

****PUBLIC NOTICE****



CITY COUNCIL WORKSHOP AND REGULAR SESSION
Thursday, January 13, 2022 at 5:45 PM
City Hall | 3300 Corinth Parkway

Pursuant to section 551.127, Texas Government Code, one or more council members or employees may attend this meeting remotely using videoconferencing technology. The videoconferencing technology can be accessed at www.cityofcorinth.com/remotesession. The video and audio feed of the videoconferencing equipment can be viewed and heard by the public at the address posted above as the location of the meeting.

A. NOTICE IS HEREBY GIVEN of a Workshop and Regular Session of the Corinth City Council.

B. CALL TO ORDER

C. WORKSHOP AGENDA

1. Review and receive direction on the Home Rule Charter amendments previously discussed during the Workshop Sessions held on November 18, 2021, and December 16, 2021.
2. Receive a report and hold a discussion regarding iChoosr, LLC's solar power program for the homeowners of Corinth.
3. Receive a report regarding the Lake Cities Fire Department's (LCFD) 48/96 work schedule and a tractor drawn aerial truck.
4. Review and discuss the Fire Station Location Study performed by the UTA Capstone class.
5. Discuss Regular Meeting Items on Regular Session Agenda, including the consideration of closed session items as set forth in the Closed Session agenda items below.

D. ADJOURN WORKSHOP

E. CALL TO ORDER, INVOCATION, PLEDGE OF ALLEGIANCE & TEXAS PLEDGE

F. PROCLAMATIONS AND PRESENTATIONS

1. Presentation of the 2021 Richard R. Lillie Texas Chapter of the American Planning Association Excellence Award.

G. CITIZENS COMMENTS

Please limit your comments to three minutes. Comments about any of the Council agenda items are appreciated by the Council and may be taken into consideration at this time or during that agenda item. Council is prohibited from acting on or discussing items brought before them at this time.

H. CONSENT AGENDA

All matters listed under the consent agenda are considered to be routine and will be enacted in one motion. Should the Mayor or a Councilmember desire discussion of any item, that item will be removed from the Consent Agenda and will be considered separately.

2. Consider and act on minutes from the December 16, 2021, City Council Meeting.

I. PUBLIC HEARING

- 3. Conduct a public hearing to consider testimony and take action on a proposed amendment to the City’s Unified Development Code (UDC), Section 4: Sign and Fence/Screening Regulations, Subsection 4.02.11. Screening Requirements for Residential and Nonresidential Properties, Subsection 4.02.11.C.1. Nonresidential Construction Abuts Residential Zoning Classifications (ZTA21-0001).

J. BUSINESS AGENDA

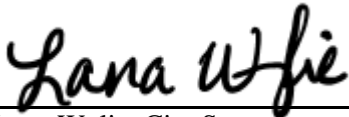
- 4. Consider and act on a Memorandum of Understanding between the City of Corinth and iChoosr, LLC for the purpose of providing homeowners of Corinth with group purchasing power in the procurement of a high quality residential solar PV system installation, including financing options, and authorizing the City Manager to execute the necessary documents.
- 5. Consider and act on an Interlocal Agreement (ILA) with Lake Dallas, Hickory Creek, and Shady Shores for legal services to prepare a contract and franchise agreement for the broadband initiative, with Corinth managing the legal services agreement in an amount not to exceed \$27,000.

K. COUNCIL COMMENTS & FUTURE AGENDA ITEMS

The purpose of this section is to allow each Council Member the opportunity to provide general updates and/or comments to fellow Council Members, the public, and/or staff on any issues or future events. Also, in accordance with Section 30.085 of the Code of Ordinances, at this time, any Council Member may direct that an item be added as a business item to any future agenda.

L. ADJOURN

Posted on this 7th day of January 2022, at 11:30 A.M., on the bulletin board at Corinth City Hall.



Lana Wylie, City Secretary
City of Corinth, Texas



CITY OF CORINTH
Staff Report

Meeting Date:	1/13/2022	Title:	Amendment Home Rule Charter
Ends:	<input type="checkbox"/> Resident Engagement <input checked="" type="checkbox"/> Proactive Government <input checked="" type="checkbox"/> Organizational Development <input type="checkbox"/> Health & Safety <input type="checkbox"/> Regional Cooperation <input type="checkbox"/> Attracting Quality Development		
Governance Focus:	<i>Focus:</i> <input checked="" type="checkbox"/> Owner <input type="checkbox"/> Customer <input type="checkbox"/> Stakeholder		
	<i>Decision:</i> <input checked="" type="checkbox"/> Governance Policy <input type="checkbox"/> Ministerial Function		
Owner Support:	<input type="checkbox"/> Planning & Zoning Commission <input type="checkbox"/> Economic Development Corporation <input type="checkbox"/> Parks & Recreation Board <input type="checkbox"/> TIRZ Board #2 <input type="checkbox"/> Finance Audit Committee <input type="checkbox"/> TIRZ Board #3 <input type="checkbox"/> Keep Corinth Beautiful <input type="checkbox"/> Ethics Commission		
	N/A		

Item/Caption

Review and receive direction on the Home Rule Charter amendments previously discussed during the Workshop Sessions held on November 18, 2021, and December 16, 2021.

Item Summary/Background/Prior Action

A home-rule city can amend its charter through a vote of its residents but not more often than every two years. Corinth voters last amended the charter in 2016. Staff recommends the council consider amending the charter in two potential areas:

1. Proposed Modification: Change the term of a council member from two years to three years with two council being elected every year rather than three. Currently the mayor, place 2 and place 5 are elected in odd years and places 1, 3, and 4 are elected in even years. The charter change would include a transition provision from two-year terms to three year terms by place as follows:

Office	Last Elected	Term Expires	If Pass/ in 2022 Election – Election Year in Which 3 year will apply	Next Election Year	No. of Years in Term	Term Expires	Next Election Year	Term Expires
Mayor	2021	2023	2023		3 years	2029	2032	2035
Place 1	2020	2022	2024	2024	3 years	2027	2030	2033

Place 2	2021	2023	2025	2025	2 years	2028	2031	2034
Place 3	2020	2022	2024	2024	1 year	2025	2028	2031
Place 4	2020	2022	2024	2024	3 years	2027	2030	2033
Place 5	2021	2023	2023	2026	3 years	2029	2032	2035

2. Proposed Modification: That the position of mayor pro-tem be formally established in the charter. The council may also wish to consider the method of selecting the mayor pro-tem, e.g., by vote of the council members, appointment by the mayor, the council member being the longest tenured member, or by rotation.

The estimated cost of a run-off election is \$20,000.

Financial Impact

This item would be considered at the May 2022 election cycle.

Staff Recommendation/Motion

N/A



CITY OF CORINTH
Staff Report

Meeting Date:	1/13/2022	Title: Program Solar Panel - iChoosr
Ends:	<input type="checkbox"/> Resident Engagement <input checked="" type="checkbox"/> Proactive Government <input type="checkbox"/> Organizational Development <input type="checkbox"/> Health & Safety <input type="checkbox"/> Regional Cooperation <input type="checkbox"/> Attracting Quality Development	
Governance Focus:	<i>Focus:</i> <input type="checkbox"/> Owner <input checked="" type="checkbox"/> Customer <input type="checkbox"/> Stakeholder	
	<i>Decision:</i> <input checked="" type="checkbox"/> Governance Policy <input type="checkbox"/> Ministerial Function	
Owner Support:	<input type="checkbox"/> Planning & Zoning Commission <input type="checkbox"/> Economic Development Corporation <input type="checkbox"/> Parks & Recreation Board <input type="checkbox"/> TIRZ Board #2 <input type="checkbox"/> Finance Audit Committee <input type="checkbox"/> TIRZ Board #3 <input type="checkbox"/> Keep Corinth Beautiful <input type="checkbox"/> Ethics Commission N/A	

Item/Caption

Receive a report and hold a discussion regarding iChoosr, LLC’s solar power program for the homeowners of Corinth.

Item Summary/Background/Prior Action

iChoosr, LLC – Texas Power Switch currently works with Corinth’s residential customers to lower electricity bills through a group negotiated electric rate. Residents re offered an opportunity to register, without obligation. iChoosr negotiates rates with providers and presents the information to residents who either move forward with the new proposed contracted rate or stay with their current plan.

iChoosr is now launching a group buying program for solar power, like they are currently offering in Europe. The program follows the same process as the electric rate program, wherein, there is a registration, auction, recommendation, and then a decision by the resident. This program provides an option for residents to receive benefits of solar power and aligns with the City’s efforts as a Sol Smart City.

A link to the existing program in Europe is <https://solartogether.co.uk/ichoosr/home>

The marketing highlights include:

1. It’s easier as part of a group

As a group you can get a more competitive offer.

2. Clear and objective information, you can trust

We will give you clear and objective information, so you can make a well-informed decision.

3. Complete, high-quality installation

The offer consists of a complete system, including a survey, installation, monitoring and warranties.

4. Extended guarantees

We set conditions for qualified installers to ensure you receive a high-quality offer with extended guarantees.

Who can participate?

All residents living in a participating community and who own their own house (or have permission from the landlord to install a solar PV system) can register for the Solar Together group-buying scheme. Small and medium-sized enterprises (non-domestic) and Commonhold Associations meeting this requirement can participate as well.

How does group-buying for solar work?

Registration - When you register online for your complete solar PV system, you will be asked questions about your house, roof, and electricity usage. If you are registering for battery storage only, you will be asked about your current solar PV system and electricity usage. If you don't know the exact figures for your roof size or electricity usage, we can help you estimate with industry or local averages. You can enter more accurate information when you have it.

Auction - The auction is a reverse auction, meaning the lowest bid wins. The winning bid sets the price for all solar systems and battery systems. All installers are pre-vetted and must comply with criteria to guarantee the quality of the offer.

Personal recommendation - After the auction, you will receive a personal recommendation which will include information about the winning installer, a complete system, costs and savings. This information is for you to consider, if you have more questions, you can always contact the Solar Together helpdesk.

You decide - After you have received your personal recommendation, you will have six weeks to decide whether you want to accept it or not.

