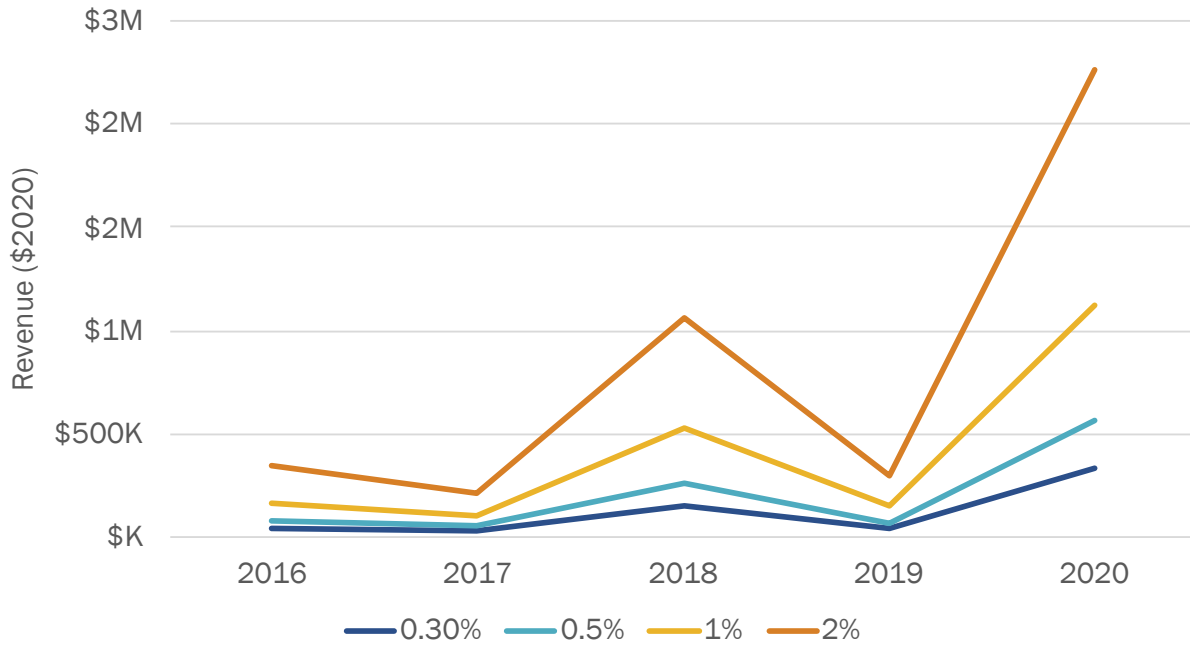
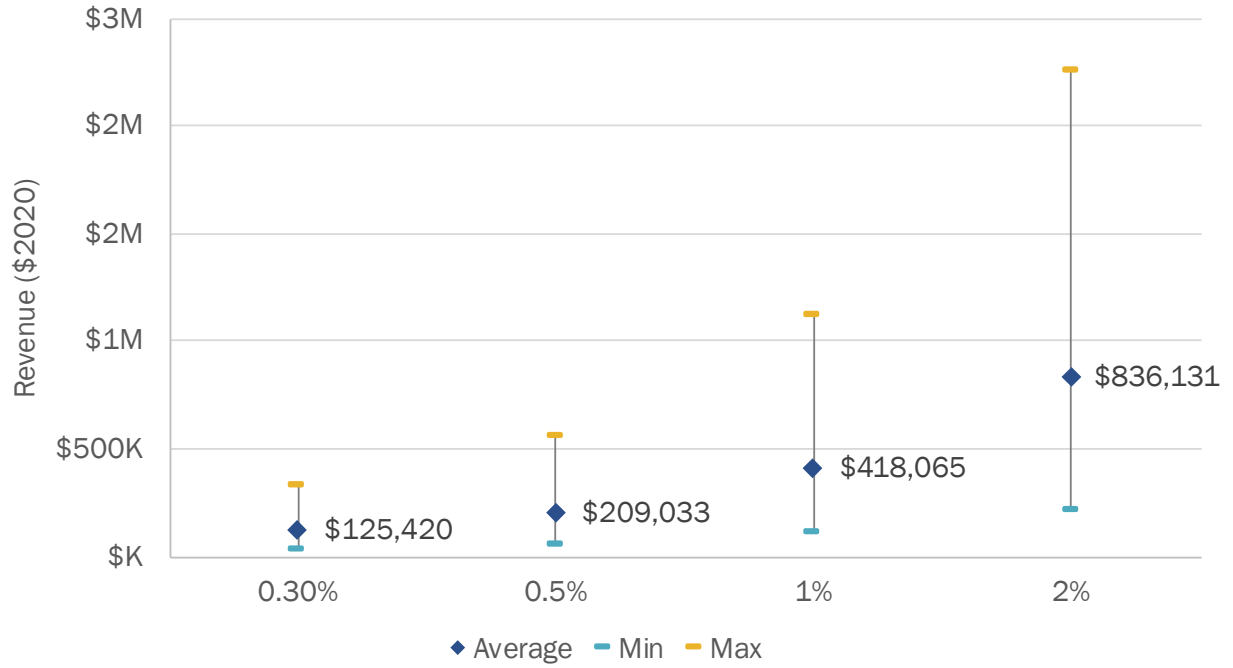


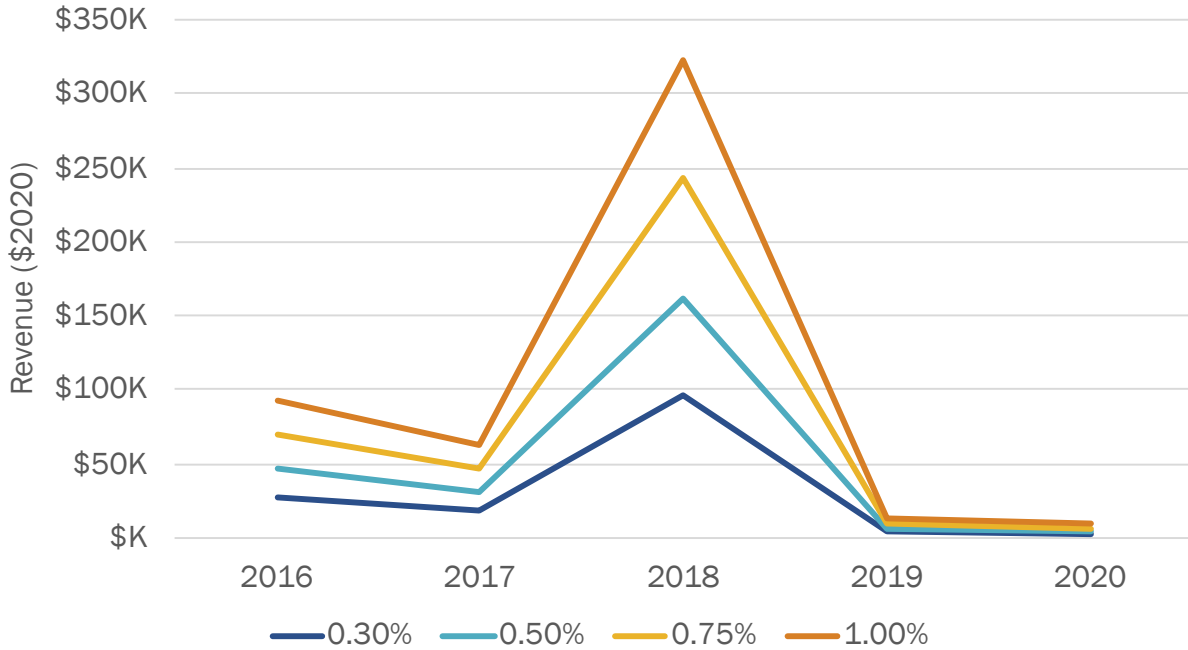
Exhibit 58. Historical Minimum, Maximum, and Average Annual Potential Commercial/Industrial CET Revenue by Rate (2016 to 2020)

Source: ECONorthwest analysis of City of Tualatin permit data.



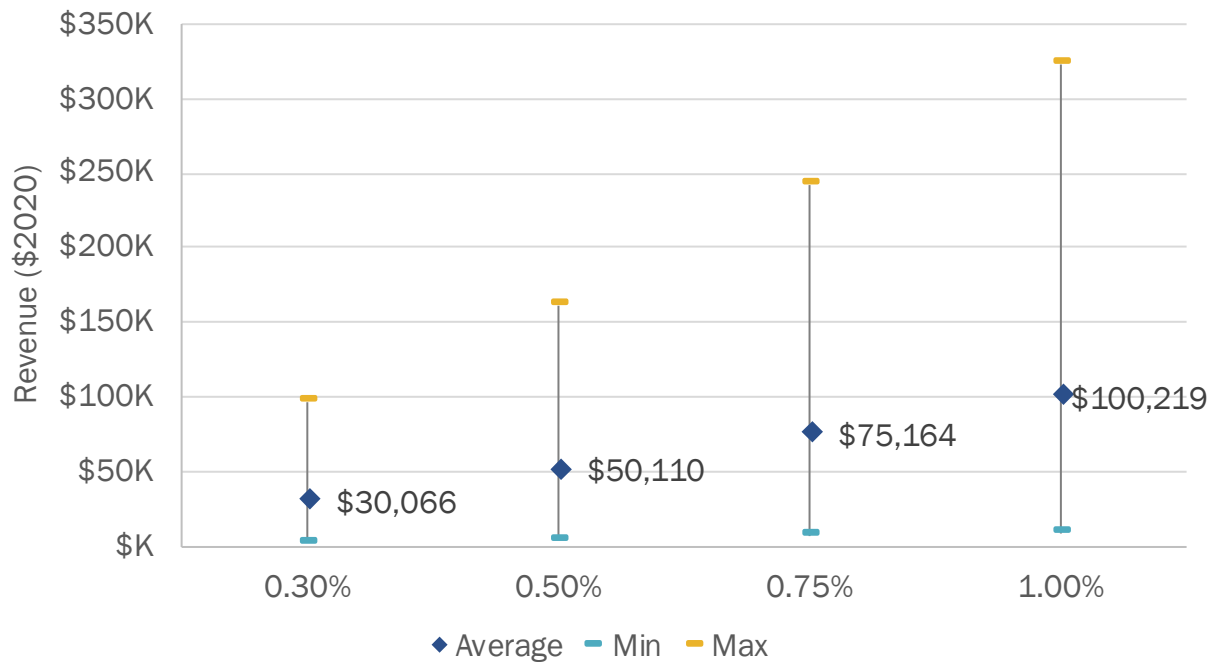
**Exhibit 59. Potential Annual Residential CET Revenue by Year and Rate (2016 to 2020)**

Source: ECONorthwest analysis of City of Tualatin permit data.



**Exhibit 60. Historical Minimum, Maximum, and Average Annual Potential Residential CET Revenue by Rate (2016 to 2020)**

Source: ECONorthwest analysis of City of Tualatin permit data.

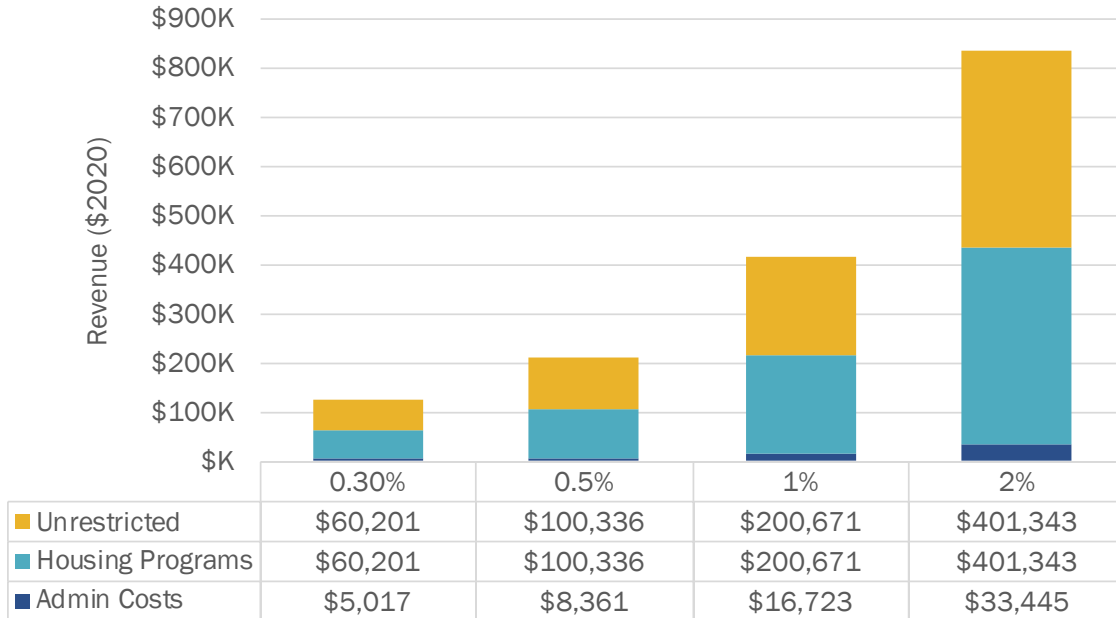




Based on the statutory requirements about use of funds, ECONorthwest translated the average annual simulated CET collections between 2016 and 2020 into funds available for each funding category, as shown in Exhibit 61 and Exhibit 62.

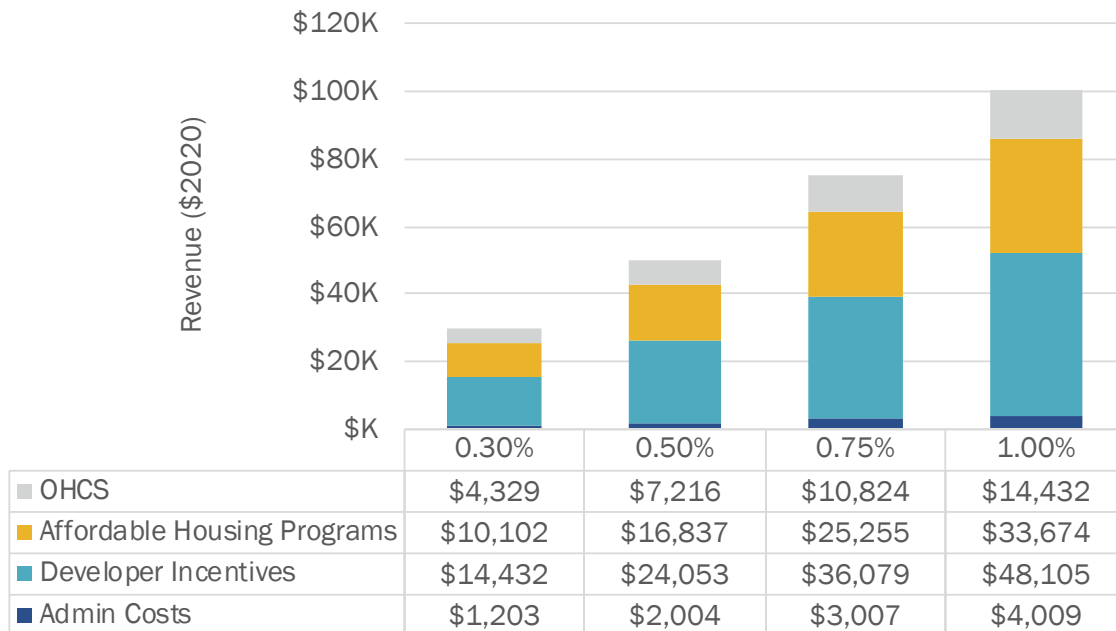
**Exhibit 61. Hypothetical Total Commercial/Industrial CET Revenue (2016 to 2020) by Rate and Use of Funds**

Source: ECONorthwest analysis of City of Tualatin permit data.



**Exhibit 62. Hypothetical Total Residential CET Revenue (2016 to 2020) by Rate and Use of Funds**

Source: ECONorthwest analysis of City of Tualatin permit data.



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As shown above, a 0.5% or 1% rate on commercial and industrial development could generate meaningful revenue for programs, especially if the unrestricted portion is also dedicated toward housing programs. Because of the greater flexibility for these revenues, the City could design a flexible program for the revenues, or direct all of the net revenues towards a Housing Trust Fund or similar fund. This ease of use is important, because even with the higher revenue potential of the commercial/industrial CET, a 0.5% to 1% rate would offer little funding for administrative costs.

A CET on residential development would generate relatively little revenue given past trends in residential development, even at the maximum rate (1%). In addition, the administration would be more complex due to needing to separate out revenues toward the spending categories as specified in statute, while the funding available to cover administrative costs would be negligible.

## Conclusions and Next Steps

Given the results summarized above, a 0.5% to 1% CET on commercial and industrial development may be worthwhile to consider as it could generate a flexible source of revenue for local housing programs, especially if the City continues to see strong industrial and commercial growth. Imposing a CET on residential development is likely not worth considering unless the City annexes a large amount of vacant residential land where higher-end new housing is expected.

If the City chooses to further evaluate adoption of a CET, it should conduct additional outreach to stakeholders and local businesses to offer an opportunity for discussion and to raise any concerns. The City should also advance conversations about the potential uses of the funds, even though this is flexible and does not necessarily need to be determined prior to adoption. Working with stakeholders to clearly define the program's intended purpose, how the funds (especially the unrestricted portion) would be used, and who would make decisions about the use of funds is likely to help build support for the program. If the City chooses to adopt a CET, it must pass an ordinance or resolution that states the rate and base of the tax. Most communities also identify any further self-imposed restrictions on the use of funds as part of adopting the ordinance. If the ordinance passes, the City must then establish a process to distribute the funds.



## Todd Prager & Associates<sub>LLC</sub>

### MEMORANDUM

**DATE:** April 12, 2023

**TO:** Lee Novak (Vista Residential)

**FROM:** Christine Johnson, ISA Certified Arborist® PN-8730A  
Todd Prager, RCA #597, ISA Board Certified Arborist®

**RE:** Tree Inventory and Preliminary Assessment for Road Improvements associated with the Norwood Multi-Family Project in Tualatin

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### Summary

Planning for the Norwood Multi-Family Project in Tualatin is underway. An existing buffer of mature Douglas-fir (*Pseudotsuga menziesii*) will be impacted by the proposed road improvements associated with development. Our firm was asked to inventory a 60-foot-wide strip south of Norwood Road and provide preliminary tree preservation recommendations. One hundred and ninety-nine (199) trees were inventoried. Successful tree preservation will require retention and protection of exterior trees, tree protection fencing, routing of utilities outside or boring underneath the tree protection zone when possible, and routine tree risk assessments if certain trees are removed. The site plan was altered in order to maximize tree preservation of the existing tree grove south of Norwood Road.

### Background

The Norwood Multi-family Project is located southeast of the intersection of Boones Ferry Road and Norwood Road. An 8-foot-wide public utility easement (PUE) is proposed south of Norwood Road. Sidewalks exist along Norwood Road adjacent to the eastern portion of tax lot 106. No sidewalk is present along Norwood Road adjacent to tax lot 108 and the western portion of tax lot 106.

### Assignment

The assignment asked of our firm was as follows:

1. Inventory an existing buffer of trees within a 60-foot-wide strip south of Norwood Road on tax lots 106 and 108.
2. Provide initial tree preservation recommendations to the project team.

### Observations

Our firm visited the site on March 17 and March 20, 2023, and inventoried 199 trees within the designated area from Norwood Road to 60 feet south of Norwood Road. The existing conditions map with tree locations is provided in Attachment 1 and the preliminary grading exhibit with tree locations is provided in Attachment 2. The following information was recorded for each tree:

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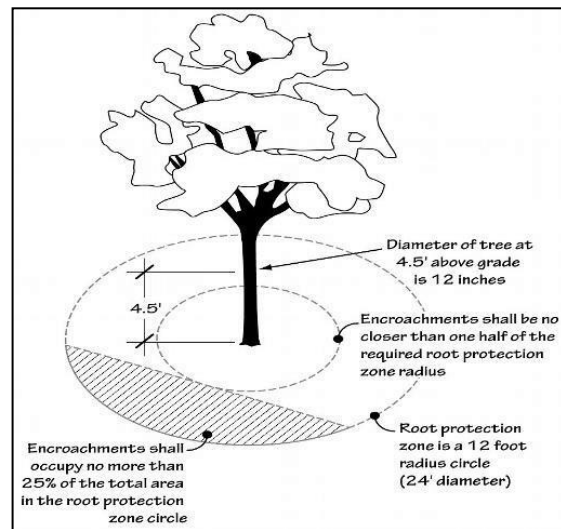
tree number, common name, scientific name, DBH (diameter at breast height, 4.5 feet above ground level), average canopy radius, health condition, structural condition, and pertinent comments. (Attachment 3) Tree numbers in the inventory in Attachment 3 correspond to tree numbers shown on Attachments 1 and 2. Photographs of the trees adjacent to tax lot 106 are provided in Attachment 4.

## Discussion and Recommendations

The buffer of Douglas-fir trees are growing relatively close to one another. Exterior trees are healthy and have either good or fair structure (i.e., one sided crown, self-corrected phototropic lean). Interior trees are generally less healthy (i.e., thin foliage) and have fair to very poor structure (i.e, suppressed, narrow crowns, high crowns). This is typical of a buffer or grove of trees. That said, it will be extremely important to preserve exterior trees since their removal would negatively impact the health and stability of interior trees.

To preserve a 60-foot-wide buffer from Norwood Road going south from construction impacts, the following tree preservation measures are recommended:

- 1. Buildings, hardscape, and grade changes.** Proposed buildings, hardscape, and grade changes will need to be located to allow for adequate root protection. A typical minimum root protection zone allows encroachments no closer than a radius from a tree of 0.5 feet per inch of DBH if no more than 25 percent of the root protection zone area (estimated at one foot radius per inch of DBH) is impacted. Figure 1 illustrates this concept. This standard may need to be adjusted on a case-by-case basis due to tree health, species, root distribution, whether the tree will be impacted on multiple sides, the specific development proposed, and other factors. A recommended limit of disturbance is provided on a preliminary site plan in Attachment 2. The recommended limit of disturbance designates where no construction, grading, or utilities should occur. If utilities must be constructed inside the limits of construction, alternative methods of construction will be recommended (i.e., horizontal directional drilling, pneumatic excavation, hydro excavation).



**Figure 1** Typical minimum protection zone.

- 2. Proposed road improvements.** If the existing access drive and sidewalk are reused for tax lot 106, then this will allow for tree preservation along that portion of the Norwood Road frontage. If a sidewalk and other improvements are required along the unimproved Norwood Road right of way adjacent to tax lots 106 and 108, trees will likely need to be removed along that frontage unless design changes are made to avoid the trees such as routing the sidewalk to the south of trees 50695, 50696, 50697 and 20698 through 20707. Coordination with the project arborist will be required during the design of right of way improvements if trees are to be retained along tax lots 106, 108, and the western portion of tax lot 106.

3. **Tree protection fencing.** Tree protection fencing with tree protection signage should enclose protected trees on all sides at the limits of disturbance.
4. **Underground electricity.** Overhead power lines exist along the south side of Norwood Road. These will be rerouted underground. The preferred location of this work is under the sidewalk or within the 7-foot-wide dedication and not within the PUE. Boring is the preferred method of installation.
5. **Routing of utilities.** An 8-foot-wide PUE is planned within the northern portion of the 60-foot-wide tree grove. If possible, additional utilities should be routed outside the recommended limit of disturbance or bored at least four feet below grade where there are existing trees to be retained. If alternative routes are unavailable or impractical, pneumatic excavation or hydro exaction under arborist supervision within the buffer may be compatible with tree preservation.
6. **Routine tree risk assessments.** If exterior trees are removed, or a new “edge” is created, routine risk assessments may be recommended.

## Conclusion

Adjustments to the preliminary design for the Norwood Multi-Family project have maximized tree preservation near Norwood Road. Preserving the 60-foot-wide buffer of Douglas-fir south of Norwood Road is compatible with the proposed road improvements and site plan at this stage of the planning process. Efforts should be made to adequately protect grove exterior trees which will in-turn protect interior trees. Close coordination with the project arborist team will be necessary as the project design is refined to ensure the trees to be retained are adequately protected.

Please contact our firm if there are any questions about the information provided in this report.

Sincerely,



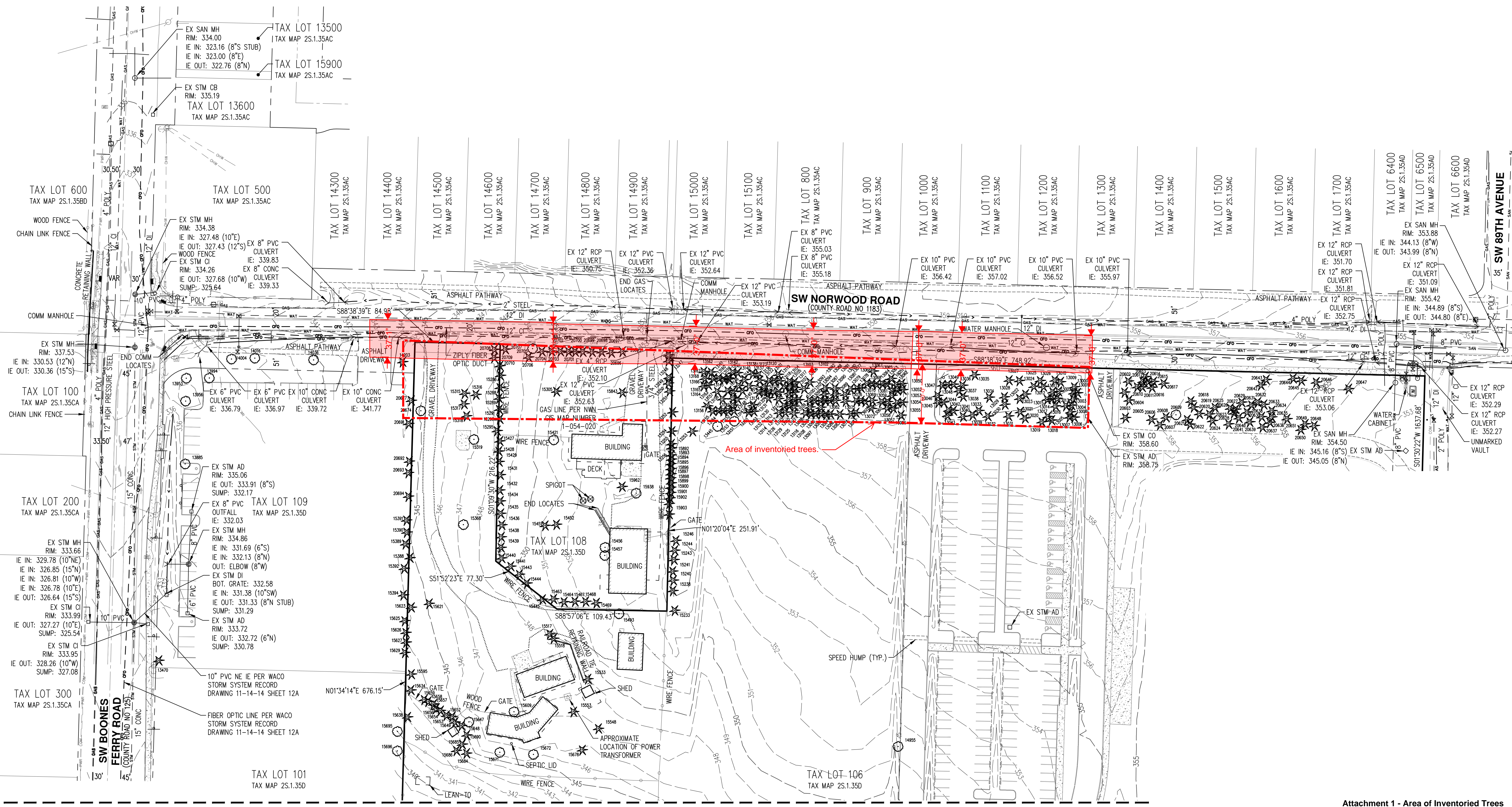
Christine Johnson  
*ISA Certified Arborist®*, PN-8730A  
*ISA Qualified Tree Risk Assessor*  
*Member, American Society of Consulting Arborists*  
*christine@toddprager.com | 971.978.9381*



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*ISA Qualified Tree Risk Assessor*  
*AICP, American Planning Association*  
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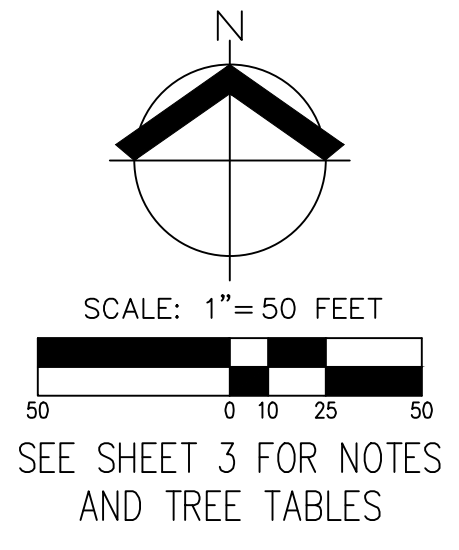
Enclosures: Attachment 1 – Area of Inventoried Trees  
Attachment 2 – Preliminary Arborist Exhibit with Limits of Disturbance  
Attachment 3 – Tree Inventory  
Attachment 4 – Photographs of the Trees and Site  
Attachment 5 – Assumptions and Limiting Conditions





MATCH LINE: SEE SHEET 2

Attachment 1 - Area of Inventoried Trees





# Preliminary

04/12/2023

Alternative sidewalk route to retain tree frontage.

Recommended limit of disturbance to the north is the existing sidewalk. No construction, paving, grading or right of way improvements beyond this point.

Existing curb to be removed and replaced with 6-inch curb. No root cracked curbs or lifted pavement were observed.

Recommended corridor to bore underground utilities between the sidewalk and 7-foot-wide dedication.

Recommended limit of disturbance. No construction, paving, grading or right of way improvements beyond this point.

Proposed 5-foot-wide curb light sidewalk west of 24-foot-wide drive aisle.

Recommended limit of disturbance. No construction, paving, grading or right of way improvements beyond this point.

Existing curb and pavement to the south to be removed and converted to landscape.

SW BOONES FERRY ROAD

SW NORWOOD ROAD








TAX LOT 109  
TAX MAP 2S.1.35D

TAX LOT 101  
TAX MAP 2S.1.35D

TAX LOT 102  
TAX MAP 2S.1.35D

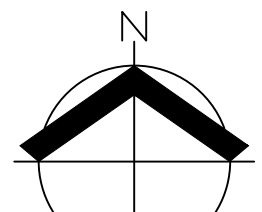
TAX LOT 106  
TAX MAP 2S.1.35D

### TREE LEGEND

-  Tree proposed for removal
-  Recommended limits of disturbance
-  Alternative sidewalk route
-  8' Public Utility Easement
-  7' Dedication
-  Existing impervious area to be converted to landscape
-  Proposed corridor for underground utilities

Note: This preliminary exhibit only addresses trees affected by road improvements along SW Norwood Road and does not address all trees on the site.

### Attachment 2 - Preliminary Arborist Exhibit



SCALE: 1" = 40 FEET  
ORIGINAL PAGE SIZE: 22" x 34"

## PRELIMINARY ARBORIST EXHIBIT NORWOOD MULTI-FAMILY VISTA RESIDENTIAL TUALATIN, OREGON

**AKS**  
AKS ENGINEERING & FORESTRY, LLC  
12865 SW HERMAN RD., STE 100  
TUALATIN, OR 97062  
503.563.6151  
WWW.AKS-ENG.COM  
ENGINEERING · SURVEYING · NATURAL RESOURCES  
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

JOB NUMBER:	8723
DATE:	04/11/2023
DESIGNED BY:	AMC
DRAWN BY:	AMC
CHECKED BY:	

AKS DRAWING FILE: 8723\_20230330\_ARBORIST\_EXHIBIT.DWG | LAYOUT: LAYOUT1





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**Attachment 3 - Tree Inventory**  
Norwood Multi-Family Project - Tualatin, OR  
3/17/2023 3/21/2023

Tree	Common Name	Scientific name	DBH <sup>1</sup>	C-Radius <sup>2</sup>	Condition <sup>3</sup>	Structure <sup>3</sup>	Comments
13000	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	10	good	fair	one sided
13001	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	7	fair	fair	suppressed, one sided, self-corrected lean
13002	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	15	good	fair	suppressed, one sided
13003	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	4	poor	poor	thin, suppressed, narrow crown, one sided
13004	Douglas-fir	<i>Pseudotsuga menziesii</i>	10	8	good	fair	one sided
13005	Douglas-fir	<i>Pseudotsuga menziesii</i>	6	4	fair	fair	thin, suppressed
13006	Douglas-fir	<i>Pseudotsuga menziesii</i>	19	12	good	fair	one sided
13007	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	6	good	fair	one sided
13008	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	4	poor	poor	thin, suppressed, codominant leaders, high crown
13009	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	8	good	fair	one sided
13010	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	8	good	fair	one sided
13011	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	4	fair	poor	thin, high crown, narrow crown
13012	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	4	fair	poor	thin, high crown, narrow crown
13013	Douglas-fir	<i>Pseudotsuga menziesii</i>	10	3	poor	poor	thin, suppressed, high crown, narrow crown
13014	Douglas-fir	<i>Pseudotsuga menziesii</i>	7	0	dead	dead	
13015	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	8	good	fair	high crown
13016	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	5	poor	poor	thin, suppressed, high crown, one sided
13017	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	5	fair	fair	thin, high crown, sweeping trunk
13018	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	12	good	fair	one sided, sweeping trunk
13019	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	8	good	fair	one sided, lost and regrew top
13020	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	8	good	fair	one sided
13021	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	6	fair	fair	thin, high crown, narrow crown
13022	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	8	fair	fair	thin, codominant leaders, high crown
13023	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	5	fair	fair	thin, high crown, narrow crown
13024	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	8	good	good	
13025	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	7	good	fair	one sided
13026	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	6	fair	fair	suppressed, high crown
13027	Douglas-fir	<i>Pseudotsuga menziesii</i>	19	10	good	fair	one sided
13028	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	12	good	fair	one sided
13029	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	5	good	fair	high crown, narrow crown
13030	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	6	good	fair	one sided
13031	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	10	good	fair	one sided
13032	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	6	fair	fair	thin, one sided
13033	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	6	fair	fair	suppressed, high crown, narrow crown
13034	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	6	good	fair	high crown, narrow crown
13035	Douglas-fir	<i>Pseudotsuga menziesii</i>	26	15	good	good	





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**Attachment 3 - Tree Inventory**  
Norwood Multi-Family Project - Tualatin, OR  
3/17/2023 3/21/2023

Tree	Common Name	Scientific name	DBH <sup>1</sup>	C-Radius <sup>2</sup>	Condition <sup>3</sup>	Structure <sup>3</sup>	Comments
13036	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	8	fair	fair	suppressed, high crown
13037	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	5	fair	fair	suppressed, high crown
13039	Douglas-fir	<i>Pseudotsuga menziesii</i>	18	10	good	fair	one sided
13040	Douglas-fir	<i>Pseudotsuga menziesii</i>	18	10	good	fair	one sided
13041	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	4	poor	poor	thin, suppressed, narrow crown
13042	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	0	dead	dead	
13043	Douglas-fir	<i>Pseudotsuga menziesii</i>	19	12	good	fair	one sided
13044	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	5	fair	fair	thin, discolored foliage, high crown, narrow crown
13045	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	6	fair	poor	thin, discolored foliage, trunk decay, high crown
13046	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	6	fair	fair	epicormic branches, narrow crown, self corrected phototropic lean
13047	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	12	good	fair	one sided
13048	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	5	good	fair	high crown, phototropic sweeping trunk
13049	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	6	fair	fair	thin, one sided
13050	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	10	good	fair	one sided
13051	Douglas-fir	<i>Pseudotsuga menziesii</i>	6	3	very poor	very poor	suppressed, 90% dead
13052	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	3	poor	fair	thin, suppressed, high crown, narrow crown
13053	Douglas-fir	<i>Pseudotsuga menziesii</i>	8	4	fair	fair	suppressed
13054	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	7	good	fair	one sided, upper crown phototropic
13055	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	7	poor	poor	suppressed, high crown, narrow crown
13056	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	8	good	good	
13057	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	12	good	fair	one sided
13058	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	5	fair	fair	suppressed, one sided
13059	Douglas-fir	<i>Pseudotsuga menziesii</i>	18	8	good	fair	high crown, narrow crown
13060	Douglas-fir	<i>Pseudotsuga menziesii</i>	10	4	fair	fair	thin, narrow crown, one sided
13061	Douglas-fir	<i>Pseudotsuga menziesii</i>	8	3	poor	very poor	suppressed, codominant leaders
13062	Douglas-fir	<i>Pseudotsuga menziesii</i>	10	5	fair	poor	suppressed, high crown
13063	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	3	fair	poor	suppressed, high crown
13064	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	6	fair	poor	thin, suppressed, high crown
13065	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	10	good	good	
13066	Douglas-fir	<i>Pseudotsuga menziesii</i>	22	15	good	good	
13067	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	4	poor	poor	thin, suppressed, high crown, narrow crown
13068	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	4	poor	poor	suppressed, high crown, narrow crown
13069	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	7	good	fair	one sided
13070	Douglas-fir	<i>Pseudotsuga menziesii</i>	10	4	poor	poor	thin, suppressed, high crown
13071	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	7	fair	fair	suppressed, high crown
13072	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	10	good	fair	one sided



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**Attachment 3 - Tree Inventory**  
Norwood Multi-Family Project - Tualatin, OR  
3/17/2023 3/21/2023

Tree	Common Name	Scientific name	DBH <sup>1</sup>	C-Radius <sup>2</sup>	Condition <sup>3</sup>	Structure <sup>3</sup>	Comments
13073	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	10	good	fair	one sided
13074	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	10	good	fair	one sided
13075	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	8	fair	fair	thin, high crown
13076	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	8	fair	fair	high crown
13077	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	8	good	fair	high crown
13078	Douglas-fir	<i>Pseudotsuga menziesii</i>	7	2	fair	poor	thin, suppressed, narrow crown
13079	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	12	good	good	
13080	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	5	fair	poor	suppressed, high crown
13081	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	4	poor	poor	thin, suppressed, narrow crown
13082	Douglas-fir	<i>Pseudotsuga menziesii</i>	19	12	good	fair	one sided, sweeping trunk
13083	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	10	fair	fair	thin, one sided
13084	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	10	good	fair	one sided
13085	Douglas-fir	<i>Pseudotsuga menziesii</i>	10	2	poor	poor	thin, suppressed, narrow crown, sweeping trunk
13086	Douglas-fir	<i>Pseudotsuga menziesii</i>	8	0	dead	dead	
13087	Douglas-fir	<i>Pseudotsuga menziesii</i>	8	2	poor	very poor	suppressed, one sided, 90% dead
13088	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	3	poor	poor	suppressed, high crown, narrow crown
13089	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	6	fair	fair	high crown
13090	Douglas-fir	<i>Pseudotsuga menziesii</i>	8	0	dead	dead	
13091	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	14	good	good	
13092	Douglas-fir	<i>Pseudotsuga menziesii</i>	19	16	good	good	
13093	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	4	poor	poor	suppressed, high crown, one sided
13094	Douglas-fir	<i>Pseudotsuga menziesii</i>	8	3	poor	poor	suppressed, discolored foliage, high crown, narrow crown
13095	Douglas-fir	<i>Pseudotsuga menziesii</i>	10	5	fair	fair	suppressed, high crown
13096	Douglas-fir	<i>Pseudotsuga menziesii</i>	10	7	fair	fair	thin, one sided
13097	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	10	good	fair	one sided
13099	Douglas-fir	<i>Pseudotsuga menziesii</i>	8	0	dead	dead	
13100	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	5	fair	poor	high crown
13103	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	15	good	fair	one sided
13104	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	12	fair	poor	one sided, lost top at 25'
13105	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	5	fair	fair	suppressed, high crown, narrow crown
13106	Douglas-fir	<i>Pseudotsuga menziesii</i>	6	2	very poor	very poor	90% dead
13107	Douglas-fir	<i>Pseudotsuga menziesii</i>	8	3	poor	poor	thin, suppressed
13108	Douglas-fir	<i>Pseudotsuga menziesii</i>	7	0	dead	dead	
13109	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	3	poor	poor	suppressed, high crown
13110	Douglas-fir	<i>Pseudotsuga menziesii</i>	8	2	very poor	very poor	90% dead
13111	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	10	good	fair	one sided



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Norwood Multi-Family Project - Tualatin, OR  
3/17/2023 3/21/2023

Tree	Common Name	Scientific name	DBH <sup>1</sup>	C-Radius <sup>2</sup>	Condition <sup>3</sup>	Structure <sup>3</sup>	Comments
13112	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	13	good	fair	one sided
13113	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	15	good	good	
13114	Douglas-fir	<i>Pseudotsuga menziesii</i>	7	3	poor	very poor	suppressed, epicormic branches, one sided
13115	Douglas-fir	<i>Pseudotsuga menziesii</i>	7	4	poor	poor	suppressed, epicormic branches, one sided
13116	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	5	fair	fair	suppressed, high crown, narrow crown
13117	Douglas-fir	<i>Pseudotsuga menziesii</i>	6	0	dead	dead	
13118	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	4	fair	poor	high crown, narrow crown
13119	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	5	fair	fair	high crown, narrow crown
13120	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	5	good	fair	suppressed, one sided, lost and regrew multiple tops
13121	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	12	good	good	
13122	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	8	good	fair	one sided
13123	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	5	fair	poor	suppressed, high crown
13125	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	4	poor	poor	suppressed, high crown, narrow crown
13126	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	12	good	fair	one sided
13127	Douglas-fir	<i>Pseudotsuga menziesii</i>	8	5	fair	poor	suppressed, high crown, narrow crown
13128	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	4	fair	poor	suppressed, high crown
13129	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	5	fair	fair	suppressed, narrow crown, one sided
13130	Douglas-fir	<i>Pseudotsuga menziesii</i>	19	12	good	good	
13131	Pacific madrone	<i>Arbutus menziesii</i>	10	2	very poor	poor	90% dead
13132	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	7	good	fair	one sided
13133	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	10	good	fair	one sided
13134	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	5	very poor	very poor	90% dead
13135	Douglas-fir	<i>Pseudotsuga menziesii</i>	7	2	poor	poor	thin, suppressed, epicormic branches, narrow crown
13136	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	8	good	fair	high crown
13137	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	15	good	fair	one sided
13138	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	6	fair	fair	suppressed, epicormic branches, one sided
13139	Douglas-fir	<i>Pseudotsuga menziesii</i>	8	3	very poor	very poor	90% dead
13140	Douglas-fir	<i>Pseudotsuga menziesii</i>	7	0	dead	dead	
13141	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	10	good	good	
13142	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	10	good	fair	one sided, crooked trunk
13143	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	8	good	fair	high crown, also tagged 13159
13144	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	3	very poor	very poor	90% dead
13145	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	8	fair	fair	high crown
13146	Douglas-fir	<i>Pseudotsuga menziesii</i>	10	4	very poor	very poor	suppressed, high crown, 80% dead
13147	Douglas-fir	<i>Pseudotsuga menziesii</i>	8	3	very poor	very poor	90% dead
13148	Douglas-fir	<i>Pseudotsuga menziesii</i>	10	4	poor	poor	thin, suppressed, narrow crown



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**Attachment 3 - Tree Inventory**  
Norwood Multi-Family Project - Tualatin, OR  
3/17/2023 3/21/2023

Tree	Common Name	Scientific name	DBH <sup>1</sup>	C-Radius <sup>2</sup>	Condition <sup>3</sup>	Structure <sup>3</sup>	Comments
13149	Douglas-fir	<i>Pseudotsuga menziesii</i>	6	3	poor	poor	thin, suppressed, codominant leaders
13150	Douglas-fir	<i>Pseudotsuga menziesii</i>	8	6	good	fair	one sided
13152	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	12	good	fair	one sided
13153	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	10	good	fair	one sided, sweeping trunk
13154	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	12	good	fair	one sided
13155	Douglas-fir	<i>Pseudotsuga menziesii</i>	8	6	fair	fair	suppressed, one sided
13156	Douglas-fir	<i>Pseudotsuga menziesii</i>	19	10	good	good	
13157	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	8	fair	fair	codominant leaders, high crown, epicormic branches, narrow crown
13158	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	10	good	fair	high crown, sweeping trunk
13160	Douglas-fir	<i>Pseudotsuga menziesii</i>	10	2	poor	poor	suppressed, epicormic branches
13161	Douglas-fir	<i>Pseudotsuga menziesii</i>	8	3	very poor	very poor	thin, suppressed, 95% dead
13162	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	8	fair	fair	suppressed, high crown, epicormic branches, narrow crown
13163	Douglas-fir	<i>Pseudotsuga menziesii</i>	6	3	fair	fair	suppressed
13164	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	10	fair	fair	high crown
13165	Douglas-fir	<i>Pseudotsuga menziesii</i>	19	12	good	good	
13166	Douglas-fir	<i>Pseudotsuga menziesii</i>	6	5	fair	fair	suppressed, sweeping trunk
13167	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	8	good	fair	one sided
13168	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	12	good	good	
13247	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	11	good	good	
13248	Douglas-fir	<i>Pseudotsuga menziesii</i>	6	7	fair	fair	thin, suppressed
13249	Douglas-fir	<i>Pseudotsuga menziesii</i>	7	2	very poor	very poor	90% dead
13250	Douglas-fir	<i>Pseudotsuga menziesii</i>	28	20	good	good	
13251	Douglas-fir	<i>Pseudotsuga menziesii</i>	23	11	good	good	
13252	Douglas-fir	<i>Pseudotsuga menziesii</i>	30	15	good	good	
14203	shore pine	<i>Pinus contorta</i>	19	10	fair	fair	codominant leaders, Moderate pitch moth infection
15286	Douglas-fir	<i>Pseudotsuga menziesii</i>	24	15	good	fair	one sided
15288	Douglas-fir	<i>Pseudotsuga menziesii</i>	23	15	good	fair	one sided
15289	Douglas-fir	<i>Pseudotsuga menziesii</i>	25	12	good	fair	narrow crown, one sided
15291	Douglas-fir	<i>Pseudotsuga menziesii</i>	23	22	good	fair	crooked trunk
15293	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	10	good	good	



**Todd Prager & Associates**  
LLC

**Attachment 3 - Tree Inventory**  
Norwood Multi-Family Project - Tualatin, OR  
3/17/2023 3/21/2023

Tree	Common Name	Scientific name	DBH <sup>1</sup>	C-Radius <sup>2</sup>	Condition <sup>3</sup>	Structure <sup>3</sup>	Comments
15295	Douglas-fir	<i>Pseudotsuga menziesii</i>	21	15	good	fair	narrow crown, one sided
15305	Douglas-fir	<i>Pseudotsuga menziesii</i>	34	25	good	fair	codominant leaders
15315	blue spruce	<i>Picea pungens</i>	8	8	good	good	
15316	Norway spruce	<i>Picea abies</i>	6	6	fair	fair	suppressed, one sided
15317	blue spruce	<i>Picea pungens</i>	7	7	good	good	
15318	white spruce	<i>Picea glauca</i>	9	8	good	good	DBH estimated
15843	Leyland cypress	<i>Cupressus x leylandii</i>	24	20	good	fair	DBH estimated, codominant leaders 18,16
20674	flowering cherry	<i>Prunus serrulata</i>	20	7	fair	poor	diameter measured at 1', large pruning cuts, broken branches
20677	shore pine	<i>Pinus contorta</i>	15	8	good	good	high crown
20695	Douglas-fir	<i>Pseudotsuga menziesii</i>	33	18	good	good	pruned for utilities
20696	Douglas-fir	<i>Pseudotsuga menziesii</i>	21	15	good	fair	narrow crown, pruned for utilities
20697	Douglas-fir	<i>Pseudotsuga menziesii</i>	30	20	good	fair	narrow crown, pruned for utilities
20698	Douglas-fir	<i>Pseudotsuga menziesii</i>	25	20	good	fair	narrow crown, pruned for utilities
20699	Douglas-fir	<i>Pseudotsuga menziesii</i>	22	15	good	fair	narrow crown, pruned for utilities
20700	Douglas-fir	<i>Pseudotsuga menziesii</i>	18	15	good	fair	narrow crown, pruned for utilities
20701	Douglas-fir	<i>Pseudotsuga menziesii</i>	19	12	good	fair	narrow crown, pruned for utilities
20702	Douglas-fir	<i>Pseudotsuga menziesii</i>	22	12	good	fair	narrow crown, pruned for utilities
20703	Douglas-fir	<i>Pseudotsuga menziesii</i>	19	12	good	fair	narrow crown, pruned for utilities
20704	Douglas-fir	<i>Pseudotsuga menziesii</i>	19	15	good	fair	one sided, pruned for utilities
20705	cherry	<i>Prunus sp.</i>	14	5	poor	poor	codominant leaders 9,8,8, dead branches 0.5 to 2"
20706	Douglas-fir	<i>Pseudotsuga menziesii</i>	35	20	good	good	
20707	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	20	fair	very poor	topped at 15' for utilities
20708	Douglas-fir	<i>Pseudotsuga menziesii</i>	24	20	fair	very poor	one sided, topped at 15' for utilities
20709	Douglas-fir	<i>Pseudotsuga menziesii</i>	23	15	good	good	
20710	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	8	poor	poor	thin, suppressed, narrow crown

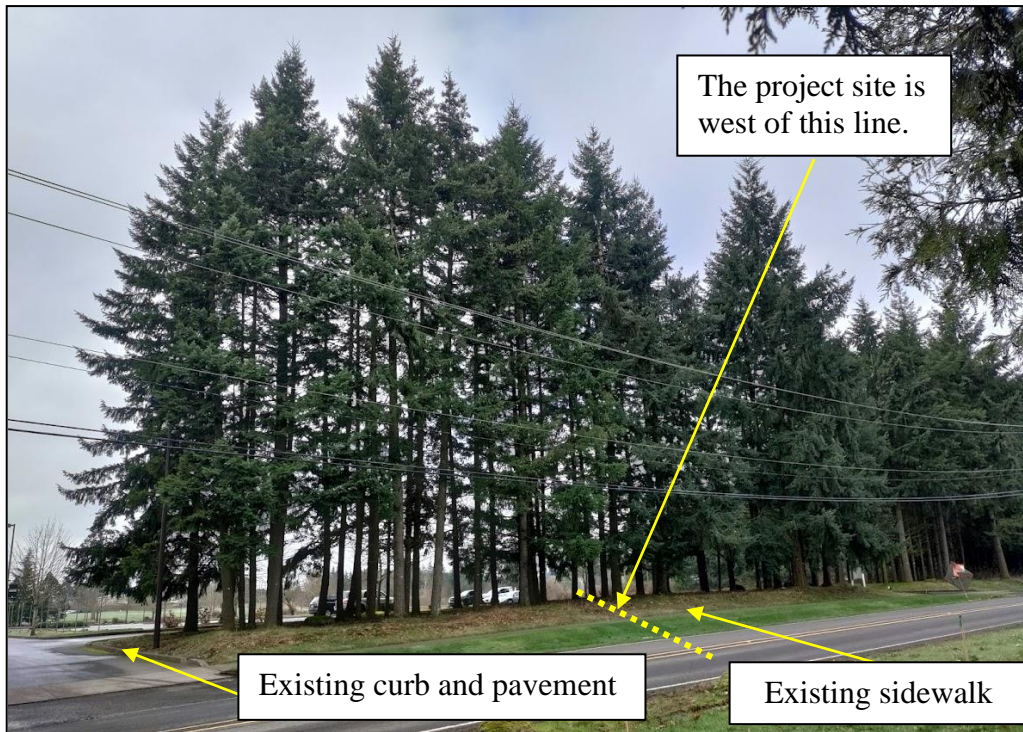
<sup>1</sup>DBH is the trunk diameter in inches measured per International Society of Arboriculture (ISA) standards.

<sup>2</sup>C-Radius is the approximate crown radius in feet.

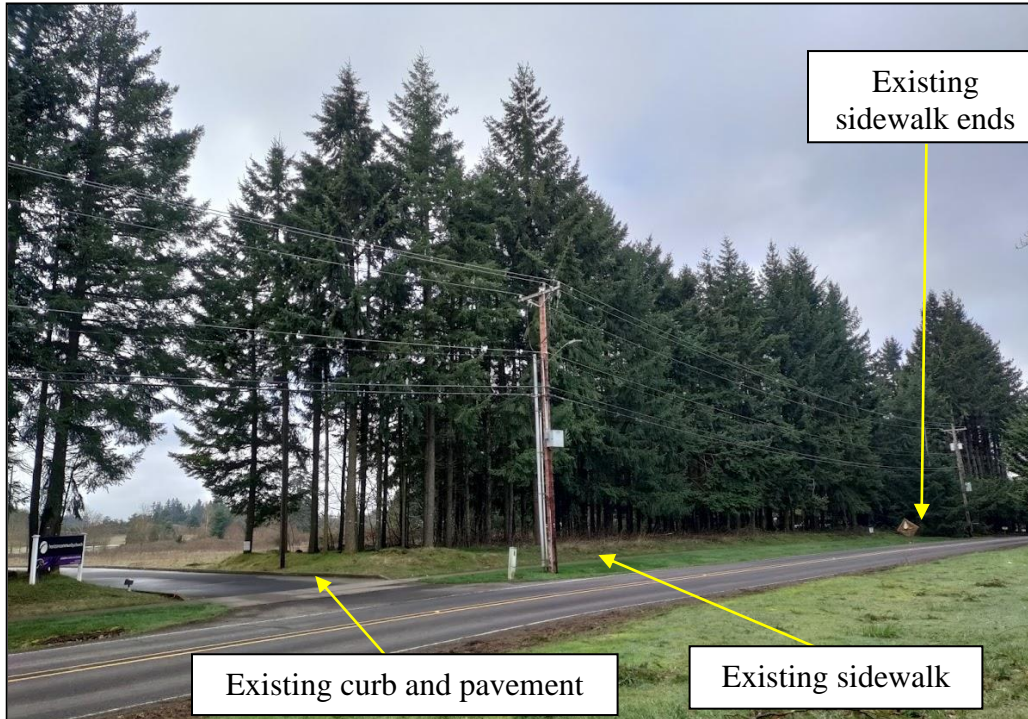
<sup>3</sup>Condition and Structure ratings range from dead, very poor, poor, fair, to good.



## Attachment 4 – Photographs of the Trees and Site



**Figure 2** Existing grove of Douglas-fir, east side. Notice the existing sidewalk and curbs around the trees. Photograph taken looking southwest. 3/21/2023.



**Figure 3** Existing grove of Douglas-fir, west side. Notice the existing sidewalk and partial curb line. The sidewalk ends near the road sign. Photograph taken looking southwest. 3/21/2023.

## **Attachment 5 – Assumptions and Limiting Conditions**

1. Any legal description provided to the consultant is assumed to be correct. The information provided by Vista Residential Partners was the basis of the information provided in this report.
2. It is assumed that this property is not in violation of any codes, statutes, ordinances, or other governmental regulations.
3. The consultant is not responsible for information gathered from others involved in various activities pertaining to this project. Care has been taken to obtain information from reliable sources.
4. Loss or alteration of any part of this delivered report invalidates the entire report.
5. Drawings and information contained in this report may not be to scale and are intended to be used as display points of reference only.
6. The consultant's role is only to make recommendations. Inaction on the part of those receiving the report is not the responsibility of the consultant.
7. The information provided in this report includes information and recommendations for the benefit of our client's decision making. The ultimate decision of whether to retain, remove, prune, inspect, monitor, or otherwise apply treatment recommendations to a tree is the sole responsibility of the tree owner, and not the responsibility of the project arborist.
8. If there are any questions or concerns with the information presented in this report, please contact our firm so that we can address any issues as soon as possible.
9. The purpose of this report is to (1) inventory trees within a 60-foot-wide area south of Norwood Road, and (2) provide tree preservation recommendations for the proposed development.

**From:** [DLCD Plan Amendments](#)  
**Sent:** Monday, March 20, 2023 11:50 AM  
**To:** [Madeleine Nelson](#)  
**Subject:** Confirmation of PAPA Online submittal to DLCD

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**Tualatin**

Your notice of a proposed change to a comprehensive plan or land use regulation has been received by the Oregon Department of Land Conservation and Development.

Local File #: PMA 23-0001 and PTA 23-0001

DLCD File #: [001-23](#)

Proposal Received: 3/20/2023

First Evidentiary Hearing: 5/22/2023

Submitted by: mnelson

If you have any questions about this notice, please reply or send an email to [plan.amendments@dlcd.oregon.gov](mailto:plan.amendments@dlcd.oregon.gov).



## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Friday, March 17, 2023 10:20 AM  
**To:** planning@sherwoodoregon.gov; neamtzu@ci.wilsonville.or.us; Naomi Vogel; theresa\_cherniak@co.washington.or.us; deqinfo@deq.state.or.us; landusenotifications@oregonmetro.gov; ODOT\_R1\_DevRev@odot.oregon.gov; baldwinb@trimet.org; LUComments@cleanwaterservices.org; alex.mcgladrey@tvfr.com; KHerrod@republicservices.com; gbennett@sherwood.k12.or.us; info@theintertwine.org; Anneleah@tualatinchamber.com; OR.METRO.ENGINEERING@ZIPLY.COM; tod.shattuck@pgn.com; brandon.fleming@pgn.com; kenneth.spencer@pgn.com; richard.girard@nwnatural.com; icrawford@wcca.com  
**Cc:** Alyssa Kerr; Don Hudson; Kim McMillan; Steve Koper; Sherilyn Lombos; Mike McCarthy; Tony Doran; Rich Mueller; Ross Hoover; Martin Loring; Tom Scott; Tom Steiger; Terrance Leahy; Hayden Ausland; Lindsey Hagerman; Erin Engman; Keith Leonard  
**Subject:** NOTICE OF HEARING: PMA23-0001 & PTA23-0001 - Norwood Multi-Family  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf



### NOTICE OF HEARING AND OPPORTUNITY TO COMMENT

**NOTICE IS HEREBY GIVEN** that a public hearing will be held before the City of Tualatin City Council at 7:00 p.m., Monday, May 22, 2023, held online over Zoom and additionally accessible at the Tualatin City Services Building (10699 SW Herman Road).

**AKS Engineering & Forestry, LLC, on behalf of Vista Residential Partners and Property Owner Horizon Community Church, requests approval of two applications:**

**A Plan Map Amendment PMA 23-0001: The proposal requests the zone change from Medium-Low Density Residential (RML) and Institutional (IN) to High-Density High Rise (RH-HR) for property located on a 9.2-acre site at 23370 SW Boones Ferry Road (Tax Lot: 2S135D000106); and**

**A Plan Text Amendment PTA 23-0001: The proposal requests to remove locational factors from the High-Density High Rise (RH-HR) purpose statement in Tualatin Development Code Section 44.100 and revise Table 44-3 to limit the structure height to 4 stories or 50 feet in the RH-HR zoning district south of Norwood Road, which would be applicable to the subject site.**

You may view the application materials on our Projects web page: <https://www.tualatinoregon.gov/planning/pma23-0001-pta23-0001-norwood-multi-family-plan-map-text-amendment>

Comments due for staff report: **May 8, 2023**. Comments made after that date but prior to the close of the written record will be included in the written record but may not be included in the staff report to the City Council.

**To grant the amendment**, Council must find the proposal meets the applicable criteria of Tualatin Development Code (TDC) Chapters 32 and 33 and the Tualatin Comprehensive Plan; Applicable Oregon Statewide Planning Goals; Applicable Oregon Administrative Rules including compliance with the Transportation Planning Rule; and Metropolitan Service District's Urban Growth Management Functional Plan.

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**Application materials** are public record and are available for review. Copies can be viewed online or obtained at a reasonable cost, by contacting the Planning Division (503-691-3026 or [planning@tualatin.gov](mailto:planning@tualatin.gov)).

**Madeleine Nelson**

Assistant Planner

City of Tualatin | Planning Division

503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Friday, March 17, 2023 10:24 AM  
**To:** Melissa Slotemaker  
**Cc:** Steve Koper  
**Subject:** NOTICE OF HEARING: PMA23-0001 & PTA23-0001 - Norwood Multi-Family  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf



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**Madeleine Nelson**

Assistant Planner

City of Tualatin | Planning Division

503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Friday, March 17, 2023 10:27 AM  
**To:** tualatincio@gmail.com; riverparkcio@gmail.com; jasuwi7@gmail.com; christine@newmountaingroup.com; dan@danhardyproperties.com; katepinamonti@hotmail.com; cynmartz12@gmail.com; daniel@bachhuber.co; cio.east.west@gmail.com; doug\_ulmer@comcast.net; keenanwoods7@gmail.com; keenanwoods7@gmail.com; dana476@gmail.com; mcrowell248@comcast.net; tualatinmidwestcio@gmail.com; dikkusan@live.com; cniew@yahoo.com; tmpgarden@comcast.net; snoelluwcwle@yahoo.com; MartinazziWoodsCIO@gmail.com; solson.1827@gmail.com; delmoore@frontier.com; jamison.l.shields@gmail.com; ClaudiaSterling68@gmail.com; abuschert@gmail.com; roydloop@gmail.com; Tualatinibachcio@gmail.com; Parsons.Patricia@outlook.com; afbohn@gmail.com; edkcnw@comcast.net; rwcleanrooms@gmail.com; byromcio@gmail.com; timneary@gmail.com; jujuheir@aol.com; kapaluapro@aol.com; katzmari22@gmail.com; mwestenhaver@hotmail.com; tualatincommercialcio@gmail.com; tualatincommercialcio@gmail.com; scottm@capacitycommercial.com; scottm@capacitycommercial.com; robertekellogg@yahoo.com; christine@newmountaingroup.com  
**Cc:** Steve Koper; Megan George; Betsy Ruef  
**Subject:** NOTICE OF HEARING: PMA23-0001 & PTA23-0001 - Norwood Multi-Family  
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**Madeleine Nelson**

Assistant Planner

City of Tualatin | Planning Division

503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)



# AFFIDAVIT OF MAILING

STATE OF OREGON)

) ss

COUNTY OF WASHINGTON)

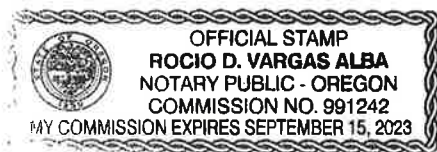
I, Lindsey Hagerman being first duly sworn, depose and say:

That on the 17 day of March, I served upon the persons shown on Exhibit A, attached hereto and by this reference incorporated herein, a copy of a Notice of Hearing/Application/Decision marked Exhibit B, attached hereto and by this reference incorporated herein, by mailing to them a true and correct copy of the original hereof. I further certify that the addresses reflect information received from the relevant party or agency, and that said envelopes were placed in the United States Mail at Tualatin, Oregon, prepared to receive postage administered by city staff.

Dated this 17 of, March 2023

Lindsey Hagerman  
Signature

SUBSCRIBED AND SWORN to before me this March 17<sup>th</sup>, 2023



Rocio Vargas  
Notary Public for Oregon

My commission expires: Sept 15<sup>th</sup>, 2023

RE: PMA23-0001 & PTA23-0001



## AFFIDAVIT OF MAILING

STATE OF OREGON)

) ss

COUNTY OF WASHINGTON)

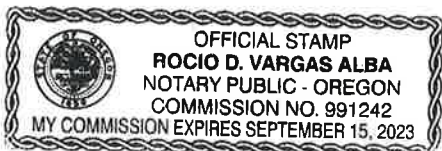
I, Lindsey Hagerman being first duly sworn, depose and say:

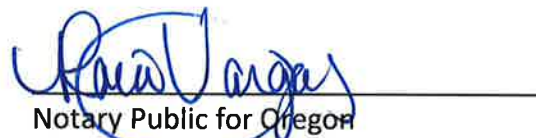
That on the 17 day of March, I have posted notice of public hearing attached hereto and by this reference incorporated herein, by placing notice in three public and conspicuous places within the city. I further certify that the addresses reflect information received from the relevant party or agency, and that said envelopes were placed in the United States Mail at Tualatin, Oregon, prepared to receive postage administered by city staff.

Dated this 17 of, March 2023

  
Signature

SUBSCRIBED AND SWORN to before me this March 17<sup>th</sup>, 2023



  
Notary Public for Oregon

My commission expires: Sept 15<sup>th</sup>, 2023

RE: PMA23-0001 & PTA23-0001 PUBLIC POSTING



**TLID**

2S135D000108  
2S135CD00300  
2S135AD03900  
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2S135AC01600  
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2S135AD09300  
2S135BD04000  
2S135AC10900  
2S135AC07700  
2S135AC07800  
2S135AD11000  
2S135AD08000  
2S135AC09400  
2S135AD05500  
2S135AD09900  
2S135AD12100  
2S135BC01900  
2S135CA00200  
2S135BD09900  
2S135AD00400  
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2S135AD01900  
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2S135BD02600  
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2S135BD10500  
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2S135BD04300  
2S135AC12500  
2S135AC14700  
2S135AC02900  
2S135AD06900  
2S135AD11100  
2S135AC16300  
2S135AC12400  
2S135BD10000  
2S135AC05100  
3S102AB00100  
3S102AB00200

## OWNER1

9300 SW NORWOOD ROAD OR LLC  
AGHAZADEH-SANAEI MEHDI & ASIAEE NAHID  
AGORIO DIANA  
ALLARD JOHN A & ALLARD KELCIE L  
ALLISON VICKI R  
ANDERSON SCOTT A & ANDERSON ANDREA N  
ANDERSON RICHARD J JR  
ANTHIMIADES GEORGE T & ANTHIMIADES STEPHANIE J  
APLIN ALAN WHITNEY & APLIN PATRICIA ANN  
ARCHULETA JOHN L & ARCHULETA ELISHA J  
ARCIGA MARCO A & ARCIGA VIRGINIA L  
ATKINS DANIEL J & ATKINS DAWNITA G  
AUGEE JOEL L & AUGEE HEIDI M S  
AUST JOSEPHINE A  
AUSTIN MICHAEL P & AUSTIN ALLISON M  
BABCOCK GAYLON  
BACA GREGORY R & BACA ELIZABETH R  
BAILEY JILL  
BALLARD FAMILY TRUST  
BARRY CHRISTOPHER & BARRY ERIN  
BATES-BLANCO FAMILY TRUST  
BAVARO EMILY EVELYN & BAVARO JOSHUA  
BAZANT CHRISTINE LEE & BAZANT JOHN JOSEPH  
BEAR ALISA ANN TRUST  
BECKER SUSAN  
BECKEN LLC  
BECKSTEAD BRIAN A & BECKSTEAD ZERELDA G  
BEDDES CRISTINA & BEDDES AARON  
BEEBE BRENT E & BEEBE SANDRA L  
BEIKMAN STEPHEN & BEIKMAN MONIQUE  
BELL JAMES M & BELL EVA J  
BELL REV TRUST  
BENNETT JASON M & MCALEER MARGUERITE T  
BERGEE CYNTHIA T & BERGE WILLIAM C  
BLACK JENNIFER O & BLACK DAVID O JR  
BOCCI JAMES A & BOCCI JULIA A  
BOELL DONALD B & BOELL PATRICIA J  
BOHMAN FAMILY TRUST  
BOSKET JOHN A & JULIE L BOSKET LIV TRUST  
BOX MICHAEL L & BOX KATIE M  
BRECK KOLTE TRISTON & BEATTIE DANIELLE NICOLE  
BRENES VALERIE & BRENES GERARDO MANUEL  
BROADHURST CURTIS  
BROWN KATHERINE MARIE & BROWN CHRISTOPHER DAVID  
BUCKALEW LIVING TRUST  
BUHAY JASON & BUHAY MICHELLE  
BUICH ALEXANDER & BUICH CORRINE  
BUNCE MICHAEL R REVOC LIV TRUST & BUNCE DEBORAH J REVOC LIV TRUST  
BURCHFIEL LARRY & BURCHFIEL DEBORAH  
BURCHETT KENNETH T & JOY A JOINT LIV TRUST  
BURNS DANIEL D & KRILL DEANN R  
CAIS CARLY J  
CALDERON CAMIE M & CALDERON DANIEL  
CALKINS MICHAEL & CALKINS DIANE  
CARBAJAL PEDRO & CARBAJAL REGINA  
CARDENAS FERNANDO  
CARNS STEVEN C  
CHAFF HEIDI L  
CHAMBERLAND MATHEW & CHAMBERLAND JAMES W  
CHAMBERLAIN JOHN & CHAMBERLAIN DEBRA  
CHAMBERLAIN JOHN & CHAMBERLAIN DEBRA

OWNERADDR	OWNERCITY	OWNERSTATE	OWNERZIP
2964 PEACHTREE RD STE #585	ATLANTA	GA	30305
23745 SW BOONES FERRY RD	TUALATIN	OR	97062
22790 SW 87TH PL	TUALATIN	OR	97062
8885 SW IOWA DR	TUALATIN	OR	97062
8994 SW STONO DR	TUALATIN	OR	97062
22825 SW 92ND PL	TUALATIN	OR	97062
22630 SW 93RD TER	TUALATIN	OR	97062
8735 SW STONO DR	TUALATIN	OR	97062
22940 SW ENO PL	TUALATIN	OR	97062
9385 SW SKOKOMISH LN	TUALATIN	OR	97062
22550 SW 93RD TER	TUALATIN	OR	97062
22570 SW 93RD TER	TUALATIN	OR	97062
8905 SW IOWA DR	TUALATIN	OR	97062
8846 SW STONO DR	TUALATIN	OR	97062
9325 SW IOWA DR	TUALATIN	OR	97062
8680 SW STONO DR	TUALATIN	OR	97062
16869 SW 65TH AVE #387	LAKE OSWEGO	OR	97035
3657 SE ROANOKE CT	HILLSBORO	OR	97123
22925 SW MIAMI PL	TUALATIN	OR	97062
23065 SW BOONES FERRY RD	TUALATIN	OR	97062
22648 SW 96TH DR	TUALATIN	OR	97062
22940 SW VERMILLION DR	TUALATIN	OR	97062
36449 HWY 34	LEBANON	OR	97355
8525 SW MARICOPA DR	TUALATIN	OR	97062
9405 SW QUINAULT LN	TUALATIN	OR	97062
2785 ARBOR DR	WEST LINN	OR	97068
8886 SW STONO DR	TUALATIN	OR	97062
22765 SW ENO PL	TUALATIN	OR	97062
8895 SW STONO DR	TUALATIN	OR	97062
22760 SW 87TH PL	TUALATIN	OR	97062
22710 SW VERMILLION DR	TUALATIN	OR	97062
8930 SW IOWA DR	TUALATIN	OR	97062
22730 SW VERMILLION DR	TUALATIN	OR	97062
16997 SW TEMPEST WAY	KING CITY	OR	97224
9040 SW STONO DR	TUALATIN	OR	97062
23205 SW BOONES FERRY RD	TUALATIN	OR	97062
22675 SW 87TH	TUALATIN	OR	97062
22567 SW 96TH DR	TUALATIN	OR	97062
9355 SW STONO DR	TUALATIN	OR	97062
9370 SW PALOUSE LN	TUALATIN	OR	97062
9290 SW STONO DR	TUALATIN	OR	97062
22830 SW 89TH PL	TUALATIN	OR	97062
22543 SW 96TH DR	TUALATIN	OR	97062
22683 SW 96TH DR	TUALATIN	OR	97062
22943 SW BOONES FERRY RD	TUALATIN	OR	97062
9300 SW STONO DR	TUALATIN	OR	97062
22985 SW MIAMI PL	TUALATIN	OR	97062
9150 SW IOWA DR	TUALATIN	OR	97062
8858 SW STONO DR	TUALATIN	OR	97062
9700 SW IOWA DR	TUALATIN	OR	97062
9345 SW QUINAULT LN	TUALATIN	OR	97062
9340 SW STONO DR	TUALATIN	OR	97062
22735 SW 92ND PL	TUALATIN	OR	97062
8890 SW STONO DR	TUALATIN	OR	97062
8925 SW IOWA DR	TUALATIN	OR	97062
9340 SW QUINAULT LN	TUALATIN	OR	97062
9335 SW QUINAULT LN	TUALATIN	OR	97062
22626 SW 96TH DR	TUALATIN	OR	97062
8975 SW IOWA DR	TUALATIN	OR	97062
9000 SW GREENHILL LN	TUALATIN	OR	97062
9000 SW GREENHILL LN	TUALATIN	OR	97062

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CHAMBERLAIN JOHN & CHAMBERLAIN DEBRA  
 CHAMBERLAIN JOHN & CHAMBERLAIN DEBRA  
 CHAMBERLAIN JOHN & CHAMBERLAIN DEBRA  
 CHAMBERLAIN JOHN & CHAMBERLAIN DEBRA  
 CHAMBERLAIN JOHN & CHAMBERLAIN DEBRA  
 CHAMBERLAIN JOHN & CHAMBERLAIN DEBRA  
 CHAMPAGNE PATRICK & ROY CELINE  
 CHAMSEDDINE WAEL M & CHAMSEDDINE BECKY A  
 CHAN JOSEPH L  
 CHAN CHEUK YEE CHAN REVOC LIV TRUST  
 CHAPEK CARRIEANN & CHAPEK CALEB  
 CHASE HARRY M & CHASE CATHY LEE  
 CHENG SIMON K REV TRUST  
 CHILDS ROBERT M & CHILDS MARY J  
 CHRISTENSEN STANFORD DEE & CAROL MAE REV INTERVIVOS TRUST  
 CLARK ROY H  
 COBB DANIEL Z & COBB ROSA  
 COKELEY HEATHER & COKELEY KEITH  
 COLE STEVEN W & ROBERTS ANDREA M  
 COMMUNITY PARTNERS FOR AFFORDABLE HOUSING  
 COMPTON MARC A & COMPTON JODY L  
 CONFER ANDREW B  
 COOPER JULIE ANN LIV TRUST  
 CORRY FAMILY TRUST  
 CRAWFORD JASON S  
 CRISP TONI K  
 CRONKRITE ERIK  
 CRUZ ALEJANDRO FRANCISCO  
 CURTHOYS CAROL ANN REV LIV TRUST  
 DARLING LANCE F  
 DAVIS JASON WAYNE  
 DEARDORFF CRAIG S & DEARDORFF ALBERTA  
 DERIENZO NICHOLAS C & DERIENZO COURTNEY LEIGH  
 DICKMAN SCOTT D & CHEN WEIWEN  
 DIETRICH ROBERT & DIETRICH SUSAN  
 DITTMAN ADAM H & DITTMAN ELIZABETH A C  
 DOSS ANDREA & DOSS BRANDON  
 DOW PETER J REV TRUST & SHERFY JENNIFER L REV TRUST  
 DOWNES ADRIAN & DOWNES CATHERINE  
 DUFFY RONALD E TRUST  
 DUNN PATRICK P & DUNN CLARA I RUSINQUE  
 DUNN KARIN R  
 EAKINS EILEEN G  
 EBERHARD JEFFERY D & TAAFFE CAROL E  
 EDELINE JENNIFER A & EDELINE SEAN M  
 EDWARDS DANIELLE  
 EGGERT BRENDA & EGGERT CHARLES  
 EISENSTEIN ETHAN & EISENSTEIN MEGAN  
 ELLIOTT WESLEY & ELLIOTT TERRA  
 ELLIS FAMILY REV TRUST  
 ENNIS MARK & ENNIS BARBARA  
 ERDMAN PAUL & ERDMAN PAMALA B  
 ERWERT EMILY  
 ESZLINGER ERIC & ESZLINGER NATASHA  
 FADLING JULIE H  
 FANT BRIAN ALAN & DEBORAH SPARCK TRUST  
 FEUCHT DANIEL & BEVERLY LIV TRUST  
 FILANTRES GUST J & FILANTRES CYNTHIA K  
 FINDERS DEBRA P  
 FITZHENRY VIRGINIA LIV TRUST  
 FLETCHER CRAIG A & FLETCHER JENINE F  
 FORCE LIVING TRUST

9000 SW GREENHILL LN	TUALATIN	OR	97062
9000 SW GREENHILL LN	TUALATIN	OR	97062
9000 SW GREENHILL LN	TUALATIN	OR	97062
9000 SW GREENHILL LN	TUALATIN	OR	97062
9000 SW GREENHILL LN	TUALATIN	OR	97062
9000 SW GREENHILL LN	TUALATIN	OR	97062
8880 SW IOWA DR	TUALATIN	OR	97062
22900 SW ERIO PL	TUALATIN	OR	97062
23156 BLAND CIR	WEST LINN	OR	97068
22800 SE VERMILION DR	TUALATIN	OR	97062
9360 SW SKOKOMISH LN	TUALATIN	OR	97062
8799 SW STONO DR	TUALATIN	OR	97062
9860 SW LUMBEE LN	TUALATIN	OR	97062
22705 SW VERMILLION DR	TUALATIN	OR	97062
8980 SW STONO DR	TUALATIN	OR	97062
9295 SW PALOUSE LN	TUALATIN	OR	97062
22770 SW 89TH PL	TUALATIN	OR	97062
9320 SW IOWA DR	TUALATIN	OR	97062
22850 SW ENO PL	TUALATIN	OR	97062
PO BOX 23206	TIGARD	OR	97281
22151 SW ANTIOCH DOWNS CT	TUALATIN	OR	97062
22575 SW 87TH PL	TUALATIN	OR	97062
9390 SW IOWA DR	TUALATIN	OR	97062
22905 SW MIAMI DR	TUALATIN	OR	97062
9563 SW IOWA DR	TUALATIN	OR	97062
9380 SW IOWA DR	TUALATIN	OR	97062
9315 SW PALOUSE LN	TUALATIN	OR	97062
9270 SW SKOKOMISH LN	TUALATIN	OR	97062
8879 SW IOWA DR	TUALATIN	OR	97062
22865 SW 94TH TER	TUALATIN	OR	97062
9180 SW STONO DR	TUALATIN	OR	97062
22595 SW 93RD TER	TUALATIN	OR	97062
22755 SW 87TH PL	TUALATIN	OR	97062
22955 SW ERIO PL	TUALATIN	OR	97062
9650 SW IOWA DR	TUALATIN	OR	97062
22785 SW 89TH PL	TUALATIN	OR	97062
22580 SW 94TH TER	TUALATIN	OR	97062
9360 SW QUINAULT LN	TUALATIN	OR	97062
22945 SW MIAMI PL	TUALATIN	OR	97062
9795 SW IOWA DR	TUALATIN	OR	97062
9380 SW PALOUSE LN	TUALATIN	OR	97062
9500 SW IOWA DR	TUALATIN	OR	97062
22760 SW 93RD TERR	TUALATIN	OR	97062
22975 SW ERIO PL	TUALATIN	OR	97062
9350 SW QUINAULT LN	TUALATIN	OR	97062
22585 SW 93RD TER	TUALATIN	OR	97062
30000 SW 35TH DR	WILSONVILLE	OR	97070
22750 SW VERMILLION DR	TUALATIN	OR	97062
9521 SW IOWA DR	TUALATIN	OR	97062
9640 SW IOWA DR	TUALATIN	OR	97062
9380 SW STONO DR	TUALATIN	OR	97062
8862 SW STONO DR	TUALATIN	OR	97062
22915 SW 94TH TER	TUALATIN	OR	97062
9395 SW QUINAULT LN	TUALATIN	OR	97062
22630 SW VERMILLION DR	TUALATIN	OR	97062
22680 SW ENO PL	TUALATIN	OR	97062
22715 SW 87TH PL	TUALATIN	OR	97062
9630 SW IOWA DR	TUALATIN	OR	97062
9355 SW PALOUSE LN	TUALATIN	OR	97062
7015 SW FOXFIELD CT	PORTLAND	OR	97225
9840 SW LUMBEE LN	TUALATIN	OR	97062
9365 SW PALOUSE LN	TUALATIN	OR	97062

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FOSSE PATRICIA J & FOSSE RANDY C  
FOWLER TREVOR & FOWLER KAYLA  
FRANCIS FRANK J & FRANCIS HELEN MARIE  
FRANCIS KATHLEEN  
FRANKS TERRENCE D  
FRAVEL LINDA SHAW TRUST  
FRENCH RODERICK LEE & FRENCH THERESE LYNN  
FRIBLEY SARAH E & FRIBLEY CHAD C  
FRITTS MICHELLE M & FRITTS BRETT C  
FRONIUS JOHN A & FRONIUS SUSAN A  
FRY ALBERTA A TRUST  
FULLER ERIC M & FULLER XIAOYAN  
GALANG JAN VINCENT SUNGA & GALANG CINDY BUSTOS  
GALVER ROBERTO & GALVER PATRICIA BYRNE  
GAMACHE ROBERT R & GAMACHE CHERI M  
GANNEY DANIEL T & BELLINGHAM TAUNI A  
GARIBAY JAIME  
GARRETT RYAN P & GARRETT KELLY E  
GENSLER KRISTOPHER & GENSLER MARIAH  
GEORGE TIMOTHY P & GEORGE BETHANY  
GEORGE REV LIV TRUST  
GHODS SHAWN M & GHODS JENNA N  
GIACCHI ROBYN M  
GIESS SIMONE ELISABETH & IVERSON SEAN PATRICK  
GILBERT CHRISTOPHER S & GILBERT TAYLOR A  
GILCHRIST BEVERLY & GILCHRIST ROLAND T  
GILLARD DAVID J & GILLARD SHELLIE S  
GILLETTS CHRIS & GILLETTS BETSY  
GILLIHAN THOMAS M TRUST  
GLAESER CHARLES W & GLAESER CHRISTA M  
GLASS BRIAN D & GLASS LEAH M  
GOFORTH NATHAN L & TAAFFE JULIA C  
GOODY GREGORY & GOODY BRITTANY  
GOUY PHIL  
GRANDON JOINT TRUST  
GREEN JUSTIN J  
GREGSON N DEAN & GREGSON DEBORAH U  
GRENZ CAITLIN & GRENZ MACKENZIE  
GRIFFITH DWIGHT A & GRIFFITH H KAY  
GRIFFITH NOEL T JR & GRIFFITH ANGELA R  
GUERRA FILEMON M JR & QUIRANTE MALINDA  
GUYETTE JONATHAN & GUYETTE REBECCA  
HACKENBRUCK JERRY ALDEN & LINDA JOAN REV TRUST  
HALL SCOTT & HALL BETH  
HALLVIK BRUCE D & HALLVIK PAMELA S  
HAMILTON GEORGE & ALICE TRUST  
HAMM STEVEN & HAMM SANDRA  
HANAWA IWAO & HANAWA LAURIE  
HARRISON LIV TRUST  
HASBROOK WILLIAM B & HASBROOK TRICIA  
HASLAM KENNETH A & HASLAM JESSICA J  
HAUDBINE PATRICK E & HAUDBINE DELEE H  
HEIRONIMUS JULIE A & VALLECK GEORGE D  
HELMS NICOLE E & HELMS ANDREW E  
HERRERA FERNANDO JR & HERRERA REBEKAH  
HERRERA FERNANDO & HERRERA MARIA D  
HEYER TRUST  
HICKOK TODD J & HICKOK MOLLY J  
HILL DEREK & HILL CYNTHIA  
HINES MICHAEL A & HINES MARLENE R  
HODGE KENNETH M  
HOLDBROOK-DADSON DENISE



22925 SW MANDAN DR	TUALATIN	OR	97062
22645 SW VERMILLION DR	TUALATIN	OR	97062
9130 SW IOWA DR	TUALATIN	OR	97062
9345 SW SKOKOMISH LN	TUALATIN	OR	97062
22730 SW 90TH PL	TUALATIN	OR	97062
9365 SW SKOKOMISH LN	TUALATIN	OR	97062
9080 SW STONO DR	TUALATIN	OR	97062
9005 SW STONO DR	TUALATIN	OR	97062
22945 SW ENO PL	TUALATIN	OR	97062
22650 SW 87TH PL	TUALATIN	OR	97062
9175 SW STONO DR	TUALATIN	OR	97062
9365 SW QUINAULT LN	TUALATIN	OR	97062
9400 SW IOWA DR	TUALATIN	OR	97062
22995 SW VERMILLION DR	TUALATIN	OR	97062
22770 SW VERMILLION DR	TUALATIN	OR	97062
22556 SW 96TH DR	TUALATIN	OR	97062
22555 SW 94TH TER	TUALATIN	OR	97062
22970 SW MIAMI PL	TUALATIN	OR	97062
8540 SW MARICOPA DR	TUALATIN	OR	97062
9335 SW IOWA DR	TUALATIN	OR	97062
22695 SW ENO PL	TUALATIN	OR	97062
22815 SW 89TH PL	TUALATIN	OR	97062
8900 SW IOWA DR	TUALATIN	OR	97062
9355 SW QUINAULT LN	TUALATIN	OR	97062
22680 SW 87TH PL	TUALATIN	OR	97062
9310 SW IOWA ST	TUALATIN	OR	97062
22680 SW MIAMI DR	TUALATIN	OR	97062
22604 SW 96TH DR	TUALATIN	OR	97062
22870 SW ENO PL	TUALATIN	OR	97062
8955 SW IOWA DR	TUALATIN	OR	97062
8900 SW SWEET DR #537	TUALATIN	OR	97062
22755 SW 90TH PL	TUALATIN	OR	97062
22830 SW ENO PL	TUALATIN	OR	97062
8995 SW IOWA DR	TUALATIN	OR	97062
22980 SW ERIO PL	TUALATIN	OR	97062
8560 SW MARICOPA DR	TUALATIN	OR	97062
22675 SW MIAMI DR	TUALATIN	OR	97062
22590 SW VERMILLION DR	TUALATIN	OR	97062
22905 SW VERMILLION DR	TUALATIN	OR	97062
8898 SW STONO DR	TUALATIN	OR	97062
8899 SW IOWA DR	TUALATIN	OR	97062
22673 SW 96TH DR	TUALATIN	OR	97062
22680 SW 96TH DR	TUALATIN	OR	97062
9065 SW STONO DR	TUALATIN	OR	97062
22640 SW ENO PL	TUALATIN	OR	97062
22740 SW 87TH PL	TUALATIN	OR	97062
22725 SW VERMILLION DR	TUALATIN	OR	97062
3528 CHEROKEE CT	WEST LINN	OR	97068
14938 SW 116TH PL	TIGARD	OR	97224
22790 SW MIAMI DR	TUALATIN	OR	97062
22825 SW ERIO PL	TUALATIN	OR	97062
9215 SW STONO DR	TUALATIN	OR	97062
22710 SW 90TH PL	TUALATIN	OR	97062
709 W 36TH ST	VANCOUVER	OR	98660
9260 SW SKOKOMISH LN	TUALATIN	OR	97062
9360 SW STONO DR	TUALATIN	OR	97062
22775 SW VERMILLION DR	TUALATIN	OR	97062
23855 SW BOONES FERRY RD	TUALATIN	OR	97062
9600 SW IOWA DR	TUALATIN	OR	97062
9730 SW IOWA DR	TUALATIN	OR	97062
9235 SW STONO DR	TUALATIN	OR	97062
9330 SW SKOKOMISH LN	TUALATIN	OR	97062

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HOOVER DAN M  
 HORIZON COMMUNITY CHURCH  
 HOWE WARREN & YUHAS-HOWE HEATHER  
 HUALA ROBIN PATRICK  
 HUMPHREY MARGIE LIV TRUST  
 HUMPHREY SUSAN E  
 HYRE TIMOTHY R & HYRE ANNILEE D  
 INGRAM CLIFFORD KEITH & INGRAM ELISABETH JOY  
 JACOBS JEFFREY W  
 JASTRAM WILLIAM E & JASTRAM CHRISTINE A  
 JENKINS PHILIP D & JENKINS KRISTEN K  
 JOHNSON FLETCHER & JOHNSON CHRISTINA  
 JORGENSEN HEATHER & JORGENSEN COLBIE  
 KALATEH EBRAHIM SHIRDOOST & DOOST NOOSHIN NEZAM  
 KARIS ALEXANDER DONALD  
 KAUFFMAN FAMILY TRUST  
 KENNEDY MICHAEL C & KENNEDY LINDA M  
 KERN KEVIN  
 KERNER ROBERT  
 KHAN SOHAIL & FARZANA LIV TRUST  
 KHAN SOHAIL & FARZANA LIV TRUST  
 KIM KYU & KIM MELISSA  
 KIMMEL RONALD A & KIMMEL REBECCA A  
 KINNAMAN JEFFREY B & KINNAMAN JENNIFER D  
 KIRK CHRISTINE A & HOFF JAMES A  
 KIS JUAN ANTONIO & KIS CLAUDIA  
 KLAUSS CYDNI M  
 KLEPS MARK G & KLEPS LINDSAY K  
 KLOSSNER ANDREW J  
 KNOX FAMILY TRUST  
 KNUDSON THOMAS & KNUDSON LINDA SALYERS  
 KREIS JOHN K  
 LACEY LONNIE D & LACEY LORI A  
 LAM DAVID & NGUYEN BETH NGOC BICH  
 LARA SALVADOR  
 LARSON ANDREW & WISEMAN LEAH DANIELLE  
 LATHROP FAMILY LIV TRUST  
 LEE WILLIAM B REV LIV TRUST  
 LEE FLORENCE & YAM WAI LUN  
 LEMON CHASE ANTHONY & LEMON HEIDI  
 LENNAR NORTHWEST LLC  
 LENNAR NORTHWEST INC  
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 LENNAR NORTHWEST INC  
 LENNAR NORTHWEST INC  
 LENNAR NORTHWEST INC  
 LENNAR NORTHWEST INC  
 LENNAR NORTHWEST INC  
 LILLEY KRISTEN M & LILLEY NICHOLAS L  
 LIMING JEANNE E  
 LINDAMAN LIVING TRUST  
 LIU RAYMOND P & SUSAN E REV LIV TRUST  
 LIVERMORE MICHAEL G & LIVERMORE SHERYL D  
 LOEN EMILY G  
 LORENZEN TYLER J & LORENZEN TATJANA  
 LOVELACE LIVING TRUST  
 LUCINI JOHN W & GRACE N FAM TRUST  
 LUSCOMBE BRUCE C TRUST  
 MACCLANATHAN MELANIE & MACCLANATHAN MICHAEL  
 MACDONALD BRIAN & MACDONALD AMELIA  
 MADONDO JEFFREY & JOHNSON MORGAN IRENE  
 MAGNUSON BRENT R & MAGNUSON HEATHER A

8993 SW STONO DR	TUALATIN	OR	97062
PO BOX 2690	TUALATIN	OR	97062
9495 SW NORWOOD RD	TUALATIN	OR	97062
14607 NE 57TH ST	BELLEVUE	WA	98007
22820 SW 92ND PL	TUALATIN	OR	97062
8801 SW STONO DR	TUALATIN	OR	97062
22840 SW VERMILLION DR	TUALATIN	OR	97062
22785 SW 87TH PL	TUALATIN	OR	97062
9360 SW PALOUSE LN	TUALATIN	OR	97062
9015 SW IOWA DR	TUALATIN	OR	97062
9240 SW STONO DR	TUALATIN	OR	97062
9365 SW STONO DR	TUALATIN	OR	97062
9375 SW STONO DR	TUALATIN	OR	97062
22585 SW 87TH PL	TUALATIN	OR	97062
22930 SW MANDAN DR	TUALATIN	OR	97062
22725 SW MIAMI DR	TUALATIN	OR	97062
22735 SW 87TH PL	TUALATIN	OR	97062
9450 SW IOWA DR	TUALATIN	OR	97062
8850 SW STONO DR	TUALATIN	OR	97062
2919 BEACON HILL DR	WEST LINN	OR	97068
2919 BEACON HILL DR	WEST LINN	OR	97068
22589 SW 96TH DR	TUALATIN	OR	97062
23605 SW BOONES FERRY RD	TUALATIN	OR	97062
8780 SW STONO DR	TUALATIN	OR	97062
22611 SW 96TH DR	TUALATIN	OR	97062
22615 SW 93RD TER	TUALATIN	OR	97062
22635 SW 87TH PL	TUALATIN	OR	97062
9675 SW IOWA DR	TUALATIN	OR	97062
8854 SW STONO DR	TUALATIN	OR	97062
22950 SW MIAMI PL	TUALATIN	OR	97062
8725 SW STONO DR	TUALATIN	OR	97062
22835 SW MIAMI DR	TUALATIN	OR	97062
22665 SW 94TH TER	TUALATIN	OR	97062
8700 SW STONO DR	TUALATIN	OR	97062
22845 SW 93RD TER	TUALATIN	OR	97062
22845 SW 94TH TER	TUALATIN	OR	97062
9265 SW IOWA DR	TUALATIN	OR	97062
37301 28TH AVE S UNIT 65	FEDERAL WAY	WA	98003
8822 SW STONO DR	TUALATIN	OR	97062
8940 SW IOWA DR	TUALATIN	OR	97062
11807 NE 99TH ST STE #1170	VANCOUVER	WA	98682
11807 NE 99TH ST STE 1170	VANCOUVER	WA	98682
11807 NE 99TH ST STE 1170	VANCOUVER	WA	98682
11807 NE 99TH ST STE 1170	VANCOUVER	WA	98682
11807 NE 99TH ST STE 1170	VANCOUVER	WA	98682
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11807 NE 99TH ST STE 1170	VANCOUVER	WA	98682
22800 SW 89TH PL	TUALATIN	OR	97062
9380 SW SKOKOMISH LN	TUALATIN	OR	97062
22805 SW ERIO PL	TUALATIN	OR	97062
9945 SW LUMBEE LN	TUALATIN	OR	97062
9835 SW LUMBEE LN	TUALATIN	OR	97062
22655 SW ENO PL	TUALATIN	OR	97062
22820 SW MIAMI DR	TUALATIN	OR	97062
22659 SW 96TH DR	TUALATIN	OR	97062
23677 SW BOONES FERRY RD	TUALATIN	OR	97062
22605 SW 87TH PL	TUALATIN	OR	97062
22575 SW 94TH TER	TUALATIN	OR	97062
22640 SW MIAMI DR	TUALATIN	OR	97062
22795 SW 94TH TER	TUALATIN	OR	97062
9540 SW IOWA DR	TUALATIN	OR	97062

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MAGNUSON BRENT R & MAGNUSON HEATHER A  
MAIER DARLA & MAIER THOMAS  
MALONSON FAMILY REV LIV TRUST  
MARBLE AMANDA L TRUST  
MARK HENRY & MARK CHRISTINE  
MARLEAU ALLISON P  
MARTIN FAMILY TRUST  
MAST MARVIN R & JELI CARLENE M  
MCALLISTER DENNIS C & MCALLISTER RAGNHILD  
MCCALED KEVIN L  
MCDONOUGH JOHN MICHAEL & MCDONOUGH MAUREEN CLARE  
MCGILCHRIST STEPHEN R & NYSTROM-GERDES ELIZABETH R  
MCKEAN AMY & MCKEAN RAYMOND  
MCLAUGHLIN NATHANIEL ANDREW & MCLAUGHLIN AREENA DEVI  
MCLEOD TRUST  
MCMANUS HEIDI  
MCREYNOLDS CHRIS & MCREYNOLDS AUDREY  
MENES MARK A  
MICHAEL SCOTT CURTIS & MICHAEL TINA FRANCINE  
MICHELS ELIZABETH A  
MIKULA KATERINA  
MILLER CAROLE D LIV TRUST  
MILLER JOHN LESLIE & PLATTEAU ASTRID S  
MILLER ROBERT F  
MILSTED MAURICE SCOTT & STOVER-MILSTED SUSAN LEE  
MIZE JOSHUA & MIZE CHRISTINE  
MOEN DEBORAH & MOEN ERIK  
MOLLER THERESA  
MOORE DAVID C & MOORE TAMMY  
MORELAND GREG E  
MORRIS LARRY L & MORRIS JUANITA  
MOSHOFKY JOHN & MOSHOFKY GINGER  
MOYES DUSTIN R & MOYES CAROL L  
MUELLER FAMILY TRUST  
MULGAONKER SHAILESH S  
MURPHY MICHAEL F & OLSON-MURPHY ANTONETTE K  
MUSIAL LUKE & MUNSEY VICTORIA  
NEARY TIMOTHY & NEARY LUCY  
NEILL RACHEL & HUSUM BRENT  
NELL ZACHARY D & NELL KENDRA  
NELSON KIRIN H  
NEULEIB TAMI R  
NEWBERRY GARY B & THOMPSON DONNA L  
NEWTON KYLE C & NEWTON HAILEY R  
NGUYEN QUOC & NGUYEN DIANE  
NORTH DAVID P & NORTH BARBARA  
NORWOOD HEIGHTS OWNERS OF LOTS 11 13-24  
NORWOOD HEIGHTS OWNERS OF LOTS 30 32-42  
NOYES PATRICK A & THOMPSON CAMILLIA M  
ODOMS LIVING TRUST  
OLIVERA APOLINAR & OLIVERA DEBBIE & WHITWORTH DAVID ET AL  
O'NEAL DANNY F & O'NEAL JONI L  
OSTROWSKI MICHAEL J & OSTROWSKI SHERIE M  
OWENS RICHARD D & OWENS VALERIE D  
OWENS CLINTON MICHAEL SHOOK  
PARKER ETHAN T & PARKER JAMIE L  
PAROSA JOSHUA DAVID  
PATTON ANDREW M & PATTON LINDSEY M  
PEEBLES CRAIG M & PEEBLES TANYA A  
PENA ZACHARY G & PENA TIFFANY R  
PERRY JANETTE & PERRY KENNETH  
PETRIDES PHILLIP LIV TRUST

9540 SW IOWA DR	TUALATIN	OR	97062
9340 SW PALOUSE LN	TUALATIN	OR	97062
22955 SW VERMILLION DR	TUALATIN	OR	97062
8989 SW STONO DR	TUALATIN	OR	97062
22725 SW 90TH PL	TUALATIN	OR	97062
22615 SW VERMILLION DR	TUALATIN	OR	97062
8986 SW STONO DR	TUALATIN	OR	97062
23845 SW BOONES FERRY RD	TUALATIN	OR	97062
8805 SW STONO DR	TUALATIN	OR	97062
8950 SW IOWA DR	TUALATIN	OR	97062
8750 SW STONO DR	TUALATIN	OR	97062
22720 SW 93RD TER	TUALATIN	OR	97062
22685 SW VERMILLION DR	TUALATIN	OR	97062
8960 SW IOWA DR	TUALATIN	OR	97062
23465 SW BOONES FERRY RD	TUALATIN	OR	97062
22820 SW 90TH PL	TUALATIN	OR	97062
22720 SW 87TH PL	TUALATIN	OR	97062
9280 SW STONO DR	TUALATIN	OR	97062
8580 SW MARICOPA DR	TUALATIN	OR	97062
22590 SW 93RD TER	TUALATIN	OR	97062
9330 SW PALOUSE LN	TUALATIN	OR	97062
8834 SW STONO DR	TUALATIN	OR	97062
22730 SW ENO PL	TUALATIN	OR	97062
22631 SW 96TH DR	TUALATIN	OR	97062
22875 SW MIAMI DR	TUALATIN	OR	97062
22920 SW ENO PL	TUALATIN	OR	97062
22572 SW 96TH DR	TUALATIN	OR	97062
22825 SW 93RD TER	TUALATIN	OR	97062
8990 SW STONO DR	TUALATIN	OR	97062
753 KOTZY AVE S	SALEM	OR	97302
22745 SW ENO PL	TUALATIN	OR	97062
9310 SW SKOKOMISH LN	TUALATIN	OR	97062
8765 SW STONO DR	TUALATIN	OR	97062
22660 SW 93RD TER	TUALATIN	OR	97062
PO BOX 367	TUALATIN	OR	97062
8870 SW IOWA DR	TUALATIN	OR	97062
22825 SW 94TH TER	TUALATIN	OR	97062
22780 SW 92ND PL	TUALATIN	OR	97062
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9395 SW SKOKOMISH LN	TUALATIN	OR	97062
9295 SW IOWA DR	TUALATIN	OR	97062
8814 SW STONO DR	TUALATIN	OR	97062
9660 SW IOWA DR	TUALATIN	OR	97062
8818 SW STONO DR	TUALATIN	OR	97062
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		OR	00000
22810 SW 92ND PL	TUALATIN	OR	97062
PO BOX 2446	TUALATIN	OR	97062
22640 SW VERMILLION DR	TUALATIN	OR	97062
22625 SW 94TH TER	TUALATIN	OR	97062
9370 SW STONO DR	TUALATIN	OR	97062
22580 SW MIAMI DR	TUALATIN	OR	97062
9965 SW LUMBEE LN	TUALATIN	OR	97062
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9360 SW IOWA DR	TUALATIN	OR	97062
9270 SW STONO DR	TUALATIN	OR	97062
22840 SW 90TH PL	TUALATIN	OR	97062
22865 SW ENO PL	TUALATIN	OR	97062
8885 SW STONO DR	TUALATIN	OR	97062
22815 SW MIAMI DR	TUALATIN	OR	97062

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PFEIFER STEPHANIE B  
PICKETT R DEAN & PICKETT E RAYLEA  
PIERCE KELLY JOANNE & PIERCE BRIAN LAWRENCE  
PIRTLE JAMES L JR & PIRTLE LINDA L  
PITT CHARLES R  
POTTER DYLAN D & POTTER MICHELLE P  
POTTLE KEITH W & POTTLE DARCY A  
POWELL MATTHEW & POWELL LAUREN  
QIAN LIDONG & YANG YUYUAN  
RAMIREZ JOSE ANTONIO & RAMIREZ SILVIA  
RAMKU FAMILY TRUST  
RANSOM ANNIE M  
RAY CYNTHIA P  
RAZ DOUGLAS JOHN  
REPCAK ROMAN & PARK-REPCAK ROBIN  
REYNHOLDS GLENN A & REYNHOLDS NANCY J  
REYNOLDS KIRK & REYNOLDS CORINNE  
RICHARDS MARK R & RICHARDS JILL E  
RICHTER FAMILY JOINT TRUST  
RILEY SHAWN O  
ROBERTS CHRISTOPHER T & ROBERTS KELLY J  
ROGERS JOHN & AGUILAR-NELSON LIZI  
ROMINE CLAUDIA  
RONALD TY & RONALD JENNIFER  
ROSE THEODORE & ROSE SHANNON  
RUDISEL A TRUST  
SABIDO ROBERT & SABIDO JENNIFER M  
SANDSTROM GLENN M  
SAWAI STUART T & SAWAI MARY JANE  
SAYLOR ERIC M & SAYLOR BRITTA M  
SCHAFROTH J F & SCHAFROTH KATE R  
SCHOTT DAVID M & SCHOTT COURTNEY A  
SCHREIBER FAMILY TRUST  
SCHULTZ LARRY & JOANN REV LIV TRUST  
SCHWEITZ ERIC J & SCHWEITZ KAREN M  
SCOTT JERRY MICHAEL & STAMBAUGH DEBRA R  
SCOTT THOMAS M  
SCRUGGS ERIC & SCRUGGS LAUREN  
SEKI KATSUMICHI & SEKI MIYUKI  
SELIVONCHICK GREGORY A & SELIVONCHICK GEORGANNE  
SEPP JULIE & SEPP ROBERT  
SHAMBURG SCOTT A  
SHAVLOVSKIY FAMILY REV LIV TRUST  
SHAVLOVSKIY VITALIY & SHAVLOVSKIY NATALIA  
SHEARER THOMAS M & CHERIE M SHEARER FAMILY TRUST  
SHEETZ DONALD K & MARY M SHEETZ REV LIV TRUST  
SHIMADA HIROSHI & SHIMADA ANGELIQUE  
SHIPLEY HEATHER  
SHOBAKEN THOMAS R  
SIMMONS LINDA C TRUST  
SIROIS TYSON & JARRARD LINDSEY  
SMITH WILLIAM R & SMITH BARBARA J  
SMITH GREGORY D & LINDA S REV TRUST  
SNODDY ROBERT B  
SOMERTON RITA G & SOMERTON MARVIN  
SPACKMAN KENT A & SPACKMAN DONNA J  
SPECHT-SMITH DANA LYNN & SPECHT DAVID LEE  
SPENCER EVERETT & SPENCER LORRIE HEAPE  
ST CLAIR DEBORAH J LIVING TRUST  
STACKLIE TIM & KAREN LIV TRUST  
STILLS DANNY T & STILLS DEBRA J  
STIMSON TOM P & GUTIERREZ-STIMSON ERINN M

22530 SW 93RD TER	TUALATIN	OR	97062
22995 SW ERIO PL	TUALATIN	OR	97062
8675 SW STONO DR	TUALATIN	OR	97062
22780 SW 93RD TER	TUALATIN	OR	97062
8883 SW IOWA DR	TUALATIN	OR	97062
23405 SW BOONES FERRY RD	TUALATIN	OR	97062
PO BOX 1996	TUALATIN	OR	97062
22835 SW ENO PL	TUALATIN	OR	97062
8815 SW STONO DR	TUALATIN	OR	97062
22560 SW 94TH TER	TUALATIN	OR	97062
14193 NW MEADOWRIDGE DR	PORTLAND	OR	97229
22785 SW MIAMI DR	TUALATIN	OR	97062
8878 SW STONO DR	TUALATIN	OR	97062
22685 SW 94TH TER	TUALATIN	OR	97062
22810 SW 93RD TER	TUALATIN	OR	97062
22795 SW 92ND PL	TUALATIN	OR	97062
22820 SW VERMILLION DR	TUALATIN	OR	97062
22600 SW MIAMI DR	TUALATIN	OR	97062
22930 SW MIAMI PL	TUALATIN	OR	97062
23365 SW BOONES FERRY RD	TUALATIN	OR	97062
9855 SW LUMBEE LN	TUALATIN	OR	97062
22600 SW 93RD TER	TUALATIN	OR	97062
22980 SW VERMILLION	TUALATIN	OR	97062
8870 SW STONO DR	TUALATIN	OR	97062
22765 SW MIAMI DR	TUALATIN	OR	97062
PO BOX 1667	LAKE OSWEGO	OR	97035
9760 SW IOWA DR	TUALATIN	OR	97062
9405 SW PALOUSE LN	TUALATIN	OR	97062
8891 SW IOWA DR	TUALATIN	OR	97062
22835 SW 90TH PL	TUALATIN	OR	97062
8838 SW STONO DR	TUALATIN	OR	97062
22690 SW VERMILLION DR	TUALATIN	OR	97062
22885 SW ERIO PL	TUALATIN	OR	97062
8890 SW IOWA DR	TUALATIN	OR	97062
9390 SW SKOKOMISH LN	TUALATIN	OR	97062
9080 SW IOWA DR	TUALATIN	OR	97062
22436 SW PIMA AVE	TUALATIN	OR	97062
9275 SW IOWA DR	TUALATIN	OR	97062
22625 SW 87TH PL	TUALATIN	OR	97062
8945 SW IOWA DR	TUALATIN	OR	97062
9150 SW STONO DR	TUALATIN	OR	97062
PO BOX 908	WILSONVILLE	OR	97070
32031 SW GUISE WAY	WILSONVILLE	OR	97070
32031 SW GUISS WAY	WILSONVILLE	OR	97070
22595 SW MIAMI DR	TUALATIN	OR	97062
9155 SW IOWA DR	TUALATIN	OR	97062
22645 SW 94TH TER	TUALATIN	OR	97062
9355 SW IOWA DR	TUALATIN	OR	97062
8795 SW STONO CT	TUALATIN	OR	97062
22920 SW MIAMI PL	TUALATIN	OR	97062
22500 SW PINTO DR	TUALATIN	OR	97062
22865 SW 89TH PL	TUALATIN	OR	97062
9930 SW LUMBEE LN	TUALATIN	OR	97062
9430 SW IOWA DR	TUALATIN	OR	97062
9375 SW IOWA DR	TUALATIN	OR	97062
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9380 SW QUINAULT LN	TUALATIN	OR	97062
22830 SW 93RD TER	TUALATIN	OR	97062
9375 SW QUINAULT LN	TUALATIN	OR	97062
9655 SW IOWA DR	TUALATIN	OR	97062
3498 CHAPARREL LOOP	WEST LINN	OR	97068
8894 SW STONO DR	TUALATIN	OR	97062

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WHITT JASON & WHITT MELANIE  
WILLIAMS MEGANN E & WILLIAMS AUSTIN J  
WILSON DAVID L & WILSON KAREN A  
WISE ROBERT C & WISE SUSAN M  
WISER BRIAN R & LIRA MARIA ALEJANDRA  
WISER THOMAS WAYNE & WISER DIANE MARIE  
WONG JONATHAN D & WONG BETH J  
WOODRUFF VIRGINIA C  
WOOLSEY RANDY M & WOOLSEY DONNA J  
WORKMAN STEPHEN G & WORKMAN MARY B  
YARNELL REV LIV TRUST  
YEE DONALD M & YEE PAMELA E  
YOUNG REV TRUST  
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**NOTICE OF PUBLIC HEARING AND OPPORTUNITY TO COMMENT**  
**CASE FILE: PMA 23-0001 & PTA 23-0001 — Norwood Multi-Family**

**NOTICE IS HEREBY GIVEN** that an application for a Plan Map and Text Amendment (PMA 23-0001 & PTA 23-0001) will be heard by Tualatin City Council:

**Monday, May 22, 2023 at 7 pm**  
 Tualatin City Services Building  
 10699 SW Herman Road

To view the application materials visit:  
[www.tualatinoregon.gov/projects](http://www.tualatinoregon.gov/projects)

**TO PROVIDE COMMENTS:**

**Email:** mnelson@tualatin.gov

**Mail:** Planning Division  
 Attn: Madeleine Nelson  
 10699 SW Herman Road  
 Tualatin, OR 97062

**Questions?:** 503-691-3027

To attend the hearing, there are two options:

- **Zoom Teleconference.** Details at: [www.tualatinoregon.gov/citycouncil/council-meetings](http://www.tualatinoregon.gov/citycouncil/council-meetings)
- **Attend in person at the Tualatin City Services Building.**

AKS Engineering & Forestry, LLC, on behalf of Vista Residential Partners and Property Owner Horizon Community Church, proposes two applications located on a 9.2-acre site at 23370 SW Boones Ferry Road (Tax Lot: 2S135D000106).

**Plan Map Amendment (PMA 23-0001):** The proposal requests the zone change from Medium-Low Density Residential (RML) and Institutional (IN) to High-Density High Rise (RH-HR).

**Plan Text Amendment (PTA 23-0001):** The proposal requests to remove locational factors from the High-Density High Rise (RH-HR) purpose statement in Tualatin Development Code Section 44.100 and revise Table 44-3 to limit the structure height to 4 stories or 50 feet in the RH-HR zoning district south of Norwood Road.

