CONVENE: 7:00 p.m.

PRESENT: Chair Trent Grantham and Boardmembers Brent Chapman, Brodrick Coval,

Michael Jackson, Hannah Ohman, and Jim Sedore.

Excused: Boardmember Tanya Nozawa.

Staff: Sustainability Coordinator Alyssa Jones Wood and Intern Amita

Devarajan.

CHANGES TO AGENDA:

There were no changes to the agenda.

TREE BOARD MEMBER REPORTS:

No reports were offered by members of the Board.

COORDINATOR'S REPORT:

Coordinator Jones Wood reported the staff prepared and forwarded a letter to the Association of Washington Cities (AWC) in response to the new Washington Wildland-Urban Interface Code. AWC incorporated the letter and sent a separate letter to the Washington State Building Code Council. Staff is engaged in conversations with the Washington State Building Code Council to address some of the City's concerns surrounding the code. A meeting of the State Building Code Council is scheduled with possible action by the Council. The deadline for finalizing the code is March 2024. Many other cities plan to engage during the legislative session to improve the code.

Boardmember Sedore asked whether an environmental impact statement has been completed on the proposed legislation. Coordinator Jones Wood replied that the letter from AWC references environmental impacts and points out provisions in the code subject to an environmental impact statement. Manager Medrud had provided the Board with a memorandum of a synopsis of the proposed code. Additionally, the Water Resources & Sustainability Department released a memorandum on how the code would affect the City in terms of water usage for irrigation, stormwater inconsistencies, stream temperature inconsistencies, and other impacts.

Boardmember Sedore asked whether the code, if passed, would be retroactive or apply only to future construction. Coordinator Jones Wood advised that the law would be applicable to future construction and new building permits, which includes new decks and other smaller building renovations.

Coordinator Jones Wood advised that the three sections of forestry codes the Board and the City have been working are pending until the state adopts the code to avoid any City conflicts with state law. The code is scheduled

for completion by March 15, 2024 and adopted by the Legislature prior to the end of the 2024 session. The City is required to adopt an ordinance adopting the code.

At the December meeting, the Board is scheduled to receive a briefing from City directors and staff on the status of implementation actions in the Urban Forestry Management Plan, as well as the street tree inventory. The City's consultant inspected and documented 1,508 trees located at City buildings and facilities. The consultant collected data on an additional 545 trees on 40 plots using sampling methods. Ground truthing has been initiated by staff based on the 2018 street tree inventory. Volunteers will assist in ground truthing. Coordinator Jones Wood described volunteer outreach efforts staff is pursuing to solicit volunteers. A data sheet will include space for notes, such as documenting the condition of a tree or sidewalk area in need of repair. The consultant is required to provide all inventory data by mid-December. Staff is preparing a list of areas with estimated times to complete an inventory of trees to provide to potential volunteers. She encouraged member to sign-up to inventory some sections of the City. She demonstrated the TreeKeeper software program to input tree inventory data. Because of the time of year, it will be difficult to identify species of trees. Because of the mid-December deadline, inventorying will be on a short timeline. Volunteers have the option of inventorying more than one area of street trees maintained by the City. Inventorying can be completed any time. The consultant is using the TreeKeeper program to track data collection. All City properties will be inventoried of existing trees except for large natural areas that will be inventoried as a sampling block.

Coordinator Jones Wood advised that information is on track to submit to Tree City USA to continue the City's Tree City USA designation.

Olympia Ecosystems has identified a restoration site in Tumwater and invited staff and the Board for a tour on Friday, November 17, 2023. Coordinator Jones Wood invited members to participate in the visit to the Deschutes River Preserve restoration site.

Boardmember Sedore asked whether efforts on tree inventorying are linked to City operations in terms of replacement or removal of trees to ensure the actions are included within the inventory. Coordinator Jones Wood responded that she is working with City GIS to complete the work as the action is included within the Urban Forestry Management Plan. Staff has been transitioning to new software used by the City for accounting, asset inventory, invoicing, and other operational processes. The work order system for staff is currently not compatible with the older system. Staff is working on transitioning existing data tree removal and tree additions.