To ensure you make a well-informed decision we will offer you the opportunity to attend an online information session where you will hear from the winning installer and ask any questions you may have in the live questions and answers section. If you have registered, you will receive an invitation to the information session ahead of time.

When you are ready to make a decision, you can accept or decline your personal recommendation. If you choose to go ahead and accept with Solar Together, we will ask you for a deposit. This deposit is conditionally refundable; more information can be found in our deposit conditions.

How does solar PV work?

Turning sunlight into electricity - Solar photovoltaic (PV) panels turn sunlight into electricity. In order to use this energy, the panels mounted on your roof need to be connected to an inverter using cables. Our package includes all the necessary equipment for a complete solar installation so, after installation, you will be able to automatically generate your own electricity from the panels installed.

During sunny days the solar panels will produce more electricity than you are able to use. Unused electricity is exported to the national grid, unless you have got a power diverter or battery installed, meaning you will store currently unused

electricity for consumption at a later time. At other times you will use more energy than your solar panels generate. You will then use electricity from the national grid - just like you do now.

How much electricity does a solar panel produce? - The total amount of electricity generated will differ on every rooftop and will depend on the orientation towards the sun, the amount of shade and the slope of your roof. During registration, we will ask you various questions about your roof in order to provide a personal estimate of how much electricity your solar panels will generate on your roof.

After you have accepted your personal recommendation, the winning installer will visit you to complete a site survey which will verify all the information provided at registration.

There are many myths about solar panels, read our blog posts about the [Top 8 myths about solar panels explained](#).

Watt peak (Wp) and kilowatt-hour (kWh) - Just like other electrical appliances, the power of solar panels is measured in Watts and expressed as kilowatts per hour (kWh). This is simply how many 1,000 Watts are produced every hour. The amount of electricity generated will depend on the annual amount of sunlight, as the amount of sunlight continually changes, the maximum power output of a solar panel is known as its Watt peak (Wp).

Optimal conditions for solar panels are in a location that is south-facing and shade-free, under these conditions a system in the UK will generate approximately 90% of its Watt peak power. Find out more about self-consumption in our blog post, [Solar self-consumption: What is it and the best ways to increase it](#).

Taking shade into account - Shade can have a negative effect on the efficiency of a solar PV system and reduces the available roof space. If you do have shade on your roof from chimneys, nearby trees or buildings we can offer an optimized solution to increase the efficiency of the system and help minimize the effect of shading.

If you are not sure whether this applies to you, your installer will be able to advise on the best system for you at the survey stage. In the event that you decide to add optimization to your panels and the surveys show you don't need it the installer will remove this from your price.

The British weather can be unpredictable at the best of times, but that doesn't mean that your solar panels won't work during the winter months or on cloudy days. To find out why read our blog post, [Solar panels: Do they work on cloudy days and in the winter months?](#)

If you accept your personal recommendation for a solar PV system:

Roof survey - After accepting your personal recommendation, the winning installer will need to survey your roof. The roof survey can only be scheduled after paying the £150 deposit. After receiving the payment, your details will be transferred to the installer. Once on-site, the installer will check whether the recommended number of panels will fit and if the expected generation will be reached. During the survey, you can also ask the installer questions or discuss changes based on your roof.

Not all roofs are the same! There are many factors that can change the suitability of having solar panels installed on your roof. Read our blog post [Solar panels: Is your roof suitable?](#) where we go through the top 7 factors.

Installation - If there are any changes to your original personal recommendation, you will need to approve your survey report and the new contract. You and the installer will schedule the installation date. Once the installation is complete you will then receive the invoice, minus the deposit. This final invoice has to be paid in full after the installation.

Savings on electricity - After installation, you will start saving money on your electricity by generating your own renewable electricity. Find out [How to save money on your energy bills with a solar PV system](#).

How does battery storage work?

Save more with battery storage - Electricity generated that is not being used will automatically be exported to the national grid. Battery storage stores the unused energy that is generated by your solar panels, meaning you can use the solar-generated energy whenever you want. This would allow you to use the stored energy, generated during the day, in the evening when you're watching television or turning on the dishwasher instead of drawing electricity from the grid via your supplier.

Regardless of the measures, you take to maximize self-consumption it is likely that there will be times when you generate more electricity than you need, with the surplus being exported. Read more to understand why this is important and more about self-consumption in our blog post, [Solar self-consumption: What is it and the best ways to increase it](#).

The decision to fit battery storage is not purely a financial one. The idea of becoming less dependent on electricity suppliers, whilst at the same time reducing your carbon footprint, can be a significant motivating factor. Read our blog post, [Solar battery storage: Is it worth it?](#)

There are ways to make the most of the electricity in each of these ways, which we have outlined below. However, we would always recommend you discuss your options with the winning installer.

If you install or have installed a solar PV system but not a battery, the electricity produced can be:

1. Used as it's being generated - Self-consumption is about using as much of the electricity your panels generate as possible.

There is a range of actions you can take to make sure that as little solar energy as possible ends up being sent to the grid. To maximize self-consumption, you can:

- Set up timers to run devices and appliances during the day
- Get a power diverter to power your immersion heater
- Install an Energy Management System (EMS)

2. Exported to the grid - The Feed-in Tariff (FiT) was the Government scheme through which people or businesses who generated electricity from renewables were paid for the energy they used and exported to the grid. The scheme closed to new applications on 31st March 2019.

A replacement for this is the Smart Export Guarantee (SEG). Suppliers with more than 150,000 domestic customers have to offer at least one SEG tariff. They would also set the price they would pay for each kilowatt-hour (kWh) of electricity bought. Not all energy suppliers currently provide these, but more are likely to follow.

If you decide not to take battery storage you could still benefit from your excess energy by exporting to the grid and getting paid by energy suppliers through an export tariff.

Pros and Cons of battery storage - We have listed some pros and cons below but if you have questions about battery storage, we advise you to discuss it with the winning installer.

Pros:

- Helps you use more of the electricity you generate and save on your energy bills
- Increases your self-sufficiency as you won't need to rely on importing energy from the grid as much at times when you are not generating
- Some energy companies may pay to use your battery to store excess grid electricity
- They can enable you to take advantage of cheap-rate electricity
- Typically require little maintenance

Cons:

- Currently, adding battery storage is costly but through the Solar Together group-buying model, we aim to bring these costs down. Read our blog post on [Solar Together: How do we get a competitive price for you?](#)

If you accept your personal recommendation for battery storage:

Survey - After accepting your personal recommendation and paying the £150 deposit, your details will be transferred to the installer. The installer will check if the chosen battery capacity is right for your consumption and solar PV system. For battery storage, an on-site survey is usually not required.

Installation - Your installer will offer you an installation date. Installation of a solar battery normally takes 4-5 hours. Once the installation is complete you will then receive the invoice, minus the deposit. This final invoice has to be paid in full after the installation.

Increase your self-consumption -After installation, you will benefit by having access to your own renewable energy at any time of the day or night. Helping you save money on your electricity bill. Find out more about self-consumption in our blog post, [Solar self-consumption: What is it and the best ways to increase it.](#)

EV charge points



During registration, you can let us know you are interested in adding an EV charge point. Please note that this would be at an additional cost specific to your needs and will therefore not appear in your personal recommendation.

Your installer will discuss your requirements for installing an EV home charge point. During the survey, the installer will take into consideration that you wish to install a home charge point and ensure that your [solar PV](#) and [battery storage](#) are compatible with the EV charge point that best suits your needs.

Having an EV charge point installed at home means that you have the convenience of having a charge point for your sole use and specifically set up to suit your needs. You can choose your charging speed and charging at home is generally cheaper than using rapid, public chargers.

When considering adding an EV charge point to an existing solar PV system, you may be able to save money by using the energy generated by your solar PV to charge your vehicle and further reduce the amount of energy you need to draw from the grid.

Is an EV home charging point right for you?

Pros:

- Allows you to charge your vehicle at home
- The convenience of charging overnight or at a time that suits you
- Cheaper than charging your EV using public rapid chargers
- Ability to use your self-generated renewable energy rather than completely relying on the grid
- The EV charging point installed through Solar Together will be compatible with your EV and your solar PV and/or battery storage to provide optimal charging

Cons:

- Installing an EV home charging point can be costly - especially for a premium option - however, we aim to bring these costs down through the Solar Together group-buying model

If you accept your personal recommendation for adding an EV home charging point to your package:

Survey - The installer will discuss your requirements for an EV home charging point during the survey for your solar PV and/or battery storage. They will provide an additional quote to supply and install an EV charging point as part of your package. They will also ensure that the solar PV and/or battery storage is compatible with the EV charging point that best meets your needs. This is not included in your initial Solar Together personal recommendation.

Installation - Your winning installer will offer you an installation date. Once the installation is complete you will then receive the invoice, minus the deposit. This final invoice has to be paid in full after the installation.

Savings on electricity - After installation, you will benefit from being able to charge your electric vehicle at home. During the daytime, you can also save money by using the energy your solar system provides instead of completely relying on the grid.

Financial Impact

There is no cost to the city, nor does it generate revenue to the city.

Applicable Owner/Stakeholder Policy

The proposed program is consistent with the city's designation as a Sol Smart City.



Solar Group Buying

Going solar made easy for residents

City of Corinth

December 14th, 2021



Content

- **History and Experience iChoosr**
- **Market dynamics Texas**
- **The Solar Together Approach**
- **Roles & Responsibilities**
- **Appendix**

History of iChoosr in Texas

- Started Operations in Texas in 2017
- Houston, Texas based Customer Care / Call Center
- Most Texas-based employees live in Austin, Texas
- Work with over 20 Texas cities today
- Have registered over 40,000 Texans into Texas Power Switch thus far
- All people that switch providers now receive 100% renewable electricity
- Extremely high customer satisfaction scores based on independent 3rd party survey.
 - City Leaders: 9.3 Net Promoter Score (scale 1-10)
 - Residents Feedback 9.0 Net Promotor Score (scale 1-10)



Results of Solar Group Buying Programs iChoosr



70

Solar group buying programs



109,000

Solarized homes



\$ 400,000,000

Investment by residents in Solar PV



20-35%

Savings against market average











Consistently high

Customer satisfaction

iChoosr organizes Solar Group Buying programs in four countries since 2012. Always in partnership with local governments. Partners include London, Suffolk, Sussex (UK), East-Flanders (Belgium), Yokohama, Osaka (Japan).