- **Criteria:** Tualatin Development Code (TDC) Chapters 32 and 33; Tualatin Comprehensive Plan; Applicable Oregon Statewide Planning Goals; Applicable Oregon Administrative Rules including compliance with the Transportation Planning Rule; and Metropolitan Service District's Urban Growth Management Functional Plan.
- **Application materials** are public record and are available for review. Copies can be viewed online or obtained at a reasonable cost, by contacting the Planning Division.
- **Staff report materials** will be available for inspection at no cost, at least seven days prior to the hearing. Copies can be obtained for a reasonable cost.
- **Individuals wishing to comment** may do so via email (mnelson@tualatin.gov) or in writing to the Planning Division prior to the hearing and/or present



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written and/or verbal testimony at the City Council hearing prior to the close of the written record. Comments should address the identified approval criteria or those criteria that the person commenting believes apply.

- **The public hearing process** begins with a staff presentation, followed by testimony by proponents, testimony by opponents, and rebuttal. Individual testimony may be limited. At the conclusion of the hearing, the City Council will deliberate and make a decision based on the facts and arguments in the public record. Before the hearing is closed, a participant may request that the record remain open for at least seven days after the hearing.
- **Everyone is invited to attend the hearing and comment** on the application's approval criteria. Failure of an issue to be raised in the hearing, in person, or by letter, or failure to provide sufficient specificity to afford the decision maker an opportunity to respond to the issue precludes appeal to the State Land Use Board of Appeals (LUBA) based on that issue. The failure of the applicant to raise constitutional or other issues relating to proposed conditions of approval with sufficient specificity to the decision maker to respond to the issue precludes an action for damages in circuit court.
- A copy of the staff report, exhibits, and findings for PMA 23-0001 and PTA 23-0001 will be available one week before the hearing at: <https://www.tualatinoregon.gov/citycouncil>.

**For additional information contact:**

Madeleine Nelson, Assistant Planner: [mnelson@tualatin.gov](mailto:mnelson@tualatin.gov), 503-691-3027

*You received this mailing because you own property within 1,000 feet (ft) of the site or within a residential subdivision which is partly within 1,000 ft.*

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# City of Tualatin

## Housing Needs Analysis

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December 2019

Prepared for:

City of Tualatin

**FINAL REPORT**

**ECONorthwest**  
ECONOMICS • FINANCE • PLANNING

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# Acknowledgements

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ECONorthwest prepared this report for the City of Tualatin. ECONorthwest and the City thank the many people who helped to develop the Tualatin Economic Opportunities Analysis.

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# Executive Summary

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Planning Goal 10 and OAR 660-008. The methods used for this study generally follow the *Planning for Residential Growth* guidebook, published by the Oregon Transportation and Growth Management Program (1996).

The primary goals of the housing needs analysis were to (1) project the amount of land needed to accommodate the future housing needs of all types within the Tualatin Planning Area, (2) evaluate the existing residential land supply within the Tualatin Planning Area to determine if it is adequate to meet that need, (3) to fulfill state planning requirements for a twenty-year supply of residential land, and (4) identify policy and programmatic options for the City to meet identified housing needs.

## What are the key housing needs in Tualatin?

Following are several key issues identified in the housing needs analysis:

- **Tualatin’s housing market is strongly impacted by the regional market in the Portland Region.** Tualatin is relatively small, accounting for 4.5% of Washington County’s population and 1.5% of the Portland Region’s population. Of the more than 23,800 people who work in Tualatin, 93% of workers commute into Tualatin from other areas, most notably Portland, Tigard, Beaverton, and Hillsboro. Nearly 11,000 residents of Tualatin commute out of the city for work, many of them to Portland.
- **Household incomes in Tualatin are similar to Washington County’s, and have not kept pace with housing prices.** Tualatin’s home sales and rental costs are comparable to other communities in the region. Tualatin has a larger share of multifamily housing compared to Washington County and the Portland Region (42% the City’s housing stock), and there are very few vacant units. Given these factors, Tualatin will continue to have demand for affordable, lower-income and middle-income housing.
- **Demographic and economic trends will drive demand for relatively affordable attached single-family housing and multifamily housing in Tualatin.** The key demographic trends that will affect Tualatin’s future housing needs are: (1) the aging of the Baby Boomers, (2) aging of the Millennials, and (3) continued growth in the Latinx population.
  - As the Baby Boomers age, growth of retirees will drive demand for housing types specific to seniors, such as small and easy-to-maintain dwellings, assisted living facilities, or age-restricted developments.
  - Tualatin’s ability to retain Millennials will depend on whether the city has opportunities for housing that both appeals to and is affordable to Millennials.
  - Growth in the number of Latinx households will result in increased demand for housing of all types, both for ownership and rentals, with an emphasis on

housing that is comparatively affordable. Latinx households are more likely to be larger than average, with more children and possibly with multigenerational households.

- **Tualatin has an existing lack of affordable housing.** Tualatin’s key challenge over the next 20 years is providing opportunities for development of relatively affordable housing of all types of housing, from lower-cost single-family housing to market-rate multifamily housing.
  - About 26% of Tualatin’s households had incomes less than \$41,000 and cannot afford a two-bedroom apartment at Washington County’s Fair Market Rent (FMR) of \$1,330 without cost burdening themselves.
  - In 2018, a household needed to earn \$25.58 an hour to afford a two-bedroom rental unit in Washington County.
  - Tualatin currently has a deficit of housing units that are affordable to households earning less than \$35,000.
  - About 37% of Tualatin’s households are cost burdened, with 56% of renters and 22% of owners paying more than 30% of their income on housing.

## How much growth is Tualatin planning for?

A 20-year household forecast (in this instance, 2020 to 2040) is the foundation for estimating the number of new dwelling units needed. Exhibit 1 shows a household forecast for Tualatin for the 2020 to 2040 period. It shows that Tualatin will grow by about 1,014 households over the 20-year period (with 44% of households projected to locate in Basalt Creek).

### Exhibit 1. Forecast of Household Growth, Tualatin city limits, 2020 to 2040

Source: Metro 2040 Population Distributed Forecast, Exhibit A. July 12, 2016.

<b>10,791</b>	<b>11,362</b>	<b>571</b>	5.3% increase
Households in 2020	Households in 2040	New households 2020 to 2040	0.26% Growth Rate

### Exhibit 2. Forecast of Household Growth, Basalt Creek, 2020 to 2040

Source: Metro 2040 TAZ Forecast, Population Estimates (TAZ 980 and 981). November 6, 2015.

<b>203</b>	<b>646</b>	<b>443</b>	218% increase
Households in 2020	Households in 2040	New households 2020 to 2040	5.96% Growth Rate

# How much buildable residential land does Tualatin currently have?

Exhibit 3 shows buildable residential acres by Plan Designation, after excluding constrained and unbuildable land. The results show that Tualatin has about 244 net buildable acres in residential Plan Designations. Of the 244 net acres, about 62% are located in Basalt Creek.

## Exhibit 3. Buildable acres in vacant and partially vacant tax lots by Plan Designation, Tualatin Planning Area, 2018

Source: Metro BLI, ECONorthwest Analysis. Note: The numbers in the table may not sum to the total as a result of rounding.

Generalized Plan Designation	Total buildable acres	Buildable acres on vacant lots	Buildable acres on partially vacant lots
<b>Residential</b>			
Low Density Residential	79	11	68
Medium Low Density Residential	1	0	1
Medium High Density Residential	1	1	0
High Density High Rise Residential	0	0	0
High Density Residential	12	12	0
<b>Commercial</b>			
Mixed-Use Commercial Overlay Zone	0	0	0
Central Tualatin Overlay Zone	0	0	0
<b>Basalt Creek Planning Area</b>			
Low Density Residential	76	2	74
Medium Low Density Residential	69	49	20
High Density Residential	5	0	5
Neighborhood Commercial	0	0	0
<b>Total</b>	<b>244</b>	<b>75</b>	<b>168</b>

Exhibit 3 shows that Tualatin has 150 buildable acres in the Basalt Creek Planning Area. To analyze housing capacity and land sufficiency, this report uses the Basalt Creek Concept Plan’s estimate of buildable acres (which is 88 buildable acres). The analysis uses the Basalt Creek Concept Plans estimate of buildable acres (rather than the buildable lands inventory estimate) to remain consistent with this recently adopted Concept Plan and the Comprehensive Plan amendment.

# How much housing will Tualatin need?

Tualatin will need to plan for about 1,014 new dwelling units to accommodate forecasted household growth between 2020 and 2040. About 406 dwelling units will be single-family detached types (40%), 152 will be single-family attached (15%), and 456 will be multifamily (45%).

This mix represents a shift from the existing mix of housing, in which about 53% of the housing stock in the 2013-2017 period was single-family detached housing. The shift in mix is in response to the need for a broader range of housing types with a wider range of price points

than are currently available in Tualatin’s housing stock, including housing types such as duplexes, townhouses, triplexes, and quadplexes, and apartments / condominiums.

## How much land will be required for housing?

Exhibit 4 shows that Tualatin’s 96 acres of buildable land in its city limits and 88 acres in Basalt Creek (per the Basalt Creek Concept Plan) has the capacity to accommodate 1,207 new dwelling units. While Tualatin’s forecast for demand is for 1,014 new dwelling units, Tualatin has a deficit of capacity for 109 dwelling units in the Median High Density Plan Designation and 101 dwelling units in the High Density High-Rise Plan Designation (over the 2020 to 2040 period). The following summarizes Tualatin’s land sufficiency results by Plan Designations:

- **Low Density:** Tualatin has a surplus of capacity for about 57 dwelling units, or 10 gross acres of land to accommodate growth.
- **Medium Low Density:** Tualatin has a surplus of capacity for about 315 dwelling units, or 27 gross acres of land to accommodate growth.
- **Medium High Density:** Tualatin has a deficit of capacity for about 109 dwelling units, or seven gross acres of land to accommodate growth.
- **High Density:** Tualatin has a surplus of capacity for about 31 dwelling units, or two gross acres of land to accommodate growth.
- **High Density High-Rise:** Tualatin has a deficit of capacity for about 101 dwelling units, or four gross acres of land to accommodate growth.

**Exhibit 4. Comparison of capacity of existing residential land with demand for new dwelling units and land surplus or deficit, Tualatin City Limits and Basalt Creek, 2020 to 2040**

Source: Buildable Lands Inventory; Calculations by ECONorthwest. Note: DU is dwelling unit.

Residential Plan Designations	Capacity (Dwelling Units)	Demand for New Housing	Remaining Capacity (Supply minus Demand)	Land Surplus or (Deficit) Gross Acres
Low Density	523	466	57	10
Medium Low Density	386	71	315	27
Medium High Density	13	122	(109)	(7)
High Density	285	254	31	2
High Density High-Rise	-	101	(101)	(4)

## What are the Key Findings of the Housing Needs Analysis?

The key findings of the Tualatin's Housing Needs Analysis are that:

- **Tualatin is planning for 1,014 new dwelling units.** The growth of 1,014 households will result in demand for 1,014 new dwelling units over the 20-year planning period, averaging 51 new dwelling units annually.
- **Tualatin will plan for more single-family attached and multifamily dwelling units in the future to meet the City's housing needs.** Historically, about 53% of Tualatin's housing was single-family detached. While 40% of new housing in Tualatin is forecast to be single-family detached, the City will need to provide opportunities for development of new single-family attached (15% of new housing) and multifamily units (45% of new housing).
  - The factors driving the shift in types of housing needed in Tualatin include changes in demographics and decreases in housing affordability. The aging of the Baby Boomers and the household formation of the Millennials will drive demand for renter- and owner-occupied housing, such as single-family detached housing, townhouses, duplexes, triplexes, quadplexes, and apartments. Both groups may prefer housing in walkable neighborhoods, with access to services.
  - Tualatin's existing deficit of housing affordable for low- and high-income households indicates a need for a wider range of housing types, for renters and homeowners. About 37% of Tualatin's households are cost burdened (paying more than 30% of their income on housing), including a cost burden rate of 56% for renter households.
  - Without diversification of housing types, lack of affordability will continue to be a problem, possibly growing in the future if incomes continue to grow at a slower rate than housing costs. Under the current conditions, 307 of the forecasted new households will have incomes of \$40,700 (in 2018 dollars) or less. These households often cannot afford market-rate housing without government subsidy. More than 300 new households will have incomes between \$40,700 and \$97,680. These households will all need access to affordable housing, such as the housing types described above.
- **Tualatin has a small deficit of land for higher density single-family and multifamily housing.** Tualatin has a deficit of land for 109 dwelling units in the Medium High Density Plan Designation (about seven gross acres) and 101 units in the High Density High-Rise Plan Designation (about four gross acres).
- **Tualatin will need to meet the requirements of House Bill 2001.** The Legislature passed House Bill 2001 in the 2019 Legislative session. The bill requires cities within the Metro UGB to allow "middle" housing types in low-density residential zones. The bill defines middle housing types as: duplexes, triplexes, quadplexes, cottage clusters, and townhouses. To comply with House Bill 2001, Tualatin will need to:

- Allow cottage cluster as a housing type in the Residential Low Density zone. Tualatin may want to allow cottage cluster housing in the Medium-Low Density and Medium-High Density zones. Tualatin will also need to include development standards in the Tualatin Development Code.
- Allow duplexes, townhouses, and multifamily housing as a permitted use in the Residential Low Density zone.

Following is a summary of ECONorthwest’s recommendations to Tualatin based on the analysis and conclusions in this report. The *Tualatin Housing Strategy* memorandum presents the full list of recommendations for Tualatin.

- **Ensure an adequate supply of land that is available and serviceable.** Tualatin should evaluate opportunities to increase residential development densities by modifying the Development Code, such as increasing densities and height limits in higher density zones. Tualatin should identify opportunities to re-zone land, from lower density usage to higher density usage, to provide additional opportunities for multifamily housing development. Tualatin should plan for long-term development of housing in Tualatin through 2040 and beyond by working with Metro on upcoming Growth Management reports.
- **Encourage development of a wider variety of housing types.** Tualatin should allow duplexes, triplexes, quadplexes, cottage clusters, and townhouses in the Residential Low Density zone and allow cottage cluster housing in the Medium-Low Density and Medium-High Density zones (which already allow for the other housing types mentioned). These changes should be made in a way that makes the City’s zoning code compliant with House Bill 2001.
- **Support development and preservation of housing that is affordable for all households.** The City should develop policies to support development of housing affordable to people who live and work in Tualatin. The City should identify opportunities to leverage resources (including funding) from the Metro Bond to support development of housing affordable to households earning less than 60% of Median Family Income in Washington County (\$48,900 for a household size of four people). The City should develop policies to prevent and address homelessness, as well as to prevent and mitigate residential displacement resulting from redevelopment and increases in housing costs. These actions will require Tualatin to evaluate the adoption of a wide variety of housing policies such as creative financing opportunities for systems development charges, evaluating tax exemption programs, participating in a land bank, and other approaches to supporting development of housing affordable at all income levels.
- **Identify funding tools to support residential development.** The City should evaluate tools such as establishing a new Urban Renewal District and evaluate establishing a construction excise tax.
- **Identify redevelopment opportunities.** The City should identify districts within Tualatin with opportunities for redevelopment for both housing and employment

uses, as well as supporting redevelopment of underutilized commercial buildings for housing.

- **Ensure there are connections between planning for housing and other community planning.** Throughout the project, stakeholders emphasized the need to coordinate housing planning with economic development planning, transportation planning, and other community planning. Updates to the Tualatin Transportation System Plan should be coordinated with planning for housing growth. A key approach to accommodating new residential development is redevelopment that results in mixed-use districts, providing opportunities for more housing affordable to people working at businesses in Tualatin and living closer to work (thus reducing transportation issues). In addition, stakeholders would like to see the incorporation of services needed to meet daily needs of residents of neighborhoods without driving.

The *Tualatin Housing Strategy* memorandum presents more details about each of these topics and recommendations for specific actions to implement these recommendations.



# 1. Introduction

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This report presents Tualatin's Housing Needs Analysis for the 2020 to 2040 period. It is intended to comply with statewide planning policies that govern planning for housing and residential development, including Goal 10 (Housing) and OAR 660 Division 8. The methods used for this study generally follow the *Planning for Residential Growth* guidebook, published by the Oregon Transportation and Growth Management Program (1996).

Tualatin has changed considerably in the last two decades. Tualatin grew from 22,791 people in 2000 to 27,135 people in the 2013-2017 period. This is an addition of 4,344 people, or 19% growth. In this time, rates of housing cost burden increased from 26% to 37%, with renter cost burdened rates increasing from 30% to 56%. Median gross rents increased by \$386 (from \$768 in 2000 to \$1,154 in 2013-2017) and median home values increased by \$83,168 (from \$282,532 in 2000 to \$365,700 in 2013-2017).

This report provides Tualatin with a factual basis to update the Housing Element of the City's Comprehensive Plan and Development Code, and to support future planning efforts related to housing and options for addressing unmet housing needs in Tualatin. This report provides information that informs future planning efforts, including development and redevelopment. It provides the City with information about the housing market in Tualatin and describes the factors that will affect future housing demand in Tualatin, such as changing demographics. This analysis will help decision makers understand whether Tualatin has enough land to accommodate growth over the next 20 years.

## Framework for a Housing Needs Analysis

Economists view housing as a bundle of services for which people are willing to pay: shelter certainly, but also proximity to other attractions (job, shopping, parks and recreation), amenities (type and quality of fixtures and appliances, landscaping, views), prestige, and access to a range of services (i.e. medical, transportation) including public services (i.e. quality of schools). Because it is impossible to maximize all these services and simultaneously minimize costs, households must, and do, make tradeoffs. What they can get for their money is influenced both by economic forces and government policy. Moreover, different households will value what they can get differently. They will have different preferences, which in turn are a function of many factors like income, age of head of household, number of people and children in the household, number of workers and job locations, number of transportation vehicles, and so on.

Thus, housing choices of individual households are influenced in complex ways by dozens of factors. The housing market in Washington County and Tualatin are the result of the individual decisions of thousands of households. These points help to underscore the complexity of projecting what types of housing will be built in Tualatin between 2020 and 2040.

The complex nature of the housing market, demonstrated by the unprecedented boom and bust during the past decade, does not eliminate the need for some type of forecast of future housing

demand and need. This includes resulting implications for land demand and consumption. Such forecasts are inherently uncertain. Their usefulness for public policy often derives more from the explanation of their underlying assumptions about the dynamics of markets and policies than from the specific estimates of future demand and need. Thus, we start our housing analysis with a framework for thinking about housing and residential markets, and how public policy affects those markets.

## Statewide Planning Goal 10

The passage of the Oregon Land Use Planning Act of 1974 (ORS Chapter 197) established the Land Conservation and Development Commission (LCDC) and the Department of Land Conservation and Development (DLCD). The Act required the Commission to develop and adopt a set of statewide planning goals. Goal 10 addresses housing in Oregon and provides guidelines for local governments to follow in developing their local comprehensive land use plans and implementing policies.

At a minimum, local housing policies must meet the requirements of Goal 10 and the statutes and administrative rules that implement it (ORS 197.295 to 197.314, ORS 197.475 to 197.490, and OAR 600-008).<sup>1</sup> Goal 10 requires incorporated cities to complete an inventory of buildable residential lands. Goal 10 also requires cities to encourage the numbers of housing units in price and rent ranges commensurate with the financial capabilities of its households. Jurisdictions located in the Metro UGB are also required to comply with Metropolitan Housing in OAR 660-007 and Title 7 of Metro’s Urban Growth Management Functional Plan in the Metro Code (3.07 Title 7).

Goal 10 defines needed housing types as “all housing on land zoned for residential use or mixed residential and commercial use that is determined to meet the need shown for housing within an urban growth boundary at price ranges and rent levels that are affordable to households within the city with a variety of incomes, including but not limited to households with low incomes, very low incomes and extremely low incomes.” ORS 197.303 defines needed housing types:

- (a) Housing that includes, but is not limited to, attached and detached single-family housing and multiple family housing for both owner and renter occupancy.
- (b) Government assisted housing.<sup>2</sup>
- (c) Mobile home or manufactured dwelling parks as provided in ORS 197.475 to 197.490.
- (d) Manufactured homes on individual lots planned and zoned for single-family residential use that are in addition to lots within designated manufactured dwelling subdivisions.
- (e) Housing for farmworkers.

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<sup>1</sup> ORS 197.296 only applies to cities with populations over 25,000.

<sup>2</sup> Government assisted housing can be any housing type listed in ORS 197.303 (a), (c), or (d).

DLCD provides guidance on conducting a housing needs analysis in the document *Planning for Residential Growth: A Workbook for Oregon's Urban Areas*, referred to as the Workbook.

Tualatin must identify needs for all of the housing types listed above as well as adopt policies that increase the likelihood that needed housing types will be developed. This housing needs analysis was developed to meet the requirements of Goal 10 and its implementing administrative rules and statutes.

## The Metropolitan Housing Rule

OAR 660-007 (the Metropolitan Housing rule) is designed to “assure opportunity for the provision of adequate numbers of needed housing units and the efficient use of land within the Metropolitan Portland (Metro) urban growth boundary.” OAR 660-0070-005(12) provides a Metro-specific definition of needed housing:

"Needed Housing" defined. Until the beginning of the first periodic review of a local government's acknowledged comprehensive plan, "needed housing" means housing types determined to meet the need shown for housing within an urban growth boundary at particular price ranges and rent levels.

The Metropolitan Housing Rule also requires cities to develop residential plan designations:

(1) Plan designations that allow or require residential uses shall be assigned to all buildable land. Such designations may allow nonresidential uses as well as residential uses. Such designations may be considered to be "residential plan designations" for the purposes of this division. The plan designations assigned to buildable land shall be specific so as to accommodate the varying housing types and densities identified in OAR 660-007-0030 through 660-007-0037.

OAR 660-007 also specifies the mix and density of new residential construction for cities within the Metro Urban Growth Boundary (UGB):

“Provide the opportunity for at least 50 percent of new residential units to be attached single family housing or multiple family housing or justify an alternative percentage based on changing circumstances” (OAR 660-007-0030 (1)).

OAR 660-007-0035 sets specific density targets for cities in the Metro UGB. Tualatin’s average density target is eight dwelling units per net buildable acre.<sup>3</sup>

## Metro Urban Growth Management Functional Plan

The Metro Urban Growth Management Functional Plan describes the policies that guide development for cities within the Metro UGB to implement the goals in the Metro 2040 Plan.

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<sup>3</sup> OAR 660-024-0010(6) defines Net Buildable Acres as follows: “Net Buildable Acre” consists of 43,560 square feet of residentially designated buildable land after excluding future rights-of-way for streets and roads.

## Title 1: Housing Capacity

Title 1 of Metro's Urban Growth Management Functional Plan is intended to promote efficient land use within the Metro UGB by increasing the capacity to accommodate housing capacity. Each city is required to determine its housing capacity based on the minimum number of dwelling units allowed in each zoning district that allows residential development and maintain this capacity.

Title 1 requires that a city adopt minimum residential development density standards by March 2011. If the jurisdiction did not adopt a minimum density by March 2011, the jurisdiction must adopt a minimum density that is at least 80% of the maximum density.

Title 1 provides measures to decrease development capacity in selected areas by transferring the capacity to other areas of the community. This may be approved as long as the community's overall capacity is not reduced.

Metro's 2017 Compliance Report concludes that Tualatin is in compliance for the City's Title 1 responsibilities.

## Title 7: Housing Choice

Title 7 of Metro's Urban Growth Management Functional Plan is designed to ensure the production of affordable housing in the Metro UGB. Each city and county within the Metro region is encouraged to voluntarily adopt an affordable housing production goal.

Each jurisdiction within the Metro region is required to ensure that their comprehensive plans and implementing ordinances include strategies to:

- Ensure the production of a diverse range of housing types,
- Maintain the existing supply of affordable housing, increase opportunities for new affordable housing dispersed throughout their boundaries, and
- Increase opportunities for households of all income levels to live in affordable housing (3.07.730)

Metro's 2017 Compliance Report concludes that Tualatin is in compliance for the City's Title 7 responsibilities.

## Title 11: Planning for New Urban Areas

Title 11 of Metro's Urban Growth Management Functional Plan provides guidance on the conversion of land from rural to urban uses. Land brought into the Metro UGB is subject to the provisions of section 3.07.1130 of the Metro Code, which requires lands to be maintained at rural densities until the completion of a concept plan and annexation into the municipal boundary.

The concept plan requirements directly related to residential development are to prepare a plan that includes:

- (1) A mix and intensity of uses that make efficient use of public systems and facilities,
- (2) A range of housing for different types, tenure, and prices that addresses the housing needs of the governing city, and
- (3) Identify goals and strategies to meet the housing needs for the governing city in the expansion area.

## Organization of this Report

The rest of this document is organized as follows:

- **Chapter 2. Residential Buildable Lands Inventory** presents the methodology and results of Tualatin’s inventory of residential land.
- **Chapter 3. Historical and Recent Development Trends** summarizes the state, regional, and local housing market trends affecting Tualatin’s housing market.
- **Chapter 4. Demographic and Other Factors Affecting Residential Development in Tualatin** presents factors that affect housing need in Tualatin, focusing on the key determinants of housing need: age, income, and household composition. This chapter also describes housing affordability in Tualatin relative to the larger region.
- **Chapter 5. Housing Need in Tualatin** presents the forecast for housing growth in Tualatin, describing housing need by density ranges and income levels.
- **Chapter 6. Residential Land Sufficiency within Tualatin** estimates Tualatin’s residential land sufficiency needed to accommodate expected growth over the planning period.

## 2. Residential Buildable Lands Inventory

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This chapter provides a summary of the residential buildable lands inventory (BLI) for the Tualatin Planning Area. This buildable lands inventory analysis complies with statewide planning Goal 10 policies that govern planning for residential uses. The detailed methodology used to complete the buildable lands inventory is presented in Appendix A.

First, the analysis established the residential land base (parcels or portion of parcels with appropriate zoning), classified parcels by buildable status, identified/deducted environmental constraints, and lastly summarized total buildable area by Plan Designation.

### Definitions

ECONorthwest developed the buildable lands inventory with a tax lot database from Metro Regional Land Information Systems (RLIS). Maps produced for the buildable lands inventory used a combination of GIS data based on the Metro BLI for the 2018 Urban Growth Report, adopted maps, and visual verification to verify the accuracy of Metro data. The tax lot database is current as of 2016, accounting for changes and development updates through April 2019. The inventory builds from the database to estimate buildable land per plan designations that allow residential uses. The following definitions were used to identify buildable land for inclusion in the inventory:

- *Vacant land.* Tax lots designated as vacant by Metro based on the following criteria: (1) fully vacant based on Metro aerial photo; (2) tax lots with less than 2,000 square feet developed and developed area is less than 10% of lot; (3) lots 95% or more vacant from GIS vacant land inventory.
- *Partially vacant land.* Single-family tax lots that are 2.5 times larger than the minimum lot size with a building value less than \$300,000, or lots that are 5 times larger than the minimum lots size (no threshold for building value). These lots are considered to still have residential capacity. For this analysis, we classified these lots as Partially Vacant, and we assumed that 0.25 acres of the lot was developed, and the remaining land is available for development, less constraints.
- *Public or exempt land.* Lands in public or semi-public ownership are considered unavailable for residential development. This includes lands in Federal, State, County, or City ownership as well as lands owned by churches and other semi-public organizations and properties with conservation easements. These lands are identified using the Metro's definitions and categories.
- *Developed land.* Lands not classified as vacant, partially vacant, or public/exempt are considered developed. Developed land includes lots with redevelopment capacity, which are also included in the BLI. The unit capacity of developed but redevelopable lots is based on Metro's estimates.

## Development Constraints

Consistent with state guidance on buildable lands inventories, ECONorthwest deducted the following constraints from the buildable lands inventory and classified those portions of tax lots that fall within the following areas as constrained, unbuildable land:

- *Lands within floodplains.* Flood Insurance Rate Maps from the Federal Emergency Management Agency (FEMA) were used to identify lands in floodways and 100-year floodplains, as well as lands identified in Metro’s Title 3 Stream and Floodplain Protection Plan.
- *Land within natural resource protection areas.* The Locally Significant Wetlands shapefile was used to identify areas within wetlands. Riparian corridors and other natural resource areas identified in Tualatin’s Natural Resource Protection Overlay District were all considered undevelopable. These areas are consistent with the City’s Development Code Chapter 72.
- *Land with slopes over 25%.* Lands with slopes over 25% are considered unsuitable for residential development.

## Buildable Lands Inventory Results

### Land Base

Exhibit 5 shows residential land in Tualatin by classification (development status). The results show that the Tualatin Planning Area has 2,556 total acres in residential Plan Designations. (This includes the areas of the Mixed-Use Commercial Overlay Zone and Central Tualatin Overlay Zone that allow residential uses). Of these 2,556 acres, about 2,193 acres (86%) are classified as Developed or Public (or Exempt) and do not have development capacity, and the remaining 364 acres (14%) are Vacant or Partially Vacant and have development capacity (not including development constraints).<sup>4</sup>

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<sup>4</sup> The buildable lands inventory results in Exhibit 5 does not account for development constraints (yet). Land with development constraints are not classified as buildable; we remove development constraints in Exhibit 6 and we present final buildable land results in Exhibit 7.

## Exhibit 5. Residential acres by classification and Plan Designation, Tualatin Planning Area, 2019

Source: Metro BLI, ECONorthwest Analysis. *Note: The numbers in the table may not sum to the total as a result of rounding.*

Generalized Plan Designation	Vacant	Partially Vacant	Developed	Public or Exempt	Total Acres	Percent of Total
<b>Residential</b>						
Low Density Residential	26	138	1,063	510	1,737	68%
Medium Low Density Residential	-	2	168	68	238	9%
Medium High Density Residential	1	-	125	31	158	6%
High Density High Rise Residential	-	-	6	9	15	1%
High Density Residential	15	-	117	21	153	6%
<b>Commercial</b>						
Mixed-Use Commercial Overlay Zone	-	-	25	-	25	1%
Central Tualatin Overlay Zone	3	-	29	6	37	1%
<b>Basalt Creek Planning Area</b>						
Low Density Residential	2	99	11	-	113	4%
Medium Low Density Residential	49	23	-	-	72	3%
High Density Residential	-	5	-	-	5	0%
Neighborhood Commercial	-	1	4	-	4	0%
<b>Total</b>	<b>95</b>	<b>268</b>	<b>1,548</b>	<b>645</b>	<b>2,556</b>	<b>100%</b>



Exhibit 6 shows land in all residential Plan Designations by development and constraint status. After development constraints have been applied, about 68% of Tualatin’s total residential land (1,747 acres) has no development capacity (i.e., committed), 22% (566 acres) is constrained, and 10% (244 acres) are unconstrained and buildable.

**Exhibit 6. Residential land by comprehensive Plan Designation and constraint status, Tualatin Planning Area, 2019**

Source: Metro BLI, ECONorthwest Analysis. *Note: The numbers in the table may not sum to the total as a result of rounding.*

Generalized Plan Designation	Total acres	Committed acres	Constrained acres	Buildable acres
<b>Residential</b>				
Low Density Residential	1,737	1,292	365	79
Medium Low Density Residential	238	190	47	1
Medium High Density Residential	158	128	29	1
High Density High Rise Residential	15	4	11	0
High Density Residential	153	77	64	12
<b>Commercial</b>				
Mixed-Use Commercial Overlay Zone	25	20	5	0
Central Tualatin Overlay Zone	37	16	21	0
<b>Basalt Creek Planning Area</b>				
Low Density Residential	113	13	23	76
Medium Low Density Residential	72	2	1	69
High Density Residential	5	0	0	5
Neighborhood Commercial	4	4	0	0
<b>Total</b>	<b>2,556</b>	<b>1,747</b>	<b>566</b>	<b>244</b>

## Vacant Buildable Land

Exhibit 7 shows buildable acres (e.g., acres in tax lots after constraints are deducted) for vacant and partially vacant land by Plan Designation. Of Tualatin’s 244 unconstrained buildable residential acres, about 31% are in tax lots classified as vacant, and 69% are in tax lots classified as partially vacant. About 32% of Tualatin’s buildable residential land is in the Low Density Residential Plan Designation and about 62% of Tualatin’s buildable residential land is located in the Basalt Creek Planning Area.

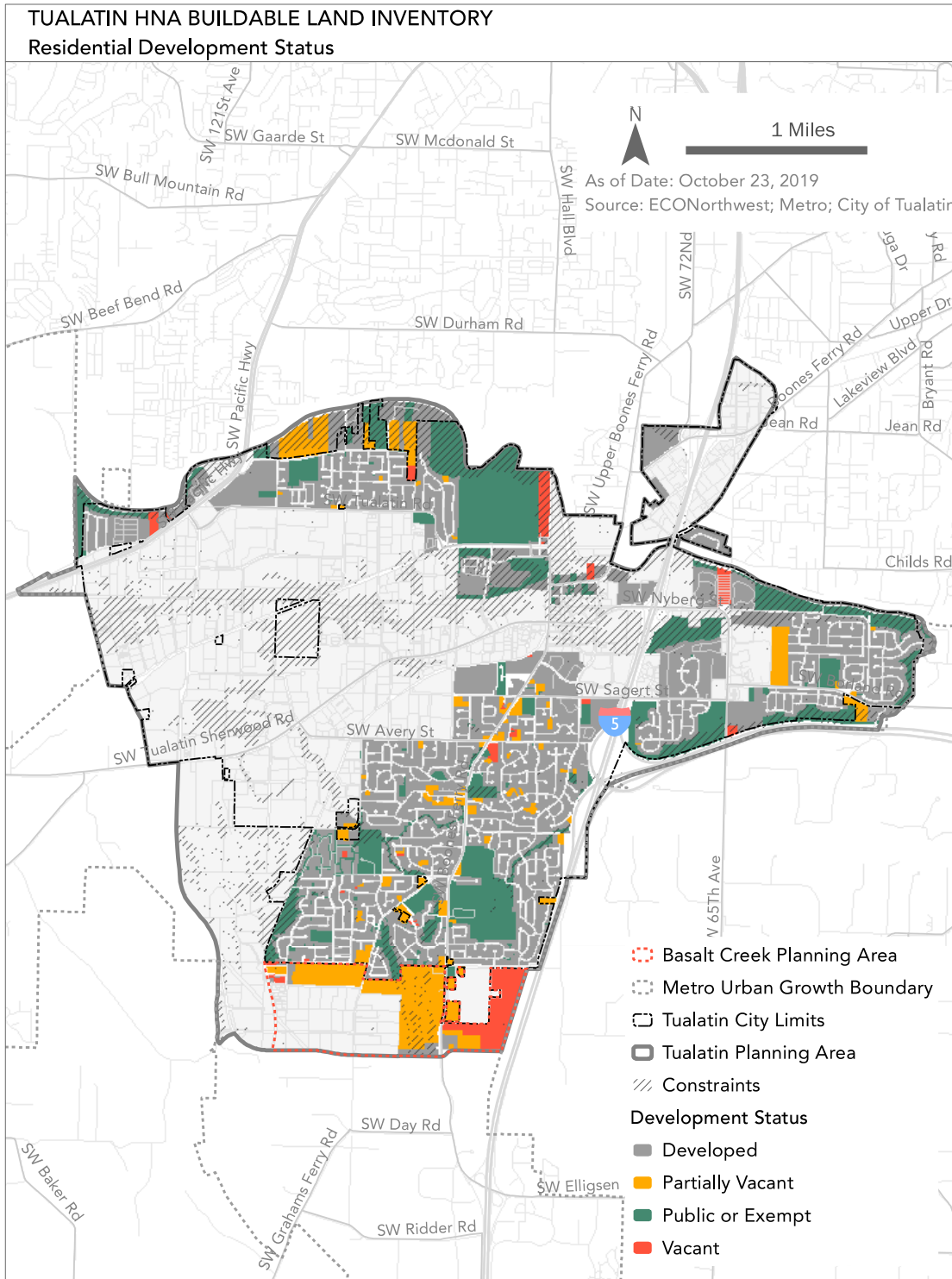
### Exhibit 7. Buildable acres in vacant and partially vacant tax lots by Plan Designation and zoning, Tualatin Planning Area, 2019

Source: Metro BLI, ECONorthwest Analysis. Note: The numbers in the table may not sum to the total as a result of rounding.

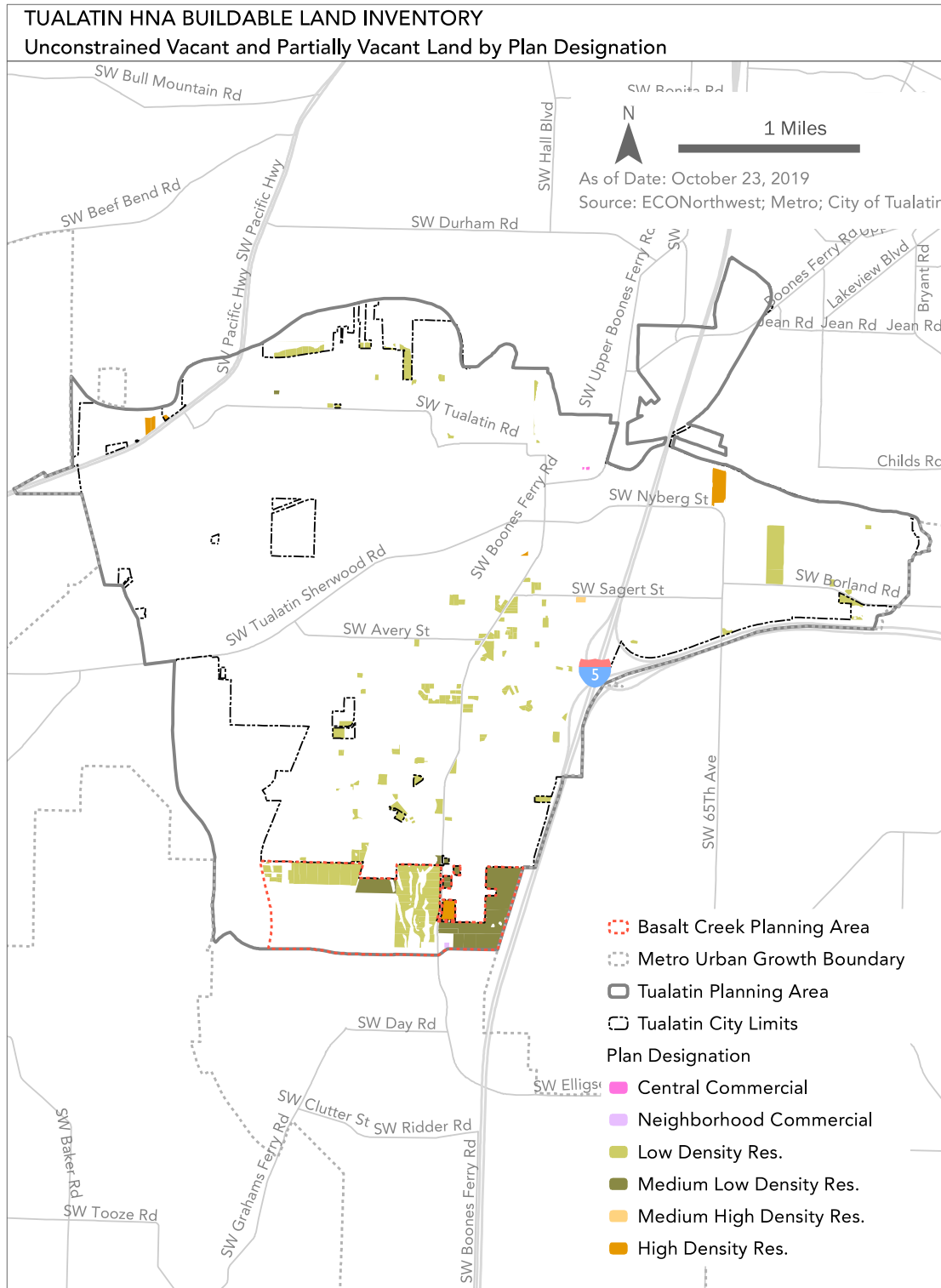
Generalized Plan Designation	Total buildable acres	Buildable acres on vacant lots	Buildable acres on partially vacant lots
<b>Residential</b>			
Low Density Residential	79	11	68
Medium Low Density Residential	1	0	1
Medium High Density Residential	1	1	0
High Density High Rise Residential	0	0	0
High Density Residential	12	12	0
<b>Commercial</b>			
Mixed-Use Commercial Overlay Zone	0	0	0
Central Tualatin Overlay Zone	0	0	0
<b>Basalt Creek Planning Area</b>			
Low Density Residential	76	2	74
Medium Low Density Residential	69	49	20
High Density Residential	5	0	5
Neighborhood Commercial	0	0	0
<b>Total</b>	<b>244</b>	<b>75</b>	<b>168</b>

Exhibit 8 and 5 (upcoming pages) show the results of Tualatin’s residential BLI.

**Exhibit 8. Residential Land by Development Status with Constraints, Tualatin Planning Area, 2019**



**Exhibit 9. Unconstrained Vacant and Partially Vacant Residential Land, Tualatin Planning Area, 2019**



### 3. Historical and Recent Development Trends

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Analysis of historical development trends in Tualatin provides insight into the functioning of the local housing market. The mix of housing types and densities, in particular, are key variables in forecasting the capacity of residential land to accommodate new housing and to forecast future land need. The specific steps are described in Task 2 of the *DLCD Planning for Residential Lands Workbook* as:

1. Determine the time period for which the data will be analyzed.
2. Identify types of housing to address (all needed housing types).
3. Evaluate permit/subdivision data to calculate the actual mix, average actual gross density, and average actual net density of all housing types.

This Housing Needs Analysis examines changes in Tualatin's housing market from 2000 to 2017, as well as residential development from 2002 to 2017. We selected this time period because (1) the period provides information about Tualatin's housing market before and after the national housing market bubble's growth, deflation, and the more recent increase in housing costs and (2) data about Tualatin's housing market during this period is readily available from sources such as the Census and RLIS.

The Housing Needs Analysis presents information about residential development by housing type. There are multiple ways that housing types can be grouped. For example, they can be grouped by:

1. Structure type (e.g., single-family detached, apartments, etc.).
2. Tenure (e.g., distinguishing unit type by owner or renter units).
3. Housing affordability (e.g., subsidized housing or units affordable at given income levels).
4. Some combination of these categories.

For the purposes of this study, we grouped housing types based on: (1) whether the structure is stand-alone or attached to another structure and (2) the number of dwelling units in each structure. The housing types used in this analysis are consistent with needed housing types as defined in ORS 197.303:

- **Single-family detached** includes single-family detached units, manufactured homes on lots and in mobile home parks, and accessory dwelling units.
- **Single-family attached** is all structures with a common wall where each dwelling unit occupies a separate lot, such as row houses or townhouses.
- **Multifamily** is all attached structures (e.g., duplexes, triplexes, quadplexes, and structures with five or more units) other than single-family detached units, manufactured units, or single-family attached units.

In Tualatin, government-assisted housing (ORS 197.303(b)) and housing for farmworkers (ORS 197.303(e)) can be any of the housing types listed above.

## Data Used in this Analysis

Throughout this analysis (including the subsequent Chapter 4), we used data from multiple sources, choosing data from well-recognized and reliable data sources. One of the key sources for housing and household data is the U.S. Census. This report primarily uses data from two Census sources, the Decennial and the American Community Survey:

- The **Decennial Census**, which is completed every ten years and is a survey of *all* households in the U.S. The Decennial Census is considered the best available data for information such as demographics (e.g., number of people, age distribution, or ethnic or racial composition), household characteristics (e.g., household size and composition), and housing occupancy characteristics. As of 2010, the Decennial Census does not collect more detailed household information, such as income, housing costs, housing characteristics, and other important household information. Decennial Census data is available for 2000 and 2010.
- The **American Community Survey (ACS)**, which is completed every year and is a *sample* of households in the U.S. From 2013 to 2017, the ACS sampled an average of 3.5 million households per year, or about 2.9% of the households in the nation. The ACS collects detailed information about households, including demographics (e.g., number of people, age distribution, ethnic or racial composition, country of origin, language spoken at home, and educational attainment), household characteristics (e.g., household size and composition), housing characteristics (e.g., type of housing unit, year unit built, or number of bedrooms), housing costs (e.g., rent, mortgage, utility, and insurance), housing value, income, and other characteristics.

This report uses data from the 2013-2017 ACS for Tualatin. Where information is available and relevant, we report information from the 2000 and 2010 Decennial Census. Among other data points, this report includes population, income, and housing price data from Redfin, the Bureau of Labor Services, and the United States Department of Housing and Urban Development. It uses the Oregon Department of Housing and Community Services affordable housing inventory and Oregon's Manufactured Dwelling Park inventory. It uses Metro's Regional Land Information System (RLIS) database, which provides tax lot data for jurisdictions within the three-county Metro Area (Clackamas County, Multnomah County, and Washington County).<sup>5</sup>

The foundation of the housing needs analysis is the population forecast for Tualatin from Metro's *2040 Household Distributed Forecast*.

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<sup>5</sup> We use RLIS tax lot data as a proxy for building permit data for Tualatin. The analysis period is 2000-2017, unless otherwise noted.

It is worth commenting on the methods used for the American Community Survey.<sup>6</sup> The American Community Survey (ACS) is a national survey that uses continuous measurement methods. It uses a sample of about 3.54 million households to produce annually updated estimates for the same small areas (census tracts and block groups) formerly surveyed via the decennial census long-form sample. It is also important to keep in mind that all ACS data are estimates that are subject to sample variability. This variability is referred to as “sampling error” and is expressed as a band or “margin of error” (MOE) around the estimate.

This report uses Census and ACS data because, despite the inherent methodological limits, they represent the most thorough and accurate data available to assess housing needs. We consider these limitations in making interpretations of the data and have strived not to draw conclusions beyond the quality of the data.

## Trends in Housing Mix

This section provides an overview of changes in the mix of housing types in Tualatin and compares Tualatin to Washington County and to Oregon. These trends demonstrate the types of housing developed in Tualatin historically. Unless otherwise noted, this chapter and the next chapter uses data from the 2000 and 2010 Decennial Census and the 2013-2017 American Community Survey 5-Year Estimates.

This section shows the following trends in housing mix in Tualatin:

- **About half (53%) of Tualatin’s housing stock is single-family detached housing units.** Forty-one percent of Tualatin’s housing stock is multifamily and 6% is single-family attached (e.g., townhouses, rowhouses, duplexes).
- **Since 2000, Tualatin’s housing mix has remained relatively static.** Tualatin’s housing stock grew by about 23% (about 2,112 new units) between 2000 and the 2013-2017 period.
- **Single-family housing accounted for the majority of new housing growth in Tualatin between 2000 and 2017.** Sixty percent of new housing built between 2000 and 2017 was single-family housing (detached and attached).

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<sup>6</sup> A thorough description of the ACS can be found in the Census Bureau’s publication “What Local Governments Need to Know.” <https://www.census.gov/library/publications/2009/acs/state-and-local.html>

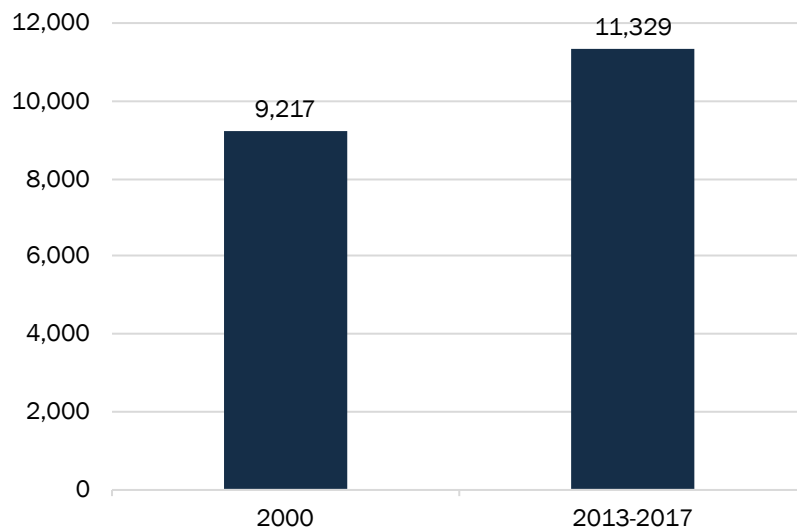
## Housing Mix

The total number of dwelling units in Tualatin increased by 23% from 2000 to 2013-2017.

Tualatin added 2,112 units since 2000.

**Exhibit 10. Total Dwelling Units, Tualatin, 2000 and 2013-2017**

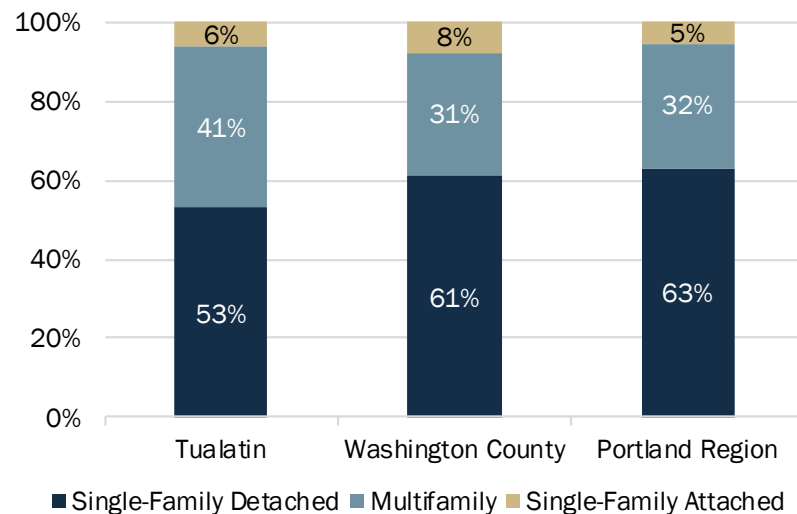
Source: U.S. Census Bureau, 2000 Decennial Census, SF3 Table H030, and 2013-2017 ACS Table B25024.



Tualatin had a smaller share of single-family detached housing and a larger share of multifamily housing than Washington County and the Portland Region.

**Exhibit 11. Housing Mix, Tualatin, Washington County, Portland Region, 2013-2017**

Source: U.S. Census Bureau, 2013-2017 ACS Table B25024.

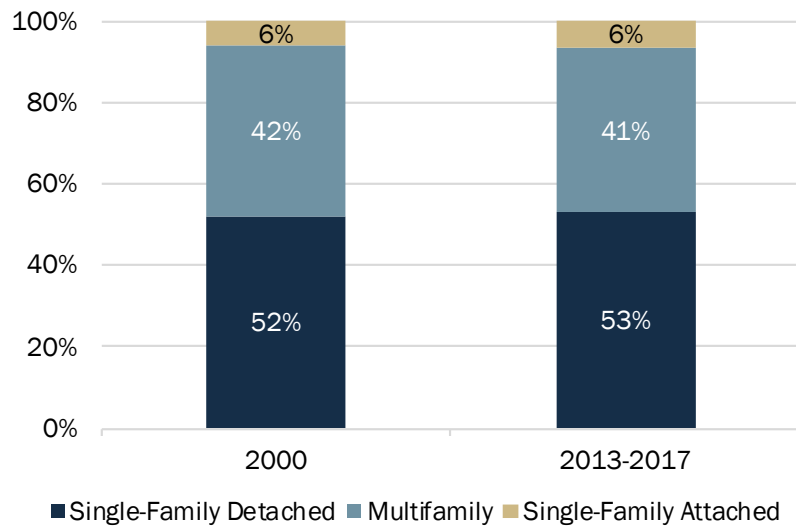




From 2000 to 2013-2017, Tualatin's housing mix stayed about the same.

**Exhibit 12. Change in Housing Mix, Tualatin, 2000 and 2013-2017**

Source: U.S. Census Bureau, 2000 Decennial Census, SF3 Table H030, and 2013-2017 ACS Table B25024.



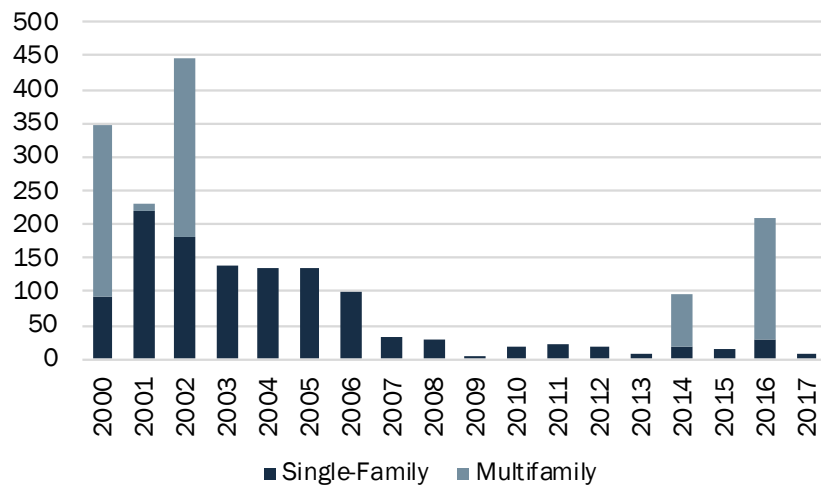
## Dwelling Units Built

Over the 2000 to 2017 period, Tualatin added 1,996 dwelling units, with an annual average of 111 dwelling units.

Of these 1,996 units, about 60% were single-family units and 40% were multifamily units.

**Exhibit 13. Units Built by Year and Type of Unit, Tualatin, 2000 through 2017**

Source: RLIS.



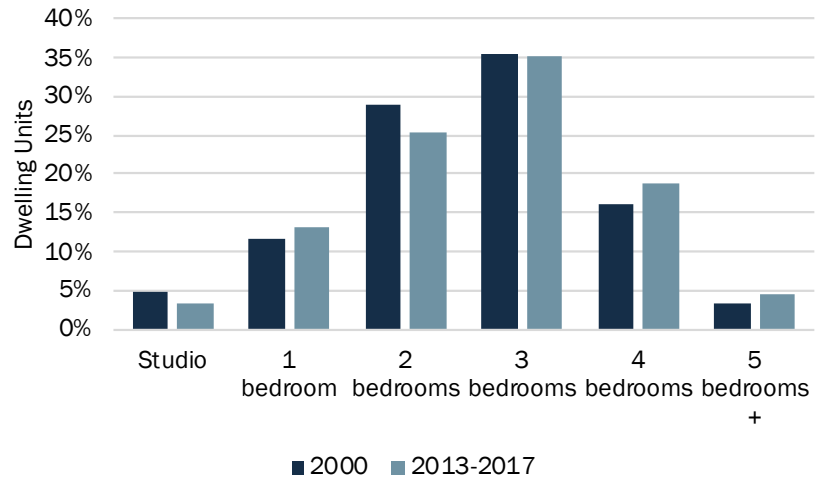
# Size of Units

This section provides an overview of dwelling unit size in Tualatin.

**In 2000, a larger share of dwelling units in Tualatin were three-bedroom units. As of the 2013-2017 period, this trend continues to persist.**

**Exhibit 14. Share of Units by Number of Bedrooms, Tualatin, 2000 and 2013-2017**

Source: U.S. Census Bureau, 2000 Decennial Census, SF3 Table H041, and 2013-2017 ACS Table B25041. Note: The total number of units in 2000 is 9,217; the total number of units in the 2013-17 period is 11,329.

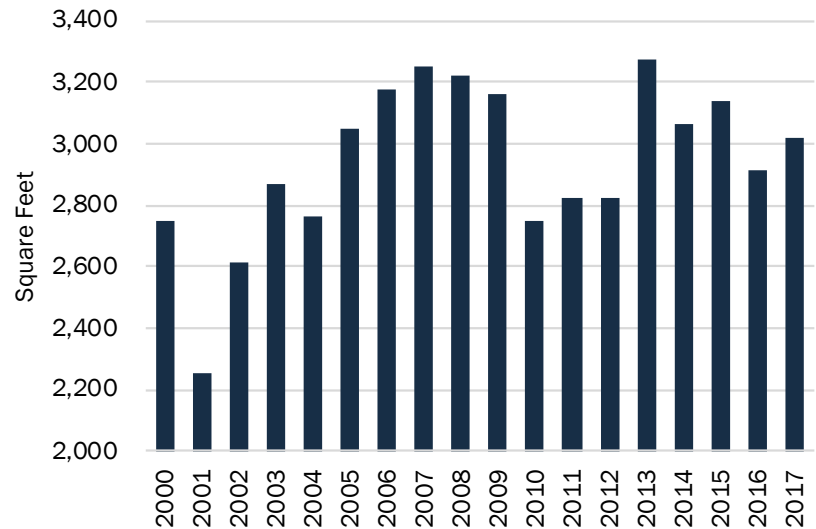


**Single-family units built in Tualatin since 2000, averaged 2,773 sq. ft. per unit.**

**Single-family units built in Tualatin since 2014, averaged 3,015 sq. ft. per unit.**

**Exhibit 15. Average Size of Single-Family Units Built by Year, Tualatin, 2010 through 2017**

Source: RLIS. Note: Single-family units include single-family detached and attached units.



Based on historical trends, condominiums in Tualatin were slightly smaller than single-family dwellings (Exhibit 15) and slightly larger than apartments.

**Exhibit 16. Average Size of Multifamily Units Built by Year (including housing description), Tualatin, 2000, 2001, 2002, 2014, and 2016**

Source: RLIS, Costar, and Washington County Assessor.

<b>2000:</b>	<b>1,172 Sq. Ft.</b> Condominium
<b>2001:</b>	<b>1,562 Sq. Ft.</b> Condominium
<b>2002:</b>	<b>892 Sq. Ft.</b> Apartment
<b>2014:</b>	<b>1,322 Sq. Ft.</b> Retirement Facility
<b>2016:</b>	<b>977 Sq. Ft.</b> Apartment

On average, a 2-bedroom multifamily unit in Tualatin is about 928 sq. ft.

**Exhibit 17. Average Square Feet of Multifamily Units, Tualatin, 2019**

Source: Costar. Note: "All Beds" represent the aggregate of multifamily units in Tualatin (recognizing that bedroom counts are unknown for some units).

Multifamily Unit by Bedroom Count	Average Sq. Ft. (2019)	Inventory (Units)
All Beds	856	3,905
Studio	445	249
1-Bedroom	649	1,206
2-Bedrooms	928	1,739
3-Bedrooms	1,144	608
4+ Bedrooms	1,255	4

## Trends in Housing Density

Housing density is the density of housing by structure type, expressed in dwelling units per net or gross acre. The U.S. Census does not track residential development density thus, this study analyzes housing density based on Metro’s RLIS database for development between 2000 and 2017.

Between 2000 and 2017, Tualatin permitted 1,996 new dwelling units. Of the 1,996 new units, 1,207 units were single-family (60%) and 789 units were multifamily (40%). During this time, housing in Tualatin developed at an average net density of 8.7 dwelling units per net acre. Exhibit 18 shows average net residential development by structure type for the historical analysis period. Single-family housing (detached and attached) developed at 6.4 units per net acre and multifamily housing developed at 19.9 units per net acre.

### Exhibit 18. Net Density by Unit Type and Zone, Tualatin, 2000 through 2017

Source: RLIS.

Note: Single-family includes single-family detached and single-family attached units because RLIS data does not distinguish between the type of single-family unit.

	Single-family (Detached and Attached)			Multifamily			Total, combined		
	Units	Acres	Net Density	Units	Acres	Net Density	Units	Acres	Net Density
Low Density Residential	976	172	5.7				976	172	5.7
Medium Low Density Residential	79	10	8.0	90	5	19.5	169	14	11.7
High Density Residential	152	6	23.4	699	35	19.9	851	42	20.5
<b>Total</b>	<b>1,207</b>	<b>189</b>	<b>6.4</b>	<b>789</b>	<b>40</b>	<b>19.9</b>	<b>1,996</b>	<b>228</b>	<b>8.7</b>

## Trends in Tenure

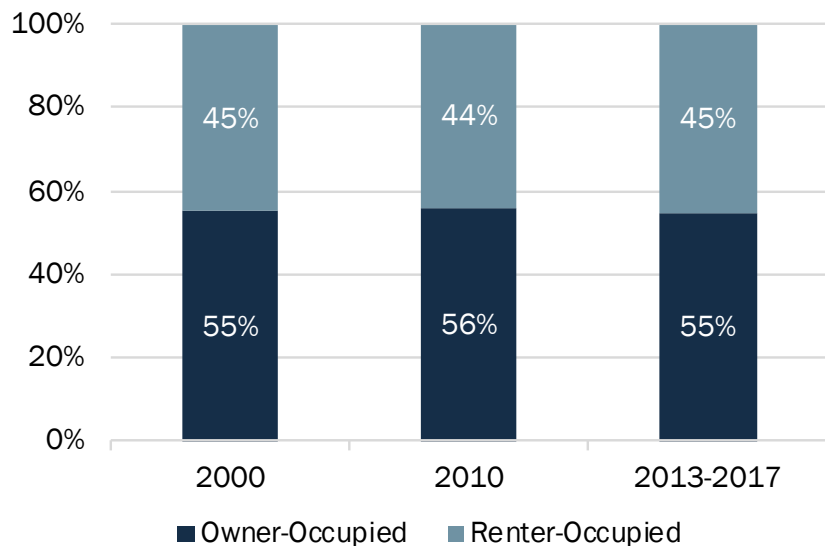
Housing tenure describes whether a dwelling unit is owner- or renter-occupied. This section shows:

- **Homeownership in Tualatin is lower than Washington County's and Oregon's rate.** About 55% of Tualatin's households own their own home. In comparison, 61% of Washington County households and 60% of Oregon households are homeowners.
- **Homeownership in Tualatin stayed about the same between 2000 and 2013-2017.** Homeownership hovered around 55% in 2000, 2010, and the 2013-2017 period.
- **Most of Tualatin homeowners (88%) live in single-family detached housing, while most of Tualatin's renters (82%) live in multifamily housing.**

The homeownership rate in Tualatin stayed about the same since 2000.

**Exhibit 19. Tenure, Occupied Units, Tualatin, 2000, 2010, and 2013-2017**

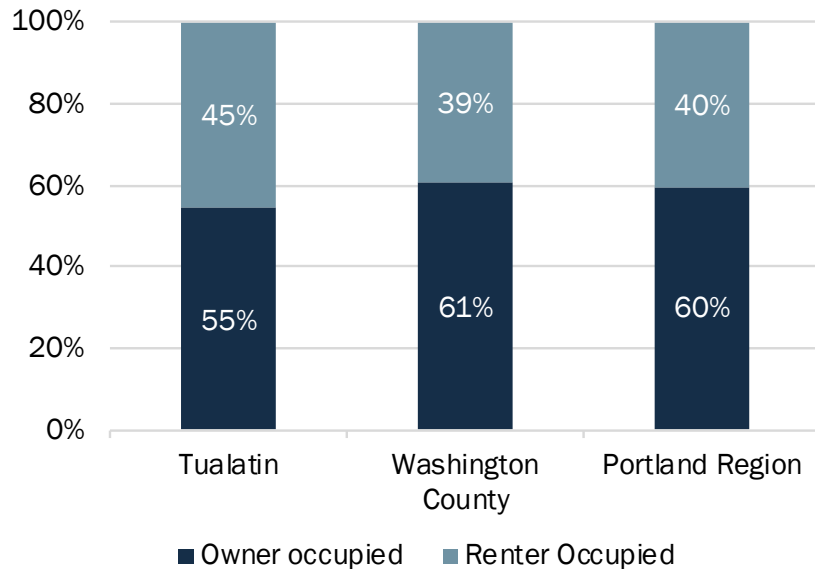
Source: U.S. Census Bureau, 2000 Decennial Census SF1 Table H004, 2010 Decennial Census SF1 Table H4, 2013-2017 ACS Table B24003.



Tualatin had a lower homeownership rate than Washington County and the Portland Region.

**Exhibit 20. Tenure, Occupied Units, Tualatin, Washington County, and Portland Region, 2013-2017**

Source: U.S. Census Bureau, 2013-2017 ACS 5-Year Estimates, Table B24003.

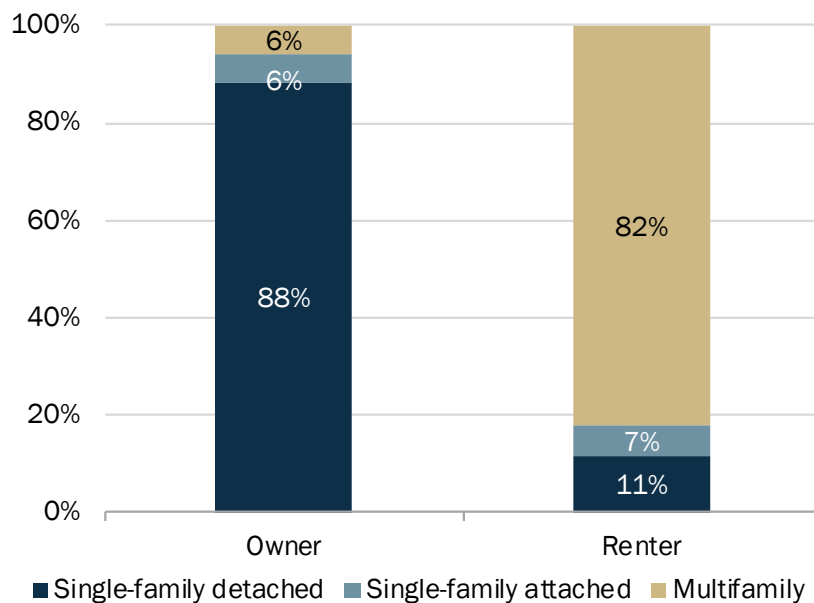


Most of Tualatin homeowners (88%) lived in single-family detached housing.

In comparison, most of Tualatin renters lived in multifamily housing.

**Exhibit 21. Housing Units by Type and Tenure, Tualatin, 2013-2017**

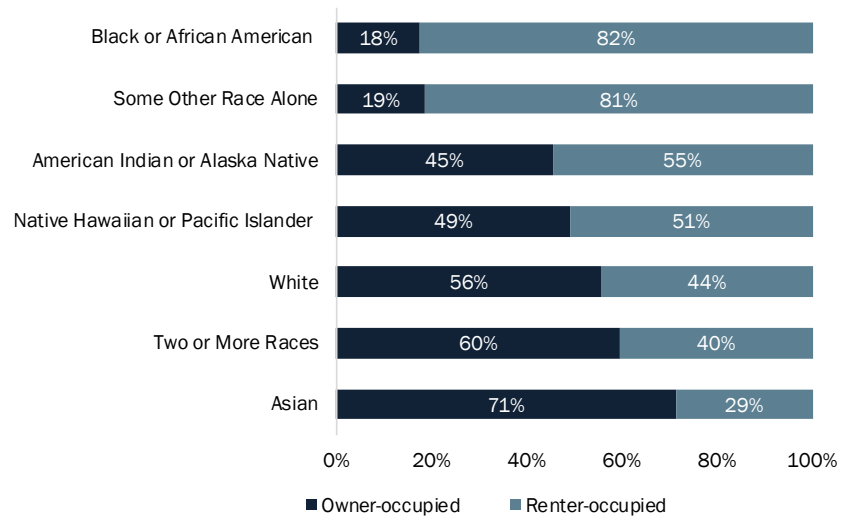
Source: U.S. Census Bureau, 2013-2017 ACS Table B25032.



A proportionately smaller share of households with an African American head of household were homeowners.

**Exhibit 22. Tenure by Race of the Head of Household, Tualatin, 2013-2017**

Source: U.S. Census Bureau, 2013-2017 ACS Table B25003A-G.



Most households with a Latinx head of household were renters.

**Exhibit 23. Tenure by Latinx Head of Household, Tualatin, 2013-2017**

Source: U.S. Census Bureau, 2013-2017 ACS Table B250031.



# Vacancy Rates

Housing vacancy is a measure of housing that is available to prospective renters and buyers. It is also a measure of unutilized housing stock. The Census defines vacancy as: "Unoccupied housing units...determined by the terms under which the unit may be occupied, e.g., for rent, for sale, or for seasonal use only." The 2010 Census identified vacancy through an enumeration, separate from (but related to) the survey of households. Enumerators are obtained using information from property owners and managers, neighbors, rental agents, and others.

According to the 2013-2017 Census, the vacancy rate in Tualatin was 4.3%, compared to 4.8% for Washington County and 5.5% for the Portland Region.

**Tualatin's vacancy rate declined from 2000 to the 2013-2017 period.**

### Exhibit 24. Vacancy Rate, Tualatin, 2000 and 2013-2017

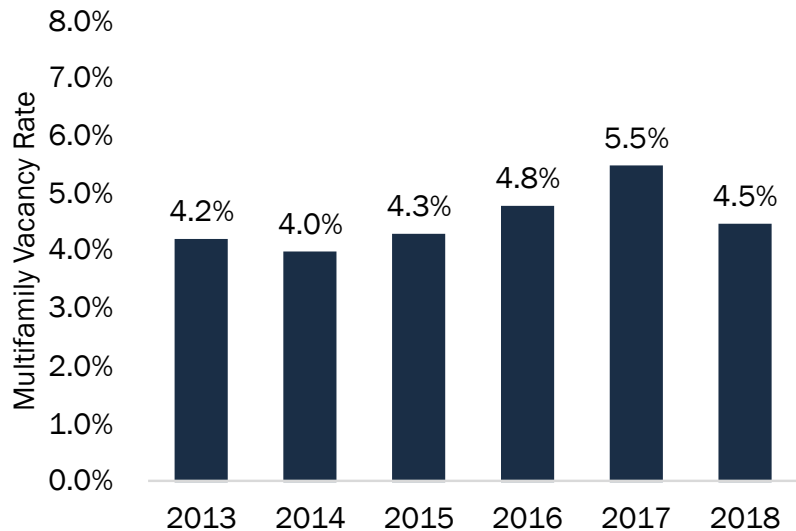
Source: U.S. Census Bureau, 2000 Decennial Census SF1 Table H005, 2013-2017 ACS Table B25004.

<b>2000</b>	<b>6.2%</b> Of Total Dwelling Units
<b>2013-2017</b>	<b>4.3%</b> Of Total Dwelling Units

**Tualatin's average multifamily vacancy rate dipped to a low of 4% in 2014. In 2018, Tualatin's multifamily vacancy rate was 4.5%.**

### Exhibit 25. Average Multifamily Vacancy Rate, Tualatin, 2013 through 2018

Source: CoStar.





As of 2013-2017, less than half a percent of Tualatin's dwelling units were vacant for seasonal, recreational, or occasional use (e.g. short-term rentals or vacation homes).

**Exhibit 26. Vacancy for Seasonal, Recreational, or Occasional Use, Tualatin, 2000 and 2013-2017**

Source: U.S. Census Bureau, 2000 Decennial Census SF1 Table H005, 2013-2017 ACS Table B25004.

<b>2000</b>	<b>43 Units</b>	<b>0.5%</b>
		Share of Total Dwelling Units
<b>2013-2017</b>	<b>44 Units</b>	<b>0.4%</b>
		Share of Total Dwelling Units

## Rent-Restricted Housing

Governmental agencies offer subsidies to support housing development for low- and moderate-income households. Tualatin has three rent-restricted housing developments, with 604 subsidized units.

**Exhibit 27. Government-Assisted Housing, Tualatin, December 2019**

Source: Oregon Housing and Community Services, Affordable Housing Inventory in Oregon (data pulled December 2019).

Housing Developments	Total Units	Affordable Units	Population Served	Government Subsidy Type	Affordability Contract Expiration
Terrace View	100	100	Family	LIHTC 4%	January 2028
Tualatin Meadows	240	240	Family	LIHTC 4%	January 2031
Woodridge	264	264	Family	OHCS Grants	March 2049
<b>Total</b>	<b>604</b>	<b>604</b>			

In addition to these rent-restricted units, and as of August 5, 2019, households in Tualatin utilized 113 of Washington County Housing Authority's Housing Choice Vouchers.<sup>7</sup>

<sup>7</sup> More information about Housing Choice Vouchers: [https://www.hud.gov/program\\_offices/public\\_indian\\_housing/programs/hcv/about/fact\\_sheet](https://www.hud.gov/program_offices/public_indian_housing/programs/hcv/about/fact_sheet)

## Manufactured Homes

Manufactured homes provide a source of affordable housing in Tualatin. They provide a form of homeownership that can be made available to low- and moderate-income households. Cities are required to plan for manufactured homes—both on lots and in parks (ORS 197.475-492).

Generally, manufactured homes in parks are owned by the occupants who pay rent for the space. Monthly housing costs are typically lower for a homeowner in a manufactured home park for several reasons, including the fact that property taxes levied on the value of the land are paid by the property owner, rather than the manufactured homeowner. The value of the manufactured home generally does not appreciate in the way a conventional home would, however. Manufactured homeowners in parks are also subject to the mercy of the property owner in terms of rent rates and increases. It is generally not within the means of a manufactured homeowner to relocate to another manufactured home to escape rent increases. Homeowners living in a park is desirable to some because it can provide a more secure community with on-site managers and amenities, such as laundry and recreation facilities.

OAR 197.480(4) requires cities to inventory the mobile home or manufactured dwelling parks sited in areas planned and zoned or generally used for commercial, industrial, or high-density residential development.<sup>8</sup> Exhibit 28 presents the inventory of mobile and manufactured home parks within Tualatin as of early 2019.

**Tualatin has two manufactured housing parks, with a total of 178 spaces within its city limits.**

### **Exhibit 28. Inventory of Mobile/Manufactured Home Parks, Tualatin City Limits, March 2019**

Source: Oregon Manufactured Dwelling Park Directory.

Name	Location	Type	Total Spaces	Vacant Spaces	Plan Designation
Angel Haven	18485 SW Pacific Dr	Senior	129	2	RML
Willow Glen	9700 SW Tualatin Rd	Family	49	1	RML
<b>Total</b>			<b>178</b>	<b>3</b>	

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<sup>8</sup> ORS 90.645 regulates rules about closure of manufactured dwelling parks. It requires that the landlord do the following for manufactured dwelling park tenants before closure of the park: give at least one year's notice of park closure, pay the tenant between \$5,000 to \$9,000 for each manufactured dwelling park space, and refrain from charging tenants demolition costs of abandoned manufactured homes.

## 4. Demographic and Other Factors Affecting Residential Development in Tualatin

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Demographic trends are important for a thorough understanding of the dynamics of the Tualatin housing market. Tualatin exists in a regional economy; trends in the region impact the local housing market. This chapter documents demographic, socioeconomic, and other trends relevant to Tualatin at the national, state, and regional levels.

Demographic trends provide a context for growth in a region; factors such as age, income, migration, and other trends show how communities have grown and how they will shape future growth. To provide context, we compare Tualatin to Washington County and Oregon. We also compare Tualatin to nearby cities where appropriate. Characteristics such as age and ethnicity are indicators of how the population has grown in the past and provide insight into factors that may affect future growth.

A recommended approach to conducting a housing needs analysis is described in *Planning for Residential Growth: A Workbook for Oregon's Urban Areas*, the Department of Land Conservation and Development's guidebook on local housing needs studies. As described in the workbook, the specific steps in the housing needs analysis are:

1. Project the number of new housing units needed in the next 20 years.
2. Identify relevant national, state, and local demographic and economic trends and factors that may affect the 20-year projection of structure type mix.
3. Describe the demographic characteristics of the population and, if possible, the housing trends that relate to demand for different types of housing.
4. Determine the types of housing that are likely to be affordable to the projected households based on household income.
5. Determine the needed housing mix and density ranges for each Plan Designation and the average needed net density for all structure types.
6. Estimate the number of additional needed units by structure type.

This chapter presents data to address steps 2, 3, and 4 in this list. Chapter 5 presents data to address steps 1, 5, and 6 in this list.

## Demographic and Socioeconomic Factors Affecting Housing Choice<sup>9</sup>

Analysts typically describe housing demand as the *preferences* for different types of housing (e.g., single-family detached or apartment), and *the ability to pay* for that housing (the ability to exercise those preferences in a housing market by purchasing or renting housing; in other words, income or wealth).

Many demographic and socioeconomic variables affect housing choice. However, the literature about housing markets finds that age of the householder, size of the household, and income are most strongly correlated with housing choice.

- **Age of householder** is the age of the person identified (in the Census) as the head of household. Households make different housing choices at different stages of life. This chapter discusses generational trends, such as housing preferences of Baby Boomers, people born from about 1946 to 1964, and Millennials, people born from about 1980 to 2000.
- **Size of household** is the number of people living in the household. Younger and older people are more likely to live in single-person households. People in their middle years are more likely to live in multiple person households (often with children).
- **Household income** is the household income. Income is probably the most important determinant of housing choice. Income is strongly related to the type of housing a household chooses (e.g., single-family detached, duplex, triplex, quadplex, or a building with more than five units) and to household tenure (e.g., rent or own).

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<sup>9</sup> The research in this chapter is based on numerous articles and sources of information about housing, including:

Davis, Hibbits, & Midghal Research, "Metro Residential Preference Survey," May 2014.

D. Myers and S. Ryu, *Aging Baby Boomers and the Generational Housing Bubble*, Journal of the American Planning Association, Winter 2008.

George Galster. *People Versus Place, People and Place, or More? New Directions for Housing Policy*, Housing Policy Debate, 2017.

Herbert, Christopher and Hrabchak Molinsky. "Meeting the Housing Needs of an Aging Population," 2015.

J. McIlwain, *Housing in America: The New Decade*, Urban Land Institute, 2010.

L. Lachman and D. Brett, *Generation Y: America's New Housing Wave*, Urban Land Institute, 2010.

Schuetz, Jenny. *Who is the new face of American homeownership?* Brookings, 2017.

The American Planning Association, "Investing in Place; Two generations' view on the future of communities," 2014.

Transportation for America, "Access to Public Transportation a Top Criterion for Millennials When Deciding Where to Live, New Survey Shows," 2014.

This chapter focuses on these factors, presenting data that suggests how changes to these factors may affect housing need in Tualatin over the next 20 years.

## National Trends<sup>10</sup>

This brief summary on national housing trends builds on previous work by ECONorthwest, the Urban Land Institute (ULI) reports, and conclusions from *The State of the Nation's Housing, 2018* report from the Joint Center for Housing Studies of Harvard University. The Harvard report summarizes the national housing outlook as follows:

“By many metrics, the housing market is on sound footing. With the economy near full employment, household incomes are increasing and boosting housing demand. On the supply side, a decade of historically low single-family construction has left room for expansion of this important sector of the economy. Although multifamily construction appears to be slowing, vacancy rates are still low enough to support additional rentals. In fact, to the extent that growth in supply outpaces demand, a slowdown in rent growth should help to ease affordability concerns.”

However, challenges to a strong domestic housing market remain. High housing costs make housing unaffordable for many Americans, especially younger Americans. In addition to rising housing costs, wages have also failed to keep pace, worsening affordability pressures. Single-family and multifamily housing supplies remain tight, which compound affordability issues. *The State of the Nation's Housing* report emphasizes the importance of government assistance and intervention to keep housing affordable moving forward. Several challenges and trends shaping the housing market are summarized below:

- **Moderate new construction and tight housing supply, particularly for affordable housing.** New construction experienced its eighth year of gains in 2017 with 1.2 million units added to the national stock. Estimates for multifamily starts range between 350,000 to 400,000 (2017). The supply of for sale homes in 2017 averaged 3.9 months, below what is considered balanced (six months) and lower-cost homes are considered especially scarce. The State of the Nation's Housing report cites lack of skilled labor, higher building costs, scarce developable land, and the cost of local zoning and regulation as impediments to new construction.
- **Demand shift from renting to owning.** After years of decline, the national homeownership rate increased from a 50-year low of 62.9% in 2016 (Q2) to 63.7% in 2017 (Q2). Trends suggest homeownership among householders aged 65 and older have remained strong and homeownership rates among young adults have begun stabilizing after years of decline.
- **Housing affordability.** In 2016, almost one-third of American households spent more than 30% of their income on housing. This figure is down from the prior year,

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<sup>10</sup> These trends are based on information from: (1) The Joint Center for Housing Studies of Harvard University's publication "The State of the Nation's Housing 2018," (2) Urban Land Institute, "2018 Emerging Trends in Real Estate," and (3) the U.S. Census.

bolstered by a considerable drop in the owner share of cost-burdened households. Low-income households face an especially dire hurdle to afford housing. With such a large share of households exceeding the traditional standards for affordability, policymakers are focusing efforts on the severely cost-burdened. Among those earning less than \$15,000, more than 70% of households paid more than half of their income on housing.

- **Long-term growth and housing demand.** The Joint Center for Housing Studies forecasts that nationally, demand for new homes could total as many as 12 million units between 2017 and 2027. Much of the demand will come from Baby Boomers, Millennials,<sup>11</sup> and immigrants. The Urban Land Institute cites the trouble of overbuilding in the luxury sector while demand is in mid-priced single-family houses affordable to a larger buyer pool.
- **Growth in rehabilitation market.**<sup>12</sup> Aging housing stock and poor housing conditions are growing concerns for jurisdictions across the United States. With almost 80% of the nation's housing stock at least 20 years old (40% at least 50 years old), Americans are spending in excess of \$400 billion per year on residential renovations and repairs. As housing rehabilitation becomes the go-to solution to address housing conditions, the home remodeling market has grown more than 50% since the recession ended — generating 2.2% of national economic activity (in 2017).

Despite trends suggesting growth in the rehabilitation market, rising construction costs and complex regulatory requirements pose barriers to rehabilitation. Lower-income households or households on fixed-incomes may defer maintenance for years due to limited financial means, escalating rehabilitation costs. At a certain point, the cost of improvements may outweigh the value of the structure, which may necessitate new responses such as demolition or redevelopment.

- **Changes in housing preference.** Housing preference will be affected by changes in demographics; most notably, the aging of the Baby Boomers, housing demand from Millennials, and growth of immigrants.
  - *Baby Boomers.* The housing market will be affected by continued aging of the Baby Boomers, the oldest of whom were in their seventies in 2018 and the youngest of whom were in their fifties in 2018. Baby Boomers' housing choices will affect housing preference and homeownership. Addressing housing needs for those moving through their 60s, 70s, and 80s (and beyond) will require a

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<sup>11</sup> According to the Pew Research Center, Millennials were born between the years of 1981 to 1996 (inclusive). Read more about generations and their definitions here: <http://www.pewresearch.org/fact-tank/2018/03/01/defining-generations-where-millennials-end-and-post-millennials-begin/>.

To generalize, and because there is no official generation of millennial, we define this cohort as individuals born between 1980 and 2000.

<sup>12</sup> These findings are copied from: Joint Center for Housing Studies. (2019). Improving America's Housing, Harvard University. [https://www.jchs.harvard.edu/sites/default/files/Harvard\\_JCHS\\_Improving\\_Americas\\_Housing\\_2019.pdf](https://www.jchs.harvard.edu/sites/default/files/Harvard_JCHS_Improving_Americas_Housing_2019.pdf)

range of housing opportunities. For example, “the 82-to-86-year-old cohort dominates the assisted living and more intensive care sector” while new or near-retirees may prefer aging in place or active, age-targeted communities.<sup>13</sup> Characteristics like immigration and ethnicity play a role too as “older Asians and Hispanics are more likely than whites or blacks to live in multigenerational households.”<sup>14</sup> Senior households earning different incomes may make distinctive housing choices. For instance, low-income seniors may not have the financial resources to live out their years in a nursing home and may instead choose to downsize to smaller, more affordable units. Seniors living in close proximity to relatives may also choose to live in multigenerational households. Research shows that “older people in western countries prefer to live in their own familiar environment as long as possible,” but aging in place does not only mean growing old in their own homes.<sup>15</sup> A broader definition exists which explains that aging in place also means “remaining in the current community and living in the residence of one’s choice.”<sup>16</sup> Therefore, some Boomers are likely to stay in their home as long as they are able, and some will prefer to move into other housing products, such as multifamily housing or age-restricted housing developments, before they move into to a dependent living facility or into a familial home. Moreover, “the aging of the U.S. population, [including] the continued growth in the percentage of single-person households, and the demand for a wider range of housing choices in communities across the country is fueling interest in new forms of residential development, including tiny houses.”<sup>17</sup>

- *Millennials*. Over the last several decades, young adults increasingly lived in multi-generational housing – and increasingly more so than older demographics.<sup>18</sup> Despite this trend, as Millennials age over the next 20 years, they will be forming households and families. In 2018, the oldest Millennials were in their late-30s and the youngest were in their late-teens. By 2040, Millennials will be between 40 and 60 years old.

At the beginning of the 2007-2009 recession, Millennials only started forming their own households. Today, Millennials are driving much of the growth in new households, albeit at slower rates than previous generations. From 2012 to 2017,

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<sup>13</sup> Urban Land Institute. Emerging Trends in Real Estate, United States and Canada. 2018.

<sup>14</sup> Herbert, Christopher and Hrabchak Molinsky (2015). Meeting the Housing Needs of an Aging Population. [https://shelterforce.org/2015/05/30/meeting\\_the\\_housing\\_needs\\_of\\_an\\_aging\\_population/](https://shelterforce.org/2015/05/30/meeting_the_housing_needs_of_an_aging_population/)

<sup>15</sup> Vanleerberghe, Patricia, et al. The quality of life of older people aging in place: a literature review. 2017.

<sup>16</sup> Ibid.

<sup>17</sup> American Planning Association. Making Space for Tiny Houses, Quick Notes.

<sup>18</sup> According to the Pew Research Center, in 1980, just 11% of adults aged 25 to 34 lived in a multi-generational family household and by 2008, 20% did (82% change). Comparatively, 17% of adults aged 65 and older lived in a multi-generational family household and by 2008, 20% did (18% change).



millennials formed an average of 2.1 million net new households each year. Twenty-six percent of Millennials aged 25 to 34 lived with their parents (or other relatives) in 2017.

Millennials' average wealth may remain far below Boomers and Gen Xers and student loan debt will continue to hinder consumer behavior and affect retirement savings. As of 2015, Millennial's comprised 28% of active home buyers, while Gen Xers comprised 32% and Boomers 31%.<sup>19</sup> That said, "over the next 15 years, nearly \$24 trillion will be transferred in bequests," presenting new opportunities for Millennials (as well as Gen Xers).

- *Immigrants.* Research on foreign-born populations find that immigrants, more than native-born populations, prefer to live in multi-generational housing. Still, immigration and increased homeownership among minorities could also play a key role in accelerating household growth over the next 10 years. Current Population Survey estimates indicate that the number of foreign-born households rose by nearly 400,000 annually between 2001 and 2007, and they accounted for nearly 30% of overall household growth. Beginning in 2008, the influx of immigrants was stunted by the effects of the Great Recession. After a period of declines, however, the foreign born are again contributing to household growth. The Census Bureau's estimates of net immigration in 2017–2018 indicate that 1.2 million immigrants moved to the U.S. from abroad, down from 1.3 million immigrants in 2016-2017 but higher than the average annual pace of 850,000 during the period of 2009–2011. However, if recent Federal policies about immigration are successful, growth in undocumented and documented immigration could slow and cause a drag on household growth in the coming years.
- *Diversity.* The growing diversity of American households will have a large impact on the domestic housing markets. Over the coming decade, minorities will make up a larger share of young households and constitute an important source of demand for both rental housing and small homes. The growing gap in homeownership rates between whites and blacks, as well as the larger share of minority households that are cost burdened warrants consideration. Since 1994, the difference in homeownership rates between whites and blacks rose by 1.9 percentage points to 29.2% in 2017. Alternatively, the gap between white and Latinx homeownership rates and white and Asian homeownership rates both decreased during this period but remained sizable at 26.1 and 16.5 percentage points, respectively. Although homeownership rates are increasing for some minorities, large shares of minority households are more likely to live in high-cost metro areas. This, combined with lower incomes than white households,

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<sup>19</sup> Srinivas, Val and Goradia, Urval (2015). The future of wealth in the United States, Deloitte Insights. <https://www2.deloitte.com/insights/us/en/industry/investment-management/us-generational-wealth-trends.html>



leads to higher rates of cost burden for minorities—47% for blacks, 44% for Latinx, 37% for Asians/others, and 28% for whites in 2015.

- **Changes in housing characteristics.** The U.S. Census Bureau’s Characteristics of New Housing Report (2017) presents data that show trends in the characteristics of new housing for the nation, state, and local areas. Several long-term trends in the characteristics of housing are evident from the New Housing Report:<sup>20</sup>
  - *Larger single-family units on smaller lots.* Between 1999 and 2017, the median size of new single-family dwellings increased by 20% nationally, from 2,028 sq. ft. to 2,426 sq. ft., and 20% in the western region from 2,001 sq. ft. in 1999 to 2,398 sq. ft. in 2017. Moreover, the percentage of new units smaller than 1,400 sq. ft. nationally, decreased by more than half, from 15% in 1999 to 6% in 2017. The percentage of units greater than 3,000 sq. ft. increased from 17% in 1999 to 25% of new one-family homes completed in 2017. In addition to larger homes, a move towards smaller lot sizes is seen nationally. Between 2009 and 2017, the percentage of lots less than 7,000 sq. ft. increased from 25% to 31% of lots.
  - *Larger multifamily units.* Between 1999 and 2017, the median size of new multiple family dwelling units increased by 5.3% nationally and 2.4% in the Western region. Nationally, the percentage of new multifamily units with more than 1,200 sq. ft. increased from 28% in 1999 to 33% in 2017 and increased from 25% to 28% in the Western region.
  - *Household amenities.* Across the U.S. and since 2013, an increasing number of new units had air-conditioning (fluctuating year by year at over 90% for both new single-family and multifamily units). In 2000, 93% of new single-family houses had two or more bathrooms, compared to 97% in 2017. The share of new multifamily units with two or more bathrooms decreased from 55% of new multifamily units to 45%. As of 2017, 65% of new single-family houses in the U.S. had one or more garages (from 69% in 2000).
  - *Shared amenities.* Housing with shared amenities are growing in popularity as it may improve space efficiencies and reduce per-unit costs / maintenance costs. Single-Room Occupancies (SROs)<sup>21</sup>, Cottage Clusters, co-housing developments, and multifamily products are common housing types that take advantage of this trend. Shared amenities may take many forms and include shared: bathrooms; kitchens and other home appliances (e.g. laundry facilities, outdoor grills);

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<sup>20</sup> U.S. Census Bureau, Highlights of Annual 2017 Characteristics of New Housing. Retrieved from: <https://www.census.gov/construction/chars/highlights.html>.

<sup>21</sup> Single-room occupancies are residential properties with multiple single room dwelling units occupied by a single individual. From: U.S. Department of Housing and Urban Development. (2001). *Understanding SRO*. <https://www.hudexchange.info/resources/documents/Understanding-SRO.pdf>

security systems; outdoor areas (e.g. green space, pathways, gardens, rooftop lounges); fitness rooms, swimming pools, and tennis courts; and free parking.<sup>22</sup>

## State Trends

*Oregon's 2016-2020 Consolidated Plan* includes a detailed housing needs analysis as well as strategies for addressing housing needs statewide. The plan concludes that “a growing gap between the number of Oregonians who need affordable housing and the availability of affordable homes has given rise to destabilizing rent increases, an alarming number of evictions of low- and fixed- income people, increasing homelessness, and serious housing instability throughout Oregon.”

It identified the following issues that describe housing need statewide:<sup>23</sup>

- For housing to be considered affordable, a household should pay up to one-third of their income toward rent, leaving money left over for food, utilities, transportation, medicine, and other basic necessities. Today, one in two Oregon households pays more than one-third of their income toward rent, and one in three pays more than half of their income toward rent.
- More school children are experiencing housing instability and homelessness. The rate of K-12 homeless children increased by 12% from the 2013-2014 school year to the 2014-2015 school year.
- Oregon has 28,500 rental units that are affordable and available to renters with extremely low incomes. There are about 131,000 households that need those apartments, leaving a gap of 102,500 units.
- Housing instability is fueled by an unsteady, low-opportunity employment market. Over 400,000 Oregonians are employed in low-wage work. Low-wage work is a growing share of Oregon's economy. When wages are set far below the cost needed to raise a family, the demand for public services grows to record heights.
- Women are more likely than men to end up in low-wage jobs. Low wages, irregular hours, and part-time work compound issues.

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<sup>22</sup> Urbsworks. (n.d.). Housing Choices Guide Book: A Visual Guide to Compact Housing Types in Northwest Oregon. [https://www.oregon.gov/lcd/Publications/Housing-Choices-Booklet\\_DIGITAL.pdf](https://www.oregon.gov/lcd/Publications/Housing-Choices-Booklet_DIGITAL.pdf)

Saiz, Albert and Salazar, Arianna. (n.d.). Real Trends: The Future of Real Estate in the United States. Center for Real Estate, Urban Economics Lab.

<sup>23</sup> These conclusions are copied directly from the report: Oregon's 2016-2020 Consolidated Plan <http://www.oregon.gov/ohcs/docs/Consolidated-Plan/2016-2020-Consolidated-Plan-Amendment.pdf>.

- People of color historically constitute a disproportionate share of the low-wage work force. About 45% of Latinx, and 50% of African Americans, are employed in low-wage industries.
- The majority of low-wage workers are adults over the age of 20, many of whom have earned a college degree, or some level of higher education.
- In 2019, minimum wage in Oregon<sup>24</sup> was \$11.25, \$12.50 in the Portland Metro, and \$11.00 for non-urban counties.

Oregon’s 2018 *Statewide Housing Plan* identified six housing priorities to address in communities across the State over 2019 to 2023, summarized below. It includes relevant data to help illustrate the rationale for each priority. The 2018 *Statewide Housing Plan* describes the Oregon Housing and Community Services’ (OHCS) goals and implementation strategies for achieving the goals.<sup>25</sup>

- **Equity and Racial Justice.** *Advance equity and racial justice by identifying and addressing institutional and systemic barriers that have created and perpetuated patterns of disparity in housing and economic prosperity.*
  - Summary of the issue: In Oregon, 26% of people of color live below the poverty line in Oregon, compared to 15% of the White population.
  - 2019-2023 Goal: Communities of color will experience increased access to OHCS resources and achieve greater parity in housing stability, self-sufficiency and homeownership. OHCS will collaborate with its partners and stakeholders to create a shared understanding of racial equity and overcome systemic injustices faced by communities of color in housing discrimination, access to housing and economic prosperity.
- **Homelessness.** *Build a coordinated and concerted statewide effort to prevent and end homelessness, with a focus on ending unsheltered homelessness of Oregon’s children and veterans.*
  - Summary of the issue: According to the Point-in-Time count, approximately 14,000 Oregonians experienced homelessness in 2017, an increase of nearly 6% since 2015. Oregon’s unsheltered population increased faster than the sheltered population, and the state’s rate of unsheltered homelessness is the third highest in the nation, at 57%. The state’s rate of unsheltered homelessness among people in families with children is the second highest in the nation, at 52%.

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<sup>24</sup> The 2016 Oregon Legislature, Senate Bill 1532, established a series of annual minimum wage rate increases beginning July 1, 2016 through July 1, 2022. <https://www.oregon.gov/boli/whd/omw/pages/minimum-wage-rate-summary.aspx>

<sup>25</sup> Priorities and factoids are copied directly from the report: Oregon Housing and Community Services (November 2018). *Breaking New Ground, Oregon’s Statewide Housing Plan, Draft.* <https://www.oregon.gov/ohcs/DO/shp/OregonStatewideHousingPlan-PublicReviewDraft-Web.pdf>

- 2019-2023 Goal: OHCS will drive toward impactful homelessness interventions by increasing the percentage of people who are able to retain permanent housing for at least six months after receiving homeless services to at least 85 percent. We will also collaborate with partners to end veterans' homelessness in Oregon and build a system in which every child has a safe and stable place to call home.
- **Permanent Supportive Housing.** *Invest in permanent supportive housing, a proven strategy to reduce chronic homelessness and reduce barriers to housing stability.*
  - Summary of the issue: Oregon needs about 12,388 units of permanent supportive housing to serve individuals and families with a range of needs and challenges.
  - 2019-2023 Goal: OHCS will increase our commitment to permanent supportive housing by funding the creation of 1,000 or more additional permanent supportive housing units to improve the future long-term housing stability for vulnerable Oregonians.
- **Affordable Rental Housing.** *Work to close the affordable rental housing gap and reduce housing cost burden for low-income Oregonians.*
  - Summary of the issue: Statewide, over 85,000 new units are needed to house those households earning below 30% of Median Family Income (MFI) in units affordable to them. The gap is even larger when accounting for the more than 16,000 units affordable at 30% of MFI, which are occupied by households at other income levels.
  - 2019-2023 Goal: OHCS will triple the existing pipeline of affordable rental housing — up to 25,000 homes in the development pipeline by 2023. Residents of affordable rental housing funded by OHCS will have reduced cost burden and more opportunities for prosperity and self-sufficiency.
- **Homeownership.** *Provide more low- and moderate-income Oregonians with the tools to successfully achieve and maintain homeownership, particularly in communities of color.*
  - Summary of the issue: In Oregon, homeownership rates for all categories of people of color are lower than for white Oregonians. For White non-Latinx Oregonians, the home ownership rate is 63%. For Latinx and non-White Oregonians, it is 42%. For many, homeownership rates have fallen between 2005 and 2016.
  - 2019-2023 Goal: OHCS will assist at least 6,500 households in becoming successful homeowners through mortgage lending products while sustaining efforts to help existing homeowners retain their homes. OHCS will increase the number of homebuyers of color in our homeownership programs by 50% as part of a concerted effort to bridge the homeownership gap for communities of color while building pathways to prosperity.
- **Rural Communities.** *Change the way OHCS does business in small towns and rural communities to be responsive to the unique housing and service needs and unlock the opportunities for housing development.*

- Summary of the issue: While housing costs may be lower in rural areas, incomes are lower as well: median family income is \$42,750 for rural counties versus \$54,420 for urban counties. Additionally, the median home values in rural Oregon are 30% higher than in the rural United States and median rents are 16% higher.
- 2019-2023 Goal: OHCS will collaborate with small towns and rural communities to increase the supply of affordable and market-rate housing. As a result of tailored services, partnerships among housing and service providers, private industry and local governments will flourish, leading to improved capacity, leveraging of resources and a doubling of the housing development pipeline.

## Regional and Local Demographic Trends that may affect housing need in Tualatin.

Demographic trends that might affect the key assumptions used in the baseline analysis of housing need are: (1) the aging population, (2) changes in household size and composition, and (3) increases in diversity.

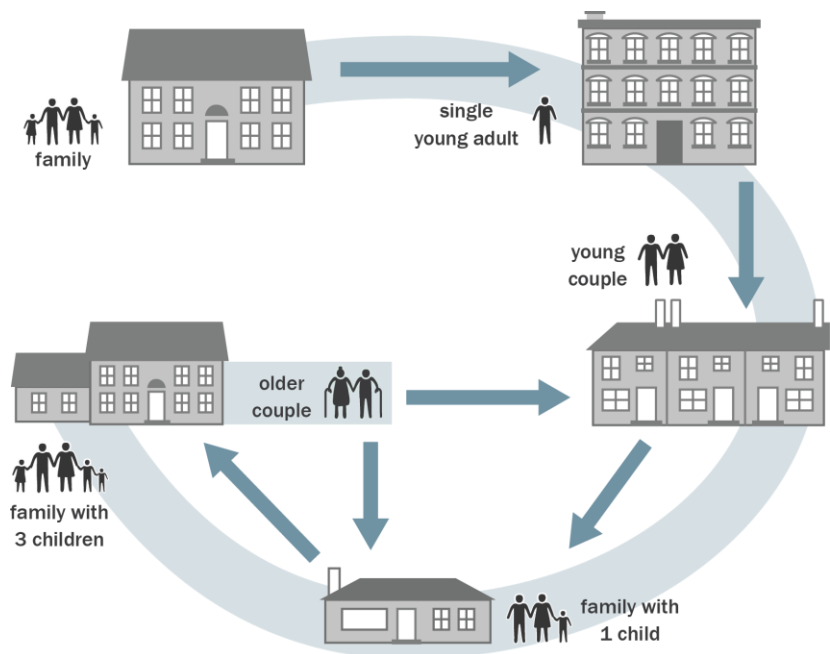
An individual’s housing needs change throughout their life, with changes in income, family composition, and age. The types of housing needed by a 20-year-old college student differ from the needs of a 40-year-old parent with children, or an 80-year-old single adult. As Tualatin’s population ages, different types of housing will be needed to accommodate older residents. The housing characteristics by age data below reveal this cycle in action in Tualatin.

### Housing needs and preferences change in predictable ways over time, such as with changes in marital status and size of family.

Families of different sizes need different types of housing.

### Exhibit 29. Effect of demographic changes on housing need

Source: ECONorthwest, adapted from Clark, William A.V. and Frans M. Dieleman. 1996. Households and Housing. New Brunswick, NJ: Center for Urban Policy Research.



## Growing Population

Tualatin’s population growth will drive future demand for housing in the City over the planning period. The population forecast in Exhibit 31 is Tualatin’s official population forecast, from the Oregon Population Forecast Program. Tualatin must use this forecast as the basis for forecasting housing growth over the 2020 to 2040 period.

Tualatin’s population grew by 81% between 1990 and the 2013-2017 period. Tualatin added 12,122 new residents, at an average annual growth rate of 2.2%.

### Exhibit 30. Population Growth and Change, Tualatin, Washington County, Portland Region, Oregon, and the United States, 1990, 2000, 2010, and 2018

Source: U.S. Decennial Census 1990, 2000, 2010, and 2018 Quick Facts. Portland State University 2018 Certified Population Estimates. Note: the Portland Region is the aggregate of Clackamas, Multnomah, and Washington Counties.

	1990	2000	2010	2018	Change 1990 to 2018		
					Number	Percent	AAGR
U.S.	248,709,873	281,421,906	308,745,538	327,167,434	78,457,561	32%	1.0%
Oregon	2,842,321	3,421,399	3,831,074	4,195,300	1,352,979	48%	1.5%
Portland Region	1,174,291	1,444,219	1,641,036	1,839,005	664,714	57%	1.7%
Washington County	311,554	445,342	529,710	606,280	294,726	95%	2.5%
Tualatin	15,013	22,791	26,054	27,055	12,042	80%	2.2%

**Tualatin city limits is projected to grow by 627 people between 2020 and 2040, at an average annual growth rate of 0.12%.<sup>26</sup>**

### Exhibit 31. Forecast of Population Growth, Tualatin city limits, 2020 to 2040

Source: Metro 2040 Population Distributed Forecast, Exhibit A. July 12, 2016.

<b>26,745</b>	<b>27,372</b>	<b>627</b>	2.3% increase
Residents in 2020	Residents in 2040	New residents 2020 to 2040	0.12% Growth Rate

**Tualatin’s Basalt Creek is project to grow by 1,080 people between 2020 and 2040, at an average annual growth rate of 5.68%.<sup>27</sup>**

### Exhibit 32. Forecast of Population Growth, Basalt Creek, 2020 to 2040

Source: Metro 2040 TAZ Forecast, Population Estimates (TAZ 980 and 981). November 6, 2015.

<b>535</b>	<b>1,616</b>	<b>1,080</b>	202% increase
Residents in 2020	Residents in 2040	New residents 2020 to 2040	5.68% Growth Rate

<sup>26</sup> This forecast of population growth is based on Tualatin’s (city limits) official population forecast from Metro 2040 Population Distributed Forecast (2016). ECONorthwest extrapolated the population forecast for 2015 (to 2020) using an average annual growth rate.

<sup>27</sup> This forecast of population growth is based on Basalt Creek’s official population forecast from Metro 2040 TAZ Population Forecast (2015). ECONorthwest extrapolated the population forecast for 2015 (to 2020) using an average annual growth rate.



## Aging Population

This section shows two key characteristics of Tualatin’s population, with implications for future housing demand in Tualatin:

- **Seniors.** Tualatin currently has a smaller share of people over 60 years old than Washington County. As Tualatin’s senior population grows, it will have increasing demand for housing that is suitable for older demographics.

Demand for housing for seniors will grow over the planning period, as the Baby Boomers continue to age and retire. The Washington County forecast share of residents aged 60 years and older will account for 24% of its population in 2040, compared to around 18% in the 2013-2017 period.

The impact of growth in seniors in Tualatin will depend, in part, on whether older people already living in Tualatin continue to reside there as they retire. National surveys show that, in general, most retirees prefer to age in place by continuing to live in their current home and community as long as possible.<sup>28</sup> Tualatin may be attractive to newly retiring seniors because of its location within the Portland Metro region.

**Growth in the number of seniors will result in demand for housing types specific to seniors, such as small and easy-to-maintain dwellings, assisted living facilities, or age-restricted developments.** Senior households will make a variety of housing choices, including: remaining in their homes as long as they are able, downsizing to smaller single-family homes (detached and attached) or multifamily units, moving in with family, or moving into group housing (such as assisted living facilities or nursing homes), as their health declines. The challenges aging seniors face in continuing to live in their community include changes in healthcare needs, loss of mobility, the difficulty of home maintenance, financial concerns, and increases in property taxes.<sup>29</sup>

- **Tualatin has a slightly larger share of younger people than the Portland Region.** About 26% of Tualatin’s population and Washington County’s population is under 20 years old, compared to 24% of the Portland Region’s population. The forecast for population growth in Washington County shows the percent of people under 20 years staying static at 24% of the population in 2013-2017 to 2040.

People currently aged 20 to 40 are referred to as the Millennial generation and account for the largest share of population in Oregon.<sup>30</sup> By 2040, they will be about 40 to 60 years of age. The forecast for Washington County shows a slight shift in Millennials from about 29% of the population in 2020 to about 25% of the population in 2040.

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<sup>28</sup> A survey conducted by the AARP indicates that 90% of people 50 years and older want to stay in their current home and community as they age. See <http://www.aarp.org/research>.

<sup>29</sup> “Aging in Place: A toolkit for Local Governments” by M. Scott Ball.

<sup>30</sup> Pew Research Center. (March 2018). “Defining generations: Where Millennials end and post-Millennials begin” by Michael Dimock. Retrieved from: <http://www.pewresearch.org/fact-tank/2018/03/01/defining-generations-where-millennials-end-and-post-millennials-begin/>.

Tualatin's ability to attract people in this age group will depend, in large part, on whether the city has opportunities for housing that both appeals to and is affordable to Millennials. Again, Tualatin is attractive because of the amenities of the Portland Metro region.

The long-term housing preference of Millennials is uncertain. Research suggests that Millennials' housing preferences may be similar to the Baby Boomers, with a preference for smaller, less costly units. Recent surveys about housing preference suggest that Millennials want affordable single-family homes in areas that offer transportation alternatives to cars, such as suburbs or small cities with walkable neighborhoods.<sup>31</sup>

A recent survey of people living in the Portland region shows that Millennials prefer single-family detached housing. The survey finds that housing price is the most important factor in choosing housing for younger residents.<sup>32</sup> The survey results suggest Millennials are more likely than other groups to prefer housing in an urban neighborhood or town center.

Growth in Millennials in Tualatin will result in increased demand for both affordable single-family detached housing (such as small single-family detached units like cottages), as well as increased demand for affordable townhouses and multifamily housing. Growth in this population will result in increased demand for both ownership and rental opportunities, with an emphasis on housing that is comparatively affordable.

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<sup>31</sup> The American Planning Association, "Investing in Place; Two generations' view on the future of communities." 2014.

"Access to Public Transportation a Top Criterion for Millennials When Deciding Where to Live, New Survey Shows," Transportation for America.

"Survey Says: Home Trends and Buyer Preferences," National Association of Home Builders International Builders

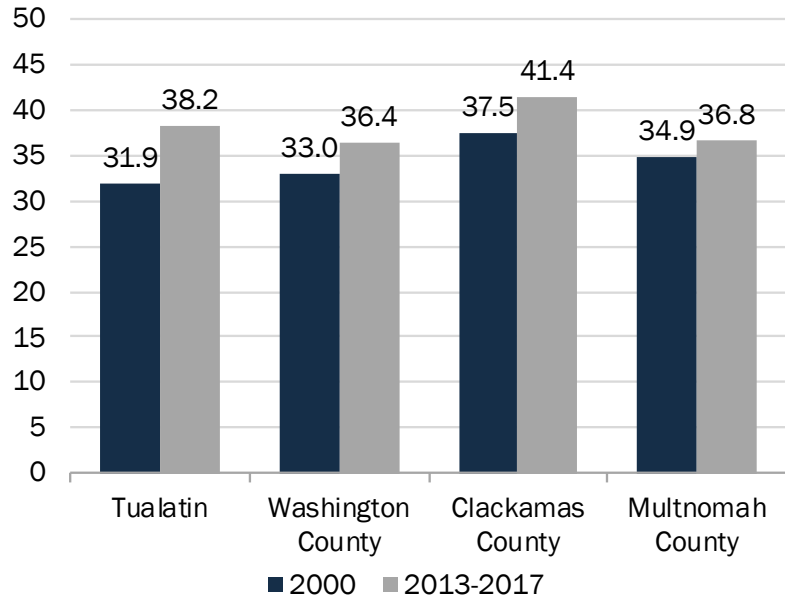
<sup>32</sup> Davis, Hibbits, & Midghal Research, "Metro Residential Preference Survey," May 2014.



From 2000 to 2013-2017, Tualatin's population grew older on average.

**Exhibit 33. Median Age, Tualatin, Washington County, Clackamas County, and Multnomah County, 2000 and 2013-2017**

Source: U.S. Census Bureau, 2000 Decennial Census Table B01002, 2013-2017 ACS, Table B01002.

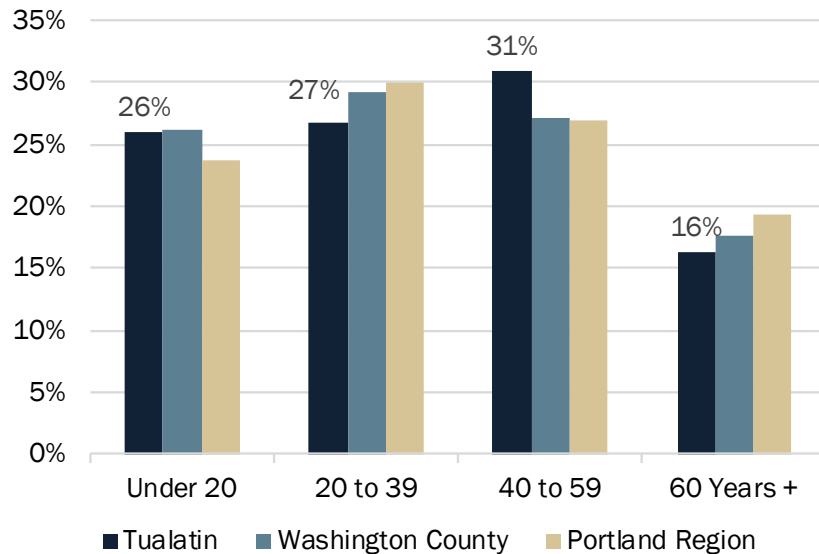


In the 2013-2017 period, about 58% of Tualatin's residents were between the ages of 20 and 59 years.

Tualatin had a slightly smaller share of people over the age of 60 than Washington County and Portland Region.