Boardmember Sedore asked whether the inventory accounts for when trees were planted. Coordinator Jones Wood advised that the specific planting

date is not included other than the data collection date. Boardmember Sedore recommended notating the date of tree planting for future reference. Coordinator Jones Wood noted that the inventory is specific to City maintained trees only.

PUBLIC COMMENT:

There were no public comments.

INTERN STREET TREE REVIEW PROJECT: Intern Amita Devarajan reported their efforts included research on the affects of climate change in the Puget Sound Region to determine how bioclimatic changes predicted to occur will affect native trees and trees included in the City's draft of an approved tree list. Initial research acknowledges that cities are beginning to recognize the importance of urban forests for enhancing the general quality of life, as well as a way to combat and adapt to climate change. The resilience of trees and urban forests and ecosystem benefits are under threat from the impacts of climate change. Based on studies and several resources from Washington State agencies, impacts will worsen over time. It is crucial to take action and begin moving forward on climate adaptation by planting street trees and urban forests.

Intern Devarajan reported they reviewed broad bioclimatic conditions of the Puget Sound Region. The region has been warming at a rate of 0.2 °F per decade since 1960 with the average temperature projected to increase by 5 °F under a low climate change scenario. The range could increase by 8.6 °F under a high climate change scenario by the end of the century. The average number of days greater than 86 °F determine Heat Zones. The Puget Sound Region historically experiences Heat Zone 2 (1 to 7 days) exceeding 30 °C or 86 °F. Under the intermediate climate change scenario, climate is projected to stay in Heat Zone 5 by 2039 and shift to Heat Zone 3 (7 to 14 days) exceeding 30 °C by 2040 to 2069. Under the high climate change scenario, climate is projected to shift to Heat Zone 3 by 2039 and Heat Zone 4 (14 to 30) by 2040 to 2069. Eventually the region will experience Heat Zone 6 for 45 days exceeding 30 °C by 2070 through 2099.

The Puget Sound Region experiences Hardiness Zone 8 or -12.2 °C to -6.7 °C. Under a low climate change scenario, the hardiness zone is projected to stay in Zones 8A to 8B in the Puget Sound Region by 2039. The zone will then shift over time to Zone 9 by 2040 to 2069. Under a high climate change scenario, the hardiness zone is projected to shift completely to Zone 9 to 2039 and remain in Zone 9 until 2099.

The results imply that less hardy tree species may be able to grow in the region and could drastically alter the ecological benefits already existing in urban forests. Expanding on that possibility, Intern Devarajan reported they researched a report titled, *Climate Change Vulnerability of Urban Trees*, *Puget Sound Region*, *Washington*. The report assesses the impacts of climate change on habitat suitability and heat transfer zones of three tree

species native to the Puget Sound Region of Western red cedar, Western hemlock, and Douglas fir. The report found that the range of those species in Puget Sound is likely to continue to provide climate conditions suitable for the species by the end of the century; however, individual seed transfer zones of the species are considered separately. Bioclimatic conditions that comprise the current seed transfer zone in Puget Sound for Western red cedar, Western hemlock, and Douglas fir are likely to diminish, shift further Northwest toward the Canadian islands, or disappear by the end of the century. With predicted bioclimatic conditions, the report suggests increasing the diversity of seed sources that include current seed zones as well as future seed zones as it may enhance and ensure the probability of successful reforestation and restoration of Western red cedar and other native trees species in the region.

Precipitation in the region has increased by 0.49 inches per decade since 1960 and is projected to increase by 2.1 to 3.2 inches under the low and high climate change scenarios by the end of the century. In a thesis authored by Jacquie S. Kwok on An Evaluation Of Potential Policy Tools And Frameworks For Urban Tree Canopy Cover Management In North Vancouver, the author documents through research that urban trees and urban forest canopy cover have a great capacity for rainfall retention and the ability to influence the lifetime velocity and peak flows of stormwater runoff. On average in coastal Vancouver, B.C., the rainfall interception rate of Douglas firs was 49.1% and in Western red cedars, the rate was 60.9%. The significant portions of rainfall captured and evaporated rather than contributing to urban storm flows have significant implications on flood protection in urban environments. The additional utilities by urban forests are also compromised as canopy cover decreases, which has been a trend in Washington State. The author emphasizes the notable advantages of planting large, longer lived trees as they reduce the number of trees required and removal of trees at the end of its lifespan, as well as lowering the longterm costs and fuel consumption required for maintenance.