Results of Solar Group Buying Programs iChoosr

		Netherlands	Belgium	U.K.	Japan
REGISTRANTS		 438,000	 173,000	 123,000	 12,000
ACCEPTANTS		116,000	53,000	24,000	4,000
INSTALLATIONS		68,000	34,000	7,000	400
DISCOUNT		20-25%	25-40%	25-40%	25-30%



Market dynamics Texas

Clear benefits of solar..

For Residents

- Drastically reduce or even eliminate electric bills
- Protection against rising energy prices
- Reduce personal environmental footprint
- Less dependency on the grid (especially combined with battery storage)

For Cities

- Contributing to local energy resilience and affordability
- Boosting economy and creating jobs
- Taking steps in meeting sustainability goals
- Helps drive towards Sustainability Goals
- Increase in Community Home Values

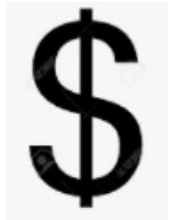
.. but low residential solar adoption in Texas

Texas cities have enormous rooftop solar potential. Dallas is in the top 10 nationwide.
source: Google Sunroof

but

Only 1% market penetration for residential solar in Texas.
source: Greentechmedia

Financial - Prices are (unnecessarily) high



Installer weariness - Which ones are trustworthy?



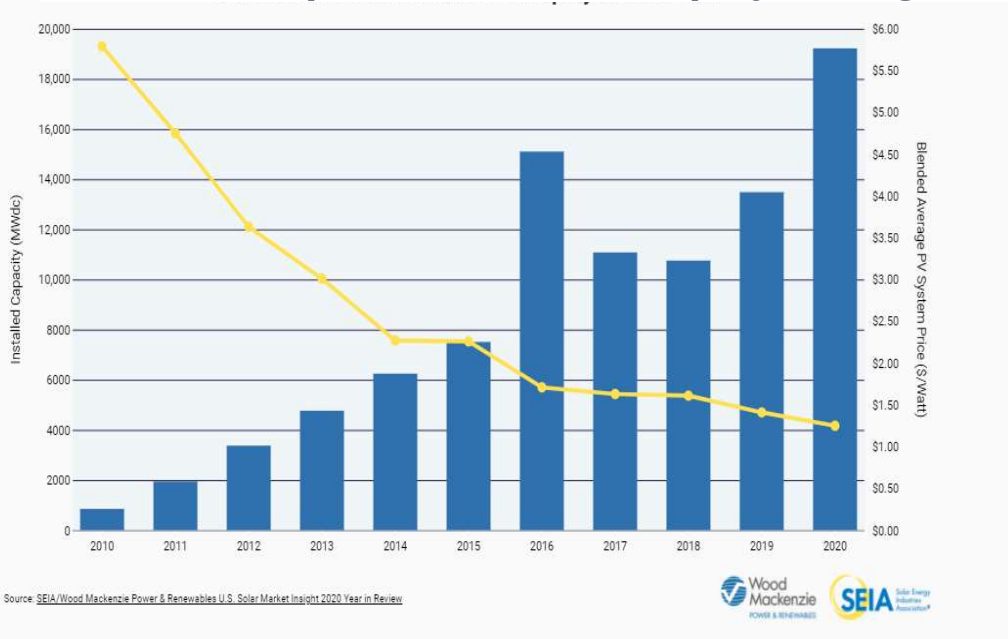
Complex topic - where to start?



iChoosr

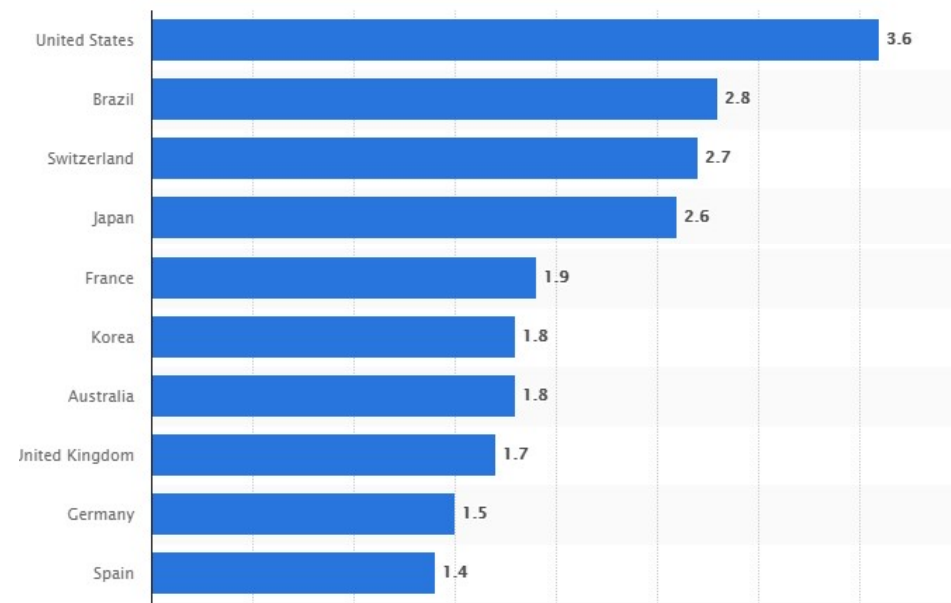
Price of solar biggest driver of solar adoption

U.S. Solar PV price declines & deployment growth



Source: SEIA/Wood Mackenzie Power & Renewables U.S. Solar Market Insight 2020 Year in Review

Prices of residential installed solar



Source: statista.com

High correlation between the price of solar and the adoption. Prices for residential solar in US at this moment highest worldwide. Much room for improvement..

Group Buying can overcome barriers

Group Buying for Solar works...

For Residents

- By coming together, residents get a better deal
- Hassle-free process without obligation
- Experts have vetted installers and have taken care of the research
- Customer service for support at all stages
- City backing gives reassurance

For Cities

- Help drive towards Sustainability Goals / Targets
- Drive resident satisfaction with another service that is no cost to the city.
- Measurable carbon reduction driven by resident investment in green energy
- Organization of the program handled by iChoosr
- Start a domino effect - Residents are 54% more likely to go solar if their neighbors have solar

Big results with little effort for the City

iChoosr

*source: "Solar power is contagious", Yale University

How it works – 5 easy steps



1. Sign up for free and without obligation (starting early May 2022, 4-5 weeks)

By answering a few questions about their roof, they are presented with an estimation of costs and savings.



2. Auction (early June, 1 day)

The auction is a reverse auction - so the lowest bid wins. Suppliers must comply with criteria to guarantee the quality of the offer. (more info on next slide)



3. Personal offer (preparation 2-3 weeks)

After the auction, all registrants will receive a personal recommendation with information about the winning supplier, the complete package, and a breakdown of costs and savings. Battery storage option available



4. Decision (offer available from second half of June, 4-5 weeks)

Through the website, helpdesk and info sessions participants will have access to all information to make a well-informed decision. An option with financing will be available. Next steps will be:

✓ Roof survey ✓ Permitting ✓ Installation



5. Savings on electricity (30 years)

Generate your own renewable electricity and save on your electricity bill

iChoosr

Selecting the best installers to guarantee the quality

1. Pre-qualification

The first potential of the installers is tested through a quick scan. The quick scan consists of online research (including customer satisfaction scores and website) and an efficiency scan (including inspection software and customer journey).



2. Qualification

iChoosr researches the experience, (financial) stability, safety measures and capacity of the installers extensively. Only installers who meet all requirements can bid during the auction.



3. Auction

By means of an auction, a winner or several winners are selected in a fair and transparent manner. With an auction we do not ask for the lowest price in the market, but for the lowest price for which an installer can deliver considering the benefits for them of serving a large group.



4. Delivery

The winning installer(s) then has (have) the time to realize the full delivery of (their part of) the project, usually within 4-6 months. This includes (remote) roof inspection & installation and arranging for permitting, financing if desired, and permission to operate.



See appendix II for more on qualification

Characteristics of Solar offer for Corinth residents (smaller system)

Indication of financial picture

	Utility (cost of doing nothing)	Solar system paid from savings	Solar system financed with a loan
Monthly solar payment	\$0	\$0	\$89
Monthly utility payment electricity ¹	\$183	\$64	\$64
Upfront cost Market ²	n/a	\$23,520 \$17,405 (incl. tax credit) ³	\$0
Upfront cost Group With 22% group discount ⁴	n/a	\$18,346 \$13,576 (incl. tax credit) ³	\$0
Loan assumptions	n/a	n/a	Term 20 year Intererest rate 5%
Payback period Incl tax credit & discount	n/a	9 years	Instant savings, without investment
30-year savings Incl performance loss 0,7% / year	\$0	\$25,132	\$17, 258

...and protection against rising energy rates

Solar system

70% offset (12,600 annual kwh of solar generation)

70% of yearly electricity need met for a household with annual electricity consumption of 18,000 annual kwh (=average in Corinth)

Size

8.4kw (~24 panels)



Notes

- 1) Based on \$0.12kwh average electricity price (Texas Power Switch participant data 2021) and \$6.50 extra monthly charge for adding solar
- 2) Based on \$2.8/w average Texas marketprice (Solarreviews.com/solar-panel-cost/texas)
- 3) Based on Federal solar investment tax credit (ITC) = 26% in '22 (expected to be lower in '23)
- 4) Based on estimation of solar installers in DFW region

Characteristics of Solar offer for Corinth residents (larger system)

Indication of financial picture

	Utility (cost of doing nothing)	Solar system paid from savings	Solar system financed with a loan
Monthly solar payment	\$0	\$0	\$115
Monthly utility payment electricity ¹	\$183	\$28	\$28
Upfront cost Market ²	n/a	\$30,240 \$22,378 (incl. tax credit) ³	\$0
Upfront cost Group With 22% group discount ⁴	n/a	\$23,587 \$17,455 (incl. tax credit) ³	\$0
Loan assumptions	n/a	n/a	Term 20 year Interest rate 5%
Payback period Incl tax credit & discount	n/a	9 years	Instant savings, without investment
30-year savings Incl performance loss 0,7% / year	\$0	\$32,917	\$22,794