**Exhibit 34. Population Distribution by Age, Tualatin, Washington County, and Portland Region, 2013-2017**

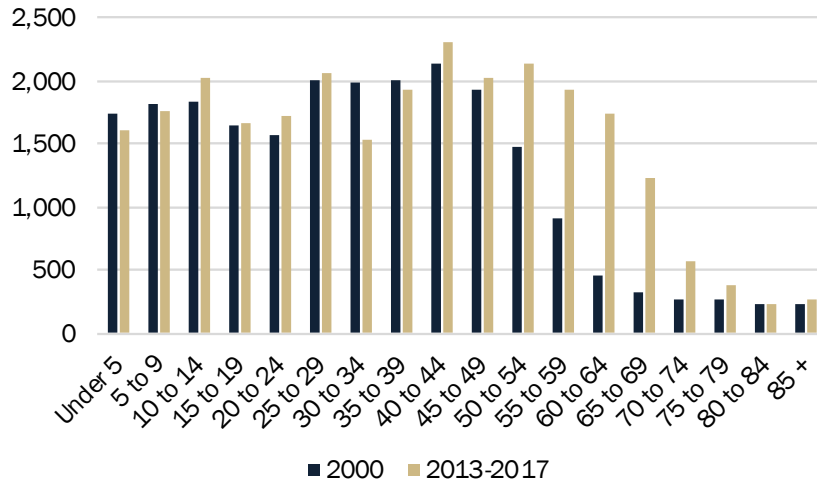
Source: U.S. Census Bureau, 2013-2017 ACS, Table B01001.



The number of senior residents in Tualatin grew between 2000 and the 2013-2017 period.

**Exhibit 35. Population Distribution by Age, Tualatin, 2013-2017**

Source: U.S. Census Bureau, 2000 Decennial Census Table P012 and 2013-2017 ACS, Table B01001.



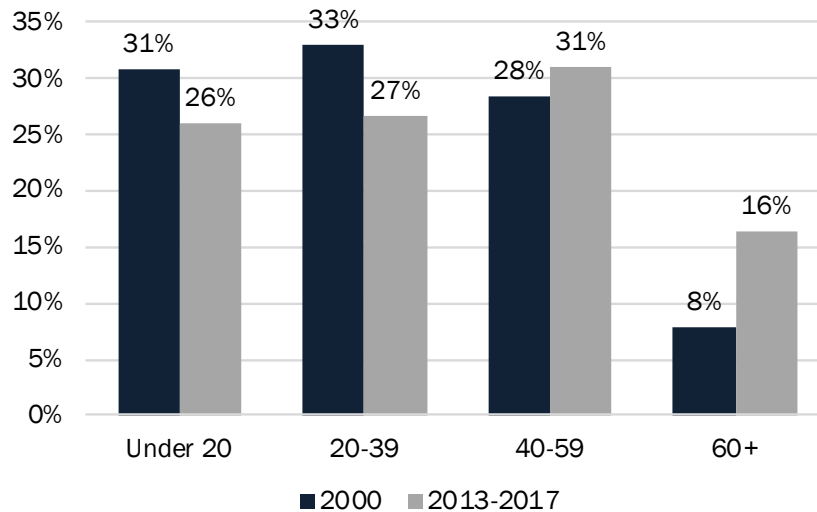
Between 2000 and 2013-2017, the share of Tualatin’s population aged 60 years and older doubled.

Tualatin’s population aged 60 years and older grew by 2,643 people between 2000 and 2013-2017.

This increase can be explained in part through aging of the Baby Boomers across the Portland Region. Development of senior housing in Tualatin likely attracted seniors to Tualatin, increasing the percentage of people over 60 years old in the city.

**Exhibit 36. Population Composition by Age, Tualatin, 2000 and 2013-2017**

Source: U.S. Census Bureau, 2000 Decennial Census Table P012 and 2013-2017 ACS, Table B01001.



Between 2020 and 2040, Washington County’s population over 60 years old is forecast to grow the fastest, by 62%.

**Exhibit 37. Fastest-growing Age Groups, Washington County, 2020 to 2040**

Source: Portland State University, Population Research Center, Washington County Forecast, June 2017.

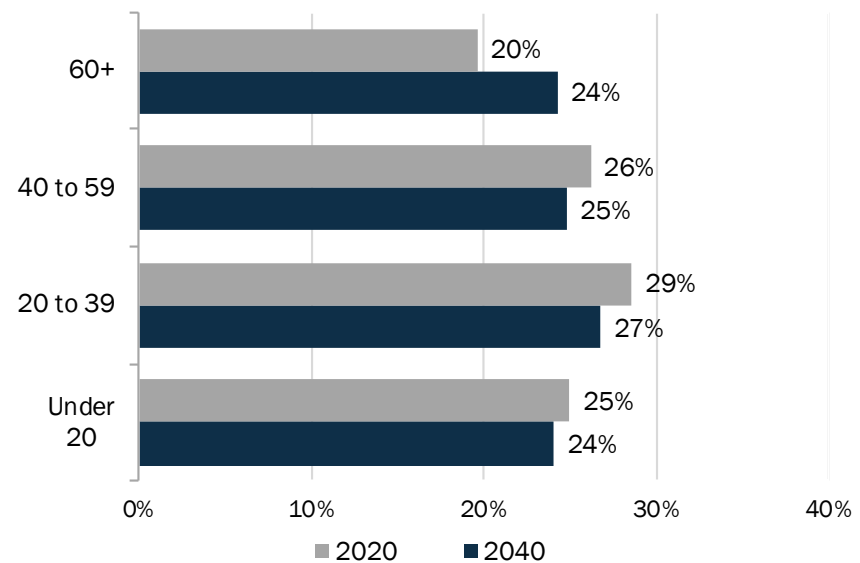
23%	23%	24%	62%
36,773	40,023	38,953	75,217
People	People	People	People
<b>Under 20</b>	<b>20-39 Yrs</b>	<b>40-59 Yrs</b>	<b>60+ Yrs</b>

**Between 2020 and 2040, the share of Washington County residents over the age of 40 will make up 49% of the county's total population.**

Of the age cohorts shown in Exhibit 38, the share of residents over 60 years of age will increase by 2040, while the share of all other age cohorts will decrease.

**Exhibit 38. Population Growth by Age Group, Washington County, 2020 to 2040**

Source: Portland State University, Population Research Center, Washington County Forecast, June 2017.



## Increased Ethnic Diversity

Tualatin is becoming more ethnically diverse. The Latinx population grew from 12% of Tualatin's population in 2000 to 16% of the population in the 2013-2017 period, adding about 1,774 new Latinx residents. Tualatin is more ethnically diverse than the Portland Region.

The U.S. Census Bureau forecasts that at the national level, the Latinx population will continue growing faster than most other non-Latinx population between 2020 and 2040. The Census forecasts that the Latinx population will increase 93% from 2016 to 2060 and foreign-born Latinx population will increase by about 40% in that same time.<sup>33</sup>

Continued growth in the Latinx population will affect Tualatin's housing needs in a variety of ways.<sup>34</sup> Growth in first and, to a lesser extent, second and third generation Latinx immigrants, will increase demand for larger dwelling units to accommodate the, on average, larger household sizes for these households. Foreign-born households, including Latinx immigrants, are more likely to include multiple generations, requiring more space than smaller household

<sup>33</sup> U.S. Census Bureau, *Demographic Turning Points for the United States: Population Projections for 2020 to 2060*, pg. 7, [https://www.census.gov/content/dam/Census/library/publications/2018/demo/P25\\_1144.pdf](https://www.census.gov/content/dam/Census/library/publications/2018/demo/P25_1144.pdf)

<sup>34</sup> Pew Research Center. *Second-Generation Americans: A Portrait of the Adult Children of Immigrants*, February 7, 2013, Appendix 8, <http://www.pewsocialtrends.org/2013/02/07/appendix-1-detailed-demographic-tables/>. National Association of Hispanic Real Estate Professionals. *2017 State of Hispanic Homeownership Report*, 2017.

sizes. As Latinx households integrate over generations, household size typically decreases, and housing needs become similar to housing needs for all households.

According to the *State of Hispanic Homeownership* report from the National Association of Hispanic Real Estate Professionals<sup>35</sup>, Latinx accounted for 28.6% of the nation’s household formation in 2017. Household formations, for Latinx homeowners specifically, accounted for 15% of the nation’s net homeownership growth. The rate of homeownership for Latinx increased from 45.4% in 2014<sup>36</sup> to 46.2% in 2017. The only demographic that increased their rate of homeownership from 2016 to 2017 was for Latinx households.

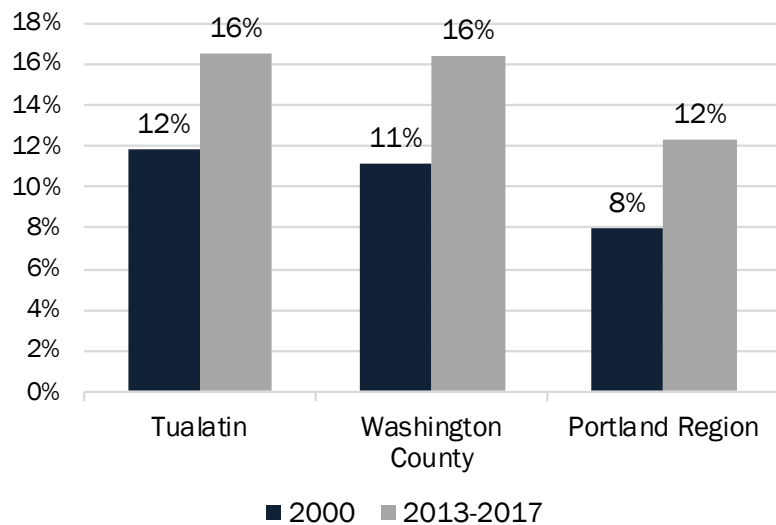
The *State of Hispanic Homeownership* report also cites the lack of affordable housing products as a substantial barrier to homeownership. The report finds that Latinx households are more likely than non-Latinx households to be nuclear households, comprised of married couples with children, and multiple-generation households in the same home, such as parents and adult children living together. These housing preferences—affordability and larger household size—will influence the housing market as the Latinx population continues to grow.<sup>37</sup> Accordingly, growth in Latinx households will result in increased demand for housing of all types, both for ownership and rentals, with an emphasis on housing that is comparatively affordable.

**The share of Tualatin’s population that is Latinx increased by 4% (1,774 people) from 2000 to 2013-2017.**

Tualatin was more ethnically diverse than the Portland Region.

**Exhibit 39. Latinx Population as a Percent of the Total Population, Tualatin, Washington County, Portland Region, 2000, 2013-2017**

Source: U.S. Census Bureau, 2000 Decennial Census Table P008, 2013-2017 ACS Table B03002.



<sup>35</sup> National Association of Hispanic Real Estate Professionals (2017). *2017 State of Hispanic Homeownership Report*.

<sup>36</sup> Ibid.

<sup>37</sup> Ibid.

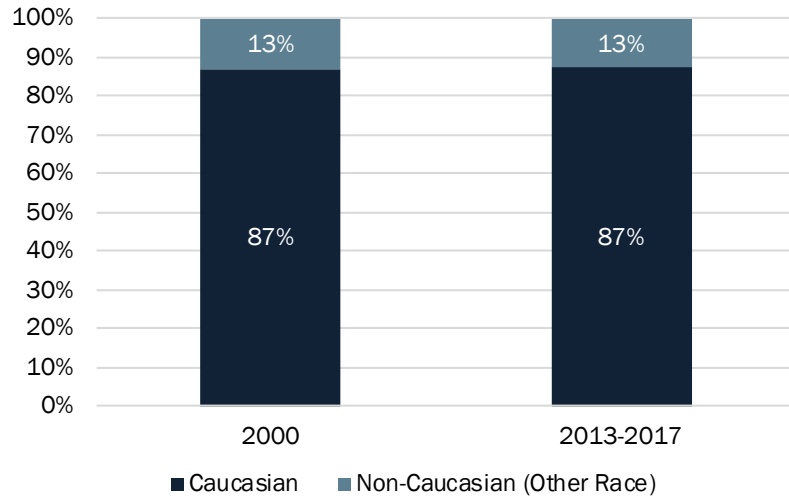
## Racial Diversity<sup>38</sup>

The non-Caucasian population is defined as the share of the population that identifies as a race other than “White alone” according to Census definitions. Racial diversity in Tualatin did not increase between 2000 and the 2013-2017 period and. In the 2013-2017 period, Tualatin was less racially diverse than both the county and region.

**The share of the non-white population in Tualatin stayed the same from 2000 to 2013-2017.**

### Exhibit 40. Non-Caucasian Population as a Percent of Total Population, Tualatin, 2000 and 2013-2017

Source: U.S. Census Bureau, 2000 Decennial Census Table P008, 2013-2017 ACS Table B02001.



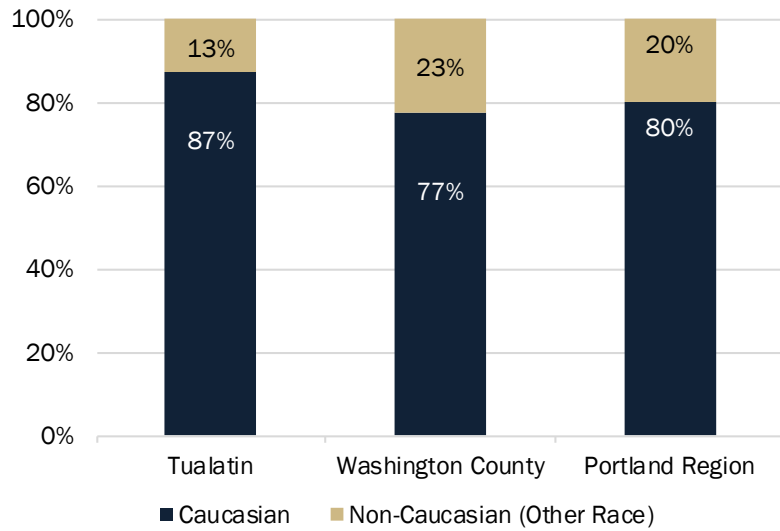
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<sup>38</sup> The US Census Bureau considers race and ethnicity as two distinct concepts. The Census applies two categories for ethnicity, which are Hispanic or Latino (i.e., Latinx) and Not Hispanic or Latino (i.e., Non-Latinx). Latinx is an ethnicity and not a race, meaning individuals who identify as Latinx may be of any race. The share of the population that identifies as Latinx should not be added to percentages for racial categories.

In the 2013-2017 period, Tualatin was less racially diverse than Washington County and the Portland Region.

**Exhibit 41. Non-Caucasian Population as a Percent of Total Population, Tualatin, Washington County, and the Portland Region 2013-2017**

Source: U.S. Census Bureau, 2013-2017 ACS Table B02001.



## Homelessness

Washington County's point-in-time homeless count decreased by about 4% (22 people) from 2017 to 2018.

Between 2015 and 2018, individuals who were homeless (and sheltered) decreased 17%. Individuals who were homeless (and unsheltered) decreased 9%.

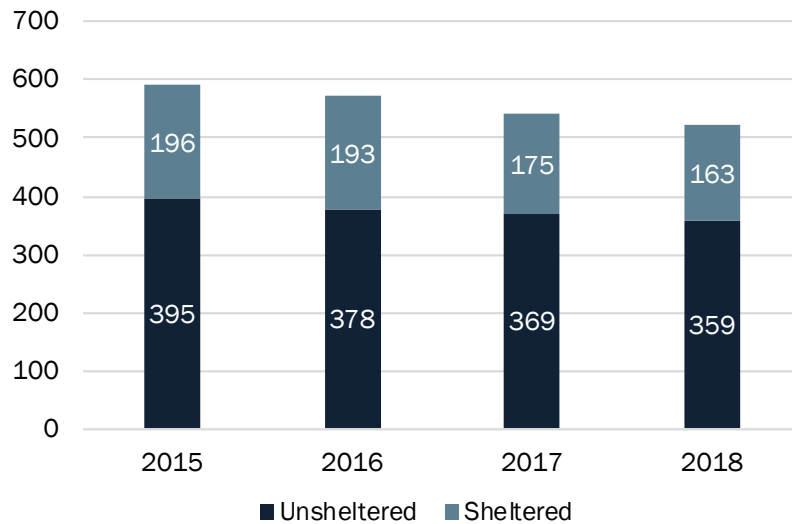
### Exhibit 42. Number of Persons Homeless, Washington County, Point-in-Time Count, 2017 and 2018

Source: Washington County, Point in Time Count, January 2017, 2018

**544 Persons**      **522 Persons**  
2017                      2018

### Exhibit 43. Number of Persons Homeless by Living Situation, Washington County, Point-in-Time Count, 2015 through 2018

Source: Washington County, Point in Time Count, January 2015, 2016, 2017, 2018



## Household Size and Composition

Tualatin’s households are smaller than Washington County’s households. Tualatin’s household composition shows that households in Tualatin are similar to Washington County and Portland Region averages.

Tualatin’s average household size was smaller than Washington County’s and Clackamas County’s, but larger than Multnomah County’s.

**Exhibit 44. Average Household Size, Tualatin, Washington County, Clackamas County, Multnomah County, 2013-2017**

Source: U.S. Census Bureau, 2013-2017 ACS 5-year estimate, Table B25010.



According to the two most recent Decennial Censuses, Tualatin’s average household size (for householder identifying as Latinx) decreased by 0.27 person.

**Exhibit 45. Average Household Size for Latinx Householder, Tualatin, 2000 and 2010**

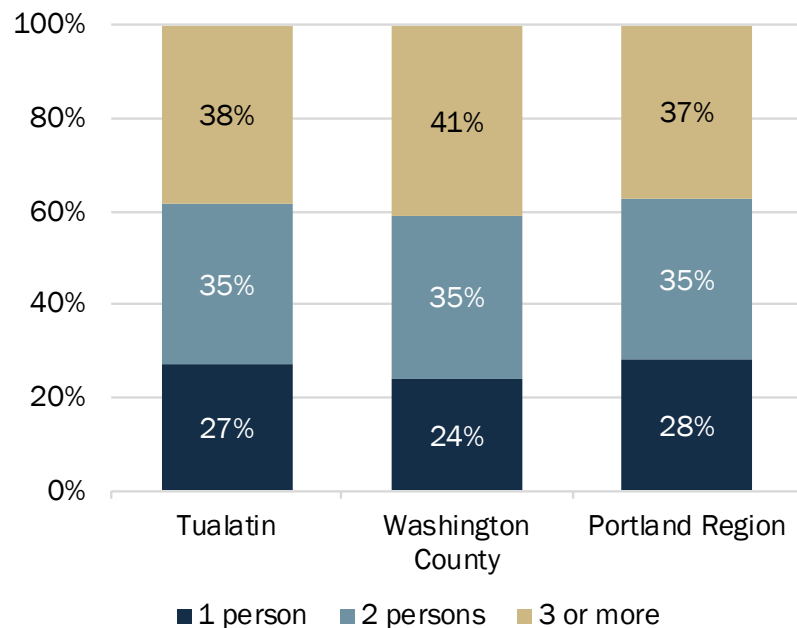
Source: U.S. Census Bureau, 2013-2017 ACS 5-year estimate, Table B25010.



About 62% of Tualatin’s households were 1- or 2-person households, compared to 59% of Washington County’s and 63% of the Portland Region’s households.

**Exhibit 46. Household Size, Tualatin, Washington County, and Portland Region, 2013-2017**

Source: U.S. Census Bureau, 2013-2017 ACS 5-year estimate, Table B25010.



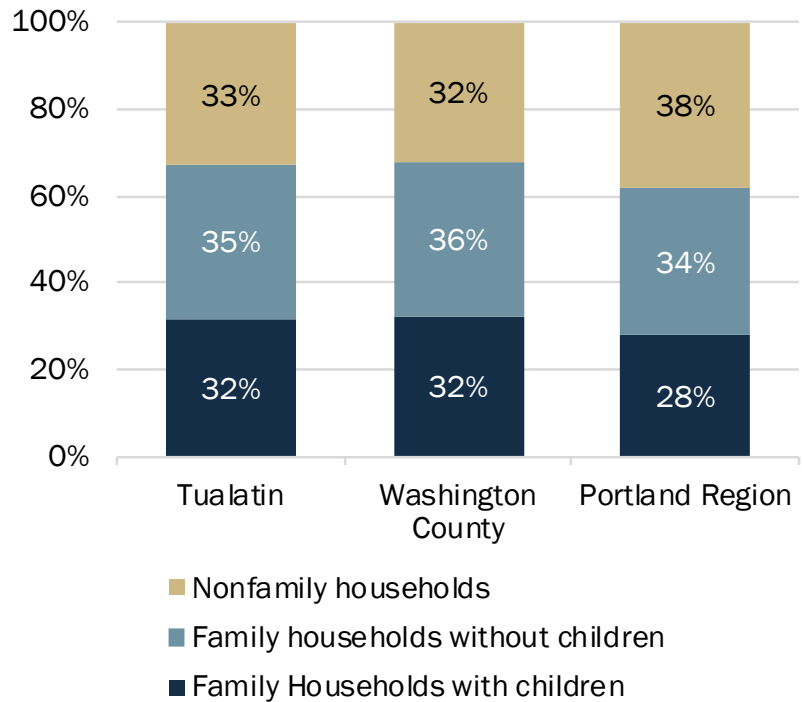


**Tualatin had a similar household composition to Washington County. Compared to the Portland Region, Tualatin had a smaller share of nonfamily households and a larger share of family households with children.**

About a third of Tualatin's households were non-family households (i.e. 1-person households and households composed of roommates).

**Exhibit 47. Household Composition, Tualatin, Washington County, and Portland Region, 2013-2017**

Source: U.S. Census Bureau, 2013-2017 ACS 5-year estimate, Table DP02.



**Households, with a Latinx head of household, were more likely to have more than one occupant per room in the 2013-2017 period, compared to all households and households with a Caucasian head of household.**

**Exhibit 48. Occupants per Room, Tualatin, 2013-2017**

Source: U.S. Census Bureau, 2013-2017 ACS 5-year estimate, Table B25014.

**2.2%**

All Households

**1.8%**

Households, with White (alone) head of household

**11.3%**

Households, with Latinx head of household

## Income of Tualatin Residents

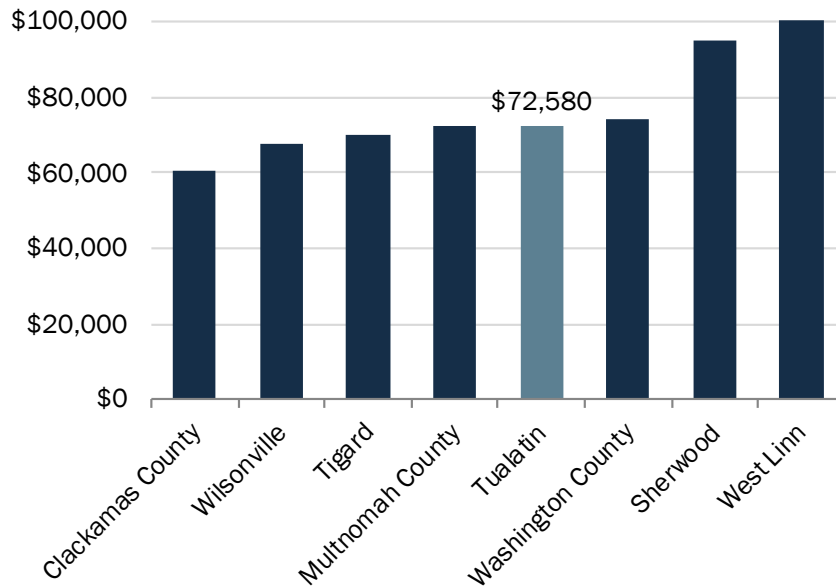
Income is one of the key determinants in housing choice and households' ability to afford housing. Income for residents living in Tualatin was lower than the Washington County median income and the state's.

**Over the 2013-2017 period, Tualatin's median household income (MHI) was below that of Washington County's.**

Tualatin's MHI was \$1,453 lower than Washington County's MHI (\$74,033).

**Exhibit 49. Median Household Income, Tualatin, Washington County, and Comparison regions, 2013-2017**

Source: U.S. Census Bureau, 2013-2017 ACS 5-year estimate, Table B25119.



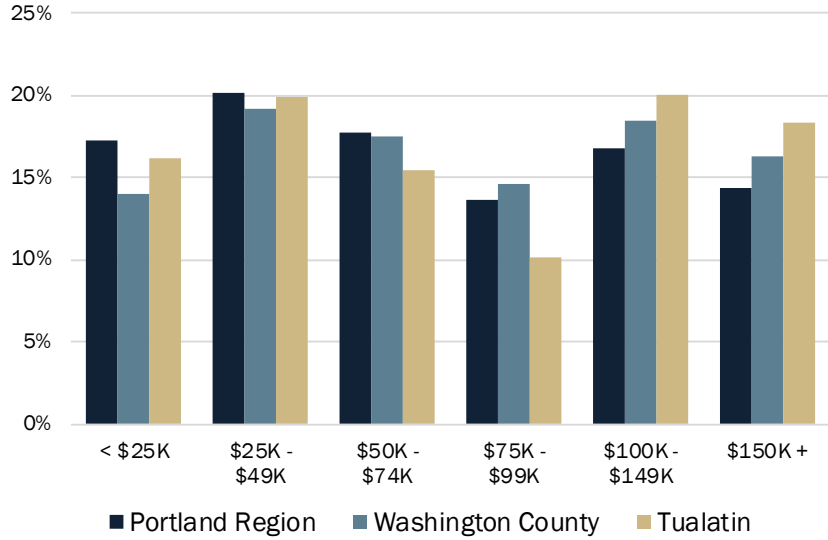
**Tualatin had a larger share of higher-earning households.**

About 38% of Tualatin’s households earned more than \$100,000 per year, compared to 35% of Washington County households and 31% of the Portland Region’s households.

About 36% of Tualatin’s households earned \$50,000 or less per year, compared to 33% of Washington County’s households and 37% of the Portland Region’s households.

**Exhibit 50. Household Income, Tualatin, Washington County, and Portland Region, 2013-2017**

Source: U.S. Census Bureau, 2013-2017 ACS 5-year estimate, Table B19001.

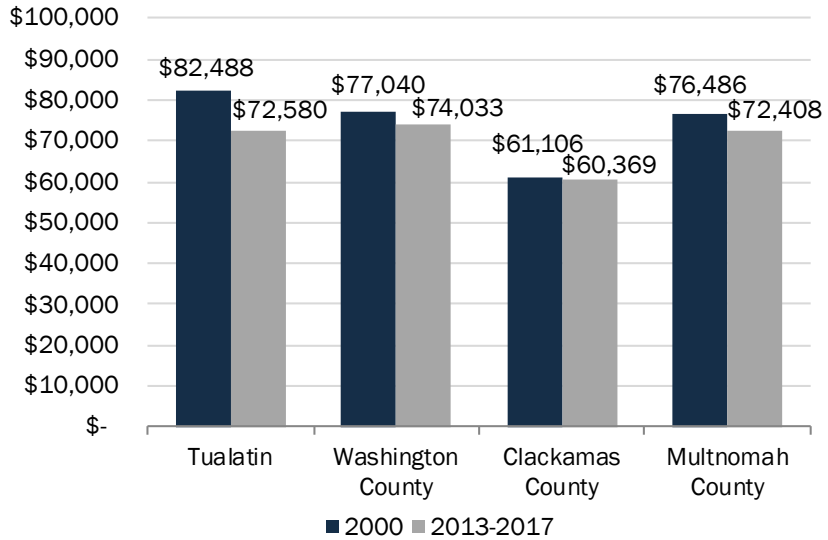


**After adjusting for inflation, Tualatin’s median household income (MHI) decreased by 12%, from \$82,488 in 2000 to \$72,580 in 2013-2017.**

In this same time, Washington County’s MHI decreased by 4%, Clackamas County’s MHI decreased by 1%, and Multnomah County’s MHI decreased by 5%.

**Exhibit 51. Change in Median Household Income (Inflation-adjusted 2017 dollars), Tualatin, Washington County, Clackamas County, and Multnomah County, 2000 and 2013-2017**

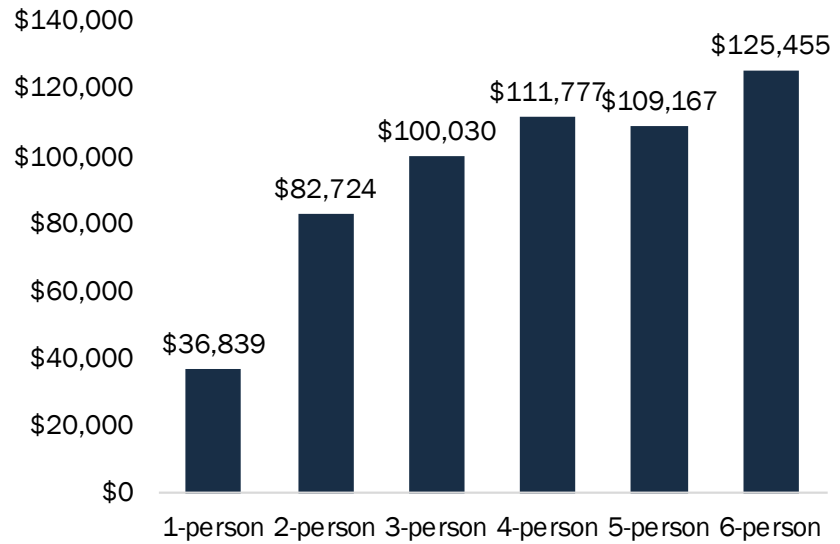
Source: U.S. Census Bureau, 2000 Decennial Census, Table HCT012; 2013-2017 ACS 5-year estimate, Table B25119; Bureau of Labor Statistics Inflation Calculator.



The median household income for a 4-person household was 3x the median household income for a 1-person household.

**Exhibit 52. Median Household Income by Household Size, Tualatin, 2013-2017**

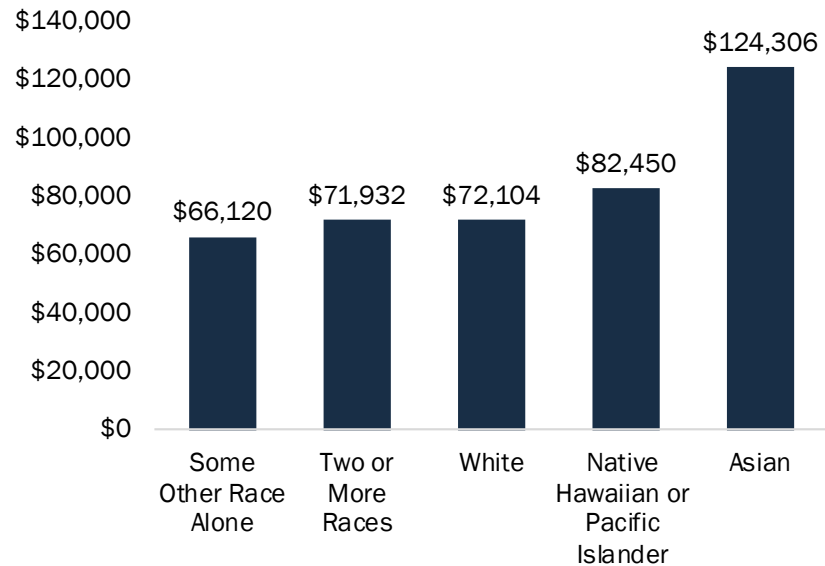
Source: U.S. Census Bureau, 2013-2017 ACS 5-year estimate, Table B25119.



Median household income, of households with an Asian head of household, were proportionately higher in Tualatin.

**Exhibit 53. Median Household Income by Race of the Head of Household, Tualatin, 2013-2017**

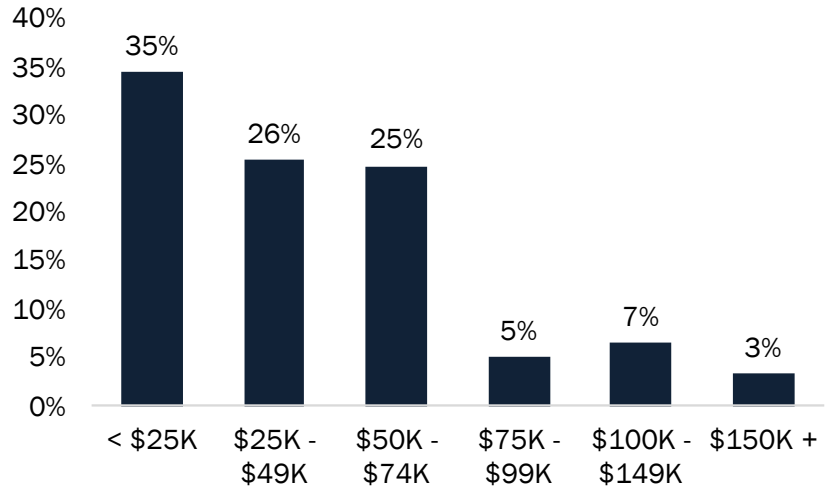
Source: U.S. Census Bureau, 2013-2017 ACS 5-year estimate, Table B19013A-G. Note: data was not available for heads of households identifying as a Black / African American or as American Indian and Alaska Native.



Most households with a Latinx head of household earned less than \$50,000 per year.

**Exhibit 54. Household Income by Latinx Head of Household, Tualatin, 2013-2017**

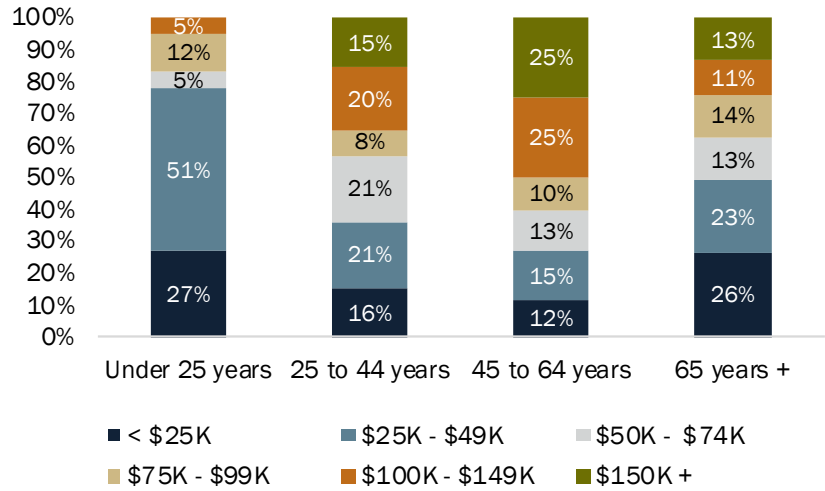
Source: U.S. Census Bureau, 2013-2017 ACS 5-year estimate, Table B19001I.



In the 2013-2017 period, 78% of households with a householder 25 and younger and 49% of households with a householder 65 years and older earned less than \$50,000 per year.

**Exhibit 55. Household Income by Age of Householder, Tualatin, 2013-2017**

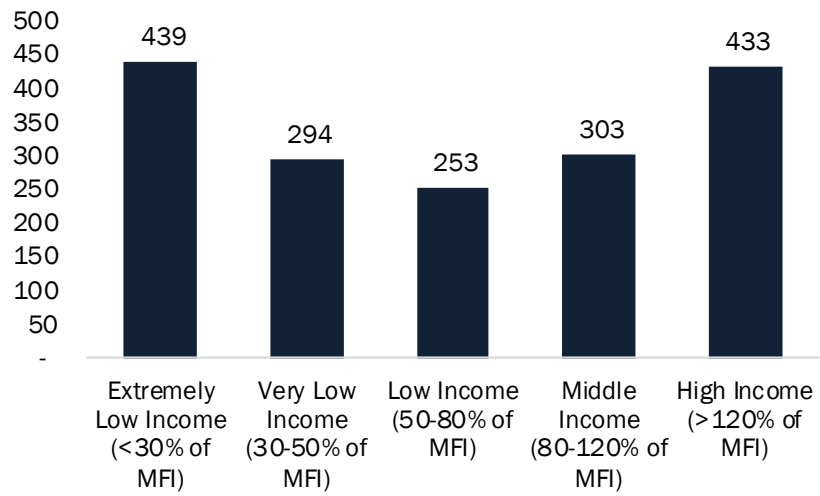
Source: U.S. Census Bureau, 2013-2017 ACS 5-year estimate, Table B19037.



About a quarter of households with a householder aged 65 years and older) were extremely low income in the 2013-2017 period. About a quarter of those households were high income.

**Exhibit 56. Median Family Income (\$81,400) by Age of Householder (Aged 65 Years and Older), Tualatin, 2013-2017**

Source: U.S. Census Bureau, 2013-2017 ACS 5-year estimate, Table XXXX. Note: Median Family Income for Washington County was \$81,400 (U.S. Department of Housing and Urban Development).



## Commuting Trends

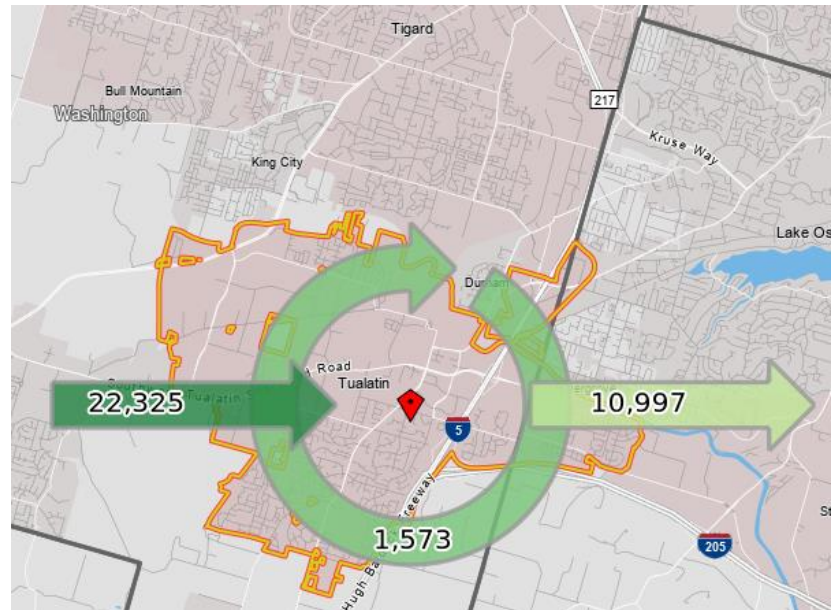
Tualatin is part of the complex, interconnected economy of the Portland Region. Of the more than 23,800 people who work in Tualatin, 93% of workers commute into Tualatin from other areas, most notably Portland, Tigard, Beaverton, and Hillsboro. Almost 11,000 residents of Tualatin commute out of the city for work, many of them to Portland.

### Tualatin is part of an interconnected regional economy.

More than 22,000 people commuted into Tualatin for work, and nearly 11,000 people living in Tualatin commuted out of the city for work.

### Exhibit 57. Commuting Flows, Tualatin, 2015

Source: U.S. Census Bureau, Census On the Map.



### About 7% of people who worked at businesses located in Tualatin also lived in Tualatin.

The remainder commuted from Portland and other parts of the Region.

### Exhibit 58. Places Where Workers at Businesses in Tualatin Live, 2015

Source: U.S. Census Bureau, Census On the Map.



### About 27% of Tualatin residents worked in Portland.

A little over 12% of Tualatin residents lived and worked in Tualatin.

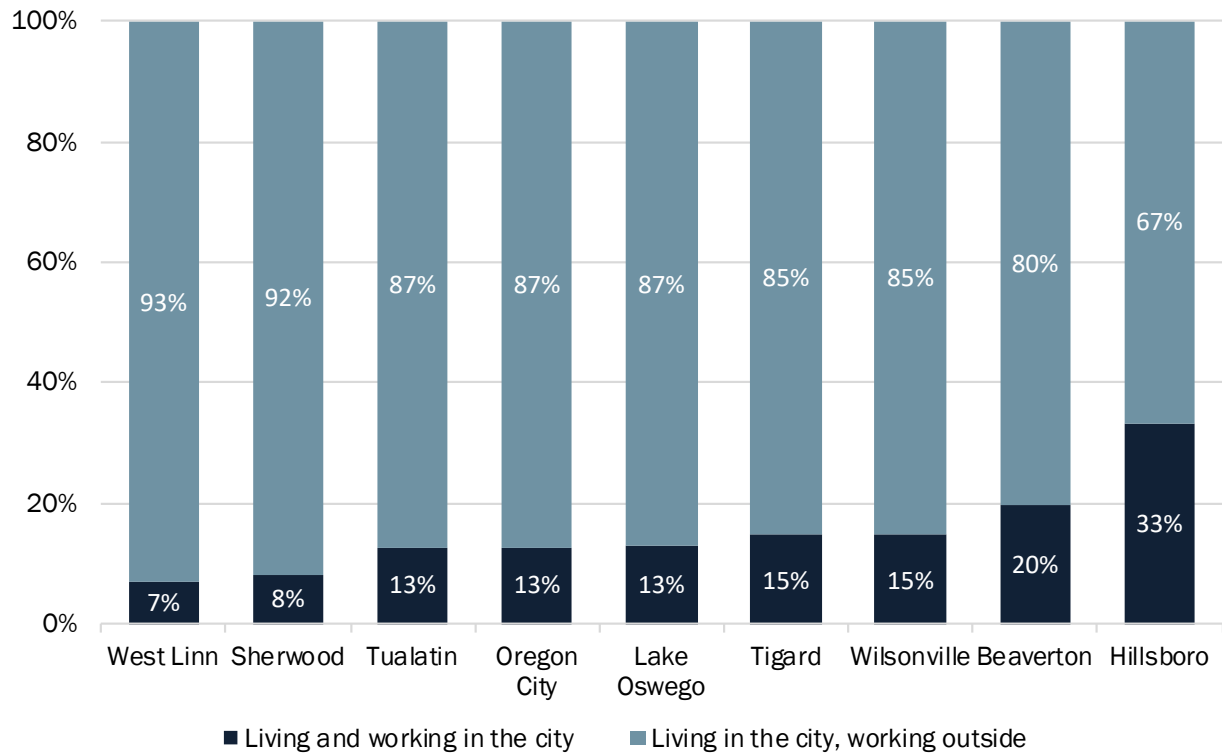
### Exhibit 59. Places Where Tualatin Residents were Employed, 2015

Source: U.S. Census Bureau, Census On the Map.



### Exhibit 60. Commuting Flows of Residents, Tualatin Relative to Comparison Geographies, 2015

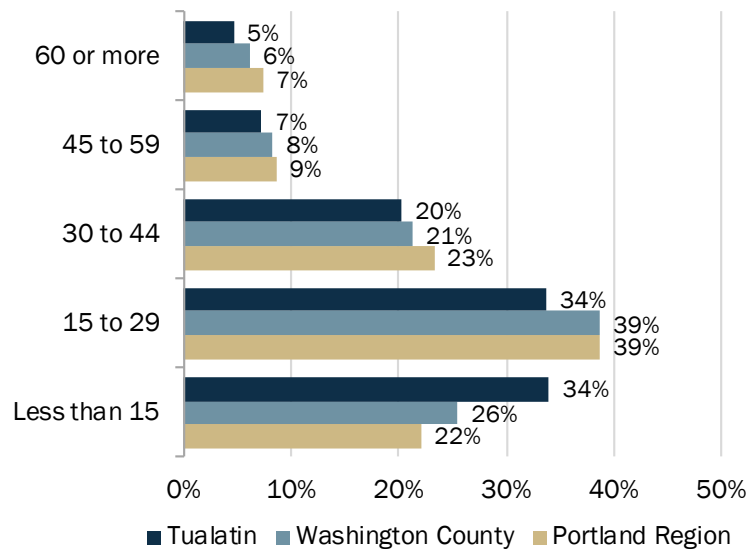
Source: U.S. Census Bureau, Census On the Map.



Most of Tualatin residents (68%) had a commute time that took less than 30 minutes.

### Exhibit 61. Commute Time by Place of Residence, Tualatin, Washington County, and Portland Region, 2013-2017

Source: U.S. Census Bureau, 2013-2017 ACS 5-year estimate, Table B08303.





# Regional and Local Trends Affecting Affordability in Tualatin

This section describes changes in sales prices, rents, and housing affordability in Tualatin. It uses cities in the region, as well as Washington County and Oregon, as comparisons.

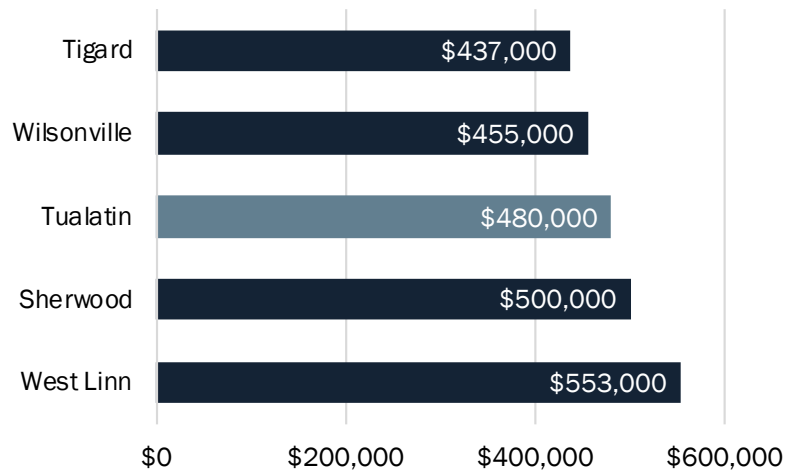
## Changes in Housing Costs

With a median sale price of \$480,000 in February 2019, Tualatin’s housing sales were slightly higher than some comparison cities in this analysis, but below sale prices of other cities. Tualatin’s housing prices grew along with comparison cities over the January 2015 to February 2019 analysis period.

**Tualatin’s median home sale price was within range of comparison cities.**

**Exhibit 62. Median Home Sale Price, Tualatin and Comparison Cities, February 2019**

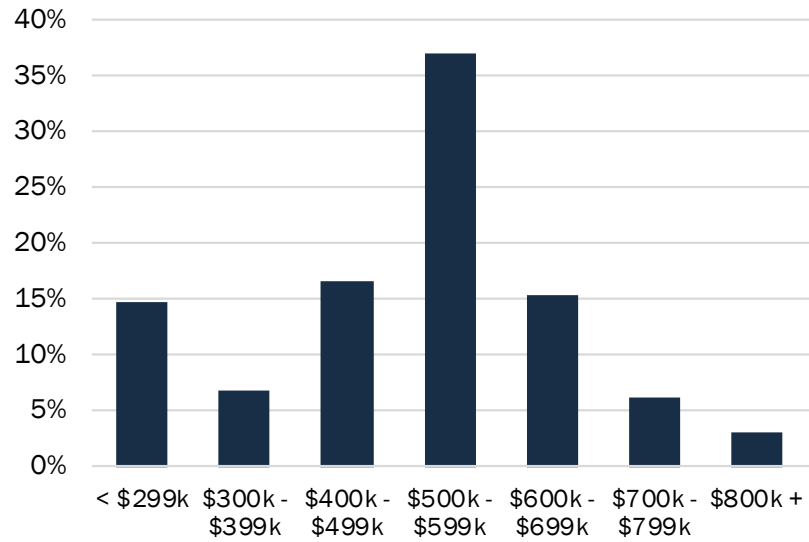
Source: Redfin.



In 2017 through 2018, more than half of the homes (62%) in Tualatin sold for more than \$500,000.

**Exhibit 63. Distribution of Home Sale Prices, Tualatin, 2017–2018**

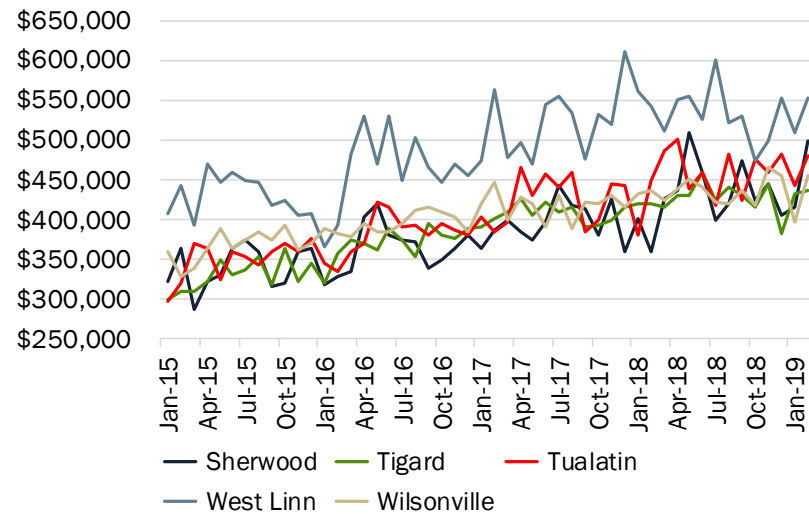
Source: RLIS.



Between January 2015 and February 2019, home sale prices in Tualatin followed similar trends to other nearby cities (with West Linn as an outlier).

**Exhibit 64. Median Sale Price, Tualatin and Comparison Cities, January 2016–February 2019**

Source: Redfin.



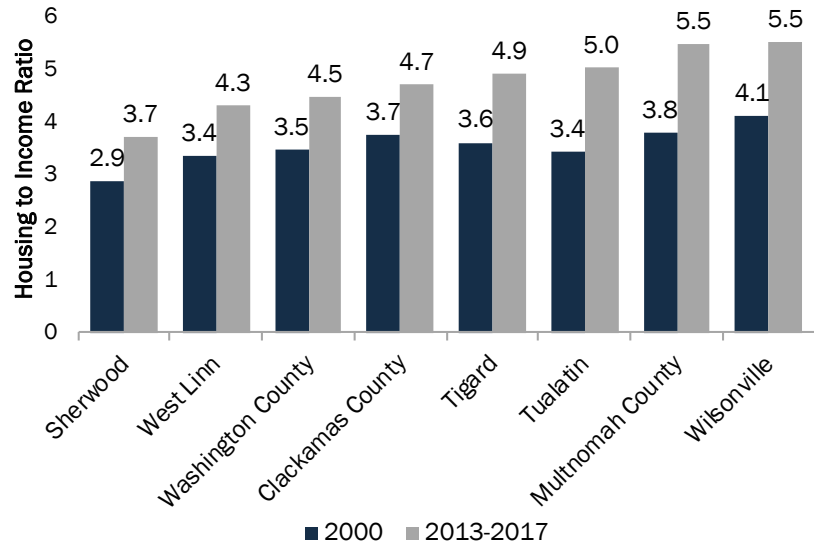
Since 2000, housing costs in Tualatin increased faster than incomes.

The household reported median value of a house in Tualatin was 3.4 times the median household income (MHI) in 2000 and 5.0 times MHI in 2016.

The decline of housing affordability was more extreme than in Washington County overall.

**Exhibit 65. Ratio of Median Housing Value to Median Household Income, Tualatin, Washington County, and Comparison Jurisdictions, 2000 to 2013–2017<sup>39</sup>**

Source: U.S. Census Bureau, 2000 Decennial Census, Tables HCT012 and H085, and 2012–2016 ACS, Tables B19013 and B25077.



<sup>39</sup> This ratio compares the median value of housing in Tualatin (and other places) to the median household income. Inflation-adjusted median owner values in Tualatin increased from \$282,532 in 2000 to \$365,700 in 2013–2017. Over the same period, inflation-adjusted median income decreased from \$82,488 to \$72,580.

## Rental Costs

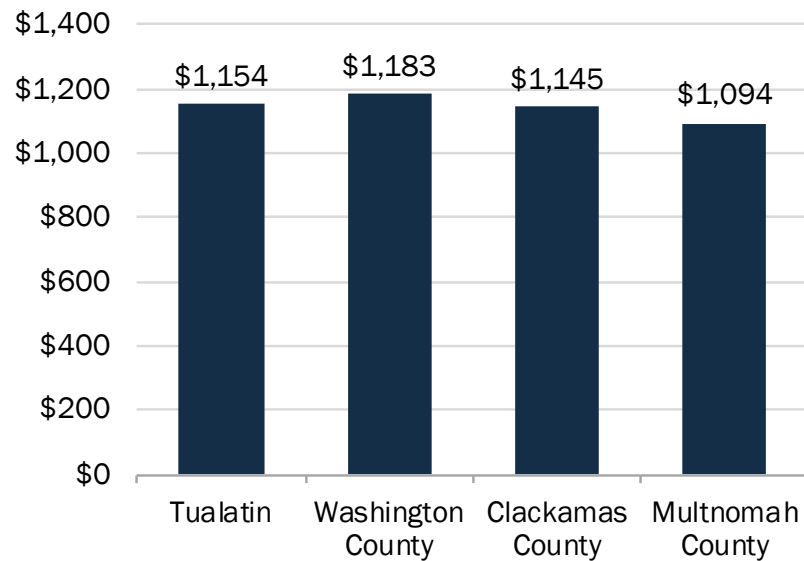
Median multifamily rents in Tualatin and Washington County are about \$1,200. The following charts show gross rent (which includes the cost of rent plus utilities) for Tualatin in comparison to Washington County and the Portland Region.

**The median gross rent in Tualatin was \$1,154 in the 2013-2017 period.**

Rent in Tualatin was comparable to that of comparison regions.

**Exhibit 66. Median Gross Rent, Tualatin, Washington County, Clackamas County, and Multnomah County, 2013-2017**

Source: U.S. Census Bureau, 2013-2017 ACS 5-year estimate, Table B25064.

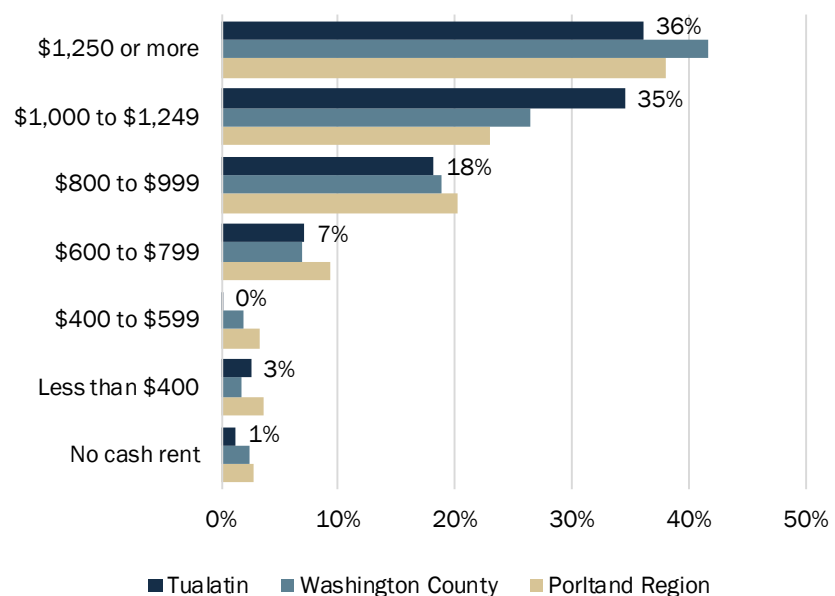


**Most renters in Tualatin paid more than \$1,000 per month in rent.**

About 36% of Tualatin's renters paid \$1,250 or more in gross rent per month, a smaller share than renters across Washington County (42%) and the Portland Region (38%).

**Exhibit 67. Gross Rent, Tualatin, Washington County, and Portland Region, 2013-2017**

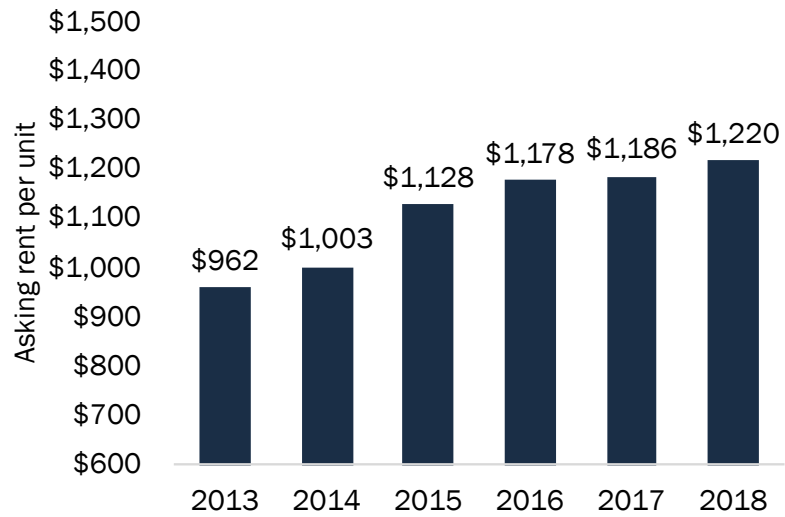
Source: U.S. Census Bureau, 2013-2017 ACS Table B25063.



Tualatin's average asking multifamily rent per unit increased by \$372, from \$848 in 2010 to \$1,220 in 2018.

**Exhibit 68. Average Asking Multifamily Rent Per Unit, Tualatin, 2013 through 2018**

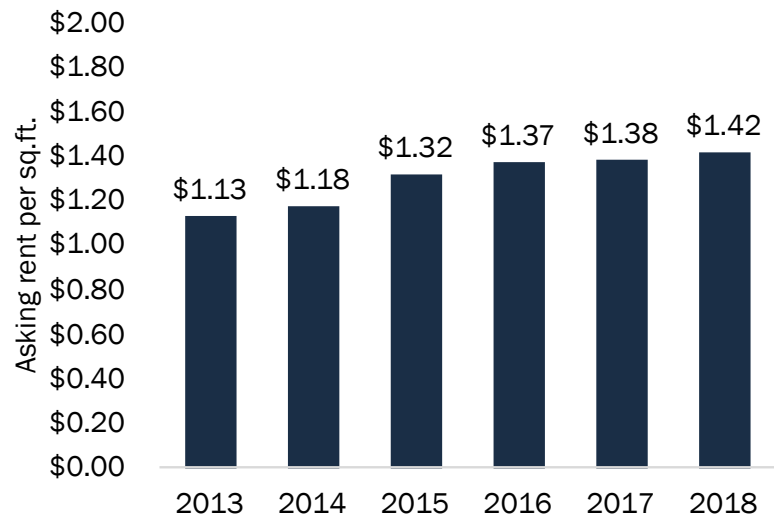
Source: CoStar.



Tualatin's average asking multifamily rent per square foot had increased since 2013.

**Exhibit 69. Average Asking Multifamily Rent per Square Foot, Tualatin, 2013 through 2018**

Source: CoStar.



## Housing Affordability

A typical standard used to determine housing affordability is that a household should pay no more than a certain percentage of household income for housing, including payments and interest or rent, utilities, and insurance. The Department of Housing and Urban Development’s guidelines indicate that households paying more than 30% of their income on housing experience “cost burden,” and households paying more than 50% of their income on housing experience “severe cost burden.” Using cost burden as an indicator is one method of determining how well a city is meeting the Goal 10 requirement to provide housing that is affordable to all households in a community.

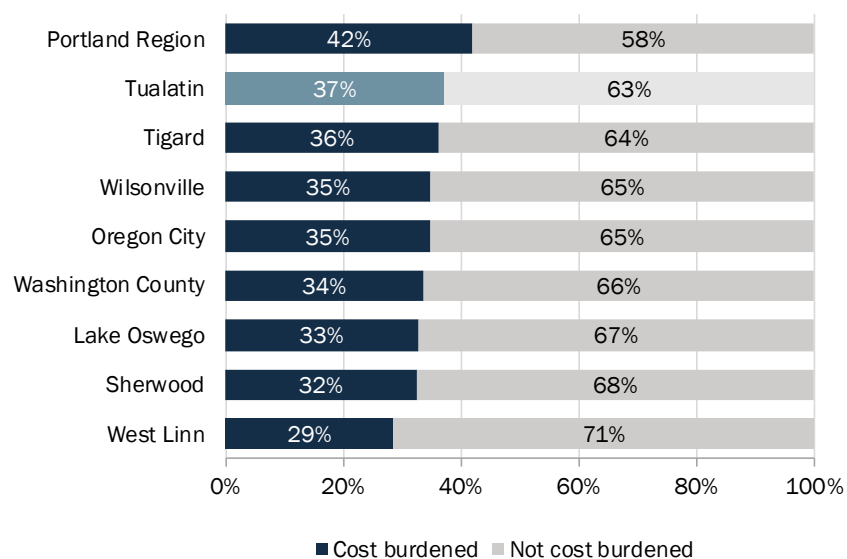
About 37% of Tualatin’s households (renters and homeowners) are cost burdened, of which 16% are severely cost burdened. About 56% of renter households (households who rent) are cost burdened, compared with 22% of homeowners (households who own their own home). Twenty-five percent of households in Tualatin are rent burdened households.<sup>40</sup> Overall, Tualatin has a slightly larger share of cost-burdened households than Washington County but a lower share of cost-burdened households than the Portland Region.

**Overall, about 37% of all households in Tualatin were cost burdened.**

In the 2013-2017 period, Tualatin had one of the highest rates of cost burdened households relative to other comparison areas.

**Exhibit 70. Housing Cost Burden, Tualatin, Washington County, and Comparison Areas, 2013-2017**

Source: U.S. Census Bureau, 2013-2017 ACS Tables B25091 and B25070.

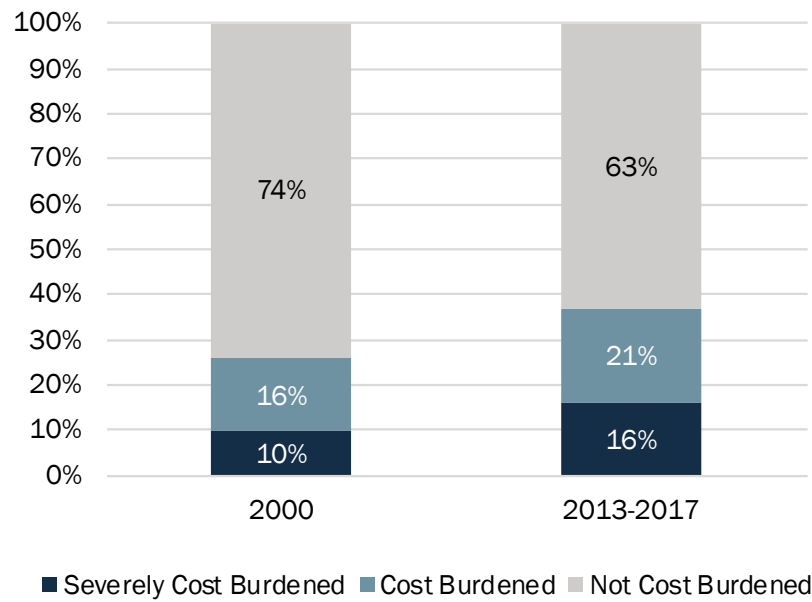


<sup>40</sup> Cities with populations >10,000 are required, per HB 4006, to assess “rent burden” if more than 50% of renters are cost burdened. In Tualatin as of the 2013-2017 period, 56% of total renter households were cost burdened. Upon further assessment, we find that a quarter (25%) of Tualatin’s households (renters and homeowners) were cost burdened renters (households that rent housing and pay more than 30% of their income on housing).

From 2000 to the 2013-2017 period, the share of cost burdened and severely cost burdened households in Tualatin grew by 11%.

**Exhibit 71. Change in Housing Cost Burden, Tualatin, 2000 to 2013-2017**

Source: U.S. Census Bureau, 2000 Decennial Census, Tables H069 and H094 and 2013-2017 ACS Tables B25091 and B25070.

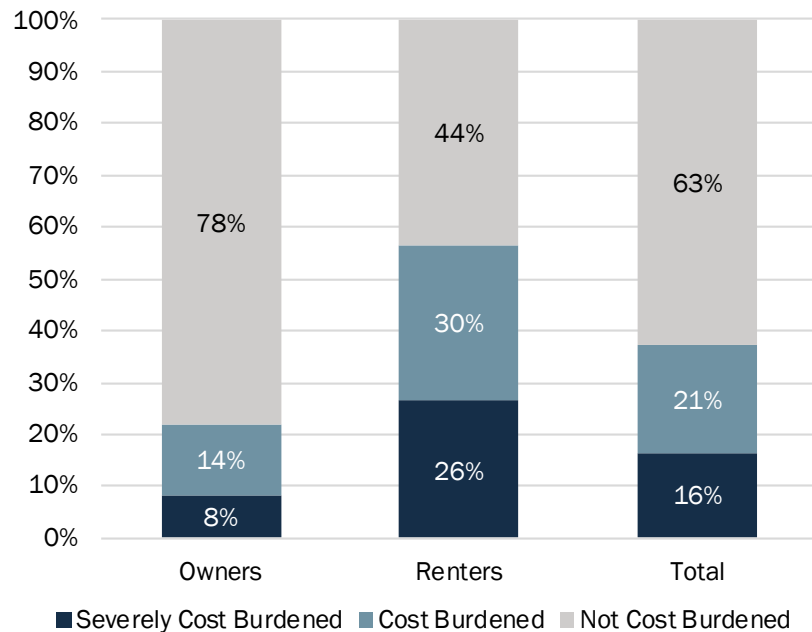


**Renters were more likely to be cost burdened than homeowners.**

In the 2013-2017 period, about 56% of Tualatin’s renters were cost burdened or severely cost burdened, compared to 22% of homeowners.

**Exhibit 72. Housing Cost Burden by Tenure, Tualatin, 2013-2017**

Source: U.S. Census Bureau, 2013-2017 ACS Tables B25091 and B25070.

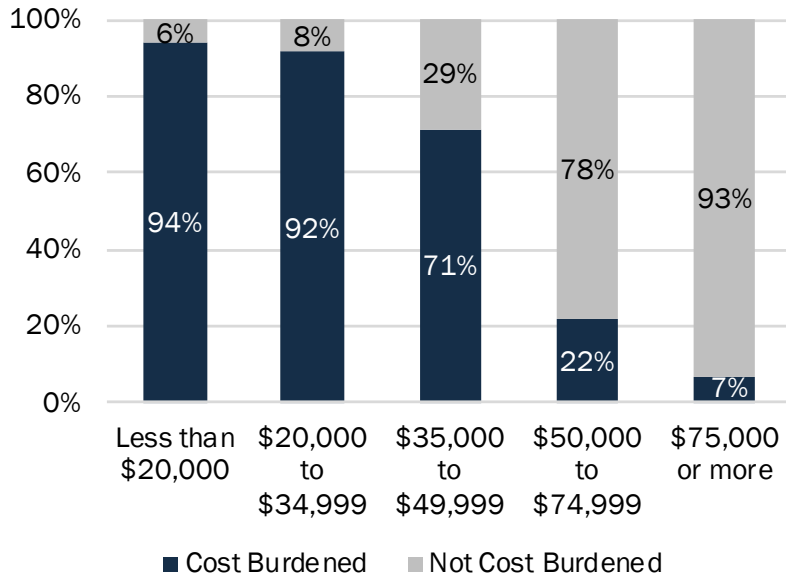


Nearly all renter households earning less than \$35,000 per year were cost burdened.

Most households earning between \$35,000 and \$50,000 per year were cost burdened.

**Exhibit 73. Cost Burdened Renter Households, by Household Income, Tualatin, 2013-2017**

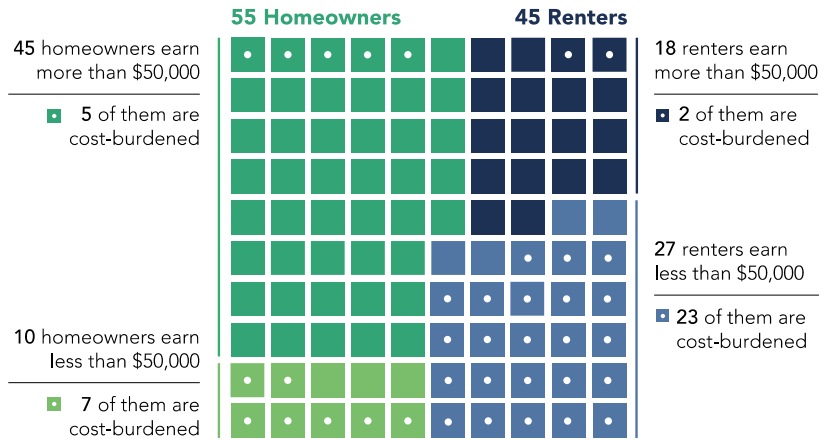
Source: U.S. Census Bureau, 2013-2017 ACS Table B25074.



If all of Tualatin's households were 100 residents, 27 households would be renters earning \$50,000 or less per year; 23 of these households (85%) would be cost burdened.

**Exhibit 74. Illustration of Cost Burden: If all of Tualatin's Households were 100 Residents**

Source: U.S. Census Bureau, 2013-2017 ACS Table S2503.





Another measure of cost burden is considering housing costs plus transportation costs. When examining housing and transportation cost burden, a household is considered cost burdened if they spend more than 45% of gross income on housing and transportation costs combined. Metro's 2014 *Metro Urban Growth Report* contains extensive documentation of housing and transportation cost burden.

**Tualatin residents spend between 34% and 40% of their income on housing plus transportation costs.**

Compared to the Metro Region, Tualatin residents spend a similar percentage of their income on housing and transportation costs.

**Exhibit 75. Average Cost of Transportation and Housing as a Percent of Income, Tualatin and the Metro Region, 2010 and 2035<sup>41</sup>**

Source: 2014 Metro Urban Growth Report, Appendix 12.

<b>2010</b>	<b>40%</b> \$2,541 per month Tualatin	<b>39%</b> \$2,300 per month Metro UGB
	<b>2035</b>	<b>34%</b> \$2,723 per month Tualatin

**Using Metro's definition for cost burdened, about 15% of households in Tualatin are forecast to be cost burdened by 2035, comparable with the region.**

**Exhibit 76. Percent of Households with Housing and Transportation Cost Burden, Tualatin and the Metro Region, 2010 and 2035**

Source: 2015 Metro Urban Growth Report, Appendix 12.

<b>2010</b>	<b>20%</b> 2,046 households Tualatin	<b>17%</b> 104,100 households Metro UGB
	<b>2035</b>	<b>15%</b> 1,838 households Tualatin

<sup>41</sup> 2035 estimates use Metro's Medium Growth forecast.

While cost burden is a common measure of housing affordability, it does have some limitations. Two important limitations are:

- A household is defined as cost burdened if the housing costs exceed 30% of their income, regardless of actual income. The remaining 70% of income is expected to be spent on non-discretionary expenses, such as food or medical care, and on discretionary expenses. Households with higher incomes may be able to pay more than 30% of their income on housing without impacting the household’s ability to pay for necessary non-discretionary expenses.
- Cost burden compares income to housing costs and does not account for accumulated wealth. As a result, the estimate of how much a household can afford to pay for housing does not include the impact of a household’s accumulated wealth. For example, a household of retired people may have relatively low income but may have accumulated assets (such as profits from selling another house) that allow them to purchase a house that would be considered unaffordable to them based on the cost burden indicator.

Another way of exploring the issue of financial need is to review housing affordability at varying levels of household income.

**Fair Market Rent for a 2-bedroom apartment in Washington County was \$1,330 in 2018.**

**Exhibit 77. HUD Fair Market Rent (FMR) by Unit Type, Washington County, 2018**

Source: U.S. Department of Housing and Urban Development.

<b>\$1,026</b>	<b>\$1,132</b>	<b>\$1,330</b>	<b>\$1,935</b>	<b>\$2,343</b>
Studio	1-Bedroom	2-Bedroom	3-Bedroom	4-Bedroom

**A household must earn at least \$25.58 per hour to afford a two-bedroom unit at Fair Market Rent (\$1,330) in Washington County.**

**Exhibit 78. Affordable Housing Wage, Washington County, 2018**

Source: U.S. Department of Housing and Urban Development; Oregon Bureau of Labor and Industries.

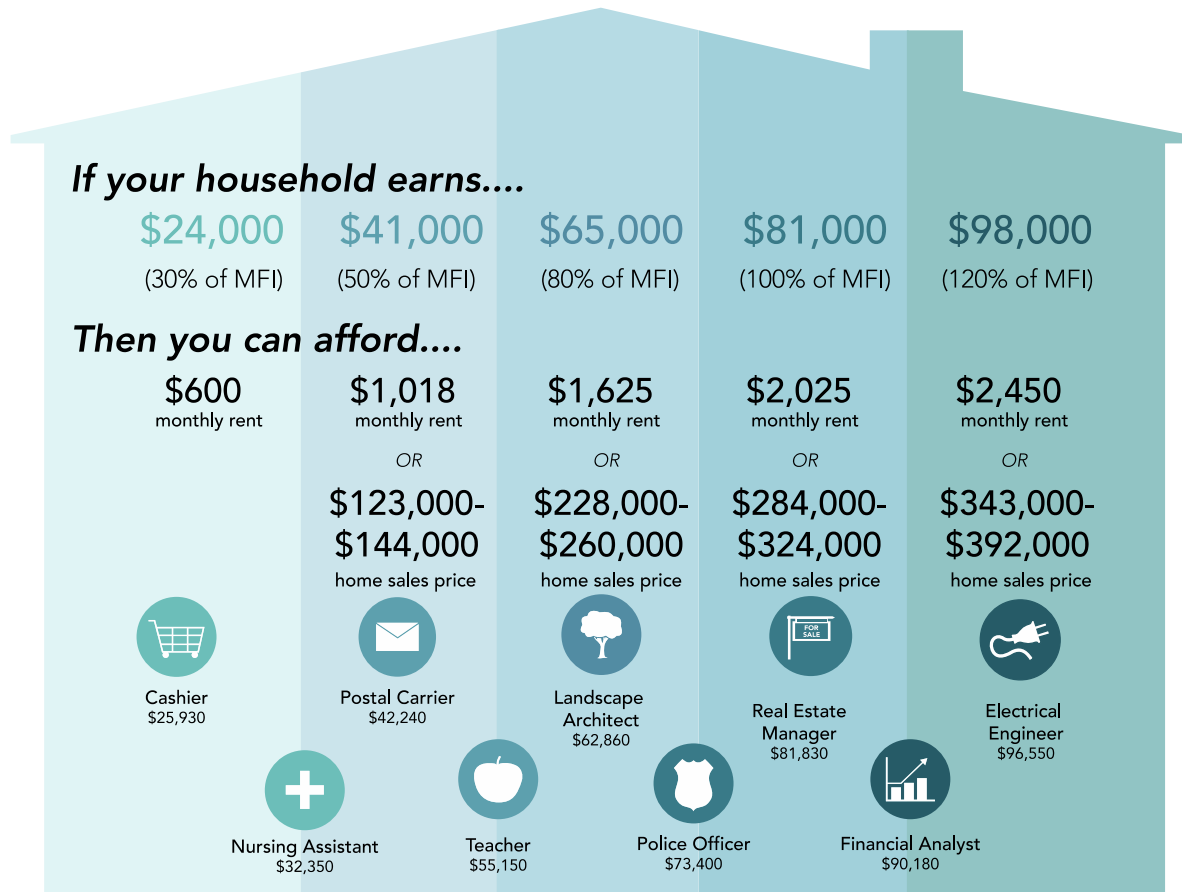
**\$25.58 per hour**

Affordable Housing Wage for two-bedroom Unit in Washington County

Illustrated in Exhibit 79, a household earning median family income in Washington County (about \$81,000 per year) can afford a monthly rent of about \$2,025 or a home roughly valued between \$284,000 and \$324,000.

**Exhibit 79. Financially Attainable Housing, by Median Family Income (MFI) for Washington County (\$81,400), Tualatin, 2018**

Source: U.S. Department of Housing and Urban Development, Washington, 2018. Bureau of Labor Services, 2017, for Portland MSA.



About 26% of Tualatin's households had incomes less than \$41,000 and cannot afford a two-bedroom apartment at Washington County's Fair Market Rent (FMR) of \$1,330.

**Exhibit 80. Share of Households, by Median Family Income (MFI) for Washington County (\$81,400), Tualatin, 2018**

Source: U.S. Department of Housing and Urban Development, Washington County, 2018. U.S. Census Bureau, 2013-2017 ACS Table 19001.

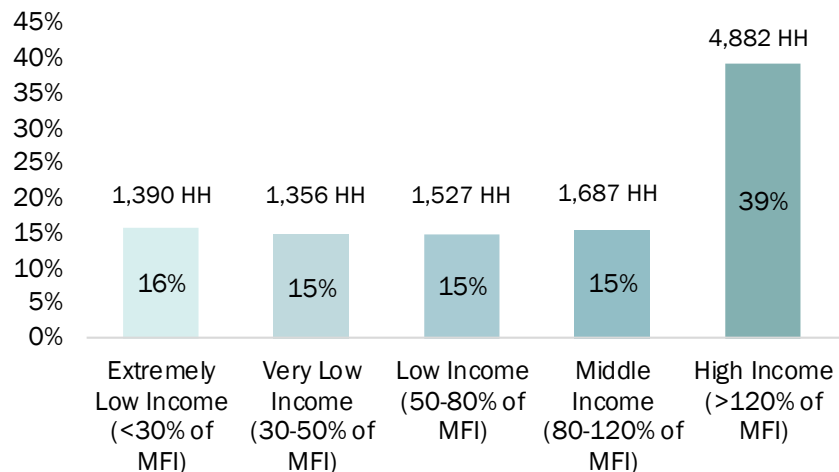
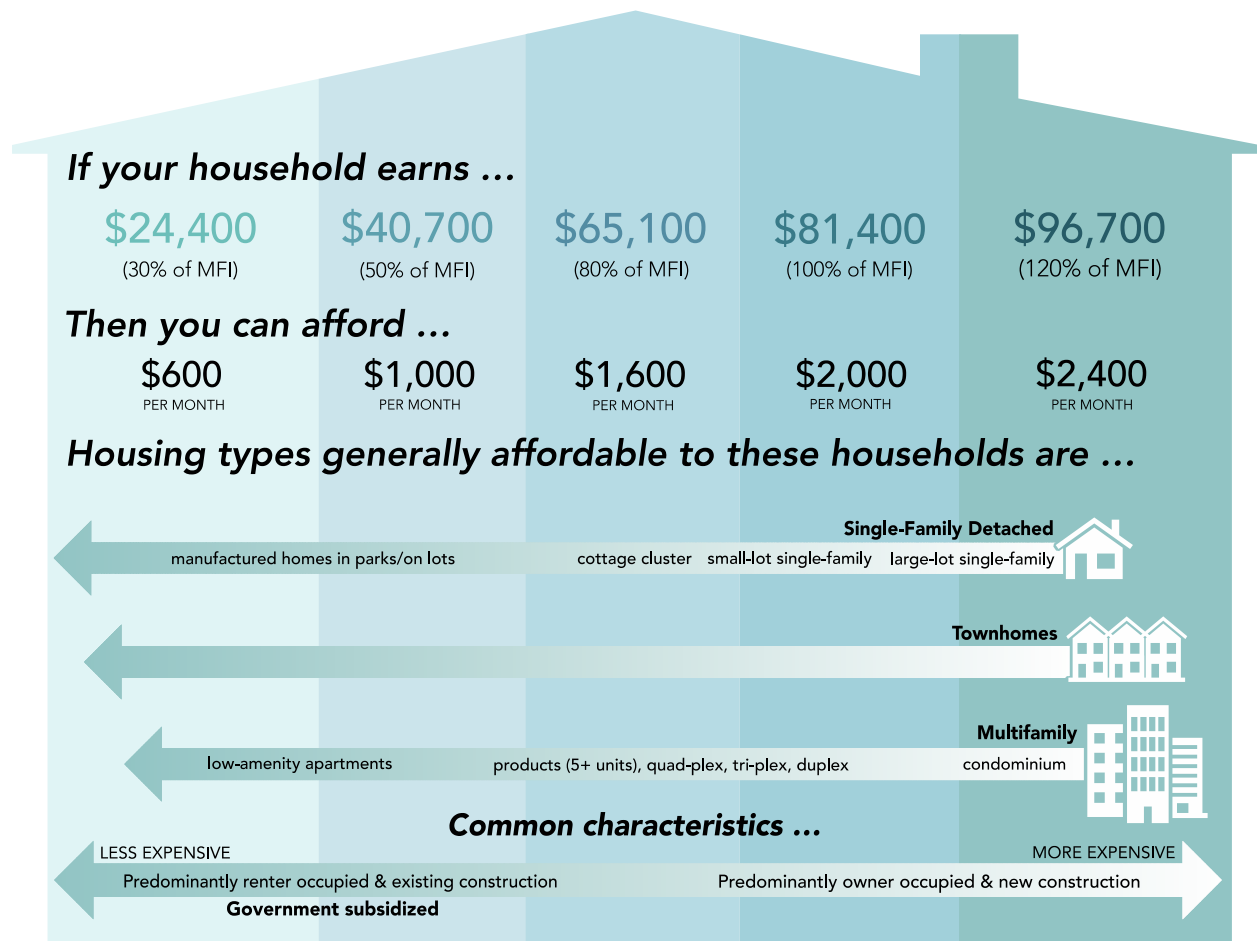


Exhibit 81 illustrates the types of financially attainable housing by income level in Washington County. Generally speaking, lower-income households will be renters occupying existing housing. Newly built housing will be a combination of renters (most likely in multifamily housing) and homeowners. The types of housing affordable for the lowest income households is limited to subsidized housing, manufactured housing, lower-cost single-family housing, and multifamily housing (apartments). The range of financially attainable housing increases with increased income.

**Exhibit 81. Types of Financially Attainable Housing by Median Family Income (MFI) for Washington County (\$81,400), Tualatin, 2018**

Source: U.S. Department of Housing and Urban Development, Washington County, 2018.



While Exhibit 63 presented a distribution of home sale prices in Tualatin from homes sold in 2017–2018, Exhibit 82 presents a distribution of home sale prices by affordability range for Tualatin in 2016–2018. Most housing sold in Tualatin in 2016, 2017, 2018 these years were affordable to households earning between 150% and 200% of the Median Family Income (MFI), or a household income of about \$122,100 to \$162,800. If housing prices continue to rise as they have in Exhibit 82, Tualatin may need to consider policies to support development of housing affordable for homeownership for households earning 80% to 150% of MFI, such as allowing smaller lot and smaller unit single-family detached housing or townhouses or policies to lower the costs of housing development such as SDC waivers or other financial support for development of housing affordable for homeownership.

**Exhibit 82. Distribution of Home Sale Prices by Affordability Range, Tualatin, 2016, 2017, 2018**

Source: RLIS. Note: 2018 data is through September 2018.

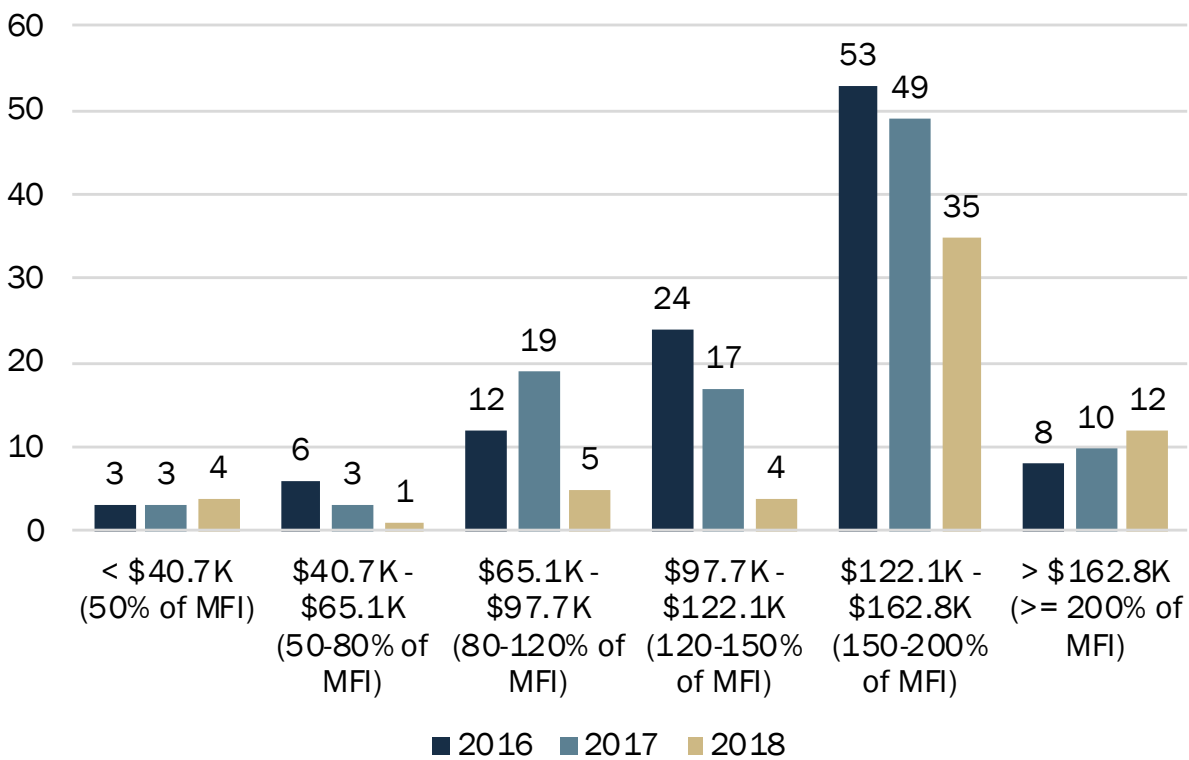
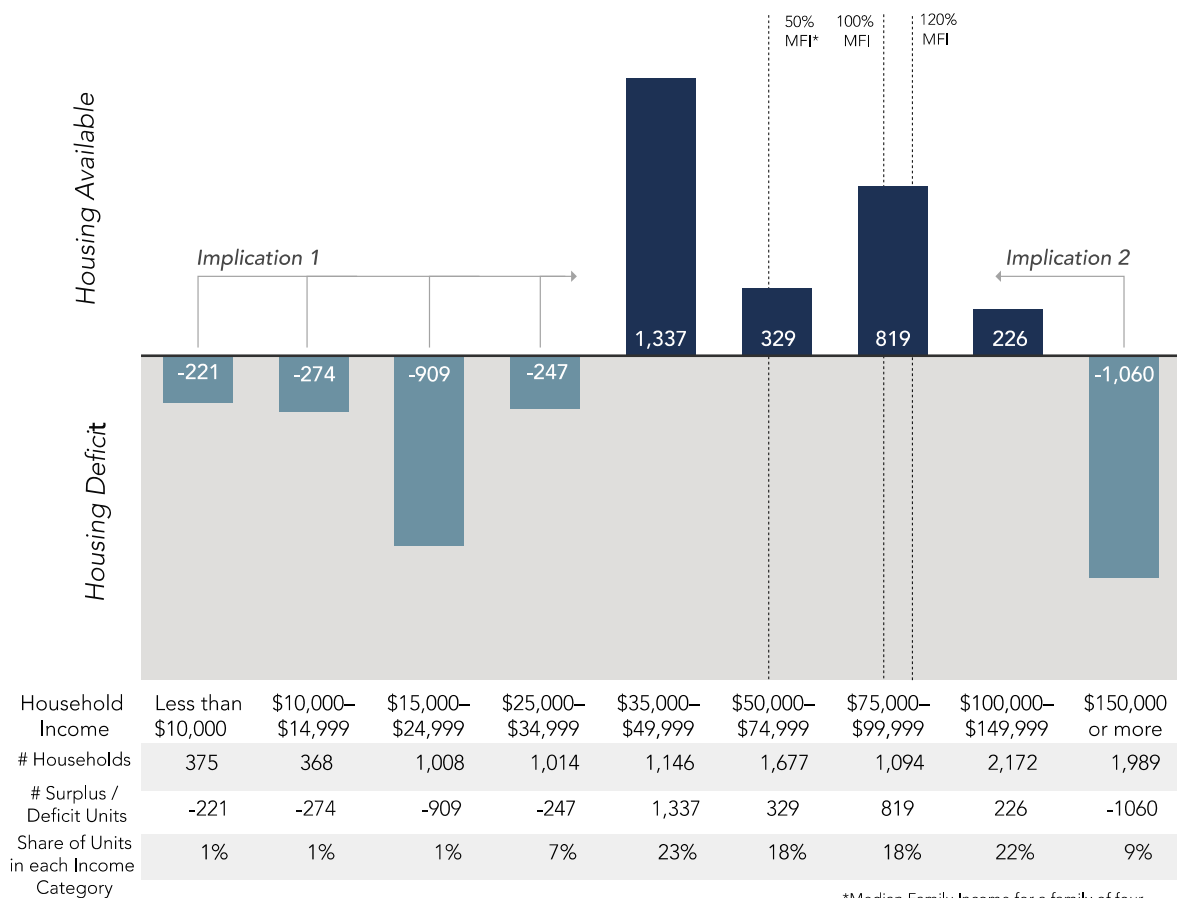


Exhibit 83 compares the number of households by income with the number of units affordable to those households in Tualatin. Tualatin currently has a deficit of housing affordable to households earning less than \$35,000. The types of housing that Tualatin has a deficit of are more affordable housing types such as: government-subsidized housing, multifamily products, and more affordable single-family homes (e.g. tiny homes, cottages, manufactured housing). Tualatin also shows a need for higher amenity housing types for households earning more than \$150,000 per year or more. Higher amenity housing types include single-family detached housing, single-family attached housing (e.g. townhomes and rowhouses), and higher-end multifamily products (including condominiums).

### Exhibit 83. Affordable Housing Costs and Units by Income Level, Tualatin, 2018

Source: U.S. Census Bureau, 2013-2017 ACS. Note: MFI is Median Family Income, determined by HUD for the Portland MSA. Portland MSA's MFI in 2018 was \$81,400.



\*Median Family Income for a family of four.

#### Implication 1

Some lower-income households live in housing that is more expensive than they can afford because affordable housing is not available. These households are cost burdened.

#### Implication 2

Some higher-income households choose housing that costs less than they can afford. This may be the result of the household's preference or it may be the result of a lack of higher-cost and higher-amenity housing that would better suit their preferences.

Exhibit 58 shows that 7% of the people who work in Tualatin also live in Tualatin. One of the key questions for Tualatin is whether people who work at businesses in Tualatin can afford housing in Tualatin.

Tualatin has 0.7 residents for every job (Exhibit 84).<sup>42</sup> In comparison, Washington County has 1.6 residents for every job and the Portland Region (Clackamas, Multnomah, and Washington County) has 1.4 residents for every job. The large number of jobs relative to the number of residents in Tualatin was an important part of the discussion in the development of the Housing Needs Analysis, with concerns focusing on the impacts of commuting on Tualatin’s transportation system and negative impacts on quality of life in Tualatin (such as heavy traffic congestion).

**Tualatin has more jobs per capita than Washington County and the Portland Region.**

**Exhibit 84. Ratio of Residents to Jobs, Tualatin, 2017**

Source: Bureau of Labor Services, Quarterly Census of Employment and Wages.

	Employees	Residents	Residents for every Job
<b>Tualatin</b>	<b>38,838</b>	<b>26,960</b>	<b>0.7</b>
<b>Washington County</b>	<b>595,860</b>	<b>337,127</b>	<b>1.6</b>
<b>Portland Region</b>	<b>1,811,860</b>	<b>1,259,773</b>	<b>1.4</b>

Exhibit 85 shows affordable housing costs for workers at businesses in Tualatin. For example, a household with one individual employed in furniture manufacturing (earning about \$39,000 per year) can afford neither the average multifamily rents in Tualatin (\$1,220 per month) nor the median housing sale price in Tualatin (about \$480,000 as of February 2019) is affordable.

However, Exhibit 85 reflects housing affordability costs for one worker per household. This analysis recognizes that most multi-person households have more than one person employed, and many have dual incomes. According to Census and Oregon Employment Department data, Washington County and Tualatin both have about 1.4 jobs per household, including both full-time and part-time jobs. This shows that most multi-person households in Tualatin have more than one worker. **It is not necessarily reasonable to expect one worker to be able to afford housing costs in Tualatin alone (or any other city in the Portland region), given the prevalence of dual-income households.**

<sup>42</sup> Ratios rely on population estimates from Portland State University’s Population Research Center (2017) and Bureau of Economic Analysis (2017).

### Exhibit 85. Housing affordability for workers at existing jobs in Tualatin, 2017

Source: Oregon Employment Department. Note: Average multifamily rent in Tualatin is \$1,220 (Costar, 2018) and median housing price is \$480,000 (Redfin, February 2019).

Industry / Sector	Average Wage per Employee (Tualatin)	Affordable Average Monthly Rent	Can a person in this industry afford average multifamily rent in Tualatin?	Affordable Housing Price (Approximate)	Can a person in this industry afford the median housing price in Tualatin?
Agriculture, Forestry, & Mining	\$58,960	\$1,474	Yes	\$206,359	No
Construction	\$67,726	\$1,693	Yes	\$237,039	No
Manufacturing (Mfg.)	\$76,654	\$1,916	Yes	\$268,287	No
Food, Beverage, & Apparel Mfg.	\$105,489	\$2,637	Yes	\$369,211	No
Wood, Paper, & Material Product Mfg.	\$55,784	\$1,395	Yes	\$195,242	No
Metal Mfg.	\$51,311	\$1,283	Yes	\$179,587	No
Machinery Mfg.	\$105,837	\$2,646	Yes	\$370,430	No
Computer & Electronic Product Mfg.	\$60,545	\$1,514	Yes	\$211,908	No
Electrical Equipment, Appliance, & Component Mfg.	\$70,665	\$1,767	Yes	\$247,328	No
Transportation Equipment Mfg.	\$69,047	\$1,726	Yes	\$241,665	No
Furniture & Related Product Mfg.	\$39,324	\$983	No	\$137,634	No
Miscellaneous Mfg.	\$59,538	\$1,488	Yes	\$208,384	No
Wholesale Trade	\$60,767	\$1,519	Yes	\$212,683	No
Retail Trade	\$28,260	\$707	No	\$98,911	No
Transportation, Warehousing & Utilities	\$61,459	\$1,536	Yes	\$215,108	No
Information	\$93,233	\$2,331	Yes	\$326,315	No
Finance & Insurance	\$79,155	\$1,979	Yes	\$277,042	No
Real Estate, Rental & Leasing	\$52,102	\$1,303	Yes	\$182,357	No
Professional, Scientific, & Technical Services	\$66,277	\$1,657	Yes	\$231,969	No
Management of Companies & Enterprises	\$73,374	\$1,834	Yes	\$256,808	No
Administrative & Waste Management Services	\$34,561	\$864	No	\$120,964	No
Private Educational Services	\$24,952	\$624	No	\$87,334	No
Health Care & Social Assistance	\$62,746	\$1,569	Yes	\$219,610	No
Arts, Entertainment, & Recreation	\$18,144	\$454	No	\$63,504	No
Accommodation & Food Services	\$20,334	\$508	No	\$71,170	No
Other Services, Except Public Administration	\$40,441	\$1,011	No	\$141,543	No
Government	\$55,058	\$1,376	Yes	\$192,703	No

Exhibit 86 displays housing affordability of workers in Tualatin’s current target industries. Tualatin’s target industries were identified in their Economic Opportunities Analysis (2019). These industries may change as the Economic Opportunities Analysis is revised.



## Exhibit 86. Housing Affordability for workers at target industries in Washington County, 2017

Source: Oregon Employment Department. Note1: Average multifamily rent in Tualatin is \$1,220 (Costar, 2018) and median housing price is \$480,000 (Redfin, February 2019). Note2: Advanced manufacturing uses the average wage for all manufacturing subsectors and Distribution and Electric Commerce uses the average wage for the transportation, warehousing, and utilities sector.

Industry / Sector	Average Wage per Employee (Washington County)	Affordable Average Monthly Rent	Can a person in this industry afford average multifamily rent in Tualatin?	Affordable Housing Price	Can a person in this industry afford the median housing price in Tualatin?
Food Processing & Manufacturing	\$66,166	\$1,654	Yes	\$231,581	No
Furniture Manufacturing	\$44,797	\$1,120	No	\$156,790	No
Plastics Manufacturing	\$50,725	\$1,268	Yes	\$177,538	No
Information Technology & Analytical Instruments	\$95,907	\$2,398	Yes	\$335,675	No
Distribution and Electronic Commerce	\$50,314	\$1,258	Yes	\$176,099	No
Advanced Manufacturing	\$110,756	\$2,769	Yes	\$387,646	No
Business Services	\$89,380	\$2,235	Yes	\$312,830	No

## Summary of the Factors Affecting Tualatin's Housing Needs

The purpose of the analysis thus far has been to provide background on the kinds of factors that influence housing choice. While the number and interrelationships among these factors ensure that generalizations about housing choice are difficult to make and prone to inaccuracies, it is a crucial step to informing the types of housing that will be needed in the future.

There is no question that age affects housing type and tenure. Mobility, the ability to move freely and easily from one community to another, is substantially higher for people aged 20 to 34. People in that age group will also have, on average, less income than people who are older and they are less likely to have children. These factors mean that younger households are much more likely to be renters, and renters are more likely to be in multifamily housing.

The data illustrates what more detailed research has shown and what most people understand intuitively: life cycle and housing choice interact in ways that are predictable in the aggregate; age of the household head is correlated with household size and income; household size and age of household head affect housing preferences; and income affects the ability of a household to afford a preferred housing type. The connection between socioeconomic and demographic factors and housing choice is often described informally by giving names to households with certain combinations of characteristics: the "traditional family," the "never-marrieds," the "dinks" (dual-income, no kids), and the "empty-nesters."<sup>43</sup> Thus, simply looking at the long wave of demographic trends can provide good information for estimating future housing demand.

<sup>43</sup> See *Planning for Residential Growth: A Workbook for Oregon's Urban Areas* (June 1997).

Still, one is ultimately left with the need to make a qualitative assessment of the future housing market. The following is a discussion of how demographic and housing trends are likely to affect housing in Tualatin over the next 20 years:

- **Growth in housing will be driven by growth in households.** Households in Tualatin’s city limits are forecast to grow from 10,791 households to 11,362 households, an increase of 571 households between 2020 and 2040.<sup>44</sup> In that same time, households in Basalt Creek are forecast to grow from 203 households to 646 households, an increase of 443 households. Together, Tualatin city limits and Basalt Creek will grow by 1,014 households between 2020 and 2040. Tualatin is planning for 1,014 new dwelling units to meet the needs of its forecasted new households.
- **Housing affordability is a growing challenge in Tualatin.** It is a challenge in most of the region in general, and Tualatin is affected by these regional trends. Housing prices are increasing faster than incomes in Tualatin and Washington County, which is consistent with state and national challenges. Tualatin has a large share of multifamily housing (about 41% of the City’s housing stock), but over half of renter households are cost burdened. Tualatin’s key challenge over the next 20 years is providing opportunities for development of relatively affordable housing of all types, such as lower-cost single-family housing, townhouses and duplexes, market-rate multifamily housing, and government-subsidized affordable housing.
- **Without substantial changes in housing policy, on average, future housing will look a lot like past housing.** That is the assumption that underlies any trend forecast, and one that is important when trying to address demand for new housing.

The City’s residential policies can impact the amount of change in Tualatin’s housing market, to some degree. If the City adopts policies to increase opportunities to build smaller-scale single-family and multifamily housing types (particularly single-family attached that is comparatively affordable to moderate-income households), a larger percentage of new housing developed over the next 20 years in Tualatin may begin to address the city’s needs. Examples of policies that the City could adopt to achieve this outcome include: allowing a wider range of housing types (e.g., duplex or townhouses) in single-family zones, ensuring that there is sufficient land zoned to allow single-family attached and multifamily housing development, supporting development of government-assisted affordable housing, and encouraging multifamily residential development in downtown. The degree of change in Tualatin’s housing market, however, will depend on market demand for these types of housing in Washington County.

- **If the future differs from the past, it is likely to move in the direction, on average, of smaller units and more diverse housing types.** Most of the evidence suggests that the bulk of the change will be in the direction of smaller average house and lot sizes for

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<sup>44</sup> This forecast is based on Metro’s 2040 *Population Distributed Forecast* (2016) for Tualatin from 2015 (extrapolated to 2020) to 2040 period, shown in Exhibit 31.

single-family housing. This includes providing opportunities for development of smaller single-family detached homes, townhomes, and multifamily housing.

Key demographic and economic trends that will affect Tualatin's future housing needs are: (1) the aging of the Baby Boomers, (2) the aging of the Millennials, and (3) the continued growth in Latinx population.

- *The Baby Boomer's population is continuing to age.* By 2040, people 60 years and older will account for 24% of the population in Washington County (up from 20% in 2020). The changes that affect Tualatin's housing demand as the population ages are that household sizes and homeownership rates decrease. The majority of Baby Boomers are expected to remain in their homes as long as possible, downsizing or moving when illness or other issues cause them to move. Demand for specialized senior housing, such as age-restricted housing or housing in a continuum of care from independent living to nursing home care, may grow in Tualatin.
- *Millennials will continue to form households and make a variety of housing choices.* As Millennials age and form households, generally speaking, their household sizes will increase, and their homeownership rates will peak by about age 55. Between 2020 and 2040, Millennials (and the generation after) will be a key driver in demand for housing for families with children. The ability to attract Millennials will depend on the City's availability of affordable renter and ownership housing. It will also depend on the location of new housing in Tualatin as many Millennials prefer to live in more urban environments.<sup>45</sup> The decline in homeownership among the Millennial generation has more to do with financial barriers rather than the preference to rent.<sup>46</sup>
- *Latinx population will continue to grow.* The U.S. Census projects that by about 2040, the Latinx population will account for one-quarter of the nation's population. The share of Latinx population in the Western U.S. is likely to be higher. The Latinx population currently accounts for about 16% of Tualatin's population. In addition, the Latinx population is generally younger than the U.S. average, with many Latinx people belonging to the Millennial generation.

The Latinx population growth will be an important driver in growth of housing demand, both for owner- and renter-occupied housing. Growth in the Latinx population will drive demand for housing for families with children. Given the lower income for Latinx households, especially first-generation immigrants,

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<sup>45</sup> Choi, Hyun June; Zhu, Jun; Goodman, Laurie; Ganesh, Bhargavi; Strohach, Sarah. (2018). Millennial Homeownership, Why is it So Low, and How Can We Increase It? Urban Institute. [https://www.urban.org/research/publication/millennial-homeownership/view/full\\_report](https://www.urban.org/research/publication/millennial-homeownership/view/full_report)

<sup>46</sup> Ibid.

growth in this group will also drive demand for affordable housing, both for ownership and renting.<sup>47</sup>

In summary, an aging population, increasing housing costs (although lower than the Region), housing affordability concerns for Millennials and the Latinx populations, and other variables are factors that support the conclusion of need for a broader array of housing choices. Growth of retirees will drive demand for small single-family detached houses and townhomes for homeownership, townhome and multifamily rentals, age-restricted housing, and assisted-living facilities. Growth in Millennials and Latinx populations will drive demand for affordable housing types, including demand for affordable single-family units (many of which may be ownership units), for affordable multifamily units (many of which may be rental units), and for dwellings with a larger number of bedrooms.

- **No amount of analysis is likely to make the distant future completely certain: the purpose of the housing forecasting in this study is to get an approximate idea about the future (so policy choices can be made today).** Economic forecasters regard any economic forecast more than three (or at most five) years out as highly speculative. At one year, one is protected from being disastrously wrong by the sheer inertia of the economic machine. A variety of factors or events could, however, cause growth forecasts to be substantially different.

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<sup>47</sup> The following articles describe housing preferences and household income trends for Latinx families, including differences in income levels for first, second, and third generation households. In short, Latinx households have lower median incomes than the national averages. First and second generation Latinx households have median incomes below the average for all Latinx households. Latinx households have a strong preference for homeownership, but availability of mortgages and availability of affordable housing are key barriers to homeownership for this group.

Pew Research Center. *Second-Generation Americans: A Portrait of the Adult Children of Immigrants*, February 7, 2012.

National Association of Hispanic Real Estate Professionals. *2014 State of Hispanic Homeownership Report*, 2014.

# 5. Housing Need in Tualatin

## Project New Housing Units Needed in the Next 20 Years

The results of the housing needs analysis are based on: (1) Metro’s official household forecast for growth in Tualatin over the 20-year planning period, (2) information about Tualatin’s housing market relative to Washington County and the Portland Region, and (3) the demographic composition of Tualatin’s existing population and expected long-term changes in the demographics of Washington County.

### Forecast for Housing Growth

A 20-year household forecast (in this instance for 2020 to 2040) is the foundation for estimating needed new dwelling units. The forecast for Tualatin is based on Metro’s 2040 Household Distributed Forecast, 2016 and Metro’s 2040 TAZ Forecast for households, 2015. Tualatin city limits will grow from 10,994 households in 2020<sup>48</sup> to 12,008 households in 2040, an increase of 1,014 households.<sup>49</sup>

To accommodate new households, Exhibit 87 shows that Tualatin will have demand for 1,014 new dwelling units over the 20-year period, with an annual average of 51 dwelling units.

#### Exhibit 87. Forecast of demand for new dwelling units, Tualatin Planning Area (city limits and Basalt Creek), 2020 to 2040

Source: Metro’s 2040 Household Distributed Forecast, July 12, 2016. Metro’s 2040 TAZ Forecast for households, November 6, 2015. Calculations by ECONorthwest. Note: DU is dwelling unit.

Variable	New DU City Limits	New DU Basalt Creek	New DU Tualatin Planning Area
Household Forecast 2020	10,791	203	10,994
Household Forecast 2040	11,362	646	12,008
<b>Total New Dwelling Units (2020-2040)</b>	<b>571</b>	<b>443</b>	<b>1,014</b>
<b>Annual Average of New Dwelling Units</b>	<b>29</b>	<b>22</b>	<b>51</b>

<sup>48</sup> Metro’s 2040 Household Distributed Forecast shows that in 2015, the Tualatin city limits had 10,653 households. The Metro forecast shows Tualatin growing to 11,362 households in 2040, an average annual growth rate of 0.26% for the 25-year period. Using this growth rate, ECONorthwest extrapolated the forecast to 2020 (10,791 households).

In addition, ECONorthwest included the forecast for new households in the Basalt Creek Planning Area. The forecast for households in Basalt Creek derive from Metro’s 2040 TAZ Forecast for households (TAZ 980 and 981). The Metro forecast shows Basalt Creek growing to 646 households in 2040, an average annual growth rate of 5.96% for the 25-year period. Using this growth rate, ECONorthwest extrapolated the forecast from 2015 (152 households) to 2020 (203 households).

<sup>49</sup> This forecast is based on Tualatin city limits’ official household forecast from Metro for the 2020 to 2040 period.

## Housing Units Needed Over the Next 20 Years

Exhibit 87 presents a forecast of new housing in Tualatin for the 2020 to 2040 period. This section determines the needed mix and density for the development of new housing developed over this 20-year period in Tualatin.

Exhibit 89 shows that over the next 20-years, the need for new housing developed in Tualatin will generally include a wider range of housing types across the affordability spectrum. This conclusion is consistent with housing need in other in the Portland Region and most cities across the State. This conclusion is based on the following information, found in Chapter 3 and 4 of this report.

- Tualatin's housing mix is predominately single-family detached and multifamily. In the 2013-2017 period, 53% of Tualatin's housing was single-family detached, 41% was multifamily, and 6% was single-family attached. In comparison, the mix of housing for the entire Portland Region was 63% single-family detached, 32% multifamily, and 5% single-family attached.
- Demographic changes across the Portland Region (and in Tualatin) suggest increases in demand for single-family attached housing and multifamily housing. The key demographic trends that will affect Tualatin's future housing needs are the aging of the Baby Boomers, household formation of Millennial households, and growth of Latinx households.
- Tualatin households have incomes about the same as those for the Portland Region. Tualatin's median household income was \$72,580, about \$1,500 lower than Washington County's median. Approximately 36% of Tualatin households earn less than \$50,000 per year, compared to 33% in Washington County and 37% in the Portland Region.
- About 37% of Tualatin's households are cost burdened (paying 30% or more of their household income on housing costs), compared to 42% of households in the Portland Region and 34% in Washington County.<sup>50</sup> About 56% of Tualatin's renters are cost burdened and about 22% of Tualatin's homeowners are cost burdened.
- About 45% of Tualatin's households are renters, 82% of whom live in multifamily housing. Median rents in Tualatin are \$1,154 per month, compared to the \$1,183 median rent for Washington County as a whole.

A household earning 60% of Tualatin's median household income (\$43,548) could afford about \$1,089 per month in rent. A household with median income in Tualatin (\$72,580) could afford \$1,815 rent per month, compared with the median gross rent of \$1,154. About 41% of Tualatin's housing stock is multifamily, compared to 32% of the housing in the Portland Region.

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<sup>50</sup> The Department of Housing and Urban Development's guidelines indicate that households paying more than 30% of their income on housing experience "cost burden," and households paying more than 50% of their income on housing experience "severe cost burden."

- Housing sales prices increased in Tualatin over the last four years. From February 2015 to February 2019, the median housing sale price increased by \$160,000 (50%), from \$320,000 to \$480,000. A household would need to earn \$120,000 to \$160,000 to afford the median sales price in Tualatin. About 36% of Tualatin's households have incomes at or above this amount.
- Tualatin needs more affordable housing types for homeowners and renters. A household earning 100% of Tualatin's median household income of \$72,580 could afford about \$1,815 per month in rent, compared with the median gross rent of about \$1,154. This household could afford to own a home roughly valued between \$254,000 and \$290,000, which is less than the median home sales price of about \$480,000 in Tualatin.<sup>51</sup>

While a household could begin to afford Tualatin's median rents at about 65% of Tualatin's median household income, the rates of cost burden among renters suggest that Tualatin does not have a sufficient number of affordable rental units. A household can start to afford median home sale prices at about 190% of Tualatin's median household income.

These factors suggest that Tualatin needs a broader range of housing types with a wider range of price points than are currently available in Tualatin's housing stock. This includes providing opportunity for development of housing types such as: single-family detached housing (e.g., small homes like cottages or small-lot detached units, traditional detached homes, and high-amenity detached homes), townhouses, and multifamily products (duplexes, triplexes, quadplexes, and apartments and condominiums).

Tualatin evaluated several scenarios to forecast housing growth (Exhibit 88). The scenario selected, and described below, was a combination between Scenario 2 and Scenario 3 (referred to here as Scenario 4). Scenario 4 was 40% single-family detached, 15% multifamily, and 45% multifamily.

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<sup>51</sup> In 2016, 2017, and 2018, 19 homes in Tualatin sold within the \$254,000 and \$290,000 price range (out of 268 homes).



**Exhibit 88. Forecast of demand for new dwelling units, Tualatin Planning Area (city limits and Basalt Creek), 2020 to 2040**

Source: Calculations by ECONorthwest. Note: DU is dwelling unit.