The difference between deciduous and evergreen trees is also important as evergreen trees retain foliage year-round and have a greater ability to attenuate rainfall throughout the year. Aside from the direct impacts of climate change, other smaller impacts will occur in urban environments as an indirect consequence, such as insect outbreaks and pests. Scientists have documented the presence of pests as more abundant on urban trees than in rural trees. Research supports the conclusion that urban heat may explain those affects.

Intern Devarajan cited information in a study, *Urban Warming Drives Insect Pest Abundance on Street Trees* of evidence that scale insect populations may be locally adapted or individuals have been climatized to the temperature of urban habitat patches in which they reside. The effect was observed over a temperature gradient common in many urban heat

islands indicating that urban warming poses a broad and immediate threat to urban trees and the services they provide including cooling and carbon sequestration. The adaptation or acclimatization of herbivorous pests to warm environments may represent an ecological tipping point after which pests can overwhelm plant defenses and escape natural enemy control. Temperature increases of similar magnitude are predicted under global climate change if rising global temperatures trigger herbivorous pests similar to the ones observed in the study as both urban and rural trees may be threatened by greatly increased herbivore pests in the future by several orders of magnitude of threat.

The main goal of the study and research was to provide usable information for the City. The research involved a tree species vulnerability assessment comprised of a list of numerous conditions that compile outcomes based on many research articles and studies. The goal was using the trees within the draft of the Street Tree List to cross compare to the assessment to develop a spreadsheet assessing the vulnerability of trees on the list.

The assessment summarizes climate change projections for the Puget Sound Region and provides an assessment of tree species vulnerability in the region. It considers projected shifts in plant hardiness and heat zones and compiles research of how species of interest are projected to tolerate future conditions while assessing the adaptability of planted trees to drought, flooding, wind damage, and air pollution, as well as environmental conditions such as shade, soils, and restricted rooting. The results summarize that of the evaluated tree species, 27% received a high adaptability score, 59% received a medium adaptability score, and 14% received a low adaptability score. When considering heat zones only, the majority of tree species fall into the low to moderate vulnerability category. The ratings remained the same between low and high climate change projections because all assessed tree species are considered suitable under the heat zone projections through the end of the century.

Intern Devarajan reviewed a list of tree species with a vulnerability rating of low, low-moderate, moderate-high, and high in heat and hardiness zones. Of the tree species, only big leaf maple is native to the Pacific Northwest. Many of the trees in the study were not native to the Pacific Northwest and some were from different countries. Policymakers should consider that tree species vulnerability does not represent a planting list and should be combined with knowledge of the region and other factors, such as aesthetics, local site conditions, wildlife value, or nursery availability. Other important considerations include using the information incongruent with information from local climate experts and studies of the local area.

Chair Grantham commented on the number of maple trees planted within the City. He asked about the species that would serve the City the best. Intern Devarajan advised that the best species are those ranked in low

vulnerability for heat and hardiness including red maple. Several maple species are predicted for tolerance of high heat, such as red maple and Norway maple. Many native trees reflect some signs of struggle, as well as species used for reforestation, such as Douglas fir and Western hemlock.

Coordinator Jones Wood noted that the proposed draft of the Street Trees List includes some native trees for landscape areas only that are not located near sidewalks but for unimproved right-of-way. The current list does not include any native tree species.

Boardmember Sedore spoke to his former occupation in forestry and how the state's reforestation efforts are divided into seed zones. The state was careful in reforestation efforts to plant seeds from the area in which the seed had originated. However, it appears the cited research recommends not pursuing that methodology and using other seed sources that have been under more stress (higher temperatures, lower precipitation) and planting those seeds to reforest native forests because in the future, the species will need to have those genetic characteristics to survive climate change. He also understands that plants and animals are negatively affected by weather extremes rather than averages. He asked whether the research related to climate change is indicative of radical extremes in temperature and precipitation rather than average fluctuations in temperature, and whether the direction is to plant trees found in Northern California in the future, as the Pacific Northwest will be experiencing the same type of climate in the future.