...and protection against rising energy rates

Solar system

90% offset (16,200 kwh)

90% of yearly electricity need met for a household with annual electricity consumption of 18,000 kwh (=average in Corinth)

Size

10.8kw (~31 panels)



Notes

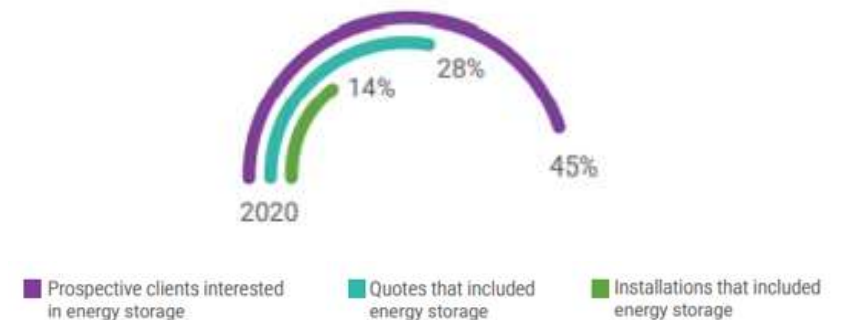
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- 2) Based on \$2.8/w average Texas marketprice (Solarreviews.com/solar-panel-cost/texas)
- 3) Based on Federal solar investment tax credit (ITC) = 26% in '22 (expected to be lower in '23)
- 4) Based on estimation of solar installers in DFW region

Battery Storage - still early days

Market insights

- Consumers are interested, but uptake is still low
- Prices are still high: \$ 7,000 - \$ 14,000
- Electricity companies in Texas offer net metering
- The consequence is that financial savings are not yet a driver for storage, only resilience is
- The expectation is that prices will go down the coming years, so storage will become more (financially) attractive
- We will require the winning installer to have an option for storage option

Solar customers interested in storage (Texas)



Source: EnergySage's 2020 Solar Installer Survey

"still a rich man's game, you'd never get payback for a battery unless your considerations are the zombie apocalypse or secession."

(Kyle Frazier, the chief revenue officer at Freedom Solar)

Impression of running solar group buying program in the UK

The screenshot shows the top section of the website. On the left is the Suffolk County Council logo. To its right is a navigation menu with items: 'How does it work?', 'Solar PV', 'Battery Storage', 'About us', and 'Questions?'. Further right is an email address 'aris@ichoose.com' and social media icons for Facebook, Twitter, Instagram, and YouTube. A 'Solar Together' logo is also present. The main banner features a photograph of a brick house with solar panels on its roof. The text on the banner reads 'Solar Together Suffolk' and 'Group-buying for solar panels and battery storage: better offers together.' Below this, a white box asks 'Is your roof suitable for solar?' and 'What is the pitch of your roof?' with four house icons representing different roof pitches.

This section is titled 'Register for free!' and contains the following text: 'Receive a highly competitive, personal recommendation for our group-buying scheme' and 'A total of 2,715 households have already registered. Join them today!'. There are two green buttons: 'Solar panel system > with optional storage' and 'Storage only > already have solar PV'.



Why join Solar Together?

- ✓ Register for free and without obligation
- ✓ Buy solar panels at a highly competitive price

Link: <https://solartogether.co.uk/suffolk/home>

Roles & Responsibilities

Roles & Responsibilities

iChoosr

- Create communication materials and plan
- Provide website for registration and personal offer
- Provide all customer service
- Organize auction for qualified solar installers
- Installer management to secure high level customer service and good quality installs
- Report program results to the City via regular reports
- Assume all costs for marketing and customer care

City

- Endorse the program- same as Texas Power Switch
- Actively promote the program through their communication channels (offline and online; link to registration page on prominent place of city website, social media, ..)
- Review & approve communication materials and plan

Thank you

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Appendix

Appendix I - Influence framework Texas resident

Pains of having no solar panels

- Very expensive electricity bills
- Dependence on the grid: outages and rising electricity prices
- Climate change:
 - Responsibility towards the planet
 - Large footprint
- Anxiety missing Tex credits
- Fear of missing out: Friends have solar and seem very happy about it

Gains of Solar panels

- Reduce electricity bills, save money
- Increase property value
- Opportunity to sell excess energy to the grid, have your own powerplant
- Feel good about yourself reducing footprint
- If you have an electric vehicle added incentive to reduce your electricity costs + increase your self sufficiency

Gains of Group Purchasing

- More affordable because of discount
- Could make it easier and information more accessible
- Trustworthy because of installer vetting and City endorsement

Comforts of current behaviour

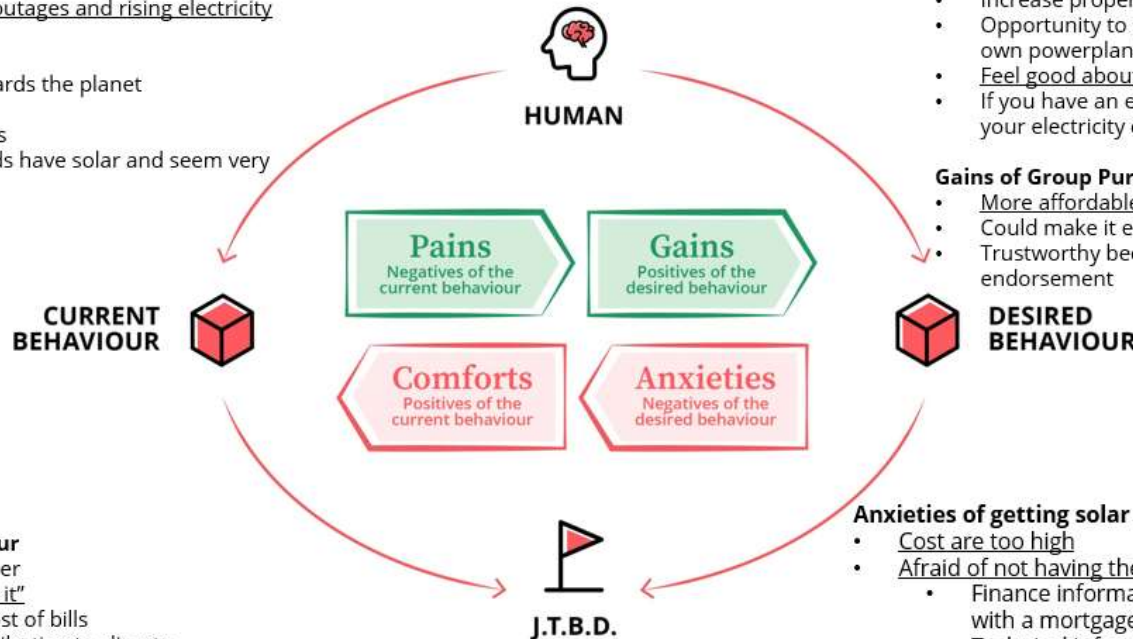
- Happy with current provider
- "If it's not broken, don't fix it"
- Happy enough with the cost of bills
- Happy enough to be contributing to climate change with a 100% renewable energy
- No debt (some people do not want to take out a loan)
- No risk of not living to see the ROI
- House looks nicer without them

Anxieties of getting solar panels

- Cost are too high
- Afraid of not having the right information to make a decision
 - Finance information: cost, ROI in years, how to merge with a mortgage,
 - Technical information: will the panels be strong enough for wind, hail
 - Finding the information in one place
- The panels
 - Reliability and quality (will they really last 30 years?)
 - Appearance on house
- Aggressive salespeople/trustworthy salespeople. Noise from commercial parties
- Permitting HOA / city / grid
- Unsure what happens when moving

Anxieties of group purchasing

Sometimes they get the idea they have to organize with neighbors



1. Save money/reduce electricity bill
2. Reduce energy consumption/environmental impact

Appendix II - Installer vetting

Step 1. PRE-QUALIFICATION	<i>The basis for participation are key figures that show that experience has been built up within the solar world. Two most important pillars: customer satisfaction & quality.</i>
Residential Solar Experience	It needs to be a mature company that has moved past the start-up phase. Track record of at least 500 - 1.000 residential solar installations.
Relevant Quality marks/Certificates	Installer needs to meet market standards and should be able to show this by having the necessary certificates e.g. NABCEP.
History/ establishment	Experience in residential solar > 3 years
Company size FTE	Number of FTE > 15
Installation capacity/region coverage	An installer should be able to handle around 200 residential installations in the Dallas metroplex within 3-6 months.
Online reviews	An installer should have a good reputation on quality and customer service. We would like to see a significant amount of online reviews with on average at least 4 out 5.
CRM software	Installers should have a sophisticated enough CRM system e.g. salesforce and software which they use to remotely design the solar system.
Off site/ design software	
Quality Products	We only work with installers that use quality components (Tier 1) that meet the market standards e.g. LONGi, Trina Solar, Canadian Solar, SolarEdge and Enphase.
Step 2. QUALIFICATION	<i>After a positive result from step 1 a more in-depth qualification of the solar installer will follow.</i>
Financial stability	e.g. Due Diligence / check annual audited accounts
Insurance policies	e.g. Installers need to have the necessary insurance
Customer Satisfaction Rates reports	e.g. Installers need to show reports of last two years
Method of Approach	e.g. Installers are asked to explain their method of approach when participating in a project, touching predefined topics that iChoosr deems relevant.
Project Risk file	e.g. Installers should identify potential risks and how to mitigate.
Step 3. SIGN INSTALLER AGREEMENT	<i>After a positive result from step 1 and 2 the installer should commit to all requirements of the program by signing the installer agreement contract. Only after this, they can participate in the auction.</i>