Variable	Mix of New Dwelling Units (2020-2040)			
	Scenario 1	Scenario 2	Scenario 3	Scenario 4
<b>Needed new dwelling units (2020-2040)</b>	1,014	1,014	1,014	1,014
Dwelling units by structure type				
Single-family detached				
Percent single-family detached DU	50%	45%	35%	40%
<b>equals Total new single-family detached DU</b>	507	456	355	406
Single-family attached				
Percent single-family attached DU	9%	10%	15%	15%
<b>equals Total new single-family attached DU</b>	91	102	152	152
Multifamily				
Percent multifamily	41%	45%	50%	45%
<b>Total new multifamily</b>	416	456	507	456
<b>equals Total new dwelling units (2020-2040)</b>	<b>1,014</b>	<b>1,014</b>	<b>1,014</b>	<b>1,014</b>

Exhibit 89 shows the final forecast for housing growth in the Tualatin city limits during the 2020 to 2040 period. The projection is based on the following assumptions:

- Tualatin’s official forecast for population growth shows that the city will add 1,014 households over the 20-year period. Exhibit 89 shows Metro’s forecast for growth of 1,014 new dwelling units over the 20-year planning period.
- The assumptions about the mix of housing in Exhibit 89 are consistent with the requirements of OAR 660-007<sup>52</sup>:
  - **About 40% of new housing will be single-family detached**, a category which includes manufactured housing. In 2013-2017, 53% of Tualatin’s housing was single-family detached.
  - **Nearly 15% of new housing will be single-family attached**. In 2013-2017, 6% of Tualatin’s housing was single-family attached.
  - **About 45% of new housing will be multifamily**. In 2013-2017, 41% of Tualatin’s housing was multifamily.

<sup>52</sup> OAR 660-007-0030(1) requires that most Metro cities “...provide the opportunity for at least 50 percent of new residential units to be attached single family housing or multiple family housing...”



Tualatin will have demand for 1,014 new dwelling units over the 20-year period, 40% of which will be single-family detached housing.

**Exhibit 89. Forecast of demand for new dwelling units, Tualatin Planning Area, 2020 to 2040**

Source: Calculations by ECONorthwest.

Variable	Mix of New Dwelling Units (2020-2040)
<b>Needed new dwelling units (2020-2040)</b>	1,014
Dwelling units by structure type	
Single-family detached	
Percent single-family detached DU	40%
<b>equals Total new single-family detached DU</b>	406
Single-family attached	
Percent single-family attached DU	15%
<b>equals Total new single-family attached DU</b>	152
Multifamily	
Percent multifamily	45%
<b>Total new multifamily</b>	456
<b>equals Total new dwelling units (2020-2040)</b>	<b>1,014</b>

The forecast of new units does not include dwellings that will be demolished and replaced. This analysis does not factor those units in; however, it assumes they will be replaced at the same site and will not create additional demand for residential land.

Exhibit 90 allocates needed housing to Plan Designations in Tualatin. The allocation is based, in part, on the types of housing allowed in the zoning designations in each Plan Designation.

Exhibit 90 shows:

- **Low Residential (RL)** land will accommodate single-family detached housing, including manufactured houses. Low density will also accommodate duplexes, triplexes, quadplexes, cottage clusters, and townhouses based on the requirements of House Bill 2001.
- **Medium Low Residential (RML)** land will accommodate duplexes, townhomes (or rowhouses), and manufactured homes in manufactured housing parks. For consistency with the housing types allowed in Low Residential, this analysis assumes that RML will also allow triplexes and quadplexes.
- **Medium High Residential (RMH)** land will accommodate duplexes, townhomes (or rowhouses), and multifamily housing.
- **High Density Residential (RH)** land will accommodate duplexes, townhomes (or rowhouses), and multifamily housing.
- **High Density High Rise Residential (RH-HR)** land will accommodate duplexes, townhomes (or rowhouses), and multifamily housing.

**Exhibit 90. Allocation of needed housing by housing type and Plan Designation, Tualatin Planning Area, 2020 to 2040**

Source: ECONorthwest.

Housing Type	Residential Plan Designations					Total
	Low Density	Medium Low Density	Medium High Density	High Density	High High-Rise	
Dwelling Units						
Single-family detached	406	-	-	-	-	406
Single-family attached	30	41	20	61	-	152
Multifamily	30	30	102	193	101	456
<b>Total</b>	<b>466</b>	<b>71</b>	<b>122</b>	<b>254</b>	<b>101</b>	<b>1,014</b>
Percent of Units						
Single-family detached	40%	0%	0%	0%	0%	40%
Single-family attached	3%	4%	2%	6%	0%	15%
Multifamily	3%	3%	10%	19%	10%	45%
<b>Total</b>	<b>46%</b>	<b>7%</b>	<b>12%</b>	<b>25%</b>	<b>10%</b>	<b>100%</b>

Exhibit 91 presents assumptions about future housing density based on historical densities in Tualatin shown in Exhibit 18. Exhibit 91 converts between net acres and gross acres<sup>53</sup> to account for land needed for rights-of-way by Plan Designation in Tualatin, based on Metro’s methodology of existing rights-of-way.<sup>54</sup>

- **Low Residential (RL):** Average density in this Plan Designation was historically 5.7 dwelling units per gross acre in tax lots smaller than 0.38 acres and no land is needed for rights-of-ways based on Metro’s assumptions. For lots between 0.38 and 1.0 acres the future density will be 5.1 dwelling units per gross acre, and for lots larger than 1.0 acres the future density will be 4.6 dwelling units per gross acre.
- **Medium Low Residential (RML):** Average density in this Plan Designation was historically 11.7 dwelling units per gross acre in tax lots smaller than 0.38 acres and no land is needed for rights-of-ways based on Metro’s assumptions. For lots between 0.38 and 1.0 acres the future density will be 10.5 dwelling units per gross acre, and for lots larger than 1.0 acres the future density will be 9.5 dwelling units per gross acre.
- **Medium High Residential (RMH):** Average density in this Plan Designation was historically 16.1 dwelling units per gross acre in tax lots smaller than 0.38 acres and no land is needed for rights-of-ways based on Metro’s assumptions. For lots between 0.38

<sup>53</sup> OAR 660-024-0010(6) uses the following definition of net buildable acre. “Net Buildable Acre” “...consists of 43,560 square feet of residentially designated buildable land after excluding future rights-of-way for streets and roads.” While the administrative rule does not include a definition of a gross buildable acre, using the definition above, a gross buildable acre will include areas used for rights-of-way for streets and roads. Areas used for rights-of-way are considered unbuildable.

<sup>54</sup> Metro’s methodology about net-to-gross assumptions are that: (1) tax lots under 3/8 acre assume 0% set aside for future streets; (2) tax lots between 3/8 acre and 1 acre assume a 10% set aside for future streets; and (3) tax lots greater than an acre assumes an 18.5% set aside for future streets. The analysis assumes an 18.5% assumption for future streets.

and 1.0 acres the future density will be 14.5 dwelling units per gross acre, and for lots larger than 1.0 acres the future density will be 13.1 dwelling units per gross acre.

- **High Density Residential (RH):** Average density in this Plan Designation was historically 20.5 dwelling units per gross acre in tax lots smaller than 0.38 acres and no land is needed for rights-of-ways based on Metro’s assumptions. For lots between 0.38 and 1.0 acres the future density will be 18.4 dwelling units per gross acre and, for lots larger than 1.0 acres the future density will be 16.7 dwelling units per gross acre.
- **High Density High Rise Residential (RH-HR):** Average density in this Plan Designation was historically 28.0 dwelling units per gross acre in tax lots smaller than 0.38 acres and no land is needed for rights-of-ways based on Metro’s assumptions. For lots between 0.38 and 1.0 acres the future density will be 15.2 dwelling units per gross acre, and for lots larger than 1.0 acres the future density will be 22.8 dwelling units per gross acre.

**Exhibit 91. Assumed future density of housing built in the Tualatin Planning Area, 2020 to 2040**

Source: ECONorthwest. Note: DU is dwelling unit.

Residential Plan Designations	Tax Lots Smaller than 0.38 acre			Tax Lots > 0.38 and < 1.0 acre			Tax Lots larger than 1.0 acre		
	Net Density (DU/net acre)	% for Rights-of-Way	Gross Density (DU/gross acre)	Net Density (DU/net acre)	% for Rights-of-Way	Gross Density (DU/gross acre)	Net Density (DU/net acre)	% for Rights-of-Way	Gross Density (DU/gross acre)
Low Density	5.7	0%	5.7	5.7	10%	5.1	5.7	18.5%	4.6
Medium Low Density	11.7	0%	11.7	11.7	10%	10.5	11.7	18.5%	9.5
Medium High Density	16.1	0%	16.1	16.1	10%	14.5	16.1	18.5%	13.1
High Density	20.5	0%	20.5	20.5	10%	18.4	20.5	18.5%	16.7
High Density / High-Rise	28.0	0%	28.0	28.0	10%	25.2	28.0	18.5%	22.8

Through the Housing Strategy, Tualatin may consider increasing densities in specific zones. For example, the City may consider increasing the allowed densities in High Density / High-Rise (and adjusting related zoning standards, such as building heights) to allow higher density multifamily housing than is currently allowed in Tualatin.

## Needed Housing by Income Level

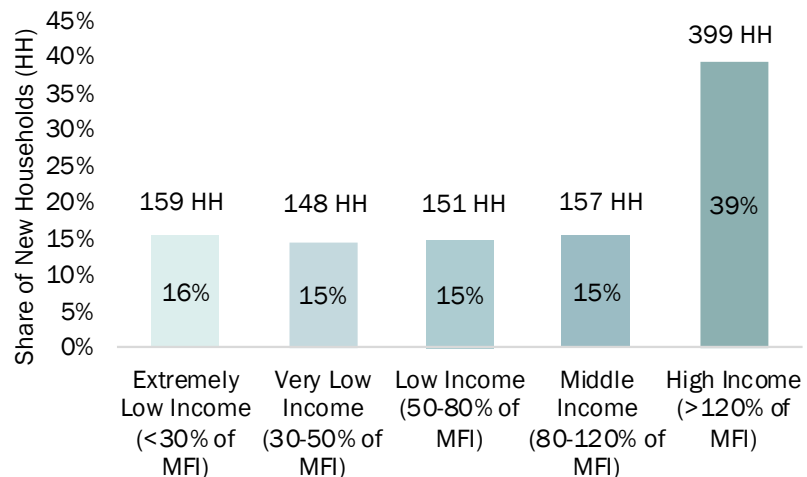
The next step in the housing needs analysis is to develop an estimate of need for housing by income and housing type. This analysis requires an estimate of the income distribution of current and future households in the community. Estimates presented in this section are based on (1) secondary data from the Census, and (2) analysis by ECONorthwest.

The analysis in Exhibit 92 is based on American Community Survey data about income levels for existing households in Tualatin. Income is categorized into market segments consistent with HUD income level categories, using Washington County’s 2018 Median Family Income (MFI) of \$81,400. The Exhibit is based on existing household income distribution, assuming that approximately the same percentage of households will be in each market segment in the future.

**About a third of Tualatin’s future households are forecast to be extremely or very low income and nearly 40% are forecast to have high incomes.**

**Exhibit 92. Future (New) Households, by Median Family Income (MFI) for Washington County (\$69,600), Tualatin Planning Area, 2018**

Source: U.S. Department of Housing and Urban Development, Washington County, 2018. U.S. Census Bureau, 2013-2017 ACS Table 19001.



## Need for Government-Assisted and Manufactured Housing

ORS 197.303, 197.307, 197.312, and 197.314 requires cities to plan for government-assisted housing, manufactured housing on lots, and manufactured housing in parks.

- **Government-assisted housing.** Government subsidies can apply to all housing types (e.g., single-family detached, apartments, etc.). Tualatin allows development of government-assisted housing in all residential Plan Designations, with the same development standards for market-rate housing. This analysis assumes that Tualatin will continue to allow government housing in all of its residential Plan Designations. Because government assisted housing is similar in character to other housing (with the exception being the subsidies), it is not necessary to develop separate forecasts for government-subsidized housing.
- **Farmworker housing.** Farmworker housing can apply to all housing types and the City allows development of farmworker housing in all residential Plan Designations, with the same development standards as market-rate housing. This analysis assumes that Tualatin will continue to allow this housing in all of its residential Plan Designations. Because it is similar in character to other housing (with the possible exception of government subsidies, if population restricted), it is not necessary to develop separate forecasts for farmworker housing.
- **Manufactured housing on lots.** Tualatin allows manufactured homes on lots in Low Density Residential zones.
- **Manufactured housing in parks.** Tualatin allows manufactured homes in parks in Medium Low Density zones. According to the Oregon Housing and Community Services' Manufactured Dwelling Park Directory,<sup>55</sup> Tualatin has two manufactured home parks with 178 spaces.
- ORS 197.480(2) requires Tualatin to project need for mobile home or manufactured dwelling parks based on: (1) population projections, (2) household income levels, (3) housing market trends, and (4) an inventory of manufactured dwelling parks sited in areas planned and zoned or generally used for commercial, industrial, or high density residential.
  - Exhibit 87 shows that Tualatin will grow by 1,014 dwelling units over the 2020 to 2040 period.
  - Analysis of housing affordability shows that about 31% of Tualatin's new households will be considered very low or extremely low income, earning 50% or less of the region's median family income. One type of housing affordable to these households is manufactured housing.

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<sup>55</sup> Oregon Housing and Community Services, Oregon Manufactured Dwelling Park Directory, <http://o.hcs.state.or.us/MDPCRParcs/ParkDirQuery.jsp>

- Manufactured homes in manufactured housing parks accounts for about 2% (about 178 dwelling units) of Tualatin’s current housing stock.
- National, state, and regional trends since 2000 showed that manufactured housing parks are closing, rather than being created. For example, between 2000 and 2015, Oregon had 68 manufactured parks close, with more than 2,700 spaces. Discussions with several stakeholders familiar with manufactured home park trends suggest that over the same period, few to no new manufactured home parks have opened in Oregon.
- The households most likely to live in manufactured homes in parks are those with incomes between \$24,420 and \$40,700 (30% to 50% of MFI), which include 15% of Tualatin’s households. However, households in other income categories may live in manufactured homes in parks.

Manufactured home subdivision development is an allowed use in the Medium Low Density Plan Designation. The national and state trends of closure of manufactured home parks, and the fact that no new manufactured home parks have opened in Oregon in over the last 15 years, demonstrate that development of new manufactured home parks or subdivisions in Tualatin is unlikely.

Our conclusion from this analysis is that development of new manufactured home parks or subdivisions in Tualatin over the 2020 to 2040 planning period is unlikely, although manufactured homes may continue to locate on lots in the Low Density Plan Designation. The forecast of housing assumes that no new manufactured home parks will be opened in Tualatin over the 2020 to 2040 period. The forecast for new dwelling units includes new manufactured homes on lots in the category of single-family detached housing.

- Over the next 20 years (or longer) one or both of Tualatin’s manufactured housing parks may close. This may be a result of the manufactured home park landowners selling or redeveloping their land for uses with higher rates of return, rather than lack of demand for spaces in manufactured home parks. Manufactured home parks contribute to the supply of low-cost affordable housing options, especially for affordable homeownership.

While there is statewide regulation of the closure of manufactured home parks designed to lessen the financial difficulties of this closure for park residents,<sup>56</sup> the City has a role to play in ensuring that there are opportunities for housing for the displaced residents. The City’s primary roles are to ensure that there is sufficient land zoned for new multifamily housing and to reduce barriers to residential

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<sup>56</sup> ORS 90.645 regulates rules about closure of manufactured dwelling parks. It requires that the landlord must do the following for manufactured dwelling park tenants before closure of the park: give at least one year’s notice of park closure, pay the tenant between \$5,000 to \$9,000 for each manufactured dwelling park space, and cannot charge tenants for demolition costs of abandoned manufactured homes.

development to allow for development of new, relatively affordable housing (i.e. housing affordable to households earning less than 80% of MFI and especially those earning less than 60% of MFI). The City may use a range of policies to encourage development of relatively affordable housing, such as allowing a wider range of moderate density housing (e.g., duplexes or cottages) in Low Density Plan Designation, removing barriers to multifamily housing development, using tax credits to support affordable housing production, developing an inclusionary zoning policy, or partnering with a developer of government-subsidized affordable housing.

## 6. Residential Land Sufficiency within Tualatin

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This chapter presents an evaluation of the sufficiency of vacant residential land in Tualatin to accommodate expected residential growth over the 2020 to 2040 period. This chapter includes an estimate of residential development capacity (measured in new dwelling units) and an estimate of Tualatin’s ability to accommodate needed new housing units for the 2020 to 2040 period, based on the analysis in the housing needs analysis. The chapter ends with a discussion of the conclusions and recommendations for the housing needs analysis.

### Capacity Analysis

The buildable lands inventory summarized in Chapter 2 (and presented in full in Appendix A) provides a *supply* analysis (buildable land by type), and Chapter 5 provided a *demand* analysis (population and growth leading to demand for more residential development). The comparison of supply and demand allows the determination of land sufficiency.

There are two ways to calculate estimates of supply and demand into common units of measurement to allow their comparison: (1) housing demand can be converted into acres, or (2) residential land supply can be converted into dwelling units. A complication of either approach is that not all land has the same characteristics. Factors such as zone, slope, parcel size, and shape can affect the ability of land to accommodate housing. Methods that recognize this fact are more robust and produce more realistic results. This analysis uses the second approach: it estimates the ability of vacant residential lands within the UGB to accommodate new housing. This analysis, sometimes called a “capacity analysis,”<sup>57</sup> can be used to evaluate different ways that vacant residential land may build out by applying different assumptions.

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<sup>57</sup> There is ambiguity in the term *capacity analysis*. It would not be unreasonable for one to say that the “capacity” of vacant land is the maximum number of dwellings that could be built based on density limits defined legally by plan designation or zoning, and that development usually occurs—for physical and market reasons—at something less than full capacity. For that reason, we have used the longer phrase to describe our analysis: “estimating how many new dwelling units the vacant residential land in the UGB is likely to accommodate.” That phrase is, however, cumbersome, and it is common in Oregon and elsewhere to refer to that type of analysis as “capacity analysis,” so we use that shorthand occasionally in this memorandum.



## Tualatin Capacity Analysis Results

The capacity analysis estimates the development potential of vacant residential land to accommodate new housing, based on the needed densities shown in Exhibit 91. Exhibit 95 shows that **Tualatin city limit's (Exhibit 93) and Basalt Creek's (Exhibit 94) buildable land has capacity to accommodate approximately 1,207 new dwelling units**, based on the following assumptions:

- **Buildable residential land.** The capacity estimates start with the number of buildable acres in residential Plan Designations, per the buildable lands inventory, for city limits. It starts with the number of buildable acres in residential Plan Designations, per the Basalt Creek Concept Plan, for Basalt Creek.
- **Needed densities.** The capacity analysis assumes development will occur at assumed future densities. Those densities were derived from the densities shown in Exhibit 91.
- **Average net density.** Exhibit 93 shows capacity and densities in gross acres. OAR 660-007 requires that Tualatin provide opportunity for development of housing at an overall average density of eight dwelling units per net acre. The average density of dwelling units in Exhibit 93 is 7.9 dwelling units per net acre and 6.7 dwelling units per gross acre. The average net density of dwelling units in Exhibit 95 is approximately 7.9 dwelling units per net acres and 6.6 dwelling units per gross acre.

### Exhibit 93. Estimate of residential capacity on unconstrained vacant and partially vacant buildable land, Tualatin City Limits, 2018

Source: Buildable Lands Inventory; Calculations by ECONorthwest. Note: DU is dwelling unit.

Residential Plan Designations	Tax Lots Smaller than 0.38 acre			Tax Lots > 0.38 and < 1.0 acre			Tax Lots larger than 1.0 acre			Total, combined	
	Buildable Acres	Density Assumption (DU/gross acre)	Capacity (Dwelling Units)	Buildable Acres	Density Assumption (DU/gross acre)	Capacity (Dwelling Units)	Buildable Acres	Density Assumption (DU/gross acre)	Capacity (Dwelling Units)	Buildable Acres	Capacity (Dwelling Units)
Low Density	18	5.7	100	17	5.1	85	44	4.6	204	79	389
Medium Low Density	0	11.7	5	1	10.5	7	0	9.5	-	1	12
Medium High Density	0	16.1	-	0	14.5	-	1	13.1	13	1	13
High Density	0	20.5	6	0	18.4	7	12	16.7	205	13	218
High High-Rise	0	28.0	-	0	25.2	-	0	22.8	-	0	-
<b>Total</b>	<b>18</b>	<b>-</b>	<b>111</b>	<b>18</b>	<b>-</b>	<b>99</b>	<b>58</b>	<b>-</b>	<b>422</b>	<b>94</b>	<b>632</b>

### Exhibit 94. Estimate of residential capacity on unconstrained vacant and partially vacant buildable land, Basalt Creek, 2018

Source: Basalt Creek Concept Plan. Note: this table uses the Basalt Creek Concept Plan's estimate for capacity and of buildable land; it does not rely on historic net densities by Plan Designation to calculate capacity on buildable lands. Historic net densities in Basalt Creek were not increased as they were in the estimate of capacity for Tualatin city limits. The amount of buildable land in Exhibit 90 is based on the Basalt Creek Concept Plan and is different than the amount of buildable land shown in Exhibit 7 of the Buildable Lands Inventory.

Residential Plan Designations	Dwelling Units	Buildable Acres from Basalt Creek Concept Plan	Density Assumption (DU per Gross Acre)
Low Density	134	24.8	5.4
Medium Low Density	374	59.8	6.3
High Density	67	3.4	19.9
<b>Total</b>	<b>575</b>	<b>88</b>	<b>6.5</b>

**Exhibit 95. Estimate of residential capacity on unconstrained vacant and partially vacant buildable land, Tualatin Planning Area, 2018**

Source: Buildable Lands Inventory; Calculations by ECONorthwest. Note1: DU is dwelling unit. Note2: Capacity in Basalt Creek uses the Basalt Creek Concept Plan's estimate of capacity (Exhibit 94).

Residential Plan Designations	Dwelling Units		
	Capacity (in City Limits)	Capacity (in Basalt Creek Concept Plan)	Capacity (Total)
Low Density	389	134	523
Medium Low Density	12	374	386
Medium High Density	13	-	13
High Density	218	67	285
High Density / High-Rise	-	-	-
<b>Total</b>	<b>632</b>	<b>575</b>	<b>1,207</b>

The amount of buildable land in Basalt Creek in the BLI (Exhibit 7) is more than the amount of buildable land from the Basalt Creek Concept Plan (Exhibit 94). The reason for the difference in capacity is primarily differences in assumptions about land constraints to development of vacant land. The Concept Plan assumed that more land would have soft constraints (that would decrease development capacity) and be unbuildable than the buildable lands inventory for this analysis.

Exhibit 96 shows an estimate of the additional capacity for development in Basalt Creek, if buildout occurs at densities consistent with development in Tualatin (the densities shown in Exhibit 91) and the amount of buildable land is consistent with the buildable lands inventory in this report (Exhibit 7). Under those conditions, Basalt Creek has capacity for 1,339 dwelling units, which is 764 dwelling units beyond the capacity in the Basalt Creek Concept Plan.

**Exhibit 96. Estimate of additional residential capacity on unconstrained vacant and partially vacant buildable land, Basalt Creek, 2018**

Source: Buildable Lands Inventory; Calculations by ECONorthwest. Note: DU is dwelling unit.

Residential Plan Designations	Capacity for Dwelling Units (using BLI)	Capacity for Dwelling Units (using Concept Plan)	Additional Capacity Potentially Available
Low Density	433	134	299
Medium Low Density	804	374	430
High Density	102	67	35
<b>Total</b>	<b>1,339</b>	<b>575</b>	<b>764</b>

## Residential Land Sufficiency

The next step in the analysis of the sufficiency of residential land within Tualatin is to compare the demand for housing by Plan Designation (Exhibit 90) with the capacity of land by Plan Designation (Exhibit 95), which does **not** include the potential additional capacity in Basalt Creek discussed in Exhibit 96.

Exhibit 97 shows that Tualatin has sufficient land to accommodate development in the Low Density Plan Designation, Medium Low Density Plan Designation, and High Density Plan Designation – with a surplus of capacity for 57 dwelling units, 315 dwelling units, and 31 dwelling units respectively. Tualatin has a deficit of capacity for 109 dwelling units in the Medium High Plan Designation and a deficit of capacity for 101 dwelling units in the High Density High-Rise Plan Designation. **The land sufficiency results are inclusive of capacity of land in Basalt Creek but are not inclusive of capacity which may become available as redevelopment occurs.**

### Exhibit 97. Comparison of capacity of existing residential land with demand for new dwelling units and land surplus or deficit, Tualatin City Limits and Basalt Creek, 2020 to 2040

Source: Buildable Lands Inventory; Calculations by ECONorthwest. Note: DU is dwelling unit.

Residential Plan Designations	Capacity (Dwelling Units)	Demand for New Housing	Remaining Capacity (Supply minus Demand)	Land Surplus or (Deficit) Gross Acres
Low Density	523	466	57	10
Medium Low Density	386	71	315	27
Medium High Density	13	122	(109)	(7)
High Density	285	254	31	2
High Density High-Rise	-	101	(101)	(4)

Tualatin’s surplus of Low Density Residential capacity (57 dwelling units) means that the City has an approximate surplus of 10 gross acres of Low Density land (at 5.7 dwelling units per gross acre). Tualatin’s surplus of Medium Low Density Residential capacity (315 dwelling units) means that the City has an approximate surplus of 27 gross acres of Medium Low Density land (at 11.7 dwelling units per gross acre).<sup>58</sup> Tualatin’s surplus of High Density Residential capacity (31 dwelling units) means that the City has an approximate surplus of two gross acres of High Density Land (at 20.5 dwelling units per gross acre).

This estimate of capacity does **not** include the potential additional capacity in Basalt Creek, shown in Exhibit 96. If Basalt Creek builds out with more housing than shown in the Concept Plan (shown in Exhibit 94), then Tualatin has about 764 dwelling units of additional capacity, all in Low Density, Medium Low Density, and High Density Plan Designations.

<sup>58</sup> This estimate of land is approximate, as densities in Medium Low Density may range from 11.7 to 9.5 dwelling units per gross acre depending on parcel size, as shown in Exhibit 91.

## Conclusions and Recommendations

The key findings of the Tualatin Housing Needs Analysis are that:

- **Growth in housing will be driven by growth in households.** Households in Tualatin’s city limits is forecast to grow from 10,791 households to 11,362 households, an increase of 571 households between 2020 and 2040. In that same time, households in Basalt Creek are forecast to grow from 203 households to 646 households, an increase of 443 households.
- **To accommodate households in Tualatin city limits and Basalt Creek, Tualatin is planning for 1,014 new dwelling units.** To accommodate the 1,014 dwelling units over the 20-year planning period, Tualatin will average 51 new dwelling units annually.
- **Tualatin will plan for more single-family attached and multifamily dwelling units in the future to meet the City’s housing needs.** Historically, about 53% of Tualatin’s housing was single-family detached. New housing in Tualatin is forecast to be 40% single-family detached, 15% single-family attached, and 45% multifamily.
  - The factors driving the shift in types of housing needed in Tualatin include changes in demographics and decreases in housing affordability. The aging of senior populations and the household formation of young adults will drive demand for renter- and owner-occupied housing, such as small single-family detached housing, townhouses, duplexes, and apartments / condominiums. Both groups may prefer housing in walkable neighborhoods, with access to services.
  - Tualatin’s existing deficit of housing that is affordable for low- and high-income households indicates a need for a wider range of housing types, for renters and homeowners. About 37% of Tualatin’s households have affordability problems, including a cost burden rate of 56% for renter households.
  - Without diversification of housing types, lack of affordability will continue to be a problem, possibly growing in the future if incomes continue to grow at a slower rate than housing costs. Under the current conditions, 307 of the forecasted new households will have incomes of \$40,700 (in 2018 dollars) or less (50% of MFI income or less). These households cannot afford market rate housing without government subsidy. Another 151 new households will have incomes between \$40,700 and \$65,120 (50% to 80% of MFI). These households will all need access to affordable housing, such as the housing types described above.
- **Tualatin cannot accommodate all of its housing needs.** Tualatin has a deficit of land in the Medium High Density and High Density High Rise Plan Designations, of 7 acres and 4 acres respectively. The deficits shown in Exhibit 97 may be addressed in multiple ways, such as by re-zoning land, increasing densities allowed in Plan Designations with deficits, or by accommodating housing in Plan Designations with surpluses.

- **Tualatin will need to meet the requirements of House Bill 2001.** The Legislature passed House Bill 2001 in the 2019 Legislative session. The bill requires cities within the Metro UGB to allow “middle” housing types in low-density residential zones. The bill defines middle housing types as: duplexes, triplexes, quadplexes, cottage clusters, and townhouses. To comply with House Bill 2001, Tualatin will need to:
  - Allow cottage cluster as a housing type in the Residential Low Density zone. Tualatin may want to allow cottage cluster housing in the Medium-Low Density and Medium-High Density zones. Tualatin will also need to include development standards in the Tualatin Development Code.
  - Allow duplexes, townhouses, and multifamily housing as a permitted use in the Residential Low Density zone.

Following is a summary of ECONorthwest’s recommendations to Tualatin based on the analysis and conclusions in this report. The *Tualatin Housing Strategy* memorandum presents the full list of recommendations for Tualatin.

- **Ensure an adequate supply of land that is available and serviceable.** Tualatin should evaluate opportunities to increase residential development densities by modifying the Development Code, such as increasing densities and height limits in higher density zones. Tualatin should identify opportunities to re-zone land, from lower density usage to higher density usage, to provide additional opportunities for multifamily housing development. Tualatin should plan for long-term development of housing in Tualatin through 2040 and beyond by working with Metro on upcoming Growth Management reports.
- **Encourage development of a wider variety of housing types.** Tualatin should allow duplexes, triplexes, quadplexes, cottage clusters, and townhouses in the Residential Low Density zone and allow cottage cluster housing in the Medium-Low Density and Medium-High Density zones (which already allow for the other housing types mentioned). These changes should be made in a way that makes the City’s zoning code compliant with House Bill 2001.
- **Support development and preservation of housing that is affordable for all households.** The City should develop policies to support development of housing affordable to people who live and work in Tualatin. The City should identify opportunities to leverage resources (including funding) from the Metro Bond to support development of housing affordable to households earning less than 60% of Median Family Income in Washington County (\$48,900 for a household size of four people). The City should develop policies to prevent and address homelessness, as well as to prevent and mitigate residential displacement resulting from redevelopment and increases in housing costs. These actions will require Tualatin to evaluate adoption of a wide variety of housing policies such as creative financing opportunities for systems development charges, evaluating tax exemption programs, participating in a land bank, and other approaches to supporting development of housing affordable at all income levels.

- **Identify funding tools to support residential development.** The City should evaluate tools such as establishing a new Urban Renewal District and evaluate establishing a construction excise tax.
- **Identify redevelopment opportunities.** The City should identify districts within Tualatin with opportunities for redevelopment for both housing and employment uses, as well as supporting redevelopment of underutilized commercial buildings for housing.
- **Ensure there are connections between planning for housing and other community planning.** Throughout the project, stakeholders emphasized the need to coordinate housing planning with economic development planning, transportation planning, and other community planning. Updates to the Tualatin Transportation System Plan should be coordinated with planning for housing growth. A key approach to accommodating new residential development is redevelopment that results in mixed-use districts, providing opportunities for more housing affordable to people working at businesses in Tualatin and living closer to work (thus reducing transportation issues). In addition, stakeholders would like to see the incorporation of services needed to meet daily needs of residents of neighborhoods without driving.

The *Tualatin Housing Strategy* memorandum presents more details about each of these topics and recommendations for specific actions to implement these recommendations.

# Appendix A – Residential Buildable Lands Inventory

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The general structure of the standard method BLI analysis is based on the DLCD HB 2709 workbook “*Planning for Residential Growth – A Workbook for Oregon’s Urban Areas*,” which specifically addresses residential lands.<sup>59</sup> The steps and sub-steps in the supply inventory are:

1. Calculate the gross vacant acres by plan designation, including fully vacant and partially vacant parcels.
2. Calculate gross buildable vacant acres by plan designation by subtracting unbuildable acres from total acres.
3. Calculate net buildable acres by plan designation, subtracting land for future public facilities from gross buildable vacant acres.
4. Calculate total net buildable acres by plan designation by adding redevelopable acres to net buildable acres.

The methods used for this study are consistent with many others completed by ECONorthwest that have been acknowledged by DLCD and LCDC.

## Overview of the Methodology

The BLI for Tualatin is based on the data and methods used by Metro. In addition, ECONorthwest’s approach updated Metro’s results to account for new development (the Metro 2018 UGR is based on 2016 data) and other potential local conditions, such as unique environmental constraints.

## Study Area

The BLI for Tualatin includes all residential land designated in the comprehensive plans within city limits and designated planning areas (referred to as Tualatin Planning Area). ECONorthwest used the most recent tax lot shapefile from Metro’s Regional Land Information System (RLIS) for the analysis.

## Inventory Steps

The BLI consisted of several steps:

1. Generating UGB “land base”
2. Classifying land by development status

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<sup>59</sup> We note that Newberg is not required to comply with ORS 197.296.



3. Identify constraints
4. Verify inventory results
5. Tabulate and map results

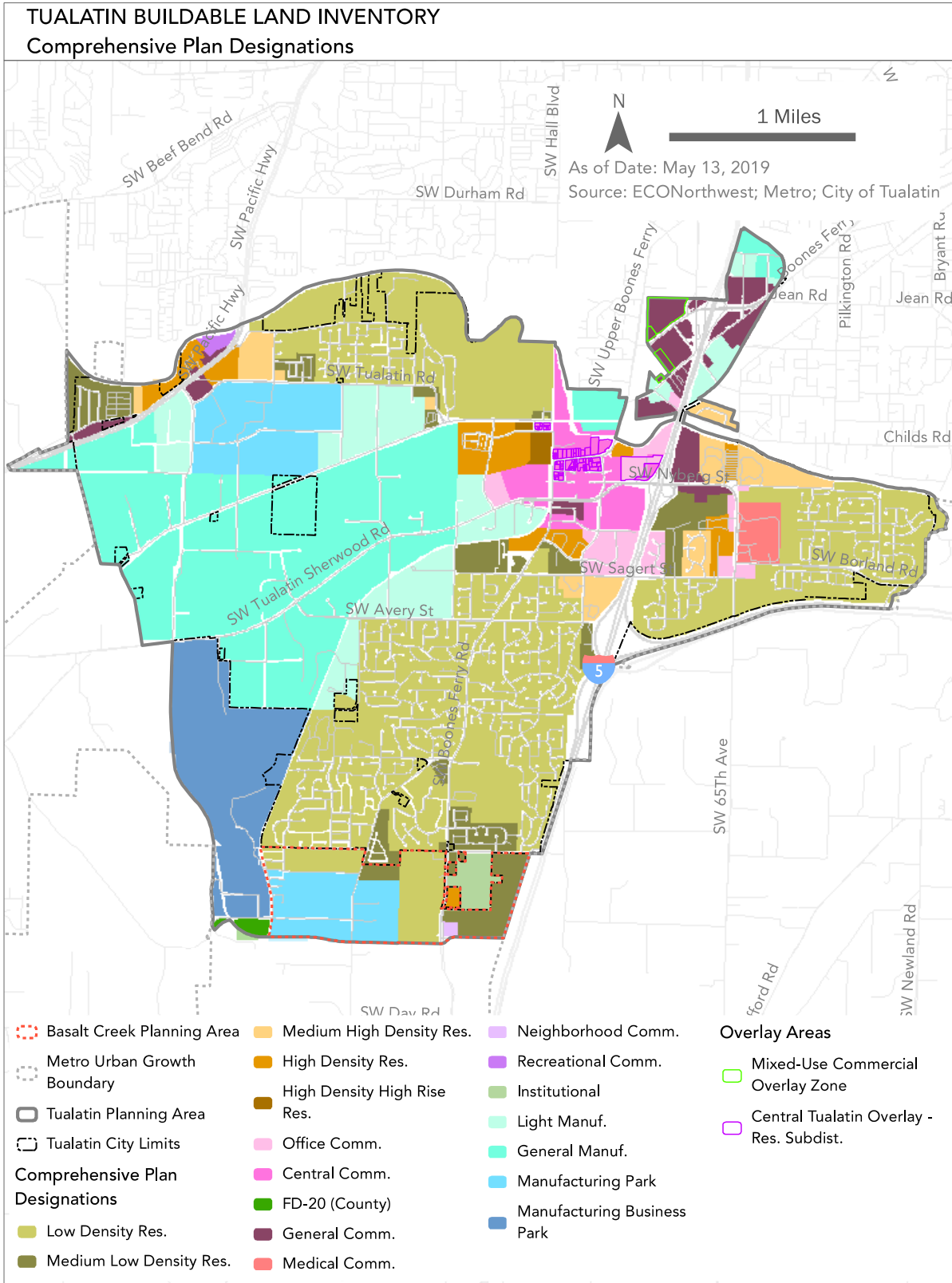
### Step 1: Generate “land base.”

Per Goal 10 this involves selecting all of the tax lots with residential and other non-employment Plan Designations where residential uses are planned for and allowed by the implementing zones. The City provided ECO with their Comprehensive Plan GIS files and indicated what designations should be included within the inventory.

Exhibit 98 (on the following page) shows Comprehensive Plan designations for the City of Tualatin. This BLI includes lands in the Low Density Residential, Medium Low Density Residential, Medium High Density Residential, High Density Residential, and High Density High Rise Residential Plan Designations. The BLI also includes areas that allow residential use in the Basalt Creek Planning Area, Mixed-Use Commercial Overlay Zone, and Central Tualatin Overlay.



**Exhibit 98. Comprehensive Plan Designations, Tualatin Planning Area, 2019**



## Step 2: Classify lands.

In this step, ECONorthwest classified each tax lot with a plan designation that allows residential uses into one of four mutually exclusive categories based on development status:

- Vacant
- Partially Vacant
- Public or Exempt
- Developed

ECONorthwest used the classification determined through Metro’s model: Vacant, Ignore, and Developed. In addition, ECO included a new classification for partially vacant lots. The definitions for each classification are listed below.

Development Status	Definition	Statutory Authority
Vacant	Tax lots designated as vacant by Metro based on the following criteria: 1) Fully vacant based on Metro aerial photo 2) Tax lots with less than 2,000 square feet developed AND developed area is less than 10% of lot 3) Lots 95% or more vacant from GIS vacant land inventory	OAR 660-008-0006(2) “Buildable Land” means residentially designated land within the urban growth boundary, including both vacant and developed land likely to be redeveloped, that is suitable, available and necessary for residential uses.
Partially Vacant	Single-family tax lots that are 2.5 times larger than the minimum lot size and a building value less than \$300,000 <b>or</b> lots that are 5 times larger than the minimum lots size (no threshold for building value). These lots are considered to still have residential capacity. For this analysis, we are classifying these lots as Partially Vacant. We assume that 0.25 acres of the lot is developed, and the remaining land is available for development, less constraints.	OAR 660-008-0006(2)
Ignore (Public or Exempt uses)	Lands in public or semi-public ownership are considered unavailable for residential development. This includes lands in Federal, State, County, or City ownership as well as lands owned by churches and other semi-public organizations and properties with conservation easements. These lands are identified using the Metro’s definitions and categories.	OAR 660-008-0005(2) - Publicly owned land is generally not considered available for residential uses.
Developed	Lands not classified as vacant, partially vacant, or public/exempt are considered developed. Developed land includes lots with redevelopment capacity, which are also included in BLI. The unit capacity of developed but redevelopable lots is based on Metro’s estimates.	OAR 660-008-0006(2) “Buildable Land” means residentially designated land within the urban growth boundary, including both vacant and developed land likely to be redeveloped, that is suitable, available and necessary for residential uses.

### Step 3: Identify constraints

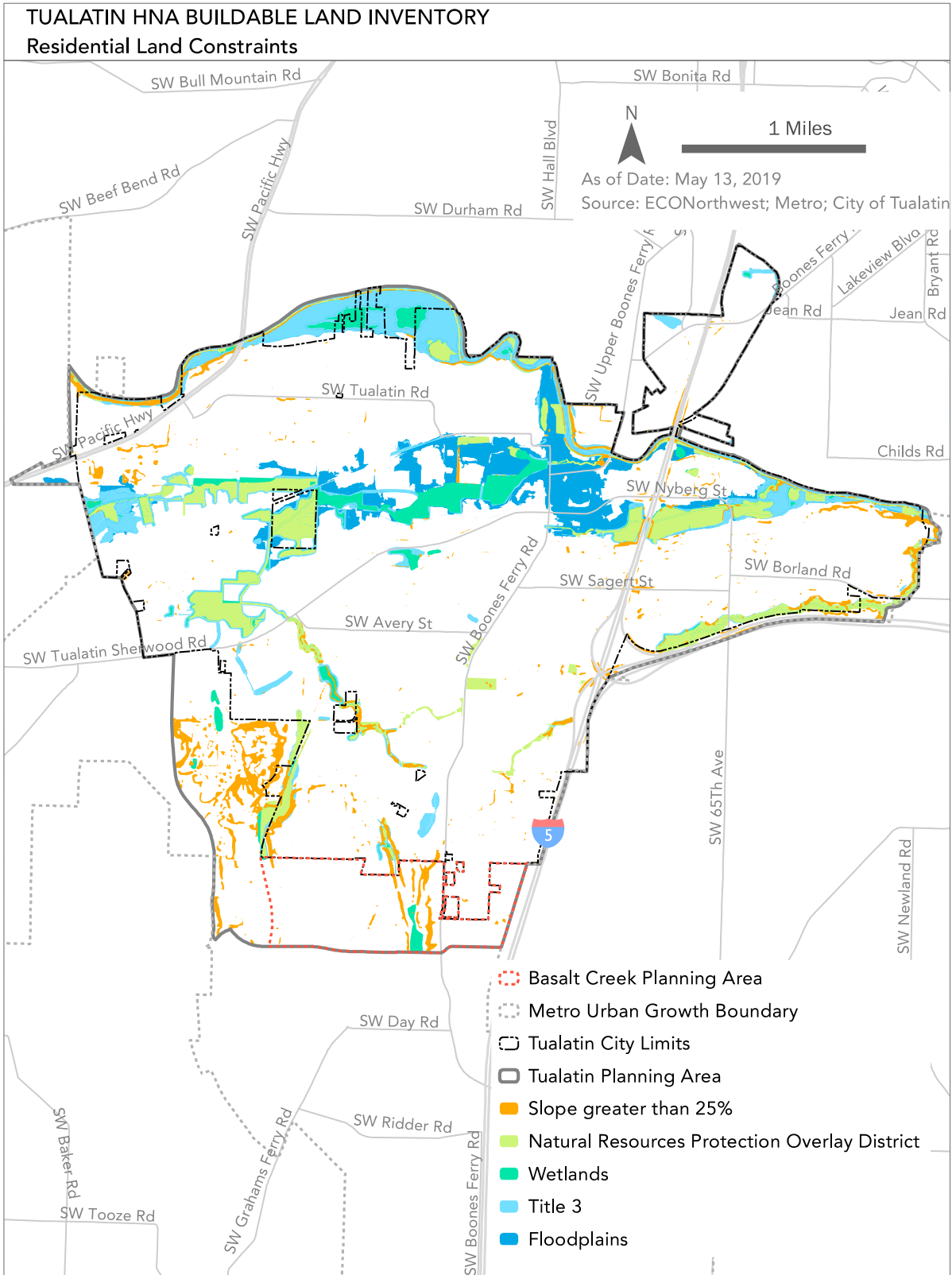
Consistent with OAR 660-008-0005(2) guidance on residential buildable lands inventories, ECO deducted certain lands with development constraints from vacant lands. We used some of the constraints established in Metro’s methodology, with modifications to fit local considerations in Tualatin. These constraints are summarized in the table below.

Constraint	Statutory Authority	Threshold
<b>Goal 5 Natural Resource Constraints</b>		
Natural Resources Protection Overlay District	OAR 660-008-0005(2)	Areas in the NRPOD
Riparian Corridors	OAR 660-015-0000(5)	Areas protected by the Stream and Floodplain Plan
Wetlands		
<b>Natural Hazard Constraints</b>		
100 Year Floodplain	OAR 660-008-0005(2)	Lands within FEMA FIRM 100-year floodplain
Steep Slopes	OAR 660-008-0005(2)	Slopes greater than 25%

The lack of access to water, sewer, power, road or other key infrastructure cannot be considered a prohibitive constraint unless it is an extreme condition. This is because tax lots that are currently unserviced could potentially become serviced over the 20-year planning period.

Exhibit 99 maps the development constraints used for the residential BLI.

**Exhibit 99. Development Constraints, Tualatin Planning Area, 2019**



## Step 4: Verification

ECO used a multi-step verification process. The first verification step will included a “rapid visual assessment” of land classifications using GIS and recent aerial photos. The rapid visual assessment involves reviewing classifications overlaid on recent aerial photographs to verify uses on the ground. ECO reviewed all tax lots included in the inventory using the rapid visual assessment methodology. The second round of verification involved City staff verifying the rapid visual assessment output. ECO amended the BLI based on City staff review and comments, particularly related to vacant land developed since 2016.

## Step 5: Tabulation and mapping

The results are presented in tabular and map format. The Tualatin Residential BLI includes all residential land designated in the Comprehensive Plan within the Tualatin Planning Area. From a practical perspective, this means that ECONorthwest inventoried all lands within tax lots identified by Metro that fall within the Tualatin Planning Area. The inventory then builds from the tax lot-level database to estimates of buildable land by Plan Designation.



FIRST AMERICAN TITLE

# Property Research Report

**SUBJECT PROPERTY**

R2146863  
2S135D000106  
Washington

**OWNER**

Horizon Community Church

**DATE PREPARED**

10/26/2022

**PREPARED BY**

gparilla@firstam.com



*First American Title*

Customer Service 503.219.8746

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Date: 10/26/2022

### OWNERSHIP INFORMATION

Owner: Horizon Community Church

CoOwner:

Site: Tualatin OR 97062

Mail: PO Box 2690 Tualatin OR 97062

Parcel #: R2146863

Ref Parcel #: 2S135D000106

TRS: 02S / 01W / 35 / SE

County: Washington

### PROPERTY DESCRIPTION

Map Grid: 715-E1

Census Tract: 032110 Block: 1005

Neighborhood: Byrom

School Dist: 88J Sherwood

Impr Type: R1 - Residence Single Family

Subdiv/Plat:

Land Use: 9110 - Exempt Church Improved

Std Land Use: MREL - Religious

Zoning: Tualatin-IN - Institutional District

Lat/Lon: 45.35133543 / -122.77170321

Watershed: Abernethy Creek-Willamette River

Legal: ACRES 34.14

### ASSESSMENT AND TAXATION

Market Land: \$5,617,080.00

Market Impr: \$10,655,120.00

Market Special: \$0.00

Market Total: \$16,272,200.00 (2021)

% Improved: 65.00%

Assessed Total: \$0.00 (2021)

Levy Code: 88.15

Tax: \$0.00 (2021)

Millage Rate: 18.0574

Exemption: \$16,272,200.00

Exemption Type:

### PROPERTY CHARACTERISTICS

Bedrooms: 2

Baths, Total: 1

Baths, Full:

Baths, Half:

Total Units:

# Stories:

# Fireplaces:

Cooling:

Heating: Forced Air

Building Style: XC0 - Church/Synagogue

Total SqFt: 56,500 SqFt

First Floor:

Second Floor: 56,500 SqFt

Basement Fin:

Basement Unfin:

Basement Total:

Attic Fin:

Attic Unfin:

Attic Total:

Garage:

Year Built: 1980

Eff Year Built: 1980

Lot Size Ac: 34.14 Acres

Lot Size SF: 1,487,138 SqFt

Lot Width:

Lot Depth:

Roof Material:

Roof Shape:

Ext Walls:

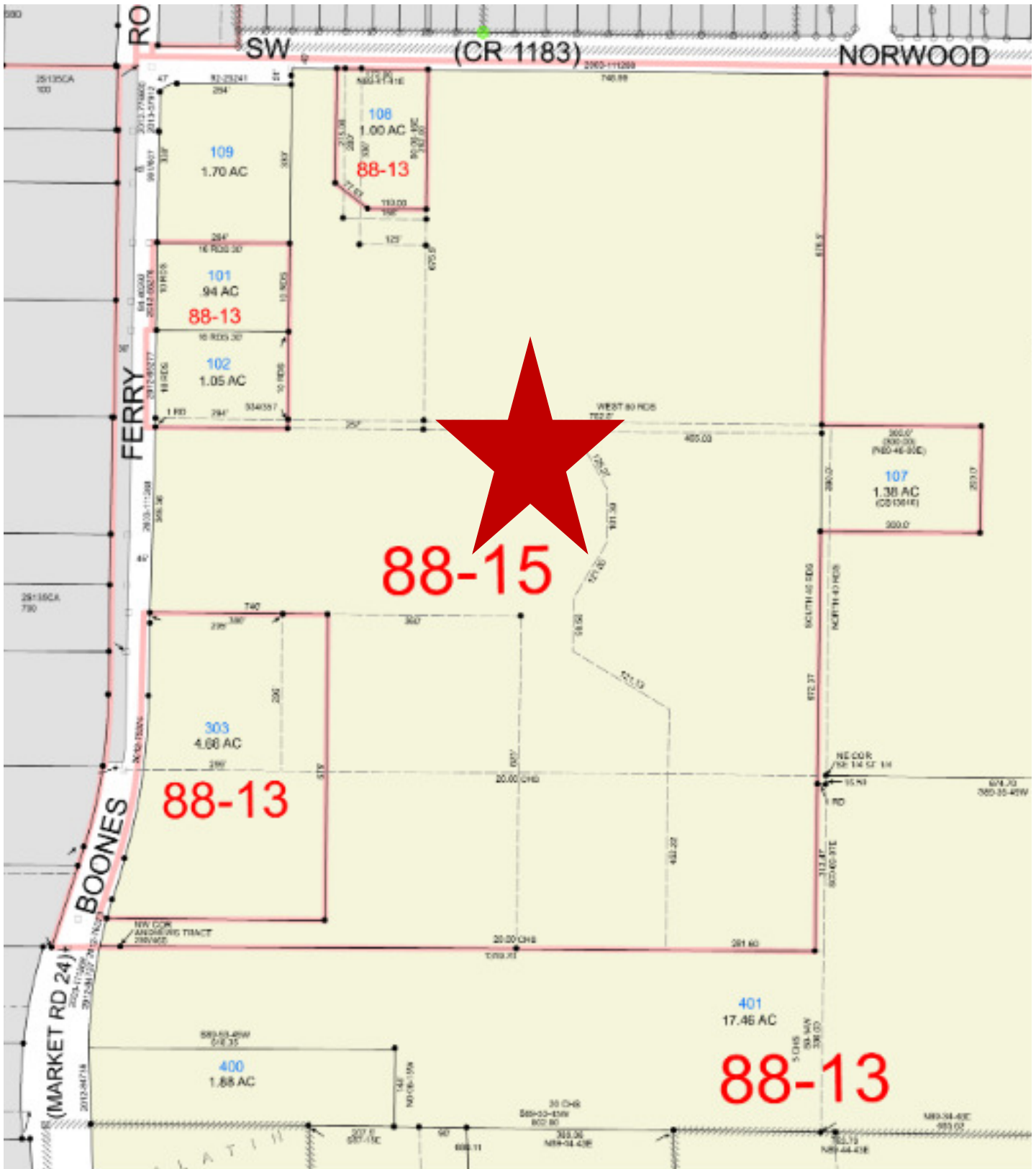
Const Type:

### SALES AND LOAN INFORMATION

Owner	Date	Doc #	Sale Price	Deed Type	Loan Amt	Loan Type
GRACE CMNTY CH OF ASSEMBLIES/GOD	08/30/2007	94943		Deed Of Trust	\$1,316,000.00	Conventional

Sentry Dynamics, Inc. and its customers make no representations, warranties or conditions, express or implied, as to the accuracy or completeness of information contained in this report.





This map/plat is being furnished as an aid in locating the herein described land in relation to the adjoining streets, natural boundaries and other land, and is not a survey of the land depicted. Except to the extent a policy of title insurance is expressly modified by endorsement, if any, the company does not insure dimensions, distances, location of easements, acreage or other matters shown thereon.



First American Title™

geoAdvantage



Aerial Map



*First American Title*

**Parcel ID: R2146863**

Sentry Dynamics, Inc. and its customers make no representations, warranties or conditions, express or implied, as to the accuracy or completeness of information contained in this report.

Washington County, Oregon **2015-081254**  
D-DQ  
Str=18 K GRUNEWALD **09/25/2015 09:58:47 AM**  
\$40.00 \$11.00 \$5.00 \$20.00 **\$76.00**

I, Richard Hobernicht, Director of Assessment and Taxation and Ex-Officio County Clerk for Washington County, Oregon, do hereby certify that the within instrument of writing was received and recorded in the book of records of said county.

Richard Hobernicht, Director of  
Assessment and Taxation, Ex-Officio

APN: 2S1328B00700

Statutory Quitclaim Deed

File No.: **NCS-744201-STLO (LS)**  
Date: **09/04/2015**



After recording return to:  
First American Title Ins. Co.  
ATTN: Lianne Schraer; 8182  
Maryland Ave., Ste. 400  
St. Louis, MO 63105

Until a change is requested all tax  
statements shall be sent to:  
Horizon Community Church  
23370 SW Boones Ferry Rd.  
Tualatin, OR 97062

File No.: NCS-744201-STLO (LS)  
Date: September 04, 2015

THIS SPACE RESERVED FOR RECORDER'S USE

### STATUTORY QUITCLAIM DEED

**Horizon Community Church, an Oregon nonprofit corporation who acquired title as Grace Community Church of the Assemblies of God, Inc., an Oregon non-profit corporation, Grantor, releases and quitclaims to Horizon Community Church, an Oregon nonprofit corporation, all rights and interest in and to the following described real property:**

**LEGAL DESCRIPTION:** Real property in the County of Washington, State of Oregon, described as follows:

**See Exhibit "A" attached hereto and made part hereof.**

The true consideration for this conveyance is **\$0.00**. (Here comply with requirements of ORS 93.030)

BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010. THIS INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 OR 215.010, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930, AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010.

Dated this 24 day of September, 2015.

**Horizon Community Church, an Oregon nonprofit corporation who acquired title as Grace Community Church of the Assemblies of God, Inc., an Oregon non-profit corporation**

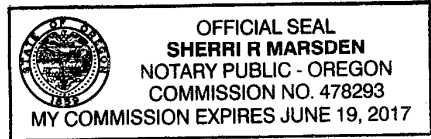
By: [Signature]  
Stan Russell, Senior Pastor

By: [Signature]  
William Stine, Secretary-Treasurer

STATE OF Oregon, Clackamas )  
County of Washington ) ss.

This instrument was acknowledged before me on this 24 day of September, 2015 by Stan Russell and William Stine, the Senior Pastor and Secretary-Treasurer respectively for Horizon Community Church, an Oregon nonprofit Corporation, FKA Grace Community Church of the Assemblies of God, Inc., an Oregon non-profit corporation on behalf of said corporation.

[Signature]  
Notary Public for Oregon  
My commission expires:





**Exhibit "A"****PARCEL I:****TRACT 1:**

**A TRACT OF LAND LYING IN THE SOUTHEAST ONE-QUARTER OF SECTION 35, TOWNSHIP 2 SOUTH, RANGE 1 WEST OF THE WILLAMETTE MERIDIAN, IN THE COUNTY OF WASHINGTON AND STATE OF OREGON, DESCRIBED AS FOLLOWS:**

**BEGINNING AT THE NORTHEAST CORNER OF THE SOUTHWEST ONE-QUARTER OF THE SOUTHEAST ONE-QUARTER OF SAID SECTION 35;  
THENCE EAST 676.0 FEET TO A POINT ON THE WESTERLY RIGHT OF WAY LINE OF THE R.H. BALDOCK FREEWAY;  
THENCE SOUTHERLY ALONG SAID WESTERLY RIGHT OF WAY LINE 675.0 FEET TO A POINT ON THE NORTHERLY LINE OF LOT 4, TUALATIN ORCHARD TRACT [PLAT BOOK 6, PAGE 0022], WASHINGTON COUNTY, OREGON; THENCE WESTERLY ALONG SAID NORTHERLY LINE AND ITS EXTENSION THEREOF 490.0 FEET TO THE SOUTHEAST CORNER OF PARCEL I AS DESCRIBED IN DEED TO JAMES KING & CO., AN OREGON CORPORATION, RECORDED APRIL 25, 1975 IN BOOK 1020, PAGE 0386, DEED RECORDS OF WASHINGTON COUNTY, OREGON;  
THENCE NORTH 0° 14' EAST 330.0 FEET TO THE NORTHEAST CORNER OF SAID KING TRACT;  
THENCE SOUTH 89° 53' 45" WEST ALONG THE NORTHERLY LINE OF SAID KING TRACT 1380.12 FEET TO A POINT ON THE EASTERLY RIGHT OF WAY LINE OF STATE HIGHWAY 217 (SW BOONES FERRY ROAD);  
THENCE NORTHERLY ALONG THE EASTERLY RIGHT OF WAY LINE TO A POINT ON THE SOUTH LINE OF THAT TRACT OF LAND CONVEYED TO KENNETH L. FURROW, ET UX, RECORDED MARCH 25, 1970 IN BOOK 774, PAGE 0864, DEED RECORDS OF WASHINGTON COUNTY, OREGON;  
THENCE EAST 1280 FEET TO A POINT ON THE WEST LINE OF THAT TRACT OF LAND CONVEYED TO THE CITY OF TUALATIN, RECORDED JULY 12, 1971 IN BOOK 825, PAGE 0873, DEED RECORDS OF WASHINGTON COUNTY, OREGON (SAID POINT BEING 16.5 FEET SOUTH OF THE NORTHWEST CORNER OF SAID CITY OF TUALATIN TRACT);  
THENCE SOUTH ALONG SAID WEST LINE EXTENDED 660.0 FEET;  
THENCE EAST 16.5 FEET;  
THENCE NORTH 16.5 FEET TO THE POINT OF BEGINNING.**

**SAVE AND EXCEPT PARCELS A, B, C, & D AS FOLLOWS:**

**PARCEL A:**

**BEGINNING AT A POINT WHICH IS 295 FEET NORTH OF THE SOUTHWEST CORNER OF THE NORTHWEST ONE-QUARTER OF THE SOUTHEAST ONE-QUARTER OF SECTION 35, TOWNSHIP 2 SOUTH, RANGE 1 WEST OF THE WILLAMETTE MERIDIAN, IN THE COUNTY OF WASHINGTON AND STATE OF OREGON;  
THENCE EAST 380 FEET TO A POINT;  
THENCE SOUTH 575 FEET TO A POINT;  
THENCE WEST TO A POINT IN THE CENTER OF SOUTHWEST BOONES FERRY ROAD (STATE HIGHWAY NO. 217);**

**THENCE IN A NORTHERLY DIRECTION ALONG THE CENTER LINE OF SOUTHWEST BOONES FERRY ROAD TO THE POINT OF BEGINNING.**

**PARCEL B:**

**BEGINNING AT A POINT WHICH IS 295 FEET NORTH OF THE SOUTHWEST CORNER OF THE NORTHWEST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER OF SECTION 35, TOWNSHIP 2 SOUTH, RANGE 1 WEST OF THE WILLAMETTE MERIDIAN, IN THE COUNTY OF WASHINGTON AND STATE OF OREGON;**

**THENCE EAST 740 FEET TO A POINT;**

**THENCE SOUTH 625 FEET TO THE TRUE POINT OF BEGINNING;**

**THENCE NORTH 625 FEET TO A POINT;**

**THENCE WEST 360 FEET TO A POINT;**

**THENCE SOUTH 575 FEET TO A POINT;**

**THENCE WEST TO A POINT IN THE CENTER OF SOUTHWEST BOONES FERRY ROAD (STATE HIGHWAY NO. 217);**

**THENCE IN A SOUTHERLY DIRECTION TO THE NORTHWEST CORNER OF THAT CERTAIN TRACT OF LAND CONVEYED TO GEORGE H. ANDREWS BY BARGAIN AND SALE DEED, RECORDED APRIL 25, 1975 IN BOOK 1020, PAGE 0383, RECORDS OF WASHINGTON COUNTY, OREGON;**

**THENCE EAST ALONG THE NORTH LINE OF THE SAID ANDREWS TRACT TO THE POINT OF BEGINNING.**

**PARCEL C:**

**A PORTION OF PARCEL I OF THOSE CERTAIN TRACTS OF LAND IN THE SOUTHWEST ONE-QUARTER OF SECTION 35, TOWNSHIP 2 SOUTH, RANGE 1 WEST OF THE WILLAMETTE MERIDIAN, IN THE COUNTY OF WASHINGTON AND STATE OF OREGON, CONVEYED TO GRACE COMMUNITY CHURCH OF THE ASSEMBLIES OF GOD, INC., BY DEED RECORDED JUNE 12, 2001 AS FEE NO. 2001 055727, WASHINGTON COUNTY, OREGON, DEED RECORDS, SAID PORTION BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:**

**BEGINNING AT A POINT ON THE SOUTH LINE OF PARCEL II, SAID DOCUMENT RECORDED JUNE 12, 2001 AS FEE NO. 2001 055727, WHICH POINT BEARS NORTH 89° 38' 45" EAST 284.71 FEET FROM THE SOUTHWEST CORNER THEREOF, AND RUNNING THENCE ALONG SAID SOUTH LINE TO THE SOUTHWEST CORNER OF SAID PARCEL II, NORTH 89° 38' 45" EAST 465.03 FEET;**

**THENCE SOUTH 00° 09' 07" EAST 972.37 FEET TO A POINT ON THE NORTH LINE OF THAT CERTAIN TRACT OF LAND CONVEYED TO GRACE COMMUNITY CHURCH BY DEED RECORDED JANUARY 11, 2002 AS FEE NO. 2002 004397, SAID DEED RECORDS;**

**THENCE SOUTH 89° 36' 05" WEST ALONG SAID NORTH LINE, 281.60 FEET;**

**THENCE NORTH 00° 00' 00" EAST 452.22 FEET;**

**THENCE NORTH 60° 00' 00" WEST 212.13 FEET;**

**THENCE NORTH 00° 05' 57" WEST 98.50 FEET;**

**THENCE NORTH 30° 00' 00" EAST 121.00 FEET;**

**THENCE NORTH 00° 00' 00" EAST 101.39 FEET;**

**THENCE NORTH 30° 00' 00" WEST 125.27 FEET TO THE POINT OF BEGINNING.**

**PARCEL D:**

**A PORTION OF PARCEL I OF THOSE CERTAIN TRACTS OF LAND IN THE SOUTHEAST ONE-QUARTER OF SECTION 35, TOWNSHIP 2 SOUTH, RANGE 1 WEST OF THE WILLAMETTE MERIDIAN, IN THE COUNTY OF WASHINGTON AND STATE OF OREGON, CONVEYED TO GRACE COMMUNITY CHURCH OF THE ASSEMBLIES OF GOD, INC., BY DEED RECORDED JUNE 12, 2001 AS FEE NO. 2001 055727, WASHINGTON COUNTY, OREGON, DEED RECORDS, SAID PORTION BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:**

**BEGINNING AT THE SOUTHEAST CORNER OF THAT CERTAIN TRACT OF LAND CONVEYED TO GRACE COMMUNITY CHURCH BY DEED RECORDED JANUARY 11, 2002 AS FEE NO. 2002 004397, SAID DEED RECORDS, AND RUNNING THENCE ALONG THE BOUNDARY OF SAID PARCEL I, NORTH 89° 34' 49" EAST 485.62 FEET, NORTH 15° 44' 54" EAST 690.21 FEET, SOUTH 89° 35' 49" WEST 674.70 FEET, SOUTH 08° 09' 07" EAST 36.50 FEET, AND SOUTH 69° 38' 49" WEST 16.50 FEET;  
THENCE SOUTH 00° 09' 07" EAST 313.47 FEET TO A POINT ON THE NORTH LINE OF SAID DOCUMENT RECORDED JANUARY 11, 2002 AS FEE NO. 2002 004397;  
THENCE ALONG THE BOUNDARY THEREOF, NORTH 89° 36' 05" EAST 16.50 FEET AND SOUTH 00° 08' 37" EAST 313.16 FEET TO THE POINT OF BEGINNING.**

**THE LEGAL DESCRIPTION WAS CREATED PRIOR TO JANUARY 01, 2008.**

**TRACT 2:**

**BEGINNING AT A POINT ON THE NORTH LINE OF THE SOUTHEAST ONE-QUARTER OF SECTION 35, TOWNSHIP 2 SOUTH, RANGE 1 WEST OF THE WILLAMETTE MERIDIAN, IN THE COUNTY OF WASHINGTON AND STATE OF OREGON, EAST 551 FEET FROM THE CENTER OF SAID SECTION 35;  
THENCE EAST ALONG THE ONE-QUARTER SECTION LINE 752.5 FEET;  
THENCE SOUTH PARALLEL TO THE WEST LINE OF SAID SOUTHEAST ONE-QUARTER 676.5 FEET TO A POINT;  
THENCE WEST PARALLEL TO THE NORTH LINE OF SAID SOUTHEAST ONE-QUARTER 752.5 FEET TO A POINT;  
THENCE NORTH PARALLEL WITH THE WEST LINE OF SAID SOUTHEAST ONE-QUARTER 676.5 FEET TO THE POINT OF BEGINNING.**

**TOGETHER WITH A PORTION OF PARCEL I OF THOSE CERTAIN TRACTS OF LAND IN THE SOUTHEAST ONE-QUARTER OF SECTION 35, TOWNSHIP 2 SOUTH, RANGE 1 WEST OF THE WILLAMETTE MERIDIAN, IN THE COUNTY OF WASHINGTON AND STATE OF OREGON, CONVEYED TO GRACE COMMUNITY CHURCH OF THE ASSEMBLIES OF GOD, INC., BY DEED RECORDED JUNE 12, 2001 AS FEE NO. 2001 055727, WASHINGTON COUNTY, OREGON, DEED RECORDS, SAID PORTION BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:**

**BEGINNING AT A POINT ON THE SOUTH LINE OF PARCEL II, SAID DOCUMENT RECORDED JUNE 12, 2001 AS FEE NO. 2001 055727, WHICH POINT BEARS NORTH 89° 38' 45" EAST 284.71 FEET FROM THE SOUTHWEST CORNER THEREOF, AND RUNNING THENCE ALONG SAID SOUTH LINE TO THE SOUTHEAST CORNER OF SAID PARCEL II, NORTH 89° 38' 45" EAST 465.03 FEET;  
THENCE SOUTH 00° 09' 07" EAST 972.37 FEET TO A POINT ON THE NORTH LINE OF THAT CERTAIN TRACT OF LAND CONVEYED TO GRACE COMMUNITY CHURCH BY DEED RECORDED**

**JANUARY 11, 2002 AS FEE NO. 2002 004397, SAID DEED RECORDS;  
THENCE SOUTH 89° 36' 05" WEST ALONG SAID NORTH LINE, 281.60 FEET;  
THENCE NORTH 00° 00' 00" EAST 452.22 FEET;  
THENCE NORTH 60° 00' 00" WEST 212.13 FEET;  
THENCE NORTH 00° 05' 57" WEST 98.50 FEET;  
THENCE NORTH 30° 00' 00" EAST 121.00 FEET;  
THENCE NORTH 00° 00' 00" EAST 101.39 FEET;  
THENCE NORTH 30° 00' 00" WEST 125.27 FEET TO THE POINT OF BEGINNING.**

**THE LEGAL DESCRIPTION WAS CREATED PRIOR TO JANUARY 01, 2008.**

**TRACT 3:**

**BEGINNING AT A POINT WHICH IS 295 FEET NORTH OF THE SOUTHWEST CORNER OF THE NORTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 35, TOWNSHIP 2 SOUTH, RANGE 1 WEST, OF THE WILLAMETTE MERIDIAN, IN THE COUNTY OF WASHINGTON AND STATE OF OREGON;  
THENCE EAST 740 FEET TO A POINT;  
THENCE SOUTH 625 FEET TO THE TRUE POINT OF BEGINNING;  
THENCE NORTH 625 FEET TO A POINT;  
THENCE WEST 360 FEET TO A POINT;  
THENCE SOUTH 575 FEET TO A POINT;  
THENCE WEST TO A POINT IN THE CENTER OF SOUTHWEST BOONES FERRY ROAD (STATE HIGHWAY NO. 217);  
THENCE IN A SOUTHERLY DIRECTION TO THE NORTHWEST CORNER OF THAT CERTAIN TRACT OF LAND CONVEYED TO GEORGE H. ANDREWS BY BARGAIN AND SALE DEED, RECORDED APRIL 25, 1975, IN BOOK 1020, PAGE 0383, RECORDS OF WASHINGTON COUNTY, OREGON; THENCE EAST ALONG THE NORTH LINE OF THE SAID ANDREWS TRACT TO THE POINT OF BEGINNING.**

**THE LEGAL DESCRIPTION WAS CREATED PRIOR TO JANUARY 01, 2008.**

**TRACT 4:**

**A TRACT OF LAND IN THE SOUTHEAST ONE-QUARTER OF SECTION 35, TOWNSHIP 2 SOUTH, RANGE 1 WEST OF THE WILLAMETTE MERIDIAN, IN THE COUNTY OF WASHINGTON AND STATE OF OREGON, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:**

**BEGINNING AT A POINT ON THE NORTH LINE OF THE SOUTHEAST ONE-QUARTER OF SECTION 35, TOWNSHIP 2 SOUTH, RANGE 1 WEST OF THE WILLAMETTE MERIDIAN, IN THE COUNTY OF WASHINGTON AND STATE OF OREGON, 294 FEET EAST OF AN IRON BAR MARKING THE CENTER OF SAID SECTION;  
THENCE EAST ALONG SAID NORTH LINE, 257 FEET TO A POINT;  
THENCE SOUTH PARALLEL TO THE WEST LINE OF THE SOUTHEAST ONE-QUARTER OF SAID SECTION 35, A DISTANCE OF 660 FEET TO A POINT;  
THENCE WEST PARALLEL TO THE NORTH LINE OF SAID SOUTHEAST ONE-QUARTER OF SECTION 35, A DISTANCE OF 257 FEET;  
THENCE NORTH PARALLEL TO THE WEST LINE OF SAID SOUTHEAST ONE-QUARTER 660 FEET TO THE POINT OF BEGINNING.**

**ALSO, THAT PORTION OF THOSE CERTAIN LANDS DESCRIBED OF RECORD IN BOOK 731, PAGE 0454, LYING SOUTH OF, ALONG AND WITHIN 16-1/2 FEET OF THE SOUTH BOUNDARY OF THE TRACT ABOVE DESCRIBED.**

**EXCEPTING THEREFROM THE FOLLOWING:**

**A TRACT OF LAND IN THE SOUTHEAST ONE-QUARTER OF SECTION 35, TOWNSHIP 2 SOUTH, RANGE 1 WEST OF THE WILLAMETTE MERIDIAN, IN THE COUNTY OF WASHINGTON AND STATE OF OREGON, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:**

**BEGINNING AT A 5/8 INCH ROD AND CAP ON THE CENTER LINE OF SECTION 35, TOWNSHIP 2 SOUTH, RANGE 1 WEST OF THE WILLAMETTE MERIDIAN, IN THE COUNTY OF WASHINGTON AND STATE OF OREGON, SITUATED NORTH 89°41'41" EAST, 379.00 FEET FROM THE MONUMENT MARKING THE CENTER OF SAID SECTION 35;  
THENCE NORTH 89° 41' 41" EAST, 172.00 FEET TO A 5/8 INCH ROD AND CAP;  
THENCE SOUTH 0° 05' 16" EAST, 262.00 FEET PARALLEL WITH THE WEST LINE OF THE SOUTHEAST ONE-QUARTER OF SAID SECTION 35 TO A 5/8 INCH ROD AND CAP;  
THENCE SOUTH 89° 41' 41" WEST, 110.00 FEET TO A 5/8 INCH ROD AND CAP;  
THENCE NORTH 53° 03' 41" WEST, 77.67 FEET TO A 5/8 INCH ROD AND CAP;  
THENCE NORTH 0° 05' 16" WEST 215.00 FEET TO THE POINT OF BEGINNING.**

**ALSO EXCEPTING THEREFROM THAT CERTAIN PARCEL OF LAND DESCRIBED IN DEED TO WILLIAM GORDON MOORE RECORDED AUGUST 03, 1972 IN BOOK 880, PAGE 0735, RECORDS OF WASHINGTON COUNTY, OREGON.**

**THE LEGAL DESCRIPTION WAS CREATED PRIOR TO JANUARY 01, 2008.**

**PARCEL II:**

**A TRACT OF LAND LOCATED IN THE NORTHEAST ONE-QUARTER OF SECTION 25, TOWNSHIP 2 SOUTH, RANGE 1 WEST OF THE WILLAMETTE MERIDIAN, IN THE CITY OF TUALATIN, COUNTY OF WASHINGTON, AND STATE OF OREGON, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:**

**BEGINNING AT A 2-INCH IRON PIPE ON THE WEST LINE OF THE NORTHEAST ONE-QUARTER OF SAID SECTION MARKING THE NORTHWEST CORNER OF LOT 105, SANDHURST NO. 2 [PLAT BOOK 47, PAGE 0032], A PLAT OF RECORD;  
THENCE ALONG SAID ONE-QUARTER SECTION LINE NORTH 0° 09' 28" EAST, 230.00 TO THE TRUE POINT OF BEGINNING;  
THENCE CONTINUING ALONG SAID LINE, NORTH 0° 09' 28" EAST, 661.34 FEET TO THE SOUTH RIGHT OF WAY LINE OF SOUTHWEST SAGERT STREET (COUNTY ROAD NO. 2430) AS WIDENED FOR THE SAGERT STREET OVERPASS CROSSING THE O.D.O.T. I-5 HIGHWAY;  
THENCE ALONG SAID LINE, NORTH 83° 07' 49" EAST 443.75 FEET;  
THENCE NORTH 89° 38' 02" EAST, 153.21 FEET TO A POINT ON THE WESTERLY RIGHT OF WAY LINE OF SOUTHWEST 72ND AVENUE AS PLATTED PER SAID SANDHURST NO. 2 [PLAT BOOK 47, PAGE 0032];  
THENCE ALONG SAID LINE, SOUTH, A DISTANCE OF 210.00 FEET;  
THENCE LEAVING SAID LINE, WEST A DISTANCE OF 175.72 FEET;**



APN: 25132B800700

Statutory Quitclaim Deed  
- continued

File No.: NCS-744201-STLO (LS)

**THENCE SOUTH 57° 21' 18" WEST, 58.58 FEET;  
THENCE SOUTH 25° 27' 48" WEST, 81.30 FEET;  
THENCE SOUTH 4° 00' 00" EAST, 100.00 FEET;  
THENCE SOUTH 21° 45' 18" EAST, 65.00 FEET;  
THENCE SOUTH A DISTANCE OF 55.00 FEET;  
THENCE SOUTH 63° 11' 36" WEST, 410.80 FEET TO THE POINT OF BEGINNING.**

**THE LEGAL DESCRIPTION WAS CREATED PRIOR TO JANUARY 01, 2008.**



**First American Title**

Customer Service Department

Phone: 503.219.TRIO (8746)

Fax: 503.790.7872

Email: [cs.oregon@firstam.com](mailto:cs.oregon@firstam.com)

Date: 10/26/2022

### OWNERSHIP INFORMATION

Owner: Horizon Community Church

CoOwner:

Site: 23370 SW Boones Ferry Rd Tualatin OR 97062

Mail: PO Box 2690 Tualatin OR 97062

Parcel #: R560208

Ref Parcel #: 2S135D000106

TRS: 02S / 01W / 35 / SE

County: Washington

### PROPERTY DESCRIPTION

Map Grid: 715-E1

Census Tract: 032110 Block: 1005

Neighborhood: Byrom

School Dist: 88J Sherwood

Impr Type:

Subdiv/Plat:

Land Use: 1910 - Urban Developable Tract Improved

Std Land Use: RSFR - Single Family Residence

Zoning: Tualatin-IN - Institutional District

Lat/Lon: 45.35133543 / -122.77170321

Watershed: Abernethy Creek-Willamette River

Legal: ACRES 3.74

### ASSESSMENT AND TAXATION

Market Land: \$781,480.00

Market Impr: \$10,570.00

Market Special: \$0.00

Market Total: \$792,050.00 (2021)

% Improved: 1.00%

Assessed Total: \$302,020.00 (2021)

Levy Code: 88.15

Tax: \$5,453.70 (2021)

Millage Rate: 18.0574

Exemption:

Exemption Type:

## PROPERTY CHARACTERISTICS

Bedrooms:	Total SqFt:	Year Built: 2020
Baths, Total:	First Floor:	Eff Year Built: 2020
Baths, Full:	Second Floor:	Lot Size Ac: 3.74 Acres
Baths, Half:	Basement Fin:	Lot Size SF: 162,914 SqFt
Total Units:	Basement Unfin:	Lot Width:
# Stories:	Basement Total:	Lot Depth:
# Fireplaces:	Attic Fin:	Roof Material:
Cooling:	Attic Unfin:	Roof Shape:
Heating:	Attic Total:	Ext Walls:
Building Style:	Garage:	Const Type:

## SALES AND LOAN INFORMATION

Owner	Date	Doc #	Sale Price	Deed Type	Loan Amt	Loan Type
GRACE CMNTY CH OF ASSEMBLIES/GOD	09/07/2012	000074300		Deed Of Trust	\$80,600.00	Conv/Unk
GRACE CMNTY CH OF ASSEMBLIES/GOD	08/30/2011	0000059805		Deed Of Trust	\$459,900.00	Conv/Unk
GRACE CMNTY CH OF ASSEMBLIES/GOD	10/14/2010	0000081566		Deed Of Trust	\$265,500.00	Conv/Unk
GRACE CMNTY CH OF ASSEMBLIES/GOD	11/13/2008	0000092584		Deed Of Trust		Conventional
GRACE CMNTY CH OF ASSEMBLIES/GOD	11/16/2006	0000135820		Deed Of Trust	\$916,000.00	Conv/Unk
GRACE CMNTY CH OF ASSEMBLIES/GOD	07/25/2006	0000088138		Deed Of Trust	\$3,040,000.00	Conv/Unk
GRACE CMNTY CH OF ASSEMBLIES/GOD	06/17/2005	69063		Deed Of Trust	\$3,500,000.00	Conv/Unk
GRACE CMNTY CH OF ASSEMBLIES/GOD	06/12/2001	55727		Deed		Conv/Unk
DALE L TURNIDGE	01/17/2001	4071		Deed Of Trust	\$350,000.00	Conventional
DALE L TURNIDGE	11/17/1997	107915	\$406,000.00	Deed	\$141,750.00	Conventional
				Deed		Conv/Unk

Sentry Dynamics, Inc. and its customers make no representations, warranties or conditions, express or implied, as to the accuracy or completeness of information contained in this report.

Property R2146863 Owner HORIZON COMMUNITY CHURCH Property Address -

2023 In Process Real Market Value \$16,551,830

2022 GENERAL INFORMATION

Property Status A Active
Property Type Residential
Legal Description ACRES 34.14
Alternate Account Number -
Neighborhood 4TL0 TRACTLAND-AREA 10 (TUAL SHWD TRKC TRSF)
Map Number 2S135D000106
Property Use 9110: EXEMPT CHURCH IMPROVED
Levy Code Area 088.15
2022 Certified Tax Rate 17.7392

RELATED PROPERTIES

Linked Properties -
Property Group ID -
Grouped Properties -
Split / Merge Date -
Split / Merge Accounts -
Split / Merge Message -

2022 OWNER INFORMATION

Owner Name HORIZON COMMUNITY CHURCH
Mailing Address PO BOX 2690 TUALATIN, OR 97062

EXEMPTIONS/DEFERRALS

Table with 3 columns: EXEMPTION CODE, EXEMPTION DESCRIPTION, EXPIRATION YEAR. Row 1: RX, RX: Owned by Religious Organization (ORS 307.140), -

PROPERTY FLAGS

Table with 2 columns: PROPERTY FLAG CODE, PROPERTY FLAG DESCRIPTION. Row 1: NAP, NON-ASSESSABLE PORTION

2023 IMPROVEMENTS


Expand/Collapse All

Improvement #1 Improvement Type Single-Family Residence Beds / Baths 2 / 1 Sketch


Table with 4 columns: ID, SECTION TYPE, YEAR BUILT, AREA. Rows: 1 (1) - Main Home, 1977, 1,050; 2 (11) - Yard Improvements, 1977, 324

Improvement #2 Improvement Type Single-Family Residence Beds / Baths 2 / 2 Sketch


ID	SECTION TYPE	YEAR BUILT	AREA
1	(1) - Main Home	1973	1,450
2	(11) - Yard Improvements	1973	1

Improvement #3      Improvement Type      Beds / Baths       Sketch  
 -      **Non-Building**      **0 / 0**


ID	SECTION TYPE	YEAR BUILT	AREA
1	(11) - Yard Improvements	1980	120

Improvement #4      Improvement Type       Sketch  
 -      **C: Commercial**


ID	SECTION TYPE	YEAR BUILT	AREA
1	(309) - Church	2005	54,000

Improvement #5      Improvement Type       Sketch  
 -      **Other Improvements**


ID	SECTION TYPE	YEAR BUILT	AREA
1	(476) - Farm Implement Building	1997	2,592

Improvement #6      Improvement Type       Sketch  
 -      **Other Improvements**


ID	SECTION TYPE	YEAR BUILT	AREA
1	(326) - Storage Garage	1997	576

Improvement #7      Improvement Type       Sketch  
 -      **Other Improvements**

ID	SECTION TYPE	YEAR BUILT	AREA
1	(326) - Storage Garage	1998	506

Improvement #8      Improvement Type       Sketch  
 -      **Other Improvements**

ID	SECTION TYPE	YEAR BUILT	AREA
1	(478) - Farm Implement Shed	1997	468

Improvement #9      Improvement Type       Sketch  
 -      **Other Improvements**

ID	SECTION TYPE	YEAR BUILT	AREA
1	(476) - Farm Implement Building	1980	864

#### 2023 LAND SEGMENTS

STATE CODE	SEGMENT TYPE	LAND SIZE
L1	19: IMPROVED SUBURBAN	2.50 acres
L2	41: TRACT FUTURE	31.64 acres

**TOTALS**      **34.14 acres**

**CERTIFIED / IN PROCESS VALUES**

YEAR	IMPROVEMENTS	LAND	RMV	SPECIAL USE	ASSESSED VALUE
2023 (In Process)	\$10,602,740	\$5,949,090	\$16,551,830	\$0	\$0
2022	\$10,873,090	\$5,949,090	\$16,822,180	\$0	\$0

**SALES HISTORY**

SALE DATE	SELLER	BUYER	INST #	SALE PRICE	INST TYPE
	GRACE COMMUNITY CHURCH OF THE ASSAMBLIES OF GOD INC	HORIZON COMMUNITY CHURCH	-	-	N

- If applicable, the described property is receiving special valuation based upon its use. Additional rollback taxes which may become due based on the provisions of the special valuation are not indicated in this listing.

**TAX SUMMARY**

Effective Date:  [Details](#)

TAXYEAR	AD VALOREM	SPECIAL ASMT	TOTAL BILLED	LEVY BALANCE	INTEREST OWING	DATE PAID	TOTAL OWED
2022	\$0.00	\$0	\$0.00	\$0.00	\$0.00	-	\$0.00
2021	\$0.00	\$0	\$0.00	\$0.00	\$0.00	-	\$0.00
2020	\$0.00	\$0	\$0.00	\$0.00	\$0.00	-	\$0.00
2019	\$0.00	\$0	\$0.00	\$0.00	\$0.00	-	\$0.00
2018	\$0.00	\$0	\$0.00	\$0.00	\$0.00	-	\$0.00
2017	\$0.00	\$0	\$0.00	\$0.00	\$0.00	-	\$0.00
2016	\$0.00	\$0	\$0.00	\$0.00	\$0.00	-	\$0.00
2015	\$0.00	\$0	\$0.00	\$0.00	\$0.00	-	\$0.00
2014	\$0.00	\$0	\$0.00	\$0.00	\$0.00	-	\$0.00
2013	\$0.00	\$0	\$0.00	\$0.00	\$0.00	-	\$0.00
2012	\$0.00	\$0	\$0.00	\$0.00	\$0.00	-	\$0.00
2011	\$0.00	\$0	\$0.00	\$0.00	\$0.00	-	\$0.00
2010	\$0.00	\$0	\$0.00	\$0.00	\$0.00	-	\$0.00
2009	\$0.00	\$0	\$0.00	\$0.00	\$0.00	-	\$0.00
2008	\$0.00	\$0	\$0.00	\$0.00	\$0.00	-	\$0.00
2007	\$0.00	\$0	\$0.00	\$0.00	\$0.00	-	\$0.00

**TOTAL TAXES DUE**

<b>Current Year Due</b>	\$0.00
<b>Past Years Due</b>	\$0.00
<b>Total Due</b>	\$0.00

Please contact the district if you have further questions.

**After recording return to:**

9300 SW Norwood Road OR LLC  
c/o Vista Acquisitions, LLC  
2964 Peachtree Road, Suite 585  
Atlanta, Georgia 30305

**This space reserved for recorder's use.**

**Until a change is requested, all tax statements shall be sent to Grantee at the following address:**

9300 SW Norwood Road OR LLC  
c/o Vista Acquisitions, LLC  
2964 Peachtree Road, Suite 585  
Atlanta, Georgia 30305

**SPECIAL WARRANTY DEED**

**NORWOOD HORIZON HOLDINGS LLC**, a Delaware limited liability company ("**Grantor**") conveys and specially warrants to **9300 SW NORWOOD ROAD OR LLC**, a Georgia limited liability company ("**Grantee**") the real property in Washington County, Oregon, more particularly described on Exhibit A attached hereto and by this reference incorporated herein (the "**Property**"), free of encumbrances created or suffered by the Grantor, except for those encumbrances set forth on Exhibit B, attached hereto and by this reference incorporated herein.

The true consideration for this conveyance in terms of dollars is \$1,000,000.00.


BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010. THIS INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 OR 215.010, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930, AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010.



DATED: November 18, 2022.

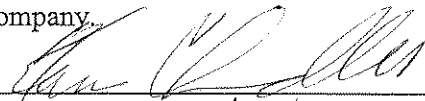
GRANTOR:

**NORWOOD HORIZON HOLDINGS LLC,  
a Delaware limited liability company**

By:   
Name: Sydney Allen  
Title: Managing Member

STATE OF Colorado )  
COUNTY OF Eagle ) ss.

The foregoing instrument is acknowledged before me this 18<sup>th</sup> day of November, 2022, by Sydney Allen, as Managing Member of Norwood Horizon Holdings LLC, a Delaware limited liability company, on behalf of the limited liability company.

  
Notary Public for Colorado  
My commission expires: 8/28/2024

**KAREN S CHANDLER**  
NOTARY PUBLIC - STATE OF COLORADO  
Notary ID #20164014728  
My Commission Expires 8/28/2024

**Exhibit A**

(Legal Description)

The Land referred to herein below is situated in the County of Washington, State of Oregon, and is described as follows:

A TRACT OF LAND IN THE SOUTHEAST ONE-QUARTER OF SECTION 35, TOWNSHIP 2 SOUTH, RANGE 1 WEST, WILLAMETTE MERIDIAN, WASHINGTON COUNTY, OREGON BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A 5/8 INCH ROD AND CAP ON THE CENTERLINE OF SECTION 35, TOWNSHIP 2 SOUTH, RANGE 1 WEST OF THE WILLAMETTE MERIDIAN, SITUATED NORTH 89°41'41" EAST, 379.00 FEET FROM THE MONUMENT MARKING THE CENTER OF SAID SECTION 35; THENCE NORTH 89°41'41" EAST 172.00 FEET TO A 5/8 INCH IRON ROD AND CAP; THENCE SOUTH 0°05'16" EAST, 262.00 FEET PARALLEL WITH THE WEST LINE OF THE SOUTHEAST ONE-QUARTER OF SAID SECTION 35 TO A 5/8 INCH ROD AND CAP; THENCE SOUTH 89°41'41" WEST, 110.00 FEET TO A 5/8 INCH ROD AND CAP; THENCE NORTH 53°03'41" WEST, 77.67 FEET TO A 5/8 INCH ROD AND CAP; THENCE NORTH 0°05'16" WEST, 215.00 FEET TO THE POINT OF BEGINNING.

NOTE: THIS LEGAL DESCRIPTION WAS CREATED PRIOR TO JANUARY 1, 2008.

**Exhibit B**

(Permitted Encumbrance)

1. Water rights, claims to water or title to water, whether or not such rights are a matter of Public Record.



AKS ENGINEERING & FORESTRY, LLC  
12965 SW Herman Road, Suite 100, Tualatin, OR 97062  
P: (503) 563-6151 F: (503) 563-6152

AKS Job #8723

OFFICES IN: TUALATIN, OR - VANCOUVER, WA - KEIZER, OR - BEND, OR

## Exhibit A

### Description

A tract of land located in the Southeast One-Quarter of Section 35, Township 2 South, Range 1 West, Willamette Meridian, City of Tualatin, Washington County, Oregon, and being more particularly described as follows:

Commencing at the center of Section 35, Township 2 South, Range 1 West, Willamette Meridian; thence along the east-west center section line, South  $88^{\circ}38'39''$  East 294.00 feet; thence leaving said east-west center section line, South  $01^{\circ}34'14''$  West 17.00 feet to the Point of Beginning; thence South  $88^{\circ}38'39''$  East 603.93 feet; thence South  $01^{\circ}21'21''$  West 47.35 feet; thence North  $88^{\circ}38'39''$  West 20.00 feet; thence South  $01^{\circ}34'46''$  West 500.25 feet; thence along a curve to the right with a Radius of 220.50 feet, a Central Angle of  $12^{\circ}20'05''$ , an Arc Length of 47.47 feet, and a Chord of South  $58^{\circ}51'11''$  West 47.38 feet; thence South  $65^{\circ}01'13''$  West 162.89 feet; thence along a curve to the left with a Radius of 297.00 feet, a Central Angle of  $25^{\circ}33'33''$ , an Arc Length of 132.49 feet, and a Chord of South  $52^{\circ}14'27''$  West 131.39 feet; thence along a reverse curve to the right with a Radius of 64.50 feet, a Central Angle of  $44^{\circ}21'28''$ , an Arc Length of 49.94 feet, and a Chord of South  $61^{\circ}38'25''$  West 48.70 feet; thence along a reverse curve to the left with a Radius of 64.50 feet, a Central Angle of  $22^{\circ}47'30''$ , an Arc Length of 25.66 feet, and a Chord of South  $72^{\circ}25'24''$  West 25.49 feet; thence along a reverse curve to the right with a Radius of 40.00 feet, a Central Angle of  $58^{\circ}15'43''$ , an Arc Length of 40.67 feet, and a Chord of North  $89^{\circ}50'30''$  West 38.94 feet; thence along a reverse curve to the left with a Radius of 194.00 feet, a Central Angle of  $36^{\circ}57'36''$ , an Arc Length of 125.14 feet, and a Chord of North  $79^{\circ}11'26''$  West 122.99 feet; thence North  $00^{\circ}38'15''$  East 67.14 feet; thence North  $88^{\circ}41'18''$  West 219.00 feet; thence North  $01^{\circ}18'42''$  East 15.00 feet to the south line of Deed Document Number 2021-097551; thence along said south line, South  $88^{\circ}41'18''$  East 149.95 feet to the east line of said Deed; thence along said east line, the east line of Deed Document Number 2022-035715, the east line of Deed Book 1004, Page 30, and the northerly extension thereof, North  $01^{\circ}34'14''$  East 659.15 feet to the Point of Beginning.

The above described tract of land contains 9.20 acres, more or less.

2/28/2023

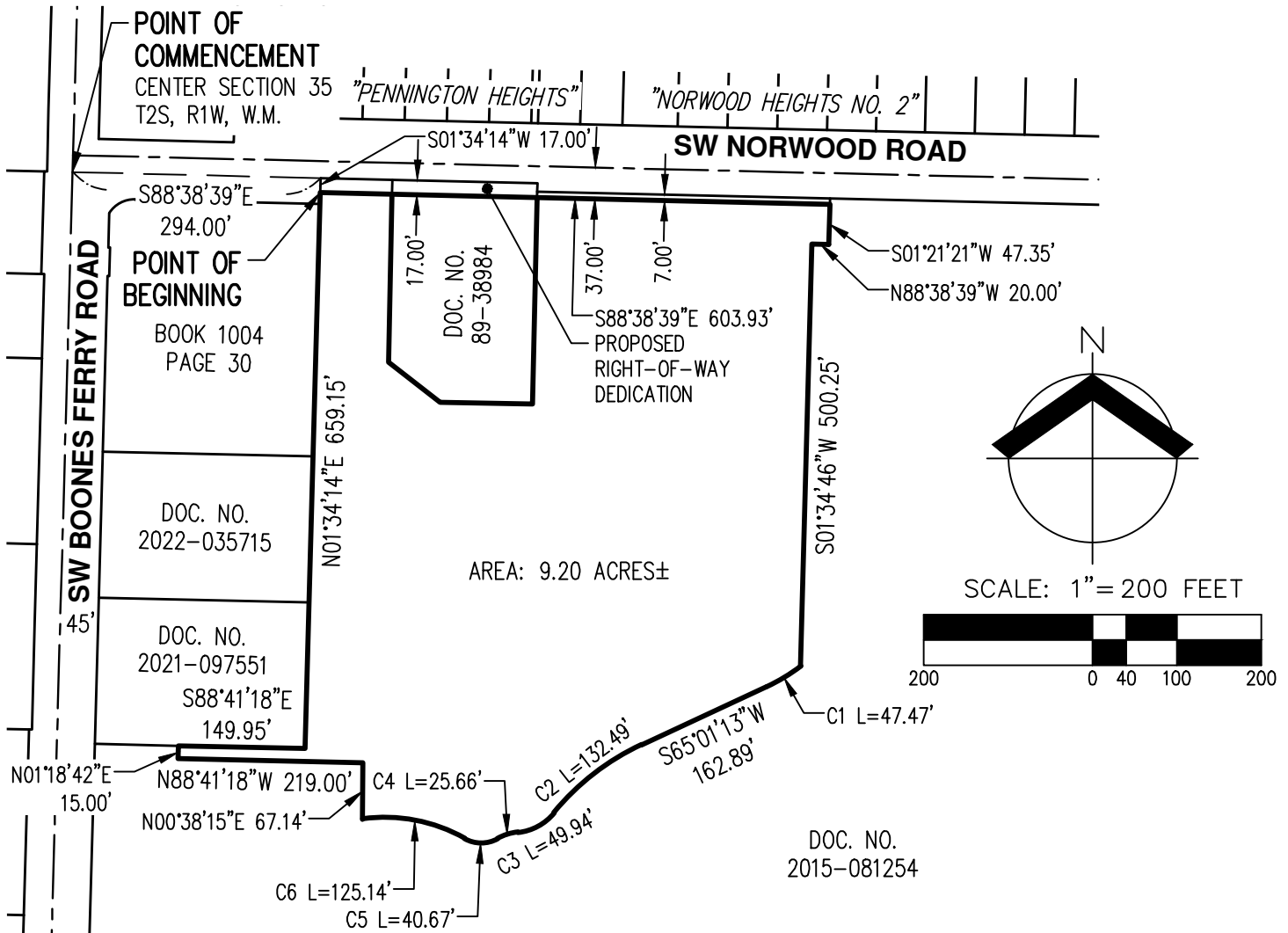
REGISTERED  
PROFESSIONAL  
LAND SURVEYOR

OREGON  
JANUARY 9, 2007  
NICK WHITE  
70652LS

RENEWS: 6/30/24

# EXHIBIT B

A TRACT OF LAND LOCATED IN THE SE 1/4 OF SEC. 35, T2S, R1W, W.M., CITY OF TUALATIN, WASHINGTON COUNTY, OREGON



CURVE TABLE				
CURVE	RADIUS	DELTA	LENGTH	CHORD
C1	220.50'	12°20'05"	47.47'	S58°51'11"W 47.38'
C2	297.00'	25°33'33"	132.49'	S52°14'27"W 131.39'
C3	64.50'	44°21'28"	49.94'	S61°38'25"W 48.70'
C4	64.50'	22°47'30"	25.66'	S72°25'24"W 25.49'
C5	40.00'	58°15'43"	40.67'	N89°50'30"W 38.94'
C6	194.00'	36°57'36"	125.14'	N79°11'26"W 122.99'

2/28/2023

REGISTERED  
PROFESSIONAL  
LAND SURVEYOR

*Nick White*

OREGON  
JANUARY 9, 2007  
NICK WHITE  
70652LS  
RENEWS: 6/30/24

## MAP OF DESCRIPTION

AKS ENGINEERING & FORESTRY, LLC  
12965 SW HERMAN RD, STE 100  
TUALATIN, OR 97062  
503.563.6151 WWW.AKS-ENG.COM



EXHIBIT  
**B**

DRWN: MSD  
CHKD: NSW  
AKS JOB:  
8723

**AFFIDAVIT OF MAILING NOTICE**

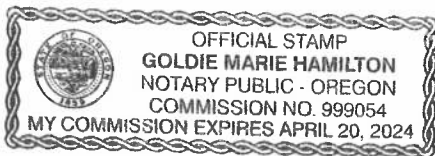
STATE OF OREGON            )  
  ) SS  
COUNTY OF WASHINGTON )

I, Mitchell Godwin being first duly sworn, depose and say:

That on the 3<sup>rd</sup> day of October, 2022, I will serve upon the persons shown on Exhibit "A" (Mailing Area List), attached hereto and by this reference incorporated herein, a copy of the Notice of Neighborhood/Developer Meeting marked Exhibit "B," attached hereto and by this reference incorporated herein, by mailing to them a true and correct copy of the original hereof. I further certify that the addresses shown on said Exhibit "A" are their regular addresses as determined from the books and records of the Washington County and/or Clackamas County Departments of Assessment and Taxation Tax Rolls, and that said envelopes were placed in the United States Mail with postage fully prepared thereon.

*Mitchell Godwin*  
Signature

SUBSCRIBED AND SWORN to before me this 3<sup>rd</sup> day of October, 2022.



*Goldie Marie Hamilton*  
Notary Public for Oregon  
My commission expires: 4/20/2024

RE: Norwood Multi-Family - Annexation, Partition, and Map/Text Amendment

October 3, 2022

**RE: Neighborhood Review Meeting  
Annexation, Map & Text Amendment, and Partition Applications**



Dear Property Owner/Neighbor:

AKS Engineering & Forestry, LLC, is holding a neighborhood meeting regarding two properties on the south side of SW Norwood Road and east of SW Boones Ferry Road in Tualatin, Oregon: the Horizon Christian School property (Tax Lot 106 of Washington County Assessor's Map 2S1135D) that is currently in the City of Tualatin and zoned Institutional (IN), and a one-acre lot (Tax Lot 108 of Washington County Assessor's Map 2S1135D) that is currently outside the Tualatin city limits and has Washington County zoning of Future Development 20-acre (FD-20). A map of the location is shown on the back of this letter. The project involves annexing Tax Lot 108 into the City of Tualatin, partitioning the school site (Tax Lot 106) into two lots, and amending the Tualatin Plan Map to apply the High Density High Rise (RH-HR) zone to ±9.2 acres of property along SW Norwood Road for future multi-family development. A Text Amendment to modify where the RH-HR zone can be applied will also be submitted.

The purpose of this meeting is to provide a forum for surrounding property owners/residents to review and discuss the project before applications are submitted to the City. This meeting will give you the opportunity to share any special information about the property involved. We will attempt to answer questions that may be relevant to meeting development standards consistent with the City of Tualatin Development Code. This neighborhood meeting is scheduled for:

**October 25, at 6:30 p.m.  
Tualatin Public Library- 18878 SW Martinazzi Avenue, Tualatin, OR 97062**

Please note that this meeting will be an informational meeting on preliminary plans. These plans may be altered prior to submittal of applications to the City. Depending upon the type of land use action required, you may receive official notice from the City of Tualatin requesting that you participate with written comments and/or you may have the opportunity to attend a public hearing.

I look forward to discussing this project with you. If you have questions but will be unable to attend, please feel free to contact me at 503-563-6151 or by email at [slotemakerm@aks-eng.com](mailto:slotemakerm@aks-eng.com).

Sincerely,

**AKS ENGINEERING & FORESTRY, LLC**

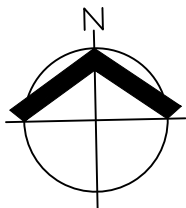
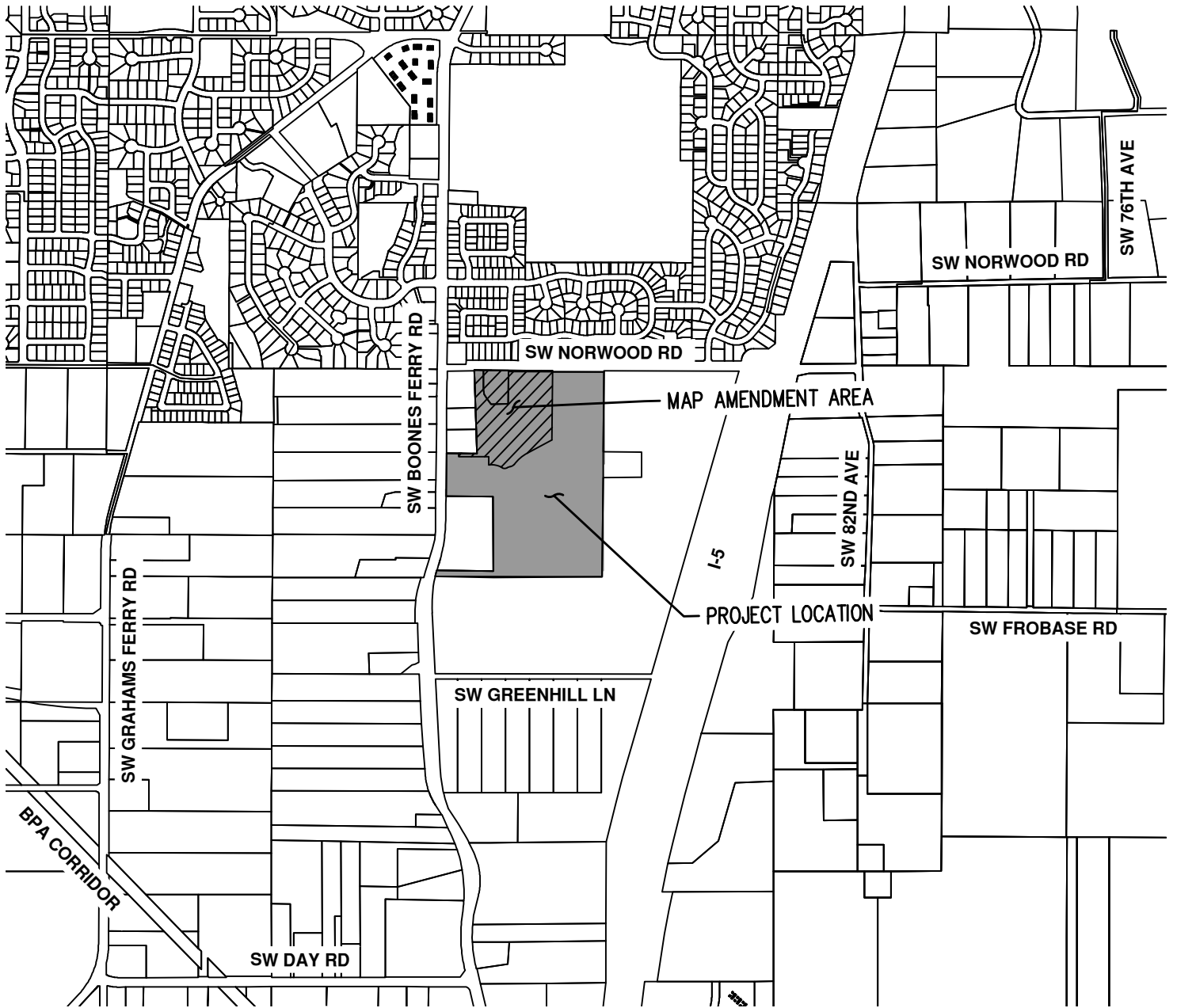
A handwritten signature in blue ink that reads 'Melissa Slotemaker'.