Intern Devarajan said their understanding of the research speaks to a suggestion of a mix of diversity of seeds from different seedlots. However, in terms of weather extremes, most studies accounted for extreme weather other than for testing of high extreme in temperatures, which increases the pest population. Most of the information used data from the 1960s, averaged the data, and factored future parameters.

Coordinator Jones Wood added that in terms of extreme weather, a lower level of certainty exists amongst scientists for predictions because a greater level of certainty can be provided by using averages.

Boardmember Sedore noted that extreme temperature could kill, which speaks to the importance of planning for extreme temperatures.

Coordinator Jones Wood responded that the global average temperature of any temperature increase above 1.5 degrees results in more death and destruction and when it increases above 2 degrees, it creates significantly more destruction and deaths.

Boardmember Sedore pointed out that the Pacific Northwest climate receives much precipitation throughout most of the year except during the

summer when 90 to 120 days of summer drought often occurs. If climate change increases the severity of summer drought regardless of the amount of precipitation the Pacific Northwest receives in December, the problem is not receiving any precipitation from May to October affecting plant survivability.

Boardmember Chapman reported that on the Capitol Campus, the Department of Enterprise Services is employing multiple strategies. He cited the importance of diversity of species that are tolerant of various conditions. More native species are being planted on the campus, as well as planting different species not considered 10 years ago, such as Chinese Pistache, which grows fast and can live up to 150 years, tolerates heat, drought, and a wide range of soils and pH levels. The Department has implemented a diversity of strategies, which he encouraged the City to consider rather than limiting a strategy to tree species reduce risk.

Discussion followed on the tree species for the annual Arbor Day tree giveaway. Coordinator Jones Wood invited the Board to assist staff in sourcing plants for the tree giveaway in April.

Intern Devarajan commented that many regions in the state are using seed sources from the Toutle area for reforestation and restoration efforts.

In response to questions about the vulnerability chart of different species, Intern Devarajan explained that the chart is based on the *Tree Species Vulnerability Assessment for the Puget Sound Region*. Most of the factors are related to urban conditions including heat and hardiness zones. They were asked about the score related to adaptability. Intern Devarajan said the plant adaptability score is based on a scoring system of different factors for vulnerabilities of disease, drought, ice, and other factors. They offered to follow-up with additional information.

Boardmember Chapman said that based on his experience, the adaptability scores are accurate in terms of the species that are more resilient. Street trees are more survivable during adverse conditions. However, other variables are included such as a species suitable for heat and hardiness that might score lower for adaptability because the species is not drought tolerant.

Coordinator Jones Wood advised that the next step is finalizing the list for review by the Board in conjunction with the Planning Commission during a joint worksession. The review will discuss the results, possible removal of some trees, and, and listing trees based on a series of factors rather than alphabetically.

Boardmember Chapman noted that availability is also an important factor to include.

Discussion ensued on resources to consult for annual updating of the list and sources of availability, such as Oregon rather than locally as it might speak to hardiness to future conditions.

Intern Devarajan reported that generally, urban trees in the Puget Sound Region would be facing the general effects of future bioclimatic conditions while experiencing altered ecological dynamics and changes pertinent to the urban environments of Tumwater. Indirect effects of the urban forest within the region may occur through the changing and increased abundance of insects, pests, and pathogens, and non-native invasive species, as well as the probability, severity, and extent of severe storms with urban storm The projected changes in climate, associated impacts, and runoff. vulnerabilities have important implications for urban forest management including the planting and maintenance of street and park trees, equity and environmental justice efforts, and long-term planning from partnerships. In terms of longevity of trees in the landscape, future scenarios of urban trees and forests that are resilient or in decline will depend on the management and planning actions. Recommendations from the references and articles highlight consideration by policymakers and urban forestry planners to:

- Incorporate the role of climate change as a driver of urban tree die back and mortality into adaptive management practice to reduce risks and economic losses, maintenance of urban canopy cover for rainfall interception as an adaptive measure
- Forming adaptive management using a combination of tree inventory analyses and monitoring with forecasts of urban forest responses under different climate change and management scenarios
- Collaboration between governments, scientists, and the public to develop locally engaged and long-term monitoring plans
- Selection of urban trees that have a critical influence on the adaptability of future urban forests and street trees particularly with the intricacies of climate change.
- Careful considerations for defining seed sources for restoration and reforestation of urban forests in the region and to adopt existing plant ecotypes.
- Identify species likely to be tolerant of future climate and support planting, maintenance, and preservation of trees through urban forestry planning and management.

Boardmember Sedore questioned the possibility of analyzing the data based on natural laws rather than municipal laws by considering the potential loss of specific species because of climate change as opposed to municipal practices. Coordinator Jones Wood advised against identifying any loss of individual trees because of climate change as most trees removed were

because of infrastructure, visual, or screening issues. For natural areas, sample plot losses could be factored on climate change, as well as in the future as it would be possible to track the reason for removal. Boardmember Sedore offered that it would be helpful in the future to ensure some means of noting whether a loss of a tree(s) was by wind, drought, storm damage, etc., as it might be possible to recognize tree species that might be more vulnerable to storm damage than other species.

PROPOSED NON-REGULATORY INCENTIVES AND PROGRAMS: Coordinator Jones Wood referred to a prior memorandum of proposed examples of regulatory incentives and programs. The information was drafted based on information from other towns and cities in the Pacific Northwest for different non-regulatory incentives for private and public properties. The Urban Forestry Management Plan includes two action items related to non-regulatory incentives and programs. Following the initial review by the Board, staff was asked to provide a recommendation based on the list of examples. During the interim, the City received a grant with a required 50% match. The request to the Board is to review the proposed list of recommendations and provide a recommendation to include some actions in the next biennium budget. The total recommended program would be budgeted at \$58,465 per year with additional staff resources to administer the program with half of the cost funded by the grant for a total of approximately \$29,000 allocated in the budget each year.

Coordinator Jones Wood reviewed the program proposal:

- Develop a subsidized street tree-trimming program to assist lowand moderate-income Tumwater residents struggling to maintain existing street trees. Income thresholds for the program and other qualifying programs included would be developed after stakeholder outreach. The City would contract with an ISA Certified Arborist to perform maintenance and trimming on properties selected for the program at a cost estimated at \$32,000 per year (160 hours per year). The US Forest Service grant covers 50 percent or \$16,000 of the program each year for four years of the grant.
- Recommendations for public plantings was not included for rightof-way and street trees pending information from the inventory identifying priority planting areas based on environment justice and equity measures.
- Two programs to address private properties: one for retaining existing trees and one for planting more trees:
 - Ocontinue the annual Arbor Day Tree Giveaway and add one more data-driven targeted annual giveaway. The giveaway should prioritize and target participation from private property owners/renters of the City in census block groups with a Tree Equity Score of 84 or less, census tracts Environmental Health Disparity score of 8 or higher, or areas identified in the City of Tumwater Tree Inventory as priority

planting areas. Staff recommends retaining 60 percent of funding allocated for the program for addresses falling into the categories as identified. To reach those residents and property owners effectively in the target areas, the City would conduct an annual mailing and/or door hanger outreach campaign to encourage participation. The property owner participating in this program would be responsible for the trees once they leave the in-person planting workshop.

To participate residents would need to:

- 1. Apply to the program;
- 2. Attend a pre-recorded tree care webinar or the annual in-person planting and care workshop;
- 3. Be responsible for bringing the trees, watering bags, compost, and mulch home from the in-person planting and care workshop; and
- 4. Sign a Tree Care Pledge

The program is estimated to provide 100 trees per year. The trees would not be provided to apartment dwellers as the goal is to plant trees in soil in areas of single-family homes, duplexes, triplexes, four-plexes, or accessory dwelling units.