CITY OF CORINTH
Staff Report

Meeting Date:	1/13/2022	Title:	Report Lake Cities Fire Department – Schedule Assessment & Tractor Drawn Aerial Fire Truck								
Ends:	<input type="checkbox"/> Resident Engagement <input checked="" type="checkbox"/> Proactive Government <input type="checkbox"/> Organizational Development <input type="checkbox"/> Health & Safety <input checked="" type="checkbox"/> Regional Cooperation <input type="checkbox"/> Attracting Quality Development										
Governance Focus:	<i>Focus:</i> <input type="checkbox"/> Owner <input type="checkbox"/> Customer <input checked="" type="checkbox"/> Stakeholder										
	<i>Decision:</i> <input type="checkbox"/> Governance Policy <input checked="" type="checkbox"/> Ministerial Function										
Owner Support:	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><input type="checkbox"/> Planning & Zoning Commission</td> <td style="width: 50%; border: none;"><input type="checkbox"/> Economic Development Corporation</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Parks & Recreation Board</td> <td style="border: none;"><input type="checkbox"/> TIRZ Board #2</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Finance Audit Committee</td> <td style="border: none;"><input type="checkbox"/> TIRZ Board #3</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Keep Corinth Beautiful</td> <td style="border: none;"><input type="checkbox"/> Ethics Commission</td> </tr> </table> <p>N/A</p>			<input type="checkbox"/> Planning & Zoning Commission	<input type="checkbox"/> Economic Development Corporation	<input type="checkbox"/> Parks & Recreation Board	<input type="checkbox"/> TIRZ Board #2	<input type="checkbox"/> Finance Audit Committee	<input type="checkbox"/> TIRZ Board #3	<input type="checkbox"/> Keep Corinth Beautiful	<input type="checkbox"/> Ethics Commission
<input type="checkbox"/> Planning & Zoning Commission	<input type="checkbox"/> Economic Development Corporation										
<input type="checkbox"/> Parks & Recreation Board	<input type="checkbox"/> TIRZ Board #2										
<input type="checkbox"/> Finance Audit Committee	<input type="checkbox"/> TIRZ Board #3										
<input type="checkbox"/> Keep Corinth Beautiful	<input type="checkbox"/> Ethics Commission										

Item/Caption

Receive a report regarding the Lake Cities Fire Department’s (LCFD) 48/96 work schedule and a tractor drawn aerial truck.

Item Summary/Background/Prior Action

The current work schedule for the LCFD is 24/48, which is similar to the proposed 48/96 work schedule. Modifying the schedule will minimally affect policies and procedures, SOP’s, and methods of operation. For your review, the attached report includes advantages/disadvantages, implementation, and staff surveys.

Also for review is the concept of a tractor drawn aerial fire truck. More fire departments are selecting this type of truck due to the increased compartment space, maneuverability, faster set-up time, improved visibility, condensed fleet size, and lighter weight.

Lake Cities Fire Department



48/96 Work Schedule Assessment

Table of Contents

Background and Information.....4

History Definition of the 48/96 Work Schedule.....4

Potential Advantages.....4

 Productivity.....4-5

 Retention and Recruitment.....5

 Commuting Time and Expenses.....6

 Holiday Rotation.....6

 Time off.....6-7

 Fatigue.....7-8

 Time with Family.....8-9

 Training.....9

 Sick Time.....9

Potential Disadvantages.....9

 Time Away from Family.....9

 Short-term Fatigue.....10

 Holidays.....10

 Productivity.....10

 Communication.....10

Implementation.....11

 Paycheck.....11

 Maximum Hours Worked.....11

 Time Off/Scheduling/Draw.....11

 Call Back/Overtime.....11

 Training Scheduling and Effects.....11

 Daily Company Schedule.....11

 Employee Survey.....12

Additional Information.....12
Additional Conversations.....12
Recommendation.....12
Sources.....13

APPENDICES

Appendix A. LCFD Survey Responses 11/28/2021.....14-19
Appendix B. The 48 /96 work schedule, Todd L. Poole.....20-25
Appendix C. Interview transcript with Dr. Blayne Laws, MD.....26
Appendix D. Survey Response Summary from NEFDA 48/96 Departments.....27-28

BACKGROUND AND INFORMATION

Headquarters was asked by Captain Trent Godwin about the possibility of going to a 48/96 schedule a couple years ago. At the time it was not feasible to give it the time it would need to properly vet out. It had been brought up several times since and now having progressed to having Firehouse 3 up and running for some time now and managing other operational proprieties, we had time to investigate the request. The request was presented every few months to see if there was any movement on the discussion, so we knew that the topic was still a priority for many of the members. We have lost a firefighter over the summer to a department that works the 48/96 and have had another resign this November to work for a department that is on a 48/96 schedule. Additionally, we have seen a sharp decrease in applicants and are receiving calls from potential applicants wanting to know what schedule we work. Health and wellness of the firefighters is a primary focus as we invest in air scrubbers, PTS training and other wellness initiatives; could the work schedule play a part in the wellness of the firefighter? To follow are additional information related to the subject including advantages, disadvantages, employee feedback, regional feedback as well as Departmental impact both financial and policy impacts.

HISTORY AND DEFINITION OF THE 48/96 WORK SCHEDULE

The 48/96 work schedule has been utilized by professional fire departments since the early 1990's. This schedule has been applied by professional departments that are diverse in their demographics, management structure, and overall philosophies. The 48/96 is very similar to our current schedule, the 24/48. On the 48/96 one would be on-duty for two-consecutive 24-hour shifts (back-to-back), and then be off-duty for 96 hours (4 days) before reporting for duty again. i.e. – OOOXXXOOXXX where O = on-duty and X = off duty. It is a tradition of many fire departments nationwide to define a rotation of their work schedule as a “tour of duty”. For our purposes the two consecutive 24-hour shifts one would work on the 48/96 as a tour of duty. It is important to remember that a tour of duty is two 24-hour shifts, not one 48-hour shift. Many of the policies and procedures, SOP's, and methods of operation currently in place for the 24/48 will also apply to the 48/96 with minimal changes required.

POTENTIAL ADVANTAGES

Productivity

- Working two 24 hour shifts back-to-back halves many of the tasks normally performed each shift. Items such as detailed apparatus and powered equipment checks can be performed once per rotation with safety checks performed the second day allowing for minimally less fuel usage and less wear and tear on the machinery.
- Projects started the first shift can be completed on the second.

- Working two consecutive days would allow more flexibility for effective training if call volumes were up and would provide greater continuity and cohesion of companies and shifts.
- Having two consecutive days to work on department projects and assignments could be more efficient.
- There would be half as many shift changes between personnel, which would equate to less opportunity for cross contamination of COVID and other illnesses as well as less opportunity for information to be lost or miscommunicated in transmission.
- There would be less duplication of certain daily tasks, which would create additional time for necessary tasks.
- Working two consecutive days gives company officers more flexibility to carry out shift objectives rather than having several days pass before accomplishing tasks that may require more than one shift.
- Firefighters working the 48/96 have also stated how much more productive they are at home as they have four consecutive days off every time they go off-duty. Many are able to see projects from start to finish before returning to work for another tour of duty.
- The 48/96 work schedule appears to have potential to enable those working it to be more productive both at work and at home.

Retention and Recruitment

- Although no data exists to prove this theory, reviewing other organizations, there is potential for retention and recruitment to increase as the 48/96 has become a very desirable schedule.
- Our own observation has shown the LCFD had received calls from potential applicants asking if we are on the 48/96 and turning down the opportunity to apply because of that.
- The Bedford Fire Department, who has converted a year ago to this schedule has seen a drastic increase in applicants; 90+ this past applicant period.
- A report by San Jose Fire notes, not a single department has voted to revert back to their original schedule after a trial period of the 48/96. In fact, the voting percentages increased dramatically of nearly every department researched from implementing the trial period to making the schedule permanent. This shows the popularity of the 48/96 across a wide spectrum of demographics.
- There is belief that the hiring pool would be much larger if the department would move to the 48/96 work schedule. Applicants could live further away and would be willing to make longer drives to work because they would only be required to drive into work 1-2 times per week versus 2-3 times per week on the 24/48 work schedule.

Commuting Time and Expenses

- LCFD firefighters currently work ten 24-hour shifts per month. Although the amount of 24 hour shifts per month would not change, a switch to the 48/96 would immediately reduce the commute time of personnel by 50%.
- Firefighters would drive to work only 5 times per month, or 60-61 times a year. For some, the reduction in commuting time could save them around one thousand dollars per year in fuel costs.
- A reduction in wear and tear on member vehicles and decreases scheduled maintenance frequency.
- A potential added benefit to commuting to work half as much, is having more time at home.
- It is estimated that employees that live locally will gain an average of 10 hours per month of off time that they otherwise would have spent driving to/from work. Those who live the furthest away can save around 15 hours per month of commute time.
- That is an average of 150 hours per year a person can gain back of their life that is not spent in traffic. This is time that can be spent with family in the morning, helping kids off to school, sleeping in, exercising, etc.

Holiday Rotation

- On our current schedule there is a large imbalance between shifts as to who works holidays. The 48/96 would balance the holiday rotation significantly. There are some members concerned with having to work both the eve and day of a holiday. This is a legitimate concern but can be solved rather simply. Some departments remedy the situation by “flip-flopping”. Christmas Eve and Christmas Day or do one cycle of 24/48 as examples below:

December	22	23	24	25	26	27
Scheduled	C	C	A	A	B	B
Changed to	C	A	C	A	B	B
OR	C	A	B	C	A	B

Time Off

- On the current schedule there is 48 hours in between work shifts. Without taking any time off, that is the maximum “rest period” one has before returning to work.
- On the 48/96 this time is doubled to 96 hours off. In any given year, a firefighter would have 60 four-day “rest periods”.
- Eighteen of these blocks fall on a full weekend (Fri, Sat, Sun). On the 24/48 schedule a person will never have a “full weekend” off without taking time off. Remember, most events or sports games are on the weekend.

- If five days off in a row are important to a person, he or she can have five days off on the 48/96 by using a single vacation day: the same as the current schedule.
- Furthermore, if a person uses two consecutive vacation days on the 48/96, the block of time off increases to ten consecutive days compared to eight consecutive days off on the current schedule.