Melissa Slotemaker, AICP  
12965 SW Herman Road, Suite 100  
Tualatin, OR 97062  
(503) 563-6151 | [slotemakerm@aks-eng.com](mailto:slotemakerm@aks-eng.com)

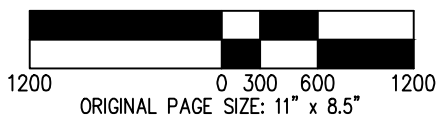
Enclosure: Vicinity Map

cc: [planning@tualatin.gov](mailto:planning@tualatin.gov), City of Tualatin Community Development Department  
Tualatin Citizen Involvement Organizations (CIOs) by email

BEND, OR | KEIZER, OR | TUALATIN, OR | VANCOUVER, WA  
[www.aks-eng.com](http://www.aks-eng.com)



SCALE: 1" = 1200 FEET



DATE: 09/29/2022

**SITE VICINITY MAP NORWOOD MULTI-FAMILY**

FIGURE  
**1**

AKS ENGINEERING & FORESTRY, LLC  
12965 SW HERMAN RD, STE 100  
TUALATIN, OR 97062  
503.563.6151 WWW.AKS-ENG.COM



DRWN: JAM  
CHKD: AMC  
AKS JOB:  
8723



AGHAZADEH-SANAEI MEHDI & ASIAEE NAHID  
23745 SW BOONES FERRY RD  
TUALATIN, OR 97062

AGORIO DIANA  
22790 SW 87TH PL  
TUALATIN, OR 97062

ALLARD JOHN A & ALLARD KELCIE L  
8885 SW IOWA DR  
TUALATIN, OR 97062

ALLISON VICKI R  
8994 SW STONO DR  
TUALATIN, OR 97062

ALVSTAD RANDALL & ALVSTAD KAREN  
23515 SW BOONES FERRY RD  
TUALATIN, OR 97062

ANDERSON SCOTT A & ANDERSON ANDREA N  
22825 SW 92ND PL  
TUALATIN, OR 97062

ANDERSON RICHARD J JR  
22630 SW 93RD TER  
TUALATIN, OR 97062

ANTHIMIADES GEORGE T & ANTHIMIADES  
STEPHANIE J  
8735 SW STONO DR  
TUALATIN, OR 97062

APLIN ALAN WHITNEY & APLIN PATRICIA ANN  
22940 SW ENO PL  
TUALATIN, OR 97062

ARCHULETA JOHN L & ARCHULETA ELISHA J  
9385 SW SKOKOMISH LN  
TUALATIN, OR 97062

ARCIGA MARCO A & ARCIGA VIRGINIA L  
22550 SW 93RD TER  
TUALATIN, OR 97062

ATKINS DANIEL J & ATKINS DAWNITA G  
22570 SW 93RD TER  
TUALATIN, OR 97062

AUGEE JOEL L & AUGEE HEIDI M S  
8905 SW IOWA DR  
TUALATIN, OR 97062

AUST JOSEPHINE A  
8846 SW STONO DR  
TUALATIN, OR 97062

AUSTIN MICHAEL P & AUSTIN ALLISON M  
9325 SW IOWA DR  
TUALATIN, OR 97062

BABCOCK GAYLON  
8680 SW STONO DR  
TUALATIN, OR 97062

BACA GREGORY R & BACA ELIZABETH R  
16869 SW 65TH AVE #387  
LAKE OSWEGO, OR 97035

BALLARD FAMILY TRUST  
22925 SW MIAMI PL  
TUALATIN, OR 97062

BANKS LANDON & BANKS MIRANDA  
22850 SW 93RD TER  
TUALATIN, OR 97062

BATES-BLANCO FAMILY TRUST  
22648 SW 96TH DR  
TUALATIN, OR 97062

BAVARO EMILY EVELYN & BAVARO JOSHUA  
22940 SW VERMILLION DR  
TUALATIN, OR 97062

BAZANT CHRISTINE LEE & BAZANT JOHN JOSEPH  
36449 HWY 34  
LEBANON, OR 97355

BEAR ALISA ANN TRUST  
8525 SW MARICOPA DR  
TUALATIN, OR 97062

BECKER SUSAN  
9405 SW QUINAULT LN  
TUALATIN, OR 97062

BECKSTEAD BRIAN A & BECKSTEAD ZERELDA G  
8886 SW STONO DR  
TUALATIN, OR 97062

BEDDES CRISTINA & BEDDES AARON  
22765 SW ENO PL  
TUALATIN, OR 97062

BEEBE BRENT E & BEEBE SANDRA L  
8895 SW STONO DR  
TUALATIN, OR 97062

BEIKMAN STEPHEN & BEIKMAN MONIQUE  
22760 SW 87TH PL  
TUALATIN, OR 97062

BELL JAMES M & BELL EVA J  
22710 SW VERMILLION DR  
TUALATIN, OR 97062

BELL REV TRUST  
8930 SW IOWA DR  
TUALATIN, OR 97062

BEMROSE HEATHER LYNN  
9320 SW IOWA DR  
TUALATIN, OR 97062

BENNETT JASON M & MCALEER MARGUERITE T  
22730 SW VERMILLION DR  
TUALATIN, OR 97062

BLACK JENNIFER O & BLACK DAVID O JR  
9040 SW STONO DR  
TUALATIN, OR 97062

BOCCI JAMES A & BOCCI JULIA A  
23205 SW BOONES FERRY RD  
TUALATIN, OR 97062

BOELL DONALD B & BOELL PATRICIA J  
22675 SW 87TH  
TUALATIN, OR 97062

BOHMAN FAMILY TRUST  
22567 SW 96TH DR  
TUALATIN, OR 97062

BOSKET JOHN A & BOSKET JULIE L  
9355 SW STONO DR  
TUALATIN, OR 97062

BOX MICHAEL L & BOX KATIE M  
9370 SW PALOUSE LN  
TUALATIN, OR 97062

BRASHEAR GREGORY A  
22935 SW MANDAN DR  
TUALATIN, OR 97062

BRECK KOLTE TRISTON & BEATTIE DANIELLE  
NICOLE  
9290 SW STONO DR  
TUALATIN, OR 97062

BROADHURST CURTIS  
22543 SW 96TH DR  
TUALATIN, OR 97062

BROWN KATHERINE MARIE & BROWN  
CHRISTOPHER DAVID  
22683 SW 96TH DR  
TUALATIN, OR 97062

BUCKALEW LIVING TRUST  
22943 SW BOONES FERRY RD  
TUALATIN, OR 97062

BUHAY JASON & BUHAY MICHELLE  
9300 SW STONO DR  
TUALATIN, OR 97062

BUICH ALEXANDER & BUICH CORRINE  
22985 SW MIAMI PL  
TUALATIN, OR 97062

BUNCE MICHAEL R REVOC LIV TRUST & BUNCE  
DEBORAH J REVOC LIV TRUST  
9150 SW IOWA DR  
TUALATIN, OR 97062

BURCHFIEL LARRY & BURCHFIEL DEBORAH  
8858 SW STONO DR  
TUALATIN, OR 97062

BURCHETT KENNETH T & JOY A JOINT LIV TRUST  
9700 SW IOWA DR  
TUALATIN, OR 97062

BURNS DANIEL D & KRILL DEANN R  
9345 SW QUINAULT LN  
TUALATIN, OR 97062

CAIS CARLY J  
9340 SW STONO DR  
TUALATIN, OR 97062

CALDERON CAMIE M & CALDERON DANIEL  
22735 SW 92ND PL  
TUALATIN, OR 97062

CALKINS MICHAEL & CALKINS DIANE  
8890 SW STONO DR  
TUALATIN, OR 97062

CARBAJAL PEDRO & CARBAJAL REGINA  
8925 SW IOWA DR  
TUALATIN, OR 97062

CARDENAS FERNANDO  
9340 SW QUINAULT LN  
TUALATIN, OR 97062

CARNS STEVEN C  
9335 SW QUINAULT LN  
TUALATIN, OR 97062

CHAFF HEIDI L  
22626 SW 96TH DR  
TUALATIN, OR 97062

CHAMBERLAND MATHEW & CHAMBERLAND  
JAMES W  
8975 SW IOWA DR  
TUALATIN, OR 97062

CHAMBERLAIN JOHN & CHAMBERLAIN DEBRA  
9000 SW GREENHILL LN  
TUALATIN, OR 97062

CHAMPAGNE PATRICK & ROY CELINE  
8880 SW IOWA DR  
TUALATIN, OR 97062

CHAMSEDDINE WAEL M & CHAMSEDDINE  
BECKY A  
22900 SW ERIO PL  
TUALATIN, OR 97062

CHAN JOSEPH L  
23156 BLAND CIR  
WEST LINN, OR 97068

CHAN CHEUK YEE CHAN REVOC LIV TRUST  
22800 SE VERMILION DR  
TUALATIN, OR 97062

CHAPEK CARRIEANN & CHAPEK CALEB  
9360 SW SKOKOMISH LN  
TUALATIN, OR 97062

CHASE HARRY M & CHASE CATHY LEE  
8799 SW STONO DR  
TUALATIN, OR 97062

CHENG SIMON K  
9860 SW LUMBEE LN  
TUALATIN, OR 97062

CHILDS ROBERT M & CHILDS MARY J  
22705 SW VERMILLION DR  
TUALATIN, OR 97062

CHRISTENSEN STANFORD DEE & CAROL MAE  
REV INTERVIVOS TRUST  
8980 SW STONO DR  
TUALATIN, OR 97062

CLARK ROY H  
9295 SW PALOUSE LN  
TUALATIN, OR 97062

CLARK KURT C & CLARK TARA  
3539 DIANNA WAY  
WENATCHEE, WA 98801

COBB DANIEL Z & COBB ROSA  
22770 SW 89TH PL  
TUALATIN, OR 97062

COLE STEVEN W & ROBERTS ANDREA M  
22850 SW ENO PL  
TUALATIN, OR 97062

COMMUNITY PARTNERS FOR AFFORDABLE  
HOUSING  
PO BOX 23206  
TIGARD, OR 97281

COMPTON MARC A & COMPTON JODY L  
22151 SW ANTIOCH DOWNS CT  
TUALATIN, OR 97062

CONFER ANDREW B  
22575 SW 87TH PL  
TUALATIN, OR 97062

COOPER JULIE ANN LIV TRUST  
9390 SW IOWA DR  
TUALATIN, OR 97062

CORRY FAMILY TRUST  
22905 SW MIAMI DR  
TUALATIN, OR 97062

CRANSTON MICHAEL S  
8845 SW STONO DR  
TUALATIN, OR 97062

CRAWFORD JASON S  
9563 SW IOWA DR  
TUALATIN, OR 97062

CRISP TONI K  
9380 SW IOWA DR  
TUALATIN, OR 97062

CRONKRITE ERIK  
9315 SW PALOUSE LN  
TUALATIN, OR 97062

CRUZ ALEJANDRO FRANCISCO  
9270 SW SKOKOMISH LN  
TUALATIN, OR 97062

CURTHOYS CAROL ANN REV LIV TRUST  
8879 SW IOWA DR  
TUALATIN, OR 97062

DARLING LANCE F  
22865 SW 94TH TER  
TUALATIN, OR 97062

DAVIS JASON WAYNE  
9180 SW STONO DR  
TUALATIN, OR 97062

DEARDORFF CRAIG S & DEARDORFF ALBERTA  
22595 SW 93RD TER  
TUALATIN, OR 97062

DERIENZO NICHOLAS C & DERIENZO COURTNEY  
LEIGH  
22755 SW 87TH PL  
TUALATIN, OR 97062

DICKMAN SCOTT D & CHEN WEIWEN  
22955 SW ERIO PL  
TUALATIN, OR 97062

DIETRICH ROBERT & DIETRICH SUSAN  
9650 SW IOWA DR  
TUALATIN, OR 97062

DITTMAN ADAM H & DITTMAN ELIZABETH A C  
22785 SW 89TH PL  
TUALATIN, OR 97062

DOSS ANDREA & DOSS BRANDON  
22580 SW 94TH TER  
TUALATIN, OR 97062

DOW PETER J REV TRUST & SHERFY JENNIFER L  
REV TRUST  
9360 SW QUINAULT LN  
TUALATIN, OR 97062

DOWNES ADRIAN & DOWNES CATHERINE  
22945 SW MIAMI PL  
TUALATIN, OR 97062

DUFFY RONALD E TRUST  
9795 SW IOWA DR  
TUALATIN, OR 97062

DUNN PATRICK P & DUNN CLARA I RUSINQUE  
9380 SW PALOUSE LN  
TUALATIN, OR 97062

DUNN KARIN R  
9500 SW IOWA DR  
TUALATIN, OR 97062

EAKINS EILEEN G  
22760 SW 93RD TERR  
TUALATIN, OR 97062

EBERHARD JEFFERY D & TAAFFE CAROL E  
22975 SW ERIO PL  
TUALATIN, OR 97062

EDELIN JENNIFER A & EDELIN SEAN M  
9350 SW QUINAULT LN  
TUALATIN, OR 97062

EDWARDS DANIELLE  
22585 SW 93RD TER  
TUALATIN, OR 97062

EGGERT BRENDA & EGGERT CHARLES  
30000 SW 35TH DR  
WILSONVILLE, OR 97070

EISENSTEIN ETHAN & EISENSTEIN MEGAN  
22750 SW VERMILLION DR  
TUALATIN, OR 97062

ELLIOTT WESLEY & ELLIOTT TERRA  
9521 SW IOWA DR  
TUALATIN, OR 97062

ELLIS FAMILY REV TRUST  
9640 SW IOWA DR  
TUALATIN, OR 97062

ENNIS MARK & ENNIS BARBARA  
9380 SW STONO DR  
TUALATIN, OR 97062

ERDMAN PAUL & ERDMAN PAMALA B  
8862 SW STONO DR  
TUALATIN, OR 97062

ERWERT EMILY  
22915 SW 94TH TER  
TUALATIN, OR 97062

ESZLINGER ERIC & ESZLINGER NATASHA  
9395 SW QUINAULT LN  
TUALATIN, OR 97062

FADLING JULIE H  
22630 SW VERMILLION DR  
TUALATIN, OR 97062

FANT BRIAN ALAN & DEBORAH SPARCK TRUST  
22680 SW ENO PL  
TUALATIN, OR 97062

FEUCHT DANIEL & BEVERLY LIV TRUST  
22715 SW 87TH PL  
TUALATIN, OR 97062

FILANTRES GUST J & FILANTRES CYNTHIA K  
9630 SW IOWA DR  
TUALATIN, OR 97062

FINDERS DEBRA P  
9355 SW PALOUSE LN  
TUALATIN, OR 97062

FITZHENRY VIRGINIA LIV TRUST  
7015 SW FOXFIELD CT  
PORTLAND, OR 97225

FLETCHER CRAIG A & FLETCHER JENINE F  
9840 SW LUMBEE LN  
TUALATIN, OR 97062

FORCE ROBERT B & FORCE JEANETTE M  
9365 SW PALOUSE LN  
TUALATIN, OR 97062

FOSSE PATRICIA J & FOSSE RANDY C  
22925 SW MANDAN DR  
TUALATIN, OR 97062

FOWLER TREVOR & FOWLER KAYLA  
22645 SW VERMILLION DR  
TUALATIN, OR 97062

FRANCIS FRANK J & FRANCIS HELEN MARIE  
9130 SW IOWA DR  
TUALATIN, OR 97062

FRANCIS KATHLEEN  
9345 SW SKOKOMISH LN  
TUALATIN, OR 97062

FRANKS TERRENCE D  
22730 SW 90TH PL  
TUALATIN, OR 97062

FRAVEL LINDA SHAW TRUST  
9365 SW SKOKOMISH LN  
TUALATIN, OR 97062

FRAZIER FAMILY LLC  
22830 SW 89TH PL  
TUALATIN, OR 97062

FRAZIER JOHN D IV & FRAZIER WANDA R  
22830 SW 89TH PL  
TUALATIN, OR 97062

FRENCH RODERICK LEE & FRENCH THERESE  
LYNN  
9080 SW STONO DR  
TUALATIN, OR 97062

FRIBLEY SARAH E & FRIBLEY CHAD C  
9005 SW STONO DR  
TUALATIN, OR 97062

FRITTS MICHELLE M & FRITTS BRETT C  
22945 SW ENO PL  
TUALATIN, OR 97062

FRONIUS JOHN A & FRONIUS SUSAN A  
22650 SW 87TH PL  
TUALATIN, OR 97062

FRY ALBERTA A TRUST  
9175 SW STONO DR  
TUALATIN, OR 97062

FULLER ERIC M & FULLER XIAOYAN  
9365 SW QUINAULT LN  
TUALATIN, OR 97062

GALANG JAN VINCENT SUNGA & GALANG CINDY  
BUSTOS  
9400 SW IOWA DR  
TUALATIN, OR 97062

GALVER ROBERTO & GALVER PATRICIA BYRNE  
22995 SW VERMILLION DR  
TUALATIN, OR 97062

GAMACHE ROBERT R & GAMACHE CHERI M  
22770 SW VERMILLION DR  
TUALATIN, OR 97062

GANEY DANIEL T & BELLINGHAM TAUNI A  
22556 SW 96TH DR  
TUALATIN, OR 97062

GARIBAY JAIME  
22555 SW 94TH TER  
TUALATIN, OR 97062

GARRETT RYAN P & GARRETT KELLY E  
22970 SW MIAMI PL  
TUALATIN, OR 97062

GENSLER KRISTOPHER & GENSLER MARIAH  
8540 SW MARICOPA DR  
TUALATIN, OR 97062

GEORGE TIMOTHY P & GEORGE BETHANY  
9335 SW IOWA DR  
TUALATIN, OR 97062

GEORGE REV LIV TRUST  
22695 SW ENO PL  
TUALATIN, OR 97062

GHODS SHAWN M & GHODS JENNA N  
22815 SW 89TH PL  
TUALATIN, OR 97062

GIACCHI ROBYN M  
8900 SW IOWA DR  
TUALATIN, OR 97062

GIESS SIMONE ELISABETH & IVERSON SEAN  
PATRICK  
9355 SW QUINAULT LN  
TUALATIN, OR 97062

GILBERT CHRISTOPHER S & GILBERT TAYLOR A  
22680 SW 87TH PL  
TUALATIN, OR 97062

GILCHRIST BEVERLY & GILCHRIST ROLAND T  
9310 SW IOWA ST  
TUALATIN, OR 97062

GILLARD DAVID J & GILLARD SHELLIE S  
22680 SW MIAMI DR  
TUALATIN, OR 97062

GILLIHAN THOMAS M TRUST  
22870 SW ENO PL  
TUALATIN, OR 97062

GLAESER CHARLES W & GLAESER CHRISTA M  
8955 SW IOWA DR  
TUALATIN, OR 97062

GLASS BRIAN D & GLASS LEAH M  
8900 SW SWECK DR #537  
TUALATIN, OR 97062

GOFORTH NATHAN L & TAAFFE JULIA C  
22755 SW 90TH PL  
TUALATIN, OR 97062

GOODY GREGORY & GOODY BRITTANY  
22830 SW ENO PL  
TUALATIN, OR 97062

GOUY PHIL  
8995 SW IOWA DR  
TUALATIN, OR 97062

GRANDON JOINT TRUST  
22980 SW ERIO PL  
TUALATIN, OR 97062

GREEN JUSTIN J  
8560 SW MARICOPA DR  
TUALATIN, OR 97062

GREGSON N DEAN & GREGSON DEBORAH U  
22675 SW MIAMI DR  
TUALATIN, OR 97062

GRENZ CAITLIN & GRENZ MACKENZIE  
22590 SW VERMILLION DR  
TUALATIN, OR 97062

GRIFFITH DWIGHT A & GRIFFITH H KAY  
22905 SW VERMILLION DR  
TUALATIN, OR 97062

GRIFFITH NOEL T JR & GRIFFITH ANGELA R  
8898 SW STONO DR  
TUALATIN, OR 97062

GUERRA FILEMON M JR & QUIRANTE MALINDA  
8899 SW IOWA DR  
TUALATIN, OR 97062

GUYETTE JONATHAN & GUYETTE REBECCA  
22673 SW 96TH DR  
TUALATIN, OR 97062

HACKENBRUCK JERRY ALDEN & LINDA JOAN REV  
TRUST  
22680 SW 96TH DR  
TUALATIN, OR 97062

HALL SCOTT & HALL BETH  
9065 SW STONO DR  
TUALATIN, OR 97062

HALLVIK BRUCE D & HALLVIK PAMELA S  
22640 SW ENO PL  
TUALATIN, OR 97062

HAMILTON GEORGE & ALICE TRUST  
22740 SW 87TH PL  
TUALATIN, OR 97062

HAMM STEVEN & HAMM SANDRA  
22725 SW VERMILLION DR  
TUALATIN, OR 97062

HANAWA IWAO & HANAWA LAURIE  
3528 CHEROKEE CT  
WEST LINN, OR 97068

HARRISON LIV TRUST  
8976 SW STONO DR  
TUALATIN, OR 97062

HASBROOK WILLIAM B & HASBROOK TRICIA  
22790 SW MIAMI DR  
TUALATIN, OR 97062

HASLAM KENNETH A & HASLAM JESSICA J  
22825 SW ERIO PL  
TUALATIN, OR 97062

HAUDBINE PATRICK E & HAUDBINE DELEE H  
9215 SW STONO DR  
TUALATIN, OR 97062

HEIRONIMUS JULIE A & VALLECK GEORGE D  
22710 SW 90TH PL  
TUALATIN, OR 97062

HELMS DANIEL M  
23035 SW BOONES FERRY RD  
TUALATIN, OR 97062

HERRERA FERNANDO & HERRERA MARIA D  
9360 SW STONO DR  
TUALATIN, OR 97062

HEYER TRUST  
22775 SW VERMILLION DR  
TUALATIN, OR 97062

HICKOK TODD J & HICKOK MOLLY J  
23855 SW BOONES FERRY RD  
TUALATIN, OR 97062

HILL DEREK & HILL CYNTHIA  
9600 SW IOWA DR  
TUALATIN, OR 97062

HINES MICHAEL A & HINES MARLENE R  
9730 SW IOWA DR  
TUALATIN, OR 97062

HODGE KENNETH M  
9235 SW STONO DR  
TUALATIN, OR 97062

HOLDBROOK-DADSON DENISE  
9330 SW SKOKOMISH LN  
TUALATIN, OR 97062

HOOVER DAN M  
8993 SW STONO DR  
TUALATIN, OR 97062

HORIZON COMMUNITY CHURCH  
PO BOX 2690  
TUALATIN, OR 97062

HOWE WARREN & YUHAS-HOWE HEATHER  
9495 SW NORWOOD RD  
TUALATIN, OR 97062

HUALA ROBIN PATRICK  
14607 NE 57TH ST  
BELLEVUE, WA 98007

HUMPHREY MARGIE LIV TRUST  
22820 SW 92ND PL  
TUALATIN, OR 97062

HUMPHREY SUSAN E  
8801 SW STONO DR  
TUALATIN, OR 97062

HYRE TIMOTHY R & HYRE ANNILEE D  
22840 SW VERMILLION DR  
TUALATIN, OR 97062

INGRAM CLIFFORD KEITH & INGRAM ELISABETH  
JOY  
22785 SW 87TH PL  
TUALATIN, OR 97062

JACOBS JEFFREY W  
9360 SW PALOUSE LN  
TUALATIN, OR 97062

JASTRAM WILLIAM E & JASTRAM CHRISTINE A  
9015 SW IOWA DR  
TUALATIN, OR 97062

JENKINS PHILIP D & JENKINS KRISTEN K  
9240 SW STONO DR  
TUALATIN, OR 97062

JOHNSON FLETCHER & JOHNSON CHRISTINA  
9365 SW STONO DR  
TUALATIN, OR 97062

JORGENSEN HEATHER & JORGENSEN COLBIE  
9375 SW STONO DR  
TUALATIN, OR 97062

KALATEH EBRAHIM SHIRDOOST & DOOST  
NOOSHIN NEZAM  
22585 SW 87TH PL  
TUALATIN, OR 97062

KARIS ALEXANDER DONALD  
22930 SW MANDAN DR  
TUALATIN, OR 97062

KAUFFMAN FAMILY TRUST  
22725 SW MIAMI DR  
TUALATIN, OR 97062

KENNEDY MICHAEL C & KENNEDY LINDA M  
22735 SW 87TH PL  
TUALATIN, OR 97062

KERN KEVIN  
9450 SW IOWA DR  
TUALATIN, OR 97062

KERNER ROBERT  
8850 SW STONO DR  
TUALATIN, OR 97062

KHAN SOHAIL & FARZANA LIV TRUST  
2919 BEACON HILL DR  
WEST LINN, OR 97068

KIM KYU & KIM MELISSA  
22589 SW 96TH DR  
TUALATIN, OR 97062

KIMMEL RONALD A & KIMMEL REBECCA A  
23605 SW BOONES FERRY RD  
TUALATIN, OR 97062

KINNAMAN JEFFREY B & KINNAMAN JENNIFER D  
8780 SW STONO DR  
TUALATIN, OR 97062

KIRK CHRISTINE A & HOFF JAMES A  
22611 SW 96TH DR  
TUALATIN, OR 97062

KIS JUAN ANTONIO & KIS CLAUDIA  
22615 SW 93RD TER  
TUALATIN, OR 97062

KLAUSS CYDNI M  
22635 SW 87TH PL  
TUALATIN, OR 97062

KLEPS MARK G & KLEPS LINDSAY K  
9675 SW IOWA DR  
TUALATIN, OR 97062

KLOSSNER ANDREW J  
8854 SW STONO DR  
TUALATIN, OR 97062

KNOX FAMILY TRUST  
22950 SW MIAMI PL  
TUALATIN, OR 97062

KNUDSON THOMAS & KNUDSON LINDA  
SALYERS  
8725 SW STONO DR  
TUALATIN, OR 97062

KREIS JOHN K  
22835 SW MIAMI DR  
TUALATIN, OR 97062

LACEY LONNIE D & LACEY LORI A  
22665 SW 94TH TER  
TUALATIN, OR 97062

LAM DAVID & NGUYEN BETH NGOC BICH  
8700 SW STONO DR  
TUALATIN, OR 97062

LARA SALVADOR  
22845 SW 93RD TER  
TUALATIN, OR 97062

LARSON ANDREW & WISEMAN LEAH DANIELLE  
22845 SW 94TH TER  
TUALATIN, OR 97062

LATHROP FAMILY LIV TRUST  
9265 SW IOWA DR  
TUALATIN, OR 97062

LEE WILLIAM B REV LIV TRUST  
37301 28TH AVE S UNIT 65  
FEDERAL WAY, WA 98003

LEE FLORENCE & YAM WAI LUN  
8822 SW STONO DR  
TUALATIN, OR 97062

LEEPER AVA J  
9945 SW LUMBEE LN  
TUALATIN, OR 97062

LEMON CHASE ANTHONY & LEMON HEIDI  
8940 SW IOWA DR  
TUALATIN, OR 97062

LENNAR NORTHWEST INC  
11807 NE 99TH ST STE 1170  
VANCOUVER, WA 98682

LENNAR NORTHWEST INC  
11807 NE 99TH ST STE 1170  
VANCOUVER, WA 98682

LILLEY KRISTEN M & LILLEY NICHOLAS L  
22800 SW 89TH PL  
TUALATIN, OR 97062

LIMING JEANNE E  
9380 SW SKOKOMISH LN  
TUALATIN, OR 97062

LINDAMAN LIVING TRUST  
22805 SW ERIO PL  
TUALATIN, OR 97062

LIVERMORE MICHAEL G & LIVERMORE SHERYL D  
9835 SW LUMBEE LN  
TUALATIN, OR 97062

LOEN EMILY G  
22655 SW ENO PL  
TUALATIN, OR 97062

LORENZEN TYLER J & LORENZEN TATJANA  
22820 SW MIAMI DR  
TUALATIN, OR 97062

LOVELACE LIVING TRUST  
22659 SW 96TH DR  
TUALATIN, OR 97062

LUCINI JOHN W & GRACE N FAM TRUST  
23677 SW BOONES FERRY RD  
TUALATIN, OR 97062

LUSCOMBE BRUCE C TRUST  
22605 SW 87TH PL  
TUALATIN, OR 97062

MACCLANATHAN MELANIE & MACCLANATHAN  
MICHAEL  
22575 SW 94TH TER  
TUALATIN, OR 97062

MACDONALD BRIAN & MACDONALD AMELIA  
22640 SW MIAMI DR  
TUALATIN, OR 97062

MADONDO JEFFRET & JOHNSON MORGAN  
IRENE  
22795 SW 94TH TER  
TUALATIN, OR 97062

MAGNUSON BRENT R & MAGNUSON HEATHER  
A  
9540 SW IOWA DR  
TUALATIN, OR 97062

MAIER DARLA & MAIER THOMAS  
9340 SW PALOUSE LN  
TUALATIN, OR 97062

MALONEY CHERYL L  
22820 SW VERMILLION DR  
TUALATIN, OR 97062

MALONSON GARY D & MALONSON MARSHA L  
22955 SW VERMILLION DR  
TUALATIN, OR 97062

MARBLE AMANDA L TRUST  
8989 SW STONO DR  
TUALATIN, OR 97062

MARK HENRY & MARK CHRISTINE  
22725 SW 90TH PL  
TUALATIN, OR 97062

MARLEAU ALLISON P  
22615 SW VERMILLION DR  
TUALATIN, OR 97062

MARTIN FAMILY TRUST  
8986 SW STONO DR  
TUALATIN, OR 97062

MAST MARVIN R & JELI CARLENE M  
23845 SW BOONES FERRY RD  
TUALATIN, OR 97062



MCALLISTER DENNIS C & MCALLISTER  
RAGNHILD  
8805 SW STONO DR  
TUALATIN, OR 97062

MCCALED KEVIN L  
8950 SW IOWA DR  
TUALATIN, OR 97062

MCDONOUGH JOHN MICHAEL & MCDONOUGH  
MAUREEN CLARE  
8750 SW STONO DR  
TUALATIN, OR 97062

MCGILCHRIST STEPHEN R & NYSTROM-GERDES  
ELIZABETH R  
22720 SW 93RD TER  
TUALATIN, OR 97062

MCGRADY ANDREA M  
9260 SW SKOKOMISH LN  
TUALATIN, OR 97062

MCKEAN AMY & MCKEAN RAYMOND  
22685 SW VERMILLION DR  
TUALATIN, OR 97062

MCLAUGHLIN NATHANIEL ANDREW &  
MCLAUGHLIN AREENA DEVI  
8960 SW IOWA DR  
TUALATIN, OR 97062

MCLEOD TRUST  
23465 SW BOONES FERRY RD  
TUALATIN, OR 97062

MCMANUS HEIDI  
22820 SW 90TH PL  
TUALATIN, OR 97062

MCREYNOLDS CHRIS & MCREYNOLDS AUDREY  
22720 SW 87TH PL  
TUALATIN, OR 97062

MENES MARK A  
9280 SW STONO DR  
TUALATIN, OR 97062

MICHAEL SCOTT CURTIS & MICHAEL TINA  
FRANCINE  
8580 SW MARICOPA DR  
TUALATIN, OR 97062

MICHELS ELIZABETH A  
22590 SW 93RD TER  
TUALATIN, OR 97062

MIKULA KATERINA  
9330 SW PALOUSE LN  
TUALATIN, OR 97062

MILLER CAROLE D LIV TRUST  
8834 SW STONO DR  
TUALATIN, OR 97062

MILLER JOHN LESLIE & PLATTEAU ASTRID S  
22730 SW ENO PL  
TUALATIN, OR 97062

MILLER ROBERT F  
22631 SW 96TH DR  
TUALATIN, OR 97062

MILSTED MAURICE SCOTT & STOVER-MILSTED  
SUSAN LEE  
22875 SW MIAMI DR  
TUALATIN, OR 97062

MIZE JOSHUA & MIZE CHRISTINE  
22920 SW ENO PL  
TUALATIN, OR 97062

MOEN DEBORAH & MOEN ERIK  
22572 SW 96TH DR  
TUALATIN, OR 97062

MOLLER THERESA  
22825 SW 93RD TER  
TUALATIN, OR 97062

MOORE DAVID C & MOORE TAMMY  
8990 SW STONO DR  
TUALATIN, OR 97062

MORELAND BEVERLY H & MORELAND BEVERLY  
H LIV TRUST  
753 KOTZY AVE S  
SALEM, OR 97302

MORRIS LARRY L & MORRIS JUANITA  
22745 SW ENO PL  
TUALATIN, OR 97062

MOSHOFKY JOHN & MOSHOFKY GINGER  
9310 SW SKOKOMISH LN  
TUALATIN, OR 97062

MOYES DUSTIN R & MOYES CAROL L  
8765 SW STONO DR  
TUALATIN, OR 97062

MUELLER RICHARD II & MUELLER MICHELLE  
22660 SW 93RD TER  
TUALATIN, OR 97062

MULGAONKER SHAILESH S  
PO BOX 367  
TUALATIN, OR 97062

MURPHY MICHAEL F & OLSON-MURPHY  
ANTONETTE K  
8870 SW IOWA DR  
TUALATIN, OR 97062

MUSIAL LUKE & MUNSEY VICTORIA  
22825 SW 94TH TER  
TUALATIN, OR 97062

NEARY TIMOTHY & NEARY LUCY  
22780 SW 92ND PL  
TUALATIN, OR 97062

NEILL RACHEL & HUSUM BRENT  
9350 SW STONO DR  
TUALATIN, OR 97062

NELL ZACHARY D & NELL KENDRA  
8842 SW STONO DR  
TUALATIN, OR 97062

NELSON KIRIN H  
8826 SW STONO DR  
TUALATIN, OR 97062

NEULEIB TAMI R  
9395 SW SKOKOMISH LN  
TUALATIN, OR 97062

NEWBERRY GARY B & THOMPSON DONNA L  
9295 SW IOWA DR  
TUALATIN, OR 97062

NEWTON KYLE C & NEWTON HAILEY R  
8814 SW STONO DR  
TUALATIN, OR 97062

NGUYEN QUOC & NGUYEN DIANE  
9660 SW IOWA DR  
TUALATIN, OR 97062

NORTH DAVID P & NORTH BARBARA  
8818 SW STONO DR  
TUALATIN, OR 97062

NORWOOD HEIGHTS OWNERS OF LOTS 11 13-  
24  
  
, OR 00000

NORWOOD HEIGHTS OWNERS OF LOTS 30 32-  
42  
  
, OR 00000

NOYES PATRICK A & THOMPSON CAMILLIA M  
22810 SW 92ND PL  
TUALATIN, OR 97062

ODOMS LIVING TRUST  
PO BOX 2446  
TUALATIN, OR 97062

OLIVERA APOLINAR & OLIVERA DEBBIE &  
WHITWORTH DAVID ET AL  
22640 SW VERMILLION DR  
TUALATIN, OR 97062

O'NEAL DANNY F & O'NEAL JONI L  
22625 SW 94TH TER  
TUALATIN, OR 97062

ORLANDINI ANTHONY J & ORLANDINI JUDY R  
8555 SW MARICOPA DR  
TUALATIN, OR 97062

OSTROWSKI MICHAEL J & OSTROWSKI SHERIE M  
9370 SW STONO DR  
TUALATIN, OR 97062

OWENS RICHARD D & OWENS VALERIE D  
22580 SW MIAMI DR  
TUALATIN, OR 97062

OWENS CLINTON MICHAEL SHOOK  
9965 SW LUMBEE LN  
TUALATIN, OR 97062

P3 PROPERTIES LLC  
PO BOX 691  
WHITE SALMON, WA 98672

PARKER ETHAN T & PARKER JAMIE L  
22855 SW ENO PL  
TUALATIN, OR 97062

PAROSA JOSHUA DAVID  
9360 SW IOWA DR  
TUALATIN, OR 97062

PATTON ANDREW M & PATTON LINDSEY M  
9270 SW STONO DR  
TUALATIN, OR 97062

PEEBLES CRAIG M & PEEBLES TANYA A  
22840 SW 90TH PL  
TUALATIN, OR 97062

PENA ZACHARY G & PENNA TIFFANY R  
22865 SW ENO PL  
TUALATIN, OR 97062

PERRY JANETTE & PERRY KENNETH  
8885 SW STONO DR  
TUALATIN, OR 97062

PETRIDES PAMELA LIVING TRUST & PETRIDES  
PHILLIP LIVING TRUST  
22815 SW MIAMI DR  
TUALATIN, OR 97062

PFEIFER STEPHANIE B  
22530 SW 93RD TER  
TUALATIN, OR 97062

PICKETT R DEAN & PICKETT E RAYLEA  
22995 SW ERIO PL  
TUALATIN, OR 97062

PIERCE KELLY JOANNE & PIERCE BRIAN  
LAWRENCE  
8675 SW STONO DR  
TUALATIN, OR 97062

PIRTLE JAMES L JR & PIRTLE LINDA L  
22780 SW 93RD TER  
TUALATIN, OR 97062

PITT CHARLES R  
8883 SW IOWA DR  
TUALATIN, OR 97062

POTTER DYLAN D & POTTER MICHELLE P  
23405 SW BOONES FERRY RD  
TUALATIN, OR 97062

POTTLE KEITH W & POTTLE DARCY A  
PO BOX 1996  
TUALATIN, OR 97062

POWELL MATTHEW & POWELL LAUREN  
22835 SW ENO PL  
TUALATIN, OR 97062

QIAN LIDONG & YANG YUYUAN  
8815 SW STONO DR  
TUALATIN, OR 97062

RAMIREZ JOSE ANTONIO & RAMIREZ SILVIA  
22560 SW 94TH TER  
TUALATIN, OR 97062

RAMKU FAMILY TRUST  
14193 NW MEADOWRIDGE DR  
PORTLAND, OR 97229

RANSOM ANNIE M & RANSOM BRADLEY  
EDWARD  
22785 SW MIAMI DR  
TUALATIN, OR 97062

RAY CYNTHIA P  
8878 SW STONO DR  
TUALATIN, OR 97062

RAZ DOUGLAS JOHN  
22685 SW 94TH TER  
TUALATIN, OR 97062

REPCAK ROMAN & PARK-REPCAK ROBIN  
22810 SW 93RD TER  
TUALATIN, OR 97062

REYNHOLDS GLENN A & REYNHOLDS NANCY J  
22795 SW 92ND PL  
TUALATIN, OR 97062

RICHARDS MARK R & RICHARDS JILL E  
22600 SW MIAMI DR  
TUALATIN, OR 97062

RICHTER FAMILY JOINT TRUST  
22930 SW MIAMI PL  
TUALATIN, OR 97062

RILEY SHAWN O  
23365 SW BOONES FERRY RD  
TUALATIN, OR 97062

ROBERTS CHRISTOPHER T & ROBERTS KELLY J  
9855 SW LUMBEE LN  
TUALATIN, OR 97062

ROGERS JOHN & AGUILAR-NELSON LIZI  
15309 NW DECATUR WAY  
PORTLAND, OR 97229

ROMINE CLAUDIA  
22980 SW VERMILLION  
TUALATIN, OR 97062

RONALD TY & RONALD JENNIFER  
8870 SW STONO DR  
TUALATIN, OR 97062

ROSE THEODORE & ROSE SHANNON  
22765 SW MIAMI DR  
TUALATIN, OR 97062

RUDISEL A TRUST  
PO BOX 1667  
LAKE OSWEGO, OR 97035

SABIDO ROBERT & SABIDO JENNIFER M  
9760 SW IOWA DR  
TUALATIN, OR 97062

SANDSTROM GLENN M  
9405 SW PALOUSE LN  
TUALATIN, OR 97062

SAWAI STUART T & SAWAI MARY JANE  
8891 SW IOWA DR  
TUALATIN, OR 97062

SAYLOR ERIC M & SAYLOR BRITTA M  
22835 SW 90TH PL  
TUALATIN, OR 97062

SCHAFROTH J F & SCHAFROTH KATE R  
8838 SW STONO DR  
TUALATIN, OR 97062

SCHOTT DAVID M & SCHOTT COURTNEY A  
22690 SW VERMILLION DR  
TUALATIN, OR 97062

SCHREIBER FAMILY TRUST  
22885 SW ERIO PL  
TUALATIN, OR 97062

SCHULTZ LARRY & JOANN REV LIV TRUST  
8890 SW IOWA DR  
TUALATIN, OR 97062

SCHWEITZ ERIC J & SCHWEITZ KAREN M  
9390 SW SKOKOMISH LN  
TUALATIN, OR 97062

SCOTT JERRY MICHAEL & STAMBAUGH DEBRA R  
9080 SW IOWA DR  
TUALATIN, OR 97062

SEKI KATSUMICHI & SEKI MIYUKI  
22625 SW 87TH PL  
TUALATIN, OR 97062

SELIVONCHICK GREGORY A & SELIVONCHICK  
GEORGANNE  
8945 SW IOWA DR  
TUALATIN, OR 97062

SEPP JULIE & SEPP ROBERT  
9150 SW STONO DR  
TUALATIN, OR 97062

SHAMBURG SCOTT A  
PO BOX 908  
WILSONVILLE, OR 97070

SHAVLOVSKIY VITALIY & SHAVLOVSKIY NATALIA  
32031 SW GUISS WAY  
WILSONVILLE, OR 97070

SHEARER THOMAS M & CHERIE M SHEARER  
FAMILY TRUST  
22595 SW MIAMI DR  
TUALATIN, OR 97062

SHEETZ DONALD K & MARY M SHEETZ REV LIV  
TRUST  
9155 SW IOWA DR  
TUALATIN, OR 97062

SHIMADA HIROSHI & SHIMADA ANGELIQUE  
22645 SW 94TH TER  
TUALATIN, OR 97062

SHIPLEY HEATHER  
9355 SW IOWA DR  
TUALATIN, OR 97062

SHOBAKEN THOMAS R  
8795 SW STONO CT  
TUALATIN, OR 97062

SIMMONS LINDA C TRUST  
22920 SW MIAMI PL  
TUALATIN, OR 97062

SIROIS TYSON & JARRARD LINDSEY  
22500 SW PINTO DR  
TUALATIN, OR 97062

SMITH WILLIAM R & SMITH BARBARA J  
22865 SW 89TH PL  
TUALATIN, OR 97062

SMITH GREGORY D & LINDA S REV TRUST  
9930 SW LUMBEE LN  
TUALATIN, OR 97062

SNODDY ROBERT B  
9430 SW IOWA DR  
TUALATIN, OR 97062

SOMERTON RITA G & SOMERTON MARVIN  
9375 SW IOWA DR  
TUALATIN, OR 97062

SPACKMAN KENT A & SPACKMAN DONNA J  
22915 SW ERIO PL  
TUALATIN, OR 97062

SPECHT-SMITH DANA LYNN & SPECHT DAVID  
LEE  
9380 SW QUINAULT LN  
TUALATIN, OR 97062

SPENCER EVERETT & SPENCER LORRIE HEAPE  
22830 SW 93RD TER  
TUALATIN, OR 97062

ST CLAIR DEBORAH J LIVING TRUST  
9375 SW QUINAULT LN  
TUALATIN, OR 97062

STACKLIE TIM & KAREN LIV TRUST  
9655 SW IOWA DR  
TUALATIN, OR 97062

STILLS DANNY T & STILLS DEBRA J  
3498 CHAPARREL LOOP  
WEST LINN, OR 97068

STIMSON TOM P & GUTIERREZ-STIMSON ERINN  
M  
8894 SW STONO DR  
TUALATIN, OR 97062

STONE LEAH  
8755 SW STONO DR  
TUALATIN, OR 97062

STRATTON GILLIAN M LIVING TRUST  
9195 SW IOWA DR  
TUALATIN, OR 97062

STUART JAMES W & STUART HOLLY V  
9235 SW IOWA DR  
TUALATIN, OR 97062

SUTHERLAND STUART P & SUTHERLAND  
LEEANN N FAM TRUST  
22805 SW 92ND PL  
TUALATIN, OR 97062

SYVERSON FAMILY LIV TRUST  
8895 SW IOWA DR  
TUALATIN, OR 97062

TAKALLOU MOJTABA B & AMINI AFSANEH  
9625 SW IOWA DR  
TUALATIN, OR 97062

TAM AARON L M & TAM AMY  
9250 SW IOWA DR  
TUALATIN, OR 97062

TAPASA HEIDI L & TAPASA TUUMAMAO  
22605 SW 94TH TER  
TUALATIN, OR 97062

TAYLOR FLORDELIZA J  
22535 SW 94TH TER  
TUALATIN, OR 97062

TAYLOR BRENDA & TAYLOR JOE N  
22885 SW 94TH TER  
TUALATIN, OR 97062

TAYLOR ARTHUR R & MANANDIL MYLYN  
22675 SW VERMILLION DR  
TUALATIN, OR 97062

THOMAS SCOTT & THOMAS CARRIE  
22770 SW MIAMI DR  
TUALATIN, OR 97062

THOMPSON JOYCE TRUST  
PO BOX 91  
TUALATIN, OR 97062

THORSTENSON PEDER H & THORNSTENSON  
KATHLEEN M  
9580 SW IOWA DR  
TUALATIN, OR 97062

THURLEY CHRISTOPHER  
9135 SW STONO DR  
TUALATIN, OR 97062

TIGARD-TUALATIN SCHOOL DISTRICT #23J  
6960 SW SANDBURG ST  
TIGARD, OR 97223

TOJONG EDWARD & TOJONG MARISSA  
9549 SW IOWA DR  
TUALATIN, OR 97062

TOLER E TRENT & TOLER ROSEANN T  
22595 SW 87TH PL  
TUALATIN, OR 97062

TOMPKINS TIMOTHY L & TOMPKINS RACHEL N  
22570 SW VERMILLION DR  
TUALATIN, OR 97062

TRAN NICHOLAS  
8983 SW STONO DR  
TUALATIN, OR 97062

TRICKETT AARON & TRICKETT HEATHER  
22580 SW VERMILLION DR  
TUALATIN, OR 97062

TRIKUR MARTA LUIZA & TRIKUR SERGEY F  
22775 SW 90TH PL  
TUALATIN, OR 97062

TROTMAN NEIL  
9385 SW IOWA DR  
TUALATIN, OR 97062

TROYER KENNETH A & VALERIE LEE REV LIV  
TRUST  
24548 SW QUARRYVIEW DR  
WILSONVILLE, OR 97070

TUALATIN CITY OF  
18880 SW MARTINAZZI AVE  
TUALATIN, OR 97062

TUALATIN HILLS CHRISTIAN CHURCH INC  
23050 SW BOONES FERRY RD  
TUALATIN, OR 97062

TURNBULL BRENT D  
9340 SW IOWA DR  
TUALATIN, OR 97062

TURNER BENJAMIN & PERKINS EMILY A  
22745 SW VERMILLION DR  
TUALATIN, OR 97062

VANDERBURG SUSAN B & VANDERBURG JOHN  
TIMOTHY REV TRUST & VANDERBURG  
JACQUELIN  
21715 SW HEDGES DR  
TUALATIN, OR 97062

VELAZQUEZ BRIAN A & VELAZQUEZ CHRISTINA  
RALSTON  
9325 SW PALOUSE LN  
TUALATIN, OR 97062

VENABLES JOHN V TRUST  
6140 SW BOUNDARY ST APT 145  
PORTLAND, OR 97221

VETETO NANCY LIV TRUST  
9220 SW STONO DR  
TUALATIN, OR 97062

VICTORIA WOODS OWNERS COMMITTEE  
PO BOX 1282  
TUALATIN, OR 97062

VICTORIA MEADOWS HOA  
, OR 00000

VUKANOVICH MARK  
23155 SW BOONES FERRY RD  
TUALATIN, OR 97062

WADSWORTH ERIC & WADSWORTH WENDY  
9265 SW STONO DR  
TUALATIN, OR 97062

WASHINGTON COUNTY FACILITIES MGMT  
169 N 1ST AVE #42  
HILLSBORO, OR 97124

WEGENER RODNEY R  
8882 SW STONO DR  
TUALATIN, OR 97062

WELBORN RANDALL J & JULIE ANN WELBORN  
LIV TRUST  
22885 SW VERMILLION DR  
TUALATIN, OR 97062

WELCH RAYMOND P & WELCH PAMELA K  
8575 SW MARICOPA DR  
TUALATIN, OR 97062

WHEELER TERRANCE J & WHEELER LINDA K  
8745 SW STONO DR  
TUALATIN, OR 97062

WHITE RYAN K & WHITE BRENNAN R  
22930 SW ERIO PL  
TUALATIN, OR 97062

WHITT JASON & WHITT MELANIE  
9745 SW IOWA DR  
TUALATIN, OR 97062

WILLIAMS MEGANN E & WILLIAMS AUSTIN J  
8830 SW STONO DR  
TUALATIN, OR 97062

WILLIAMS TOM K  
9300 SW NORWOOD RD  
TUALATIN, OR 97062

WILSON DAVID L & WILSON KAREN A  
22750 SW 92ND PL  
TUALATIN, OR 97062

WISE ROBERT C & WISE SUSAN M  
9875 SW LUMBEE LN  
TUALATIN, OR 97062

WISER BRIAN R & LIRA MARIA ALEJANDRA  
22845 SW 89TH PL  
TUALATIN, OR 97062

WISER THOMAS WAYNE & WISER DIANE MARIE  
22750 SW MIAMI DR  
TUALATIN, OR 97062

WONG JONATHAN D & WONG BETH J  
9345 SW STONO DR  
TUALATIN, OR 97062

WOODRUFF VIRGINIA C  
22740 SW 93RD TER  
TUALATIN, OR 97062

WOOLSEY RANDY M & WOOLSEY DONNA J  
8775 SW STONO DR  
TUALATIN, OR 97062

WORKMAN STEPHEN G & WORKMAN MARY B  
8810 SW STONO DR  
TUALATIN, OR 97062

YARNELL REV LIV TRUST  
22620 SW 87TH PL  
TUALATIN, OR 97062

YEE DONALD M & YEE PAMELA E  
9105 SW STONO DR  
TUALATIN, OR 97062

YOUNG DOUGLAS A & YOUNG TERESA S  
987 SOLANA CT  
MOUNTAIN VIEW, CA 94040

ZACHER BRIAN M & ZACHER MICHAELA F  
9325 SW QUINAULT LN  
TUALATIN, OR 97062

ZHANG SHANE XUE YUAN & ZHANG YUAN  
22604 SW 96TH DR  
TUALATIN, OR 97062

**From:** [Melissa Slotemaker](#)  
**To:** [byromcio@gmail.com](mailto:byromcio@gmail.com)  
**Cc:** [Erin Engman](#); [Madeleine Nelson](#); [planning@tualatin.gov](mailto:planning@tualatin.gov); [Stacey Morrill](#)  
**Subject:** Norwood Road/Horizon Neighborhood Meeting  
**Date:** Friday, October 14, 2022 9:28:00 AM  
**Attachments:** [8723 20220929 Mailing - Final.pdf](#)

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Hello Byrom CIO Representatives,

I am pleased to invite you to participate in a Neighborhood/Developer meeting on **October 25, 2022 at 6:30 pm at the Tualatin Library** to discuss planned land use applications at the Horizon church and school site, and an adjacent one-acre lot on SW Norwood Road that will be annexed to the City. The meeting provides an opportunity for us to discuss the planned applications with surrounding property owners and the Byrom CIO before the application is submitted to the City.

Attached is the letter that was mailed out to the neighborhood with more information. Feel free to contact me if you are unable to attend the meeting or if you have any specific questions about the project and process.

Sincerely,  
Melissa Slotemaker

**Melissa Slotemaker, AICP**  
**Land Use Planner**



**AKS ENGINEERING & FORESTRY, LLC**

12965 SW Herman Road, Suite 100 | Tualatin, OR 97062

P: 503.563.6151 Ext. 141 | [www.aks-eng.com](http://www.aks-eng.com) | [slotemakerm@aks-eng.com](mailto:slotemakerm@aks-eng.com)

Offices in: Bend, OR | Keizer, OR | Tualatin, OR | Vancouver, WA

*NOTICE: This communication may contain privileged or other confidential information. If you have received it in error, please advise the sender by reply e-mail and immediately delete the message and any attachments without copying or disclosing the contents. AKS Engineering and Forestry shall not be liable for any changes made to the electronic data transferred. Distribution of electronic data to others is prohibited without the express written consent of AKS Engineering and Forestry.*

CERTIFICATION OF SIGN POSTING



In addition to the requirements of TDC 32.150, the 18" x 24" sign must display the meeting date, time, and address as well as a contact phone number. The block around the word "NOTICE" must remain **orange** composed of the **RGB color values Red 254, Green 127, and Blue 0**. A PowerPoint template of this sign is available at: <https://www.tualatinoregon.gov/planning/land-use-application-sign-templates>.

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applicant's consultant  
As the applicant for the Norwood Multi-Family-Annexation, Partition, and Map/Text Amendment project, I hereby certify that on this day, three (3) sign(s) was/were posted on the subject property in accordance with the requirements of the Tualatin Development Code and the Community Development Division.

Applicant's Name: Mitchell Godwin  
applicant's consultant (Please Print)

Applicant's Signature: *Mitchell Godwin*  
applicant's consultant

Date: 10/3/22



October 26, 2022

**Neighborhood Meeting Summary:** Norwood Multi-family Annexation, Partition, and Map/Text Amendment Applications

**Meeting Date:** October 25, 2022

**Time:** 6:30 PM

**Location:** Tualatin Public Library, 18878 SW Martinazzi Avenue, Tualatin, OR 97062

The following serves as a summary of the Neighborhood Meeting process. On October 3, 2022, property owners within 1000 feet of the proposed development site were sent notification of the planned Norwood Multi-family applications. This notification included the project location, project details, and the neighborhood meeting date, time, and location. The Byrom CIO and City staff were also emailed the meeting information. Signs with the neighborhood meeting information were also posted on the subject site on October 3, 2022.

On October 25, 2022, Mimi Doukas and Melissa Slotemaker from AKS Engineering & Forestry, LLC and Lee Novak from Vista Residential Partners were the meeting presenters. Other members of the Applicant's project team also attended the meeting and were available to answer questions. The meeting began with Mimi Doukas and Lee Novak providing introductory remarks. Melissa Slotemaker then presented an overview of the Norwood Multi-family project, the site area, expected roadway improvements, and the planned land use applications. She then provided details on the City's review process and opportunities for public input.

Following the presentation, attendees were given the opportunity to ask questions. The following topics were discussed:

**Transportation**

- Existing traffic issues on SW Boones Ferry Road and the impact of new development
- Anticipated roadway improvements along SW Norwood Road and SW Boones Ferry Road and how those would help roadway capacity
- Traffic signal at SW Norwood and SW Boones Ferry Road and when that would be constructed
- Mitigation in progress for Autumn Sunrise development
- The long-term plans for expansion of SW Norwood Road and if the City would take property for roadway
- If the developer would need to construct street improvements/mitigation
- Concerns about increase in traffic, especially on SW Norwood Road and if the project would route traffic north through Tualatin Woods

**Zone Change/Future Project**

- The density of the proposed project and whether the RH-HR district is appropriate
- The nature and purpose of the Institutional zoning district and the effects on the Horizon Church & School
- Height of the proposed project and whether the buildings would be taller than 4 stories
- The Basalt Creek Concept Plan and the type of residential development originally expected
- Other sites which could be used for apartments

**Miscellaneous**

- How the site was selected, expected rent, and market needs
- The need for housing equity and affordable housing
- How the project will affect schools in the area and if the Sherwood School District would bus children to Sherwood
- The land use process, how to submit testimony, and who the makes the decision

The meeting concluded at approximately 8:05 pm.

Sincerely,

**AKS ENGINEERING & FORESTRY, LLC**



Melissa Slotemaker, AICP

12965 SW Herman Road, Suite 100 | Tualatin, OR 97062

P: 503.563.6151 | [www.aks-eng.com](http://www.aks-eng.com) | [SlotemakerM@aks-eng.com](mailto:SlotemakerM@aks-eng.com)



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OFFICES IN: TUALATIN, OR - VANCOUVER, WA - KEIZER, OR - BEND, OR

Norwood Road Multi-family  
 Annexation, Partition, & Map/Text Amendment  
 October 25, 2022  
 6:30 p.m.

Neighborhood Meeting  
 Tualatin Public Library  
 18878 SW Martinazzi Avenue  
 Tualatin, OR 97062

**PLEASE PRINT CLEARLY**

Printed Name	Full Mailing Address	Email Address	Phone #
JULIE HERONIMUS	22710 SW 90TH PL TUALATIN 97062	JULIETEIR@AOL.COM	503 715-7562
JO AUST	8846 SW Stone Dr Tualatin 97062	joauly12@gmail.com	503-313-2898
Jan Perry	8885 SW Stone Dr. Tualatin, OR 97062	jrperry.perry11@gmail.com	(360) 901 6834
Ken Perry	"	"	(360) 921 8957
PATSY + ALAN APLIN	22940 SW Emo PL	patsy@kerrcontractors.com aalpin@kerrcontractors.com	
Robert Jay	9175 SW Stone Dr	NDNE	(503) 692-9522
Terri Imbaech	8420 SW Umatilla St. Tualatin, OR 97062	Terriimbaech@gmail.com	503.481.9806.



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OFFICES IN: TUALATIN, OR - VANCOUVER, WA - KEIZER, OR - BEND, OR

Norwood Road Multi-family Annexation, Partition, & Map/Text Amendment October 25, 2022 6:30 p.m.	Neighborhood Meeting Tualatin Public Library 18878 SW Martinazzi Avenue Tualatin, OR 97062
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**PLEASE PRINT CLEARLY**

Printed Name	Full Mailing Address	Email Address	Phone #
Julie Cooper	9396 SW DOWA DRIVE TUALATIN, OR 97062	Juldajour@hotmail.com	
Charles & Susan Pitt	8883 SW TOWA DR 97062 Tualatin, 97062	crp58@sboglobal.net	(775) 762-1774
Judi Wick	27390 SW Martinazzi Ave	judiwick@gmail.com	503-302-3622
Delee Haudbine	9215 SW Stone Dr	dhaudbine@frontier.com	503-6925450
Don Yee	9105 SW Stone Dr	pam@schmidtandye.com	503 692 8873
Chris McReynolds	22720 SW 87th Pl	Chris.McReynolds@gmail.com	
Beu Feucht	22715 SW 87th Pl	beufeucht@comcast.net	503-403-9325



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OFFICES IN: TUALATIN, OR - VANCOUVER, WA - KEIZER, OR - BEND, OR

Norwood Road Multi-family  
 Annexation, Partition, & Map/Text Amendment  
 October 25, 2022  
 6:30 p.m.

Neighborhood Meeting  
 Tualatin Public Library  
 18878 SW Martinazzi Avenue  
 Tualatin, OR 97062

**PLEASE PRINT CLEARLY**

Printed Name	Full Mailing Address	Email Address	Phone #
Linda Kennedy	22735 SW 87th Place Tualatin, OR 97062	Like94fun@comcast.net	503-307-2581
Carolyn Hess	4500 SW Halcyon Rd 97062		503 638 1164
Nancy Veteto	9220 SW Stone Drive Tualatin 97062	nancyjveteto@gmail.com	971 645 7221
Leslie Jackman	20715 SW Shoshone Ct Tualatin OR	banittie@gmail.com	858-345-0633
Lorelei Mercado	22920 SW Mandan Dr Tualatin OR 97062	loirelei.mercado@gmail.com	503 916 9875
Randy + Julie Welborn	22885 SW Vermillion Dr Tualatin 97062	randy+jw@juno.com	503 885 9633
Ann Feucht	22715 SW 87th Pl Tualatin 97062	a.feucht@comcast.net	503 941 6224



AKS ENGINEERING & FORESTRY, LLC  
 12965 SW Herman Road, Suite 100, Tualatin, OR 97062  
 P: (503) 563-6151 F: (503) 563-6152

OFFICES IN: TUALATIN, OR - VANCOUVER, WA - KEIZER, OR - BEND, OR

Norwood Road Multi-family  
 Annexation, Partition, & Map/Text Amendment  
 October 25, 2022  
 6:30 p.m.

Neighborhood Meeting  
 Tualatin Public Library  
 18878 SW Martinazzi Avenue  
 Tualatin, OR 97062

**PLEASE PRINT CLEARLY**

Printed Name	Full Mailing Address	Email Address	Phone #
Maria Lathrop	9265 SW Iowa Dr Tualatin	marialathrop@ hotmail.com	503 803-3463
Preston Hixfield	9195 SW Iowa Dr Tualatin 97062	prestonhixfield@ gmail.com	(503) 701-8356
GRACE LUCINI	23677 SW BEAVER FERRY RD TUALATIN 97062	GRLuci@GMAIL. com	503 692 9890
JOHN LUCINI	//	JWLUCI@JMAIL.COM	503-692-9890
Geoffrey Taylor			410-961-0132
Gillian Stratton	9195 SW Iowa Dr, Tualatin OR 97062	ghixfield@aol.com	The bullying a church comment was unprofessional.
Regina Carbajal	8925 SW Iowa Dr. Tualatin, OR 97062		503-330-0115



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Printed Name	Full Mailing Address	Email Address	Phone #
KELLY HORSFORD	10000 SW ALSEA CT TUALATIN, OR 97062	kshorsford@gmail.com	503-522-2352
MARK KEENS LINDSAY KEENS	9675 SW IOWA DR. TUALATIN OR		
Kathy Arnold	21438 SW 90 <sup>th</sup> Ave	karnold28@mac.com	503-841-0644
Marguerite McAleen	22730 SW Vermillion Drive	marguerite.mcaleen@gmail.com	503-799-1370
Matrils	22815 SW IOWA DR	Phillip.Petrades@you.com	5164102436
Chad Frisley	9005 SW Stone Dr.	kepetruspro@aol.com	760-404-9189
Alejandro Cruz	9270 SW Skokomish Ln Tualatin	<del>alejandrofc@gmail.com</del> alejandrofc@gmail.com	(503) 258-7537



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Printed Name	Full Mailing Address	Email Address	Phone #
Hans + Rosemarie Heyer	22775 SW Vermillion Dr	Heyer4414@comcast.net	503-851-3930
Randy Welborn	22885 SW Vermillion Dr	randyiw@juno.com	503-885-9633
Kevin McCarbb	8950 SW Ford Dr	MC.8184@attman.com	651-500-7211
Scott Hall	9065 SW Stone Dr	scottlesu@gmail.com	503-407-7949
Trent Toler	22595 SW 87th Pl	etrent.toler@gmail.com	503-784-6639
Sherie Ostrowski	9370 SW Stone Dr	sheriechaney@yahoo.com	503 916 9808
Jim Sturt	9235 SW Iowa Dr	STU313@gmail.com	503-720-0119





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Printed Name	Full Mailing Address	Email Address	Phone #
Beth Dittman	22785 SW 89th Pl Tualatin OR 97062	thedittmanfamily@gmail.com	SH 33 77776
Cristina Beddes	22765 SW Eno Pl Tualatin 97062	cristina.beddes@gmail.com	503-906-0179
Stacy Bell	8930 SW Leno Dr.		
Heather Yuhashou	9495 SW Norwood Dr	hyuhashou@aol.com	714-293-3961
JOEL ANGER	8905 SW IOWA DR. TUALATIN OR	joelanger@gmail.com	503 855-8720
Dan Hoover	8993 Stone Dr.	—	—
Dan Cobb	22770 SW 89th Pl Tualatin, OR	dancobb@me.com	503-543-1696



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Printed Name	Full Mailing Address	Email Address	Phone #
Rick & Therese French	9080 SW Stone Dr Tualatin 97062	therese.french@comcast.net rick.french@comcast.net	971-312-9047
Tim Neary	2780 SW 9th Pl Tualatin OR 97062	timneary@gmail.com	503 820 6223
Cherles & Christa Glaeser	<del>8955 S.W. Towne</del> Tualatin, OR		
Heidi Auger	8905 SW Towne Dr Tualatin OR	heidiauger@yahoo.com	503 691 5937
Jason Bennett	22730 SW Vermillion Dr. Tualatin, OR 97062	joy.bennett71@gmail.com	503.593.9893
LEONKY KAUFFMAN	22725 SW MIAMI DR TUALATIN	LKAUFF@COMCAST.NET	503-885-1920
Octavio Gozale	19146 SW 53rd Ct Tualatin	tanogoz@gmail.com	503-929-3989



## **Exhibit L: Sign Posting Information**

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CERTIFICATION OF SIGN POSTING



Proposal submitted as:  
**PLAN TEXT AMENDMENT**  
**PTA 23-0001**

FOR MORE INFORMATION:  
**TUALATIN.GOV/PROJECTS**

Signs must adhere to the requirements of TDC 32.150.

---

As the applicant for the Norwood Multi-family - Plan Text Amendment project, I hereby certify that on this day, 1 sign(s) was/were posted on the subject property in accordance with the requirements of the Tualatin Development Code and the Community Development Division.

Applicant's Representative: Jacob Secor

*(Please Print)*

Applicant's Representative Signature:  \_\_\_\_\_

Date: 02/15/2023

CERTIFICATION OF SIGN POSTING



Proposal submitted as:  
**PLAN MAP AMENDMENT**  
**PMA 23-0001**

FOR MORE INFORMATION:  
**TUALATIN.GOV/PROJECTS**

Signs must adhere to the requirements of TDC 32.150.

---

As the applicant for the Norwood Multi-family - Plan Map Amendment project, I hereby certify that on this day, 1 sign(s) was/were posted on the subject property in accordance with the requirements of the Tualatin Development Code and the Community Development Division.

Applicant's Representative: Jacob Secor

*(Please Print)*

Applicant's Representative Signature:  \_\_\_\_\_

Date: 02/15/2023





Posted 2/15



## Glen Southerland

---

**From:** Jim Rose <jerose@sherwood.k12.or.us>  
**Sent:** Friday, December 2, 2022 2:27 PM  
**To:** Glen Southerland  
**Subject:** Re: SSD Service Provider Letter Request

**Categories:** Filed by Newforma

**EXTERNAL EMAIL:** This email originated from outside AKS Engineering & Forestry.

Hi Glen,

The Sherwood School District can accommodate the additional students from the proposed complex.

Please let me know if you have any questions or need any additional information.

Thanks.

Jim

 **Jim Rose**  
**Chief Operations Officer**

Sherwood School District • 21020 SW Sherwood Blvd • Sherwood, OR 97140  
(503) 636-3007 • jerose@sherwood.k12.or.us

On Fri, Dec 2, 2022 at 11:43 AM Glen Southerland <[southerlandg@aks-eng.com](mailto:southerlandg@aks-eng.com)> wrote:

Hello Jim!

I was hoping to get some input on a proposed development within the School District. I'm not sure who to direct those questions to, so I apologize if you are not the correct person. Please direct me to whoever could best address my request.

We are currently working on several applications for two properties within the City of Tualatin, including an annexation and plan and map amendment, and culminating in an architectural review application for a multifamily development.



The area is south of SW Norwood Road in Tualatin, east of SW Boones Ferry Road, and currently has the address of 9300 SW Norwood Road. I've included a map showing the property below to help provide context.

The first application for this project involved an annexation of approximately 1 acre of residential land (shown in yellow below) within the Basalt Creek Area. Once annexed, it would be zoned Medium Low Residential (RML).

A zoning text amendment application would propose to allow High Density High Rise zoning within the Basalt Creek Planning Area, which includes this project site. The area does not currently have this zoning designated and the text of the zone specifies where it can be applied (Central Tualatin). Those restrictions are proposed to be changed to allow the higher density zoning in this area.

That application would also re-zone the annexed property (in yellow) and the area shown below in blue from Medium Low Residential (RML) to High Density High Rise Zone (RH-HR). The blue area is currently zoned Institutional and is currently part of the Horizon Community Church and School campus.



Thank you!

**Glen Southerland, AICP**



**AKS ENGINEERING & FORESTRY, LLC**

12965 SW Herman Road, Suite 100 | Tualatin, OR 97062

P: 503.563.6151 Ext. 166 | [www.aks-eng.com](http://www.aks-eng.com) | [southerlandg@aks-eng.com](mailto:southerlandg@aks-eng.com)

Offices in: Bend, OR | Keizer, OR | Tualatin, OR | Vancouver, WA

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# Sales Past 12 Months

## Sherwood/Tualatin Multi-Family

Sale Comparables

Avg. Price/Unit (thous.)

Average Price (mil.)

Average Vacancy at Sale

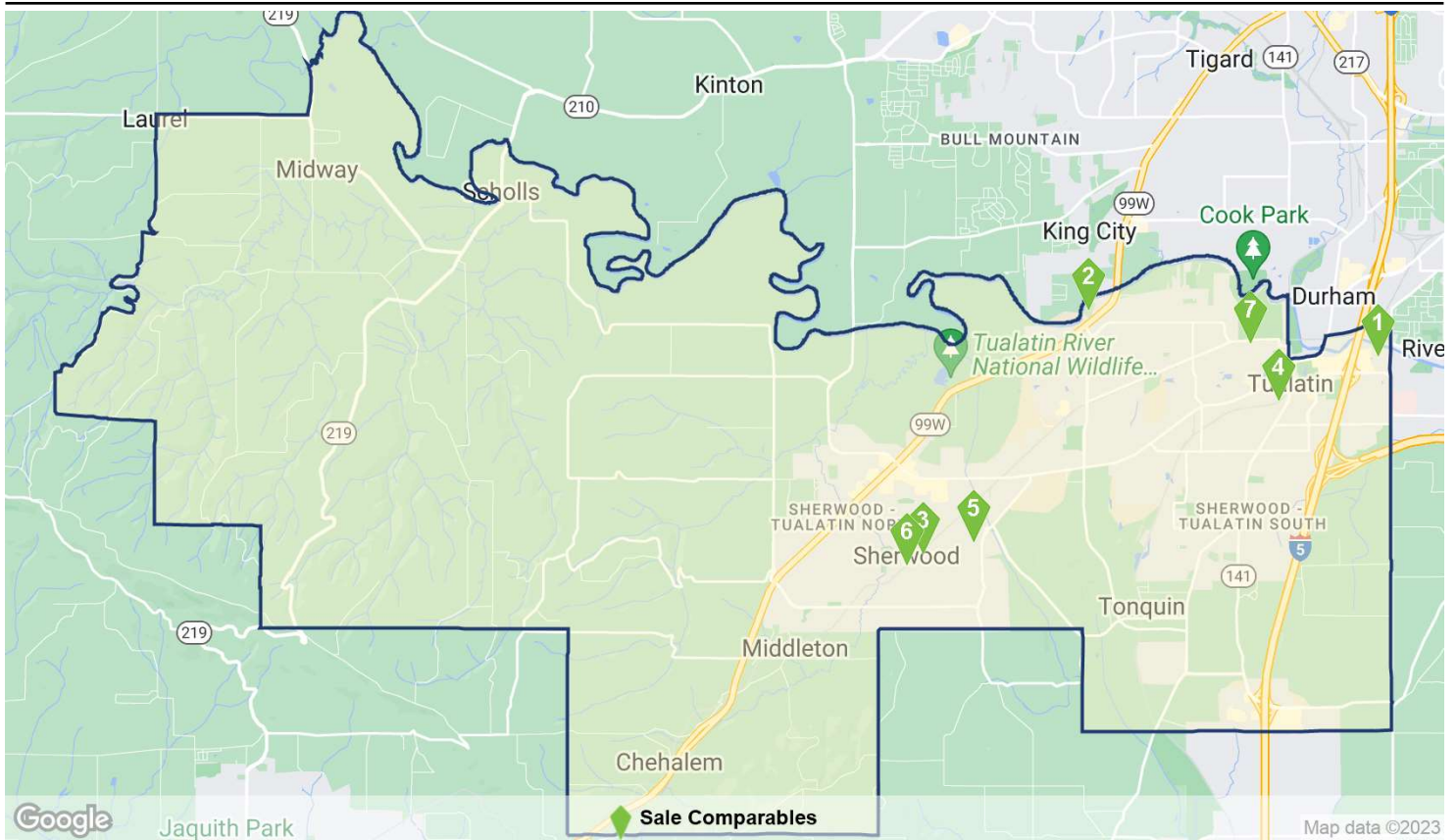
7

\$311

\$38.4

3.3%

### SALE COMPARABLE LOCATIONS



### SALE COMPARABLES SUMMARY STATISTICS

Sales Attributes	Low	Average	Median	High
Sale Price	\$2,200,000	\$38,370,833	\$24,675,000	\$96,500,000
Price/Unit	\$203,684	\$311,114	\$286,015	\$388,888
Cap Rate	3.9%	3.9%	3.9%	3.9%
Vacancy Rate At Sale	0%	3.3%	2.8%	12.5%
Time Since Sale in Months	0.7	4.3	3.1	10.9
Property Attributes	Low	Average	Median	High
Property Size in Units	7	106	95	300
Number of Floors	2	2	2	3
Average Unit SF	806	979	865	1,633
Year Built	1968	1995	1994	2017
Star Rating	★★★★★	★★★★★ 2.9	★★★★★	★★★★★

# Sales Past 12 Months

## Sherwood/Tualatin Multi-Family

### RECENT SIGNIFICANT SALES

Property Name/Address	Property Information				Sale Information			
	Rating	Yr Built	Units	Vacancy	Sale Date	Price	Price/Unit	Price/SF
1 Timbers at Tualatin 6765 SW Nyberg St	★★★★☆	1994	300	1.0%	10/4/2022	\$96,500,000	\$321,666	\$382
2 River Ridge Apartments 17865 SW Pacific Hwy	★★★★☆	2017	180	2.8%	6/9/2022	\$70,000,000	\$388,888	\$389
3 Cannery Row 22550 SW Highland Dr	★★★★☆	2014	101	2.0%	10/13/2022	\$30,000,000	\$297,029	\$353
4 Fox Meadows Apartments 19545-19605 SW Boones Fer...	★★★☆☆	1968	95	10.5%	12/16/2022	\$19,350,000	\$203,684	\$228
5 Township Sherwood 22210 SW Murdock Rd	★★★☆☆	1991	56	7.1%	9/22/2022	\$12,175,000	\$217,410	\$242
6 22845-22857 SW Washingto...	★★★☆☆	1986	8	12.5%	10/21/2022	\$2,200,000	\$275,000	\$331
7 Liberty Oaks Townhomes 9133 SW Sweek Dr	★★★★☆	2001	7	0%	2/8/2022	-	-	-

### OVERALL SUPPLY & DEMAND

Year	Inventory			Absorption		
	Units	Growth	% Growth	Units	% of Inv	Construction Ratio
2027	4,354	63	1.5%	52	1.2%	1.2
2026	4,291	63	1.5%	52	1.2%	1.2
2025	4,228	56	1.3%	42	1.0%	1.3
2024	4,172	21	0.5%	42	1.0%	0.5
2023	4,151	263	6.8%	223	5.4%	1.2
YTD	3,888	0	0%	-	-	-
2022	3,888	0	0%	14	0.4%	0
2021	3,888	0	0%	30	0.8%	0
2020	3,888	0	0%	27	0.7%	0
2019	3,888	25	0.6%	5	0.1%	5.0
2018	3,863	0	0%	45	1.2%	0
2017	3,863	194	5.3%	171	4.4%	1.1
2016	3,669	0	0%	(30)	-0.8%	0
2015	3,669	0	0%	(1)	0%	0
2014	3,669	101	2.8%	70	1.9%	1.4
2013	3,568	0	0%	44	1.2%	0
2012	3,568	0	0%	(6)	-0.2%	0
2011	3,568	0	0%	(4)	-0.1%	0

### 4 & 5 STAR SUPPLY & DEMAND

Year	Inventory			Absorption		
	Units	Growth	% Growth	Units	% of Inv	Construction Ratio
2027	1,906	63	3.4%	58	3.0%	1.1
2026	1,843	64	3.6%	56	3.0%	1.1
2025	1,779	56	3.3%	44	2.5%	1.3
2024	1,723	21	1.2%	48	2.8%	0.4
2023	1,702	264	18.4%	215	12.6%	1.2
YTD	1,438	0	0%	-	-	-
2022	1,438	0	0%	(4)	-0.3%	0
2021	1,438	0	0%	4	0.3%	0
2020	1,438	0	0%	36	2.5%	0
2019	1,438	25	1.8%	10	0.7%	2.5
2018	1,413	0	0%	16	1.1%	0
2017	1,413	180	14.6%	180	12.7%	1.0
2016	1,233	0	0%	(7)	-0.6%	0
2015	1,233	0	0%	11	0.9%	0
2014	1,233	101	8.9%	63	5.1%	1.6
2013	1,132	0	0%	18	1.6%	0
2012	1,132	0	0%	(11)	-1.0%	0
2011	1,132	0	0%	(3)	-0.3%	0

### 3 STAR SUPPLY & DEMAND

Year	Inventory			Absorption		
	Units	Growth	% Growth	Units	% of Inv	Construction Ratio
2027	1,347	0	0%	(3)	-0.2%	0
2026	1,347	0	0%	(2)	-0.1%	0
2025	1,347	0	0%	(1)	-0.1%	0
2024	1,347	0	0%	(3)	-0.2%	0
2023	1,347	0	0%	5	0.4%	0
YTD	1,347	0	0%	-	-	-
2022	1,347	0	0%	30	2.2%	0
2021	1,347	0	0%	27	2.0%	0
2020	1,347	0	0%	(22)	-1.6%	0
2019	1,347	0	0%	(6)	-0.4%	0
2018	1,347	0	0%	19	1.4%	0
2017	1,347	14	1.1%	1	0.1%	14.0
2016	1,333	0	0%	(14)	-1.1%	0
2015	1,333	0	0%	(11)	-0.8%	0
2014	1,333	0	0%	7	0.5%	0
2013	1,333	0	0%	10	0.8%	0
2012	1,333	0	0%	(3)	-0.2%	0
2011	1,333	0	0%	7	0.5%	0

### 1 & 2 STAR SUPPLY & DEMAND

Year	Inventory			Absorption		
	Units	Growth	% Growth	Units	% of Inv	Construction Ratio
2027	1,101	0	0%	(3)	-0.3%	0
2026	1,101	(1)	-0.1%	(2)	-0.2%	0.5
2025	1,102	0	0%	(1)	-0.1%	0
2024	1,102	0	0%	(3)	-0.3%	0
2023	1,102	(1)	-0.1%	3	0.3%	-
YTD	1,103	0	0%	-	-	-
2022	1,103	0	0%	(12)	-1.1%	0
2021	1,103	0	0%	(1)	-0.1%	0
2020	1,103	0	0%	13	1.2%	0
2019	1,103	0	0%	1	0.1%	0
2018	1,103	0	0%	10	0.9%	0
2017	1,103	0	0%	(10)	-0.9%	0
2016	1,103	0	0%	(9)	-0.8%	0
2015	1,103	0	0%	(1)	-0.1%	0
2014	1,103	0	0%	0	0%	-
2013	1,103	0	0%	16	1.5%	0
2012	1,103	0	0%	8	0.7%	0
2011	1,103	0	0%	(8)	-0.7%	0

### OVERALL VACANCY & RENT

Year	Vacancy			Market Rent				Effective Rents	
	Units	Percent	Ppts Chg	Per Unit	Per SF	% Growth	Ppts Chg	Units	Per SF
2027	182	4.2%	0.2	\$2,021	\$2.20	2.2%	(0.4)	\$2,011	\$2.19
2026	171	4.0%	0.2	\$1,977	\$2.15	2.6%	(0.5)	\$1,967	\$2.14
2025	159	3.8%	0.3	\$1,927	\$2.10	3.1%	(0.2)	\$1,918	\$2.09
2024	145	3.5%	(0.5)	\$1,869	\$2.03	3.3%	(0.3)	\$1,860	\$2.02
2023	165	4.0%	0.8	\$1,810	\$1.97	3.6%	(3.1)	\$1,801	\$1.96
YTD	125	3.2%	0	\$1,743	\$1.89	6.2%	(0.5)	\$1,735	\$1.89
2022	125	3.2%	(0.3)	\$1,747	\$1.90	6.7%	(2.3)	\$1,739	\$1.89
2021	138	3.5%	(0.8)	\$1,637	\$1.78	9.0%	5.4	\$1,630	\$1.77
2020	168	4.3%	(0.7)	\$1,502	\$1.63	3.6%	(1.9)	\$1,490	\$1.62
2019	194	5.0%	0.5	\$1,451	\$1.58	5.4%	2.8	\$1,435	\$1.56
2018	175	4.5%	(1.2)	\$1,376	\$1.49	2.6%	1.1	\$1,348	\$1.46
2017	221	5.7%	0.4	\$1,341	\$1.45	1.5%	(3.1)	\$1,300	\$1.41
2016	196	5.3%	0.8	\$1,321	\$1.43	4.6%	(7.5)	\$1,303	\$1.41
2015	167	4.5%	0.1	\$1,263	\$1.37	12.1%	7.3	\$1,251	\$1.36
2014	164	4.5%	0.7	\$1,127	\$1.22	4.8%	(0.2)	\$1,115	\$1.21
2013	134	3.8%	(1.2)	\$1,076	\$1.17	5.0%	1.1	\$1,068	\$1.16
2012	178	5.0%	0.1	\$1,025	\$1.11	3.9%	0.7	\$1,018	\$1.10
2011	173	4.8%	0.1	\$986	\$1.07	3.3%	-	\$980	\$1.06

### 4 & 5 STAR VACANCY & RENT

Year	Vacancy			Market Rent				Effective Rents	
	Units	Percent	Ppts Chg	Per Unit	Per SF	% Growth	Ppts Chg	Units	Per SF
2027	95	5.0%	0.1	\$2,214	\$2.24	2.1%	(0.3)	\$2,202	\$2.23
2026	90	4.9%	0.3	\$2,168	\$2.19	2.5%	(0.5)	\$2,157	\$2.18
2025	82	4.6%	0.5	\$2,116	\$2.14	3.0%	(0.2)	\$2,105	\$2.13
2024	71	4.1%	(1.5)	\$2,055	\$2.08	3.2%	(2.5)	\$2,044	\$2.07
2023	96	5.6%	2.3	\$1,991	\$2.02	5.7%	(1.9)	\$1,981	\$2.01
YTD	48	3.3%	0	\$1,914	\$1.94	9.0%	1.4	\$1,905	\$1.93
2022	48	3.3%	0.3	\$1,884	\$1.90	7.6%	0	\$1,874	\$1.90
2021	43	3.0%	(0.3)	\$1,751	\$1.77	7.6%	3.1	\$1,746	\$1.76
2020	47	3.3%	(2.5)	\$1,627	\$1.64	4.5%	0.1	\$1,619	\$1.63
2019	84	5.8%	1.0	\$1,556	\$1.57	4.4%	2.0	\$1,520	\$1.53
2018	68	4.8%	(1.2)	\$1,490	\$1.50	2.5%	0.7	\$1,475	\$1.49
2017	85	6.0%	(0.8)	\$1,454	\$1.47	1.7%	(0.4)	\$1,399	\$1.41
2016	84	6.8%	0.6	\$1,429	\$1.44	2.2%	(10.0)	\$1,406	\$1.42
2015	77	6.2%	(0.8)	\$1,399	\$1.41	12.2%	6.8	\$1,378	\$1.39
2014	87	7.0%	2.7	\$1,247	\$1.25	5.4%	0.7	\$1,225	\$1.23
2013	49	4.4%	(1.6)	\$1,183	\$1.19	4.7%	0.7	\$1,170	\$1.18
2012	68	6.0%	1.0	\$1,130	\$1.14	4.0%	(1.3)	\$1,122	\$1.13
2011	57	5.0%	0.2	\$1,086	\$1.09	5.3%	-	\$1,079	\$1.08



### 3 STAR VACANCY & RENT

Year	Vacancy			Market Rent				Effective Rents	
	Units	Percent	Ppts Chg	Per Unit	Per SF	% Growth	Ppts Chg	Units	Per SF
2027	40	2.9%	0.2	\$2,010	\$2.26	2.4%	(0.4)	\$2,001	\$2.25
2026	37	2.7%	0.2	\$1,963	\$2.20	2.7%	(0.5)	\$1,955	\$2.19
2025	34	2.6%	0.1	\$1,911	\$2.15	3.2%	(0.1)	\$1,903	\$2.14
2024	33	2.5%	0.2	\$1,852	\$2.08	3.3%	2.5	\$1,844	\$2.07
2023	30	2.3%	(0.4)	\$1,792	\$2.01	0.8%	(6.4)	\$1,784	\$2
YTD	36	2.6%	0	\$1,735	\$1.95	4.5%	(2.6)	\$1,728	\$1.94
2022	36	2.6%	(2.2)	\$1,777	\$2	7.2%	(4.2)	\$1,770	\$1.99
2021	65	4.8%	(2.0)	\$1,659	\$1.86	11.3%	9.6	\$1,648	\$1.85
2020	92	6.8%	1.6	\$1,490	\$1.67	1.7%	(4.2)	\$1,468	\$1.65
2019	70	5.2%	0.5	\$1,465	\$1.64	5.9%	3.4	\$1,461	\$1.64
2018	63	4.7%	(1.5)	\$1,384	\$1.55	2.5%	1.8	\$1,336	\$1.50
2017	84	6.2%	1.0	\$1,350	\$1.51	0.7%	(5.8)	\$1,307	\$1.47
2016	70	5.2%	1.0	\$1,340	\$1.50	6.5%	(6.5)	\$1,319	\$1.48
2015	56	4.2%	0.8	\$1,259	\$1.41	13.0%	10.1	\$1,252	\$1.40
2014	45	3.4%	(0.5)	\$1,114	\$1.25	2.9%	(3.8)	\$1,109	\$1.24
2013	52	3.9%	(0.7)	\$1,083	\$1.21	6.6%	4.7	\$1,077	\$1.21
2012	62	4.6%	0.1	\$1,016	\$1.14	1.9%	(1.1)	\$1,010	\$1.13
2011	60	4.5%	(0.5)	\$997	\$1.12	3.0%	-	\$991	\$1.11

### 1 & 2 STAR VACANCY & RENT

Year	Vacancy			Market Rent				Effective Rents	
	Units	Percent	Ppts Chg	Per Unit	Per SF	% Growth	Ppts Chg	Units	Per SF
2027	47	4.3%	0.3	\$1,768	\$2.06	2.3%	(0.3)	\$1,759	\$2.04
2026	44	4.0%	0.2	\$1,728	\$2.01	2.6%	(0.5)	\$1,719	\$2
2025	42	3.8%	0.1	\$1,684	\$1.96	3.1%	(0.1)	\$1,675	\$1.95
2024	41	3.7%	0.3	\$1,633	\$1.90	3.3%	(0.8)	\$1,624	\$1.89
2023	38	3.4%	(0.3)	\$1,581	\$1.84	4.1%	(0.6)	\$1,573	\$1.83
YTD	41	3.8%	0	\$1,515	\$1.76	4.1%	(0.6)	\$1,507	\$1.75
2022	41	3.8%	1.1	\$1,520	\$1.77	4.6%	(3.4)	\$1,512	\$1.76
2021	30	2.7%	0.1	\$1,453	\$1.69	8.0%	3.4	\$1,446	\$1.68
2020	28	2.6%	(1.1)	\$1,345	\$1.56	4.6%	(2.0)	\$1,340	\$1.56
2019	41	3.7%	(0.2)	\$1,286	\$1.50	6.6%	3.5	\$1,284	\$1.49
2018	43	3.9%	(0.8)	\$1,207	\$1.40	3.1%	0.9	\$1,187	\$1.38
2017	52	4.7%	0.9	\$1,171	\$1.36	2.2%	(3.8)	\$1,153	\$1.34
2016	42	3.8%	0.8	\$1,145	\$1.33	6.0%	(4.7)	\$1,138	\$1.32
2015	34	3.1%	0.2	\$1,081	\$1.26	10.7%	4.2	\$1,073	\$1.25
2014	32	2.9%	0	\$976	\$1.14	6.5%	3.4	\$969	\$1.13
2013	33	3.0%	(1.4)	\$917	\$1.07	3.1%	(3.8)	\$913	\$1.06
2012	48	4.4%	(0.7)	\$890	\$1.03	6.9%	6.8	\$885	\$1.03
2011	56	5.1%	0.9	\$832	\$0.97	0.1%	-	\$827	\$0.96

### OVERALL SALES

Year	Completed Transactions (1)						Market Pricing Trends (2)		
	Deals	Volume	Turnover	Avg Price	Avg Price/Unit	Avg Cap Rate	Price/Unit	Price Index	Cap Rate
2027	-	-	-	-	-	-	\$380,097	446	4.0%
2026	-	-	-	-	-	-	\$372,995	438	4.0%
2025	-	-	-	-	-	-	\$364,522	428	4.0%
2024	-	-	-	-	-	-	\$354,498	416	4.0%
2023	-	-	-	-	-	-	\$342,203	401	4.0%
YTD	-	-	-	-	-	-	\$334,615	393	4.0%
2022	7	\$230.2M	19.2%	\$38,370,833	\$311,115	3.9%	\$331,043	388	4.0%
2021	2	\$61.2M	5.6%	\$61,150,000	\$291,190	-	\$309,249	363	4.0%
2020	4	\$19.8M	3.2%	\$6,600,000	\$169,231	5.2%	\$262,125	308	4.2%
2019	2	\$2.5M	0.6%	\$1,261,500	\$114,682	-	\$243,009	285	4.5%
2018	-	-	-	-	-	-	\$223,055	262	4.7%
2017	6	\$40.4M	6.4%	\$6,725,608	\$164,039	5.5%	\$201,943	237	4.8%
2016	2	\$136.1M	16.6%	\$68,050,000	\$223,849	4.8%	\$188,794	221	5.0%
2015	2	\$35.6M	7.8%	\$17,800,000	\$123,611	5.5%	\$170,515	200	5.1%
2014	1	\$624.5K	0.2%	\$624,500	\$104,083	5.9%	\$148,163	174	5.4%
2013	5	\$47.8M	10.3%	\$9,555,600	\$130,185	5.8%	\$131,574	154	5.7%
2012	4	\$62.7M	14.7%	\$15,666,500	\$119,137	5.8%	\$125,079	147	5.8%

(1) Completed transaction data is based on actual arms-length sales transactions and levels are dependent on the mix of what happened to sell in the period.

(2) Market price trends data is based on the estimated price movement of all properties in the market, informed by actual transactions that have occurred.

### 4 & 5 STAR SALES

Year	Completed Transactions (1)						Market Pricing Trends (2)		
	Deals	Volume	Turnover	Avg Price	Avg Price/Unit	Avg Cap Rate	Price/Unit	Price Index	Cap Rate
2027	-	-	-	-	-	-	\$452,050	453	3.9%
2026	-	-	-	-	-	-	\$444,091	445	3.9%
2025	-	-	-	-	-	-	\$434,518	436	3.9%
2024	-	-	-	-	-	-	\$422,984	424	3.9%
2023	-	-	-	-	-	-	\$408,544	410	3.9%
YTD	-	-	-	-	-	-	\$398,685	400	3.8%
2022	2	\$100M	19.5%	\$50,000,000	\$355,872	-	\$394,759	396	3.8%
2021	-	-	-	-	-	-	\$368,933	370	3.9%
2020	-	-	-	-	-	-	\$319,402	320	4.0%
2019	-	-	-	-	-	-	\$295,520	296	4.2%
2018	-	-	-	-	-	-	\$271,990	273	4.4%
2017	-	-	-	-	-	-	\$246,146	247	4.6%
2016	2	\$136.1M	49.3%	\$68,050,000	\$223,849	4.8%	\$232,757	233	4.7%
2015	-	-	-	-	-	-	\$199,601	200	4.9%
2014	-	-	-	-	-	-	\$173,029	174	5.2%
2013	1	\$46.7M	29.9%	\$46,650,000	\$138,018	5.8%	\$153,332	154	5.5%
2012	-	-	-	-	-	-	\$145,076	146	5.5%

(1) Completed transaction data is based on actual arms-length sales transactions and levels are dependent on the mix of what happened to sell in the period.

(2) Market price trends data is based on the estimated price movement of all properties in the market, informed by actual transactions that have occurred.

### 3 STAR SALES

Year	Completed Transactions (1)						Market Pricing Trends (2)		
	Deals	Volume	Turnover	Avg Price	Avg Price/Unit	Avg Cap Rate	Price/Unit	Price Index	Cap Rate
2027	-	-	-	-	-	-	\$377,201	459	4.0%
2026	-	-	-	-	-	-	\$369,658	450	4.0%
2025	-	-	-	-	-	-	\$360,754	439	4.0%
2024	-	-	-	-	-	-	\$350,401	427	4.0%
2023	-	-	-	-	-	-	\$337,954	412	4.0%
YTD	-	-	-	-	-	-	\$332,550	405	4.0%
2022	2	\$96.5M	22.8%	\$96,500,000	\$321,667	-	\$328,389	400	4.0%
2021	2	\$61.2M	16.1%	\$61,150,000	\$291,190	-	\$307,402	374	4.0%
2020	2	\$4.3M	1.6%	\$4,300,000	\$307,143	5.3%	\$251,864	307	4.3%
2019	1	\$1.3M	1.3%	\$1,250,000	\$73,529	-	\$235,259	287	4.5%
2018	-	-	-	-	-	-	\$217,094	264	4.7%
2017	5	\$38.7M	17.7%	\$7,740,730	\$162,620	5.0%	\$197,191	240	4.9%
2016	-	-	-	-	-	-	\$181,323	221	5.0%
2015	1	\$28M	15.8%	\$28,000,000	\$133,333	5.5%	\$165,050	201	5.2%
2014	1	\$624.5K	0.5%	\$624,500	\$104,083	5.9%	\$145,004	177	5.5%
2013	-	-	-	-	-	-	\$128,925	157	5.8%
2012	2	\$61.5M	38.3%	\$30,750,000	\$120,588	5.8%	\$123,830	151	5.9%

(1) Completed transaction data is based on actual arms-length sales transactions and levels are dependent on the mix of what happened to sell in the period.

(2) Market price trends data is based on the estimated price movement of all properties in the market, informed by actual transactions that have occurred.

### 1 & 2 STAR SALES

Year	Completed Transactions (1)						Market Pricing Trends (2)		
	Deals	Volume	Turnover	Avg Price	Avg Price/Unit	Avg Cap Rate	Price/Unit	Price Index	Cap Rate
2027	-	-	-	-	-	-	\$272,603	409	4.2%
2026	-	-	-	-	-	-	\$267,364	401	4.2%
2025	-	-	-	-	-	-	\$261,115	391	4.2%
2024	-	-	-	-	-	-	\$253,822	380	4.2%
2023	-	-	-	-	-	-	\$245,025	367	4.2%
YTD	-	-	-	-	-	-	\$238,274	357	4.2%
2022	3	\$33.7M	14.4%	\$11,241,667	\$212,107	3.9%	\$235,968	354	4.2%
2021	-	-	-	-	-	-	\$219,407	329	4.3%
2020	2	\$15.5M	9.3%	\$7,750,000	\$150,485	5.2%	\$186,273	279	4.5%
2019	1	\$1.3M	0.5%	\$1,273,000	\$254,600	-	\$171,445	257	4.7%
2018	-	-	-	-	-	-	\$154,823	232	5.0%
2017	1	\$1.7M	0.7%	\$1,650,000	\$206,250	6.0%	\$139,538	209	5.2%
2016	-	-	-	-	-	-	\$130,081	195	5.3%
2015	1	\$7.6M	7.1%	\$7,600,000	\$97,436	-	\$132,308	198	5.3%
2014	-	-	-	-	-	-	\$113,649	170	5.7%
2013	4	\$1.1M	2.6%	\$282,000	\$38,897	-	\$101,235	152	6.0%
2012	2	\$1.2M	1.5%	\$583,000	\$72,875	6.0%	\$95,746	143	6.1%

(1) Completed transaction data is based on actual arms-length sales transactions and levels are dependent on the mix of what happened to sell in the period.

(2) Market price trends data is based on the estimated price movement of all properties in the market, informed by actual transactions that have occurred.

### DELIVERIES & UNDER CONSTRUCTION

Year	Inventory			Deliveries		Net Deliveries		Under Construction	
	Bldgs	Units	Vacancy	Bldgs	Units	Bldgs	Units	Bldgs	Units
2027	-	4,354	4.2%	-	64	-	62	-	-
2026	-	4,292	4.0%	-	66	-	64	-	-
2025	-	4,228	3.8%	-	54	-	55	-	-
2024	-	4,173	3.5%	-	23	-	22	-	-
2023	-	4,151	4.0%	-	264	-	263	-	-
YTD	43	3,888	3.2%	0	0	0	0	1	264
2022	43	3,888	3.2%	0	0	0	0	1	264
2021	43	3,888	3.5%	0	0	0	0	1	264
2020	43	3,888	4.3%	0	0	0	0	0	0
2019	43	3,888	5.0%	1	25	1	25	0	0
2018	42	3,863	4.5%	0	0	0	0	1	25
2017	42	3,863	5.7%	2	194	2	194	0	0
2016	40	3,669	5.3%	0	0	0	0	2	194
2015	40	3,669	4.5%	0	0	0	0	1	180
2014	40	3,669	4.5%	1	101	1	101	0	0
2013	39	3,568	3.8%	0	0	0	0	1	101
2012	39	3,568	5.0%	0	0	0	0	1	101
2011	39	3,568	4.8%	0	0	0	0	0	0

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# City of Tualatin

## Economic Opportunities Analysis

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December 2019

Prepared for:  
City of Tualatin

**FINAL REPORT**

**ECONorthwest**  
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# Executive Summary

This report presents an economic opportunities analysis (EOA) consistent with the requirements of Statewide Planning Goal 9 and the Goal 9 administrative rule (OAR 660-009). Goal 9 describes the EOA as “an analysis of the community’s economic patterns, potentialities, strengths, and deficiencies as they relate to state and national trends” and states that “a principal determinant in planning for major industrial and commercial developments should be the competitive advantage of the region within which the developments would be located.”

The primary goals of the EOA are to (1) project the amount of land needed to accommodate the future employment growth within Tualatin between 2020 and 2040, (2) evaluate the existing employment land supply within the City to determine if it is adequate to meet that need, and (3) to fulfill state planning requirements for a twenty-year supply of employment land.

## How much buildable employment land does Tualatin currently have?

Exhibit 1 shows commercial and industrial land in Tualatin with development capacity (lands classified vacant or partially vacant). The results show that Tualatin has about 385 unconstrained buildable acres within its city limits and Basalt Creek.

### Exhibit 1. Buildable Acres by Plan Designation and Zoning, Tualatin Planning Area, 2019

Source: Metro BLI, ECONorthwest Analysis. Note: The numbers in the table may not sum to the total as a result of rounding.

Generalized Plan Designation	Total buildable acres	Buildable acres on vacant lots	Buildable acres on partially vacant lots
<b>Commercial</b>			
Central Commercial	0	0	0
General Commercial	4	4	0
Medical Commercial	0	0	0
Neighborhood Commercial	0	0	0
Office Commercial	3	3	0
Recreational Commercial	0	0	0
<b>Industrial</b>			
General Manufacturing	99	99	0
Light Manufacturing	29	29	0
Manufacturing Business Park	85	85	0
Manufacturing Park	56	56	0
<b>Mixed-Use Commercial Overlay Zone</b>			
General Commercial	0	0	0
<b>Central Tualatin Overlay Zone</b>			
Central Commercial	0	0	0
General Commercial	0	0	0
Office Commercial	0	0	0
General Manufacturing	0	0	0
Light Manufacturing	0	0	0
<b>Basalt Creek Planning Area</b>			
Manufacturing Park	105	35	70
Neighborhood Commercial	4	4	0
<b>Total</b>	<b>385</b>	<b>314</b>	<b>70</b>

# How much growth is Tualatin planning for?

Goal 9 requires that cities provide for an adequate supply of commercial and industrial sites consistent with plan policies. To meet this requirement, Tualatin needs an estimate of the amount of commercial and industrial land that will be needed over the 2020–2040 planning period. Exhibit 2 presents the forecast of employment growth by land use type in Tualatin from 2020 to 2040.

Tualatin’s employment base was 40,478 employees in 2020. The forecast shows that by 2040, Tualatin will have 53,332 employees, an increase of 12,854 jobs over the planning period.

**Exhibit 2. Forecast of Employment Growth by Land Use Type, Tualatin Planning Area, 2020–2040**

Source: ECONorthwest. Note: The shaded percentages denote an assumption about the future share of employment (as a percent of total) by land use type. It assumes that the share of employment by land use type will remain the same.

Land Use Type	2020		2040		Change 2020 to 2040
	Employment	% of Total	Employment	% of Total	
Industrial	18,218	45%	24,004	45%	5,786
Retail Commercial	3,050	8%	4,018	8%	968
Office & Commercial Services	18,382	45%	24,219	45%	5,837
Government	829	2%	1,092	2%	263
<b>Total</b>	<b>40,478</b>	<b>100%</b>	<b>53,332</b>	<b>100%</b>	<b>12,854</b>

Tualatin will accommodate new government employees (263 employees) in Institutional Plan Designations. Therefore, the estimate of new employees (between 2020 and 2040) that will require commercial and industrial lands is 12,591 employees.

# How much land will be required for employment?

The forecast for land needed to accommodate employment growth in Tualatin shows that the growth of 12,591 new employees will result in demand for about 677 gross acres of commercial and industrial employment lands.

# Does Tualatin have enough land to accommodate employment growth?

Exhibit 3 shows that Tualatin has a deficit of suitable employment land to accommodate demand for commercial and industrial employment in the Tualatin Planning Area.

## Exhibit 3. Comparison of the Capacity of Land with Employment Land Demand by Land Use Type, Tualatin Planning Area, 2020–2040

Source: ECONorthwest. Note: Employment demand requires an additional 42 gross acres on land in Residential Plan Designations and one gross acre on land in an institutional (public) Plan Designation.

General Plan Designation	Land Supply (Suitable Gross Acres)	Land Demand (Gross Acres)	Land Sufficiency (Deficit)
Industrial	374	448	(74)
Commercial (incl Retail and Office)	11	186	(175)

## What types of business does Tualatin want to attract?

An analysis of growth industries in Tualatin should address two main questions: (1) Which industries are most likely to be attracted to Tualatin? and (2) Which industries best meet Tualatin’s economic development goals? The selection of target industries is based on Tualatin’s goals for economic development; economic conditions in Tualatin, Washington County, and the Portland Metro Region; and the city’s competitive advantages.

Given the current employment base, which is composed of small and mid-sized businesses, it is reasonable to assume that much of the city’s business growth will come from small and mid-sized businesses. This growth will either come from businesses already in Tualatin or new businesses that start or relocate to Tualatin from within the Portland Region or from outside of the region.

The industries identified as having potential for growth in Tualatin are:

- **Manufacturing.** Tualatin’s manufacturing sector accounts for 27% of the city’s employment base. A few examples of Tualatin’s potential growth industries in manufacturing are:
  - *Advanced manufacturing.* This industry is an internally preferred grouping of five independent traded clusters: (1) Downstream Metal Products, (2) Lighting and Electrical Equipment, (3) Metalworking Technology, (4) Production Technology and Heavy Machinery, and (5) Upstream Metal Manufacturing.
  - *Food processing and manufacturing.* The Bureau of Labor Statistics describes this industry cluster as one that takes livestock and agricultural products (raw food materials) and transforms them into products for intermediate or final consumption (sold to wholesalers or retailers for distribution). Tualatin’s food

processing and manufacturing cluster is its fastest growing industry (projected to grow 64% from 2017 to 2028).

- *Plastics.* Wages in the plastics industry cluster (comprising establishments that manufacture plastic materials and other plastic components/products) grew 14 % from 2012 to 2017. As the fourth most concentrated cluster in Tualatin (with an LQ of 5.21), this industry presents objective growth potential for lower-skilled workers.
- **Information technology and analytical systems.** This industry cluster includes establishments that work in computers, software, audio visual equipment, laboratory instruments, and medical apparatus development (e.g., standard and precision electronics like circuit boards and semiconductors).
- **Business services.** Business services establishments including corporate headquarters and other professional services (e.g., consulting, back office services, financial services/legal services, facilities support, computer services, etc.). In Tualatin, this industry is expected to see the largest growth in total jobs, and it had the largest growth in average wage.

## What are the key conclusions from the EOA?

The conclusions about commercial and industrial land sufficiency in Tualatin are:

- **Tualatin has a deficit of land to accommodate new employment growth.** Tualatin has a deficit of about 74 acres of land in industrial Plan Designations and 175 acres of employment in commercial Plan Designations to accommodate employment. Tualatin will need to consider policies to increase the efficiency of employment land use within the City, such as policies to encourage denser employment development and redevelopment that results in higher-density development.
- **Tualatin has substantial redevelopment potential.** A majority of redevelopable lots are in industrial areas. For example, change of use (and redevelopment) of the gravel pit in the southwest area of the Manufacturing Business Park presents substantial redevelopment opportunities. The six tax lots in the gravel pit comprise 181 acres with about 47 constrained acres, mostly due to steep slopes and wetlands. When mining ceases in the gravel pit, which may or may not occur in the twenty-year planning period, the gravel pit may be redevelopable and available for new employment uses.
- **Tualatin's primary comparative advantages for economic development are its location along the I-5 corridor and proximity to urban and cultural amenities/services in the Portland Region, making Tualatin an attractive place for businesses to locate.** Tualatin has advantages through its access to the regional labor market and the region's growing labor force comprising diverse skill sets.
- **Tualatin will need to address transportation capacity issues to accommodate growth, particularly along regional connectors (roads and avenues).** Traffic congestion is a substantial issue in Tualatin and surrounding areas, making it difficult to commute to

Tualatin from other cities within the Portland Region and within Tualatin. Stakeholders are concerned that additional employment growth will make congestion substantially worse.

## What are the key recommendations of the EOA?

Following are a summary of ECONorthwest's recommendations to Tualatin based on the analysis and conclusions in this report. The *Tualatin Economic Development Strategy* memorandum presents the full list of recommendations for Tualatin.

- **Ensure that Tualatin has enough land to accommodate expected employment growth and that land has infrastructure to support employment growth.** Tualatin should identify opportunities to support mixed-use development (especially development that includes commercial and residential uses) to accommodate employment growth, especially commercial employment growth. The City should identify opportunities to make more efficient use of employment land, such as limiting development of businesses that have large land requirements and have little employment (such as distribution). In addition, the City should work with landowners to get key employment sites certified as “shovel ready” to speed the development process.
- **Identify opportunities for redevelopment, especially mixed-use redevelopment.** The City has a substantial deficit of industrial and commercial land. The City may be able to address some or most of this deficit within the existing planning area (without a UGB expansion). To do so, the City should identify districts for redevelopment, such as mixed-use development. This planning includes revising the Tualatin Town Center Plan to focus on opportunities to support redevelopment, identify tools to support redevelopment, and identify areas appropriate for more intense industrial uses (e.g., redevelopment of the gravel pit in the southwest area of the city once mining activity has ceased).
- **Grow jobs and businesses in Tualatin by supporting business retention, growth, and attraction.** The first step in growing jobs and businesses in Tualatin is revising the economic development strategy, including developing a clear vision for economic development in Tualatin and creating an action plan to implement the vision. The revised strategy can build on the *Tualatin Economic Development Strategy* produced as part of this analysis, but the revised strategy should include a detailed action plan to implement the newly developed vision for economic development. In revising the strategy, the City should identify partnerships and incentive programs to grow, retain, and attract businesses and to support entrepreneurial businesses in Tualatin.
- **Ensure that the City connects planning for economic development with other community planning.** Throughout the project, stakeholders emphasized the need to coordinate economic development planning with housing, transportation planning, and other community planning. Updates to the Tualatin Transportation System Plan should be coordinated with planning for employment and business growth. A key approach to accommodating new commercial development is redevelopment that results in mixed-

use districts, providing opportunities for more housing affordable to people working at businesses in Tualatin and living closer to work (thus reducing transportation issues). In addition, stakeholders would like to see incorporation of services needed to meet daily needs of residents of neighborhoods without driving.

The *Tualatin Economic Development Strategy* memorandum presents more details about each of these topics and recommendations for specific actions to implement these recommendations.



# 1. Introduction

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This report presents an economic opportunities analysis (EOA) for the City of Tualatin. The purpose of an EOA is to develop information as a basis for policies that capitalize on Tualatin opportunities and help address the City's challenges. The EOA includes technical analysis to address a range of questions that Tualatin faces in managing its commercial and industrial land. For example, the EOA includes an employment forecast that describes how much growth Tualatin should plan for over the 2020–2040 period and identifies the amount and type of employment land necessary to accommodate growth in Tualatin over that period. The EOA also includes an inventory of commercial and industrial land within Tualatin's Planning Area to provide information about the amount of land available to accommodate employment growth.

This EOA complies with the requirements of Statewide Planning Goal 9, the Goal 9 administrative rules (OAR 660 Division 9), and the court decisions that have interpreted them. Goal 9 requires cities to state objectives for economic development (OAR 660-009-0020[1][a]) and to identify the characteristics of sites needed to accommodate industrial and other employment uses (OAR 660-009-0025[1]) over the twenty-year planning period. This approach could be characterized as a *site-based* approach that projects land need based on the forecast for employment growth, the City's economic development objectives, and the specific needs of target industries.

## Background

Tualatin last evaluated economic trends in a 2014 update to the City's Economic Development Strategic Plan. Around that same time, Greater Portland Inc. completed a five-year economic development strategy for the Portland Region (Greater Portland 2020), which defined emerging industry clusters and policies for economic development in the region. In 2018, Tualatin also completed a concept plan for the Basalt Creek Planning Area, which allocated substantial land as a Manufacturing Park and was expected to accommodate 1,897 new jobs.

The purpose of this project was to develop a factual base to provide the City with information about current economic conditions. This factual basis provides information necessary for updating the City's Economic Development Comprehensive Plan policies. This report identifies opportunities to meet the City's economic development objectives and develop comprehensive plan policies and implementation strategies that capitalize on the City's comparative advantages and address areas of economic weakness.

The EOA provides information that the City can use to identify and capitalize on its economic opportunities. It also provides information essential to addressing the City's challenges in managing economic development, such as a lack of commercial sites to support growth of businesses that require office space and a lack of policy direction to address these issues, as well as underutilized industrial and commercial land.

The EOA draws on information from numerous data sources, such as the Oregon Employment Department, U.S. Bureau of Economic Analysis, U.S. Bureau of Labor Statistics, and the U.S. Census.

## Framework for an Economic Opportunities Analysis

The content of this report is designed to meet the requirements of Oregon Statewide Planning Goal 9 and the administrative rule that implements Goal 9 (OAR 660-009). The analysis in this report is designed to conform to the requirements for an economic opportunities analysis (EOA) in OAR 660-009 as follows.

1. *Economic Opportunities Analysis (OAR 660-009-0015)*. The EOA requires communities to (1) identify the major categories of industrial or other employment uses that could reasonably be expected to locate or expand in the planning area based on information about national, state, regional, county, or local trends; (2) identify the number of sites by type reasonably expected to be needed to accommodate projected employment growth based on the site characteristics typical of expected uses; (3) include an inventory of vacant and developed lands within the planning area designated for industrial or other employment use; and (4) estimate the types and amounts of industrial and other employment uses likely to occur in the planning area. Local governments are also encouraged to assess community economic development potential through a visioning or some other public input-based process in conjunction with state agencies.
2. *Industrial and commercial development policies (OAR 660-009-0020)*. Cities are required to develop commercial and industrial development policies based on the EOA. Local comprehensive plans must state the overall objectives for economic development in the planning area and identify categories or particular types of industrial and other employment uses desired by the community. Local comprehensive plans must also include policies that commit the city or county to designate an adequate number of employment sites of suitable sizes, types, and locations. The plan must also include policies to provide necessary public facilities and transportation facilities for the planning area. Tualatin's draft economic development policies will be in the Tualatin Economic Development Strategy memorandum, which will accompany this report.
3. *Designation of lands for industrial and commercial uses (OAR 660-009-0025)*. Cities and counties must adopt measures to implement policies adopted pursuant to OAR 660-009-0020. Appropriate implementation measures include amendments to plan and zone map designations, land use regulations, public facility plans, and transportation system plans. More specifically, plans must identify the approximate number, acreage, and characteristics of sites needed to accommodate industrial and other employment uses to implement plan policies and must designate serviceable land suitable to meet identified site needs.

## Organization of this Report

This report is organized as follows:

- **Chapter 2.** Factors Affecting Future Economic Growth summarizes historic economic trends that affect current and future economic conditions in Tualatin as well as Tualatin's competitive advantages for economic development.
- **Chapter 3.** Employment Growth and Site Needs presents a forecast for employment growth in Tualatin and describes the City's target industries and site needs for potential growth in industries.
- **Chapter 4.** Buildable Lands Inventory presents a summary of the inventory of employment lands.
- **Chapter 5.** Land Sufficiency and Conclusions compares the supply of land demand for buildable lands and presents key concluding recommendations for Tualatin.

This report also includes two appendices:

- **Appendix A.** National, State, and Regional and Local Trends
- **Appendix B.** Buildable Lands Inventory Methodology

## 2. Factors Affecting Future Economic Growth

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Tualatin exists as part of the economy of the Portland Region. While Portland is the economic center of the region, providing urban amenities (such as stores, medical services, or personal financial services) to residents, Tualatin also provides similar amenities to its residents and visitors.

This chapter describes the factors affecting economic growth in Tualatin within the context of national and regional economic trends. The analysis presents the City's competitive advantages for growing and attracting businesses, which forms the basis for identifying potential growth industries in Tualatin.

### Factors that Affect Economic Development<sup>1</sup>

The fundamental purpose of Goal 9 is to make sure that a local government plans for economic development. The planning literature provides many definitions of economic development, both broad and narrow. Broadly,

Economic development is the process of improving a community's well-being through job creation, business growth, and income growth (factors that are typical and reasonable focus of economic development policy), as well as through improvements to the wider social and natural environment that strengthen the economy.<sup>2</sup>

That definition acknowledges that a community's wellbeing depends in part on narrower measures of economic wellbeing (e.g., jobs and income) and on other aspects of quality of life (e.g., the social and natural environment). In practice, cities and regions trying to prepare an economic development strategy typically use a narrower definition of economic development; they take it to mean business development, job growth, and job opportunity. The assumptions are that:

- Business and job growth are contributors to and are consistent with economic development, increased income, and increased economic welfare. From the municipal point of view, investment and resulting increases in property tax are important outcomes of economic development.
- The evaluation of trade-offs and balancing of policies to decide whether such growth is likely to lead to overall gains in well-being (on average and across all citizens and

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<sup>1</sup> The information in this section is based on previous Goal 9 studies conducted by ECONorthwest and the following publication: *An Economic Development Toolbox: Strategies and Methods*, Terry Moore, Stuart Meck, and James Ebenhoh, American Planning Association, Planning Advisory Service Report Number 541, October 2006.

<sup>2</sup> *An Economic Development Toolbox: Strategies and Methods*, Terry Moore, Stuart Meck, and James Ebenhoh, American Planning Association, Planning Advisory Service Report Number 541, October 2006.

businesses in a jurisdiction, and all aspects of well-being) is something that decision makers do after an economic strategy has been presented to them for consideration.

That logic is consistent with the tenet of the Oregon Land Use Planning program: all goals matter, no goal dominates, and the challenge is to find a balance of conservation and development that is acceptable to a local government and state. Goal 9 does not dominate, but it legitimizes and requires that a local government focus on the narrower view of economic development that focuses on economic variables.

In that context, a major part of local economic development policy is about local support for business development and job growth; that growth comes from the creation of new firms, the expansion of existing firms, and the relocation or retention of existing firms. Specifically, new small businesses are accounting for a larger share of the job growth in the United States.<sup>3</sup> This shift toward a focus on entrepreneurship, innovation, and small businesses presents additional options for local support for economic development beyond firm attraction and retention. Thus, a key question for economic development policy is, *What are the factors that influence business and job growth, and what is the relative importance of each?* This document addresses that question in depth.

## What factors matter?

Why do firms locate where they do? There is no single answer—different firms choose their locations for different reasons. Key determinants of a location decision are a firm's *factors of production*. For example, a firm that spends a large portion of total costs on unskilled labor will be drawn to locations where labor is relatively inexpensive. A firm with large energy demands will give more weight to locations where energy is relatively inexpensive. In general, firms choose locations they believe will allow them to maximize net revenues—if demand for goods and services are held roughly constant, then revenue maximization is approximated by cost minimization.

The typical categories that economists use to describe a firm's production function are:

- **Labor.** Labor is often the most important factor of production. Other things equal, firms look at productivity—labor output per dollar. Productivity can decrease if certain types of labor are in short supply, which increases the costs by requiring either more pay to acquire the labor that is available, the recruiting of labor from other areas, or the use of the less productive labor that is available locally.
- **Land.** Demand for land depends on the type of firm. Manufacturing firms need more space and tend to prefer suburban locations where land is relatively less expensive and

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<sup>3</sup> According to the 2018 Small Business Profile from the U.S. Small Business Office of Advocacy, small businesses account for over 99 percent of total businesses in the United States, and their employees account for nearly 50% of American workers. <https://www.sba.gov/sites/default/files/advocacy/2018-Small-Business-Profiles-US.pdf>

less difficult to develop. Warehousing and distribution firms need to locate close to interstate highways.

- **Local infrastructure.** An important role of government is to increase economic capacity by improving quality and efficiency of infrastructure and facilities, such as roads, bridges, water and sewer systems, airport and cargo facilities, energy systems, and telecommunications.
- **Access to markets.** Though part of infrastructure, transportation merits special attention. Firms need to move their product (either goods or services) to the market, and they rely on access to different modes of transportation to do this.
- **Materials.** Firms producing goods, and even firms producing services, need various materials to develop products that they can sell. Some firms need natural resources (i.e., raw lumber) and others may need intermediate materials (i.e., dimensioned lumber).
- **Entrepreneurship.** This input to production may be thought of as good management, or even more broadly as a spirit of innovation, optimism, and ambition that distinguishes one firm from another even though most of their other factor inputs may be quite similar. Entrepreneurial activity, even when unsuccessful, can offer information about the local market that other entrepreneurs can use in starting a new firm. Entrepreneurs are typically willing to take on more risk in uncertain markets, and a strengthened entrepreneurial environment can help to reduce that risk and uncertainty.<sup>4</sup> Entrepreneurs also tend to have more mobility than larger firms and are more likely to locate in areas with a strong entrepreneurial environment.<sup>5</sup> To some degree, local governments can promote the high quality of life in an area to attract entrepreneurs, in addition to adopting regulations with minimal barriers—or at least, clear guidelines—for new small businesses.