Boardmember Sedore questioned the authorities for determining where trees are planted. Coordinator Jones Wood said the program is an application-driven process that would be cross-referenced with a list of priorities. The in-person workshop and training would emphasize best practices for planting trees on private property and not in public right-of-ways.

Coordinator Jones Wood shared a map of environmental health disparities of Tumwater census tracks. The program would prioritize those areas with a score of 8 or more. The map was prepared by the Washington Department of Health after the development of the Urban Forestry Management Plan.

Boardmember Sedore commented that some of the sites are not conducive to trees. Coordinator Jones Wood responded that staff could include other plant species, such as prairie species. The map is reflective of the long-standing correlation between low tree canopy and areas with a higher concentration of people of color or poor and working class families. The 50% match requirement of the grant is tied to environmental justice and equity. She acknowledged the need to modify the program to some degree based on the Board's feedback.

 Retain existing trees: recent community engagement in Tumwater suggests homeowners often remove trees because of the potential

financial impacts of a falling tree or tree limbs. Those fears can often be addressed by conducting a tree health assessment by the future urban forester. Selection of applicants taking advantage of the program would be through an application to the City and targeted outreach throughout the City to advertise the program.

Boardmember Sedore commented on the City's regulations requiring homeowners removing six or more trees to obtain a permit. He suggested in those circumstances, the City might consider visiting the site and recommending against the removal of healthy trees, as there is no incentive if property owners have the legal right to remove up to six trees. Coordinator Jones Wood said in terms of the future, the City's tree and vegetation preservation ordinance could require property owners to retain a specific number of tree credits. The process would also help to inform property owners not aware of the City's tree removal permitting process.

Boardmember Sedore mentioned some neighbors who moved from Arizona to be closer to family and removed all their trees for the property to resemble their former property in Arizona, which speaks to the convincibility of such a program. Coordinator Jones Wood responded that the City does not anticipate 100% compliance in the implementation of any programs as there will be struggles and adjustments creating lessons learned to improve programs and processes.

Boardmember Sedore referred to City maintenance of trees. He asked about the status of tree maintenance by City utilities. Coordinator Jones Wood said it might be possible to utilize the utilities tree contractor for the program. She understands the City has encountered some difficulties of contracting with professionals to trim trees near utility lines. The City's maintenance is focused on street trees not obstructed by utility lines.

Coordinator Jones Wood reported the grant award is from the federal government and administered through the River Network, a non-profit organization. The award requires administrative processes as part of the pass-through.

Staff anticipates the budget process will be initiated in March 2024. Some time is available for the Board to delay a recommendation if desired until March 2024.

MOTION:

Chair Grantham moved, seconded by Boardmember Coval, to table the inclusion of the recommendations within the budget until March 2024. Motion carried unanimously.

OTHER BUSINESS:

The Board discussed the status of heritage tree nominations. Boardmember Sedore reported on a proposed tree nomination of a tree near the Panda Express Restaurant. The property owner refused to consider the nomination

because the owner wants to retain the flexibility associated with the future of the tree(s).

Boardmember Sedore questioned whether the Board would have the opportunity to review data for the tree inventory, such as identifying the location of Garry oaks in the City. Coordinator Jones Wood advised that the data does not include unclassified street trees under review. However, she can download the data for sorting. Boardmember Sedore noted the Urban Forestry Management Plan included a pie chart identifying different tree species. He asked whether that type of information would be incorporated within inventory data. Coordinator Jones Wood said the City's data could be utilized for that and other types of analysis.

Boardmember Sedore advised of the discussions that spoke to updating the Urban Forestry Management Plan and that he is assuming staff is continuing to collect data and updating charts in the plan. Coordinator Jones Wood acknowledged the need for additional analysis with new information by utilizing grant funding for the urban forester to lead the process.

NEXT MEETING DATE:

The next meeting is scheduled on Monday, December 11, 2023.

ADJOURNMENT:

With there being no further business, Chair Grantham adjourned the meeting at 8:40 p.m.

Prepared by Valerie L. Gow, Recording Secretary/President Puget Sound Meeting Services, psmsoly@earthlink.net