Fatigue

- With the current schedule, if a person works a 48-hour shift, they have 24 hours off before or after the 48 hours worked to recover. On the 48/96 they would always receive 96 hours both before and after their tour of duty. On the 48/96, if a member accepts a 24-hour overtime shift or works a single trade, he/she has the potential to work 72 hours (with approval).
- The firefighter would still have a minimum of 72 hours of recovery either before or after working 72 hours.
- The 48/96 work schedule allows for 60 overtime/trade shifts per year that don't result in a 48-hour shift, the current 24/48 allows for zero.
- The 48/96 provides more recovery time than our current schedule or any other schedule, thus reducing long term fatigue.
- A major issue of importance with the 48-96 work schedule is as it relates to the level of fatigue imposed upon firefighters compared to more traditional work schedules. Factors that must be reviewed are short-term fatigue vs. long-term fatigue and how these relate to the overall health and well-being of the firefighter.

Short-term fatigue: Short-term fatigue can be defined as consecutive hours worked without adequate sleep. This is a reality of the fire service that firefighters have learned to cope with and adapt to. Short-term fatigue can be corrected with adequate rest. Since firefighters would work 48 consecutive hours on a regular basis instead of the current 24 hours, the 48-96 schedule would pose an increase in short-term fatigue from longer work hours; however, the schedule also allows for more recovery time. While the 48-96 schedule poses a potential increase in the level of short-term fatigue, the major advantage to this schedule is its relation to long-term fatigue.

Long-term fatigue: Long-term fatigue can be defined as the accumulation of fatigue that lasts over weeks, months, or longer periods without adequate rest periods. Long-term fatigue is more hazardous to employees in emergency services than short-term fatigue because the body is less able to compensate for the lack of rest than with short-term fatigue. The major advantage of the 48-96-work schedule as compared to the current schedule worked is the reduction in long-term fatigue or sleep deprivation, for the following reasons:

- 100% more 4-day rest periods, giving firefighters more time to catch up on lost sleep. Most times a firefighter starts a shift, they will be well rested from having 4 days off, consistently.
 - More opportunity to work overtime or shift trade without working 72-hour shifts.
- An interesting perspective as it relates to fatigue is from firefighters that made the transition from a traditional schedule to the 48-96 schedule. Increase in fatigue was one of the biggest concerns that came up when departments were considering switching to this schedule, but many found that the overall level of fatigue was actually reduced due to the increase in rest periods.

Time with Family Helping with the kids in the morning and evening

- One Firefighter stated that 48 hours is too long to be away from home/family. This is typically an individual specific issue and cannot be resolved for some. This was also the main concern for other fire departments that have switched to the 48/96.
- Once these departments worked the schedule their concerns about the long 48 hours were much less than originally thought.
- It is important to note that every department that has begun a trial period of the 48/96 has voted to stay on the schedule after the trial period with an overwhelming majority.
- Currently a firefighter misses the morning and evening along with the next morning helping with the children. They are home the evening they get off work and there the morning and evening the next day; then back to shift the next day. So, missing three opportunities (2 mornings and 1 evening) and being there three opportunities (1 morning and 2 evenings) to help with Children or family a 3:3 comparison.
- On a 48/96 and kept the same shift change time: The firefighter would miss the morning and evening for the 48 hours and the morning getting off then be home that evening and the next three mornings and evenings. So, missing five opportunities (3 morning and 2 nights) and being there seven opportunities (3 mornings and 4 nights) to help with children or family a 5:7 comparison.
- On a 48/96 and changed shifts at noon: The firefighter would miss the evening they start shift, the next day and the morning they get off duty. They would be home that evening and the next three mornings and two evenings. So, missing four opportunities (2 morning and 2 nights) and being there eight opportunities (4 mornings and 4 nights) to help with children or family a 4:8 comparison.
- Susan L. Koen, PhD., an organizational psychologist, has studied the 48-96 work schedule and its effects on the family. Consider her findings included in Appendix 1:

“Research on family distress among shift working households, including firefighters, have revealed that the off-time pattern of the shift employees’

work schedule is the most significant determinant of family well-being. In other words, is the firefighter at home and positively interacting with his/her spouse, children and other family members often enough and for long-enough duration to be a viable family member?"

She goes on to note "consecutive hours at home with the family, and increased amount and frequency of weekend time are advantages of the 48-96 schedule".

Training

- Many of the benefits that departments found were not realized until they were already working the 48/96 schedule. The most notable of these was in the area of training.
- Many departments found that the quality of training increased.
 - Some departments were able to have firefighters on the training ground at 0600 so as to beat the heat.
 - Night drills were easier to accomplish as the firefighters would be there the next day.
 - Eight hour training classes were completed during the firefighter's tour of duty with no interruption of days off. Financial Savings for Department

Sick Time

- Some Departments allege the 48/96 reduces the amount of sick time usage, and holdover's thus reducing the overtime the department pays out.
- Without working the 48/96 it is unknown yet whether these advantages will be realized with the LCFD.
- According to the San Jose report, switching to the 48/96 has had either a neutral or positive effect on reducing sick leave usage within other departments.

POTENTIAL DISADVANTAGES

Time Away from Family or Change in Routine

- Of the many concerns that members listed on their survey, the number one concern was that 48 hours was too much time away from their family.
- This is a very valid concern and one that is personal and individualized. For some this may not be much of an issue, and for others it is a huge hurdle.
- It is important to note that although members will be working 48 hours straight, they will not be working any more hours than they are currently working.
- Some families will be able to adjust to this new schedule while others may not.
- This will not be certain until we have worked a trial period of this schedule.

Short-Term Fatigue

- Although the 48/96 can reduce long term fatigue, it can increase short term fatigue. Many firefighters working the 48/96 have found that if they were up both nights on their 48, the fatigue would not catch up with them until the third day.
- Each individual deals with fatigue differently so it will be necessary that everyone pays close attention to his/her fatigue level and ensures they get adequate rest.

Holidays

- Holidays can be both an advantage and a disadvantage. Although the 48/96 would level the playing field when it comes to the holiday rotation, it will also cause each shift to work both Christmas Eve and Christmas day approximately every 7-8 years.
- In addition, shifts typically work a given holiday 3 years in a row and subsequently have 6 years off.

Productivity

- Productivity can either be increased or decreased while working the 48/96.
- Productivity is subject to the motivation of the station officer and their crew.
- Many officers believe that they can be more productive while working the 48/96 than on our current schedule, others believe the opposite.
- Although a work schedule can assist with a person's productivity or motivation, the productivity is entirely up to the officer and his crew.

Communication

- Every six weeks, each shift will end up working only the weekends, Sat-Sun then Fri-Sat, leaving a period of 10 weekdays (regular city work-days) that the members are off-duty. Additionally, if a member takes a tour off, he will be away for 10 consecutive days. This has the potential for those members to have a lapse of communication with the administration or the members of their crew.
- It will be each member's responsibility to remain in communication through e-mail, telephone calls, or other means thus ensuring that each member is up-to-date with any changes in the department during their absence.

IMPLEMENTATION

Paycheck and Shift Designation

- Implementation of the 48/96 can be accomplished without causing any overtime issues and minimal to no financial costs to the city or the department members while maintaining a 120, 120, 96 pay hour rotation.

Maximum Hours Worked

- The maximum number of hours a member can choose to work is 96 but the department cannot require one to work more than 72 hours.

Scheduling of Annual Leave

- A change in scheduled leave would be necessary. Priority going to current overlapping days to allow the same time off then proceeding with the pick process as outlined in our current policy with one exception; Thanksgiving, Christmas Eve, Christmas, and New Year’s Eve would be picked one at a time, no picking both days of your tour on these Holidays. This would enable more members to get either Christmas Eve or Day off if they were assigned to work both days that year.

Sick Time

- No changes be made to our current method of using sick time. Members need to understand that when they call in sick, it is for 24 hours unless they state otherwise. Calling in sick at the start of a tour would not mean you are calling in sick for 48 hours unless you make that known to the Staffing Officer. If a member calls in sick for more than two consecutives 24-hour shifts, they will need a doctor’s note before returning to duty.

Call Back/Overtime

- No changes need to be made concerning our current method of call back/overtime or sign up. The Excel spreadsheet will be updated top reflect the new schedule.

Training Scheduling and Effects

- No changes need to be made concerning training policy, only schedules. Firefighters will be working the same number of days as in the past and training can be scheduled both on the company level and the department level accordingly.

Daily Company Schedule

- Very little changes will need to be made concerning the daily company schedule. Some routine tasks will not be necessary on the second day of the 48/96. Some tasks need not be duplicated on the second day however this will be individual to each crew. Tasks such as physical fitness activities would need to be completed each shift, however station chores among other items would usually only be necessary prior to the end of the tour.

Employee Survey (Appendix A)

- On November 8, 2021, A survey was sent to all shift members of the LCFD. The intent was to gauge the interest in the 48/96 schedule as well as identifying personal and professional barriers to the switch. At the time of the survey there were 48 positions with 45 of them filled (1 vacancy from military deployment and two vacant positions from resignations).
- Detailed results are in the Appendix.

Additional information about the schedule and its impact may be found in:

- Todd Pool's research paper; Appendix B
- Interview with Dr. Blayne Laws, MD; Appendix C
- Survey Response Summary from NEFDA 48/96 Departments; Appendix D

Additional Conversations

- Deputy Chief James Richardson (known 33 years) and Battalion Chief Frank Tamayo (known over 20 years), of the Bedford Fire Department. Both are overwhelmingly pleased with the employee satisfaction and productivity as well as echoed the positive feedback from the crews. Have been on the 48/96 shift a year.
- Chief Mike Thompson, Highland Village Fire Chief. Same responses from him regarding his perspective and the crews' responses. Have been on the 48/96 Shift for 2.5 years.
- Several persons on the shift. I visited with several firefighters and battalion Chiefs who are currently working the 48/96 and no one had a negative comment and felt they were more rested and productive. Some admitted hesitation in shifting scheduled but are glad they did.