The supply, cost, and quality of any of these factors obviously depends on market factors such as conditions of supply and demand locally, nationally, and even globally. But they also depend on public policy. In general, public policy can affect these factors of production through:

- **Regulation.** Regulations protect the health and safety of a community and help maintain the quality of life. Overly burdensome regulations, however, can be disincentives for businesses to locate in a community. Simplified bureaucracies and straightforward regulations can reduce the burden on businesses and help them react quickly in a competitive marketplace.
- **Taxes.** Firms tend to seek locations where they can optimize their after-tax profits. Tax rates are not a primary location factor—they matter only after businesses have made decisions based on labor, transportation, raw materials, and capital costs. The costs of these production factors are usually similar within a region. Therefore, differences in tax

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<sup>4</sup> Tessa Conroy and Stephan Weiler. “Local and Social: Entrepreneurs, Information Network Effects, and Economic Growth” (2017). [https://redi.colostate.edu/wp-content/uploads/sites/50/2017/05/gender\\_gia\\_Jun2017-2.pdf](https://redi.colostate.edu/wp-content/uploads/sites/50/2017/05/gender_gia_Jun2017-2.pdf)

<sup>5</sup> Emil E. Malizia and Edward J. Feser. *Understanding Local Economic Development*. (1999).

levels across communities within a region are more important in the location decision than are differences in tax levels between regions.

- **Financial incentives.** Governments can offer firms incentives to encourage growth. Most types of financial incentives have had little significant effect on firm location between regions. For manufacturing industries with significant equipment costs, however, property or investment tax credit or abatement incentives can play a significant role in location decisions. Incentives are more effective at redirecting growth within a region than they are at providing a competitive advantage between regions.

This discussion may make it appear that a location decision is based entirely on a straightforward accounting of costs, with the best location being the one with the lowest level of overall costs. Studies of economic development, however, have shown that location decisions depend on a variety of other factors that indirectly affect costs of production. These indirect factors include agglomerative economies (also known as industry clusters), quality of life, and innovative capacity.

- **Industry clusters.** Firms with similar business activities can realize operational savings when they congregate in a single location or region. Clustering can reduce costs by creating economies of scale for suppliers. For this reason, firms tend to locate in areas where there is already a presence of other firms engaged in similar or related activities.
- **Quality of life.** A community that features many quality amenities, such as access to recreational opportunities, culture, low crime, good schools, affordable housing, and a clean environment can attract people simply because it is a nice place to be. A region's quality of life can attract skilled workers, and if the amenities lure enough potential workers to the region, the excess labor supply pushes their wages down so that firms in the region can find skilled labor for a relatively low cost. The characteristics of local communities can affect the distribution of economic development within a region, with different communities appealing to different types of workers and business owners. Sometimes location decisions by business owners are based on an emotional or historical attachment to a place or set of amenities, without much regard for the cost of other factors of production.
- **Innovative capacity.** Increasing evidence suggests that a culture promoting innovation, creativity, flexibility, and adaptability is essential to keeping U.S. cities economically vital and internationally competitive. Innovation is particularly important in industries that require an educated workforce. High-tech companies need to have access to new ideas typically associated with a university or research institute. In addition to innovations in research and development within firms or research institutions, firms may also draw on the innovative capacity of entrepreneurs in an area. These entrepreneurs may be former employees of the larger firm or businesses that relocated to an area because of the proximity to an industry cluster. Strong networks and communication between firms, research institutions, and entrepreneurs are key



components to leveraging innovative capacity in an area.<sup>6</sup> Local governments are well-equipped to help foster these networks through supporting economic development tools such as small business assistance centers or incubation centers. Government can also be a key part of a community's innovative culture through the provision of services and regulation of development and business activities that are responsive to the changing needs of business.

## How important are these factors?

To understand how changes in public policies affect local job growth, economists have attempted to identify the importance for firms of different locational factors. They have used statistical models, surveys, and case studies to examine detailed data on the key factors that enter the business location decision.

Economic theory says that firms locate where they can reduce the costs of their factors of production (assuming demand for products and any other factors are held constant). Firms locate in regions where they have access to inputs that meet their quality standards, at a relatively low cost. Because firms are different, the relative importance of different factors of production varies both across industries and, more importantly, across firms.

No empirical analysis can completely quantify firm location factors because numerous methodological problems make any analysis difficult. For example, some would argue simplistically that firms would prefer locating in a region with a low tax rate to reduce tax expenses. However, the real issue is the value provided by the community for the taxes collected. Because taxes fund public infrastructure that firms need, such as roads, water, and sewer systems, regions with low tax rates may end up with poor infrastructure, making it less attractive to firms. When competing jurisdictions have roughly comparable public services (type, cost, and quality) and quality of life, then tax rates (and tax breaks) can make a difference.

Further complicating any analysis is the fact that many researchers have used public expenditures as a proxy for infrastructure quality. But large expenditures on roads do not necessarily equal a quality road system. It is possible that the money has been spent ineffectively and the road system is in poor condition.

An important aspect of this discussion is that the business function at a location matters more than a firm's industry. A single company may have offices spread across cities with headquarters located in a cosmopolitan metropolitan area, the research and development divisions located near a concentration of universities, the back office in a suburban location, and manufacturing and distribution located in areas with cheap land and good interstate access.

The location decisions of businesses are primarily based on the availability and cost of labor, transportation, raw materials, and capital. The availability and cost of these production factors are usually similar within a region. Most economic development strategies available to local

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<sup>6</sup> Nancey Green Leigh and Edward Blakely. *Planning Local Economic Development: Theory and Practice*. 2013.



governments, however, only indirectly affect the cost of these primary location factors. Local governments can most easily affect tax rates, public services, and regulatory policies. Economists generally agree that these factors do affect economic development, but the effects on economic development are modest. Thus, most of the strategies available to local governments have only a modest effect on the level and type of economic development in the community.

Local governments can provide support for new and existing small businesses through policies and programs that support entrepreneurship and innovation. The National League of Cities suggests strategies for local governments, including strong leadership from elected officials; better communication with entrepreneurs, especially regarding the regulatory environment for businesses in the community; and partnerships with colleges, universities, small business development centers, mentorship programs, community groups, businesses groups, and financial institutions.<sup>7</sup>

Local governments in Oregon also play a central role in the provision of buildable land through the inclusion of lands in the Urban Growth Boundary, through the determination of plan designations and zoning, and through the provision of public services. Obviously, businesses need buildable land to locate or expand in a community. Providing buildable land alone is not sufficient to guarantee economic development in a community—market conditions must create demand for this land, and local factors of production must be favorable for business activity. In the context of expected economic growth and the perception of a constrained land supply in Tualatin, the provision of buildable land has the potential to strongly influence the level and type of economic development in the City. The provision of buildable land is one of the most direct ways that Tualatin can affect the level and type of economic development in the community.

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<sup>7</sup> National League of Cities. “Supporting Entrepreneurs and Small Businesses.” (2012). <https://www.nlc.org/supporting-entrepreneurs-and-small-business>

# Summary of the Effect of National, State, and Regional Trends on Economic Development in Tualatin

This section presents a summary and the implications of national, state, and regional economic trends on economic growth in Tualatin, which are presented in Appendix A. Employment growth in Tualatin is closely related to trends that affect economic growth in Washington County and the broader Portland region.

- **Recovery from the national recession.** Incomes grew faster in Washington County than Oregon since 2001, and the unemployment rate in Washington County was lower than the statewide average.
  - The unemployment rate in Washington County has declined since the recession, consistent with trends in the United States and Oregon. In 2018, the unemployment rate was 3.5% in Washington County, 4.2% in Oregon, and 3.9% in the United States. Comparatively, in 2009, unemployment was 9.5% in Washington County, 11.3% in Oregon, and 9.3% in the United States. As of 2018, the unemployment rate for Washington County is similar to its rate in 2000.
  - Employment has increased in Washington County since 2001, with a gain of about 66,799 employees between 2001 and 2018. The largest increases were in professional/business services and health care/social assistance, while the largest decreases were in wholesale trade and information. Tualatin accounts for about 11% of employment in Washington County.
- **Growth in manufacturing and healthcare / social assistance sectors.** Employment in manufacturing and the healthcare / social assistance sectors accounted for about 37% of employment in Tualatin in 2017. In 2007, employment in these industries accounted for about 36% of employment in Tualatin, an increase of about 3,299 employees between 2007 and 2017. Employment in both of these sectors support above average wages.

In Washington County, employment in manufacturing and the healthcare / social assistance sectors accounted for 23% of employment in 2017, down from 24% in 2007. While the overall share of employment decreased, total employment increased by about 9,809 employees between 2007 and 2017.

- **Availability of trained and skilled labor.** Availability of labor depends, in part, on population growth and in-migration. Tualatin's population increased by 4,344 people between 2000 and the 2013–2017 period, at an average growth rate of 1.0%. In comparison, Oregon's population also grew at an average rate of 1.0%, between 2000 and 2017, with 66% of population coming from in-migration.

The current labor force participation rate is another important consideration in the availability of labor. The labor force in any market consists of the adult population (16 and over) who are working or actively seeking work. The labor force includes both the employed and unemployed. Children, retirees, students, and people who are not actively seeking work are not considered part of the labor force. According to the 2013–

2017 American Community Survey, Tualatin had about 15,643 people in its labor force and Washington County had over 310,400. The labor force participation rate in Tualatin (73%) was higher than Washington County (69%) and the Portland Region (68%) in the 2013–2017 period. A higher concentration of older residents in an area or a mismatch of the types of jobs available in an area and the types of skills of the labor force can contribute to low labor force participation rates.

Businesses in Tualatin draw employees from across Washington County as well as Multnomah and Clackamas Counties. Relative to Washington County and the Portland Region, Tualatin residents have a slightly higher level of educational attainment.

- **Aging of the population.** Tualatin has a smaller percentage of residents 60 years and older relative to Washington County and the Portland Region. Tualatin’s median age, which was 31.9 in 2000, increased to 38.2 by the 2013–2017 period. In comparison, Washington County’s median age was 36.4 in the 2013–2017 period.

Washington County’s population is expected to continue to age, with people 60 years and older forecast to grow from 20% of the population in 2020 to 24% of the population in 2040, consistent with Statewide trends. Tualatin may continue to attract midlife and older workers over the planning period. People in this age group may provide sources of skilled labor, as people continue to work until later in life. These skilled workers may provide opportunities to support business growth in Tualatin.

- **Increases in racial and ethnic diversity.** Overall, the nation and Oregon are becoming more racially and ethnically diverse. Between 2000 and 2013–2017, the Latinx population in Oregon increased from 8% to 13%, and the Latinx population in Tualatin increased from 12% to 16% in that same time. Growth in the Latinx community will continue to drive economic development in Oregon. The share of Oregon’s non-Caucasian population increased from 13% to 15% and stayed static in Tualatin at 13%. Tualatin is less racially diverse but more ethnically diverse than Oregon.
- **Importance of small businesses in Oregon’s economy.** Small business, those with 100 or fewer employees, account for 66% of private-sector employment in Oregon. The average size for a private business in Tualatin is 18 employees per business, compared to the State average of 11 employees per private business. Businesses with five or fewer employees in Tualatin account for 64% of private employment, and businesses with fewer than 20 employees account for 89% of private employment. Only 3% of private businesses in Tualatin have more than 100 employees, accounting for 39% of the jobs in Tualatin.
- **Increases in energy prices.** In 2018, lower energy prices decreased the costs of commuting. Over the long-term, if energy prices increase, these higher prices will likely affect the mode of commuting before affecting workers’ willingness to commute. For example, commuters may choose to purchase a more energy-efficient car or carpool. Very large increases in energy prices may affect workers’ willingness to commute, especially workers living the furthest from Tualatin or workers with lower-paying jobs. In addition, very large increases in energy prices may make shipping freight long

distances less economically feasible, resulting in a slowdown or reversal of offshore manufacturing, especially of large, bulky goods.

- **Increases in remote workers.** Working from home has increased in Oregon in both urban and rural areas. Firms that allow workers to work remotely cover a variety of industries, allowing their employees to continue working for that firm but enjoy the quality of life and amenities of the location that the workers prefer to live. While data on remote workers is difficult to obtain, about 6% of workers in Tualatin reported that they worked from home in the 2013–2017 period (according to Census data), up from 4.6% in 2000. In comparison, 6.0% of workers in Washington County worked from home in 2013–2017.

## Employment Trends in Tualatin, Clackamas County, and Washington County

The economy of the nation changed substantially between 1980 and 2018. These changes affected the composition of Oregon’s economy, including Tualatin’s economy. At the national level, the most striking change was the shift from manufacturing employment to service-sector employment. The most important shift in Oregon during this period was the shift from a timber-based economy to a more diverse economy, with the greatest employment in services.

This section focuses on changes in the economy in Clackamas and Washington County since 2001 and in Tualatin since 2007.

Exhibit 4 shows covered employment in Washington County for 2001 and 2018.<sup>8</sup> Employment increased by 66,799 jobs, at an average annual growth rate (AAGR) of 1.5% over this period. The sectors with the largest increases in numbers of employees were professional and businesses services, healthcare and social assistance, and accommodation and food services. The average annual wage for employment in Washington County in 2018 was about \$70,308.

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<sup>8</sup> Covered employment includes employees covered by unemployment insurance. Examples of workers not included in covered employment are sole proprietors, some types of contractors (often referred to as “1099 employees”), or some railroad workers. Covered employment data is from the Oregon Employment Department.

#### Exhibit 4. Covered Employment by Industry, Washington County, 2001 and 2018

Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages, 2001 and 2018.

Note: AAGR is Average Annual Growth Rate.

Sector	2001	2018	Change 2001 to 2018		
			Difference	Percent	AAGR
Natural Resources and Mining	3,607	3,090	-517	-14%	-0.9%
Construction	12,611	16,629	4,018	32%	1.6%
Manufacturing	50,872	51,028	156	0%	0.0%
Wholesale trade	14,476	13,131	-1,345	-9%	-0.6%
Retail trade	26,850	32,092	5,242	20%	1.1%
Trade, Transportation, and Utilities	4,501	5,253	752	17%	0.9%
Information	8,688	7,543	-1,145	-13%	-0.8%
Financial Activities	13,181	14,874	1,693	13%	0.7%
Professional and Business Services	34,275	54,220	19,945	58%	2.7%
Educational Services	3,598	5,723	2,125	59%	2.8%
Health care and social assistance	15,616	31,405	15,789	101%	4.2%
Arts, entertainment, and recreation	2,372	4,749	2,377	100%	4.2%
Accommodation and food services	14,253	22,691	8,438	59%	2.8%
Other Services	7,151	10,468	3,317	46%	2.3%
Unclassified	78	108	30	38%	1.9%
Government	16,517	22,441	5,924	36%	1.8%
<b>Total</b>	<b>228,646</b>	<b>295,445</b>	<b>66,799</b>	<b>29%</b>	<b>1.5%</b>

Exhibit 5 shows covered employment and average wage for the 10 largest industries in Washington County. Jobs in professional and business services, as well as manufacturing, each account for about 18% of the county’s covered employment, and these sectors pay more per year than the County average (\$91,027 and \$113,297, respectively). Jobs in wholesale trade and information also pay more per year than the county average but account for a smaller share of covered employment in the county.

**Exhibit 5. Covered Employment and Average Pay by Sector, 10 Largest Sectors Washington County, 2018**

Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages, 2018. Note: Largest sectors are defined by number of employees.

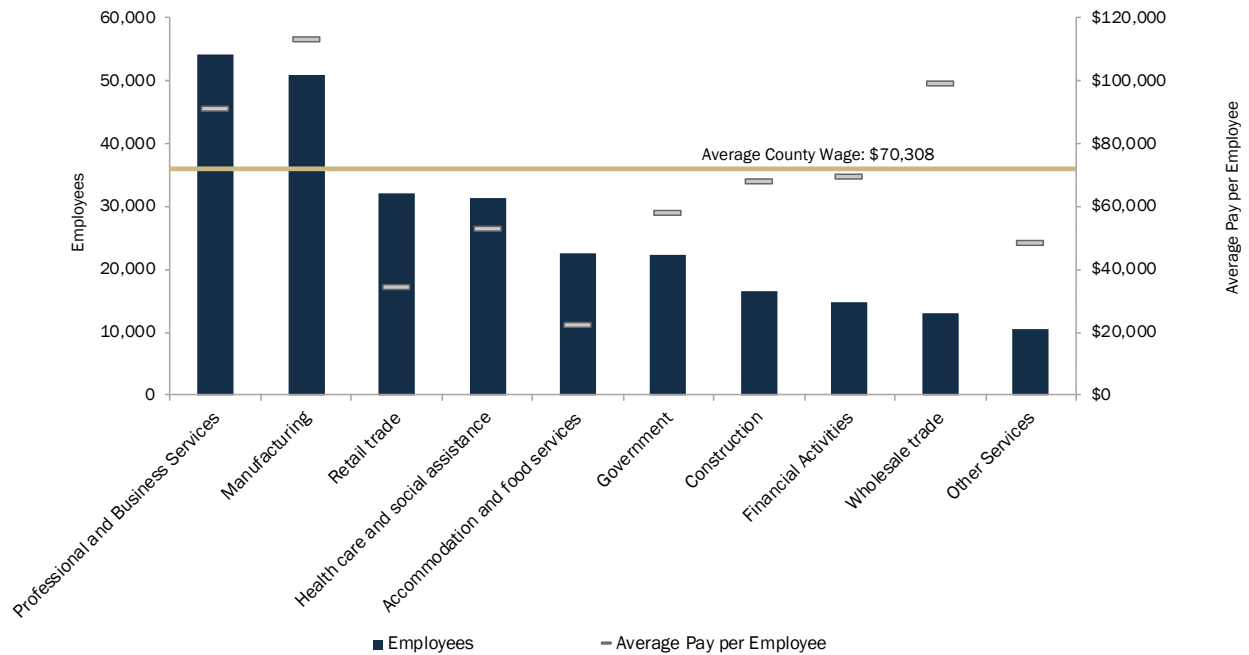


Exhibit 6 shows covered employment in Clackamas County for 2001 and 2018. Employment increased by 31,975 jobs, with an average annual growth rate (AAGR) of 1.3% over this period. The sectors with the largest increases in numbers of employees were health care and social assistance, professional and business services, accommodation and food services, and construction. The average annual wage for employment in Clackamas County in 2018 was about \$53,326.

### Exhibit 6. Covered Employment by Industry, Clackamas County, 2001 and 2018

Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages, 2001 and 2018.

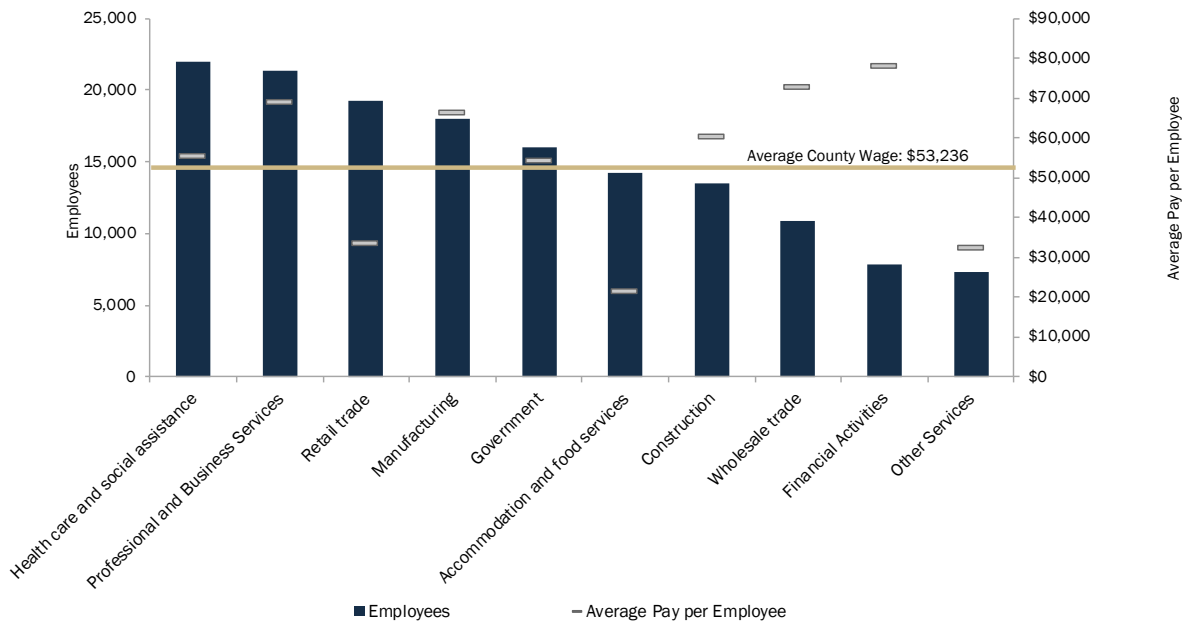
Note: AAGR is Average Annual Growth Rate.

Sector	2001	2018	Change 2001 to 2018		
			Difference	Percent	AAGR
Natural Resources and Mining	4,164	4,825	661	16%	0.9%
Construction	9,327	13,515	4,188	45%	2.2%
Manufacturing	18,172	18,026	-146	-1%	0.0%
Wholesale trade	10,391	10,875	484	5%	0.3%
Retail trade	17,628	19,224	1,596	9%	0.5%
Trade, Transportation, and Utilities	4,439	3,983	-456	-10%	-0.6%
Information	1,728	2,057	329	19%	1.0%
Financial Activities	8,294	7,874	-420	-5%	-0.3%
Professional and Business Services	13,301	21,339	8,038	60%	2.8%
Educational Services	1,112	2,111	999	90%	3.8%
Health care and social assistance	12,038	21,976	9,938	83%	3.6%
Arts, entertainment, and recreation	1,680	2,596	916	55%	2.6%
Accommodation and food services	9,832	14,242	4,410	45%	2.2%
Other Services	5,422	7,281	1,859	34%	1.7%
Unclassified	77	128	51	66%	3.0%
Government	16,497	16,025	-472	-3%	-0.2%
<b>Total</b>	<b>134,102</b>	<b>166,077</b>	<b>31,975</b>	<b>24%</b>	<b>1.3%</b>

Exhibit 7 shows covered employment and average wage for the 10 largest industries in Clackamas County. Jobs in health care and social assistance, as well as professional and business services, each account for about 13% of the county’s covered employment, and these sectors pay more per year than the county average (\$55,217 and \$68,652, respectively).

**Exhibit 7. Covered Employment and Average Pay by Sector, 10 Largest Sectors Clackamas County, 2018**

Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages, 2018. Note: Largest sectors are defined by number of employees.



Employment in Tualatin accounts for about 11% of employment in Washington County. Exhibit 8 shows a summary of covered employment data for the Tualatin Planning Area in 2017. The sectors with the largest number of employees in Tualatin were manufacturing (27%), health care and social assistance (11%), and wholesale trade (10%). These sectors accounted for 14,897 jobs or 48% of Tualatin’s employment.



## Exhibit 8. Covered Employment and Average Pay by Sector, Tualatin Planning Area, 2017<sup>9</sup>

Source: Oregon Employment Department, Quarterly Census of Employment and Wages, 2017.

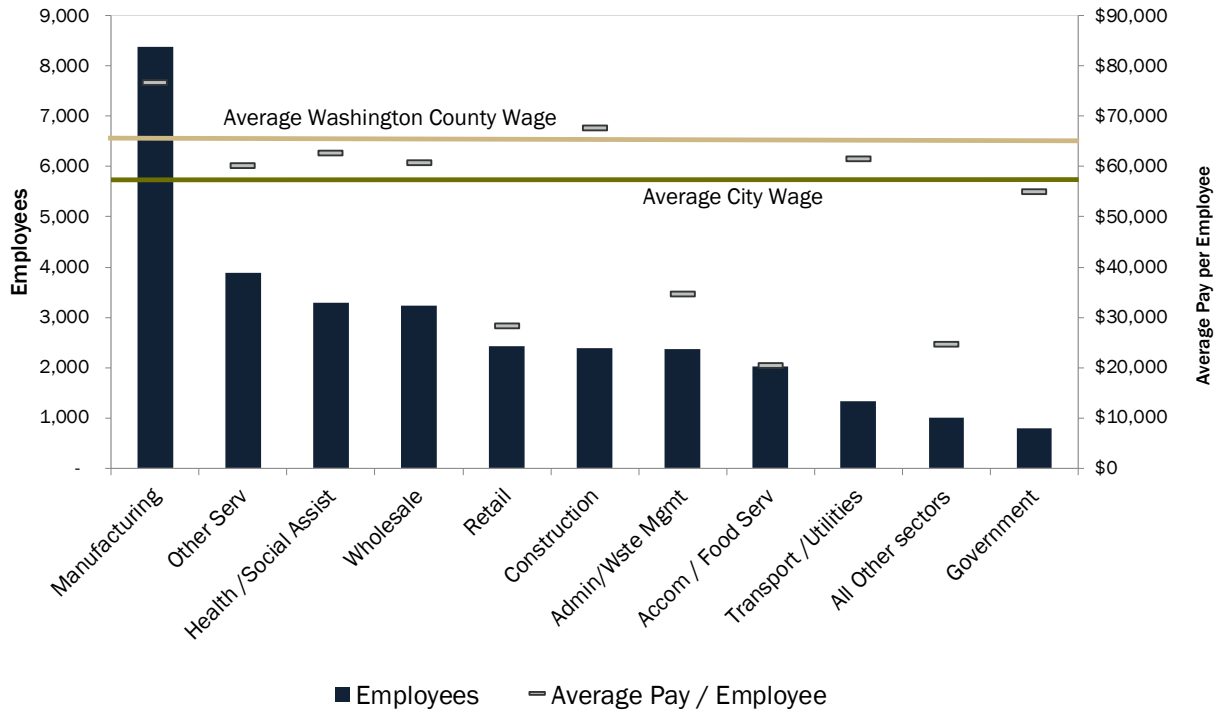
Sector/Industry	Establishments	Employees	Payroll	Average Pay / Employee
<b>Agriculture, Forestry, and Mining</b>	7	162	\$9,551,473	\$58,960
<b>Construction</b>	142	2,384	\$161,457,609	\$67,726
Construction of Buildings	45	529	\$33,683,731	\$63,674
Heavy and Civil Engineering Construction	9	289	\$29,245,674	\$101,196
Specialty Trade Contractors	88	1,566	\$98,528,204	\$62,917
<b>Manufacturing</b>	150	8,371	\$641,666,664	\$76,654
Food, Beverage, and Apparel Manufacturing	22	856	\$90,298,572	\$105,489
Wood, Paper, and Other Material Product Manufacturing	34	1,191	\$66,438,149	\$55,784
Metal Manufacturing	38	1,520	\$77,992,172	\$51,311
Machinery Manufacturing	19	2,801	\$296,449,663	\$105,837
Computer and Electronic Product Manufacturing	10	506	\$30,635,840	\$60,545
Electrical Equipment, Appliance, and Component Manufacturing	6	514	\$36,321,867	\$70,665
Transportation Equipment Manufacturing	5	96	\$6,628,519	\$69,047
Furniture and Related Product Manufacturing	10	787	\$30,948,048	\$39,324
Miscellaneous Manufacturing	6	100	\$5,953,834	\$59,538
<b>Wholesale Trade</b>	262	3,235	\$196,579,720	\$60,767
<b>Retail Trade</b>	108	2,429	\$68,643,958	\$28,260
Building Material and Garden Equipment and Supplies Dealers	13	255	\$13,882,178	\$54,440
Food and Beverage Stores	8	454	\$12,722,710	\$28,024
Health and Personal Care Stores	11	199	\$7,360,231	\$36,986
Gasoline Stations	5	68	\$1,476,441	\$21,712
Clothing and Clothing Accessories Stores	35	448	\$8,657,769	\$19,325
Other Retailers	36	1,005	\$24,544,629	\$24,423
<b>Transportation and Warehousing and Utilities</b>	37	1,337	\$82,171,091	\$61,459
<b>Information</b>	39	195	\$18,180,409	\$93,233
<b>Finance and Insurance</b>	75	380	\$30,078,816	\$79,155
<b>Real Estate and Rental and Leasing</b>	74	294	\$15,317,961	\$52,102
<b>Professional and Technical Services</b>	175	1,044	\$69,192,933	\$66,277
<b>Management of Companies</b>	14	789	\$57,891,957	\$73,374
<b>Administrative / Support; Waste Mngmt/ Remediation</b>	101	2,366	\$81,771,708	\$34,561
<b>Private Education Services</b>	11	296	\$7,385,926	\$24,952
<b>Health Care and Social Assistance</b>	178	3,291	\$206,495,765	\$62,746
Health Care	143	2,535	\$185,684,497	\$73,248
Social Assistance	35	756	\$20,811,268	\$27,528
<b>Arts, Entertainment, and Recreation</b>	23	846	\$15,349,722	\$18,144
<b>Accommodation and Food Services</b>	103	2,017	\$41,014,523	\$20,334
Accommodation	5	97	\$2,320,012	\$23,918
Food Services and Drinking Places	98	1,920	\$38,694,511	\$20,153
<b>Other Services</b>	212	879	\$35,547,519	\$40,441
<b>Government</b>	14	787	\$43,330,609	\$55,058
Federal	3	74	\$4,661,596	\$62,995
State	3	94	\$6,666,134	\$70,916
Local	8	619	\$32,002,879	\$51,701
Educational Services	5	393	\$18,859,472	\$47,988
<b>Total</b>	<b>1,725</b>	<b>31,102</b>	<b>\$1,781,628,363</b>	<b>\$57,283</b>

<sup>9</sup> The following sectors were combined due to confidentiality of QCEW data: utilities, transportation, and warehousing; manufacturing and wholesale trade; finance and insurance, real estate and rental and leasing; health care and social assistance and private education; arts, entertainment, and recreation and accommodation and food services.

Exhibit 9 shows the employment and average pay per employee for sectors in Tualatin. Average pay for all employees (\$57,283) is shown as a light brown line across the graph, and average pay for individual sectors are shown as short red lines. The exhibit shows that Tualatin’s retail, administrative/waste management, and accommodations/food service sectors have below-average wages. The highest wages are in manufacturing (Exhibit 10).

**Exhibit 9. Covered Employment and Average Pay by Sector, Tualatin, 2017**

Source: Oregon Employment Department, Quarterly Census of Employment and Wages, 2017.



### Exhibit 10. Covered Employment and Average Pay by Manufacturing Sub-Sector, Tualatin, 2017

Source: Oregon Employment Department, Quarterly Census of Employment and Wages, 2017.

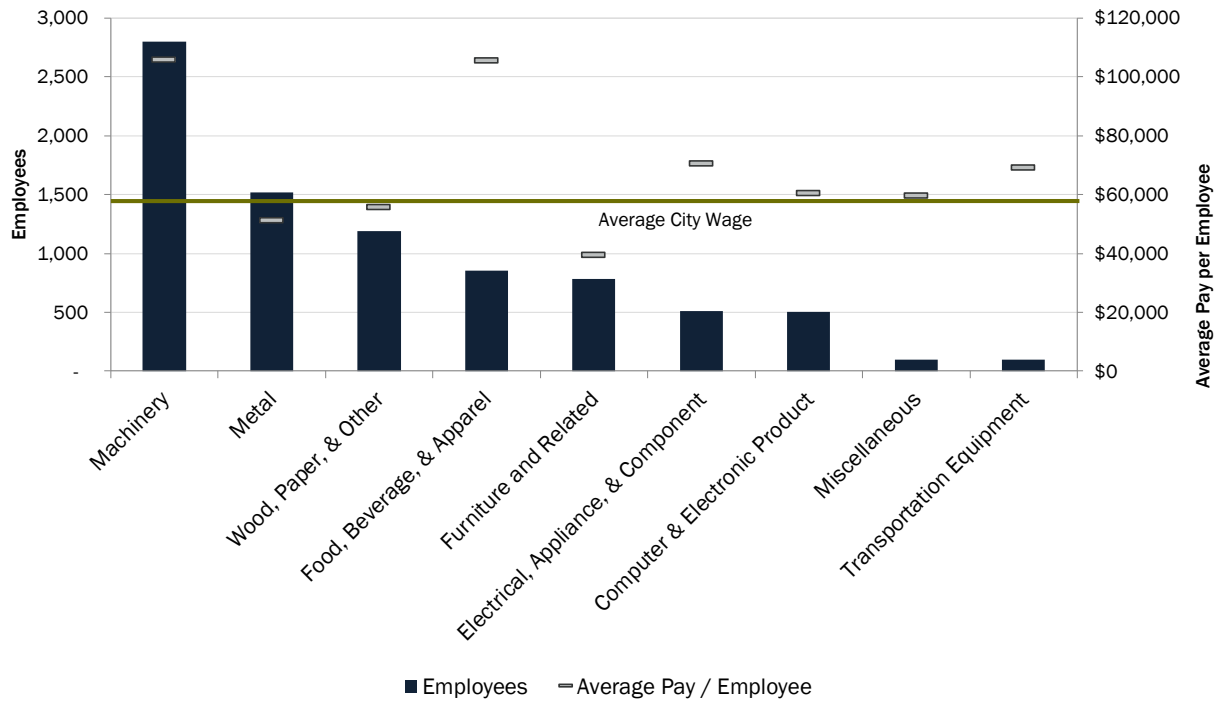


Exhibit 11 shows that employment in Tualatin grew by nearly 7,800 employees between 2007 and 2017 at an average annual growth rate of 2.9%. All sectors grew in employment, with three exceptions: (1) agriculture, forestry, and mining; (2) finance and insurance, and (3) private education services. The sectors with the largest growth were manufacturing, health care and social assistance, and administrative support/waste management and remediation services.

### Exhibit 11. Change in Covered Employment, Tualatin, 2007–2017

Source: Oregon Employment Department, Quarterly Census of Employment and Wages, 2007 and 2017. Note: AAGR is Average Annual Growth Rate.

Sector	Establishments		Employees		Change in Employment 2007-2017		
	2007	2017	2007	2017	Number	Percent	AAGR
Agriculture, Forestry, & Mining	5	7	199	162	(37)	-19%	-2%
Construction	145	142	1,707	2,384	677	40%	3%
Manufacturing	139	150	6,332	8,371	2,039	32%	3%
Wholesale Trade	213	262	2,909	3,235	326	11%	1%
Retail Trade	141	108	2,348	2,429	81	3%	0%
Transportation, Warehousing & Utilities	27	37	926	1,337	411	44%	4%
Information	20	39	87	195	108	124%	8%
Finance & Insurance	81	75	435	380	(55)	-13%	-1%
Real Estate, Rental, & Leasing	59	74	258	294	36	14%	1%
Professional & Technical Services	112	175	581	1,044	463	80%	6%
Management of Companies	14	14	574	789	215	37%	3%
Admin. & Support / Waste Mgmt & Remediation Serv.	83	101	1,400	2,366	966	69%	5%
Private Education Services	16	11	299	296	(3)	-1%	0%
Health Care & Social Assistance	141	178	2,031	3,291	1,260	62%	5%
Arts, Entertainment, & Recreation	10	23	490	846	356	73%	6%
Accommodation & Food Services	92	103	1,352	2,017	665	49%	4%
Other Services	163	212	655	879	224	34%	3%
Government	13	14	743	787	44	6%	1%
<b>Total Non-Farm Employment</b>	<b>1,474</b>	<b>1,725</b>	<b>23,326</b>	<b>31,102</b>	<b>7,776</b>	<b>33%</b>	<b>2.9%</b>

## Outlook for Growth in Washington County

Exhibit 12 shows the Oregon Employment Department’s forecast for employment growth by industry for the Portland Region (Clackamas, Multnomah, and Washington Counties) over the 2017–2027 period. Employment in the region is forecast to grow at an average annual growth rate of 1.2%.

The sectors that will lead employment in the region for the 10-year period are: professional and business services (adding 28,100 jobs); private education and health services (adding 27,300 jobs); trade, transportation, and utilities (adding 21,400); and leisure and hospitality (adding 13,800 jobs). In sum, these sectors are expected to add 90,600 new jobs or about 74% of employment growth in the Portland Region. As of 2017, Washington County accounts for about 36% of employment in these three counties (the Portland Region), and Tualatin accounts for about 10% of the County’s employment.

### Exhibit 12. Regional Employment Projections, Portland Region (Clackamas, Multnomah, and Washington County), 2017 and 2027

Source: Oregon Employment Department. Employment Projections by Industry 2017–2027. Note: AAGR is average annual growth rate.

Industry Sector	2017	2027	Change 2017 - 2027		
			Number	Percent	AAGR
Total private	856,800	971,800	115,000	13%	1.3%
Natural resources and mining	9,800	10,600	800	8%	0.8%
Mining and logging	700	700	0	0%	0.0%
Construction	50,500	59,100	8,600	17%	1.6%
Manufacturing	101,100	106,000	4,900	5%	0.5%
Durable goods	76,300	79,200	2,900	4%	0.4%
Nondurable goods	24,800	26,700	1,900	8%	0.7%
Trade, transportation, and utilities	176,900	198,300	21,400	12%	1.1%
Wholesale trade	48,000	51,800	3,800	8%	0.8%
Retail trade	95,000	104,900	9,900	10%	1.0%
Transportation, warehousing, and utilities	33,900	41,600	7,700	23%	2.1%
Information	21,700	24,300	2,600	12%	1.1%
Financial activities	60,000	63,400	3,400	6%	0.6%
Professional and business services	155,500	183,600	28,100	18%	1.7%
Private educational and health services	140,800	168,100	27,300	19%	1.8%
Health care and social assistance	118,000	141,500	23,500	20%	1.8%
Leisure and hospitality	101,100	114,900	13,800	14%	1.3%
Arts, entertainment, and recreation	14,800	17,200	2,400	16%	1.5%
Accommodation and food services	86,300	97,800	11,500	13%	1.3%
Other services and private households	39,400	43,500	4,100	10%	1.0%
Government	114,100	122,000	7,900	7%	0.7%
Federal government	14,200	14,900	700	5%	0.5%
State government	7,600	8,200	600	8%	0.8%
Local government	92,300	98,900	6,600	7%	0.7%
Local education	47,200	51,500	4,300	9%	0.9%
Total payroll employment	970,900	1,093,800	122,900	13%	1.2%

## Infrastructure Capacity

This section outlines details about Tualatin's infrastructure capacity (including water, wastewater, stormwater, and transportation and transit infrastructure). Findings derive from an interview conducted with the Tualatin Public Works Department.

### Water

Tualatin purchases its water from the City of Portland. Tualatin's water system, which extends past Bridgeport Village, is City-owned (and water becomes City-owned once it enters city limits). Its water supply derives from the Bull Run Watershed and Columbia South Shore Well Field. In the summer months, Tualatin uses about 10m gallons of water per day, and in the winter months, Tualatin uses about 4.4m gallons of water per day. The maximum water delivery to Tualatin is 14.1m gallons per day. Tualatin's 10-year water contract expires in 2026.

While Tualatin is closer to capacity in the summer, its water system currently accommodates all existing needs. From an economic development perspective, however, some types of businesses that use significant amounts of water (i.e., 1m gallons of water per day) may not locate in Tualatin because of the available water in the city. For example, Business Oregon was pursuing potential sites for a business looking to locate somewhere in the Greater Portland area—where they could access about 2m gallons of water per day. Tualatin turned this opportunity down.

Currently, Tualatin is helping to pay for a water treatment plant (expected delivery is 2026) that serves the Portland region. In addition, Tualatin is updating its Water Master Plan (expected delivery is summer 2019), developing its Water Emergency Supply Plan (expected delivery is fall 2019), and developing its Water Supply Strategy (expected delivery spring 2020).

On the horizon, Tualatin does not have big plans to expand its system per its Water Master Plan update. Core strategic priorities, per its Water Supply Strategy, are to find ways to access water from other water supplies. The City's water systems are in good repair. The most significant upgrade to water infrastructure is in Basalt Creek, which may need an additional reservoir depending on how fast the sub-area builds out.

### Wastewater

Tualatin's wastewater collection system is serviced by Clean Water Services. Clean Water Services treats the wastewater and manages several of Tualatin's pump stations, which are City-owned. Its effluent discharge is typically 2.4m gallons per day (dry peak) and 4 million gallons per day (wet peak). While Tualatin has some issues with inflow to manhole lids, it does not have significant issues with infiltration.

Tualatin is not concerned about its water treatment capacity, as Clean Water Services is continuously improving and expanding its facilities. It is likely that as Basalt Creek grows, however, Tualatin will need to replace its piping and add five new pump stations. Despite growing population and jobs, Tualatin is not concerned with future wastewater capacity.

Tualatin recently finished an update to their Sewer Master Plan (which went to council in August 2019).

## Stormwater

Tualatin staff do not think that stormwater management or treatment is a barrier to supporting new business growth. As new development occurs, developers are required to address stormwater issues on a property by property basis.

## Transportation Services

This analysis looked at connections and capacity to I-5, regional connectors, and local roadways. Transportation access is both a significant advantage for economic development (because Tualatin is located directly on I-5) and a significant disadvantage because of increasing congestion on I-5 and other major roads.

- **Connection and capacity to I-5.** ODOT finished an auxiliary lanes project last year, which made a notable difference in easing capacity and reducing congestion (particularly from Carmen to Nyberg and the 205 on-ramps). I-5's (regional) pinch points are the Rose Quarter and Boones Bridge. Generally speaking, congestion issues around I-5 are less about Tualatin's interchanges and ramps and more about regional conditions on I-5.
- **Regional connector roads.** Over the last decade and longer, major roads connecting Tualatin to nearby cities have become increasingly congested. Major regional connectors include Tualatin Sherwood Road, Boones Ferry Road N-S, Hwy 99 W, Borland Road E-W, and 124th Avenue. The following provides more information:
  - *Tualatin Sherwood Road.* Washington County plans to complete a road widening project in 2023. The project will widen Tualatin Sherwood Road from three lanes to five lanes. It will include bicycle facilities.
  - *124th Avenue.* New improvements on this road are currently being underused. The City's long-term plan is to implement more signage to direct vehicles onto this currently underutilized roadway (offsetting traffic on other roadways). This road was built with three lanes but was planned for five lanes, allowing for future expansions of the road. Because few people know about (or use) this road, not much traffic exists. It is likely that as this road becomes more used, traffic pressure on Boones Ferry and Tualatin Sherwood Road will be relieved somewhat.
  - *Boones Ferry Road N-S.* Despite congestion near Tualatin Sherwood Road, the City has no plans for expansion at this time.
  - *Highway 99 W.* As this connector is located toward the north portion of Tualatin, this connector is not as extensive of an issue for traffic within the City of Tualatin. The City is, however, looking to develop a funding plan to improve Sherwood through King City and Tigard.

- *65th Avenue*. Running north to south, this road is becoming a bypass to get around 205 and I-5. While it is not considered a regional connector, it is a road likely to be looked at in the next Transportation System Plan update.
- *Mary Borland Road*. Tualatin recently took possession of Borland Road from Washington County. From Lake Oswego to Stafford, the City plans to make pavement improvements and conduct maintenance to make it a more pleasant place to drive. While there are no current plans for expansion, the City will likely address this piece of the network in their next Transportation System Plan update.
- **Local roadways**. Tualatin’s road network is well-built and fairly new. As new development occurs, developers will be required to pay for transportation improvements that will support upgrading local and other roads. Tualatin is working to complete a cyclist pathway across I-5 and is working to increase multimodal pathways to T-S road (developed as part of the T-S Road widening project; expected delivery 2023). A \$20 million general obligation bond passed last year to implement transportation capital projects to improve safety and relieve congestion at key intersections and locations.

## Transit

Tualatin has three Tri-Met bus routes that serve the community (the 76, 96, and 97 routes) and the WES commuter rail that connects Tualatin to Beaverton. In addition, Ride Connection, which is funded through a Tri-met grant, offers two fixed, on-call lines that serve the business community on a regular schedule. Development of a 12-mile TriMet MAX line (the Southwest Corridor) between southwest Portland and Bridgeport Village in Tualatin is also on the horizon. To date, the City has not participated in discussions about implementing a local transit agency.



# Tualatin's Strengths, Weaknesses, Opportunities, and Threats

OAR 660-009-0015(4) requires that cities conduct an assessment of community economic development potential, as part of the EOA. This assessment considers market factors, infrastructure and public facility availability and access, labor, proximity to suppliers and other necessary business services, regulations, and access to job training. The local factors that form Tualatin's competitive advantage are summarized in the subsections below.

## Strengths

- **Location.** Tualatin is located in Washington County, about 13 miles south of Portland and about 36 miles north of Salem, along the I-5 corridor. Tualatin is located about midway between Hillsboro and Gresham. Other nearby and relatively large cities include Tigard, Lake Oswego, and Wilsonville. These locational aspects allow both goods and workers to move in and out of Tualatin relatively efficiently. Tualatin's location is an advantage, especially for freight transportation and households composed of workers that commute to different cities for work.

Due to Tualatin's prime location along the I-5 corridor, about 93% of employees who work in Tualatin commute into Tualatin from other areas. This reality is advantageous for Tualatin, as they can attract workers (at a range of skill sets) from around the region.

- **Availability of transportation.** All firms are heavily dependent upon surface transportation for efficient movement of goods, customers, and workers. Access to an adequate highway and arterial roadway network is needed for all industries. Close proximity to a highway or arterial roadway is critical for firms that generate a large volume of truck or auto trips and firms that rely on visibility from passing traffic to help generate business.

Businesses and residents in Tualatin have access to a variety of modes of transportation: automotive (I-5, 99W, and local roads), commuter train (West Side Express Service [WES]), light rail (Metropolitan Area Express [MAX] connection to WES at Lombard); bus (TriMet lines 76, 96, and 97), and air (Portland International Airport and Hillsboro Airport). These options provide options for residents and workers in Tualatin to commute in and out of the city, though traffic congestion is a growing concern.

Additionally, Tualatin's easy access to I-5 is an advantage for attracting many types of businesses, such as warehouse and distribution or manufacturers that need close access to I-5 for heavy freight

- **Quality of life.** Tualatin residents value the City's many urban services and amenities available to residents while maintaining a small-town character. Tualatin residents and workers have access to numerous local businesses, a high-quality school system, access to retail shopping opportunities, and an expansive parks system (which includes 90 park sites, 60 miles of trails, and 1,500 acres of natural area). Tualatin also provides access to medical care services through the Kaiser Permanente Tualatin Medical Office, Legacy Meridian Park Medical Center, Providence Bridgeport, and other medical and dental

offices. Tualatin is also a relatively safe community; in 2018, criminal citations, traffic citations, total arrests, and traffic crashes (activities) each amounted to less than 0.1 activity per capita.<sup>10</sup>

- **Support for local businesses.** Successful local economic development is often a result of effective collaboration among governments, business owners, and community members. To support new and existing small businesses in Tualatin, the City and Chamber of Commerce have developed a small business toolkit. The toolkit helps business owners with permitting their business in Tualatin.<sup>11</sup>
- **Existing businesses.** Tualatin has several key sectors (e.g., manufacturing, health care, social assistance), which present key opportunities for the creation of local clusters. These sectors may build off of regional clusters on the westside of the metro region. Tualatin also has many small businesses in a range of industries, including those listed above. Tualatin’s existing businesses provide a base to build upon and expand.
- **Access to workers.** Tualatin pulls workers from across the Portland metropolitan area. The types of jobs available at businesses in Tualatin range from highly skilled professional and technical service jobs to service-sector jobs, such as retail services. These jobs require a range of educational background or specialized training.
- **Access to education and training.** Tualatin is also close to higher education facilities, including Clackamas Community College in Wilsonville, Portland Community College (Sylvania), Portland State University, Lewis and Clark, Oregon Institute of Technology, and Reed College. Businesses in Tualatin are able to attract workers from these schools.
- **Infrastructure capacity.** Tualatin has plans for expansion of water, wastewater, and stormwater systems to meet business needs as the city grows. The City recently updated its plans (and planning is ongoing) to address growing demands in the Basalt Creek subarea.

## Weaknesses

- **Traffic congestion.** Tualatin’s location along the I-5 corridor within the southern part of the Portland region results in significant congestion within the city, particularly during peak travel hours. Addressing these congestion issues will require addressing regional congestion issues on I-5, as well as expansion of connector roads with neighboring cities, as described in the section above. Part of the resolution of traffic congestion issues is increases in public transit and expansion of bicycling and pedestrian facilities.
- **Limited access to transit.** Tualatin residents and commuters have access to TriMet bus lines 76, 96, and 97; the WES commuter rail line; and the Tualatin Shuttle operated by

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<sup>10</sup> City of Tualatin. (2018). Tualatin Police Annual Report.

[https://www.tualatinoregon.gov/sites/default/files/fileattachments/police/page/4885/2018\\_annual\\_report.pdf](https://www.tualatinoregon.gov/sites/default/files/fileattachments/police/page/4885/2018_annual_report.pdf)

<sup>11</sup> Tualatin’s Small Business Toolkit:

[www.tualatinoregon.gov/sites/default/files/fileattachments/economic\\_development/page/4725/small\\_business\\_toolkit\\_final\\_draft\\_webpdf.pdf](http://www.tualatinoregon.gov/sites/default/files/fileattachments/economic_development/page/4725/small_business_toolkit_final_draft_webpdf.pdf)

Ride Connection. These alternative modes of transportation are important but do not meet the scale of the community's public transportation needs. More public transit routes that are more convenient and accessible is desired by the community to reduce congestion and to allow employees to get to work more efficiently.

- **Commuting trends.** While employee commuting trends in Tualatin have their advantages (ability to attract a workforce from across the region), they also present disadvantages. As Tualatin's population grows and as employment in Tualatin grows, it is likely that the number of employees commuting in and out of Tualatin will grow too. Commuting increases road congestion, and with limited access to transit to alleviate this problem, Tualatin's transportation infrastructure will become overloaded.
- **Affordable housing for workers.** A significant concern among Tualatin leaders and community members is the lack of affordable and available housing for people who work at businesses in Tualatin. The cost of housing does not align with the existing salaries of the workforce, which may prevent households from living and working in Tualatin.
- **Need for Replacement Workers.** The population across the region is aging, prompting a need for replacement workers. As workers in Tualatin retire, the need for skilled, educated workers will increase. This trend is consistent with workforce issues common to Oregon's cities.
- **Downtown area that looks dated and has limited draw for residents and visitors.** A perception that Tualatin lacks urban design standards, architectural variety, and amenities in close proximity has resulted in many community members feeling that Tualatin looks dated. Specifically, community members note a need for a refined downtown center to draw visitors to Tualatin from I-5. Potential improvements to the physical appearance of the built environment in the city include increases to allowed building heights in specific areas, more mixed-use development, and improved connectivity to increase walkability.
- **Availability of high-wage jobs.** The average wage in Tualatin is \$57,283, while the average wage in Washington County is \$70,308. The largest sector of employment in Tualatin is in manufacturing industries, which pay higher-than-average wages. Tualatin also has many service-sector jobs, which tend to provide lower-than-average wages. Tualatin's location and cluster of manufacturing industries may help to attract more businesses with high wages, which may allow more workers in Tualatin to afford to also live in the city.
- **Retention of businesses.** Tualatin's Business Outreach Survey uncovered several issues that may make keeping businesses in Tualatin difficult. Issues include a poor perception of public safety (issues around the interstate and rail line and the perception of rising crime), the lack of transportation and freight access, inconvenient public transit,

perceived slowness on part of the City to modify the Development Code,<sup>12</sup> and lack of incentives for development. In addition, businesses cited a mismatch between business needs and workforce skill sets.

## Opportunities

- **Public transportation.** Tualatin may work with Tri-Met to expand public transportation to promote connectivity, reduce reliance on cars, and reduce congestion, and to encourage alternative modes of transportation. While local jurisdictions are not mandated to offer transit services, public transit is essential to the households that need it to access services or to get to work. Connections to the Southwest Corridor transit line will be key to connecting Tualatin within the Portland region. Local transit will be necessary to allow riders to get from the Southwest Corridor station to employment centers in Tualatin.
- **Improvements to regional connectors.** Regional transportation corridors, connecting Tualatin to nearby cities, are congested. Plans for road expansions, as well as road expansions completed in the recent past, may improve existing conditions and support further growth.
- **Redevelopment and infill development.** Community members noted the lack of a downtown center of Tualatin to draw visitors. Along with improvements to the physical appearance and urban form of commercial areas in Tualatin, the City can continue to attract small businesses to locate in Tualatin, especially those that would attract visitors and residents to a core area. One potential area for this type of development would be the redevelopment of the Tualatin Commons, to create a more pedestrian-oriented center.
- **Small business retention and growth.** Issues with business retention have created vacant storefronts. The City could develop and promote initiatives that encourage use of currently vacant storefronts through continued support for small businesses and entrepreneurs.

## Threats

- **Environmental and climate change risks.** Environmental factors, including climate change, can threaten the success of a variety of industries that rely on key infrastructure that may not be adapted to growing environmental pressures (e.g., flooding, seismic hazards, or powerful storms). The risk of these natural hazards is likely to increase as a result of climate change.<sup>13</sup> Forest fires and urban heat islands also cause poor air quality, which can decrease quality of life for residents and impact their health.
- **Potential for decline in the State and national economies.** Changes in the State and national economies are beyond local control and directly affect Tualatin's economy.

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<sup>12</sup> Tualatin updated its Development Code in 2018 through a project known as the Tualatin Development Code Improvement Project (TDCIP) Phase 1.

<sup>13</sup> Oregon Climate Change Research Institute. *Fourth Oregon Climate Assessment Report*. January 2019.

National recessions generally have a greater effect on Oregon, with higher job losses and longer recovery periods than the national average.

## Summary of Tualatin's Competitive and Comparative Advantages

The prior sections presented Tualatin's strengths, weaknesses, opportunities, and threats for economic development. Based on this, Tualatin's competitive and comparative advantages are:

- **Location.** Tualatin is located along a major transportation corridor (the I-5 corridor) and is 13 miles from downtown Portland. While Tualatin is not an especially large city, it is in close proximity to all of the urban amenities and services one would expect in a large metropolitan area. Residents of Tualatin have access to cultural activities such as concerts and events (like the West Coast Giant Pumpkin Regatta) at the Tualatin Commons and museums, markets, and concert halls in Portland. Residents also have access to outdoor recreational activities such as many park amenities offered by the City and the Tualatin River National Wildlife Refuge in Sherwood. These locational aspects are attractive to businesses who prioritize quality of life for their employees.

Additionally, most of Tualatin's workers commute to the city from other areas. Businesses that need access to or want to attract customers across the Portland Region may locate in Tualatin. Tualatin's location will impact the area's future economic development.

- **Regional Labor Market.** The availability of labor is critical for economic development. Availability of labor depends not only on the number of workers available but the quality, skills, and experience of available workers. Businesses in Tualatin have access to workers in Tualatin and from neighboring communities. Businesses need access to reliable skilled workers, both with and without higher education. The multitude of higher education institutions located in and around the Portland Metro area means that Tualatin has sufficient access to skilled workers.
- **Existing Businesses.** Tualatin's existing businesses provide an opportunity for development of new businesses within the city. The existing business base is an advantage for economic development in numerous ways—as a source of future economic expansion, for attracting skilled workers, and for provision of goods and services to other businesses in Tualatin.
- **Ongoing Planning Projects.** The City is revising its Comprehensive Plan (the Tualatin 2040 process), which will result in ongoing planning work that is necessary to support economic growth. This work may include revisions to the City's economic development strategy, additional planning for housing to provide more opportunities for workers to live in Tualatin, updating the Transportation System Plan, ongoing planning for transit services, area planning for redevelopment that may result from this EOA and the housing needs analysis project, and other ongoing planning projects.

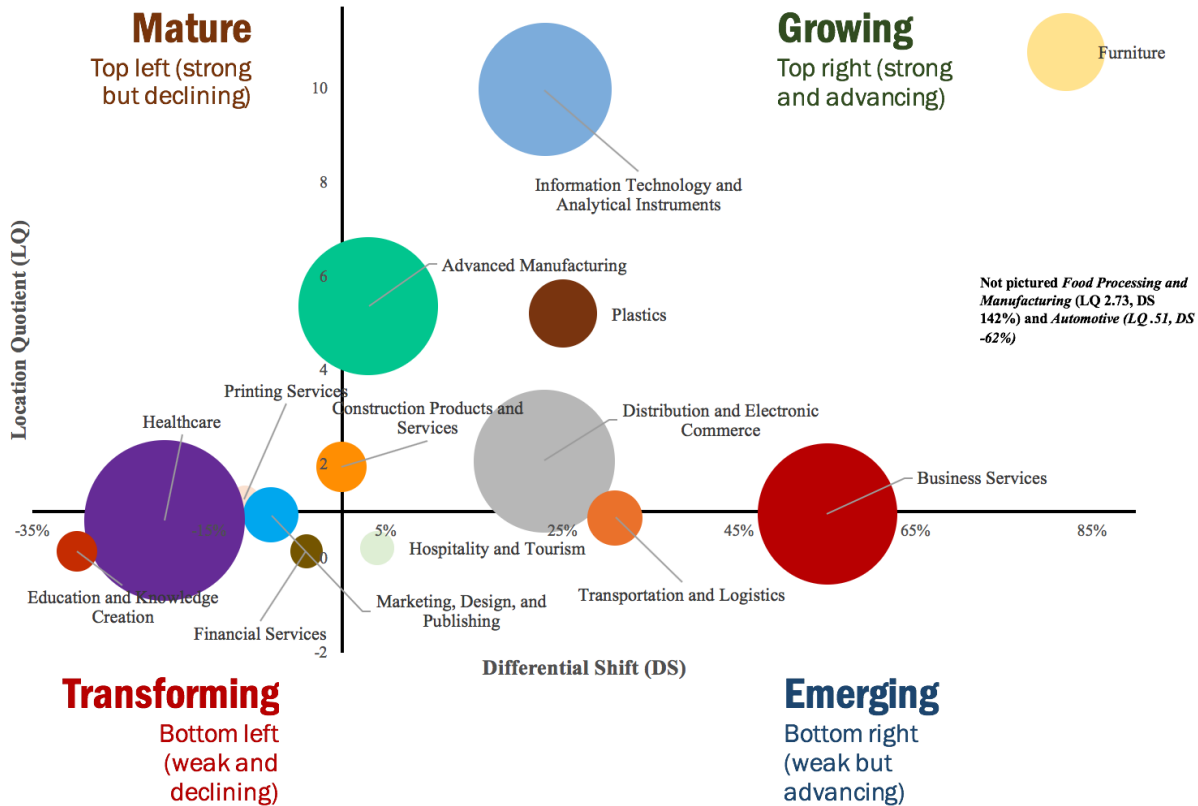
# Target Industries

The characteristics of Tualatin will affect the types of businesses most likely to locate in the city. Tualatin’s attributes that may attract firms are Tualatin’s access to industrial land, access to workers, and its location along the I-5 corridor.

Tualatin’s industry concentrations with a potential competitive advantage are defined in Exhibit 13. Tualatin has categorized its existing businesses into four main categories based on the analysis of location quotients (i.e., highly specialized industries), differential shift (i.e., competitive advantage compared to the national level), and critical concentration (i.e., at least five establishments in a defined cluster). These four categories are Growing Base, Emerging Clusters, Mature Clusters, and Transformation Clusters. Exhibit 13 and Exhibit 14 list the specific industries by each category.

## Exhibit 13. Concentration of Industries and Employment, Tualatin, 2017

Source: City of Tualatin, Economic Development Department using data from EMSI and Oregon Department of Employment (QECW data).  
 Note: Not pictured is Food Processing and Manufacturing, with an LQ of 2.73 and DS 142%. Automotive is also not displayed, with an LQ of 0.51 and DS of -62%.



## Exhibit 14. Industries Ranked Based on Differential Shift and Location Quotient

Source: City of Tualatin, Economic Development department using EMSI data (2018).

Rank	Cluster	Location Quotient (LQ)	Cluster Employment, 2017	Number of Establishments, 2016	Differential Shift (DS)
<b>GROWING BASE</b>					
1	Food Processing and Manufacturing	2.73	564	6	142%
2	Furniture	10.79	776	6	82%
3	Plastics	5.21	587	10	25%
4	Information Technology and Analytical Instruments	9.99	2,270	37	23%
5	Distribution and Electronic Commerce	2.08	2,535	193	23%
6	Advanced Manufacturing	5.38	2,433	46	3%
<b>EMERGING CLUSTERS</b>					
7	Business Services	0.96	2,506	131	55%
8	Transportation and Logistics	0.88	378	16	31%
9	Hospitality and Tourism	0.22	144	8	4%
<b>MATURE CLUSTERS</b>					
10	Construction Products and Services	1.96	331	7	-0.4%
11	Printing Services	1.26	110	11	-11%
<b>TRANSFORMATION CLUSTERS</b>					
12	Financial Services	0.17	141	35	-4%
13	Marketing, Design, and Publishing	0.93	385	28	-8%
14	Healthcare	0.82	3,279	153	-20%
15	Education and Knowledge Creation	0.16	199	16	-30%

The potential growth industries in Tualatin will draw from existing industry concentration in the City, Washington County, and the Portland Region, along with the City's economic development policies that align with changing or emerging industries and result in employment growth in Tualatin. Tualatin may also have opportunities for employment growth in industries without a concentration of employment or a high location quotient.



## Potential Growth Industries

An analysis of growth industries in Tualatin should address two main questions: (1) Which industries are most likely to be attracted to Tualatin? and (2) Which industries best meet Tualatin's economic development goals? The selection of target industries is based on Tualatin's goals for economic development, economic conditions in Tualatin and Washington County, and the City's competitive advantages.

Given the current employment base, which is composed of small and mid-sized businesses, it is reasonable to assume that much of the city's business growth will come from small and mid-sized businesses. This growth will either come from businesses already in Tualatin or new businesses that start or relocate to Tualatin from within the Portland Region or from outside of the region.

The industries identified as having potential for growth in Tualatin are outlined below. This section primarily draws from the City of Tualatin's cluster analysis and reports developed for the Portland Region.

- **Manufacturing.** Tualatin's manufacturing sector accounts for 27% of the city's employment base. Greater Portland, Inc. (GPI) described Portland as a hot spot for manufacturing growth for key sub-clusters (footwear, apparel, knives, and sporting; machinery; and medical devices).<sup>14</sup> Tualatin's potential growth industries in manufacturing are:
  - *Advanced manufacturing.* This industry is an internally preferred grouping of five independent traded clusters: (1) downstream metal products, (2) lighting and electrical equipment, (3) metalworking technology, (4) production technology and heavy machinery, and (5) upstream metal manufacturing. In a report by the U.S. Subcommittee on Advanced Manufacturing, this industry is challenged by "a shortage of Americans with the science, technology, engineering, and mathematics knowledge and technical skills needed for advanced manufacturing jobs."<sup>15</sup> Tualatin has a larger share of highly educated residents compared to Washington County and the Portland Region, alleviating some concerns related to not having sufficient levels of skilled workers.

Greater Portland Global (GPG), in its latest Investment Plan,<sup>16</sup> states that "[t]he region is rich with firms in legacy industries such as metals manufacturing and wood processing that use advanced processes and possess a highly skilled labor pool, [motor vehicle manufacturing, and computers and electronics]." While GPG indicates that there is "a limited economic development role to play,"

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<sup>14</sup> Greater Portland, Inc. (n.d.). Regional Trends in Greater Portland's Target Clusters. Greater Portland 2020.

<sup>15</sup> The United States Subcommittee on Advanced Manufacturing. *Strategy for American Leadership in Advanced Manufacturing*. Office of the President, Committee on Technology of the National Science and Technology Council.

<sup>16</sup> Greater Portland Global. (n.d.). *Global Trade and Investment Plan*. Global Cities Initiative, A Joint Project of Brookings and JPMorgan Chase.



Tualatin has substantial access to labor talent and may continue to support expansions of existing advanced metals manufacturing, family-owned operations, and wood products manufacturing.

- *Food processing and manufacturing.* The Bureau of Labor Statistics describes this industry cluster as one that takes livestock and agricultural products (raw food materials) and transforms them into products for intermediate or final consumption (sold to wholesalers or retailers for distribution). Tualatin’s food processing and manufacturing cluster is its fastest growing industry (projected to grow 64% from 2017 to 2028). GPG cites the region’s food processing sector as an established sector, requiring support in the form of industrial lands readiness and continued recruitment.
- *Furniture.* The furniture industry cluster comprises establishments that manufacture furniture, cabinets, shelving, and manufactured homes using products made of wood, metal, plastic, or textiles. While the furniture cluster provides the lowest annual wage of \$38,911 per year (almost \$19,000 less than the city average), it is the most concentrated cluster in Tualatin (with an LQ of 10.79).
- *Plastics.* Wages in the plastics industry cluster (comprising establishments that manufacture plastic materials and other plastic components/products) grew 14% from 2012 to 2017. As the fourth most concentrated cluster in Tualatin (with an LQ of 5.21), this industry presents objective growth potential for lower-skilled workers.
- *Consumer products.* Per a 2019 discussion with GPI, the consumer products sector was described as an important industry target for Oregon, particularly for food and beverage products but also apparel, outdoor wear, and footwear, as well as health and beauty products, home accessories, and pet products. Consumer products consists of convenience, shopping, specialty, or unsought products (e.g., final goods). BuiltOregon, purposed to make Oregon the leader in consumer product innovation and development, launched the United States first nonprofit consumer product accelerator in Oregon. Tualatin may support efforts to connect consumer product businesses with BuiltOregon to encourage growth in its manufacturing target industries (e.g., advanced manufacturing, food processing, furniture manufacturing, etc.).
- **Information technology and analytical systems.** This industry cluster comprises establishments that work in computers, software, audio visual equipment, laboratory instruments, and medical apparatus development (e.g., standard and precision electronics like circuit boards and semiconductors). As of 2017, employees working in this industry cluster maintain an average wage of \$109,832 (about \$52,000 above the city’s average)—representing the highest average-waged industry in Tualatin. Tualatin’s information technology and analytical system industry has, however, grown slower (17%) than the nation.

- **Business services.** Business services establishments, including corporate headquarters and other professional services (e.g., consulting, back office services, financial services/legal services, facilities support, computer services, etc.). In Tualatin, this industry is expected to see the largest growth in total jobs and had the largest growth in average wage.

### 3. Employment Growth and Site Needs

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Goal 9 requires cities to prepare an estimate of the amount of commercial and industrial land that will be needed over a 20-year planning period. The estimate of employment land need and site characteristics for Tualatin is based on expected employment growth and the types of firms that are likely to locate in Tualatin over the 20-year period. This section presents an employment forecast and analysis of target industries that build from recent economic trends.

#### Forecast of Employment Growth and Commercial and Industrial Land Demand

Demand for industrial and non-retail commercial land will be driven by the expansion and relocation of existing businesses and by the growth of new businesses in Tualatin. This employment land demand is driven by local growth independent of broader economic opportunities, including the growth of target industries.

The employment projections in this section build off of Tualatin's existing employment base, assuming future growth is similar to the Portland Region's long-term historical employment growth rates. The employment forecast does not take into account a major change in employment that could result from the location (or relocation) of one or more large employers in the community during the planning period. Such a major change in the community's employment would exceed the growth anticipated by the city's employment forecast and its implied land needs (for employment, housing, parks, and other uses). Major economic events, such as the successful recruitment of a very large employer, are difficult to include in a study of this nature. The implications, however, are relatively predictable—more demand for land (of all types) and public services.

Projecting demand for industrial and non-retail commercial land has four major steps:

1. **Establish base employment for the projection.** We start with the estimate of covered employment in Tualatin presented in Exhibit 8. Covered employment does not include all workers, so we adjust covered employment to reflect total employment in the city.
2. **Project total employment.** The projection of total employment considers forecasts and factors that may affect employment growth in Tualatin over the 20-year planning period.
3. **Allocate employment.** This step involves allocating types of employment to different land use types.
4. **Estimate land demand.** This step estimates general employment land demand based on employment growth and assumptions about future employment densities.

The remainder of this section follows this outline to estimate employment growth and commercial and industrial land demand for Tualatin.

## Employment Base for Projection

The purpose of the employment projection is to model future employment land need for general employment growth. The forecast of employment growth in Tualatin starts with a base of employment growth on which to build the forecast.

Exhibit 15 shows ECONorthwest's estimate of total employment in Tualatin in 2017. Tualatin had an estimated 38,838 total employees in 2017.

To develop the figures, ECONorthwest started with estimated covered employment in Tualatin using confidential Quarterly Census of Employment and Wages (QCEW) data provided by the Oregon Employment Department. Based on this information, Tualatin had about 31,102 covered employees in 2017.

Covered employment, however, does not include all workers in an economy. Most notably, covered employment does not include sole proprietors. Analysis of data shows that covered employment reported by the Oregon Employment Department for Washington County is only about 77% of total employment reported by the U.S. Department of Commerce.<sup>17</sup> We evaluated this ratio for each industrial sector for Washington County and used the resulting ratios to determine the number of noncovered employees. This allowed us to determine the total employment in Tualatin.

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<sup>17</sup> **Covered employment** includes employees covered by unemployment insurance. Examples of workers not included in covered employment are sole proprietors, some types of contractors (often referred to as "1099 employees"), or some railroad workers. Covered employment data is from the Oregon Employment Department.

**Total employment** includes all workers based on data from the U.S. Department of Commerce. Total employment includes all covered employees, plus sole proprietors and other noncovered workers.

**Exhibit 15. Estimated Total Employment by Sector, Tualatin Planning Area, 2017**

Source: 2017 covered employment from confidential Quarterly Census of Employment and Wage (QCEW) data provided by the Oregon Employment Department.

Sector	Covered Employment	Estimated Total Employment	Covered % of Total
Agriculture, Forestry, & Mining	162	162	100%
Construction	2,384	3,018	79%
Manufacturing	8,371	8,761	96%
Wholesale Trade	3,235	3,805	85%
Retail Trade	2,429	2,926	83%
Transportation, Warehousing & Utilities	1,337	1,734	77%
Information	195	235	83%
Finance & Insurance	380	675	56%
Real Estate, Rental, & Leasing	294	1,175	25%
Professional & Technical Services	1,044	1,821	57%
Management of Companies	789	827	95%
Admin. & Support / Waste Mgmt & Remediation Serv.	2,366	2,942	80%
Private Education Services	296	552	54%
Health Care & Social Assistance	3,291	4,019	82%
Arts, Entertainment, & Recreation	846	1,658	51%
Accommodation & Food Services	2,017	2,201	92%
Other Services	879	1,532	57%
Government	787	795	99%
<b>Total Non-Farm Employment</b>	<b>31,102</b>	<b>38,838</b>	<b>77%</b>

Exhibit 16 shows that industrial employment (i.e., manufacturing, warehousing, or construction) is predominantly located in Industrial Plan Designations, with small amounts of employment located in commercial Plan Designations (such as contractors and delivery or transportation logistics services) and in residential Plan Designations (such as contractors, plumbers, electricians, contractors, and delivery or transportation logistics services).

In contrast, about one-fifth of commercial employment (i.e., retail, health care, financial services, and other commercial uses) are located in industrial Plan Designations (such as gas stations, auto body shops, storage facilities, and professional or technical-service businesses) and 12% are located in residential Plan Designations (such as financial institutions, property management or real estate offices, cafes, restaurants, and professional or technical-service businesses).

In the future, it is reasonable to expect that employment in Tualatin will continue to mix within existing Plan Designations, with substantial amounts of commercial employment locating in industrial and residential Plan Designations. Existing commercial and industrial employment in residential Plan Designations (Exhibit 16) consists of construction businesses, some wholesale and retail, as well as financial and real estate businesses.

## Exhibit 16. Location of Employment by Plan Designation, Tualatin Planning Area, 2017

Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wage, summarized by ECONorthwest. Note: Data is organized by 2-digit NAICS and only includes employment at businesses with private ownership.

General Plan Designation	Industrial employment		Commercial employment		Total	
	Employees	Percent	Employees	Percent	Employees	Percent
Industrial	13,985	94%	3,090	20%	17,075	56%
Commercial	547	4%	10,352	67%	10,899	36%
Residential	382	3%	1,881	12%	2,263	7%
Institutional	-	0%	78	1%	78	0%
<b>Total</b>	<b>14,914</b>	<b>100%</b>	<b>15,401</b>	<b>100%</b>	<b>30,315</b>	<b>100%</b>

## Employment Projection

The employment forecast covers the 2020–2040 period, requiring an estimate of total employment for Tualatin in 2020. Tualatin does not have an existing employment forecast, and there is no required method for employment forecasting. OAR 660-024-0040(9) sets out some optional “safe harbors” that allow a city to determine employment land need.

ECONorthwest modeled four scenarios of employment growth. The employment growth assumption and basis for the scenarios are outlined below and in Exhibit 17:

- **Metro’s Household Growth Rate for Tualatin:** The growth rate of 0.44% based on Tualatin’s household growth forecast for the 2020–2040 period. This rate is consistent with the household forecast used in Tualatin’s Housing Needs Analysis (2020–2040). Use of this growth rate is consistent with the safe harbor in OAR 660-024-0040(9)(a).
- **OED’s Employment Growth Rate for the Tri-County Region:** The growth rate of 1.2% based on Oregon Employment Departments’ (OEDs’) forecast for employment growth for the Portland Region (Clackamas County, Multnomah County, and Washington County). Use of this growth rate is consistent with the safe harbor in OAR 660-024-0040(9)(a).
- **Metro’s Employment Growth Rate for Tualatin:** The growth rate of 1.4% based on Metro’s employment forecast for Tualatin for the 2015–2040 period.
- **Tualatin’s Historic Employment Growth Rate:** The growth rate of 2.9% based on Tualatin’s employment growth for the 2007–2017 period.

### Exhibit 17. Employment Growth Scenarios, Tualatin Planning Area, 2020–2040

Source: (1) Metro's 2040 Household Distributed Forecast, July 12, 2016. Metro's 2040 TAZ Forecast for households, November 6, 2015. Calculations by ECONorthwest. (2) State of Oregon Employment Department, Employment Projections by Industry, 2017–2027. (3) Metro's 2040 Employment Distributed Forecast, July 12, 2016. (4) Bureau of Labor Statistics, Quarterly Census of Employment and Wage, 2007 and 2017. Note: "HH" is household and "Emp." is employment.

Year	Total Employment Scenarios			
	Metro's HH Growth for Tualatin	OED's Emp. Growth for Tri-County Region	Metro's Emp. Growth for Tualatin	Historic Emp. Growth for Tualatin
2020	39,355	40,252	40,478	42,339
2040	42,985	51,089	53,332	75,272
<b>Change 2020 to 2040</b>				
Employees	3,630	10,837	12,854	32,933
Percent	9%	27%	32%	78%
AAGR	0.44%	1.20%	1.39%	2.92%

Tualatin is assuming that the City will grow at the rate forecast by Metro, 1.4% average annual growth rate. This assumption is based on the fact that Tualatin grew at a substantially faster rate over the 2007–2017 period (2.9% average annual growth rate), as well as Tualatin's key comparative advantages, such as the city's location along I-5 and its land base of industrial land.

Exhibit 18 shows employment growth for Tualatin between 2020 and 2040, based on the assumption that the City will grow at an average annual growth rate of 1.4%. Tualatin will have 53,332 employees by 2040, which is an increase of 12,854 employees (32%) between 2020 and 2040.

**Tualatin is forecast to have 12,854 new employees over the 20-year period.**

### Exhibit 18. Forecast of Employment Growth, Tualatin Planning Area, 2020–2040

Source: ECONorthwest.

Year	Total Employment
2020	40,478
2040	53,332
<b>Change in Employees (2020 to 2040)</b>	
Employees	12,854
Percent	32%
AAGR	1.39%

## Allocate Employment to Different Land Use Types

The next step in forecasting employment is to allocate future employment to broad categories of land use. Firms wanting to expand or locate in Tualatin will look for a variety of site characteristics, depending on the industry and specific circumstances. We grouped employment into four broad categories of land use based on North American Industrial Classification System (NAICS): industrial, retail commercial, office and commercial services, and government.

Exhibit 19 shows the expected share of employment by land use type in 2020 and the forecast of employment growth by land use type in 2040 in Tualatin. For each land use type, we assumed that the share of total employment will stay the same.

### Exhibit 19. Forecast of Employment Growth by Land Use Type, Tualatin Planning Area, 2020–2040

Source: ECONorthwest. Note: The shaded percentages denote an assumption about the future share of employment (as a percent of total) by land use type. It assumes that the share of employment by land use type will remain the same.

Land Use Type	2020		2040		Change 2020 to 2040
	Employment	% of Total	Employment	% of Total	
Industrial	18,218	45%	24,004	45%	5,786
Retail Commercial	3,050	8%	4,018	8%	968
Office & Commercial Services	18,382	45%	24,219	45%	5,837
Government	829	2%	1,092	2%	263
<b>Total</b>	<b>40,478</b>	<b>100%</b>	<b>53,332</b>	<b>100%</b>	<b>12,854</b>

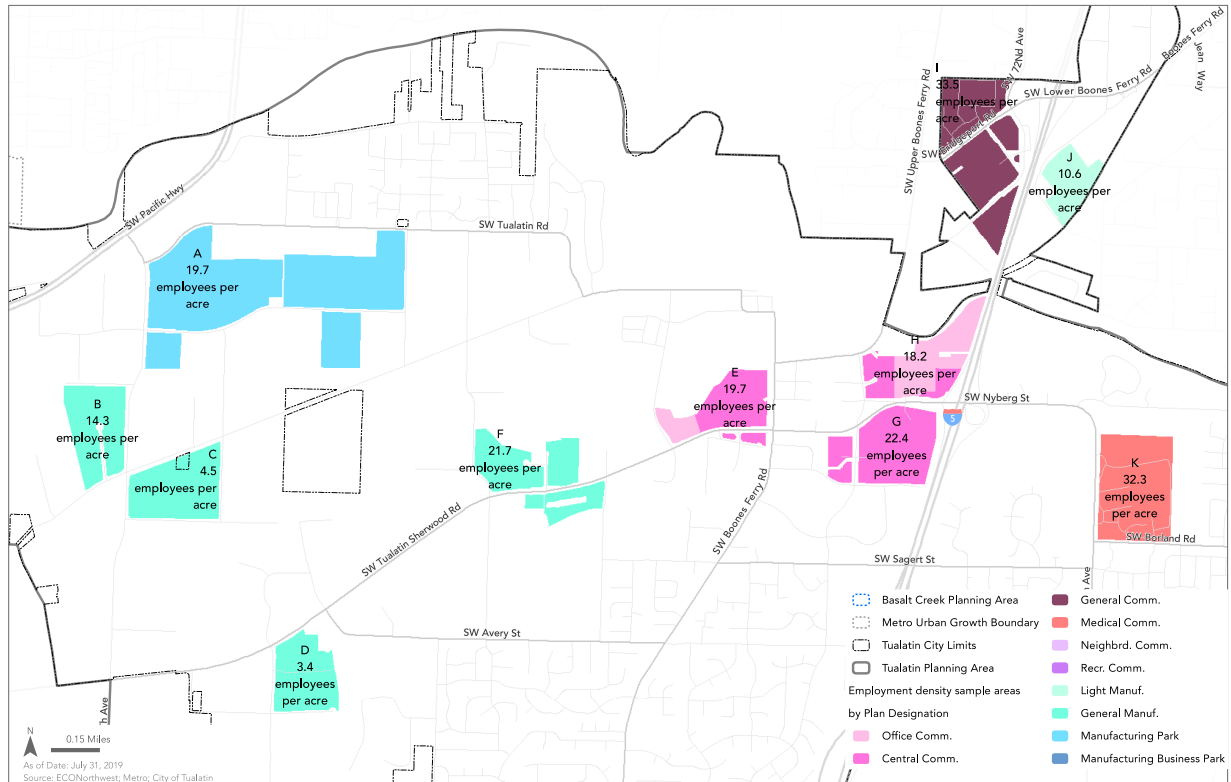


## Estimate of Demand for Commercial and Industrial Land

Converting from employment growth to land need (in acres) requires assumptions about future employment densities. Employees per acre is a measure of employment density based on the ratio of the number of employees per acre of employment land that is developed for employment uses. Exhibit 20 displays sample sites that informed ECONorthwest’s analysis of employment densities for businesses and sites in Tualatin based on existing employment. Results of the employment density analysis are summarized in Exhibit 21.

### Exhibit 20. Employment Densities in Tualatin, Tualatin Sample Sites, 2019

Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wage, 2017; analysis by ECONorthwest.



Based on a sampling of sites in Tualatin, industrial areas average about 15 employees per acre (EPA) and commercial areas average about 27 EPA.

**Exhibit 21. Summary of Employment Average Employment Densities, Tualatin Planning Area, 2018**

Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wage; summarized by ECONorthwest. Note1: Area names (A through K) correspond to areas mapped in Exhibit 20. Note2: "EPA" is employees per acre.

Land Use Type/ Area Name on Map	Type of Use	Average density (EPA)
Industrial		15
A	Manufacturing Park	20
B	General Manufacturing	14
C	General Manufacturing	5
D	General Manufacturing	3
F	General Manufacturing	22
J	Light Manufacturing	11
Commercial and Retail		27
E	Office/Central Commercial	20
G	Central Commercial	22
H	Office/Central Commercial	18
I	General Commercial	34
K	Medical Commercial	32

Exhibit 22 shows demand for vacant (including partially vacant) land in Tualatin over the 20-year period. ECONorthwest uses two assumptions in Exhibit 22: (1) employment density and (2) net-to-gross conversion factor.

- **Employment density.** Exhibit 22 displays the density assumptions as net employees per acre (EPA) for use in the analysis of employment land demand. It assumes industrial will have an average of 15 EPA, retail commercial will have an average of 25 EPA, and office commercial will have an average of 40 EPA.

These employment densities are consistent with Tualatin’s historic densities and employment densities in Oregon cities of a similar size as Tualatin. Some types of employment will have higher employment densities (e.g., a multistory office building), and some will have lower employment densities (e.g., a convenience store with a large parking lot).

This analysis assumes 15 EPA for industrial uses, as it is consistent with the EPA weighted average of industrial sample sites. This analysis assumes 25 EPA for retail, as it is consistent with the weighted average of sample site G, H, and I. This analysis assumes 40 EPA for office based on the assumption that Tualatin will encourage more two and three-story office buildings over the 20-year planning period (meaning we assume a higher employment density than historical).

- **Conversion from net-to-gross acres.** The data about employment density is in *net* acres, which does not include land for public right-of-way. Future land need for employment should include land in tax lots needed for employment plus land needed for public right-of-way. One way to estimate the amount of land needed for employment, including public right-of-way, is to convert from *net* to *gross* acres based on assumptions about the amount of land needed for public right-of-way.<sup>18</sup> A net-to-gross conversion is expressed as a percentage of gross acres that are in public right-of-way.

Based on empirical evaluation of Tualatin’s existing net-to-gross ratios, ECONorthwest uses a net-to-gross conversion factor of 9% for industrial and 27% for commercial.

Using these assumptions, the forecast for growth is 12,854 new employees. Exhibit 22 displays and accounts for 12,591 new employees, as government employees (263 employees) were deducted from the analysis of land demand. Tualatin will accommodate new government employees in institutional Plan Designations. The 12,591 new employees will result in the following demand for employment land: 424 gross acres of industrial land, 53 gross acres of retail commercial land, and 200 gross acres of office and commercial services land.

**Exhibit 22. Demand for Land to Accommodate Employment Growth, Tualatin Planning Area, 2020–2040**

Source: ECONorthwest.

Land Use Type	New Emp. on Vacant Land	Employees per Acre (Net Acres)	Land Demand (Net Acres)	Land Demand (Gross Acres)
Industrial	5,786	15	386	424
Retail Commercial	968	25	39	53
Office & Commercial Services	5,837	40	146	200
<b>Total</b>	<b>12,591</b>	-	<b>570</b>	<b>677</b>

Exhibit 23 shows land demand by general Plan Designation based on the existing distribution of employment in Exhibit 16. For example, Exhibit 23 assumes that 94% of growth in industrial employment (demand for 424 acres shown in Exhibit 22) will occur in industrial Plan Designations, with 4% in commercial Plan Designations and 3% in residential Plan Designations.

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<sup>18</sup> OAR 660-024-0010(6) uses the following definition of net buildable acre. “Net Buildable Acre” consists of 43,560 square feet of residentially designated buildable land after excluding future rights-of-way for streets and roads. While the administrative rule does not include a definition of a gross buildable acre, using the definition above, a gross buildable acre will include areas used for rights-of-way for streets and roads. Areas used for rights-of-way are considered unbuildable.

## Exhibit 23. Demand for Land to Accommodate Employment Growth by Generalized Plan Designation, Tualatin Planning Area, 2020–2040

Source: ECONorthwest.

Land Use Type	General Plan Designation				Total (Acre)
	Industrial	Commercial	Residential	Institutional	
Industrial	397	16	11	-	424
Retail, Office, & Com Services	51	170	31	1	253
<b>Total (Acres)</b>	<b>448</b>	<b>186</b>	<b>42</b>	<b>1</b>	<b>677</b>

## Site Needs for Potential Growth Industries

OAR 660-009-0015(2) requires the EOA to “identify the number of sites by type reasonably expected to be needed to accommodate the expected [20-year] employment growth based on the site characteristics typical of expected uses.” The Goal 9 rule does not specify how jurisdictions conduct and organize this analysis.

The rule, OAR 660-009-0015(2), does state that “[i]ndustrial or other employment uses with compatible site characteristics may be grouped together into common site categories.” The rule suggests, but does not require, that the city “examine existing firms in the planning area to identify the types of sites that may be needed.” For example, site types can be described by (1) plan designation (e.g., heavy or light industrial), (2) general size categories that are defined locally (e.g., small, medium, or large sites), or (3) industry or use (e.g., manufacturing sites or distribution sites). For purposes of the EOA, Tualatin groups its future employment uses into categories based on their need for land with a particular plan designation (i.e., industrial or commercial) and by their need for sites of a particular size.

Based on the forecast of employment growth in Exhibit 19 and the average business size of business in Tualatin in 2017 (using analysis of Quarterly Census of Employment and Wage data), employment growth in Tualatin will require:

- **Industrial** employment will grow by 5,785 employees, with 5,785 employees requiring buildable land. The average site of industrial employers in Tualatin in 2017 was 26 employees per business. At that average size, Tualatin will need 223 industrial sites. Exhibit 29 (in Chapter 4) shows that Tualatin has 697 sites for industrial development (with a total of 374 buildable acres of land). The majority of these sites (626 sites) are smaller than 0.5 acres. Tualatin has seven industrial sites between 10 and 20 acres and 2 industrial sites larger than 20 acres. These sites provide a range of sizes that may be needed by future industrial businesses in Tualatin.
- **Commercial** employment will grow by 6,805 employees, with 6,805 employees requiring buildable land. The average site of commercial employers in Tualatin in 2017 was 13 employees per business. At that average size, Tualatin will need 511 commercial sites. Exhibit 29 (in Chapter 4) shows that Tualatin has 149 sites for commercial development (with a total of 10.5 buildable acres of land). The majority of these sites (143 sites) are smaller than 0.5 acres. Tualatin has four commercial sites between 0.5 and 1 acre, one

commercial site between 1 and 2 acres, and one commercial site between 2 and 5 acres. Limited available sites will affect commercial development in Tualatin.

The potential growth industries described in the prior section are a mixture of business sizes, from small businesses to larger businesses. For the most part, Tualatin's potential growth industries need relatively flat sites, especially for industrial or manufacturing businesses with access to arterial roads to connect with I-5 or key employment centers in Beaverton, Hillsboro, and Portland.

Manufacturing and other industrial businesses that are likely to locate in Tualatin will have a range of space needs:

- **Small-scale manufacturing spaces.** Businesses would be located in an industrial building with many other users.
- **Space in flex-service buildings.** These businesses may locate in a building that includes other industrial businesses, as well as commercial businesses that prefer to locate in flex space buildings. Per a 2019 discussion with GPI, we find that vacancy rates in flex-service buildings are exceptionally low compared to more traditional employment spaces.
- **Mid-sized manufacturing.** Businesses would be located potentially in a building with a few other businesses. Between 2015 and 2019, Greater Portland Inc. (GPI) reported manufacturing projects in its pipeline that requested an average square footage between 35,000 square feet (approximately two to four-acre sites) and 118,000 square feet (approximately eight to 10-acre sites).<sup>19</sup> Average space needs (per square foot) have increased each year, between 2015 and 2019.

Retail, office, and commercial service businesses have a range of space needs ranging from:

- **Small- or mid-sized space.** Between 2015 and 2019, on average, GPI reported office projects seeking sites that range from about 14,045 square feet to about 39,000.
- **Space in a building dominated by one firm or in a building with many other businesses.** Some commercial employment will locate in a newly constructed building with other commercial businesses of all types. This could potentially be with other commercial (or light industrial) uses in the building. Other businesses may require or desire their own space.
- **Land for construction of a building designed for the firm.** However, in the case where the business needs to build a building, they are typically seeking existing space rather than land to build a new facility.

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<sup>19</sup> Greater Portland Inc. (May 2019). "Almost Mid-Year Pipeline Analysis."

Overall, of the businesses included in GPI's 2019 pipeline analysis—both office and manufacturing projects consistently requested existing space over “greenfield” space for their facility. In 2019, about 33% requested either greenfield space, up from 21% in 2017.

## 4. Buildable Lands Inventory

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This chapter provides a summary of the commercial and industrial buildable lands inventory (BLI) for the Tualatin Planning Area. The buildable lands inventory analysis complies with Statewide Planning Goal 9 policies that govern planning for employment uses. The detailed methodology used to complete the buildable lands inventory completed is presented in Appendix B.

The analysis established the employment land base (parcels or portions of parcels with appropriate zoning), classified parcels by buildable status, identified/deducted environmental constraints, and summarized total buildable area by Plan Designation.

### Definitions

ECONorthwest developed the buildable lands inventory with a tax lot database from Metro Regional Land Information Systems (RLIS). Maps produced for the buildable lands inventory used a combination of GIS data based on the Metro BLI for the 2018 Urban Growth Report, adopted maps, and used visual verification to verify the accuracy of Metro data. The tax lot database is current as of 2016, accounting for changes and development updates through April 2019. The inventory builds from the database to estimate buildable land per Plan Designations that allow employment uses. The following definitions were used to identify buildable land for inclusion in the inventory:

- *Vacant land.* Tax lots designated as vacant by Metro based on the following criteria: (1) fully vacant based on Metro aerial photo; (2) tax lots with less than 2,000 square feet developed and the developed area is less than 10% of lot; and (3) lots 95% or more vacant from GIS vacant land inventory.
- *Partially vacant land.* Tax lots located on land designated for employment uses but have an existing single-family structure. These lots are assumed to likely develop with an employment use within the planning period.
- *Potentially redevelopable land.* Lots determined to have redevelopment capacity based on Metro's threshold price methodology. This method identifies lots that meet size and price thresholds based on location in the Metro UGB and Plan Designation. The methods use property value thresholds where it is economically viable for a lot to redevelop. For example, if the unconstrained area of tax lot in a central commercial Plan Designation is greater than 0.249 acres, and the real market value per square foot is below \$12, then the unconstrained acreage is considered as potentially redevelopable.
- *Public or exempt land.* Lands in public or semi-public ownership are considered unavailable for commercial or industrial development. This includes lands in federal, state, county, or city ownership as well as lands owned by churches and

other semi-public organizations and properties with conservation easements. These lands are identified using Metro's definitions and categories.

- *Developed land.* Lands not classified as vacant, partially vacant, or public/exempt are considered developed. Developed land includes lots with redevelopment capacity, which are also included in BLI. The capacity of developed but redevelopable lots is based on Metro's estimates.

## Development Constraints

Consistent with state guidance on buildable lands inventories, ECONorthwest deducted the following constraints from the buildable lands inventory and classified those portions of tax lots that fall within the following areas as constrained, unbuildable land:

- *Lands within floodplains.* Flood insurance rate maps from the Federal Emergency Management Agency (FEMA) were used to identify lands in floodways and 100-year floodplains, as well as lands identified in Metro's Title 3 Stream and Floodplain Protection Plan.
- *Land within natural resource protection areas.* The Locally Significant Wetlands shapefile was used to identify areas within wetlands. Riparian corridors and other natural resource areas identified in Tualatin's Natural Resource Protection Overlay District were all considered undevelopable. These areas are consistent with chapter 72 of the City's Development Code.
- *Land with slopes over 15%.* Lands with slopes over 15% are considered unsuitable for commercial or industrial development.



# Buildable Lands Inventory Results

## Land Base

Exhibit 24 shows commercial and industrial land in Tualatin by classification (development status). The results show that the Tualatin Planning Area has 2,731 total acres in commercial or industrial Plan Designations. Of these 2,731 acres, about 1,534 acres (56%) are classified as developed or public (or exempt) and do not have development capacity, about 683 acres (25%) are on lots classified as potentially redevelopable, and the remaining 514 acres (19%) are vacant or partially vacant and have development capacity (not including development constraints).

### Exhibit 24. Commercial and Industrial Acres by Classification and Plan Designation, Tualatin Planning Area, 2019

Source: Metro BLI, ECONorthwest Analysis. Note: The numbers in the table may not sum to the total as a result of rounding.

Generalized Plan Designation	Vacant	Partially Vacant	Developed	Public or Exempt	Potentially Redevelopable	Total Acres	Percent of Total
<b>Commercial</b>							
Central Commercial	-	-	0	4	-	4	0%
General Commercial	4	-	125	3	3	134	5%
Medical Commercial	-	-	-	46	-	46	2%
Neighborhood Commercial	-	-	-	-	-	-	0%
Office Commercial	3	-	53	19	3	78	3%
Recreational Commercial	-	-	9	-	-	9	0%
<b>Industrial</b>							
General Manufacturing	184	-	569	97	264	1,114	41%
Light Manufacturing	35	-	214	54	43	346	13%
Manufacturing Business Park	107	-	3	1	260	372	14%
Manufacturing Park	60	-	40	27	89	216	8%
<b>Mixed-Use Commercial Overlay Zone</b>							
General Commercial	-	-	25	-	-	25	1%
<b>Central Tualatin Overlay Zone</b>							
Central Commercial	3	-	95	50	5	153	6%
General Commercial	-	-	7	0	-	7	0%
Office Commercial	-	-	23	-	-	23	1%
General Manufacturing	-	-	33	-	-	33	1%
Light Manufacturing	-	-	17	-	-	17	1%
<b>Basalt Creek Planning Area</b>							
Manufacturing Park	36	78	2	19	15	150	5%
Neighborhood Commercial	4	1	-	-	-	4	0%
<b>Total</b>	<b>436</b>	<b>78</b>	<b>1,215</b>	<b>319</b>	<b>683</b>	<b>2,731</b>	<b>100%</b>

Exhibit 25 shows land in all commercial and industrial Plan Designations by development and constraint status. After development constraints have been applied, about 63% of Tualatin’s total employment land (1,714 acres) has no development capacity (i.e., committed), 23% (632 acres) is constrained, and 14% (385 acres) is unconstrained and buildable.

**Exhibit 25. Commercial and Industrial Land by Comprehensive Plan Designation and Constraint Status, Tualatin Planning Area, 2019**

Source: Metro BLI, ECONorthwest Analysis. Note: The numbers in the table may not sum to the total as a result of rounding.

Generalized Plan Designation	Total acres	Committed acres	Constrained acres	Buildable acres
<b>Commercial</b>				
Central Commercial	4	0	4	0
General Commercial	134	117	13	4
Medical Commercial	46	43	3	0
Neighborhood Commercial	0	0	0	0
Office Commercial	78	63	12	3
Recreational Commercial	9	2	6	0
<b>Industrial</b>				
General Manufacturing	1,114	694	321	99
Light Manufacturing	346	283	34	29
Manufacturing Business Park	372	211	76	85
Manufacturing Park	216	129	31	56
<b>Mixed-Use Commercial Overlay Zone</b>				
General Commercial	25	20	5	0
<b>Central Tualatin Overlay Zone</b>				
Central Commercial	153	45	108	0
General Commercial	7	2	5	0
Office Commercial	23	18	4	0
General Manufacturing	33	28	6	0
Light Manufacturing	17	17	0	0
<b>Basalt Creek Planning Area</b>				
Manufacturing Park	150	41	4	105
Neighborhood Commercial	4	0	0	4
<b>Total</b>	<b>2,731</b>	<b>1,714</b>	<b>632</b>	<b>385</b>

## Vacant Buildable Land

Exhibit 26 shows buildable acres (e.g., acres in tax lots after constraints are deducted) for vacant and partially vacant land by Plan Designation. Of Tualatin’s 385 unconstrained buildable commercial or industrial acres, about 82% of the land is in tax lots classified as vacant, and 18% is in tax lots classified as partially vacant. About 28% of Tualatin’s buildable commercial and industrial land is located in the Basalt Creek Planning Area.

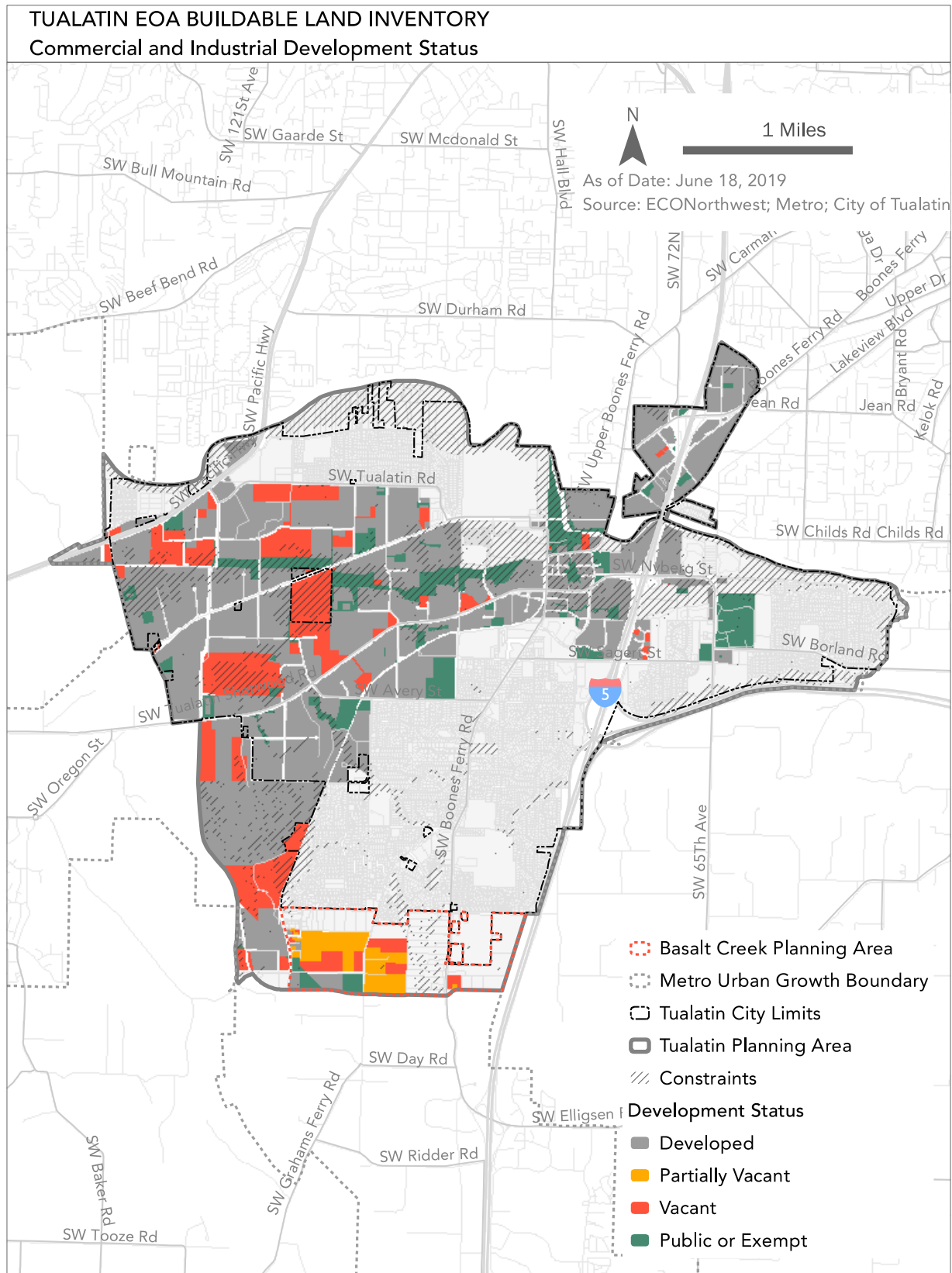
### Exhibit 26. Buildable Acres in Vacant and Partially Vacant Tax Lots by Plan Designation and Zoning, Tualatin Planning Area, 2019

Source: Metro BLI, ECONorthwest Analysis. Note: The numbers in the table may not sum to the total as a result of rounding.

Generalized Plan Designation	Total buildable acres	Buildable acres on vacant lots	Buildable acres on partially vacant lots
<b>Commercial</b>			
Central Commercial	0	0	0
General Commercial	4	4	0
Medical Commercial	0	0	0
Neighborhood Commercial	0	0	0
Office Commercial	3	3	0
Recreational Commercial	0	0	0
<b>Industrial</b>			
General Manufacturing	99	99	0
Light Manufacturing	29	29	0
Manufacturing Business Park	85	85	0
Manufacturing Park	56	56	0
<b>Mixed-Use Commercial Overlay Zone</b>			
General Commercial	0	0	0
<b>Central Tualatin Overlay Zone</b>			
Central Commercial	0	0	0
General Commercial	0	0	0
Office Commercial	0	0	0
General Manufacturing	0	0	0
Light Manufacturing	0	0	0
<b>Basalt Creek Planning Area</b>			
Manufacturing Park	105	35	70
Neighborhood Commercial	4	4	0
<b>Total</b>	<b>385</b>	<b>314</b>	<b>70</b>

Exhibit 27 and Exhibit 28 (upcoming pages) show the results of Tualatin’s commercial and industrial BLI.

**Exhibit 27. Commercial and Industrial Land by Development Status with Constraints, Tualatin Planning Area, 2019**



**Exhibit 28. Unconstrained Vacant and Partially Vacant Commercial and Industrial Land, Tualatin Planning Area, 2019**

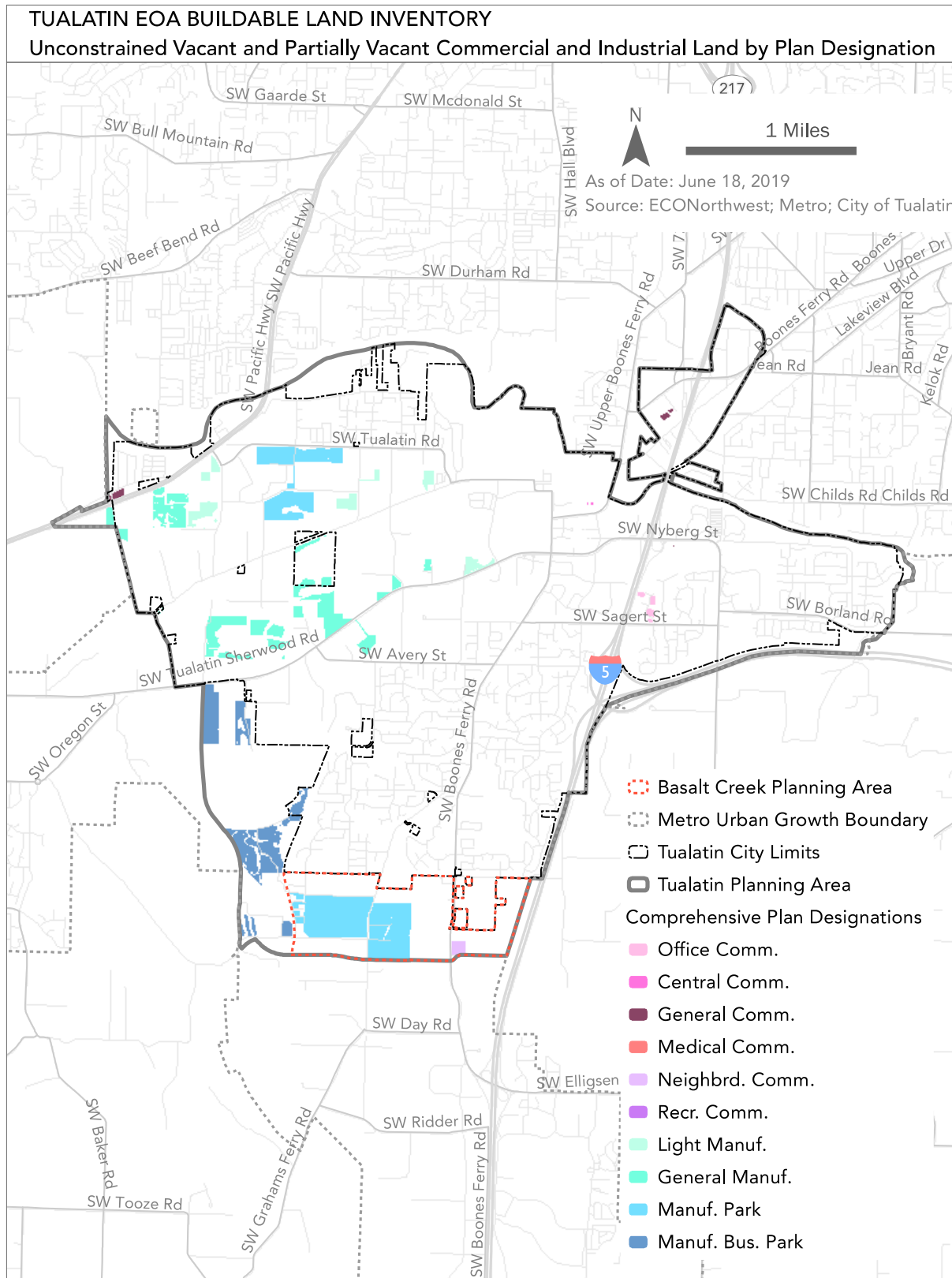


Exhibit 29 shows the size of lots by Plan Designations for buildable employment land. Tualatin has:

- 24 lots that are smaller than 0.5 acres (with 4.7 acres of land),
- 9 lots between 0.5 and 1 acres (6.3 acres of land),
- 13 lots between 1 and 2 acres (19.6 acres of land),
- 35 lots between 2 and 5 acres in size (132 acres of land),
- 11 lots between 5 and 10 acres in size (81 acres of land),
- 7 lots between 10 and 20 acres in size (95.5 acres of land), and
- 2 lots 20 acres or more in size (45.3 acres of land).

### Exhibit 29. Lot Size by Plan Designation, Buildable Acres, Tualatin Planning Area, 2019

Source: ECONorthwest analysis of data from Metro.

	Buildable acres in taxlots						
	<0.5 acres	0.5-1 acres	1-2 acres	2-5 acres	5-10 acres	10-20 acres	20+ acres
<b>Buildable acres on tax lots</b>							
<b>Commercial</b>							
General Commercial	0.4	1.5	1.9	0.0	0.0	0.0	0.0
Office Commercial	1.7	1.1	0.0	0.0	0.0	0.0	0.0
<b>Industrial</b>							
General Manufacturing	0.1	2.8	2.8	36.5	17.6	39.8	0.0
Light Manufacturing	0.0	0.0	9.7	13.3	5.8	0.0	0.0
Manufacturing Business Park	0.0	0.0	4.1	19.4	27.5	13.1	20.9
Manufacturing Park	0.0	0.0	0.0	0.0	0.0	31.5	24.4
<b>Basalt Creek Planning Area</b>							
Manufacturing Park	2.3	0.9	1.2	59.1	30.2	11.2	0.0
Neighborhood Commercial	0.3	0.0	0.0	3.7	0.0	0.0	0.0
<b>Acreage subtotal</b>	<b>4.7</b>	<b>6.3</b>	<b>19.6</b>	<b>132.0</b>	<b>81.0</b>	<b>95.5</b>	<b>45.3</b>
<b>Number of taxlots with buildable acreage</b>							
<b>Commercial</b>							
General Commercial	2	2	1	0	0	0	0
Office Commercial	5	2	0	0	0	0	0
<b>Industrial</b>							
General Manufacturing	3	4	2	10	2	3	0
Light Manufacturing	0	0	6	4	1	0	0
Manufacturing Business Park	1	0	3	6	4	1	1
Manufacturing Park	0	0	0	0	0	2	1
<b>Basalt Creek Planning Area</b>							
Manufacturing Park	12	1	1	14	4	1	0
Neighborhood Commercial	1	0	0	1	0	0	0
<b>Tax lot count subtotal</b>	<b>24</b>	<b>9</b>	<b>13</b>	<b>35</b>	<b>11</b>	<b>7</b>	<b>2</b>

## Redevelopment Potential

Over the 20-year study period a portion of developed lots are likely to redevelop within new buildings. To account for the development capacity on these developed lots, Metro identifies a subset of developed lots as “redevelopable.” Metro has created two “filters” to identify lots with the potential to redevelop.

- **Threshold Method.** This method identifies lots that meet size and price thresholds based on location in the Metro UGB and Plan Designation. The method uses property value thresholds where it is economically viable for a lot to redevelop. For example, if the *unconstrained* area of a tax lot in a central commercial Plan Designation is greater than 0.249 acres, and the real market value per square foot is below \$12, then the unconstrained acreage is considered as potentially redevelopable.<sup>20</sup>
- **Historic Probability Method.** This method determines the probability of a lot redeveloped based on a statistical analysis of lots that historically redeveloped within the region. The probability for each lot is multiplied by the total zoned capacity of the lot to determine the likely future capacity.

For the Tualatin BLI, ECONorthwest proposes to use redevelopable acreage identified based on the threshold method, a recommendation that is based on discussion with Metro staff. Exhibit 30Exhibit 11 shows the estimate of potentially redevelopable acreage by Plan Designation.

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<sup>20</sup> “Appendix 2: Buildable Land Inventory.” Oregon Metro. Urban Growth Report 2018.  
[https://www.oregonmetro.gov/sites/default/files/2018/12/03/Appendix2-BuildableLandsInventory\\_12032018.pdf](https://www.oregonmetro.gov/sites/default/files/2018/12/03/Appendix2-BuildableLandsInventory_12032018.pdf)

### Exhibit 30. Estimate of Potentially Redevelopable Land by Plan Designation, Tualatin Planning Area, 2019

Source: Metro BLI, using 2016 data to calculate redevelopment potential.

Generalized Plan Designation	Potentially Redevelopable Acres
<b>Commercial</b>	
Central Commercial	0
General Commercial	3
Medical Commercial	0
Neighborhood Commercial	0
Office Commercial	1
Recreational Commercial	0
<b>Industrial</b>	
General Manufacturing	135
Light Manufacturing	37
Manufacturing Business Park	71
Manufacturing Park	36
<b>Mixed-Use Commercial Overlay Zone</b>	
General Commercial	0
<b>Central Tualatin Overlay Zone</b>	
Central Commercial	0
General Commercial	0
Office Commercial	0
General Manufacturing	0
Light Manufacturing	0
<b>Basalt Creek Planning Area</b>	
Manufacturing Park	15
Neighborhood Commercial	0
<b>Total</b>	<b>297</b>

The analysis of redevelopment in Exhibit 30Exhibit 11 is based on analysis of existing land values (i.e., the threshold method). In considering likely commercial and industrial redevelopment that may occur over the next 20 years, stakeholders discussed the possibility of change of use (and redevelopment) of the gravel pit in the southwest area of the city, zoned Manufacturing Business Park. This area is classified as “committed” in the buildable lands inventory. The six tax lots in the gravel pit are a total size of 181 acres with about 47 constrained acres, mostly due to steep slopes and wetlands. When mining ceases in the gravel pit, which may or may not occur in the 20-year planning period, the gravel pit may be redevelopable and available for new employment uses.



## 5. Land Sufficiency and Conclusions

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This chapter presents conclusions about Tualatin’s employment land sufficiency for the 2020–2040 period. The chapter then concludes with a discussion about Tualatin’s land base and its ability to accommodate growth over the next 20 years, as well as recommendations for the City to consider, ensuring it meets its economic growth needs throughout the planning period.

### Land Sufficiency

Exhibit 31 shows commercial and industrial land sufficiency within the Tualatin Planning Area. It shows:

- **Capacity of Land** (supply) within the Tualatin Planning Area (see Exhibit 26). Exhibit 31 shows that Tualatin has 374 gross acres of industrial land and 11 gross acres of commercial land.
- **Demand for Commercial and Industrial Land** in the Tualatin Planning Area (see Exhibit 22 and Exhibit 23). Exhibit 31 shows Tualatin will need a total of 448 gross acres for industrial uses and 186 gross acres for commercial uses (including retail and office) over the 2020–2040 period.

Exhibit 31 shows that Tualatin has:

- A 74-acre deficit of industrial land in the Tualatin Planning Area.
- A 175-acre deficit of commercial land (including retail and office) in the Tualatin Planning Area.

#### Exhibit 31. Comparison of the Capacity of Land with Employment Land Demand by Land Use Type, Tualatin Planning Area, 2020–2040

Source: ECONorthwest. Note: Employment demand requires an additional 42 gross acres on land in residential Plan Designations and one gross acre on land in an institutional (public) Plan Designation.

General Plan Designation	Land Supply (Suitable Gross Acres)	Land Demand (Gross Acres)	Land Sufficiency (Deficit)
Industrial	374	448	(74)
Commercial (incl Retail and Office)	11	186	(175)

## Conclusions and Recommendations

The conclusions about commercial and industrial land sufficiency in Tualatin are:

- **Tualatin is expected to have job growth in commercial and industrial sectors over the 20-year period.** Tualatin is forecast to grow by about 12,591 new employees (excluding new government employees) over the 2020–2040 period, with about 5,800 new industrial employees and 6,800 new employees in retail, office, and commercial services, with the remaining employees in government.
- **Tualatin has a deficit of land to accommodate new employment growth.** Tualatin has a deficit of about 74 acres of land in industrial Plan Designations and 175 acres of employment in commercial Plan Designations to accommodate employment. Tualatin will need to consider policies to increase the efficiency of employment land use within the city, such as policies to encourage denser employment development and redevelopment that results in higher-density development.
- **Tualatin has substantial redevelopment potential.** A majority of redevelopable lots are in industrial areas. For example, change of use (and redevelopment) of the gravel pit in the southwest area of the Manufacturing Business Park presents substantial redevelopment opportunities. The six tax lots in the gravel pit are a total size of 181 acres with about 47 constrained acres, mostly due to steep slopes and wetlands. When mining ceases in the gravel pit, which may or may not occur in the 20-year planning period, the gravel pit may be redevelopable and available for new employment uses.
- **Tualatin’s primary comparative advantages for economic development are its location along the I-5 corridor and proximity to urban and cultural amenities/services in the Portland Region, making Tualatin an attractive place for businesses to locate.** Tualatin has advantages through its access to the regional labor market and the region’s growing labor force comprising diverse skill sets.
- **Tualatin will need to address transportation capacity issues to accommodate growth, particularly along regional connectors (roads and avenues).** Traffic congestion is a substantial issue in Tualatin and surrounding areas, making it difficult to commute to Tualatin from other cities within the Portland Region and within Tualatin. Stakeholders are concerned that additional employment growth will make congestion substantially worse.
- **New employment will require additional urban infrastructure.** Growth in Basalt Creek will prompt the need for new pipes, pump stations, and potentially another reservoir to accommodate water and wastewater capacity demands in the sub-area. If Tualatin wishes to accommodate businesses that are more water-intensive, Tualatin will need to look to new or additional water supplies.

Following is a summary of ECONorthwest’s recommendations to Tualatin based on the analysis and conclusions in this report. The *Tualatin Economic Development Strategy* memorandum presents the full list of recommendations for Tualatin.

- **Ensure that Tualatin has enough land to accommodate expected employment growth and that land has infrastructure to support employment growth.** Tualatin should identify opportunities to support mixed-use development (especially development that includes commercial and residential uses) to accommodate employment growth, especially commercial employment growth. The City should identify opportunities to make more efficient use of employment land, such as limiting development of businesses that have large land requirements and little employment (such as distribution). In addition, the City should work with landowners to get key employment sites certified as “shovel ready” to speed the development process.
- **Identify opportunities for redevelopment, especially mixed-use redevelopment.** The City has a substantial deficit of industrial and commercial land. The City may be able to address some or most of this deficit within the existing planning area (without a UGB expansion). To do so, the City should identify districts for redevelopment, such as mixed-use development. This planning includes revising the Tualatin Town Center Plan to focus on opportunities to support redevelopment, identify tools to support redevelopment, and identify areas appropriate for more intense industrial uses (e.g., redevelopment of the gravel pit in the southwest area of the city once mining activity has ceased).
- **Grow jobs and businesses in Tualatin by supporting business retention, growth, and attraction.** The first step in growing jobs and businesses in Tualatin is revising the economic development strategy, including developing a clear vision for economic development in Tualatin, and creating an action plan to implement the vision. The revised strategy can build on the *Tualatin Economic Development Strategy* produced as part of this analysis, but the revised strategy should include a detailed action plan to implement the newly developed vision for economic development. In revising the strategy, the City should identify partnerships and incentive programs to grow, retain, and attract businesses as well as support entrepreneurial businesses in Tualatin.
- **Ensure that the City connects planning for economic development with other community planning.** Throughout the project, stakeholders emphasized the need to coordinate economic development planning with housing, transportation planning, and other community planning. Updates to the Tualatin Transportation System Plan should be coordinated with planning for employment and business growth. A key approach to accommodating new commercial development is redevelopment that results in mixed-use districts, providing opportunities for more housing affordable to people working at businesses in Tualatin and living closer to work (thus reducing transportation issues). In addition, stakeholders would like to see the incorporation of services needed to meet daily needs of residents of neighborhoods without driving.

The *Tualatin Economic Development Strategy* memorandum presents more details about each of these topics and recommendations for specific actions to implement these recommendations.

# Appendix A. National, State, and Regional and Local Trends

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## National Trends

Economic development in Tualatin over the next 20 years will occur in the context of long-run national trends. The most important of these trends include:

- **Economic growth will continue at a moderate pace.** Analysis from the Congressional Budget Office (CBO) predicts real GDP to grow by 3.1% in 2018 and 2.4% in 2019, while settling just under 2% growth for the rest of the decade (through 2028), assuming current laws remain intact.<sup>21</sup>

The unemployment rate is expected to decrease to 3.6% by the end of 2018 and fall to 3.4% in 2019. Thereafter, the CBO predicts the unemployment rate will rise to 3.8% in 2020 and approach 4.8% through the end of the forecast period (2028).<sup>22</sup>

As demand for labor increases and market competition for workers pushes the growth of hourly wage compensation, the CBO projects that “the increase in labor compensation, [will dampen] demand for labor, slowing employment growth and, by 2020, diminishing the positive employment gaps.”<sup>23</sup>

- **The aging of the Baby Boomer generation accompanied by increases in life expectancy.** As the Baby Boomer generation continues to retire, the number of Social Security recipients is expected to increase from 61 million in 2017 to over 86 million in 2035, a 41% increase. However, due to lower-birth rate replacement generations, the number of covered workers is only expected to increase 9% over the same time period, from 174 million to almost 190 million in 2035. Currently, there are 35 Social Security beneficiaries per 100 covered workers in 2014, but by 2035, there will be 46 beneficiaries per 100 covered workers. This will increase the percent of the federal budget dedicated to Social Security and Medicare.<sup>24</sup>

Baby Boomers are expecting to work longer than previous generations. An increasing proportion of people in their early- to mid-50s expect to work full-time after age 65. In 2004, about 40% of these workers expect to work full-time after age 65, compared with

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<sup>21</sup> Congressional Budget Office. *An Update to the Economic Outlook: 2018 to 2028. August 2018.* Retrieved from: <https://www.cbo.gov/system/files?file=2018-08/54318-EconomicOutlook-Aug2018-update.pdf>.

<sup>22</sup> *Ibid.*

<sup>23</sup> *Ibid.*

<sup>24</sup> The Board of Trustees, Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, 2015, the 2018 *Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*, June 5, 2018. Retrieved from: <https://www.ssa.gov/oact/tr/2018/tr2018.pdf>.

about 30% in 1992.<sup>25</sup> This trend can be seen in Oregon, where the share of workers 65 years and older grew from 2.9% of the workforce in 2000 to 4.1% of the workforce in 2010. In 2017, this share reached 5.5%, or a 90% increase over the 2000–2017 period. Over the same seventeen-year period, workers 45 to 64 years increased by about 7%.<sup>26</sup>

- **The population identifying as Latinx will continue to grow and be an important driver in the economy.** The U.S. Census projects that by about 2040, the Latinx population will account for one-quarter of the nation’s population. The share of Latinx population in the western United States is likely to be higher. The Latinx population currently accounts for about 16% of Tualatin’s population. In addition, the Latinx population is generally younger than the U.S. average, with many Latinx individuals belonging to the Millennial generation.
- **Need for replacement workers.** The need for workers to replace retiring Baby Boomers will outpace job growth. According to the Bureau of Labor Statistics, total employment in the United States will grow by about 11.5 million jobs over 2016 to 2026. Annually, they estimate there will be 18.7 million occupational openings over the same period. This exhibits the need for employees over the next decade, as the quantity of openings per year is large relative to expected employment growth. About 71% of annual job openings are in occupations that do not require postsecondary education.<sup>27</sup>
- **The importance of education as a determinant of wages and household income.** According to the Bureau of Labor Statistics, a majority of the fastest growing occupations will require an academic degree, and on average, they will yield higher incomes than occupations that do not require an academic degree. The fastest-growing occupations requiring an academic degree will be registered nurses, software developers, general and operations managers, accountants and auditors, market research analysts and marketing specialists, and management analysts. Occupations that do not require an academic degree (e.g., retail salespeople, food preparation workers, and home care aides) will grow, accounting for approximately 71% of all new jobs by 2026. These occupations typically have lower pay than occupations requiring an academic degree.<sup>28</sup>

The national median income for people over the age of 25 in 2017 was about \$47,164. Workers without a high school diploma earned \$20,124 less than the median income, and workers with a high school diploma earned \$10,140 less than the median income. Workers with some college earned \$6,916 less than median income, and workers with a bachelor’s degree earned \$13,832 more than median. Workers in Oregon experience the

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<sup>25</sup> “The Health and Retirement Study,” 2007, National Institute of Aging, National Institutes of Health, U.S. Department of Health and Human Services.

<sup>26</sup> Analysis of 2000 Decennial Census data, 2010 U.S. Census American Community Survey, 1-Year Estimates, and 2017 U.S. Census American Community Survey, 1-Year Estimates, for the table Sex by Age by Employment Status for the Population 16 Years and Over.

<sup>27</sup> “Occupational Employment Projections to 2016–2026,” Bureau of Labor Statistics, 2018.

<sup>28</sup> “Occupational Employment Projections to 2016–2026,” Bureau of Labor Statistics, 2018.

same patterns as the nation, but pay is generally lower in Oregon than the national average.<sup>29</sup>

- **Increases in labor productivity.** Productivity, as measured by output per hour of labor input, increased in most sectors between 2000 and 2010, peaking in 2007. However, productivity increases were interrupted by the recession. After productivity decreases from 2007 to 2009, many industries saw large productivity increases from 2009 to 2010. Industries with the fastest productivity growth were information technology–related industries. These include wireless telecommunications carriers, computer and peripheral equipment manufacturing, electronics and appliance stores, and commercial equipment manufacturing wholesalers.<sup>30</sup>

Since the end of the recession (or 2010), labor productivity has increased across a handful of large sectors but has also decreased in others. In wholesale trade, productivity—measured in output per hour—increased by 19% over 2009 to 2017. Retail trade gained even more productivity over this period at 25%. Food services, however, have remained stagnant since 2009, fluctuating over the nine-year period and shrinking by 0.01% over this time frame. Additionally, the Bureau of Labor Statistics reports that multifactor productivity in manufacturing has been slowing down 0.3% per year over the 2004–2016 period. Much of this, they note, is due to slowdown in semiconductors, other electrical component manufacturing, and computer and peripheral equipment manufacturing.<sup>31</sup>

- **The importance of entrepreneurship and growth in small businesses.** According to the 2018 Small Business Profile from the US Small Business Office of Advocacy, small businesses account for over 99% of total businesses in the United States, and their employees account for nearly 50% of American workers.<sup>32</sup> The National League of Cities suggests ways that local governments can attract entrepreneurs and increase the number of small businesses, including strong leadership from elected officials; better communication with entrepreneurs, especially about the regulatory environment for businesses in the community; and partnerships with colleges, universities, small business development centers, mentorship programs, community groups, businesses groups, and financial institutions.<sup>33</sup>

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<sup>29</sup> Bureau of Labor Statistics, Employment Projections, March 2018. [http://www.bls.gov/emp/ep\\_chart\\_001.htm](http://www.bls.gov/emp/ep_chart_001.htm)

<sup>30</sup> Brill, Michael R. and Samuel T. Rowe, “Industry Labor Productivity Trends from 2000 to 2010.” Bureau of Labor Statistics, *Spotlight on Statistics*, March 2013.

<sup>31</sup> Michael Brill, Brian Chanksy, and Jennifer Kim. “Multifactor productivity slowdown in U.S. manufacturing,” *Monthly Labor Review*, U.S. Bureau of Labor Statistics, July 2018. Retrieved from: <https://www.bls.gov/opub/mlr/2018/article/multifactor-productivity-slowdown-in-us-manufacturing.htm>.

<sup>32</sup> U.S. Small Business Office of Advocacy. 2018 Small Business Profile. <https://www.sba.gov/sites/default/files/advocacy/2018-Small-Business-Profiles-US.pdf>

<sup>33</sup> National League of Cities, “Supporting Entrepreneurs and Small Businesses” (2012). <https://www.nlc.org/supporting-entrepreneurs-and-small-business>



- **Increases in automation across sectors.** Automation is a long-running trend in employment, with increases in automation (and corresponding increases in productivity) over the last century and longer. The pace of automation is increasing, and the types of jobs likely to be automated over the next 20 years (or longer) is broadening. Lower-paying jobs are more likely to be automated, with potential for automation of more than 80% of jobs paying less than \$20 per hour over the next 20 years. About 30% of jobs paying \$20 to \$40 per hour and 4% of jobs paying \$40 or more are at risk of being automated over the next 20 years.<sup>34</sup>

Low- to middle-skilled jobs that require interpersonal interaction, flexibility, adaptability, and problem solving will likely persist into the future, as will occupations in technologically lagging sectors (e.g., production of restaurant meals, cleaning services, hair care, security/protective services, and personal fitness).<sup>35</sup> This includes occupations such as recreational therapists; first-line supervisors of mechanics, installers, and repairers; emergency management directors; mental health and substance abuse social workers; audiologists; occupational therapists; orthotists and prosthetists; health-care social workers; oral and maxillofacial surgeons; and first-line supervisors of firefighting and prevention workers. Occupations in the service and agricultural or manufacturing industry are most at risk of automation because of the manual-task nature of the work.<sup>36,37,38</sup> This includes occupations such as telemarketers; title examiners, abstractors, and searchers; hand sewers; mathematical technicians; insurance underwriters; watch repairers; cargo and freight agents; tax preparers; photographic process workers and processing machine operators; and accounts clerks.<sup>39</sup>

- **Consolidation of Retail.** Historical shift in retail businesses, starting in the early 1960s, was the movement from one-off mom-and-pop shops toward superstores and the clustering of retail into centers or hubs. Notably, we still see this trend persist. For example, in 1997, the 50 largest retail firms accounted for about 26% of retail sales, and by 2007, they accounted for about 33%.<sup>40</sup> The more recent shift began in the late 1990s, where technological advances have provided consumers with the option to buy goods through e-commerce channels. The trend toward e-commerce has become increasingly

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<sup>34</sup> Executive Office of the President. (2016). *Artificial Intelligence, Automation, and the Economy*.

<sup>35</sup> Autor, David H. (2015). *Why Are There Still So Many Jobs? The History and Future of Workplace Automation*. *Journal of Economic Perspectives*, Volume 29, Number 3, Summer 2015, Pages 3–30.

<sup>36</sup> Frey, Carl Benedikt and Osborne, Michael A. (2013). *The Future of Employment: How Susceptible Are Jobs to Computerisation?* Oxford Martin School, University of Oxford.

<sup>37</sup> Otekhile, Cathy-Austin and Zeleny, Milan. (2016). *Self Service Technologies: A Cause of Unemployment*. *International Journal of Entrepreneurial Knowledge*. Issue 1, Volume 4. DOI: 10.1515/ijek-2016-0005.

<sup>38</sup> PwC. (n.d.). *Will robots really steal our jobs? An international analysis of the potential long-term impact of automation*.

<sup>39</sup> Frey, Carl Benedikt and Osborne, Michael A. (2013). *The Future of Employment: How Susceptible Are Jobs to Computerisation?* Oxford Martin School, University of Oxford.

<sup>40</sup> Hortaçsu, Ali and Syverson, Chad. (2015). *The Ongoing Evolution of U.S. Retail: A Format Tug-of-War*. *Journal of Economic Perspectives*, Volume 29, Number 4, Fall 2015, Pages 89–112.

preferential to Millennials and Generation Xers, who are easier to reach online and are more responsive to digital ads than older generations.<sup>41</sup> Since 2000, e-commerce sales have grown from 0.9% to 6.4% (2014) and are forecast to reach 12% by 2020. It is reasonable to expect this trend to continue. With it has come closures of retail stores. By 2027, for example, an estimated 15% of about 1,050 U.S. malls in smaller markets will close, impacting local employment levels, local government revenue streams (tax dollars), and neighborhood character.

While it is unclear what impact e-commerce will have on employment and brick-and-mortar retail, it seems probable that e-commerce sales will continue to grow, shifting business away from some types of retail. Over the next decades, communities must begin considering how to redevelop and reuse retail buildings in shopping centers, along corridors, and in urban centers.

The types of retail and related services that remain will likely be sales of goods that people prefer to purchase in person or that are difficult to ship and return (e.g., large furniture), specialty goods, groceries and personal goods that maybe needed immediately, restaurants, and experiences (e.g., entertainment or social experiences).

- **The importance of high-quality natural resources.** The relationship between natural resources and local economies has changed as the economy has shifted away from resource extraction. High-quality natural resources continue to be important in some states, especially in the western United States. Increases in the population and in household incomes, plus changes in tastes and preferences, have dramatically increased demand for outdoor recreation, scenic vistas, clean water, and other resource-related amenities. Such amenities contribute to a region's quality of life and play an important role in attracting both households and firms.<sup>42</sup>
- **Continued increase in demand for energy.** Energy prices are forecast to increase over the planning period. While energy use per capita is expected to decrease through 2050, total energy consumption will increase with rising population. Energy consumption is expected to grow primarily from industrial (0.9%) and, to a lesser extent, commercial users (0.4%). Residential consumption is forecast to stagnate (0.0%), and transportation will slightly decrease (-0.1%). This decrease in energy consumption for transportation is primarily due to increased federal standards and increased technology for energy efficiency in vehicles. Going forward through the projection period, potential changes in federal laws (such as decreases in car emissions) leave energy demand somewhat uncertain.

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<sup>41</sup> Pew Research Center (2010b). Generations 2010. Retrieved Online at: <http://www.pewinternet.org/Reports/2010/Generations-2010.aspx>

<sup>42</sup> For a more thorough discussion of relevant research, see Power, T.M. and R.N. Barrett. 2001. *Post-Cowboy Economics: Pay and Prosperity in the New American West*. Island Press, and Kim, K.-K., D.W. Marcouiller, and S.C. Deller. 2005. "Natural Amenities and Rural Development: Understanding Spatial and Distributional Attributes." *Growth and Change* 36 (2): 273–297.



Energy consumption by type of fuel is expected to change over the planning period. In 2050, the United States will be continuing to shift from crude oil toward natural gas and renewables. For example, from 2017 to 2050, the Energy Information Administration projects that the United States' overall energy consumption will average a 0.4% annual growth rate, while consumption of renewable sources will grow by 1.4% per year. With increases in energy efficiency, strong domestic production of energy, and relatively flat demand for energy by some industries, the United States will be able to be a net exporter of energy over the 2017–2050 period. Demand for electricity is expected to increase, albeit slowly, over the 2017–2050 period as the population grows and economic activity increases.<sup>43</sup>

- **Impact of rising energy prices on commuting patterns.** As energy prices increase over the planning period, energy consumption for transportation will decrease. These increasing energy prices may decrease willingness to commute long distances, though with expected increases in fuel economy, it could be that people commute further while consuming less energy.<sup>44</sup> Over 2019 to 2035, the U.S. Energy Information Administration estimates that the decline in transportation energy consumption, a result of increasing fuel economy, will more than offset the total growth in vehicle miles traveled (VMT). VMT for passenger vehicles is forecast to increase through 2050.
- **Potential impacts of global climate change.** The consensus among the scientific community that global climate change is occurring expounds important ecological, social, and economic consequences over the next decades and beyond.<sup>45</sup> Extensive research shows that Oregon and other western states already have experienced noticeable changes in climate and predicts that more change will occur in the future.<sup>46</sup>

In the Pacific Northwest, climate change is likely to (1) increase average annual temperatures, (2) increase the number and duration of heat waves, (3) increase the amount of precipitation falling as rain during the year, (4) increase the intensity of rainfall events, (5) increase sea level, (6) increase wildfire frequency, and (7) increase

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<sup>43</sup> Energy Information Administration, 2018, *Annual Energy Outlook 2018 with Projections to 2050*, U.S. Department of Energy, February 2018. <https://www.eia.gov/outlooks/aeo/pdf/AEO2018.pdf>. Note, the cited growth rates are shown in the Executive Summary and can be viewed here: <https://www.eia.gov/outlooks/aeo/data/browser/#/?id=2-AEO2018&cases=ref2018&sourcekey=0>.

<sup>44</sup> Energy Information Administration, 2018, *Annual Energy Outlook 2018 with Projections to 2050*, U.S. Department of Energy, February 2018.

<sup>45</sup> U.S. Global Change Research Program. *National Climate Assessment*. 2018. <https://nca2018.globalchange.gov/>

<sup>46</sup> Oregon Global Warming Commission. *2018 Biennial Report to the Legislature*. 2018. <https://www.keeporegoncool.org/reports/>

forest vulnerability to tree disease.<sup>47</sup> These changes are also likely to reduce winter snowpack and shift the timing of spring runoff earlier in the year.<sup>48</sup>

These anticipated changes point toward some of the ways that climate change is likely to impact ecological systems and the goods and services they provide. There is considerable uncertainty about how long it would take for some of the impacts to materialize and the magnitude of the associated economic consequences. Assuming climate change proceeds as today's models predict, however, some of the potential economic impacts of climate change in the Pacific Northwest will likely include:<sup>49</sup>

- *Potential impact on agriculture and forestry.* Climate change may impact Oregon's agriculture through changes in growing season, temperature ranges, and water availability.<sup>50</sup> Climate change may impact Oregon's forestry through an increase in wildfires, a decrease in the rate of tree growth, a change in the mix of tree species, and increases in diseases and pests that damage trees.<sup>51</sup>
- *Potential impact on tourism and recreation.* Impacts on tourism and recreation may range from (1) decreases in snow-based recreation if snow-pack in the Cascades decreases, (2) negative impacts to tourism along the Oregon Coast as a result of damage and beach erosion from rising sea levels,<sup>52</sup> (3) negative impacts on availability of summer river recreation (e.g., river rafting or sports fishing) as a result of lower summer river flows, and (4) negative impacts on the availability of water for domestic and business uses.

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<sup>47</sup> U.S. Global Change Research Program. *National Climate Assessment*. "Chapter 24: Northwest." 2018. <https://nca2018.globalchange.gov/chapter/24/>

<sup>48</sup> Mote, P., E. Salathe, V. Duliere, and E. Jump. 2008. *Scenarios of Future Climate for the Pacific Northwest*. Climate Impacts Group, University of Washington. March. Retrieved June 16, 2009, from <http://cse.washington.edu/db/pdf/moteetal2008scenarios628.pdf>; Littell, J.S., M. McGuire Elsner, L.C. Whitely Binder, and A.K. Snover (eds). 2009. "The Washington Climate Change Impacts Assessment: Evaluating Washington's Future in a Changing Climate - Executive Summary." In the *Washington Climate Change Impacts Assessment: Evaluating Washington's Future in a Changing Climate*, Climate Impacts Group, University of Washington. Retrieved June 16, 2009, from [www.cse.washington.edu/db/pdf/wacciaexecsummary638.pdf](http://www.cse.washington.edu/db/pdf/wacciaexecsummary638.pdf); Madsen, T. and E. Figdor. 2007. *When it Rains, it Pours: Global Warming and the Rising Frequency of Extreme Precipitation in the United States*. Environment America Research & Policy Center and Frontier Group.; and Mote, P.W. 2006. "Climate-driven variability and trends in mountain snowpack in western North America." *Journal of Climate* 19(23): 6209–6220.

<sup>49</sup> The issue of global climate change is complex, and there is a substantial amount of uncertainty about climate change. This discussion is not intended to describe all potential impacts of climate change but to present a few ways that climate change may impact the economy of cities in Oregon and the Pacific Northwest.

<sup>50</sup> "The Economic Impacts of Climate Change in Oregon: A Preliminary Assessment," Climate Leadership Initiative, Institute for Sustainable Environment, University of Oregon, October 2005.

<sup>51</sup> "Economic Impacts of Climate Change on Forest Resources in Oregon: A Preliminary Analysis," Climate Leadership Initiative, Institute for Sustainable Environment, University of Oregon, May 2007.

<sup>52</sup> "The Economic Impacts of Climate Change in Oregon: A Preliminary Assessment," Climate Leadership Initiative, Institute for Sustainable Environment, University of Oregon, October 2005.

Short-term national trends will also affect economic growth in the region, but these trends are difficult to predict. At times, these trends may run counter to the long-term trends described above. A recent example is the downturn in economic activity in 2008 and 2009 following declines in the housing market and the mortgage banking crisis. The result of the economic downturn was decreases in employment related to the housing market, such as construction and real estate. As these industries recover, they will continue to play a significant role in the national, state, and local economy over the long run. This report takes a long-run perspective on economic conditions (as the Goal 9 requirements intend) and does not attempt to predict the impacts of short-run national business cycles on employment or economic activity.

## State Trends

### Short-Term Trends

According to the Oregon Office of Economic Analysis (OEA), the Oregon economy “continues to hit the sweet spot.”<sup>53</sup> They also report, “job gains are enough to match population growth and absorb the workers coming back into the labor market. Wages are rising faster than in the typical state, as are household incomes.”<sup>54</sup> Though they note recent growth is slower than growth experienced several years ago.

Wages in Oregon continue to remain below the national average, but they are at their highest since the early 1980s. The OEA reports that new Oregon Employment Department research “shows that median hourly wage increases for Oregon workers since 2014 has been 3.1 percent annually for the past three years.”<sup>55</sup> These wage increases are “substantially stronger for the Oregonians who have been continually employed over the last three years.”<sup>56</sup>

By the end of 2018, the OEA forecasts 41,700 jobs will be added to Oregon’s economy. This is an approximate 2.2% annual growth in total nonfarm employment relative to 2017 levels.<sup>57</sup> The leisure and hospitality, construction, professional and business services, and health services industries are forecast to account for well over half of the total job growth in Oregon for 2018. Oregon continues to have an advantage in job growth compared to other states, due to its industrial sector and in-migration flow of young workers in search of jobs.

The housing market continues to recover as Oregon’s economy improves. Oregon is seeing an increase in household formation rates, which is good for the housing market, as this will “help drive up demand for new houses.”<sup>58</sup> Though younger Oregonians are tending to live at home

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<sup>53</sup> Office of Economic Analysis. Oregon Economic and Revenue Forecast, September 2018. Vol. XXXVIII, No. 3, page 2.

<sup>54</sup> *Ibid*, page 2.

<sup>55</sup> *Ibid*, page 5.

<sup>56</sup> *Ibid*, page 5.

<sup>57</sup> *Ibid*, page 13.

<sup>58</sup> *Ibid*, page 13.

with their parents longer, the aging Millennial generation (from their early 20s to mid-to-late 30s) and the state's increase in migration will drive demand for homes in the coming years. Housing starts in 2018 are on track to just under 22,000 units annually. This is "driven in large part by a decline in multifamily permit activity."<sup>59</sup> Through 2020, the OEA forecasts moderate to strong housing growth. Beyond this time frame, the OEA forecasts an average growth of 24,000 units per year to satisfy the demand for Oregon's growing population and to make up for the under development of housing post-recession.<sup>60</sup>

The Oregon Index of Leading Indicators (OILI) has grown quite rapidly since January 2017. The leading indicators showing improvement are consumer sentiment, industrial production, initial claims, the manufacturing purchasing managers index (PMI), new incorporations, semiconductor billings, and withholdings. The indicators that are slowing include air freight and the Oregon Dollar Index, and the indicators not improving include help wanted ads and housing permits.<sup>61</sup>

Oregon's economic health is dependent on the export market. The value of Oregon exports in 2017 was \$21.9 billion. The countries that Oregon exports the most to are China (18% of total Oregon exports), Canada (11%), Malaysia (11%), South Korea (9%), Japan (8%), and Vietnam (7%).<sup>62</sup> With straining trade relations overseas, specifically with China, Oregon exports are left potentially vulnerable, as China is a top destination for Oregon exports.<sup>63</sup> An economic slowdown across many parts of Asia will have a spillover effect on the Oregon economy. Furthermore, with the United States' withdrawal from the Trans-Pacific Partnership in January 2017, it is unclear how much Pacific Northwest trade will be impacted in the years to come.

## Long-Term Trends

State, regional, and local trends will also affect economic development in Tualatin over the next 20 years. The most important of these trends includes continued in-migration from other states, distribution of population and employment across the state, and change in the types of industries in Oregon.

- **Continued in-migration from other states.** Oregon will continue to experience in-migration (more people moving to Oregon than from Oregon) from other states, especially California and Washington. From 1990 to 2017, Oregon's population increased by about 1.3 million, 66% of which was from people moving into Oregon (net migration). The average annual increase in population from net migration over the same time period was just over 33,200. During the early to mid-1990s, Oregon's net migration

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<sup>59</sup> *Ibid*, page 13.

<sup>60</sup> *Ibid*, page 13.

<sup>61</sup> *Ibid*, page 10.

<sup>62</sup> U.S. Census Bureau. State Exports from Oregon, 2014–2017. Retrieved from: <https://www.census.gov/foreign-trade/statistics/state/data/or.html>.

<sup>63</sup> Office of Economic Analysis. Oregon Economic and Revenue Forecast, September 2018. Vol. XXXVIII, No. 3, page 14.

was highest, reaching over 60,000 in 1991, with another smaller peak of almost 42,100 in 2006. In 2017, net migration reached just over 56,800 persons. Oregon has not seen negative net migration since the early to mid-1980s.<sup>64</sup> Oregon's population has continued to get more ethnically and racially diverse, with Latinx populations growing from 8% of the population in 2000 to 13% of the population in 2013–2017. The nonwhite population grew from 13% of the population to 15% of the population over the same period. The share of Latinx population increased in Tualatin from 2000 to 2013–2017 while the share of the nonwhite population stayed the same.

- **Forecast of job growth.** Total nonfarm employment is expected to increase from 1.91 million in 2018 to just over 1.99 million in 2022, an increase of 80,000 jobs. The industries with the largest growth are forecast to be professional and business services, health services, and retail, accounting for 61% of employment growth.<sup>65</sup>
- **Continued importance of manufacturing to Oregon's economy.** Oregon's exports totaled \$19.4 billion in 2008, nearly doubling since 2000, and reached almost \$22 billion in 2017. The majority of Oregon exports go to countries along the Pacific Rim, with China, Canada, Malaysia, South Korea, and Japan as top destinations. Oregon's largest exports are tied to high-tech and mining industries, as well as agricultural products.<sup>66</sup> Manufacturing employment is concentrated in five counties in the Willamette Valley or Portland area: Washington, Multnomah, Lane, Clackamas, and Marion Counties.<sup>67</sup>
- **Shift in manufacturing from natural resource-based to high-tech and other manufacturing industries.** Since 1970, Oregon has been transitioning away from reliance on traditional resource-extraction industries. A significant indicator of this transition is the shift within Oregon's manufacturing sector, with a decline in the level of employment in the lumber and wood products industry and the concurrent growth of employment in other manufacturing industries, such as high-tech manufacturing (industrial machinery, electronic equipment, and instruments), transportation equipment manufacturing, and printing and publishing.<sup>68</sup>
- **Income.** Oregon's income and wages are below that of a typical state. However, mainly due to the wage growth over the last two to three years, Oregon wages are at their highest point relative to other states since the recession in the early 1980s. In 2017, the

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<sup>64</sup> Portland State University Population Research Center. 2017 Annual Population Report Tables. April 2017. Retrieved from: <https://www.pdx.edu/prc/population-reports-estimates>.

<sup>65</sup> Office of Economic Analysis. Oregon Economic and Revenue Forecast, September 2018. Vol. XXXVIII, No. 3, page 38.

<sup>66</sup> U.S. Census Bureau. State Exports from Oregon, 2014-2017. Retrieved from: <https://www.census.gov/foreign-trade/statistics/state/data/or.html>.

<sup>67</sup> Oregon Employment Department. *Employment and Wages by Industry (QCEW)*. 2017 Geographic Profile, Manufacturing (31–33). Retrieved from: [qualityinfo.org](http://qualityinfo.org).

<sup>68</sup> Although Oregon's economy has diversified since the 1970s, natural resource-based manufacturing accounts for about 38% of employment in manufacturing in Oregon in 2017, with the most employment in food manufacturing (nearly 30,000) and wood product manufacturing (nearly 23,000) (QCEW).

average annual wage in Oregon was \$51,117 and the median household income was \$60,212 (compared to national average wages of \$53,621 in 2017 and the national household income of \$60,336).<sup>69</sup> Total personal income (all classes of income minus Social Security contributions and adjusted for inflation) in Oregon is expected to increase by 22%, from \$202.2 billion in 2018 to \$247.5 billion in 2022.<sup>70</sup> Per capita income is expected to increase by 16% over the same time period, from \$48,000 (thousands of dollars) in 2018 to \$55,800 in 2022 (in nominal dollars).<sup>71</sup>

- **Small businesses continue to account for a large share of employment in Oregon.**

While small firms played a large part in Oregon's expansion between 2003 and 2007, they also suffered disproportionately in the recession and its aftermath (64% of the net jobs lost between 2008 and 2010 was from small businesses).

In 2017 small businesses (those with 100 or fewer employees) accounted for 95% of all businesses and 66% of all private-sector employment in Oregon. Said differently, most businesses in Oregon are small (in fact, 78% of all businesses have fewer than 10 employees), but the largest share of Oregon's employers work for large businesses.

The average annualized payroll per employee for small businesses was \$37,149 in 2015, which is considerably less than that for large businesses (\$54,329) and the statewide average for all businesses (\$47,278).<sup>72</sup> Younger workers are important to continue growth of small businesses across the nation. More than one-third of Millennials (those born between 1980 and 1999) are self-employed, with approximately one-half to two-thirds interested in becoming an entrepreneur. Furthermore, in 2011, about 160,000 start-up companies were created each month; 29% of these companies were founded by people between 20 and 34 years of age.<sup>73</sup>

- **Entrepreneurship in Oregon.** The creation of new businesses is vital to Oregon's economy, as their formations generate new jobs and advance new ideas and innovations into markets. They also can produce more efficient products and services to better serve local communities. According to the Kauffman Index, Oregon ranked thirteenth in the country in 2017 for its start-up activity, a measurement comprised of three statistics: rate

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<sup>69</sup> Average annual wages are for "all industries," which includes private and public employers. Oregon Quarterly Census of Employment and Wages, 2017. Retrieved from: <https://www.qualityinfo.org>; Bureau of Labor Statistics, Quarterly Census of Employment and Wages, 2017; Total, U.S. Census American Community Survey 1-Year Estimates, 2017, Table B19013.

<sup>70</sup> Office of Economic Analysis. Oregon Economic and Revenue Forecast, September 2018. Vol. XXXVIII, No. 3, page 39.

<sup>71</sup> *Ibid*, page 39.

<sup>72</sup> U.S. Census Bureau, 2015 Statistics of U.S. Businesses, Annual Data, Enterprise Employment Size, U.S. and States. <https://www.census.gov/data/tables/2015/econ/susb/2015-susb-annual.html>.

<sup>73</sup> Cooper, Rich, Michael Hendrix, Andrea Bitely. (2012). "The Millennial Generation Research Review." Washington, DC: The National Chamber Foundation. Retrieved from: <https://www.uschamberfoundation.org/sites/default/files/article/foundation/MillennialGeneration.pdf>.



of new entrepreneurs, opportunity share of new entrepreneurs, and start-up density.<sup>74</sup> This ranking is higher than its 2016 position at spot fifteen. Oregon's rate of new entrepreneurs (the percent of adults that became an entrepreneur in a given month) was in steady decline post-recession, but since 2013, it has gradually recovered to about 0.34% in 2016. This rate is still well below Oregon's pre-recession peak of 0.43% in 2000, but its recent growth broadly exhibits that business ownership and formation is increasing.

Moreover, in 2018, the Oregon Office of Economic Analysis reported that new business applications in Oregon are increasing. They do, however, simultaneously note that start-up businesses "are a smaller share of all firms than in the past."<sup>75</sup> Though this measurement of economic activity does not constitute a full understanding of how well entrepreneurship is performing, it does provide an encouraging signal.

## Regional and Local Trends

Throughout this section, Tualatin is compared to Washington County, the Portland region, and the State of Oregon. These comparisons provide context for changes in Tualatin's socioeconomic characteristics.

### Availability of Labor

A skilled and educated populace can attract well-paying businesses and employers and spur the benefits that follow from a growing economy. Key trends that will affect the workforce in Tualatin over the next 20 years include growth in its overall population, growth in the senior population, and commuting trends.

### Growing Population

Population growth in Oregon tends to follow economic cycles. Oregon's population grew from about 2.8 million people in 1990 to 4.0 million people in the 2013–2017 period, an increase of almost 1.2 million people, at an average annual rate of 1.3%. Oregon's growth rate slowed to 1.0% annual growth between 2000 and 2017.

Tualatin's population increased over the 1990 to 2013–2017 period, by 12,122 residents. Washington County's population also grew over the same time, by 260,517 residents, at a similar rate of growth as Tualatin.

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<sup>74</sup> Kauffman Foundation. *The Kauffman Index, Oregon*. Retrieved from: <https://www.kauffman.org/kauffman-index/profile?loc=41&name=oregon&breakdowns=growth|overall,startup-activity|overall,main-street|overall>.

<sup>75</sup> Lehner, Josh. (August 2018). "Start-Ups, R&D, and Productivity." Salem, OR: Oregon Office of Economic Analysis. Retrieved from: <https://oregoneconomicanalysis.com/2015/03/13/start-ups-and-new-business-formation/>.

**Exhibit 32. Population Growth, Tualatin, Washington County, Portland Region, Oregon, U.S., 1990, 2000, 2010, 2017**

Source: US Decennial Census 1990, 2000, 2010. ACS 2013–2017 5-year estimate.

	1990	2000	2010	2013-2017	Change 1990 to 2013-2017		
					Number	Percent	Growth Rate
U.S.	248,709,873	281,421,906	308,745,538	321,004,407	72,294,534	29%	0.9%
Oregon	2,842,321	3,421,399	3,831,074	4,025,127	1,182,806	42%	1.3%
Portland Region	1,174,291	1,444,219	1,641,036	1,760,492	586,201	50%	1.5%
Washington County	311,554	445,342	529,710	572,071	260,517	84%	2.3%
Tualatin	15,013	22,791	26,054	27,135	12,122	81%	2.2%

**Age Distribution**

The number of people aged 65 and older in the United States is expected to increase by nearly three-quarters by 2050, while the number of people under age 65 will only grow by 16%. The economic effects of this demographic change include the slowing of labor force growth, the need for workers to replace retirees, and the aging of the workforce for seniors that continue working after age 65, as well as an increase in the demand for health-care services and an increase in the percent of the federal budget dedicated to Social Security and Medicare.<sup>76</sup>

**Between 2000 and the 2013–2017 period, Tualatin grew older on average (6.3 years).**

This increase suggests Tualatin attracted more workers in their later adult lives.

**Exhibit 33. Median Age, Tualatin, Washington County, Clackamas County, Multnomah County, 2000 to 2013–2017**

Source: U.S. Census Bureau, 2000 Decennial Census, Table P013; American Community Survey 2013–2017 5-year estimates, Table B01002.

<b>2000</b>	<b>31.9</b> Tualatin	<b>33.0</b> Washington County	<b>37.5</b> Clackamas County	<b>34.9</b> Multnomah County
<b>2013–17</b>	<b>38.2</b> Tualatin	<b>36.4</b> Washington County	<b>41.4</b> Clackamas County	<b>36.8</b> Multnomah County

<sup>76</sup> The Board of Trustees, Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, 2017, the 2017 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, July 13, 2017. The Budget and Economic Outlook: Fiscal Years 2018 to 2028, April 2018.

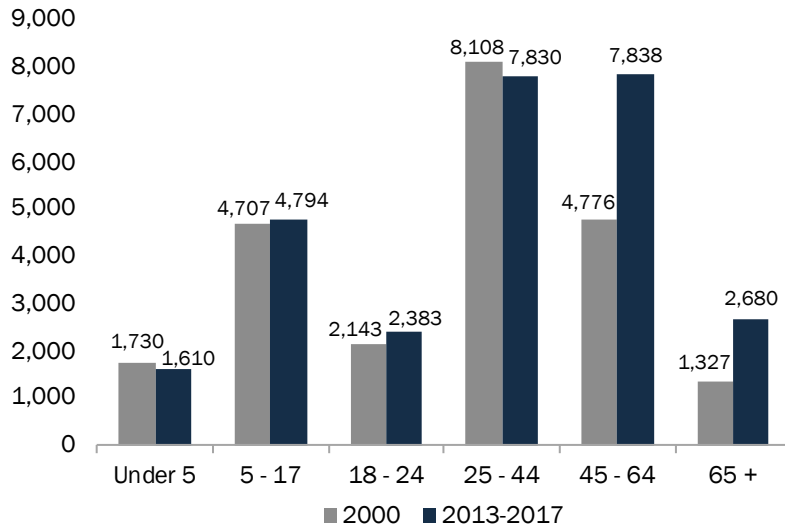


**Over 2000 to 2013–2017, Tualatin’s largest population increase was for those between 45 and 64 years of age.**

This age group grew by 3,062 people between 2000 and 2013–2017.

**Exhibit 34. Population Change by Age Group, Tualatin, 2000 and 2013–2017**

Source: U.S. Census Bureau, 2000 Summary File; American Community Survey, 2013–2017, 5-year estimates, Table B01001.

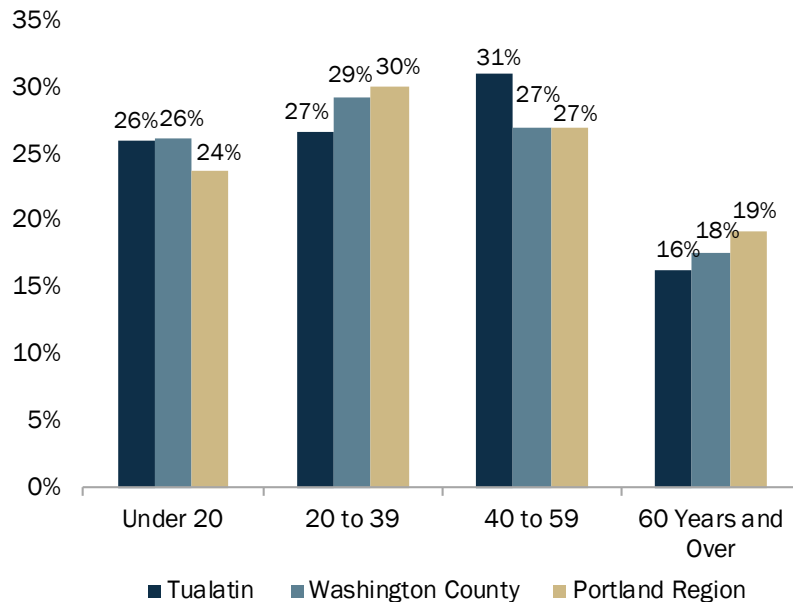


**Compared to Washington County and the Portland Region, Tualatin had a slightly larger proportion of adults aged 40 to 59.**

During the 2013–2017 period, 58% of Tualatin residents were between 20 and 59 years of age.

**Exhibit 35. Population Distribution by Age, Tualatin, Washington County, Portland Region, 2013–2017**

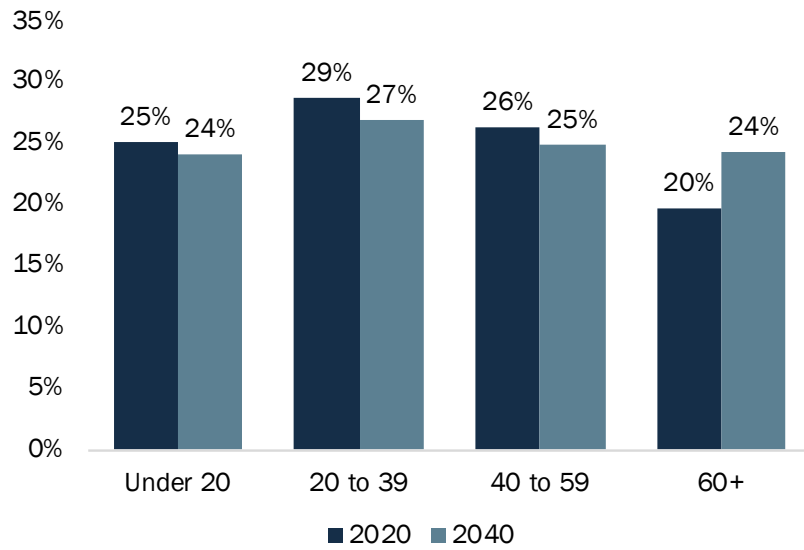
Source: U.S. Census Bureau, American Community Survey, 2013–2017 5-year estimate, Table B01001.



From 2020 to 2040, the share of residents 60 years and older in Washington County is forecast to grow while other age cohorts are forecast to decline proportionately.

**Exhibit 36. Population Growth by Age Group, Washington County, 2020 and 2040**

Source: Portland State University, Population Research Center, Washington County Forecast, June 2017.



## Income

Income and wages affect business decisions for locating in a city. Areas with higher wages may be less attractive for industries that rely on low-wage workers. In the 2013–2017 period, Tualatin’s median household income (\$72,580) was similar to Washington County’s median (\$74,033). In 2017 (inflation adjusted to 2018 \$), average wages at businesses in Tualatin (\$58,429) were below the County’s average (\$70,310, 2018).

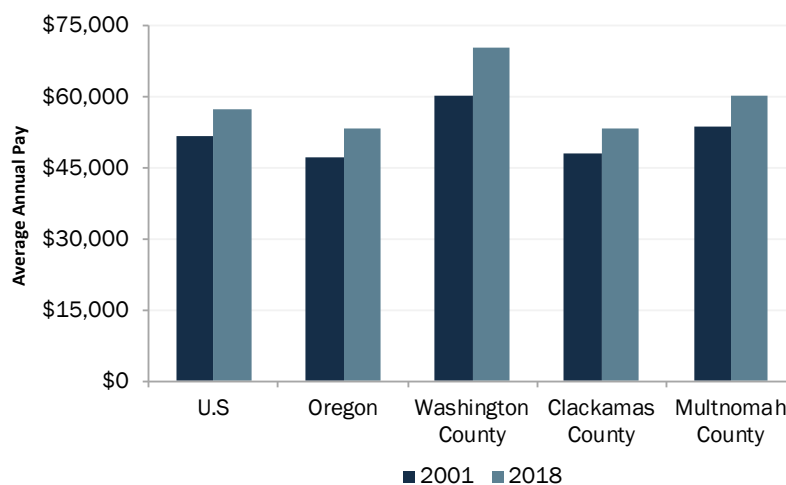
Adjusting for inflation, between 2000 and 2018, Washington County’s average wages increased, as did the average wages of other counties in the Portland region, Oregon, and the nation. When adjusted for inflation, average annual wages grew by 17% in Washington County and 13% in Oregon.

**From 2000 to 2018, average annual wages increased in Washington County, as did the average wages of other counties in the Portland Region, Oregon, and the nation.**

In 2018, the average annual wage was \$70,310 in Washington County, compared to 53,058 in Oregon.

**Exhibit 37. Average Annual Wage (Inflation-Adjusted 2018 \$), Covered Employment, Washington County, Clackamas County, Multnomah County, Oregon, U.S., 2001 to 2018,**

Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages.



**Over the 2013–2017 period, the median household income (MHI) in Tualatin was below Washington County’s MHI, comparable to Multnomah County’s MHI and above Clackamas County’s MHI.**

**Exhibit 38. Median Household Income (MHI),<sup>77</sup> 2013–2017**

Source: U.S. Census Bureau, American Community Survey 2013–2017 5-year estimates, Table B19013.

**\$72,580**

Tualatin

**\$74,033**

Washington County

**\$60,369**

Clackamas County

**\$72,408**

Multnomah County

<sup>77</sup> The Census calculated household income based on the income of all individuals 15 years old and over in the household, whether they were related or not.

**Tualatin median family income during the 2013–2017 period, similar to the median household income and above the median family incomes of Washington County, Clackamas County, and Multnomah County.**

**Exhibit 39. Median Family Income,<sup>78</sup> 2013–2017**

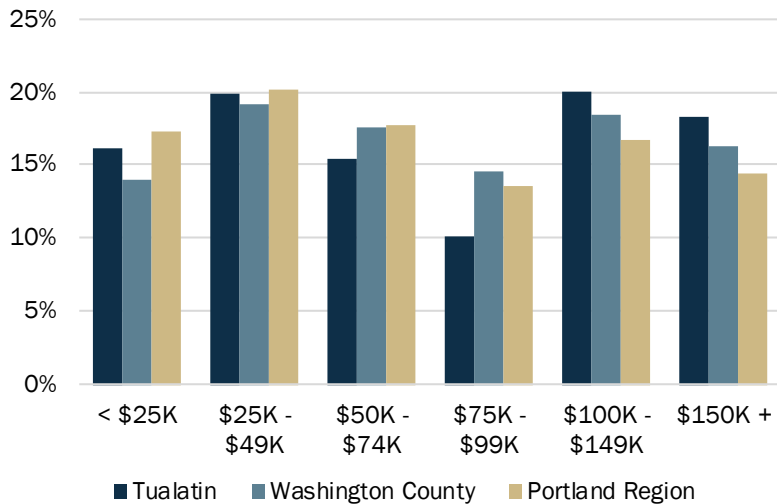
Source: U.S. Census Bureau, American Community Survey 2013–2017 5-year estimates, Table B19113.

<b>\$95,656</b> Tualatin	<b>\$85,993</b> Washington County
<b>\$87,858</b> Clackamas County	<b>\$76,557</b> Multnomah County

**During the 2013–2017 period, 48% of Tualatin households earned over \$75,000 annually, comparable to Washington County.**

**Exhibit 40. Household Income by Income Group, Tualatin, Washington County, Portland Region, 2013–2017**

Source: U.S. Census Bureau, American Community Survey 2013–2017 5-year estimates, Table B19001.



<sup>78</sup> The Census calculated family income based on the income of the head of household, as identified in the response to the Census forms, and income of all individuals 15 years old and over in the household who are related to the head of household by birth, marriage, or adoption.

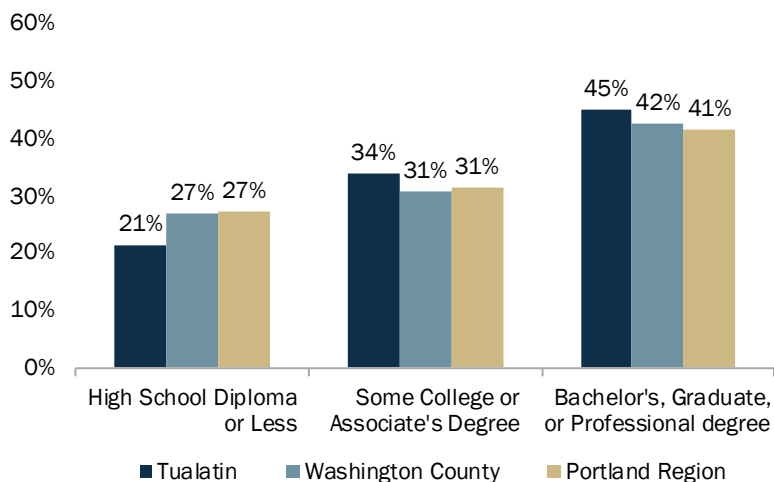
## Educational Attainment

The availability of trained, educated workers affects the quality of labor in a community. Educational attainment is an important labor force factor because firms need to be able to find educated workers.

**The share of residents, 25 years and older, with a bachelor's degree (or higher) is slightly larger in Tualatin than Washington County and the Portland Region.**

**Exhibit 41. Educational Attainment for the Population 25 Years and Over, Tualatin, Washington County, and the Portland Region, 2013–2017**

Source: U.S. Census Bureau, American Community Survey 2013–2017 5-year estimates, Table B15003.



## Race and Ethnicity

Tualatin, like Oregon overall, is becoming more ethnically diverse (while racial diversity has remained about the same). The Latinx community increased in Tualatin between 2000 and 2013–2017, from 12% of the total population to 16%. The non-Caucasian share of the population stayed the same,<sup>79</sup> from 2000 to 2013–2017 at 13% of the population. The Latinx community in Washington County also increased from 11% to 16%, while the non-Caucasian population increased from 18% to 23% between 2000 and 2013–2017.

Exhibit 42 and Exhibit 43 show the change in the share of Latinx and non-Caucasian populations in Tualatin, compared to Washington County and the Portland Region, between 2000 and 2013–2017.

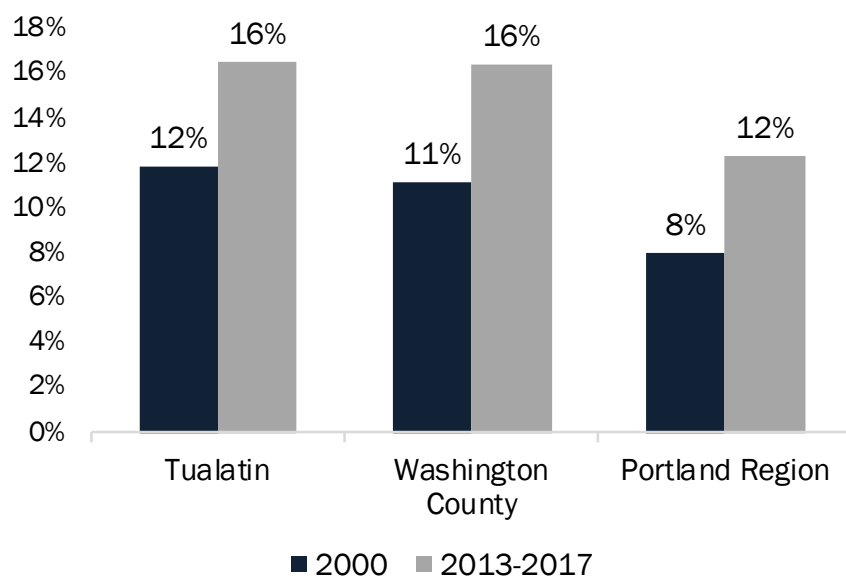
<sup>79</sup> The non-Caucasian population is defined as the share of the population that identifies as another race other than “white alone” according to Census definitions.

**Tualatin’s Latinx population increased between 2000 and 2013–2017 from 12% to 16%.**

Tualatin and Washington County are more ethnically diverse than the Portland Region.

**Exhibit 42. Latinx Population as a Percent of the Total Population, Tualatin, Washington County, and Oregon, 2000 and 2013–2017**

Source: U.S. Census Bureau, 2000 Decennial Census Table P008, 2013–2017 ACS Table B03002.

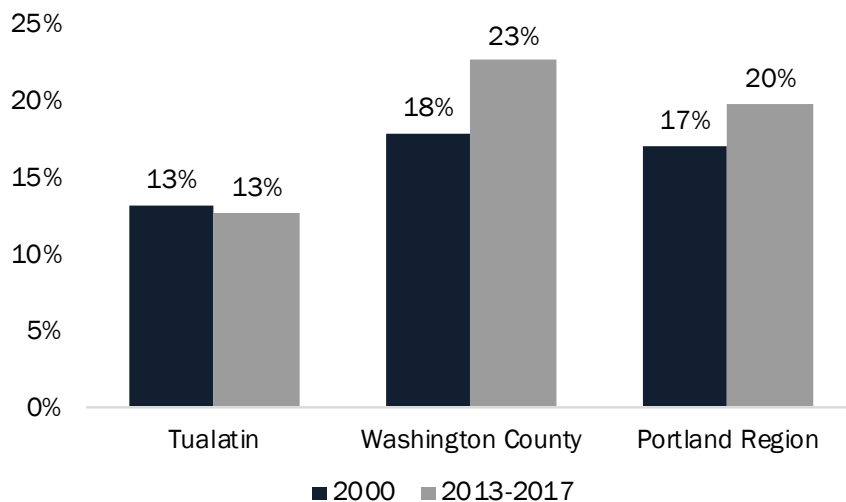


**The non-Caucasian population in Tualatin stayed the same (at 13%) between 2000 and 2013–2017.**

Tualatin is less racially diverse than Washington County and the Portland Region.

**Exhibit 43. Non-Caucasian Population as a Percent of the Total Population, Tualatin, Washington County, and Oregon, 2000 and 2013–2017**

Source: U.S. Census Bureau, 2000 Decennial Census Table P007, 2013–2017 ACS Table B02001.



## Labor Force Participation and Unemployment

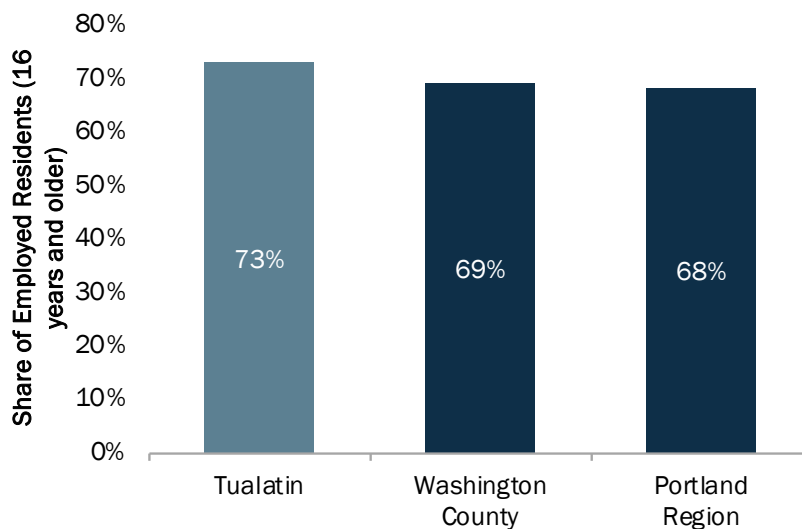
The current labor force participation rate is an important consideration in the availability of labor. The labor force in any market consists of the adult population (16 and over) who are working or actively seeking work. The labor force includes both the employed and unemployed. Children, retirees, students, and people who are not actively seeking work are not considered part of the labor force. According to the 2013–2017 American Community Survey, Washington County had more than 310,426 people in its labor force and Tualatin had 15,643 people in its labor force.

In 2017, the Oregon Office of Economic Analysis reported that 64% of job vacancies were difficult to fill. The most common reason for difficulty in filling jobs included a lack of applications (30% of employers' difficulties), lack of qualified candidates (17%), unfavorable working conditions (14%), a lack of soft skills (11%), and a lack of work experience (9%).<sup>80</sup> These statistics indicate a mismatch between the types of jobs that employers are demanding and the skills that potential employees can provide.

**Tualatin has a higher labor participation rate than Washington County and the Portland Region.**

**Exhibit 44. Labor Force Participation Rate, Tualatin, Washington County, Portland Region, 2013–2017**

Source: U.S. Census Bureau, American Community Survey 2013–2017 5-year estimates, Table B23001.

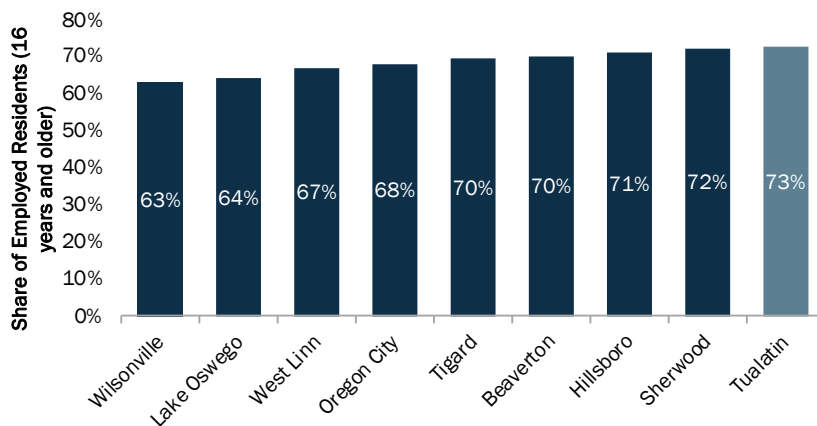


<sup>80</sup> Oregon's Current Workforce Gaps: Difficult-to-fill Job Openings, Oregon Job Vacancy Survey, Oregon Employment Department, June 2018.

Compared to neighboring cities, Tualatin has the highest labor force participation rate.

**Exhibit 45. Labor Force Participation Rate, Tualatin and comparison cities, 2013–2017**

Source: U.S. Census Bureau, American Community Survey 2013–2017 5-year estimates, Table B23001.

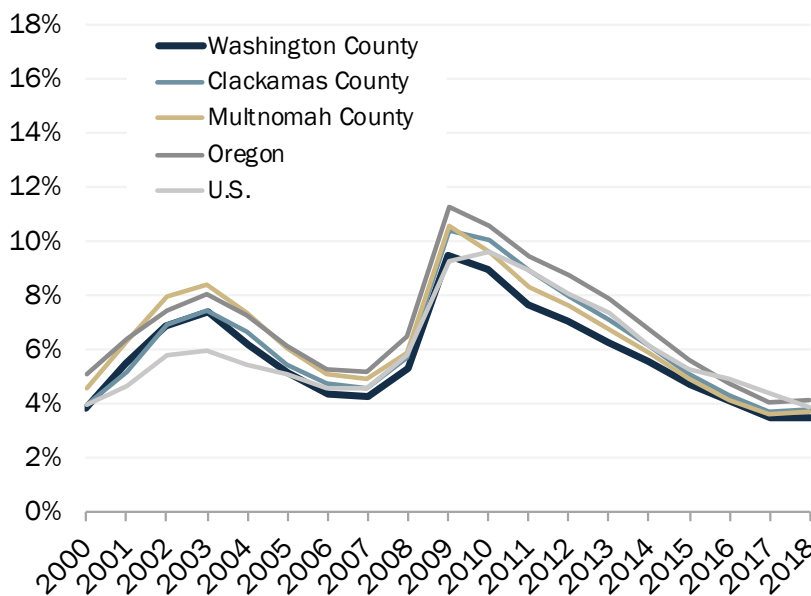


Alongside other counties in the Portland Region, Oregon, and the U.S., the unemployment rate in Washington County has declined since the Great Recession.

In general, Washington County’s unemployment rate is below that of other regions.

**Exhibit 46. Unemployment Rate, Washington County, Clackamas County, Multnomah County, Oregon, U.S., 2000–2018**

Source: Bureau of Labor Statistics, Local Area Unemployment Statistics and Labor Force Statistics.





## Commuting Patterns

Commuting plays an important role in Tualatin’s economy because employers in these areas are able to access workers living in cities across Washington County and the broader Portland Region.

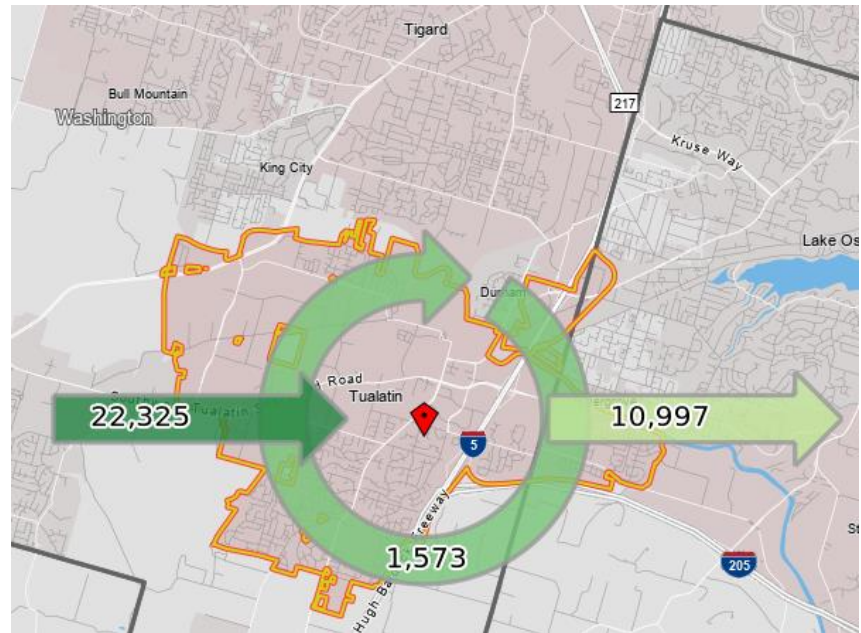
Exhibit 47 shows commuting flows of employees. Of the employees who work in Tualatin (about 23,898 persons), 93% commute into Tualatin from other areas. Of the employees who live in Tualatin (about 12,570 persons), 87% of people commute out of Tualatin to work in other areas.

### Tualatin is part of an interconnected regional economy.

More than 22,000 people commute into Tualatin for work, and nearly 11,000 people living in Tualatin commute out of the city for work.

### Exhibit 47. Commuting Flows, Tualatin, 2015

Source: U.S. Census Bureau, Census on the Map.



### About 7% of people who work at businesses located in Tualatin also live in Tualatin.

The remainder commute from Portland and other parts of the Region.

### Exhibit 48. Places Where Workers at Businesses in Tualatin Live, 2015

Source: U.S. Census Bureau, Census On the Map.



### About 27% of Tualatin residents work in Portland.

About 13% of Tualatin residents live and work in Tualatin.

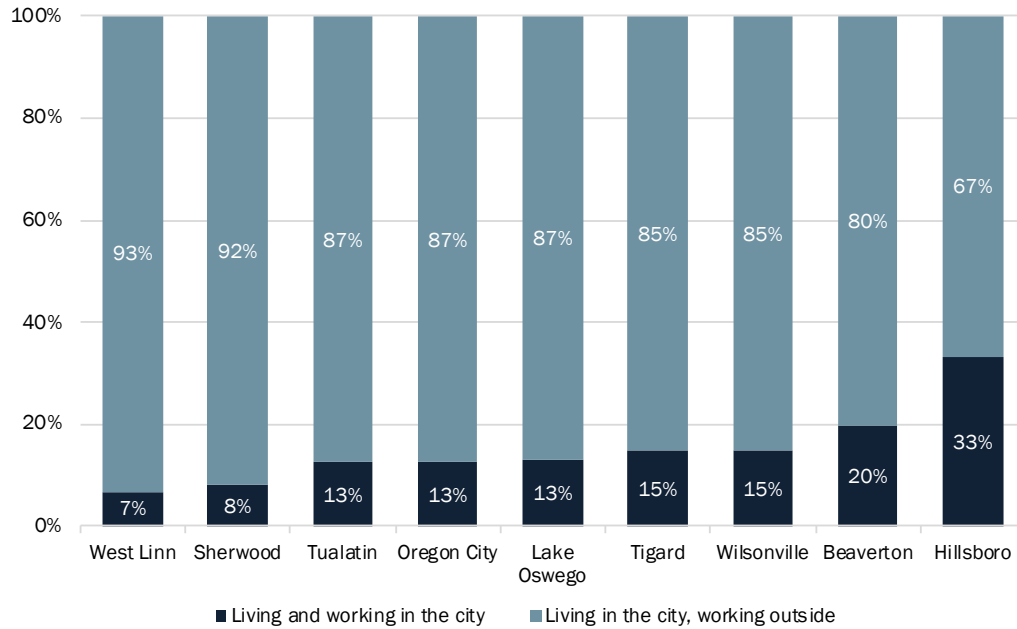
### Exhibit 49. Places Where Tualatin Residents were Employed, 2015

Source: U.S. Census Bureau, Census On the Map.



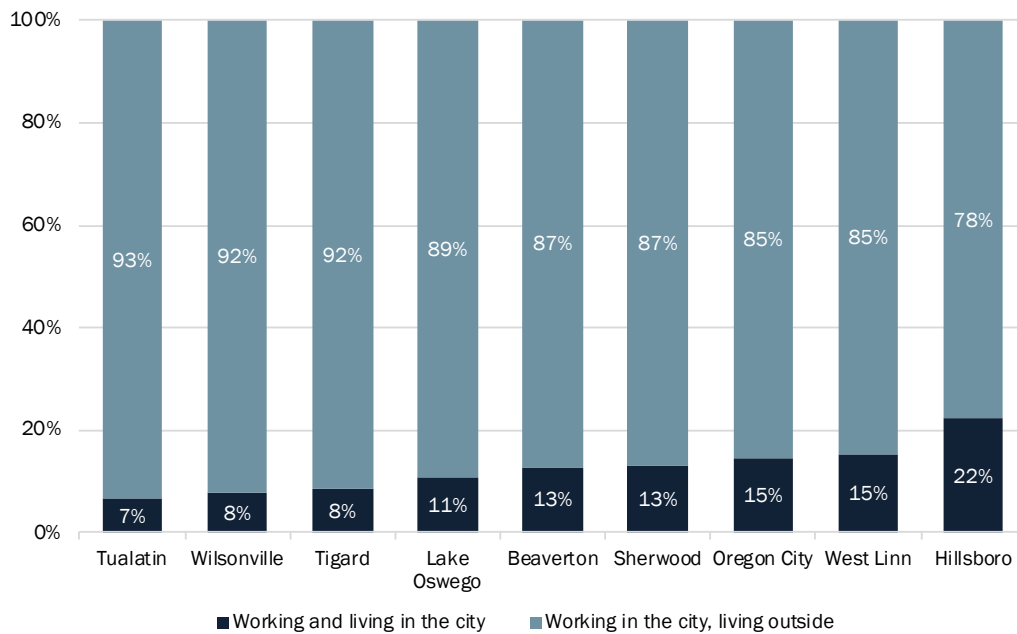
### Exhibit 50. Commuting Patterns of Employees Living in Respective Communities, Tualatin and Comparison Cities in the Portland Region, 2015

Source: U.S. Census Bureau, Census On the Map.



### Exhibit 51. Commuting Patterns of Employees Working in Respective Communities, Tualatin and Comparison Cities in the Portland Region, 2015

Source: U.S. Census Bureau, Census On the Map.

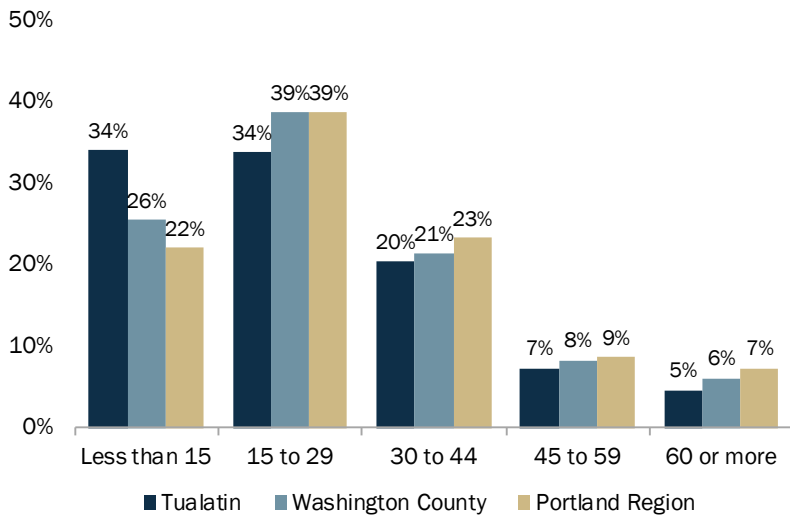


During the 2013–2017 period, about 34% of Tualatin residents had a commute of less than 15 minutes, compared to 26% of residents in Washington County and 22% of residents in the Portland Region.

**Most of Tualatin residents (68%) have a commute time that takes less than 30 minutes.**

**Exhibit 52. Commute Time by Place of Residence, Tualatin, Washington County, and Portland Region, 2013–2017**

Source: U.S. Census Bureau, 2013–2017 ACS 5-year estimate, Table B08303.



**Over the 2000 to 2013–2017 period, the share of workers that worked from home increased slightly.**

**Exhibit 53. Percent of Workers Working from Home, Tualatin, 2000 and 2013–2017**

Source: U.S. Census Bureau, 2000 Decennial Census Summary File 3 estimates, Table P030; 2013–2017 ACS 5-year estimate, Table B08303.

**2000: 4.6%**  
**2013–2017: 6.8%**

## Tourism in the Portland Region and Washington County

Longwoods International provides regional statistics on travel. The following information is from Longwoods International’s 2017 Regional Visitor Report for the Portland Region.<sup>81</sup> Broadly, travelers to the Portland Region accounted for:

- 10.9 million overnight trips in 2017, or 32% of all Oregon overnight travel that year.
- The primary market areas for travelers over 2016 and 2017 were Oregon, Washington, and California: 28% of the visitors to the Portland Region came from Oregon, 26% came from Washington, and 20% came from California.
- About 48% of visitors stayed two or fewer nights over 2016 and 2017 in the Portland Region, 37% stayed three to six nights, and 15% stayed 7 or more nights. The average nights spent in the Portland Region were four days.
- The average per person expenditures on overnight trips in 2017 ranged from \$16 on transportation at destination to \$66 per night on lodging.
- About 63% of visits to the Portland Region over 2016 and 2017 were via personally owned automobiles, 22% were by rental car, and 18% were via an online taxi service (such as Lyft or Uber).
- Over 2016 and 2017, visitors tended to be younger- or middle-aged adults, with the average age being about 43.7. Those aged 25 to 44 comprised 43% of overnight visits, 30% were between 45 and 64, and 14% were 65 or older. About 66% of visitors graduated college or completed a post-graduate education. Additionally, 35% of visitors earned less than \$50,000 in household income, 41% earned between \$50,000 and \$99,999, and 24% earned more than \$100,000. The average household income for Portland Region visitors was about \$70,440.

**Washington County’s direct travel spending increased 103% from 2000 to 2017.**

The Portland Region’s direct travel spending increased by 89% over the same period.

### Exhibit 54. Direct Travel Spending (\$ millions), 2000 and 2017

Source: Dean Runyan Associates, Oregon Travel Impacts, 1992–2017.

<b>2000:</b>	<b>\$2,700</b> Portland Region	<b>\$410</b> Washington County
<b>2017:</b>	<b>\$5,100</b> Portland Region	<b>\$833</b> Washington County

<sup>81</sup> Travel Oregon. “Portland Oregon Overnight Travel Study: 2017,” Longwoods International, October 2018. Retrieved from: <https://industry.traveloregon.com/wp-content/uploads/2018/10/OR-2017-Portland-Region-Visitor-Report.pdf>.

**Washington County's lodging tax receipts increased 243% over 2006 to 2017.**

**Exhibit 55. Lodging Tax Receipts (\$ millions), 2006 and 2017**  
Source: Dean Runyan Associates, Oregon Travel Impacts, 1992–2017.

<b>2006:</b>	<b>\$4,900</b> Washington County
<b>2017:</b>	<b>\$16,800</b> Washington County

**Washington County's largest visitor spending for purchased commodities is food services.**

**Exhibit 56. Largest Visitor Spending Categories (\$ millions), Washington County, 2018**  
Source: Dean Runyan Associates, Oregon Travel Impacts, 1992–2017.

<b>\$236.5</b> Food Services	<b>\$137.1</b> Accommodations	<b>\$105.1</b> Retail Sales
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**Washington County's largest employment generated by travel spending is in the accommodations and food services industry.**

**Exhibit 57. Largest Industry Employment Generated by Travel Spending, Washington County, 2018**  
Source: Dean Runyan Associates, Oregon Travel Impacts, 1992–2017.

<b>5,940 jobs</b> Accommodations and Food Services	<b>1,190 jobs</b> Arts, Entertainment, and Recreation	<b>290 jobs</b> Ground Tran.
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# Appendix B. Buildable Lands Inventory

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Oregon Administrative Rules provide guidance on conducting employment land BLIs:

## OAR 660-009-0005:

(1) *"Developed Land"* means non-vacant land that is likely to be redeveloped during the planning period.

(2) *"Development Constraints"* means factors that temporarily or permanently limit or prevent the use of land for economic development. Development constraints include, but are not limited to, wetlands, environmentally sensitive areas such as habitat, environmental contamination, slope, topography, infrastructure deficiencies, parcel fragmentation, or natural hazard areas.

(11) *"Site Characteristics"* means the attributes of a site necessary for a particular industrial or other employment use to operate. Site characteristics include, but are not limited to, a minimum acreage or site configuration including shape and topography, visibility, specific types or levels of public facilities, services or energy infrastructure, or proximity to a particular transportation or freight facility such as rail, marine ports and airports, multimodal freight or transshipment facilities, and major transportation routes.

(12) *"Suitable"* means serviceable land designated for industrial or other employment use that provides, or can be expected to provide the appropriate site characteristics for the proposed use.

(13) *"Total Land Supply"* means the supply of land estimated to be adequate to accommodate industrial and other employment uses for a 20-year planning period. Total land supply includes the short-term supply of land as well as the remaining supply of lands considered suitable and serviceable for the industrial or other employment uses identified in a comprehensive plan. Total land supply includes both vacant and developed land.

(14) *"Vacant Land"* means a lot or parcel:

(a) Equal to or larger than one half-acre not currently containing permanent buildings or improvements; or

(b) Equal to or larger than five acres where less than one half-acre is occupied by permanent buildings or improvements.

Unlike with residential lands, the rules for employment lands include the concept of "suitability," which can be affected by factors other than the physical attributes of land. (See OAR 660-009-0005 [11] and [12] above.) The BLI methods do not fully address the suitability factors, rather, they more narrowly assess whether a parcel is buildable based solely on attributes of the land.

The methods used for conducting the Tualatin commercial and industrial BLI is consistent with Oregon statutes. However, the methods used for inventorying land within the city are based on the BLI completed by Metro for the 2018 Urban Growth Report (UGR). Metro is required to complete a BLI for land within the regional UGB every six years, and the agency updated the BLI (based on 2016 data) in January 2018. The methods used for inventorying Tualatin lands attempt to be consistent with Metro’s results while also accounting for new development since 2016 and other local conditions, such as unique environmental constraints.

## Overview of the Methodology

The BLI for Tualatin is based on the data and methods used by Metro. In addition, ECONorthwest’s approach updated Metro’s results to account for new development (the Metro 2018 UGR is based on 2016 data) and other potential local conditions, such as unique environmental constraints.

### Study Area

The BLI for Tualatin includes all commercial and industrial land designated in the Comprehensive Plans within city limits and designated planning areas (referred to as Tualatin Planning Area). ECONorthwest used Metro’s BLI, which used the 2016 RLIS tax lot database, as the basis for the BLI. We worked with City staff to identify new developments or changes since 2016 to reflect Tualatin’s commercial and industrial land base in 2019.

### Inventory Steps

The BLI consisted of several steps:

1. Generating UGB “land base”
2. Classifying land by development status
3. Identifying constraints
4. Verifying inventory results
5. Tabulating and mapping results

### Step 1: Generate “Land Base”

Per Goal 9, this involves selecting all of the tax lots with employment plan designations. Based on information provided by City staff, ECONorthwest included the following Plan Designations in the BLI:

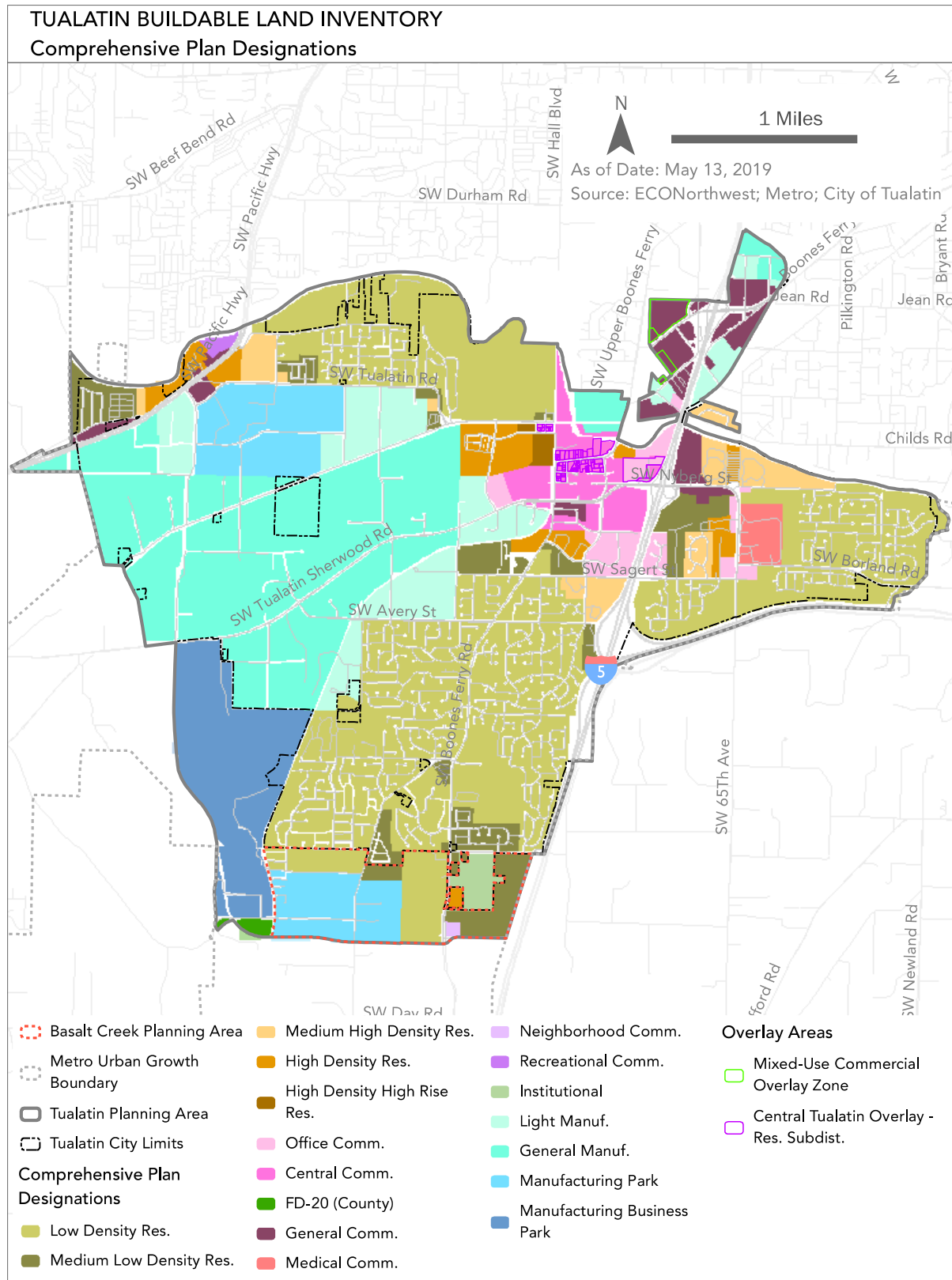
- Office Commercial
- Central Commercial
- General Commercial
- Medical Commercial
- Neighborhood Commercial
- Recreational Commercial

- Light Manufacturing
- General Manufacturing
- Manufacturing Park
- Manufacturing Business Park

Exhibit 58 shows Comprehensive Plan designations for the City of Tualatin.



**Exhibit 58. Comprehensive Plan Designations, Tualatin Planning Area, 2019**



## Step 2: Classify Lands

In this step, ECONorthwest classified each tax lot with a plan designation that allows employment uses into one of four mutually exclusive categories based on development status:

- Vacant
- Partially Vacant
- Potentially Redevelopable
- Public or Exempt
- Developed

ECONorthwest used the classification determined through Metro’s model: vacant, ignore, and developed. In addition, ECONorthwest included a new classification for partially vacant and potentially redevelopable lots. The definitions for each classification are listed below.

Development Status	Definition	Statutory Authority
Vacant	<p>Tax lots designated as vacant by Metro based on the following criteria:</p> <ol style="list-style-type: none"> <li>1) Fully vacant based on Metro aerial photo</li> <li>2) Tax lots with less than 2,000 square feet developed AND developed area is less than 10% of lot</li> <li>3) Lots 95% or more vacant from GIS vacant land inventory</li> </ol>	OAR 660-009-005(14)
Partially Vacant	Lots with an existing single-family dwelling but have been redesignated for commercial or industrial use (e.g., lots in the Basalt Creek Planning Area). These lots are assumed to redevelop in the planning period.	No statutory definition
Potentially Redevelopable	Lots determined to have redevelopment capacity based on Metro’s Threshold Price methodology.	No statutory definition
Ignore (Public or Exempt uses)	Lots in public or semi-public ownership are considered unavailable for commercial or industrial development. This includes lands in Federal, State, County, or City ownership, as well as lands owned by churches and other semi-public organizations and properties with conservation easements. These lands are identified using the Metro’s definitions and categories.	No statutory definition
Developed	Lots not classified as vacant, potentially redevelopable, or public/exempt are considered developed. Developed land includes lots with redevelopment capacity, which are also included in BLI. The capacity of developed but redevelopable lots is based on Metro’s estimates.	OAR 660-009-005(1)

### Step 3: Identify Constraints

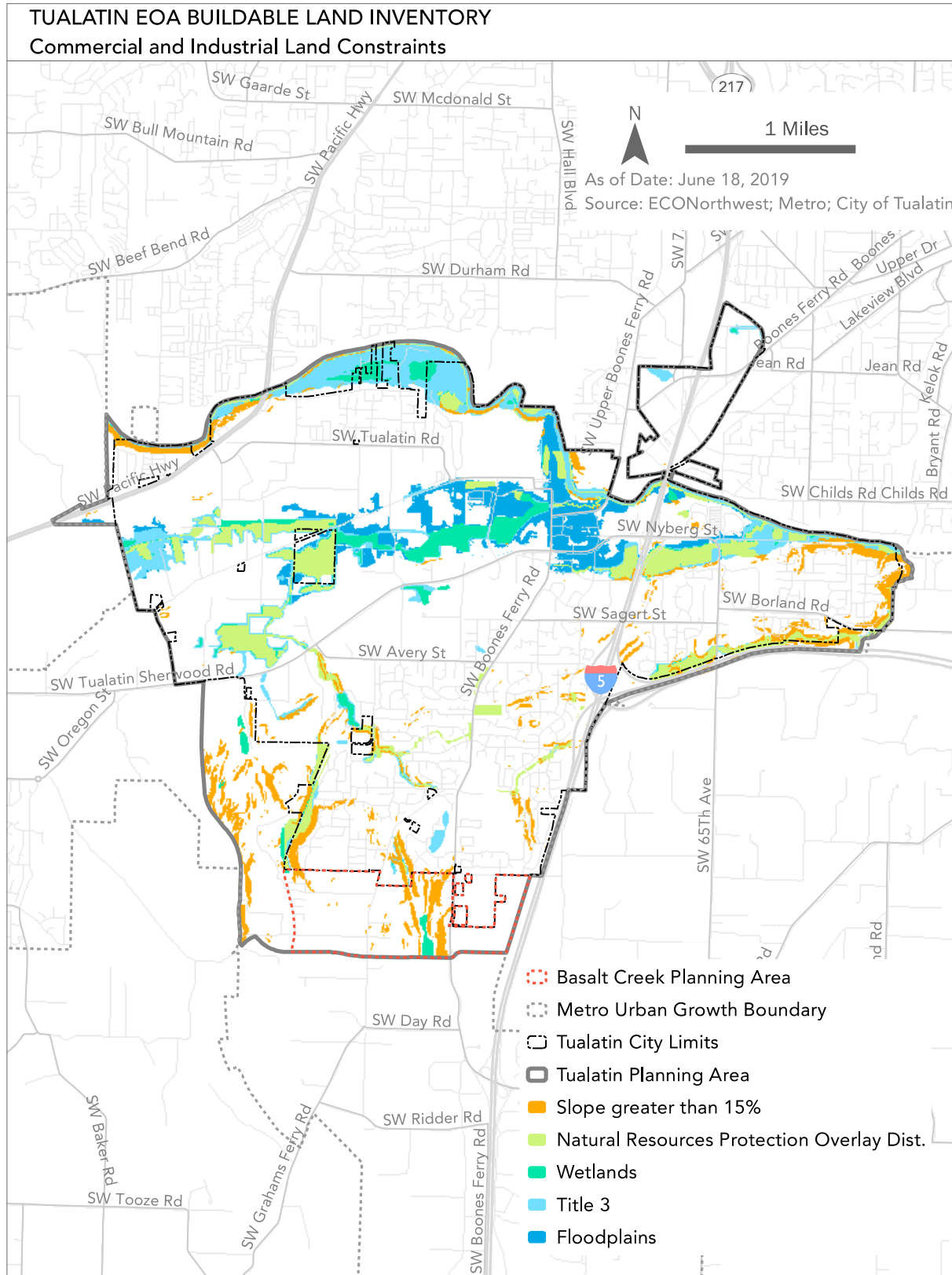
Consistent with OAR 660-008-0005(2) guidance on buildable lands inventories, ECONorthwest deducted certain lands with development constraints from vacant lands. We used some of the constraints established in Metro’s methodology with modifications to fit local considerations in Tualatin. These constraints are summarized in the table below.

Constraint	Statutory Authority	Threshold
<b>Goal 5 Natural Resource Constraints</b>		
Natural Resources Protection Overlay District	OAR 660-008-0005(2)	Areas in the NRPOD
Riparian Corridors	OAR 660-015-0000(5)	Areas protected by the Stream and Floodplain Plan
Wetlands	OAR 660-008-0005(2)	Areas in wetlands
<b>Natural Hazard Constraints</b>		
100-Year Floodplain	OAR 660-008-0005(2)	Lands within FEMA FIRM 100-year floodplain
Steep Slopes	OAR 660-008-0005(2)	Slopes greater than 15%

The lack of access to water, sewer, power, road or other key infrastructure cannot be considered a prohibitive constraint unless it is an extreme condition. This is because tax lots that are currently unserved could potentially become serviced over the 20-year planning period.

Exhibit 59 maps the development constraints used for the commercial and industrial BLI.

**Exhibit 59. Development Constraints, Tualatin Planning Area, 2019**



## Step 4: Verification

ECONorthwest used a multi-step verification process. The first verification step included a “rapid visual assessment” of land classifications using GIS and recent aerial photos. The rapid visual assessment involved reviewing classifications overlaid on recent aerial photographs to verify uses on the ground. ECONorthwest reviewed all tax lots included in the inventory using the rapid visual assessment methodology. The second round of verification involved City staff verifying the rapid visual assessment output. ECONorthwest amended the BLI based on City staff review and comments, particularly related to vacant land developed since 2016.

## Step 5: Tabulation and Mapping

The results are presented in tabular and map format. The Tualatin Commercial and Industrial BLI includes all employment land designated in the Comprehensive Plan within the Tualatin Planning Area. From a practical perspective, this means that ECONorthwest inventoried all lands within tax lots identified by Metro that fall within the Tualatin Planning Area. The inventory then builds from the tax lot-level database to estimates of buildable land by plan designation.

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Friday, March 31, 2023 8:45 AM  
**To:** alisa Bear  
**Cc:** Steve Koper  
**Subject:** RE: PMA 23-0001 Med to high density  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** alisa Bear <alisaabear@gmail.com>  
**Sent:** Friday, March 31, 2023 5:58 AM  
**To:** Madeleine Nelson <mnelson@tualatin.gov>  
**Subject:** PMA 23-0001 Med to high density

Hello,

I'd like to go on record that changing the med to high density apartment building is not a good idea.

Even without the new horrible development going in, the traffic is a nightmare. I can't go into Wilsonville or Tualatin after 4:00pm on most days due to traffic backup. Some nights the line of cars going towards I-5 ramp is past the high school.

The city has ruined Tualatin with this new development off Norwood. I've been a resident for 29 years and never expected this. Unfortunately Tualatin will no longer be my forever home.

Thanks, Alisa

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 8:54 AM  
**To:** Alma Palma  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Alma Palma <palmaalma172@gmail.com>  
**Sent:** Friday, April 7, 2023 8:17 PM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Alma Palma Douglass

18051 SW Lower Bones Ferry Road #144 Zip 97224

5419997260

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 9:25 AM  
**To:** Amy Elbers  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Amy Elbers <[amyelbers0727@gmail.com](mailto:amyelbers0727@gmail.com)>  
Sent: Sunday, April 9, 2023 9:05 PM  
To: Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Amy Elbers

14848 SW Scholls Ferry Rd Apt N104 Beaverton Oregon 97007

2087899426



Amy Elbers

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 10:25 AM  
**To:** Ana Bautista  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

---

**From:** Ana Bautista <ana.bautista7@yahoo.com>  
**Sent:** Wednesday, April 12, 2023 4:17 PM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments. As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. Horizon Community Church is a refuge in the midst of so much anxiety for so many families. I am certain it will be so for the potential additional families that this project would bring into our community.

The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.  
Please support and approve the Map and Text Amendments.

Thank you,

Ana Bautista

10658 SW McKinney St  
Tualatin, OR 97062

[\(503\) 989-8467](tel:(503)989-8467)

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 10:48 AM  
**To:** Andrew Malm  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Andrew Malm <[malm.andrew@gmail.com](mailto:malm.andrew@gmail.com)>  
Sent: Wednesday, April 12, 2023 4:57 PM  
To: Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Andrew Malm

22538 SW 96th Dr  
Tualatin OR 97062

971-727-9344

Sent from my iPhone

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 11:01 AM  
**To:** Bob Eittreim  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Bob Eittreim <bobeittreim1@gmail.com>  
**Sent:** Wednesday, April 12, 2023 8:41 PM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Type Your Name Here. Bob Eittreim

Type Your Address Here 11040 s w greenburg rd #310 tigar d oregon 97223

Type Your Phone Number Here 503 830 6251

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 9:10 AM  
**To:** Aleisha Pieri  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Aleisha Pieri <aleisharp@gmail.com>  
**Sent:** Saturday, April 8, 2023 9:07 AM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Brian and Aleisha Pieri

13885 SW Martingale Ct, Beaverton, OR 97008

503-646-8129

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 2:00 PM  
**To:** Tim N.; Chad Fribley; Mary Lyn Westenhaver; Marissa Katz; Julie Heironimus  
**Cc:** Steve Koper  
**Subject:** RE: Byrom CIO Executive Committee Statement: No on PTA23-0001 and PMA23-0001  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Afternoon,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Tim N. <timneary@gmail.com>  
**Sent:** Thursday, April 13, 2023 12:28 PM  
**To:** Frank Bubenik <fbubenik@tualatin.gov>; Maria Reyes <mreyes@tualatin.gov>; Christen Sacco <csacco@tualatin.gov>; Bridget Brooks <bbrooks@tualatin.gov>; Cyndy Hillier <chillier@tualatin.gov>; Octavio Gonzalez <ogonzalez@tualatin.gov>; Valerie Pratt <vpratt@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>; Sherilyn Lombos <slombos@tualatin.gov>; Steve Koper <skoper@tualatin.gov>; Kim McMillan <kmcmillan@tualatin.gov>; Megan George <mgeorge@tualatin.gov>; Madeleine Nelson <mnelson@tualatin.gov>  
**Cc:** Chad Fribley <kapaluapro@aol.com>; Mary Lyn Westenhaver <mwestenhaver@hotmail.com>; Marissa Katz <katzmari22@gmail.com>; Julie Heironimus <jujuheir@aol.com>  
**Subject:** Byrom CIO Executive Committee Statement: No on PTA23-0001 and PMA23-0001

Hello Planning Commission and City Council Members,

The leadership of the Byrom CIO met recently and discussed the proposed text and map amendments: PTA23-0001 and PMA23-0001. **The Executive Boards of the Byrom CIO agreed that these proposed text and map amendments are NOT in the best interests of the current and future residents of Tualatin, and therefore should not be recommended for approval.**

Reasons to not approve the proposed text and map amendments:

1. The rationale to remove the restriction on residential high rises and enable them to be built anywhere in Tualatin is rooted in a concern for lack of affordable housing. It is important to note that the proposed apartments have been described by the builder as "class A, luxury apartments." These are not low income or subsidized housing. Additionally, studies have recommended that the city of Tualatin should add about 1000 housing units by 2040. Based on current construction and approvals in the city, about 1200 units will already be added to housing inventory, well above the 2040 target. There is not a need to rush to build more housing units.
2. Traffic - South Boones Ferry Road already has significant development planned: light industrial development, the Autumn Sunrise housing development, and the Plambeck Gardens subsidized housing



community. Traffic studies complete to date have never examined the cumulative impact of all of the proposed development projects, and some of the studies that have been completed identify that Boones Ferry will fail, and already is failing to effectively manage traffic, especially during peak hours. Adding the 286 housing units specific to the Norwood high rise apartment project would only further worsen traffic. South Tualatin is heavily car dependent. There is inadequate public transit, and there are no stores, restaurants, or places of employment for miles, requiring all new and current residents to drive, creating a recipe for gridlock on Boones Ferry Road.

**3. Most significantly, the proposed text and map amendments do not meet Tualatin Development Code Approval Criteria, specifically the following items:**

*TDC 33.070 (5) (A) - Granting the amendment is in the public interest.* - As representatives of all of the Tualatin CIOs representing residents of the city, we identify that the proposed amendments are not in the public interest.

*TDC 33.070 (5) (B) - The public interest is best protected by granting the amendment at this time.* Given the approved and in development housing units that have yet to be occupied and that these units are well in excess of the anticipated need of the city by 2040, it is not critical or necessary to change the restriction on residential high rises at this time. Furthermore, public interest would be harmed by granting the amendments, as traffic will worsen on Boones Ferry, adversely impacting quality of life.

*TDC 33.070 (5) (C) - The proposed amendment is in conformity with the goals and policies of the Tualatin Comprehensive Plan.* The comprehensive plan does not call for building residential high rises outside of the downtown area, and the area for the proposed Norwood high rise is specifically left as undeveloped on the maps associated with the comprehensive plan. Per the Tualatin 2040 Comprehensive plan, high density residential/ high rise zone is specifically supposed to be in areas with the greatest access to amenities. The site at Norwood Rd has no access to amenities. See the description copied from the 2040 developmental plan.

*High-Density Residential/High-Rise Planning District (RH-HR)*

*This district supports a wide range of housing types at the greatest density of household living in areas with the greatest access to amenities.*



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Due to the above factors, the leadership of the Byrom CIO do not support the proposed text amendment and map amendments. Alternatively, CIO leadership would be happy to consult regarding other changes that could be more beneficial to current and future residents of Tualatin. CIO leadership would gladly participate in conversations regarding alternative development of the site at Norwood Road, particularly development options that minimally impact traffic and increase livability of the community.

Sincerely,

Tim Neary  
President, Byrom CIO

Julie Heironomous  
Vice President, Byrom CIO

Marylyn Westerhaver  
Member at Large, Byrom CIO

Chad Fribley  
Land Use Officer, Byrom CIO

Marissa Katz  
Treasurer, Byrom CIO

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, March 14, 2023 9:10 AM  
**To:** Carly J. Cais  
**Subject:** RE: No to PTA23-0001 and PMA23-0001 Applications

Good Morning,

Thank you for your email. Your comments have been received and will be added to the written record. The comments will also be shared with the applicant team.

Thanks,

**Madeleine Nelson**  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Carly J. Cais <carlyjcais@gmail.com>  
**Sent:** Monday, March 13, 2023 8:20 PM  
**To:** Madeleine Nelson <mnelson@tualatin.gov>  
**Cc:** Council <council@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>  
**Subject:** No to PTA23-0001 and PMA23-0001 Applications

Dear City of Tualatin, City Council, the Planning Department, and Ms. Nelson,  
I am a long-time resident of Tualatin (bought my house in 2008) and have paid property taxes faithfully every year despite increases, worked in Tualatin, shopped and spent money locally, and am very upset at the idea of rezoning the land behind my house into high-density high-rise and building apartment buildings right behind my neighborhood..

**This doesn't belong here in Tualatin.** I would not have bought here where I did had I known there would be such a callous disregard for our natural resources.

I heartily **oppose the partition and text amendment applications** because they open the door to decision after decision by the City culminating in the approval of the high-density high-rise literally right behind my fence.

You already have Autumn Sunrise and CPAH Plambeck Apartments. Can't you stop there?

We're not downtown Portland - this is a semi-rural suburban area that cannot support the traffic from even the influx of homes from Autumn Sunrise - let alone high-density residences on the corner. Traffic studies are out of date. **They don't take into account current traffic levels** in the surrounding areas, multiple feeder streets to this area and the crash data from there, and the lack of entry/exit to this small corner on SW Norwood Dr.

Please say NO to these applications.

Thank you,  
Carly

**Full name:** Carly Cais

**Address:** 9340 SW Stono Dr, Tualatin, OR 97062

**Tualatin Resident for:** 15 years

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 8:06 AM  
**To:** Christian Neighbor  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Christian Neighbor <[pray4u.christian@gmail.com](mailto:pray4u.christian@gmail.com)>  
Sent: Friday, April 7, 2023 4:03 PM  
To: Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Charles Redwing

13250 Eastborne  
Oregon City, OR 97045  
503-656-3400

Sent from my iPhone

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, February 21, 2023 10:29 AM  
**To:** Dan Unrein  
**Subject:** RE: Norwood Area Proposed Zone Change Comment

Good Morning,

Thank you for your email. Your comments have been received and will be added to the written record. The comments will also be shared with the applicant team.

A Notice of Decision shall be provided to any person who submits written comments. As a comment participant, you will receive a Notice of Decision when the decision is made – do you have a preferred mailing address you would like the notice sent?

Thanks,

**Madeleine Nelson**  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

---

**From:** Dan Unrein <dan@amstlc.com>  
**Sent:** Tuesday, February 21, 2023 9:07 AM  
**To:** Frank Bubenik <fbubenik@tualatin.gov>; Maria Reyes <mreyes@tualatin.gov>; Christen Sacco <csacco@tualatin.gov>; Bridget Brooks <bbrooks@tualatin.gov>; Cyndy Hillier <chillier@tualatin.gov>; Octavio Gonzalez <ogonzalez@tualatin.gov>; Valerie Pratt <vpratt@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>; Sherilyn Lombos <slombos@tualatin.gov>  
**Subject:** Norwood Area Proposed Zone Change Comment

Hello.

My name is Dan Unrein. I am a 30+ year resident / home owner on Frobase Road.

I have a Tualatin mailing address and Zipcode although the property is under Washington County jurisdiction.

Many years ago Washington County sent a notification to property owners with Frobase Road “connections” that the County was going to revert the road from a very badly in need of repair asphalt surface to a “gravel” surface.

One of my then neighbors took up the cause to prevent this reversion. (The dust from the traffic would have been outrageous!)

After quite a process my neighbor was able to get the County and the neighbors to agree on a “private” road improvement bond to pave Frobase Road with asphalt. This re-pavement project was funded by an assessment on each property on Frobase Road.

( I know the assessment calculation was quite involved – and I never knew if the properties on the south side of Frobase were accessed – they are in Clackamas County!)

Here is why Frobase Road residents need consideration in your Rezoning Decision.

Washington County would only make the road so wide!

There can be no center dividing line for two way traffic.

There can be no white reflective stripes on the outside edges to help with identifying the edges on the dark nights, especially with a heavy fog setting on the area. (Multiple personal thrills associated with this over the years!)

There can be no speed limit signs and no speed limit set.

Without any of the typical street aids, two way traffic on Frobase is and always has been an accident waiting to happen. It is a driver's choice about where the edge of the road is and how comfortable they are at "feeling" for the edge of the road.

The saying they "took their half out of the middle" applies way too often, especially with drivers just discovering the new found shortcut!

Frobase Road is strategically located for traffic to leave the congestion of Boones Ferry Road, SW 65<sup>th</sup>, Stafford Road via 205 exit and try another route – even if it only makes the driver feel better because they are moving! The congestion can be on both ends of Frobase Road.

Boones Ferry Road on one end and SW 65<sup>th</sup> on the other end on a Friday afternoon is a no win situation for all parties.

Thank you for your consideration.

Dan



## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 9:25 AM  
**To:** DANETTE HYLLAND  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

A Notice of Decision shall be provided to anyone submitting written comments. As a comment participant, you will receive a Notice of Decision when the decision is made – do you have a preferred mailing address you would like the notice sent?

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** DANETTE HYLLAND <danettehylland@gmail.com>  
**Sent:** Sunday, April 9, 2023 9:32 PM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Danette Ramirez

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 9:12 AM  
**To:** Danny O'NEAL  
**Cc:** Steve Koper  
**Subject:** RE: Public Hearing Input on PMA 23-0001 &PTA23-0001  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

---

**From:** Danny O'NEAL <dtcme99@comcast.net>  
**Sent:** Saturday, April 8, 2023 5:00 PM  
**To:** Madeleine Nelson <mnelson@tualatin.gov>  
**Subject:** Public Hearing Input on PMA 23-0001 &PTA23-0001

Dear Madeleine,

My personal information.

Danny and Joni O'Neal  
22625 SW 94th Terrace  
Tualatin, OR 97062  
503-692-0908

We live in the adjacent area that will be affected by this project,

We will provide bullet point comments rather than a long narrative.

We will be away from home when the meeting on May 22, 2023 is scheduled.

1. We've lived in Tualatin since July 1995 in the same home.
2. I attended the Byrom CIO meeting on February 28, 2023 expecting to hear Mayor Bubenik and Councilor Reyes comments on this project. Neither were in attendance as they were advised not to by the City legal counsel. I was disappointed that we couldn't hear directly from our cities leaders on this.
3. We've watched Tualatin grow and change, most was good. However the growth we've seen lately is counter to the reason We choose to live here. The traffic is beyond the capabilities of the roads and infer-structure. Just try and enter Boones Ferry from a side street in the morning

hours or afternoon around 4:00 pm. Not an easy task or even safe at times. Now we are faced with more homes on Boones Ferry Road and a high rise multi-family complex on Norwood. We both know that the increased population will put a strain on our already saturated community. We're very disappointed in our City Government's decision to approve these projects, sometimes it seems to be ignoring current zoning regulations and processes to accommodate the developers over the residents. We're not against increasing the availability of homes. We are against the rapid increase and heavy concentration in one area and high rise buildings. It doesn't need to happen all at once and in a already heavily populated area.

4. We loved all of the big beautiful trees that populated our city and Boones Ferry and Norwood Road. They are quickly disappearing at an alarming rate so that developers can build more while ignoring the concerns of Tualatin residents. Didn't we used to claim to be "America's Tree City"? Not true anymore!
5. We cringe now when we drive along Norwood Road at the complete destruction of all the senior trees and foliage. Their removal has ruined a landscape that can't and won't be replaced by the proposed addition of NEW trees and fauna.
6. We understand that there is perceived need for more apartment style residences in Tualatin. However Norwood Road is not the answer to this issue. High Rise apartments will not fit the surrounding home styles and community.
7. Traffic is already a daily problem and will be exacerbated by this project and the additional homes in the Sunrise Development. The recommendation of a traffic control light at Norwood and Boones Ferry will do nothing to reduce the additional traffic that comes with impending approval of these apartments.
8. Property owners will suffer in reduced values of their current homes along the Norwood Road corridor. That will be no fault of their own but the direct result of government decisions overriding the home owners input into this project.
9. The green-light given the project in the annexing approval for the property in question amounts to a forgone conclusion that the rezoning will follow suit.
10. The developer is a Atlanta based company with no ties or concerns about the affect this high rise will have on the neighborhood or the residents.
11. This property resides in the Sherwood School District and they have stated the district can accommodate the additional students. Memo from Jim Rose of Sherwood to Glen Southerland of AKS engineering.  
***How long before the new residents apply for exemption status to enroll their children in Tualatin High School and Byrom Elementary that are actually within walking distance of the new developments? We know we would. We believe that both schools are at capacity or near it.***
12. Vehicular access to this property will require additional egress points. The current recommendation does not meet the 600 foot spacing requirement and requires right of ways on current lots 101 and 102 to provide flow also to lot 109.
13. The removal of existing trees will be the next variance requested much like the Sunrise Development received to remove trees under the guise that they were not healthy.
14. The stated services and amenities by AKS makes several overstated availability. The most glaring is that Tualatin High School and Edward Byrom Elementary school are close by when in fact they received notification from the Sherwood School District that they could accommodate the additional students in their schools. The project is in their district. Also basing park availability on a park that hasn't been properly approved or designed yet.
15. Our concerns are in step with other neighborhood residents in regards to traffic and building heights. The traffic study stated that the traffic light at Norwood and Boones Ferry is required without the apartment project in consideration. So then it adds no real benefit to the additional vehicles associated with this project. As usual developers lay the responsibility for traffic improvements on the city and it will always lag behind the growth experienced with new homes and apartments. The proposed height of 4 stories of 50 feet will still limit the visibility of those residents in homes on the Norwood Road elevation.
16. We completely disagree with this statement by AKS "The proposed code height limitation would reduce the visual impacts of the future site improvements on the surrounding area. Along with the

transportation improvements, the proposed plan map and text amendments consciously consider the characteristics of this and other areas of the City, and this criterion is met." Question: Do any of these people believe that this would be acceptable in their own communities? We don't expect a response would be forth coming.