RECOMMENDATION - TBD

Sources

1. **48/96 Work Schedule (Special Report to San Jose Firefighters Local 230)**
March 2003
Capt. Mike Willcox, Capt. Matt Smith, Capt. Gaudenz Panholzer, Capt. Mark English,
Engineer Dennis Bell
2. **The Forty Eight-Ninety Six Work Schedule (A Feasibility Study Prepared for the Members of Firefighters Local 1014)**
May 2005
Capt. Greg Cleveland, Capt. Ken Whiteing, Capt. Rick Pfeiffer, Capt. Don Schwaiger,
Capt. Dave Larson, Capt. Rick Fullerton, FFS Art Cocks, FFS Rick Creighton, FFS Dave Bohon, FFS Wes Daum, FFS Jim Wright, FF Brian Ciesiak, FF Rob Carson, FF Rob Garcia, FF Norm Lavoie, FFPM Kelly Lynn and FF Dave Guymon
3. **24-48 VS. 48-96 Work Schedules: A Comparative Analysis**
2005
Susan L. Koen Ph.D.
4. **48/96 Work Schedule (Informational Packet Local 1696)**
May 2005
5. **Special Report to Roseville Firefighters Local 1592**
March 2002
6. **Provo Fire & Rescue 48/96 Work Schedule Special Report**
2004

Appendix A

Survey Responses 11/8/2021

- Of the 45 requests we received 41 responses (91% participation rate)
- Of the 41 responses 38 (92.7%) were in support of the 48/96 and three (7.3%) were not in support of the 48/96.

Would you like and/or support a 48/96 shift schedule?

- Answered: 41
- Skipped: 0

ANSWER CHOICES	RESPONSES
Yes	92.7% 38
No	7.3% 3

What do you think the biggest professional hurdle would be if we switched to a 48/96 schedule?

- Answered: 41
- Skipped: 0

ANSWER CHOICES	RESPONSES
Overtime issues	36.7% 15
48 hours on the ambulance	2.4% 1
Training scheduling	2.4% 1
Other Comments	58.5% 24

- No Issues was cited 6 times (14.6%)
- shift change time. I would like to keep it at 6:30, I definitely do not want to change at noon
- change in schedule, working two days at the beginning will take its toll. But just like everything, change is tough in the beginning, but having 4 days off

ANSWER CHOICES**RESPONSES**

will help with recovery to be ready to work again and actually been able to function around my family for longer than one day.

- Staying that extra day. I do feel HVFD schedule would be easier for me.
- Getting used to the new schedule and how overtime / mandatory would work.
- Second day fatigue
- Special projects
- Limiting events and training on back half of 48. If you are very busy on the front it can get tiring having a booked schedule for 48 hours.
- Safety
- I believe getting use to the schedule would take some time, but after a while it would run just as smoothly as it does with a 24/48 schedule
- I think just the questions of the unknown: how would OT work, mandatory, training, etc.
- I don't feel like a 48/96 would present that many issues regarding the topics mentioned above.
- Adaption in various areas due to long standing culture of 24/48
- Time management. knowing what needs to get done in the 48 that cant wait till possibly next week.
- I believe OT would be easier knowing you still have 2 days off after a long haul and training would improve because training sessions can be more in depth when you can pick up where you left off the day before.
- Not seeing my family for 2 days
- having trainings scheduled on the second day of tour after a busy night.(counted under training)
- adaptation to the change in schedule
- The new hours, the HVFD format only makes it feel like your gone 24 hours vs starting at the usual 0630 for the next 48 hours. Plus easier to meet with people if we change at noon. You can catch 2 crews switching
- A&B, Fatigue

When it comes to work schedules at the fire department, I prefer...

Answered: 41

Skipped: 0

ANSWER CHOICES	RESPONSES
48/96	78.0% 32
24/48	7.3% 3
It doesn't matter	14.7% 6

When discussing our fire department pay cycle (how frequently we are paid), I prefer...

Answered: 41

Skipped: 0

ANSWER CHOICES	RESPONSES
Getting the same check each pay day	39.0% 16
Having different checks each pay day (small/big)	7.3% 3
Different checks but with some consistency/pattern	12.2% 5
Doesn't matter	14.5% 17

What do you think the greatest personal hurdle would be if we switched to a 48/96 schedule?

Answered: 41

Skipped: 0

ANSWER CHOICES

RESPONSES

Spousal Relationship	7.3%	3
Child/elderly care complications	14.6%	6
“short-term” fatigue	9.8%	4
Difficulty in contacting other personnel	9.8%	4
Other	58.5%	24

- None 3 (7.3%) – others below not counted in this bullet
- None other than being closed minded to change
- I feel like it would improve family life as well as the fatigue rejuvenation
- Home life, spousal relationship, working certain holidays (both Christmas Eve and Christmas)
- just have to change schedule change with children. Already spoke to ex wife, she is on board with 48/96's and will change schedule with kids to 3 days each.
- The change over. Working that extra day and working the weekends
- Just getting used to being there for two days, but I believe the four days rest is better than if you work a 48 now you only get one day rest.
- Don't believe I will be affected personally.
- Adjusting to it in the short term after working 24 for some time. I believe this is a better schedule and a step forward.
- Being away from family for 2 days
- The 48/96 simply put is a selfish individual schedule. There is no benefit to the “fire service.” Most firefighters want to debate the advantages of this schedule followed by the most common, suggestions of how it benefits them led with “I or my.” I will be home more. I will have more consecutive days off. My commute time is cut in half. I will have less wear and tear on my vehicle. I will have more

weekends off. However, for all those that are willing to honestly debate this schedule, no one has yet been able to answer the following question. “How does this schedule improve the fire service as a whole without jeopardizing the safety of crews?” Safety should be the cornerstone of the fire service and this department. Data already reveals we are sleep deprived. This is not just an opinion. This is hard data that shift work interferes with our circadian rhythms. So why are we debating on working more and run a risk of injury or death just so firefighters can have 4 consecutive days off? One could make a case that if a firefighter works an OT shift, he is working a 48. However, the problem is with an enforced 48/96, now we are jeopardizing the entire crew’s integrity in the event one station has been up longer than the other stations. Especially operating on a large-scale incident working the last 12 hours of a 48-hour shift. Does it take losing a life for us to realize that our own selfishness interferes with safety. I thought safety is our number one priority. EGH, everyone goes home. Or that just a cliché that we just say. Data reveals that maydays are called during the last 12 hours of the shift. We are sworn to serve the community. Are we honestly living up to our mission statement? We’ll Be There Ready to Respond, compassionate in our care, safe in our work. Can we always be ready among all fire stations when the time comes that one house, and the entire crew has spent most of the 48 hours running calls? Can we honestly be compassionate at all times in EMS or fire calls when we potentially are dealing with sleep deprivation. Can we be safe in our work with sleep deprivation? Will we be able to make wise tactical decisions that achieve the objectives on the fire ground or Ems calls? Science, not opinions when at its extremes, reveal impairment from sleep deprivation is similar to alcohol intoxication. How does this improve the fire service? Sleep deprivation (science) increases risk for hypertension, cancer, ulcers, heart attack and stroke. Negatives to this schedule: • Personnel assigned to medics experiencing fatigue and patient care. Are we servicing the community to the highest standards? Are we willing to open the department up to medical/legal implications? • Personnel demeanor during interaction with the public and patients while experiencing sleep deprivation. • USFA study recommends peace officers should not work shifts longer than 24 hours because they would be less attentive, sleepy, and tired which would be a safety issue. Do I need to repeat that? Safety issue. Tell me how this improves the fire service? • A sleep deprived firefighter makes poor decisions. Poor decisions can have life or death consequences. The effects on the brain of inadequate sleep • Drop in concentration levels • Impaired memory • Mental reaction time slows • Speech becomes fragmented • Problem solving ability is greatly impaired •

Emotional mood is affected The physical effects of sleep deprivation include: • Difficulty in focusing the eyes • Difficulty performing fine motor functions • Muscle strength and endurance drops • Comprised immune system with greater than normal chance of infection • Lower glucose metabolism • Increased risk of coronary artery disease As fatigue progresses: • Errors of omission increase • Followed by errors of commission • Followed by micro sleeps Fatigue can cause uncontrolled and involuntary shut down of the brain: • Regardless of how hard you try •

Professionalism • Training level of the employee Fatigue related detriments are like those caused by alcohol • 19 hours of wakefulness equals the mental & performance level of a legally drunk driver. (.08 blood alcohol concentration) Fatigue is a major contributor to accidents, lost productivity, and poor quality of life. Sleep is a physical necessity, not a luxury • There is NO substitute for sleep. Finally, please provide the answer to the question how does this schedule improve the fire service in a whole without jeopardizing safety?

- I would not have a personal hurdle by switching to a 48/96 schedule. I believe the extra time at home would be worth the extended time at work
- I think just getting used to the new schedule at first, but then would be fine.
- A 48/96 wouldn't effect my life in any negative way. I feel like it would be greatly beneficial regarding matters such as recovery time, sleep schedules, workout routines, family time, and secondary jobs. I would be very happy if we switched to this schedule.
- Just the short family adjustment. My family is good with the schedule but like anything new there will be an adaption process
- Short term fatigue could play a factor, but the 4 day recovery time would be worth it.
- Personally a 48/96 schedule would be very beneficial to me for more time with family and schooling
- just getting used to it
- I feel the 48/96 schedule will be better overall for my personal life.
- Managing secondary buisnesses, and re working child care with your spouse. 48/96 would allow more time at home with that being said. Less child care would be involved.
- Schedule changes for short term
- All the above

Appendix B



The 48 /96 work schedule

BY TODD L. POOLE

A growing trend mostly among progressive western U.S. fire departments is the implementation of a 48/96 work schedule. In this alternative to traditional 56-hour workweek patterns, employees work 48 hours, followed by 96 hours off. My research has revealed benefits and challenges of the 48/96 schedule. A significant question, however, is do the benefits of a 48/96 schedule outweigh the potential negative effects that can result from working firefighters 48 consecutive hours?

BENEFITS

The idea of working a 48/96 schedule likely originated in Kern County, California.¹ Firefighters, unable to afford homes in the area, were forced to live great distances from their places of employment. The long commutes of the employees resulted in the development of the 48/96 rotation, which reduced by half the number of commutes for the employees and resulted in significant cost savings to the firefighters. As the 48/96 schedule became more prevalent, additional unintended benefits were observed. (1)

In evaluating the 48/96 work schedule for West Metro Fire Rescue in Lakewood, Colorado, Dr. Allison Hawkes discovered an overall increase in employee satisfaction.² Employees felt the 48/96 schedule interfered significantly less with activities outside of work than their previous schedule. Prior to implementing the trial of this new work schedule, only 52 percent of employees supported the change; however, after the six-month trial period, 68 percent of employees indicated the advantages of the new 48/96 schedule outweighed any disadvantages.