With the comments we've provided we're completely against the rezoning approval that would give this development the authorization to proceed with the project that would have a negative impact on the city and my community.

Thanks for the opportunity to provide or opinions and comments in this all important process.

Danny and Joni O'Neal  
MCPO, USN Retired  
[dtcme99@comcast.net](mailto:dtcme99@comcast.net)

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 11:33 AM  
**To:** Darilyn Houfmuse  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Darilyn Houfmuse <[queenmommad@icloud.com](mailto:queenmommad@icloud.com)>  
Sent: Thursday, April 13, 2023 10:31 AM  
To: Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Darilyn Berray

10960 sw Wilsonville rd #60  
Wilsonville, OR 97070

(206)673-7836

Sent from my iPhone

## Madeleine Nelson

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**From:** Madeleine Nelson  
**Sent:** Wednesday, March 22, 2023 8:17 AM  
**To:** DAVID TULLY  
**Cc:** Steve Koper  
**Subject:** RE: No to PTA23-0001 and PMA23-0001 Applications  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to Council at the public hearing. The public hearing will be held on May 22, 2023, attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: DAVID TULLY <davidallentully@hotmail.com>  
Sent: Tuesday, March 21, 2023 4:49 PM  
To: Madeleine Nelson <mnelson@tualatin.gov>  
Cc: Council <council@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>  
Subject: No to PTA23-0001 and PMA23-0001 Applications

I am opposed to the applications and what they stand to do to our neighborhood and city. These applications will first of all make my neighborhood and Norwood road worse off then it will be after the homes of Autumn Springs get built and residences are filled. This alone will cause us all huge traffic congestion and issues since no traffic studies were done to comprehend the impact of such a large amount of housing being placed on this two lane Road.

The thought of high rises being placed not only along Norwood Road but also anywhere in our great city sickens me. Is this a developers community or are we a community made up of People that have been in this city and contributed to this city?

We are a community of people that are willing to work together to help make growth decisions for our community that are smart and reasonable.

Not because the church has some financial incentive to sell off property to a developer that can make the money and turn the city council to change its current policies and not represent the people that voted them in the position they have been elected to.

If this were to pass my 16 years in this community will end and I and my family will have no choice but to leave this community we love. I'm certain I am not alone.

I ask that you all really consider these applications very carefully and consider not only what they will do immediately, but the future of Tualatin as we know it.

I have heard a rumor that this council has never seen application that they never liked.

Let's START with these TWO!!

Let's say NO to these applications!

Sincerely  
Dave Tully  
8994 SW Stono Dr.



## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 8:34 AM  
**To:** David M Conlee  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

---

**From:** David M Conlee <disneydc1@yahoo.com>  
**Sent:** Friday, April 7, 2023 4:49 PM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

David Comlee  
13097 SW Jacob Court  
Tigard, OR 97224  
503.869.5970

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 8:21 AM  
**To:** David Ransdell  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

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### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** David Ransdell <randsdell@gmail.com>  
**Sent:** Wednesday, April 12, 2023 4:10 PM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

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Please support and approve the Map and Text Amendments.

Thank you,

David Ransdell

3791 SW Halcyon Rd  
Tualatin, OR 97062

503/799-1745

## Madeleine Nelson

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**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 10:38 AM  
**To:** Deanna Cain  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

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Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Deanna Cain <[dkiana@yahoo.com](mailto:dkiana@yahoo.com)>  
Sent: Wednesday, April 12, 2023 4:29 PM  
To: Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

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Please support and approve the Map and Text Amendments.

Thank you,

Deanna Cain

21254 SW Teton Ave  
Tualatin, OR 97062

503-913-5854

Sent from my iPhone

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 8:35 AM  
**To:** Denny Ghim  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

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Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Denny Ghim <dennyghim@gmail.com>  
Sent: Friday, April 7, 2023 4:53 PM  
To: Ext - Planning <Planning@tualatin.gov>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

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Please support and approve the Map and Text Amendments.

Thank you,

Type Your Name Here

Type Your Address Here

Type Your Phone Number Here

Denny Ghim

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 10:59 AM  
**To:** Denny Ghim  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

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Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Denny Ghim <dennyghim@gmail.com>  
Sent: Wednesday, April 12, 2023 5:06 PM  
To: Ext - Planning <Planning@tualatin.gov>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

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Please support and approve the Map and Text Amendments.

Thank you,

Type Your Name Here

Type Your Address Here

Type Your Phone Number Here

Denny Ghim



## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 9:26 AM  
**To:** Diana Fitts  
**Cc:** Steve Koper  
**Subject:** RE: Norwood for Smart Zoning - Please Consider the Needs of Your Residents!  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

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### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Diana Fitts <dianacfitts@gmail.com>  
**Sent:** Monday, April 10, 2023 7:07 AM  
**To:** Frank Bubenik <fbubenik@tualatin.gov>; Maria Reyes <mreyes@tualatin.gov>; Christen Sacco <csacco@tualatin.gov>; Bridget Brooks <bbrooks@tualatin.gov>; Cyndy Hillier <chillier@tualatin.gov>; Octavio Gonzalez <ogonzalez@tualatin.gov>; Valerie Pratt <vpratt@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>; Sherilyn Lombos <slombos@tualatin.gov>  
**Subject:** Norwood for Smart Zoning - Please Consider the Needs of Your Residents!

Dear Tualatin Planning Department Members, City Council Members, and Mayor Frank Bubenik;

I am writing regarding the following Text Amendment and annexation of Washington County to modify Tax Lot 106, and Tax lot 108 and further areas of incorporation of Washington county zoned FD-20 from RL and RML zoning to the proposed RH-HR zone. As a resident of Tualatin, and speaking on the behalf of my neighbors, we have considerable concerns with this proposed zoning change, especially when there are other alternative options available downtown Tualatin. The current area and local infrastructure in general does not conform to this level of zoning especially with the new development of approximately 500 new homes and condos within proximity.

The three areas of concern are traffic, removal of local institutional zoned areas for future development, and the lack of use of existing RH-HR zoned areas in Tualatin near the Westside transit station on SW Boones Ferry Rd, properties 8412, 8514, and 8538. Overall, these properties are better suited for this type of zoning with local transit, grocery stores, government facilities, retail, and similar residential development, which could also serve the Basalt Creek master plan more locally.

Issue one regarding traffic;

SW Boones Ferry Road is already considerably congested from Tualatin city limits to the corner of Norwood and SW Boones Ferry Rd. Though this new development plans to introduce a stoplight at the intersection of Norwood and Boones Ferry, this will not mitigate the merging traffic from I-5 that backs up all the way to this intersection during rush hour. Travel time is up to 20 min to drive 1.7 miles according to Google maps and personal experience. With the addition of RH-HR zones, this only compounds the issue and does not alleviate the lack of traffic planning between the border of Tualatin city limits and Wilsonville, not to mention the development plan for the Basalt Creek Employment Center and its impact to SW Boones Ferry arterials to I-5.

Issue two regarding institutional infrastructure;

The Tualatin public school system is already dealing with classrooms at close to capacity. With the addition of current development and the proposed RH-HR zone change, this development will most likely be districted to Edward Byrom if the Sherwood school district does not agree to districting this area once residential developments are built. Based on current enrolled rates and children coming back to traditional classroom learning since the peak of COVID, the influx of new students will strain our educational institution without any additional planned expansion in this vicinity. In addition, with the RH-HR proposed zone change, the city would be removing an institutional zone without relocating or considering other areas in Tualatin for replacement or having a plan shown in the Basalt Creek development for an additional institutional zone.

Issue three regarding existing RH-HR zones;

As stated, properties 8412, 8514, and 8538 of 18 acres near the Westside transit station are already zoned RH-HR and is a prime location for this type of development. There is a completely vacant retail space where Hagen's grocery store was, existing retail, grocery stores and easily accessible public transportation. Seeing how fast the new development off of I-5 is progressing, it would be most appropriate to develop the downtown area that is currently zoned RH-HR than to add an additional RH-HR zone in the middle of RL and RML areas on the outer south edge of Tualatin. With the Westside rail transit, a station can be built at the Basalt Creek Employment Center giving access to a downtown high rise. Utilizing WES commuter rail would also not directly impact vehicular traffic, besides crossings, and utilize existing taxpayer public transit more efficiently. Also adding another RH-HR zone near the center of the Basalt Creek employment center would assist with commuting and provide a local housing center for the anticipated 2000 jobs that will be created with the Basalt Creek development plan. This also complies with the Southwest and Basalt Creek Development Area Plan Policies and Ordinances.

**POLICY 3.1.1 DENSITY.** Maintain a citywide residential density of at least eight (8) dwelling units per net acre.

**POLICY 3.1.2 ZONING FOR MULTIFAMILY.** Provide zoning for multifamily development, which may be located in areas adjacent to transit.

**POLICY 3.1.3 COMMERCIAL ACTIVITY.** Allow home based businesses and occupations in all residential zones, subject to regulations to minimize impact to housing supply and uses in commercial and industrial zones. Provide for compatible agricultural uses in areas where significant development barriers are present, or where compatible with permitted residential uses. 29 | Southwest and Basalt Creek Development Area Plan

**POLICY 3.1.4 CLEAR AND OBJECTIVE REVIEW.** Provide for clear and objective review standards for all residential development and redevelopment.

**POLICY 3.1.5 FUNCTIONAL PLANNING.** Consider the development-ready residential land supply as part of

ongoing functional planning efforts to provide necessary urban services in support of residential development.

**POLICY 3.1.6 INFRASTRUCTURE PLANNING.** Evaluate future infrastructure planning for consistency with the Housing Needs Analysis and Housing Strategies

I, and fellow residents of the Tualatin community, appreciate the open ear regarding the proposed Text Amendment change. I also understand the sentiment and initiative of providing lower income housing throughout Tualatin. However, based on the provided concerns and examples, the location near Norwood Rd does not fit these requirements and will strain our available infrastructure. As the applicant applies for this zoning alteration, I and fellow residents strongly urge the Tualatin Planning division to not approve the Text Amendment change and keep the existing zoning areas intact, which similarly match the surrounding RL and RML zones, and better utilize existing planned RH-HR zones within downtown Tualatin. City Council members and Mayor, I also encourage you to think of our city holistically with the entire community in mind.

See the exhibits Norwood for Smart Zoning has sent to the city in previous emails regarding these issues.

Sincerely,  
Diana Fitts

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 10:24 AM  
**To:** Diana  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Diana <[dianahoober@gmail.com](mailto:dianahoober@gmail.com)>  
Sent: Wednesday, April 12, 2023 4:11 PM  
To: Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Diana Hooper

14383 SW McFarland Blvd

Tigard, Or 97224

9718321602

Dianahooper@gmail.com  
Yorkiesofbullmountain.com

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 8:22 AM  
**To:** (null) donmershon  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: (null) donmershon <[donmershon@frontier.com](mailto:donmershon@frontier.com)>  
Sent: Friday, April 7, 2023 4:24 PM  
To: Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Don Mershon

23683 Sw Red Fern Drive Sherwood, Or 97140

503-476-7685

Sent from my iPhone

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 11:01 AM  
**To:** Erica Shafer  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Erica Shafer <[shafer00@gmail.com](mailto:shafer00@gmail.com)>  
Sent: Wednesday, April 12, 2023 7:57 PM  
To: Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Erica Shafer

17555 SW Fulton Dr  
Tualatin



503-317-5289

Sent from my iPhone

## Madeleine Nelson

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**From:** Madeleine Nelson  
**Sent:** Wednesday, March 15, 2023 1:59 PM  
**To:** Fletcher Johnson  
**Cc:** Steve Koper  
**Subject:** RE: I say NO to PTA23-0001 and PMA23-0001 Applications

Good Afternoon,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to Council at the public hearing. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Fletcher Johnson <fletcherjohnson2@gmail.com>  
**Sent:** Wednesday, March 15, 2023 12:30 PM  
**To:** Madeleine Nelson <mnelson@tualatin.gov>  
**Cc:** Council <council@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>  
**Subject:** I say NO to PTA23-0001 and PMA23-0001 Applications

Good Afternoon,

I would like to add my voice to those saying:

### **High Rises BELONG in Tualatin Central Urban Renewal District ONLY.**

High density high rise dwellings are limited to the core of Tualatin for good reason:

- Amenities within walking distance
- Shops and City services
- Mass transit
- Supporting City infrastructure
- Architecture that blends with existing urban environment
- Lighter dedicated parking requirements
- Livability and accessibility within a car-dependent suburb

They make NO SENSE anywhere else in Tualatin, especially on the edge of practically farmland and ON TOP OF ~600 units already approved for construction.

Let's not just make a decision because a developer wants us to. Let's be smart about our future, the future of our kids in the school district, the future of our safety, and the future of our community.

Thank you for time, consideration, and for your forthcoming vote of NO on this matter.

--

Fletcher C. Johnson

Portland, Oregon

C: 503-830-4621

E: [Fletcherjohnson2@gmail.com](mailto:Fletcherjohnson2@gmail.com)

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 10:49 AM  
**To:** Gabriella Levasa  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Gabriella Levasa <gabriella.levasa@gmail.com>  
**Sent:** Wednesday, April 12, 2023 5:06 PM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission, As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments. As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too. I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes. Please support and approve the Map and Text Amendments. Thank you,  
Gabriella Levasa ,( 503) 939-0765 10695 Sw Meier Dr, Tualatin, OR 97062

City Of Tualatin  
Planning Division

March 24, 2023

Subject: Notice Of Public Hearing, Case File PMA 23-0001 & PTA 23-0001  
Norwood Multi Family

Attn: Madeleine Nelson

Upon receipt of the Notice I have given considerable thought to the proposed project. Probably not a good idea as I'm looking out my window at the current project on Norwood including the removal of the forest entirely, the construction on Norwood itself leaving temporary asphalt patches rough and messy.

I can't imagine the amount of traffic this project is going to add to Norwood and surrounding neighborhood streets and collectors. I'm guessing increasing the need for traffic signals and other traffic control. If that's the case I hope it's a requirement for the contractor to pay for those future traffic control projects. And that's just for the project under construction.

The proposed multi level multi family project will only add to the existing traffic and infrastructure problems. Considering this project again in my opinion is self serving and not in the best interest of neighboring residents. I'm guessing you won't receive any favorable comments from all those you sent notice. Most probably will just discard the information thinking it won't matter what they write or they'll say you are going to do what you want anyway. Have seen it before and certain will again.

I am not in favor of this project and request the City Of Tualatin reject the proposal.

---

Gary Harrison  
8976 SW Stono Drive

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## Madeleine Nelson

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**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 10:37 AM  
**To:** GIGI STEDMAN  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** GIGI STEDMAN <gggstedman@gmail.com>  
**Sent:** Wednesday, April 12, 2023 4:21 PM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Gigi & George Stedman

15475 SW Royalty Pkwy, King City, OR 97224

503-729-5435

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 8:20 AM  
**To:** Glenn Lancaster  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Glenn Lancaster <gmtl1958@gmail.com>  
**Sent:** Wednesday, April 12, 2023 4:09 PM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a former resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Glenn Lancaster

31098 SW Country View Ln, Wilsonville, OR 97070

503.709.7511

## Madeleine Nelson

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**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 9:39 AM  
**To:** heather&kobly kabli  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: heather&kobly kabli <kablifamily@yahoo.com>  
Sent: Monday, April 10, 2023 6:47 PM  
To: Ext - Planning <Planning@tualatin.gov>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Heather Kabli  
7293 SW Delaware Circle  
Tualatin OR 97062

503-718-1206



Sent from my iPhone (Heather Kabli)

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 8:24 AM  
**To:** 'HOLLY Schweitz'  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** HOLLY Schweitz <schweitz\_5@msn.com>  
**Sent:** Friday, April 7, 2023 4:35 PM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Holly Schweitz

6910 SW Pine St. Tigard, 97223

503-502-3421

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, March 14, 2023 9:50 AM  
**To:** jackiemathys@gmail.com  
**Subject:** RE: No to PTA23-0001 and PMA23-0001 Applications

Good Morning Jackie,

Thank you for your email. Your comments have been received and will be added to the written record. The comments will also be shared with the applicant team.

Thanks,

**Madeleine Nelson**  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Jackie Mathys <jackiemathys@gmail.com>  
**Sent:** Tuesday, March 14, 2023 8:50 AM  
**To:** Madeleine Nelson <mnelson@tualatin.gov>  
**Cc:** Council <council@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>  
**Subject:** No to PTA23-0001 and PMA23-0001 Applications

Dear Madeleine,

As a property owner in Tualatin, I am writing to say NO to the PTA23-0001 and PMA23-0001 Applications.

We have had unprecedented development of building new homes to alleviate the housing crisis here in our City, with almost 1,000 new units underway already in the past 2 years.

This meets 92% of Tualatin's 30-year growth plan.

92% of a 30 year plan - met already!

We also are already in compliance with the 2022 Oregon Housing Needs Analysis - which is what this developer is trying to use to push this code change.

I say NO to development that can't be supported by existing City infrastructure.

I say NO to development that opens the floodgates to high-rises everywhere and anywhere.

I say NO to development that hands our City over to developers to build what they want.

Keep high rises to the core of Tualatin - which has infrastructure, amenities, and provides the necessary quality of life for apartment/condo living.

Sincerely,

Jackie Mathys

24305 SW Boones Ferry Rd.  
Tualatin, OR 97062

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 3:22 PM  
**To:** Jackie Mathys  
**Cc:** Steve Koper  
**Subject:** RE: Addressing Tualatin Zoning Changes: Traffic, Schools, and Alternative Options  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Afternoon,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Jackie Mathys <jackiemathys@gmail.com>  
**Sent:** Thursday, April 13, 2023 2:50 PM  
**To:** Madeleine Nelson <mnelson@tualatin.gov>  
**Cc:** Council <council@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>  
**Subject:** Addressing Tualatin Zoning Changes: Traffic, Schools, and Alternative Options

Dear Tualatin Decision Makers,

I've written before but writing again. As a Tualatin resident and rental property owner, I'm writing on behalf of my neighbors and myself to express our concerns about the proposed zoning changes involving Tax Lots 106 and 108. We believe there are more suitable alternatives available in downtown Tualatin that would minimize the negative impact on our community.

Here are our main concerns:

**Traffic congestion:** The area around SW Boones Ferry Road already experiences significant traffic. Increasing housing density in this area would exacerbate the problem, affecting the quality of life for Tualatin

residents. Although the proposed stoplight at Norwood and Boones Ferry would help, it may not be enough to mitigate the added traffic.

**School capacity and public facilities:** Our schools are nearing capacity, and further residential development will put a strain on the education system. Additionally, the proposed zoning change would eliminate a space designated for public institutions without providing a suitable alternative location.

**Utilizing vacant spaces downtown:** There are already properties zoned for high-density residential development near the Westside transit station (8412, 8514, and 8538). These locations are conveniently located near transit, retail, and other amenities, making them a more appropriate choice for new housing.

We appreciate your commitment to the well-being of the Tualatin community and hope you will consider these concerns when making decisions regarding the proposed zoning changes. We believe that focusing development efforts on existing high-density zones in downtown Tualatin would better serve our community.

Thank you for your attention to this matter.

Sincerely,

Jackie Mathys  
24305 SW Boones Ferry Rd., Tualatin, OR 97062  
M: 503-781-2872  
[jackiemathys@gmail.com](mailto:jackiemathys@gmail.com)

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 10:37 AM  
**To:** Janet Johnson  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Janet Johnson <[janetjohnson2011@gmail.com](mailto:janetjohnson2011@gmail.com)>  
Sent: Wednesday, April 12, 2023 4:21 PM  
To: Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Janet Johnson  
15578 Southwest Gardner Court  
Tigard, OR 97224

503-544-2545





## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 9:27 AM  
**To:** Jared  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Jared <jwcarkin@gmail.com>  
**Sent:** Monday, April 10, 2023 9:40 AM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

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Please support and approve the Map and Text Amendments.

Thank you,

Jared W. Carkin  
28107 SW Heater Rd, Sherwood, OR 97140  
503.209.6048

## Madeleine Nelson

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**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 8:56 AM  
**To:** Jimbo  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Jimbo <[mtns4jb@aol.com](mailto:mtns4jb@aol.com)>  
Sent: Friday, April 7, 2023 10:28 PM  
To: Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Jim Brauch  
23612 S.W. Middleton Rd.  
Sherwood, OR 97140

512- 406-1741

Regards,

Jim Brauch

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 9:10 AM  
**To:** Jim Munson  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

---

**From:** Jim Munson <munsonhighlander@outlook.com>  
**Sent:** Saturday, April 8, 2023 7:35 AM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Jim Munson

10600 SW Kiowa St., Tualatin, OR 97062

(503) 314-9998

Sent from my T-Mobile 4G LTE Device

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, February 28, 2023 2:26 PM  
**To:** Joel Augee  
**Subject:** RE: No High-Rise on Norwood Rd

Good Afternoon,

Thank you for your email. Your testimony last night is on the record for the annexation application. I will also have your comments submitted today added to the written record and case files for the Plan Map and Text amendment applications.

Thanks,

### Madeleine Nelson

Assistant Planner

City of Tualatin | Planning Division

503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Joel Augee <joelaugee@gmail.com>

**Sent:** Tuesday, February 28, 2023 9:35 AM

**To:** Sherilyn Lombos <slombos@tualatin.gov>; Betsy Ruef <bruef@tualatin.gov>; Megan George <mgeorge@tualatin.gov>; Frank Bubenik <fbubenik@tualatin.gov>; Teresa Ridgley <tridgley@tualatin.gov>; Christen Sacco <csacco@tualatin.gov>; Maria Reyes <mreyes@tualatin.gov>; Cyndy Hillier <chillier@tualatin.gov>; Valerie Pratt <vpratt@tualatin.gov>; Erin Engman <eengman@tualatin.gov>; Keith Leonard <kleonard@tualatin.gov>; Cody Field <cfield@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>; Bridget Brooks <bbrooks@tualatin.gov>; Nancy Grimes <ngrimes@tualatin.gov>; Steve Koper <skoper@tualatin.gov>; Holly Goodman <holly@tualatinlife.com>; Council <council@tualatin.gov>; Octavio Gonzalez <ogonzalez@tualatin.gov>

**Subject:** Re: No High-Rise on Norwood Rd

Dear Tualatin Planning Department Members, Planning Commission, City Council Members, and Mayor Frank Bubenik,

Thank you for your time and attentive listening at yesterday's hearing, and your thoughtful comments before the vote. Please know these were much appreciated.

In case you find it useful, below is the transcript from my 3 minute presentation laying the groundwork for our primary objections to the zone change application (FYI, I pulled the complete application from the City's website). I understood you had no choice but to approve the annexation. As we all know, the zone change application, is a much different matter, and with that in mind, I wanted to raise these key points sooner rather than later, so that you all have the time to digest them.

Rest assured, there are even more detailed reasons to reject the applicant's zone change (using the code criteria), but the 3 minute limit prevented me from getting into those details last night. Please know that we will share with you a full rebuttal of the application in the days and weeks to come.

Thank you for your service and all you do. Transcript is below.

Joel Augee  
Tualatin resident since 1998  
8905 SW Iowa Drive

## TRANSCRIPT

My name is Joel Augee. I live at 8905 SW Iowa Drive. I am here to speak out specifically against the applicant's annexation vis-à-vis its map and text amendment to change the zoning to High Density High Rise.

First, I want to say that I imagine how difficult it must seem, to be in your position. There is a lot being written and said about this proposed development. At the end of the day, though, the decision really isn't difficult. And here is why.

First, let's dispel a myth. The first myth is that we neighbors here are NIMBYS. But is that really the case? After Autumn Sunrise was approved, with nary an objection, and the same with Plambeck Gardens, the result is that we neighbors trusted the City and did not object to these developments. These two developments will result in over 500 housing units (in our back yards), which is over 50% of the City's entire housing needs for the next 20 years, per your own 2019 housing analysis. How in the world does that make us NIMBYS? It doesn't.

Second, let's understand why we neighbors no longer blindly trust the City to "do the right thing" with this application. The Autumn Sunrise approval has been a failure in a number of important regards. There are lessons to be learned. Not a stick of a tree was left in the middle – it is hideous, frankly, and nothing that our neighbor Wilsonville would have allowed. Second, no arborist was required to approve the plan to leave that thin strand of trees along Norwood, trees which ultimately knocked out power so many times that they had to be mowed down. And finally, as we can see by the developer's application here, even before another unit is approved, the traffic of Autumn Sunrise and Plambeck Gardens already requires, by the applicant's own traffic study, a signal at Norwood. A signal which was never required but clearly should have been required. And the developer's solution – let us build 276 more units of HDHR, so you can get your traffic signal. Wow. Really? That is bold.



Next, let's talk about the application. When you read through it, it plays heavily to the "housing crisis," and refers to the City's 2019 Housing Needs Analysis, as it should, but it offers ZERO, and that is the key here, ZERO data on where we currently stand in meeting those housing needs.

Where do we stand in? Since the study, 940 housing units have been approved.

- Alden Apartments – 45 town homes
- Plambeck Gardens – 116 multi family affordable housing
- Tualatin Height Apartments – 116 more units
- Autumn Sunrise, 407 housing units, some single family, some attached
- Nyberg Tualatin Apartments, 256 Units

So with 940 units already approved, that means, that in less than three years into a 20 year goal, you have reached 92% of that goal.

Looking at the facts and the data, your decision is easy. The re-zone application, and its extreme zoning, isn't in the public good. Leave the high density high rise for the city's downtown core where it is appropriate and needed. Please, use common sense, don't rubber stamp another proposal in our back yard, and reject the move to push the highest density, high rise zoning, into a place where it doesn't belong.

Thank you.

## Madeleine Nelson

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**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 8:13 AM  
**To:** Joetta Harikian  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

---

**From:** Joetta Harikian <jharikian@hotmail.com>  
**Sent:** Friday, April 7, 2023 4:07 PM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Type Your Joetta HarikianName Here

Type Your Address21590 SW Lebeau Rd. Sherwood , OR 97140Here

Type Your Phone Number503-625-5924 Here

Get [Outlook for iOS](#)

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 8:22 AM  
**To:** Pam Pries  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Pam Pries <pamelapries@icloud.com>  
Sent: Friday, April 7, 2023 4:21 PM  
To: Ext - Planning <Planning@tualatin.gov>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church, these two decisions are very important to the future plans for both Horizon and the city of Tualatin, as well. As you know, the lack of housing opportunities within the city severely impact the cost of apartment rentals. This in itself is an important reason for approving these amendments.

Currently, the most important housing option missing in Tualatin is multi-family development, those between affordable housing projects and single-family homes.

For these reasons we ask you to support and approve the Map and Text Amendments.

John and Pam Pries  
8535 SW Avery  
Tualatin 97062 Your Address Here<BR><BR>Type Your Phone Number Here  
593-484-7937 or 593-484-7349

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Monday, March 13, 2023 3:25 PM  
**To:** John Fronius  
**Subject:** RE: No to PTA23-0001 and PMA23-0001 Applications

Good Afternoon,

Thank you for your email. Your comments have been received and will be added to the written record. The comments will also be shared with the applicant team.

A Notice of Decision shall be provided to any person who submits written comments. As a comment participant, you will receive a Notice of Decision when the decision is made – do you have a preferred mailing address you would like the notice sent?

Thanks,

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: John Fronius <[jfronius@comcast.net](mailto:jfronius@comcast.net)>  
Sent: Monday, March 13, 2023 2:41 PM  
To: Madeleine Nelson <[mnelson@tualatin.gov](mailto:mnelson@tualatin.gov)>  
Cc: Council <[council@tualatin.gov](mailto:council@tualatin.gov)>; Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: No to PTA23-0001 and PMA23-0001 Applications

No to zoning changes for high rise buildings in Tualatin.

John Fronius

Concerned Citizen and Tualatin Resident

[jfronius@comcast.net](mailto:jfronius@comcast.net)

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 8:36 AM  
**To:** Jon Martinez  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Jon Martinez <[jonscare5@gmail.com](mailto:jonscare5@gmail.com)>  
Sent: Friday, April 7, 2023 5:21 PM  
To: Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Type Your Name Here  
Jon & Tasha Martinez  
Type Your Address Here  
4415 Lone Oak Rd Se Salem, Or 97302

Type Your Phone Number Here

503-779-6003

My wife and I would love to live and move closer to the area and this location would be amazing. I trust and hope that this new development would be approved.

Sent from my iPhone

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, March 16, 2023 11:01 AM  
**To:** Junior Carbajal  
**Cc:** Steve Koper  
**Subject:** RE: I say NO to PTA23-0001 and PMA23-0001 Applications

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to Council at the public hearing. The comments will also be shared with the applicant team.

A Notice of Decision shall be provided to any person who submits written comments. As a comment participant, you will receive a Notice of Decision when the decision is made – do you have a preferred mailing address you would like the notice sent?

**Madeleine Nelson**  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Junior Carbajal <jrcarbajal06@gmail.com>  
**Sent:** Thursday, March 16, 2023 10:34 AM  
**To:** Madeleine Nelson <mnelson@tualatin.gov>  
**Cc:** Council <council@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>  
**Subject:** I say NO to PTA23-0001 and PMA23-0001 Applications

### **High Rises BELONG in Tualatin Central Urban Renewal District ONLY.**

High density high rise dwellings are limited to the core of Tualatin for good reason:

- Amenities within walking distance
- Shops and City services
- Mass transit
- Supporting City infrastructure
- Architecture that blends with existing urban environment
- Lighter dedicated parking requirements
- Livability and accessibility within a car-dependent suburb

They make NO SENSE anywhere else in Tualatin, especially on the edge of practically farmland and ON TOP OF ~600 units already approved for construction.



## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 8:23 AM  
**To:** Stan and Karen Russell  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Stan and Karen Russell <[stankarenrussell@comcast.net](mailto:stankarenrussell@comcast.net)>  
Sent: Friday, April 7, 2023 4:33 PM  
To: Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Karen Russell

10215 SW Madrid Loop  
Wilsonville, OR 97070

503.819.0038

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, March 16, 2023 8:28 AM  
**To:** Jan Perry  
**Cc:** Steve Koper  
**Subject:** RE: Norwood for Smart Zoning

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to Council at the public hearing. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Jan Perry <jrperry.perry11@gmail.com>  
**Sent:** Wednesday, March 15, 2023 7:02 PM  
**To:** Frank Bubenik <fbubenik@tualatin.gov>; Maria Reyes <mreyes@tualatin.gov>; Christen Sacco <csacco@tualatin.gov>; Bridget Brooks <bbrooks@tualatin.gov>; Cyndy Hillier <chillier@tualatin.gov>; Nancy Grimes <ngrimes@tualatin.gov>; Valerie Pratt <vpratt@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>; Sherilyn Lombos <slombos@tualatin.gov>  
**Cc:** Jan Perry <jrperry.perry11@gmail.com>; Brent Beebe <brent.beebe@gmail.com>; Cynthia Ray <cynthiaray201@gmail.com>  
**Subject:** Norwood for Smart Zoning

Dear Tualatin Planning Department Members, City Council Members, and Mayor Frank Bubenik;

I am writing regarding the following Text Amendment of further areas of incorporation of Washington county zoned FD-20 from RL and RML zoning to the proposed RH-HR zone. As a resident of Tualatin, and speaking on the behalf of my neighbors, we have considerable concerns with this proposed zoning change, especially when there are other alternative options available downtown Tualatin. The current area and local infrastructure in general does not conform to this level of zoning especially with the new development of approximately 500 new homes and condos within proximity.

As has been stated several times, the potential development of another 276 residences on Norwood Rd. will cause even more cars to back up on SW Boones Ferry Rd. This after adding the already approved Autumn Sunrise. We've calculated over 2000 more trips up and down SW Boones Ferry Road each weekday.

What I hear from the City Council, AKS and the developer is “That’s really not our problem.” They cite that Wilsonville is part of the solution and, of course, ODOT. What I hear them saying is, the system is broken. We can’t address our traffic issues (actually, the city of Tualatin’s issues) because it’s just too hard. There are too many parts and pieces.

We are suggesting that the City of Tualatin works with ODOT and Wilsonville to address this very real problem. Agencies and governing bodies should be able to work together to address this already untenable issue affecting both Wilsonville and Tualatin (as well as the freeway issues, which are a big part of the problem). All that has been done has served to exacerbated the problem with no clear solution (and adding a traffic light will not solve the problem, by the way).

It sounds like AKS and all traffic studies have washed their hands of anything having to do with Boones Ferry Rd. No more homes should be built, or added, until this issue is addressed. I think this may be the most disappointing part of this situation, that there has been no effort at all to work together on a problem that everyone acknowledges exists. I’d love to see the City of Tualatin be the ones who solve this problem and bring the parties together to make this happen.

As for the apartments proposed for Norwood Rd. (clearly the purpose of the request for annexation and partitioning): This small two-lane road cannot handle this added traffic. I envision the people of the apartment complex being unable to turn left onto Norwood due to traffic. This will lead to them turning right and likely cutting through our neighborhood. This will also need to be addressed with Autumn Sunrise added traffic and the temptation for them to go speeding through our neighborhood to avoid the Boones Ferry traffic. This will be a very clear hazard for all of us living in the surrounding neighborhood.

I know the city leaders have pledged to protect the safety and quality of life of the people of Tualatin. We have placed our trust in them. I know they can find a way to work together with the other entities to address this issue. Even without these new neighborhoods and the proposed apartment complex, this needs to be addressed. The right thing to do is to say no to the partition and annexation requests. Anything else will only make things worse for everyone in Tualatin.

Thank you for considering our feedback.

Ken and Jan Perry  
8885 NW Stono Drive  
Tualatin, OR 97062

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, March 16, 2023 8:30 AM  
**To:** Jan Perry  
**Cc:** Steve Koper  
**Subject:** RE: Norwood for Smart Zoning

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to Council at the public hearing. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Jan Perry <jrperry.perry11@gmail.com>  
**Sent:** Wednesday, March 15, 2023 7:06 PM  
**To:** Frank Bubenik <fbubenik@tualatin.gov>; Maria Reyes <mreyes@tualatin.gov>; Christen Sacco <csacco@tualatin.gov>; Bridget Brooks <bbrooks@tualatin.gov>; Cyndy Hillier <chillier@tualatin.gov>; Nancy Grimes <ngrimes@tualatin.gov>; Valerie Pratt <vpratt@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>; Sherilyn Lombos <slombos@tualatin.gov>  
**Cc:** Jan Perry <jrperry.perry11@gmail.com>; Brent Beebe <brent.beebe@gmail.com>; Cynthia Ray <cynthiaray201@gmail.com>  
**Subject:** Norwood for Smart Zoning

Dear Tualatin Planning Department Members, City Council Members, and Mayor Frank Bubenik;

I am writing regarding the following Text Amendment of further areas of incorporation of Washington county zoned FD-20 from RL and RML zoning to the proposed RH-HR zone. As a resident of Tualatin, and speaking on the behalf of my neighbors, we have considerable concerns with this proposed zoning change, especially when there are other alternative options available downtown Tualatin. The current area and local infrastructure in general does not conform to this level of zoning especially with the new development of approximately 500 new homes and condos within proximity.

I am opposing this change, specifically, for the following reasons:

- **Increased traffic:** When populations are concentrated, traffic congestion is a given. **Public transportation and walkability of neighborhoods becomes increasingly important.** The traditional model of developers being required to provide a set number of parking spaces per anticipated user encourages more cars on the road, leading to more traffic issues. With no walkable services near

these apartments, and 276 units, it will require people to use their cars causing a big increase of traffic on Norwood Road and SW Boones Ferry Rd.

- **Lack of services:** Traffic and suburban sprawl are already straining our resources. The most logical plan is in-fill urban centers with high density developments. This provides the renters access to critical services. Walkability is the key to high rise/high density housing location.
- **Lack of green spaces:** Amenities like parks and other green spaces don't in themselves provide income to developers and must be planned in high density developments to provide improved quality of life for would-be residents. There are many beautiful amenities and parks in our lovely downtown Tualatin. This is exactly why builders of high-density housing build in urban areas.

This planned development will not only make everyone in the surrounding neighborhoods unhappy, it will also not make the tenants happy. This is a poor plan (or a complete lack of a plan) and literally makes no sense.

Thank you for considering our input,  
Ken and Jan Perry  
8885 SW Stono Drive  
Tualatin, OR 97062

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, March 16, 2023 8:31 AM  
**To:** Jan Perry  
**Cc:** Steve Koper  
**Subject:** RE: Norwood for Smart Zoning

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to Council at the public hearing. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Jan Perry <jrperry.perry11@gmail.com>  
**Sent:** Wednesday, March 15, 2023 7:15 PM  
**To:** Frank Bubenik <fbubenik@tualatin.gov>; Maria Reyes <mreyes@tualatin.gov>; Christen Sacco <csacco@tualatin.gov>; Bridget Brooks <bbrooks@tualatin.gov>; Cyndy Hillier <chillier@tualatin.gov>; Nancy Grimes <ngrimes@tualatin.gov>; Valerie Pratt <vpratt@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>; Sherilyn Lombos <slombos@tualatin.gov>  
**Cc:** Jan Perry <jrperry.perry11@gmail.com>; Brent Beebe <brent.beebe@gmail.com>; Cynthia Ray <cynthiaray201@gmail.com>  
**Subject:** Norwood for Smart Zoning

Dear Tualatin Planning Department Members, City Council Members, and Mayor Frank Bubenik;

I am writing regarding the following Text Amendment of further areas of incorporation of Washington county zoned FD-20 from RL and RML zoning to the proposed RH-HR zone. As a resident of Tualatin, and speaking on the behalf of my neighbors, we have considerable concerns with this proposed zoning change, especially when there are other alternative options available downtown Tualatin. The current area and local infrastructure in general does not conform to this level of zoning especially with the new development of approximately 500 new homes and condos within proximity.

My concern with this, and all projects involving AKS, are the following:

I sent a message to AKS asking that they reach out to the neighboring community to discuss the plan following their completely failed approach at a Tree Preservation Zone. The neighborhood would like large, native trees and a sufficient buffer, as promised.

Needless to say, I have heard nothing back from them. They clearly don't care about this community or about the importance of being wise in how you blend a community in with an existing environment. They continue to take trees down next to the freeway. This is the worst possible action to take when you are near a greenhouse gas producing roadway.

My request is that you do not trust AKS as they will say anything to get approved and then fail to deliver on their promises and do whatever they want. They have continued to prove that they cannot be trusted. Please say "No!" to any of their proposals. We don't need more of what they have given us with Autumn Sunrise.

Please stand up for your constituents and communities. Please just say "No!" And please say no to HD/HR zoning changes that would remove all the remaining trees and build HD/HR apartments anywhere in Tualatin without consideration of appropriate planning and services for these apartment residents and neighboring communities.

Thank you,  
Ken and Jan Perry, Stono Drive



## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, March 16, 2023 8:38 AM  
**To:** Jan Perry  
**Cc:** Steve Koper  
**Subject:** RE: Norwood for Smart Zoning

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to Council at the public hearing. The comments will also be shared with the applicant team.

### Madeleine Nelson

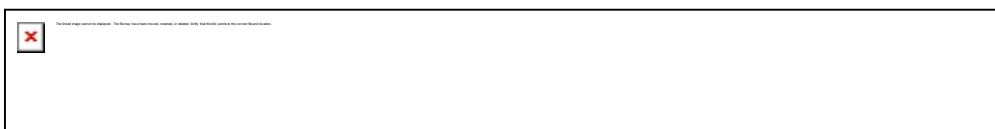
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Jan Perry <jrperry.perry11@gmail.com>  
**Sent:** Wednesday, March 15, 2023 7:22 PM  
**To:** Frank Bubenik <fbubenik@tualatin.gov>; Maria Reyes <mreyes@tualatin.gov>; Christen Sacco <csacco@tualatin.gov>; Bridget Brooks <bbrooks@tualatin.gov>; Cyndy Hillier <chillier@tualatin.gov>; Nancy Grimes <ngrimes@tualatin.gov>; Valerie Pratt <vpratt@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>; Sherilyn Lombos <slombos@tualatin.gov>  
**Cc:** Jan Perry <jrperry.perry11@gmail.com>; Brent Beebe <brent.beebe@gmail.com>; Cynthia Ray <cynthiaray201@gmail.com>  
**Subject:** Norwood for Smart Zoning

Dear Tualatin Planning Department Members, City Council Members, and Mayor Frank Bubenik;

I am writing regarding the following Text Amendment of further areas of incorporation of Washington county zoned FD-20 from RL and RML zoning to the proposed RH-HR zone. As a resident of Tualatin, and speaking on the behalf of my neighbors, we have considerable concerns with this proposed zoning change, especially when there are other alternative options available downtown Tualatin. The current area and local infrastructure in general does not conform to this level of zoning especially with the new development of approximately 500 new homes and condos within proximity.

The proposal is concerning for so many reasons that many of us in the Bryom CIO Neighborhood have expressed to the City Council. But what is literally the most concerning on this proposal, is the following:



This appears to be an attempt on the part of AKS and the builder to continue to remove all of the trees and build high-rise apartments everywhere in Tualatin. What AKS has demonstrated thus far:

- They have no regard for the environment. They will say anything to get their plans approved and then will do exactly what they want once the approval is in place, regardless of whether they've met the commitments/promises. Unfortunately, they clearly proved this with the Autumn Sunrise development. Below is text in the document. We have seen just the opposite so far with Autumn Sunrise and cannot believe that they will do what it says, or is right, in the future.



- They have shown no concern for the community when it comes to the amount of traffic these endless building projects are placing on our roads. The traffic study concerning Alden Apartments read, from 220 added residences, it would only put 16 more trips on the road during morning rush hour and 18 trips during pm rush hour. This is beyond reason! Are we to believe that all these people are not working? That they're just staying home all day? These estimates can't be correct. Even if they were (and more, given the two developments here), that's too many more cars to put on an already overcrowded road (SW Boones Ferry) with no solution in sight.

Tualatin will be unrecognizable and impossible to navigate if such egregious plans and changes are approved. We, the citizens of Tualatin, are saying "No!" to this ridiculous proposal for a change in wording AND to the proposed apartments that will sit on this land. We are trusting our City leaders to listen to our voice of concern and reason. The City Council needs to say "No!" to the wording change and the partition request.

Thank you,  
Ken and Jan Perry

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, March 16, 2023 8:42 AM  
**To:** Jan Perry  
**Cc:** Steve Koper  
**Subject:** RE: Norwood for Smart Zoning

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to Council at the public hearing. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Jan Perry <jrperry.perry11@gmail.com>  
**Sent:** Wednesday, March 15, 2023 7:27 PM  
**To:** Frank Bubenik <fbubenik@tualatin.gov>; Maria Reyes <mreyes@tualatin.gov>; Christen Sacco <csacco@tualatin.gov>; Bridget Brooks <bbrooks@tualatin.gov>; Cyndy Hillier <chillier@tualatin.gov>; Nancy Grimes <ngrimes@tualatin.gov>; Valerie Pratt <vpratt@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>; Sherilyn Lombos <slombos@tualatin.gov>  
**Cc:** Jan Perry <jrperry.perry11@gmail.com>; Brent Beebe <brent.beebe@gmail.com>; Cynthia Ray <cynthiaray201@gmail.com>  
**Subject:** Norwood for Smart Zoning

Dear Tualatin Planning Department Members, City Council Members, and Mayor Frank Bubenik;

I am writing regarding the following Text Amendment of further areas of incorporation of Washington county zoned FD-20 from RL and RML zoning to the proposed RH-HR zone. As a resident of Tualatin, and speaking on the behalf of my neighbors, we have considerable concerns with this proposed zoning change, especially when there are other alternative options available downtown Tualatin. The current area and local infrastructure in general does not conform to this level of zoning especially with the new development of approximately 500 new homes and condos within proximity.

Imagine living in a neighborhood where you paid good money for your home and you have done so surrounded by trees. You then learn that the City Council has approved a huge, high-density neighborhood and all the trees will be gone.

This changes everything for your neighborhood and for the market price of your home. The approved neighborhood will have some apartment complexes and higher-density homes but the price of the homes will reflect this fact. This is how it should work as it impacts home prices in

that **new** neighborhood. But this is all having an impact on existing neighborhoods and home owners.

For us who are living in long standing surrounding neighborhoods, adding a high-rise apartment complex has an even more profound impact. It causes our home prices to drop for many reasons.

- Regardless of what you may think or say, we know that apartments bring a higher level of crime. My husband **is former law enforcement**. It could not be more clear to him based on experience that neighborhoods with apartment complexes have higher rates of crime. *(Please refer to an earlier email sent to you by Brent Bebee showing crime rates in neighborhoods with apartments.)*
- The impact to the traffic, which I've previously noted, is another negative impact to our home values. *(Please refer to my earlier email on traffic impacts)*
- The **esthetics** to the neighborhood as you drive to your home also has an impact. Where tall evergreens once stood you now have the eye sore of a 4-7 story imposing apartment building. This is not what someone wants to see when looking for a home in a safe and quiet neighborhood.

The answer to this 8 ½ acres: A park

We don't have nearly enough parks in our area. Well, to be accurate, none. Although we know there is a park possibly being planned a half mile plus from here, that is not good enough. (The location of the park in the current plans won't be near any of the neighborhoods.) This entire area has no park. You continue to raise money for parks (a recent bond measure was just approved) and we continue to only wish that we could have one near us.

This property would be perfect for a park. You cannot ethically continue to build homes without also providing a comprehensive plan that includes parks and open space. Doing so is how cities become concrete jungles with no plan and no open space that no one wants to live in. I've lived in areas where this has happened, and the cities have become low-income, low-quality communities. Do you want that for Tualatin?

We would like for you to consider putting together a comprehensive plan for Tualatin that includes parks and open spaces. This is so critical for the quality of life of those living here. This is what you were elected to do. Please show us you care about all of Tualatin and preserving this lovely community and our quality of life.

Thank you,  
Ken and Jan Perry, Stono Drive

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Friday, March 17, 2023 8:35 AM  
**To:** Jan Perry  
**Cc:** Steve Koper  
**Subject:** RE: Norwood for Smart Zoning

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to Council at the public hearing. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Jan Perry <jrperry.perry11@gmail.com>  
**Sent:** Thursday, March 16, 2023 6:54 PM  
**To:** Frank Bubenik <fbubenik@tualatin.gov>; Maria Reyes <mreyes@tualatin.gov>; Christen Sacco <csacco@tualatin.gov>; Bridget Brooks <bbrooks@tualatin.gov>; Cyndy Hillier <chillier@tualatin.gov>; Nancy Grimes <ngrimes@tualatin.gov>; Valerie Pratt <vpratt@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>; Sherilyn Lombos <slombos@tualatin.gov>  
**Cc:** Jan Perry <jrperry.perry11@gmail.com>; Brent Beebe <brent.beebe@gmail.com>; Cynthia Ray <cynthiaray201@gmail.com>  
**Subject:** Norwood for Smart Zoning

Dear Tualatin Planning Department Members, City Council Members, and Mayor Frank Bubenik;

I am writing regarding the following Text Amendment of further areas of incorporation of Washington county zoned FD-20 from RL and RML zoning to the proposed RH-HR zone. As a resident of Tualatin, and speaking on the behalf of my neighbors, we have considerable concerns with this proposed zoning change, especially when there are other alternative options available downtown Tualatin. The current area and local infrastructure in general does not conform to this level of zoning especially with the new development of approximately 500 new homes and condos within proximity.

I have been walking around this area for over 3 years. This was a beautiful area with tall evergreens and an amazing ecosystem of animals and birds. I watched the birds (hawks and eagles) as they fed their young and then pushed them out of the nest to fly on their own.

I've also watched as that ecosystem was destroyed to build high density housing. Not a single tree was spared. I watched as the hawks and eagles flew in circles above the devastation which

was formerly their home. It was heartbreaking. And my husband has been taking food to the squirrels who lost their homes and food source.

Those beautiful birds have relocated, many of them finding homes in the trees that you are now wanting to remove for high rise apartments. I hear lots of talk of respecting and caring for the environment, but those words seem very empty right now. This is not a little sacrificing of trees to provide some additional housing. This is just complete and total destruction of an environment in order to provide tax money for the city of Tualatin. A city once known as the City of Trees.

In addition to the impact to the ecosystem, there will be an enormous impact to the surrounding roads. The I5 freeway is already totally exposed, adding to the amount of exhaust fumes for the neighborhood. Without the shade from the trees, our temperatures have already risen.

Additionally, this and the Lennar development will pour thousands of additional cars onto our already overloaded roads. If you are driving East on Boones Ferry Road any time after 3 pm, you will encounter up to a five mile backup of cars heading to I5. We've been told no improvements to the roads are necessary. Really? This is a nightmare.

From what I understand, there are other areas already zoned for high density/high rise development. Why are you destroying this area when other land is available for similar housing without causing this destruction? And why do you zone land only to quickly turn your back on that plan and change the zoning? The only answer must be money.

Please do the right thing. Please say "No!" to the change in the code that will bring HR/HD apartments to all of the open areas across Tualatin with no consideration to the destruction this will cause.

Ken and Jan Perry  
Norwood for Smart Zoning

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Friday, March 17, 2023 8:38 AM  
**To:** Jan Perry  
**Cc:** Steve Koper  
**Subject:** RE: Norwood for Smart Zoning

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to Council at the public hearing. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Jan Perry <jrperry.perry11@gmail.com>  
**Sent:** Thursday, March 16, 2023 7:04 PM  
**To:** Frank Bubenik <fbubenik@tualatin.gov>; Maria Reyes <mreyes@tualatin.gov>; Christen Sacco <csacco@tualatin.gov>; Bridget Brooks <bbrooks@tualatin.gov>; Cyndy Hillier <chillier@tualatin.gov>; Nancy Grimes <ngrimes@tualatin.gov>; Valerie Pratt <vpratt@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>; Sherilyn Lombos <slombos@tualatin.gov>  
**Cc:** Jan Perry <jrperry.perry11@gmail.com>; Brent Beebe <brent.beebe@gmail.com>; Cynthia Ray <cynthiaray201@gmail.com>  
**Subject:** Norwood for Smart Zoning

Dear Tualatin Planning Department Members, City Council Members, and Mayor Frank Bubenik;

I am writing regarding the following Text Amendment of further areas of incorporation of Washington county zoned FD-20 from RL and RML zoning to the proposed RH-HR zone. As a resident of Tualatin, and speaking on the behalf of my neighbors, we have considerable concerns with this proposed zoning change, especially when there are other alternative options available downtown Tualatin. The current area and local infrastructure in general does not conform to this level of zoning especially with the new development of approximately 500 new homes and condos within proximity.

A couple of observations as to the track record of the City Council and Tualatin's (lack of) planning:

- The first plan we looked at, published by the development company (2020?), concerning the property just south of I5, included a mix of lower to higher density housing; some single-family dwellings mixed with some duplexes. Although it is extremely sad to see the beautiful trees torn down and the disruption of the many ecosystems and wildlife habitats, the plans seemed not to be too disruptive to the area; somewhat similar to what we have in our current neighborhood.

- The next plan had added even higher density housing as well as apartment buildings incorporated into the area. For those buying in that neighborhood, they would do so with awareness of the apartments and mixed high/low density. It might not be too big of an impact to us in our neighborhood. Although not great (especially given the current traffic on Boones Ferry Road), it was still something we could live with.
- The latest plan seems entirely focused on the highest possible density. Not the two-story apartments, but now 4 story apartments (and a request to change the zoning wording for all of Tualatin). These apartments would be nearer our neighborhood than earlier projected. This new plan is the most intrusive, highest impact to our neighborhood. It literally changes everything for us in the way of home value and safety (see Brent Bebee’s earlier letter as it is well stated there).

This prompted a few questions:

- What seems to be driving these changes? Those defining the zoning are good with one plan and then, suddenly, more interested in another plan just to change the plan once again. What is the driver here? Do you consider, at all, the impact to the surrounding neighborhoods? To the roads and environment?
- The purpose of zoning is “to regulate and control land and property markets to ensure complementary uses.” The current plan seems to be the opposite of that. It does not consider what is **complementary** to those living nearby. It is not even a reasonable plan that is taking into consideration the impact not only to the neighborhoods, but also to roads, schools, etc.
- These many changes in plans have created a high level of distrust in, and lack of credibility with, the City Council. Many of us are asking ourselves “what is next?” Will the zoning changes continue until there is no resemblance to the community we love so much?

We, as a community, are trying to be flexible and would welcome the opportunity to provide our ideas and feedback in this process. Are you willing to hear us out? Or is this a done deal?

Thanks for the opportunity to provide this input. I hope it will serve as a starting point for further discussion.

Ken and Jan Perry  
Norwood for Smart Zoning



## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 8:20 AM  
**To:** Ken Hawes  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

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**From:** Ken Hawes <Ken.Hawes@rogers-machinery.com>  
**Sent:** Wednesday, April 12, 2023 4:09 PM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Ken Hawes

21366 SW Martinazzi Avenue

503-380-9810

Sent from my Verizon, Samsung Galaxy smartphone

Get [Outlook for Android](#)

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## Madeleine Nelson

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**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 9:26 AM  
**To:** 'Kevin J Holtzman'  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Kevin J Holtzman <[kevinjholtzman@gmail.com](mailto:kevinjholtzman@gmail.com)>  
Sent: Monday, April 10, 2023 6:04 AM  
To: Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Good morning Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

Like many cities, Tualatin is no different in its lack of housing opportunities and the impact this shortage has on both prices and rents is a concern. Many in the Horizon Church community wish they could find and afford housing in the city.

The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Kevin J Holtzman  
That's "Holtzman" with a | Z |  
(503) 367-5959  
[kevinjholtzman@gmail.com](mailto:kevinjholtzman@gmail.com)

Forgive me for any errors; sometimes my smartphone is not so smart!

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 10:25 AM  
**To:** Kimberly Levasa  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Kimberly Levasa <[kimberlylevasa@icloud.com](mailto:kimberlylevasa@icloud.com)>  
Sent: Wednesday, April 12, 2023 4:12 PM  
To: Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Kimberly Levasa

10685 SW MEIER DRIVE  
TUALATIN

503-341-1103

Sent from my iPhone

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 10:47 AM  
**To:** kristintaggart@gmail.com  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: kristintaggart@gmail.com <kristintaggart@gmail.com>  
Sent: Wednesday, April 12, 2023 4:30 PM  
To: Ext - Planning <Planning@tualatin.gov>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

I do not support what is said below. I don't think it's fair that Horizon community church is sending this to their congregation. Most who do not reside within Tualatin City limits.

My children attend Horizon Christian School. And I do not support what horizon is doing. We live at 22545 SW Miami Drive and can barely get out of our neighborhood as it is.

We do not need apartments on this side of town. There is plenty of space downtown for that.

Thank you,  
Kristin Giboney  
22545 SW Miami Drive

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Thank you,

Type Your Name Here

Type Your Address Here

Type Your Phone Number Here

Sent from my iPhone



## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 10:27 AM  
**To:** Lynda McGillvrey  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Lynda McGillvrey <[mcgillvrey51@icloud.com](mailto:mcgillvrey51@icloud.com)>  
Sent: Wednesday, April 12, 2023 4:09 PM  
To: Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Lynda McGillvrey  
16194 Apperson Blvd  
Oregon City, OR. 97045  
(503) 957-5637

Sent from my iPhone

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, March 30, 2023 8:20 AM  
**To:** Margie Humphrey  
**Cc:** Steve Koper  
**Subject:** RE: Please NO on PTA23-001 and PMA-001  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

A Notice of Decision shall be provided to anyone submitting written comments. As a comment participant, you will receive a Notice of Decision when the decision is made – do you have a preferred mailing address you would like the notice sent?

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

---

**From:** Margie Humphrey <margiehumphrey@comcast.net>  
**Sent:** Thursday, March 30, 2023 7:20 AM  
**To:** Madeleine Nelson <mnelson@tualatin.gov>  
**Cc:** Council <council@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>  
**Subject:** Please NO on PTA23-001 and PMA-001

High Rises BELONG in Tualatin Central Urban Renewal District ONLY.

High density high rise dwellings are limited to the core of Tualatin for good reason:

- Amenities within walking distance
- Shops and City services
- Mass transit
- Supporting City infrastructure
- Architecture that blends with existing urban environment
- Lighter dedicated parking requirements
- Livability and accessibility within a car-dependent suburb

They make NO SENSE anywhere else in Tualatin, especially on the edge of practically farmland and ON TOP OF ~600 units already approved for construction.

Sincerely,  
Margie Humphrey, CPA

linkedin.com



Long time Tualatin resident (Since 1995), Daughter attends Tualatin public school

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 8:12 AM  
**To:** Christian Neighbor  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Christian Neighbor <[pray4u.christian@gmail.com](mailto:pray4u.christian@gmail.com)>  
Sent: Friday, April 7, 2023 4:04 PM  
To: Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Marlene Redwing

13250 Eastborne Dr  
Oregon City, OR 97045  
503-309-3111

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 8:13 AM  
**To:** Randy & Megan Campbell  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Randy & Megan Campbell <[rmc1984@comcast.net](mailto:rmc1984@comcast.net)>  
Sent: Friday, April 7, 2023 4:05 PM  
To: Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Megan Campbell

11003 SW Oneida St Tualatin OR 97062

503-593-9886



## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 8:12 AM  
**To:** Pastor Randy Campbell  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

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**From:** Pastor Randy Campbell <rcampbell@horizoncommunity.church>  
**Sent:** Friday, April 7, 2023 4:04 PM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Megan Campbell

11003 SW Oneida St Tualatin OR 97062



## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 11:00 AM  
**To:** Michele Leisman  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Michele Leisman <mleisman52@gmail.com>  
**Sent:** Wednesday, April 12, 2023 5:11 PM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank You,

Michele Leisman  
503 475 6917

## Madeleine Nelson

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**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 2:36 PM  
**To:** Sherie Chaney  
**Cc:** Steve Koper  
**Subject:** RE: No to PTA23-0001 and PMA23-0001 Applications  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Afternoon,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

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**From:** Sherie Chaney <sheriechaney@yahoo.com>  
**Sent:** Thursday, April 13, 2023 2:09 PM  
**To:** Madeleine Nelson <mnelson@tualatin.gov>  
**Cc:** Council <council@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>  
**Subject:** No to PTA23-0001 and PMA23-0001 Applications

We strongly oppose rezoning in Tualatin for high rise apartments. Mike and Sherie Ostrowski. 9370 SW STONO Dr. Tualatin

[Sent from Yahoo Mail for iPhone](#)

## Madeleine Nelson

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**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 8:56 AM  
**To:** Olivia Peterson  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Olivia Peterson <[oliviacatep16@gmail.com](mailto:oliviacatep16@gmail.com)>  
Sent: Friday, April 7, 2023 5:53 AM  
To: Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Olivia Peterson

25481 SW Newland Pl

(503)709/2087



## Madeleine Nelson

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**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 1:09 PM  
**To:** Owen Enevoldsen  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Afternoon,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Owen Enevoldsen <owene1940@gmail.com>  
**Sent:** Tuesday, April 11, 2023 12:23 PM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Owen Enevoldsen

105 NE 11th Ave. Canby, OR 97013

503-250-1423

## Madeleine Nelson

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**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 8:37 AM  
**To:** Pat Smith  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

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**From:** Pat Smith <rainmont@yahoo.com>  
**Sent:** Friday, April 7, 2023 5:37 PM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission, As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments. As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too. I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes. Please support and approve the Map and Text Amendments. Thank you,

Patricia Smith  
10320 SW Meier Drive  
Tualatin, Or 97062

503-312-5922



## Madeleine Nelson

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**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 8:55 AM  
**To:** Pati Elwell  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Pati Elwell <[e.pati@yahoo.com](mailto:e.pati@yahoo.com)>  
Sent: Friday, April 7, 2023 10:02 PM  
To: Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Patricia Sykes

8135 SW Lummi street, Tualatin, 97062

503-317-7738

Sent from my iPhone

## Madeleine Nelson

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**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 8:33 AM  
**To:** Paul Pedersen  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Paul Pedersen <lt302@icloud.com>  
Sent: Friday, April 7, 2023 4:39 PM  
To: Ext - Planning <Planning@tualatin.gov>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commissioners,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident Tualatin and a member of Horizon Community Church, these two decisions are very important to the future plans for Horizon (and the City of Tualatin, too).

I would like to express concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

I urge you to support and approve the Map and Text Amendments. Thank you for your consideration.

Thank you,

Paul and Vanita Pedersen  
19338 SW 55th Ct, Tualatin  
503 710-2130

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Monday, March 13, 2023 1:58 PM  
**To:** Penny Harper  
**Subject:** RE: No to PTA23-0001 and PMA23-0001 Applications

Good Afternoon,

Thank you for your email. Your comments have been received and will be added to the written record. The comments will also be shared with the applicant team.

Thanks,

**Madeleine Nelson**  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Penny Harper <padgett.harper@gmail.com>  
**Sent:** Tuesday, March 7, 2023 5:53 PM  
**To:** Madeleine Nelson <mnelson@tualatin.gov>  
**Subject:** No to PTA23-0001 and PMA23-0001 Applications

- **Dear Ms Nelson**

I am writing in opposition to the planned SW Norwood annexations referenced above.

I have lived in the Norwood neighborhood for 28 years and use Norwood Road to access Boones Ferry Road several times a week. I am already nervous about how the Autumn Sunrise development will affect traffic in that neighborhood—adding a whole high rise on top of that will surely cause terrible daily traffic congestion, especially without major improvements to the surrounding roads.

Please consider the needs of the existing and new residents of this neighborhood and deny the annexation until a comprehensive traffic mitigation can be implemented.

Thank you

Penny Harper

7180 SW Norse Hall Rd., Tualatin 97062

503/939-9313

## Madeleine Nelson

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**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 8:04 AM  
**To:** Pastor Randy Campbell  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

---

**From:** Pastor Randy Campbell <rcampbell@horizoncommunity.church>  
**Sent:** Friday, April 7, 2023 4:02 PM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Randy Campbell

11003 SW Ondeida St Tualatin, OR 97062

503-593-9887

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 8:19 AM  
**To:** hsapitan@yahoo.com  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: hsapitan@yahoo.com <hsapitan@yahoo.com>  
Sent: Wednesday, April 12, 2023 4:09 PM  
To: Ext - Planning <Planning@tualatin.gov>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Randy Sapitan  
4720 Masters Dr,  
Newberg, OR 97132





## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 8:18 AM  
**To:** Rick Stokes  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

A Notice of Decision shall be provided to anyone submitting written comments. As a comment participant, you will receive a Notice of Decision when the decision is made – do you have a preferred mailing address you would like the notice sent?

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Rick Stokes <[gladimsavedbytheone@gmail.com](mailto:gladimsavedbytheone@gmail.com)>  
Sent: Wednesday, April 12, 2023 4:05 PM  
To: Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Type Your Name Here

Type Your Address Here

Type Your Phone Number Here

Sent from my iPhone

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 9:09 AM  
**To:** Ron Kimmel  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Ron Kimmel <kimmel.dna@gmail.com>  
**Sent:** Saturday, April 8, 2023 6:26 AM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

Do not rezone this area! No one that actually lives in this area wants this type of housing. The greed of Horizon church is undeniable. Please do not be a part of this!

Thank you,  
Ron Kimmel  
23605 SW Boones Ferry Rd, Tualatin, OR 97062

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Wednesday, March 15, 2023 8:23 AM  
**To:** Rose Toler  
**Cc:** Steve Koper  
**Subject:** RE: No to PTA23-0001 and PMA23-0001 Applications

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to Council at the public hearing. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Rose Toler <rose.toler@gmail.com>  
**Sent:** Tuesday, March 14, 2023 9:21 PM  
**To:** Madeleine Nelson <mnelson@tualatin.gov>  
**Cc:** Council <council@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>  
**Subject:** No to PTA23-0001 and PMA23-0001 Applications

I am writing this to you and the city council to look at the long range ramifications of changing the zoning on Norwood Rd to build apartments/high rises.

This area is zoned for single family homes. High rises are zoned in Tualatin downtown, where there is plenty of land to build on and where there is better public transportation, and shopping.

Please understand that the citizens you represent are very much against this proposal. There are so many housing projects taking place on Norwood and Boonesferry Rd. that another one is not justified or needed.

Sincerely,  
Rose Toler

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 8:55 AM  
**To:** Rosie Juarez  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

A Notice of Decision shall be provided to anyone submitting written comments. As a comment participant, you will receive a Notice of Decision when the decision is made – do you have a preferred mailing address you would like the notice sent?

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

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**From:** Rosie Juarez <rosiejuarez30@yahoo.com>  
**Sent:** Friday, April 7, 2023 9:19 PM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission, As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments. As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too. I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes. Please support and approve the Map and Text Amendments. Thank you, Type Your Name Here Type Your Address Here Type Your Phone Number Here

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 11:00 AM  
**To:** Marquez, Ryan  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Marquez, Ryan <[rmarquez@kpmg.com](mailto:rmarquez@kpmg.com)>  
Sent: Wednesday, April 12, 2023 6:58 PM  
To: Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Ryan and Shae Marquez

4748 SW Homesteader Rd.  
Wilsonville, OR

503-810-7618

\*\*\*\*\*

The information in this email is confidential and may be legally privileged. It is intended solely for the addressee. Access to this email by anyone else is unauthorized. If you are not the intended recipient, any disclosure, copying, distribution or any action taken or omitted to be taken in reliance on it, is prohibited and may be unlawful. When addressed to our clients any opinions or advice contained in this email are subject to the terms and conditions expressed in the governing KPMG client engagement letter.

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## Madeleine Nelson

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**From:** Madeleine Nelson  
**Sent:** Monday, March 6, 2023 8:27 AM  
**To:** Steve Hamm  
**Subject:** RE: No high rise on Norwood

Good Morning,

Thank you for your email. Your comments have been received and will be added to the written record. The comments will also be shared with the applicant team.

Thanks,

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

---

**From:** Steve Hamm <sshambone@aol.com>  
**Sent:** Friday, March 3, 2023 3:59 PM  
**To:** Frank Bubenik <fbubenik@tualatin.gov>; Maria Reyes <mreyes@tualatin.gov>; Christen Sacco <csacco@tualatin.gov>; Bridget Brooks <bbrooks@tualatin.gov>; Cyndy Hillier <chillier@tualatin.gov>; Octavio Gonzalez <ogonzalez@tualatin.gov>; Valerie Pratt <vpratt@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>; Sherilyn Lombos <slombos@tualatin.gov>  
**Subject:** No high rise on Norwood

Dear Tualatin Planning Department Members, City Council Members, and Mayor Frank Bubenik;

I am writing regarding the following Text Amendment and annexation of Washington County to modify Tax Lot 106, and Tax lot 108 and further areas of incorporation of Washington county zoned FD-20 from RL and RML zoning to the proposed RH-HR zone. As a resident of Tualatin, and speaking on the behalf of my neighbors, we have considerable concerns with this proposed zoning change, especially when there are other alternative options available downtown Tualatin. The current area and local infrastructure in general does not conform to this level of zoning especially with the new development of approximately 500 new homes and condos within proximity.

The three areas of concern are traffic, removal of local institutional zoned areas for future development, and the lack of use of existing RH-HR zoned areas in Tualatin near the Westside transit station on SW Boones Ferry Rd, properties 8412, 8514, and 8538. Overall, these properties are better suited for this type of zoning with local



transit, grocery stores, government facilities, retail, and similar residential development, which could also serve the Basalt Creek master plan more locally.

**Issue one regarding traffic;**

SW Boones Ferry Road is already considerably congested from Tualatin city limits to the corner of Norwood and SW Boones Ferry Rd. Though this new development plans to introduce a stoplight at the intersection of Norwood and Boones Ferry, this will not mitigate the merging traffic from I-5 that backs up all the way to this intersection during rush hour. Travel time is up to 20 min to drive 1.7 miles according to Google maps and personal experience. With the addition of RH-HR zones, this only compounds the issue and does not alleviate the lack of traffic planning between the border of Tualatin city limits and Wilsonville, not to mention the development plan for the Basalt Creek Employment Center and its impact to SW Boones Ferry arterials to I-5.

**Issue two regarding institutional infrastructure;**

The Tualatin public school system is already dealing with classrooms at close to capacity. With the addition of current development and the proposed RH-HR zone change, this development will most likely be districted to Edward Byrom if the Sherwood school district does not agree to districting this area once residential developments are built. Based on current enrolled rates and children coming back to traditional classroom learning since the peak of COVID, the influx of new students will strain our educational institution without any additional planned expansion in this vicinity. In addition, with the RH-HR proposed zone change, the city would be removing an institutional zone without relocating or considering other areas in Tualatin for replacement or having a plan shown in the Basalt Creek development for an additional institutional zone.

**Issue three regarding existing RH-HR zones;**

As stated, properties 8412, 8514, and 8538 of 18 acres near the Westside transit station are already zoned RH-HR and is a prime location for this type of development. There is a completely vacant retail space where Hagen's grocery store was, existing retail, grocery stores and easily accessible public transportation. Seeing how fast the new development off of I-5 is progressing, it would be most appropriate to develop the downtown area that is currently zoned RH-HR than to add an additional RH-HR zone in the middle of RL and RML areas on the outer south edge of Tualatin. With the Westside rail transit, a station can be built at the Basalt Creek Employment Center giving access to a downtown high rise. Utilizing WES commuter rail would also not directly impact vehicular traffic, besides crossings, and utilize existing taxpayer public transit more efficiently. Also adding another RH-HR zone near the center of the Basalt Creek employment center would assist with commuting and provide a local housing center for the anticipated 2000 jobs that will be created with the Basalt Creek development plan. This also complies with the Southwest and Basalt Creek Development Area Plan Policies and Ordinances.

POLICY 3.1.1 DENSITY. Maintain a citywide residential density of at least eight (8) dwelling units per net acre.

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POLICY 3.1.3 COMMERCIAL ACTIVITY. Allow home based businesses and occupations in all residential zones, subject to regulations to minimize impact to housing supply and uses in commercial and industrial zones. Provide for compatible agricultural uses in areas where significant development barriers are present, or where compatible with permitted residential uses. 29 | Southwest and Basalt Creek Development Area Plan

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See the exhibits Norwood for Smart Zoning has sent to the city in previous emails regarding these issues.

Sincerely,

**Sandi Hamm**  
**22725 SW Vermillion Dr.**

Sent from my iPad

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, March 14, 2023 1:55 PM  
**To:** Steve Hamm  
**Subject:** RE: No to PTA23-0001 and PMA23-0001 Applications

Good Afternoon,

Thank you for your email. Your comments have been received and will be added to the written record. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

---

**From:** Steve Hamm <sshambone@aol.com>  
**Sent:** Tuesday, March 14, 2023 12:28 PM  
**To:** Madeleine Nelson <mnelson@tualatin.gov>  
**Cc:** Council <council@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>  
**Subject:** No to PTA23-0001 and PMA23-0001 Applications

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See the exhibits Norwood for Smart Zoning has sent to the city in previous emails regarding these issues.

Sincerely,

**Sandi Hamm**  
**22725 SW Vermillion Dr.**

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 11:19 AM  
**To:** Sheila Matthey  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Sheila Matthey <[sheilamatthey@yahoo.com](mailto:sheilamatthey@yahoo.com)>  
Sent: Thursday, April 13, 2023 3:30 AM  
To: Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you  
Sheila Matthey  
10645 SW Meier Dr Tualatin  
5034909406  
Sent from my iPhone

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 9:08 AM  
**To:** Sheryl Bunfill  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Sheryl Bunfill <[sbunfill@gmail.com](mailto:sbunfill@gmail.com)>  
Sent: Saturday, April 8, 2023 6:12 AM  
To: Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

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Please support and approve the Map and Text Amendments.

Thank you,

Sheryl Bunfill



15331 SW Clifford Ct.  
Sherwood, Or. 97140

503-453-7716

Sent from my iPhone

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 11:18 AM  
**To:** Stacie Anderson  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

---

**From:** Stacie Anderson <sadiethegolden@hotmail.com>  
**Sent:** Wednesday, April 12, 2023 9:18 PM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

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Please support and approve the Map and Text Amendments.

Thank you,

Stacie Anderson  
21363 SW Baler Way  
Sherwood, OR 97140

Get [Outlook for iOS](#)

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 8:23 AM  
**To:** Pastor Stan Russell  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Pastor Stan Russell <SER@horizoncommunity.church>  
Sent: Friday, April 7, 2023 4:33 PM  
To: Ext - Planning <Planning@tualatin.gov>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

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Please support and approve the Map and Text Amendments.

Thank you,

Type Your Name Here

Stan Russell

Type Your Address Here

10215 SW Madrid Loop TUALATIN, Oregon.

Type Your Phone Number Here

503-307-8414

Sent from my iPhone

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Monday, March 20, 2023 8:17 AM  
**To:** 'Steve Zimmerman'  
**Cc:** Steve Koper  
**Subject:** RE: No to PTA23-0001 and PMA23-0001 Applications

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to Council at the public hearing. The comments will also be shared with the applicant team.

A Notice of Decision shall be provided to any person who submits written comments. As a comment participant, you will receive a Notice of Decision when the decision is made – do you have a preferred mailing address you would like the notice sent?

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Steve Zimmerman <stevezee@gmail.com>  
**Sent:** Sunday, March 19, 2023 1:52 PM  
**To:** Madeleine Nelson <mnelson@tualatin.gov>  
**Subject:** No to PTA23-0001 and PMA23-0001 Applications

Hello,

As an owner of properties on Boones Ferry Rd on both sides of this proposal, I can say for certain that this is a really, really bad idea.

Not only do we not need this project, it will make traffic so much worse than it already is. I have had six car accidents on my property south of the project and increased traffic flow will only make this worse. There are already evenings when the traffic backs up as people try to get onto I5. With this additional increase over what's already in the works, traffic will get worse to the point of intolerable.

It makes much more sense to put such a development elsewhere in Tualatin, where car traffic can be mitigated with bus/foot/bike transportation and a multi-story building won't look out of place. I understand that there are times when owners and developers want to push or stretch the boundaries of what is zoned... it's understandable. It's also understandable when elected officials push back with the support of the will of the people to hold firm to the current zoning.

I would expect any elected official to do what's best for their constituents.

Steve Zimmerman



Virus-free [www.avast.com](http://www.avast.com)

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Monday, March 6, 2023 8:27 AM  
**To:** Steve Hamm  
**Subject:** RE:

Good Morning,

Thank you for your email. Your comments have been received and will be added to the written record. The comments will also be shared with the applicant team.

Thanks,

### Madeleine Nelson

Assistant Planner

City of Tualatin | Planning Division

503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

---

**From:** Steve Hamm <sshambone@aol.com>

**Sent:** Friday, March 3, 2023 3:53 PM

**To:** Frank Bubenik <fbubenik@tualatin.gov>; Maria Reyes <mreyes@tualatin.gov>; Christen Sacco <csacco@tualatin.gov>; Bridget Brooks <bbrooks@tualatin.gov>; Cyndy Hillier <chillier@tualatin.gov>; Octavio Gonzalez <ogonzalez@tualatin.gov>; Valerie Pratt <vpratt@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>; Sherilyn Lombos <slombos@tualatin.gov>

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Sincerely,

Steven R Hamm  
22725 SW Vermillion Dr.

Sent from my iPad

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, March 14, 2023 2:49 PM  
**To:** Steve Hamm  
**Subject:** RE: No to PTA23-0001 and PMA23-0001 Applications

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### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

---

**From:** Steve Hamm <sshambone@aol.com>  
**Sent:** Tuesday, March 14, 2023 12:25 PM  
**To:** Madeleine Nelson <mnelson@tualatin.gov>  
**Cc:** Council <council@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>  
**Subject:** No to PTA23-0001 and PMA23-0001 Applications

Sent from my iPad Dear Tualatin Planning Department Members, City Council Members, and Mayor Frank Bubenik;

I am writing regarding the following Text Amendment and annexation of Washington County to modify Tax Lot 106, and Tax lot 108 and further areas of incorporation of Washington county zoned FD-20 from RL and RML zoning to the proposed RH-HR zone. As a resident of Tualatin, and speaking on the behalf of my neighbors, we have considerable concerns with this proposed zoning change, especially when there are other alternative options available downtown Tualatin. The current area and local infrastructure in general does not conform to this level of zoning especially with the new development of approximately 500 new homes and condos within proximity.

The three areas of concern are traffic, removal of local institutional zoned areas for future development, and the lack of use of existing RH-HR zoned areas in Tualatin near the Westside transit station on SW Boones Ferry Rd, properties 8412, 8514, and 8538. Overall, these properties are better suited for this type of zoning with local transit, grocery stores, government facilities, retail, and similar residential development, which could also serve the Basalt Creek master plan more locally.

**Issue one regarding traffic;**

SW Boones Ferry Road is already considerably congested from Tualatin city limits to the corner of Norwood and SW Boones Ferry Rd. Though this new development plans to introduce a stoplight at the intersection of Norwood and Boones Ferry, this will not mitigate the merging traffic from I-5 that backs up all the way to this intersection during rush hour. Travel time is up to 20 min to drive 1.7 miles according to Google maps and personal experience. With the addition of RH-HR zones, this only compounds the issue and does not alleviate the lack of traffic planning between the border of Tualatin city limits and Wilsonville, not to mention the development plan for the Basalt Creek Employment Center and its impact to SW Boones Ferry arterials to I-5.

**Issue two regarding institutional infrastructure;**

The Tualatin public school system is already dealing with classrooms at close to capacity. With the addition of current development and the proposed RH-HR zone change, this development will most likely be districted to Edward Byrom if the Sherwood school district does not agree to districting this area once residential developments are built. Based on current enrolled rates and children coming back to traditional classroom learning since the peak of COVID, the influx of new students will strain our educational institution without any additional planned expansion in this vicinity. In addition, with the RH-HR proposed zone change, the city would be removing an institutional zone without relocating or considering other areas in Tualatin for replacement or having a plan shown in the Basalt Creek development for an additional institutional zone.

**Issue three regarding existing RH-HR zones;**

As stated, properties 8412, 8514, and 8538 of 18 acres near the Westside transit station are already zoned RH-HR and is a prime location for this type of development. There is a completely vacant retail space where Hagen's grocery store was, existing retail, grocery stores and easily accessible public transportation. Seeing how fast the new development off of I-5 is progressing, it would be most appropriate to develop the downtown area that is currently zoned RH-HR than to add an additional RH-HR zone in the middle of RL and RML areas on the outer south edge of Tualatin. With the Westside rail transit, a station can be built at the Basalt Creek Employment Center giving access to a downtown high rise. Utilizing WES commuter rail would also not directly impact vehicular traffic, besides crossings, and utilize existing taxpayer public transit more efficiently. Also adding another RH-HR zone near the center of the Basalt Creek employment center would assist with commuting and provide a local housing center for the anticipated 2000 jobs that will be created with the Basalt Creek development plan. This also complies with the Southwest and Basalt Creek Development Area Plan Policies and Ordinances.

**POLICY 3.1.1 DENSITY.** Maintain a citywide residential density of at least eight (8) dwelling units per net acre.

POLICY 3.1.2 ZONING FOR MULTIFAMILY. Provide zoning for multifamily development, which may be located in areas adjacent to transit.

POLICY 3.1.3 COMMERCIAL ACTIVITY. Allow home based businesses and occupations in all residential zones, subject to regulations to minimize impact to housing supply and uses in commercial and industrial zones. Provide for compatible agricultural uses in areas where significant development barriers are present, or where compatible with permitted residential uses. 29 | Southwest and Basalt Creek Development Area Plan

POLICY 3.1.4 CLEAR AND OBJECTIVE REVIEW. Provide for clear and objective review standards for all residential development and redevelopment.

POLICY 3.1.5 FUNCTIONAL PLANNING. Consider the development-ready residential land supply as part of ongoing functional planning efforts to provide necessary urban services in support of residential development.

POLICY 3.1.6 INFRASTRUCTURE PLANNING. Evaluate future infrastructure planning for consistency with the Housing Needs Analysis and Housing Strategies

I, and fellow residents of the Tualatin community, appreciate the open ear regarding the proposed Text Amendment change. I also understand the sentiment and initiative of providing lower income housing throughout Tualatin. However, based on the provided concerns and examples, the location near Norwood Rd does not fit these requirements and will strain our available infrastructure. As the applicant applies for this zoning alteration, I and fellow residents strongly urge the Tualatin Planning division to not approve the Text Amendment change and keep the existing zoning areas intact, which similarly match the surrounding RL and RML zones, and better utilize existing planned RH-HR zones within downtown Tualatin. City Council members and Mayor, I also encourage you to think of our city holistically with the entire community in mind.

See the exhibits Norwood for Smart Zoning has sent to the city in previous emails regarding these issues.

Sincerely

Steven R Hamm  
22725 SW Vermillion Dr.

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, March 14, 2023 1:54 PM  
**To:** Steve Hamm  
**Subject:** RE: No to PTA23-0001 and PMA23-0001 Applications

Good Afternoon,

Thank you for your email. Your comments have been received and will be added to the written record. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Steve Hamm <[sshambone@aol.com](mailto:sshambone@aol.com)>  
Sent: Tuesday, March 14, 2023 12:51 PM  
To: Madeleine Nelson <[mnelson@tualatin.gov](mailto:mnelson@tualatin.gov)>  
Cc: Council <[council@tualatin.gov](mailto:council@tualatin.gov)>; Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: No to PTA23-0001 and PMA23-0001 Applications

Dear Mayor and Tualatin city council and Planners

I have been a citizen of Tualatin for over thirty years. I have seen many changes over the years, some for the good, many for the worst in regards to the livability of its citizens. Traffic being one such issue, no surprise there I'm sure. The latest attempt to ruin our livability in this fine city is the re-zoning of property to allow High-rise dwellings to be located anywhere in the city. This I am totally against. There is one being purposed on the corner of Norwood and boones ferry road. With a huge neighborhood already being built, having a High rise located on the corner would be a traffic and livability disaster. There other other places in Tualatin like downtown that would be better suited like where the old Hagens store was located. Close to transit and amenities. I say NO to any development that can't be supported by existing city infrastructure as well as city zoning. I say NO to development that opens floodgates to High-rise everywhere. I say NO to development that hands our wonder city of Tualatin over to Developers to ruin our city and lessen our livability. There are better choices out there lets do the right thing by our community and not developers who don't even reside in our state.

Sincerely,  
Steve Hamm  
22725 SW Vermillion dr.

Sent from my iPad

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Wednesday, February 22, 2023 11:09 AM  
**To:** susantaylorhill@gmail.com  
**Subject:** RE: Norwood Against ANN22-0003 - 9300 SW Norwood Road Annexation

Good Morning,

Thank you for your email. Your comments have been received and will be added to the written record. The comments will also be shared with the applicant team.

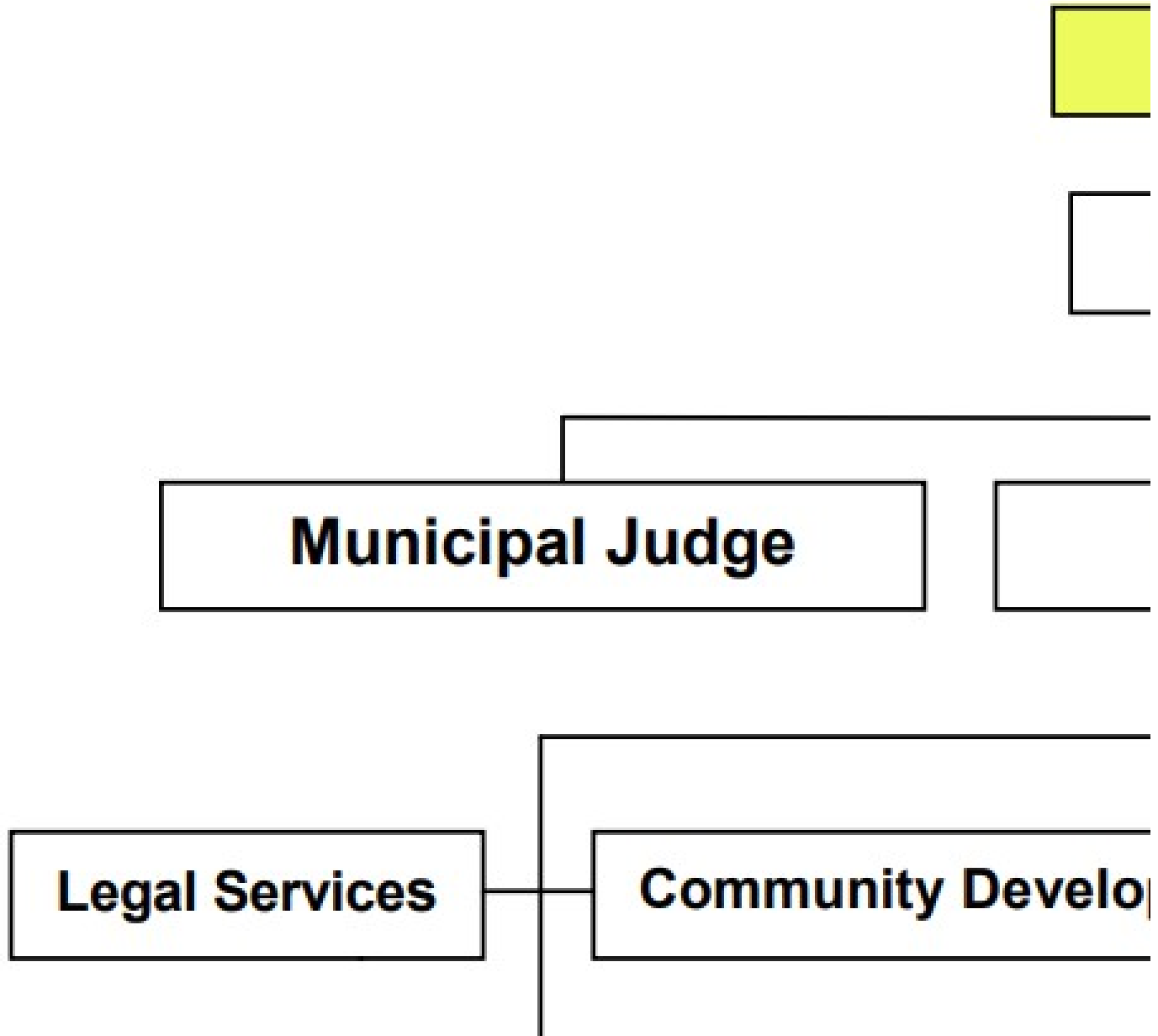
Thanks,

**Madeleine Nelson**  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

---

**From:** susantaylorhill@gmail.com <susantaylorhill@gmail.com>  
**Sent:** Tuesday, February 21, 2023 10:02 PM  
**To:** Madeleine Nelson <mnelson@tualatin.gov>  
**Subject:** Norwood Against ANN22-0003 - 9300 SW Norwood Road Annexation

# City of



Tualatin Planning Commission meeting on 1/19/23. The meeting agenda: discuss a significant zone change that would allow heavy manufacturing behind residents' homes on Boones Ferry Rd.(Tualatin City Council will also be discussing this issue on 2/27/23).

You know what happened? The developer **brought an attorney to the meeting**. It seemed to attendees that the developer was implying they would file a lawsuit if they didn't get their way.

At the same meeting a resident had concerns and questions regarding the zone change, and they accidentally spoke out of turn. They were quickly silenced by one planning commissioner. Thankfully the Chair let this person speak, but at the end of the meeting when the Commission was supposed to deliberate on a recommendation to council, the *developers* spoke out of turn to sway the commission one more time.

It wasn't enough that the developer received more than half an hour for their presentation earlier, it was that they had *so much clout to basically walk all over the process*. And they were not silenced by any planning commissioner and were allowed to speak out of turn.

*We hope you see the issue here...*

From our perspective it seems as if Council has forgotten who is really in charge of the city.

It is supposed to be the citizens, not developers.

A high-rise is not a smart choice on SW Norwood Rd when *this type of development is supposed to be in the core of Tualatin*.

Kind regards,  
Susan Pitt  
8883 SW Iowa Drive

Sent from my iPhone



## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Friday, March 17, 2023 2:03 PM  
**To:** Susan Hill  
**Cc:** Steve Koper  
**Subject:** RE: No to PTA23-0001 and PMA23-0001 Applications

Good Afternoon,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to Council at the public hearing. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

---

**From:** Susan Hill <susantaylorhill@gmail.com>  
**Sent:** Friday, March 17, 2023 12:59 PM  
**To:** Madeleine Nelson <mnelson@tualatin.gov>  
**Cc:** Council <council@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>; Susan Hill <susantaylorhill@gmail.com>  
**Subject:** No to PTA23-0001 and PMA23-0001 Applications

Good Afternoon.

I wish to state that I strongly oppose altering the City Code as proposed. **Changing the text of the Tualatin Development Code opens the entire city to high rise development anywhere and is not just relative to the proposed high rise apartment building on Norwood**, but goes much further than that. It affects all of Tualatin and the surrounding unincorporated areas, as well as our neighboring cities. It affects all of our community and everyone who lives, works, shops or visits this city.

Tualatin has already done our part to alleviate the housing crisis with almost 1,000 new units already underway here in the past two years. We have already met 92% of the City's 30-year growth plan!

Additionally, we are already in compliance with the 2022 Oregon Housing Needs Analysis. We do not need to do more.

Our existing city infrastructure cannot support this level of growth.

**Any new high rises should be built in the core of Tualatin, where infrastructure and amenities provide quality of life for apartment/condo living.**

Kind regards,

Susan Pitt  
8883 SW Iowa Drive  
Tualatin, OR 97062  
503-351-5915

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, March 21, 2023 11:32 AM  
**To:** susantaylorhill@gmail.com  
**Cc:** Steve Koper  
**Subject:** RE: No to PTA23-0001 and PMA23-0001 Applications  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to Council at the public hearing. The public hearing will be held on May 22, 2023, attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: susantaylorhill@gmail.com <susantaylorhill@gmail.com>  
Sent: Tuesday, March 21, 2023 10:26 AM  
To: Ext - Planning <Planning@tualatin.gov>  
Subject: No to PTA23-0001 and PMA23-0001 Applications

Hello Planning Department,

>  
> Increasing the residential density on Norwood Rd. by nearly 500% will most certainly negatively affect the entire area, with markedly increased traffic throughout the neighborhood streets, as well as on Boones Ferry Rd. What improvements are planned to mitigate these issues?  
>  
> My husband and I stand firmly against allowing a high rise on Norwood Rd. and changing the zoning for the church-owned property currently zoned institutional to high-density residential.  
>  
> Kind regards,  
> Susan Pitt  
> 8883 SW Iowa Drive  
>  
>  
> Sent from my iPhone

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 11:19 AM  
**To:** 'Tavita Laasaga'  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Tavita Laasaga <[uso23@yahoo.com](mailto:uso23@yahoo.com)>  
Sent: Thursday, April 13, 2023 7:09 AM  
To: Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Type Your Name Here TAVITA LAASAGA

Type Your Address Here 13020 SW DICKSON ST KING CITY OREGON

Type Your Phone Number Here 808-333-1493

Sent from my iPhone

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 10:38 AM  
**To:** Ted Shafer  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Ted Shafer <unkateddy@gmail.com>  
**Sent:** Wednesday, April 12, 2023 4:23 PM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

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Please support and approve the Map and Text Amendments.

Thank you,

Type Your Name Here

Type Your Address Here

Type Your Phone Number Here

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 10:48 AM  
**To:** Ted Shafer  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Ted Shafer <unkateddy@gmail.com>  
**Sent:** Wednesday, April 12, 2023 4:39 PM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Type Your Name Here

Type Your Address Here

Type Your Phone Number Here

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 10:38 AM  
**To:** Ted Shafer  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Ted Shafer <unkateddy@gmail.com>  
**Sent:** Wednesday, April 12, 2023 4:23 PM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

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Please support and approve the Map and Text Amendments.

Thank you,

Type Your Name Here

Ted Shafer

Type Your Address Here

17555 SW Fulton Dr, Tualatin, OR 97062

Type Your Phone Number Here 503 317 6421

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 11:19 AM  
**To:** Ted Shafer  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Ted Shafer <unkateddy@gmail.com>  
**Sent:** Thursday, April 13, 2023 8:00 AM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Type Your Name Here

Type Your Address Here

Type Your Phone Number Here



## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 10:28 AM  
**To:** Terry Swartout  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Terry Swartout <terrswartout68@gmail.com>  
**Sent:** Tuesday, April 11, 2023 10:05 AM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Terry Swartout

Sherwood OR 97140

503-625-3966



## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, February 16, 2023 12:10 PM  
**To:** Tim N.  
**Cc:** kapaluapro@aol.com; mwestenhaver@hotmail.com; Marissa Katz; Julie Heironimus  
**Subject:** RE: Concern with application PTA 23-0001  
**Attachments:** CIO Contact.pdf

Hi Tim,

Thank you for your email. The comment has been received and will also be provided to the applicant. Attached is the letter the applicant provided in their application submittal.

Thanks,

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Tim N. <timneary@gmail.com>  
**Sent:** Thursday, February 16, 2023 11:33 AM  
**To:** Madeleine Nelson <mnelson@tualatin.gov>  
**Cc:** Chad Fribley <kapaluapro@aol.com>; Mary Lyn Westenhaver <mwestenhaver@hotmail.com>; Marissa Katz <katzmari22@gmail.com>; Julie Heironimus <jujuheir@aol.com>  
**Subject:** Concern with application PTA 23-0001

Hi Madeleine,

I am concerned that the application is still incomplete, as those involved with the project did not make any known attempts to contact any of the executive committee members of the Byrom CIO.

This is in violation of TDC 32.140 criterion h:

A statement as to whether any City-recognized Citizen Involvement Organizations (CIOs) whose boundaries include, or are adjacent to, the subject property were contacted in advance of filing the **application** and, if so, a summary of the contact. The summary must include the date when contact was made, the form of the contact and who it was with (e.g. phone conversation with neighborhood association chairperson, meeting with **land use** committee, presentation at neighborhood association meeting), and the result.

I have CC'ed the other Byrom CIO board members, who can also confirm that they have not been contacted regarding this project.

## Madeleine Nelson

---

**From:** Tim N. <timneary@gmail.com>  
**Sent:** Thursday, February 16, 2023 10:53 AM  
**To:** Madeleine Nelson  
**Subject:** Re: PTA23-0001

Thank you Madeleine!

As a community member, I would appreciate it if planning department procedure changed and posted materials publicly as soon as possible, even if that includes a clear indicator that the application is not yet complete and moving forward. The goal in this change would be to create a greater degree of equality for project applicants and community members, as applicants likely put significant time and effort, at their own pace, to put their materials together, whereas delays in a proposed change drastically limits community members' time to research the project and its impact from their perspective.

On Thu, Feb 16, 2023 at 10:13 AM Madeleine Nelson <[mnelson@tualatin.gov](mailto:mnelson@tualatin.gov)> wrote:

Good Morning Tim,

Public notice will be issued for the PTA and PMA applications once the public hearing is scheduled. This notice will look similar to the ANN22-0003 public notice and it will provide instructions on submitting public comments for the applications ahead of the hearing. Comments submitted will be added to the written record and will be shared with the applicant and Council.

Land use applications are posted to the Projects Page once the applicant has provided all of the necessary materials to deem the application "complete". At the time of initial submission, the applicant was missing application materials.

Thanks,

**Madeleine Nelson**

Assistant Planner

City of Tualatin | Planning Division

503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Tim N. <[timneary@gmail.com](mailto:timneary@gmail.com)>  
**Sent:** Thursday, February 16, 2023 9:27 AM

**To:** Madeleine Nelson <[mnelson@tualatin.gov](mailto:mnelson@tualatin.gov)>

**Subject:** PTA23-0001

Hi Madeleine,

Are there public comment opportunities related to PTA23-0001 beyond the public hearing?

I am concerned as the submitted public meeting summary as written does not capture the significant neighborhood opposition to the project.

Additionally, could you provide insight as to why it took over a month after application submission to make the text revision application public?

Thank you,

Tim Neary, Byrom CIO President

## Madeleine Nelson

---

**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 1:57 PM  
**To:** timneary@gmail.com  
**Cc:** Steve Koper  
**Subject:** RE: Comment for Planning Commission re: DO NOT APPROVE PTA23-0001 and PMA23-0001  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Afternoon,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

**From:** Tim N. <timneary@gmail.com>  
**Sent:** Thursday, April 13, 2023 12:20 PM  
**To:** Frank Bubenik <fbubenik@tualatin.gov>; Maria Reyes <mreyes@tualatin.gov>; Christen Sacco <csacco@tualatin.gov>; Bridget Brooks <bbrooks@tualatin.gov>; Cyndy Hillier <chillier@tualatin.gov>; Octavio Gonzalez <ogonzalez@tualatin.gov>; Valerie Pratt <vpratt@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>; Sherilyn Lombos <slombos@tualatin.gov>; Steve Koper <skoper@tualatin.gov>; Kim McMillan <kmcmillan@tualatin.gov>; Megan George <mgeorge@tualatin.gov>; Madeleine Nelson <mnelson@tualatin.gov>  
**Cc:** Catherine Holland <tualatincio@gmail.com>  
**Subject:** Comment for Planning Commission re: DO NOT APPROVE PTA23-0001 and PMA23-0001

Hello Planning Commission, Planning Staff, and City Council:

The proposed text and map amendments will be harmful to the community if approved.

The proposed text amendment is particularly problematic in that it removes the restriction for residential high rises to be built anywhere in the city. This is not consistent with the context of most of Tualatin, and based on approval criteria, should not be approved.

The proposed map amendment is similarly problematic, in that approving the building of high rise residential housing is not in context with the community, and there are precedents that the construction of high rise apartments will adversely impact neighboring home values.

Please see below as I will speak to each point for consideration of approval as outlined by the TDC.

TDC 33.070(5) *Approval Criteria.*

- a. Granting the amendment is in the public interest.

**Comment: Hundreds of residents have expressed opposition, as well as leadership of all of the Tualatin Residential CIOs. The message from the residents of Tualatin is clear, these amendments are not supported by the people, and are not in the public interest.**

(b) The public interest is best protected by granting the amendment at this time.

**Comment: Given the approved and in development housing units that have yet to be occupied and that these units are well in excess of the anticipated need of the city by 2040, it is not critical or necessary to change the restriction on residential high rises at this time. Furthermore, public interest would be harmed by granting the amendments, as traffic will worsen on Boones Ferry, adversely impacting quality of life.**

(c) The proposed amendment is in conformity with the applicable goals and policies of the Tualatin Comprehensive Plan.

**Comment: The comprehensive plan does not call for building residential high rises outside of the downtown area, and the area for the proposed Norwood high rise is specifically left as undeveloped on the maps associated with the comprehensive plan. Per the Tualatin 2040 Comprehensive plan, high density residential/ high rise zone is specifically supposed to be in areas with the greatest access to amenities. The site at Norwood Rd has no access to amenities. See the description copied from the 2040 developmental plan.**

High-Density Residential/High-Rise Planning District (RH-HR)

This district supports a wide range of housing types at the greatest density of household living in areas with the greatest access to amenities.



(d)The following factors were consciously considered:

(i)The various characteristics of the areas in the City;

**The Norwood apartments project is not in context with the neighborhood and would not match the characteristics of the community.**

(ii) The suitability of the areas for particular land uses and improvements in the areas;

**The area is not suitable for use as a residential high rise due to the poor traffic infrastructure, inadequate parking plan, lack of access to amenities, and lack of support by public transportation.**

(iii) Trends in land improvement and development;

**There are no trends of building high rise apartments in any other areas of Tualatin, including presently in the only approved area in downtown. High rise apartment projects should focus on the area where zoning is already approved before considering expanding the zoning area.**

(iv) Property values;

**There are precedents that construction of a high rise apartment complex is associated with negative impacts on nearby single family home property values:**

- 1. St. Charles County v. Breeze Park Senior Living Communities, LLC:** In this case, the construction of a high-rise senior living complex was found to have a negative impact on the property values of neighboring single-family homes. The court ruled that the high-rise complex, which obstructed the view and privacy of the neighboring homes, caused a reduction in property values, and awarded compensation to the affected homeowners.
- 2. Murr v. Wisconsin:** In this case, the construction of a high-rise condominium complex was found to have diminished the value of a neighboring single-family home. The court determined that the high-rise complex, which restricted the development potential and

use of the neighboring property, resulted in a "taking" of property rights without just compensation.

3. **Hobart v. Hobart West Group:** In this case, the construction of a high-rise residential building was associated with a decrease in property values of nearby single-family homes. The court found that the high-rise building obstructed views, created noise and traffic, and resulted in a loss of privacy for the neighboring homeowners, leading to a reduction in property values.

(v) The needs of economic enterprises and the future development of the area; needed right-of-way and access for and to particular sites in the area;

**As the 2040 comprehensive plan, which includes economic development of the Basalt Creek Planning area, does not include the Norwood property, there is no support for the creation of the Norwood high rise apartments having been factored into consideration of economic enterprises and other future development.**

(vi) Natural resources of the City and the protection and conservation of said resources;

**A forest was destroyed to build Autumn Sunrise, and what remains of the forest is on the proposed land for development. The city has provided no evidence that protection and conservation of natural resources was considered in the proposed map amendment. The proposed text amendment could have far reaching impact on natural resources throughout the city if it enables remaining natural land to be developed as high rise apartments.**

(vii) Prospective requirements for the development of natural resources in the City;

(viii) The public need for healthful, safe, esthetic surroundings and conditions; and

**South Tualatin has already experienced a drastic reduction in healthful, safe, aesthetic surroundings. A view of a forest is replaced by a field of mud and two looming water tower eye sores. On dry days, construction dust covers the adjacent neighborhoods. Road noise is much louder, and wind blows harder with the trees gone, resulting in many residential fences along Norwood being blown over and homeowners being saddled with repair costs. Removing the remaining forest would further reduce the healthful, aesthetic surroundings of South Tualatin.**

(ix) Proof of change in a neighborhood or area, or a mistake in the Plan Text or Plan Map for the property under consideration are additional relevant factors to consider.

(e) If the amendment involves residential uses, then the appropriate school district or districts must be able to reasonably accommodate additional residential capacity by means determined by any affected school district.

**Comment: The Sherwood school district commented the ability to accommodate additional students; however TTSD was not contacted to identify how they could accommodate students that may petition to enroll in TTSD so they would not have to travel to Sherwood district schools. There is also no assurance that school district boundary lines will remain in place into the future, so TTSD should also be consulted should boundary lines change.**

(f) Granting the amendment is consistent with the applicable State of Oregon Planning Goals and applicable Oregon Administrative Rules, including compliance with the Transportation Planning Rule TPR (OAR 660-012-0060).

**Comment: The increased population would overburden Norwood and Boones Ferry Roads. There is already inadequate public transportation. The proposed apartments are not consistent with the Transportation Planning Rule.**

(g) Granting the amendment is consistent with the Metropolitan Service District's Urban Growth Management Functional Plan.

**Comment: The proposed Norwood apartments, and the building of any high rise in Tualatin, is not needed given at this time or in the foreseeable future given Tualatin's forecasted housing needs as outlined in the 2040 comprehensive plan. Most significantly, the proposed Norwood Apartments are contradictory to the**



**Metropolitan Service District's Urban Growth Management Functional Plan, specifically Title 12: Protection of Residential Neighborhoods, and Title 13: Nature In Neighborhoods.**

(h) Granting the amendment is consistent with Level of Service F for the p.m. peak hour and E for the one-half hour before and after the p.m. peak hour for the Town Center 2040 Design Type (Comprehensive Plan Map 10-4), and E/E for the rest of the 2040 Design Types in the City's planning area.

**Comment: This project integrated data from Autumn Sunrise to complete the traffic study, however this study gathered data during the pandemic when driving patterns were drastically different. Additionally, Traffic impact from the Norwood apartments project was not comprehensively considered with the impact of Plambeck Gardens and industrial development in the Basalt Creek Planning area. It is probable that if a comprehensive study were completed, significant failures on both Boones Ferry and Norwood Road would be observed.**

(i) Granting the amendment is consistent with the objectives and policies regarding potable water, sanitary sewer, and surface water management pursuant to applicable goals and policies in the Tualatin Comprehensive Plan, water management issues are adequately addressed during development or redevelopment anticipated to follow the granting of a plan amendment.

(j)The applicant has entered into a development agreement. This criterion applies only to an amendment specific to property within the Urban Planning Area (UPA), also known as the Planning Area Boundary (PAB), as defined in both the Urban Growth Management Agreement (UGMA) with Clackamas County and the Urban Planning Area Agreement (UPAA) with Washington County.

**As you can see, the proposed text and map amendments do not meet many of the approval criteria s outlined in Tualatin Development Code, and therefore cannot be approved.**

As a final note, neighbors have become aware that Horizon Christian School has launched an e-mail campaign. **Please note, many, if not most Horizon members do not live in Tualatin and do not have a vested interest in our town and community.** Please be aware that the motivation for this campaign is **not focused on community benefit**, but rather focused on the church raising capital to build a new sanctuary. As evidence of this, here is a screen grab from the page instructing Horizon members to write the city:

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from those of us in support of this project as well.

To send an email, **simply click the button below**, it will open a new email on your device that will include a letter to the Planning Commission and their email address already populated. Then just **add your name, address, and phone number at the end of the email** and send it **no later than Friday, April 14**. You may add personal comments if desired.

Thanks for your help with this important effort that we believe will help us secure a new sanctuary for Horizon and bring new residents to our area!

Blessings,

Pastor Stan

[EMAIL THE CITY OF TUALATIN HERE](#)

[\*\*Email the City of Tualatin Here\*\*](#)

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For all of the above reasons, the city cannot approve the proposed map and text amendments: PMA23-0001, and PTA23-0001.

Thank you, and you are welcome to contact me for further information.

Tim Neary,  
President, Byrom CIO District  
(503) 320-6223

## Madeleine Nelson

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**From:** Madeleine Nelson  
**Sent:** Monday, March 20, 2023 11:31 AM  
**To:** Todd Coleman  
**Cc:** Steve Koper  
**Subject:** RE: Norwood Growth and Traffic  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to Council at the public hearing. The public hearing will be held on May 22, 2023, attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

A Notice of Decision shall be provided to any person who submits written comments. As a comment participant, you will receive a Notice of Decision when the decision is made – do you have a preferred mailing address you would like the notice sent?

### Madeleine Nelson

Assistant Planner

City of Tualatin | Planning Division

503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

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**From:** Todd Coleman <gearhd@yahoo.com>  
**Sent:** Monday, March 20, 2023 9:54 AM  
**To:** Frank Bubenik <fbubenik@tualatin.gov>; Maria Reyes <mreyes@tualatin.gov>; Christen Sacco <csacco@tualatin.gov>; Bridget Brooks <bbrooks@tualatin.gov>; chiller@tualatin.gov; ogonzales@tualatin.gov; Valerie Pratt <vpratt@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>; Sherilyn Lombos <slombos@tualatin.gov>  
**Subject:** Norwood Growth and Traffic

Dear Mayor and council members,

I have lived in Tualatin for over 25 years in three different homes. I could have moved from Tualatin several times, but I live here because I love it. I live near Ibach Park for reference.

I am writing to you because I feel some of your recent decisions are not in the best interest of the city. I'm not necessarily for or against the Norwood development, but I am strongly against your recent projects around the city. You have continued to spend untold amounts of money on improving sidewalks and crosswalks with little to no consideration for traffic and road improvements. The roads need repaired all over town and some need widened. And yet you continue to spend money on sidewalks that will need to be removed and redone as soon as you realize the traffic issues. This will only get worse with new the new development on Norwood.

Your decisions are not improving the lives of the people of Tualatin. If so, why is the old Haggens store still empty. Why do restaurants continue to go out of business around the commons?

Let's focus on traffic flow that encourages people to shop and eat in Tualatin, not stay out of Tualatin due to traffic!

If you would like an example of road repairs that are needed and have been needed for years, please drive over the freeway headed East and get on I5 Northbound. Just before the ramp is a seam that has developed into a massive pothole. You can't avoid it and it continues to get worse.

Thank you for your time and all the many things you do for our community.

Todd Coleman

## Madeleine Nelson

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**From:** Madeleine Nelson  
**Sent:** Tuesday, April 11, 2023 11:20 AM  
**To:** tomcarlisle@comcast.net  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

### Madeleine Nelson

Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

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**From:** tomcarlisle@comcast.net <tomcarlisle@comcast.net>  
**Sent:** Tuesday, April 11, 2023 10:55 AM  
**To:** Ext - Planning <Planning@tualatin.gov>  
**Subject:** Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Tom Carlisle

21442 SW Martinazzi Ave. Tualatin

503.313.2262



## Madeleine Nelson

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**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 10:24 AM  
**To:** Tracy Kashi  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Tracy Kashi <[tskashi@icloud.com](mailto:tskashi@icloud.com)>  
Sent: Wednesday, April 12, 2023 4:12 PM  
To: Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Tracy S. Kashi

10375 SW McDonald St  
Tigard, Or 97224

971-777-1861

Sent from my iPhone



## Madeleine Nelson

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**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 10:48 AM  
**To:** Victoria Soderstrom  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: Victoria Soderstrom <[victorias@posim.com](mailto:victorias@posim.com)>  
Sent: Wednesday, April 12, 2023 4:45 PM  
To: Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

Victoria Soderstrom

4322 Silver Ct

Lake Oswego, OR 97035

503-807-4721

Victoria

## Madeleine Nelson

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**From:** Madeleine Nelson  
**Sent:** Thursday, April 13, 2023 11:18 AM  
**To:** William Wilson  
**Cc:** Steve Koper  
**Subject:** RE: Proposed Map and Text Amendments for Vista Residential Partners  
**Attachments:** Notice of Hearing PMA 23-0001 & PTA 23-0001.pdf

Good Morning,

Thank you for your email. Your comments have been received and will be added to the public record which will be presented to the Planning Commission and Council at the public hearing. The public hearing will be held on May 22, 2023. Attached is the Notice of Public Hearing for additional information. The comments will also be shared with the applicant team.

Madeleine Nelson  
Assistant Planner  
City of Tualatin | Planning Division  
503.691.3027 | [www.tualatinoregon.gov](http://www.tualatinoregon.gov)

-----Original Message-----

From: William Wilson <[wew1951@icloud.com](mailto:wew1951@icloud.com)>  
Sent: Wednesday, April 12, 2023 9:01 PM  
To: Ext - Planning <[Planning@tualatin.gov](mailto:Planning@tualatin.gov)>  
Subject: Proposed Map and Text Amendments for Vista Residential Partners

Dear Tualatin City Planning Commission,

As you consider the land use decisions for the proposed multi-family apartment development by Vista Residential Partners, please accept my comments in support of both the Map and Text Amendments.

As a resident of this community and a constituent of Horizon Community Church and School, these two decisions are very important to the future plans for Horizon and the city of Tualatin too.

I would like to express my sincere concern about the lack of housing opportunities within the city and the impact this shortage has on both prices and rents. Many in the Horizon community wish they could find and afford housing in the city. The most important housing option missing is multi-family development, those between affordable housing projects and single-family homes.

Please support and approve the Map and Text Amendments.

Thank you,

William E Wilson

4515 SW Joshua St  
Tualatin, Oregon 97062

502-692-4674

Sent from my iPhone