Although Hawkes found that employee perception of spousal support decreased from 88.9 percent satisfaction to 83.1 percent after transitioning to the new shift rotation, a later study refuted this finding. Hawkes reported that 11.9 percent of employees indicated their spouses were fairly or extremely unsupportive of their new work schedule, a significant increase from the 3.7 percent indicating unsupportive spouses before the shift schedule changed in January.

JVA Consulting, LLC was hired in 2006 to perform a focus group study on how the change to the 48/96 schedule affected West Metro Fire Rescue employees' quality of family life. Three focus groups, each consisting of 11 spouses and 13 firefighters with an average of 11.5 years of service, were established.³ The focus group study revealed that overall spousal support remained high after transitioning to the 48/96 schedule. Spouses across all focus groups noticed their firefighter partners were happier, more relaxed, and less fatigued. (3) Additionally, spouses across all three focus groups indicated more quality family time was a significant strength.

However, spouses working a Monday-through-Friday 40-hour schedule expressed concern with firefighters working both Saturday and Sunday consecutively. (3) They found this phenomenon, which occurred every six weeks, difficult because of the lack of quality family time during those periods. (3)

Overall, it was discovered that disparity exists between an employee's perception of spousal support and the actual amount of support reported by the spouse. This finding suggests that perhaps further studies should be conducted in this area, given that spousal support contributes to overall employee satisfaction.

Employee Satisfaction

A further review of the literature was conducted in an effort to identify the underlying basis for increased employee satisfaction when working a 48/96 rotation. Several studies show a correlation between extended consecutive days off and employee satisfaction.⁴⁻⁶ (2)

One researcher claims that "off-time work patterns of the shift employees' work schedule is the most significant determinant of family well-being." (4, 2) This theory is confirmed by the positive reports across all departments that indicate an increased quality of time at home when the employee was off for 96 hours in a row.⁷ A noteworthy fact is that employees working a 48/96 schedule wake up at home three out of every six days. (1)

In contrast, firefighters working a 24/48 schedule, or Kelly rotation, wake up only one out of every three and three out of every nine mornings at home, respectively. (1) Surveys show that the increase in mornings when the firefighter wakes up at home has many benefits such as enabling them to see their children off to school more often and providing opportunities for them to reduce accumulated sleep debt by waking up later in the morning. (1)

In addition, firefighters working a 48/96 schedule have more complete weekends off to enjoy with their families, since children are often out of school during the weekends and the majority of working spouses have weekends off. (1, 2) In fact, a 48/96 schedule affords a firefighter 26 entire weekends off, where the Kelly and 24/48 rotations provide only 17. (1)

Although the firefighter is working an equal number of hours in any of the aforementioned schedule patterns, it is likely that families perceive the firefighter to be present more often because of this increase in weekends at home. However, every six weeks, the firefighter works both Saturday and Sunday consecutively, which may be perceived as an excessive amount of time away from home. (3) Overall, it is likely that the increased opportunity for firefighters and their families to enjoy more weekend trips outweighs the challenge of being unavailable because of this Saturday/Sunday phenomenon.

Along with improved quality family time, firefighters working 48/96 rotations find themselves significantly more productive at home and work. A survey of Roseville (CA) Firefighters Local 1592 suggests that firefighters are able to complete more substantive household projects when they have more consecutive days at home. (1) Similarly, employees indicated they were able to better tend to special projects at work when given 48 hours to complete tasks. (1) Some surveys indicate that firefighters are more organized to perform tasks when there is a reduction in transition between work and home routines. (1, 6)

Although employees perceived the 48/96 schedule to be negative prior to implementation, actually working a 48/96 schedule ultimately resulted in higher employee satisfaction when compared with other schedule variations. (1, 2) Being able to live farther away, a 50-percent

reduction in the overall number of commutes to work, and reduced auto insurance rates also add to employee satisfaction. (1)

Employer Benefits

West Metro Fire Rescue observed an overall reduction in injuries from 2004 to 2006. (2) Also, the number of sick days dropped from 13,277 hours in 2004 to 8,246 hours in 2006, after the implementation of the new schedule. (2) However, a procedural change to allow the use of sick leave to care for an ill family member coincided with the study. A further reduction of sick time use would likely be realized if the policy had not changed. Notwithstanding, additional studies would be needed to accurately determine the cause of this reduction in using sick days. Some theorize that there is less abuse of sick time given that employees are less likely to call off duty for nonqualified reasons if they are already on duty during the first 24 hours. (2) If this is true, then a potential 50-percent reduction in sick leave use may result.

One feasibility study indicated a correlation between the 48/96 schedule and a reduction in sick time use.⁸ In the Pacifica (CA) Fire Department, there was a 20-percent reduction in the use of sick days, and the Manhattan Beach (CA) Fire Department reported a reduction of 80 percent. (8) No resource reported an increase of sick time after switching to the 48/96 schedule. With the literature indicating employees' morale improves with a 48/96 rotation, it is entirely feasible to correlate higher morale with less use of sick leave benefits. (8)

THE "TRADE-OFF": SLEEP PROBLEMS

Departments contemplating a change in work schedule patterns must consider the potential for dangerous fatigue and sleep deprivation among shift personnel.

Dr. Susan L. Koen, Ph.D., of Round-The-Clock Systems published a comparative analysis of the 48/96 schedule to determine whether dangerous sleep deprivation and fatigue exist among firefighters. (4) Her key question was, "Does the benefit of more consecutive days off provided by the 48/96 schedule create any negative costs in safety, health, on-duty performance, family distress, or individual morale and job satisfaction?" (4, p. 1) Her greatest concern was sleep deprivation among firefighters. The question remains: How much sleep is needed for firefighters to be fit for duty?

Koen defines sleep deprivation as "insufficient deep sleep or restorative sleep for the brain, [which] causes cognitive or brain fatigue that can result in slowed reaction time, decreased vigilance and impairment in complex reasoning skills." (4, p. 1) She argues that the quantity of sleep is not as vital as the quality of uninterrupted, deep restorative sleep. As such, departments with one or two sleep interruptions each night may not experience the negative effects of sleep deprivation, but employees experiencing three or more interruptions nightly will be too sleep deprived to work safely and effectively during the second 24-hour shift. (4) Although Koen claims the higher safety and performance risks for busy departments outweigh the benefits of 48/96, she does not offer any solutions for overcoming or preventing the negative effects of sleep deprivation. Other studies claim firefighter sleep deprivation can be successfully managed.

Robin Widmar, a driver/engineer and EMT with the Colorado Springs (CO) Fire Department, published an in-depth study on the management of firefighter sleep deprivation.⁹ She asserts that firefighters are not immune to the mental and physical consequences of sleep deprivation. Extended periods without sleep can significantly contribute to workplace accidents. In the firefighting and emergency medical services industries, the consequences of workplace accidents

could result in death or permanent disability in many cases. In fact, case law has been established that can hold a sleep-deprived firefighter, along with the employer, legally responsible for the neglect of his or her duties. (9) This has been exemplified by studies that show 18 hours without sleep is equivalent to a .05 blood alcohol content, and 24 hours without sleep is similar to the effects of having a .10 blood alcohol content. (9) Thus, a sleep-deprived firefighter can be equally as dangerous as a person who is chemically intoxicated. Not only does sleep deprivation affect performance, but health concerns also exist for employees deprived of deep restorative sleep.

In a 1983 study by the University of Chicago, rats became sick and died after only 2.5 weeks of being denied sleep. (9) However, the same study showed that rats that were allowed to sleep after becoming ill recovered fully. (9) The fact remains that sleep deprivation is cumulative and can lead to "sleep debt." (9, p. 46). Larger sleep debts can be managed by introducing proportional amounts of restorative sleep. (9)

Widmar argues that habitual sleep deprivation over time can lead to chronic sleep deprivation, causing hallucinations and paranoia. Thus, it is reasonable to conclude that negative health effects can result from chronic sleep deprivation. This introduces an additional problem: How do employers know when employees are sleep-deprived? Widmar reports the following:

- Self-awareness of sleep deprivation can be especially difficult to evaluate. Employees are often completely unaware of their own impairment.
- Several studies showed that employees fail to recognize they are making mistakes. This ultimately leads to "micro sleeping" or "dozing off," which can result in death or permanent disability. (p. 46)
- Automatic Behavior Syndrome, or sleeping with one's eyes open, is an additional negative effect of sleep deprivation. This syndrome is especially dangerous because employees will continue to perform their duties even though they are completely incapable of cognition. This was likely the cause of the 1989 Exxon Valdez accident in which a tanker carrying 55 million gallons of oil struck a reef in Prince William Sound, Alaska. The pilot at the controls was found to be "severely sleep-deprived and apparently asleep on his feet." (p. 48) It was later determined that Exxon's failure to provide a rested and sufficient crew contributed significantly to what was, at the time, the largest oil spill ever experienced in the United States.
- Human error causes 90 percent of all workplace accidents: "Inadequate sleep is a major factor in human error, at least as important as drugs, alcohol, and equipment failure." (p.48)
- In addition, shift workers are 40 times more likely than day workers to be involved in accidents at work, on the road, and at home. Thus, employers should implement controls to evaluate and manage fatigue for employees working all shift schedule patterns.

Managing Sleep Deprivation

Widmar maintains that implementing key policies and procedures can manage the negative effects of sleep deprivation. He suggests rotating busier crews to slower units throughout the work shift. This intervention would help to balance the workload among all crew members in an

effort to avoid burnout. Second, employers should limit the time an employee can be assigned to an excessively busy station to counteract the effects of long-term fatigue.

Finally, Widmar recommends that napping be encouraged for all employees with the potential to work more than 18 hours consecutively. Naps as short as 20 minutes can be effective, but two-hour naps have been found to be highly restorative for firefighting employees. (9)

Other research has found that it is entirely possible that firefighters working 48/96 schedules are, in fact, less fatigued. (2) Employees slept more on average after the implementation of a 48/96 schedule. This increase in overall sleep was found to be distributed throughout workdays and off days. However, no departmental policies were offered to recommend how much sleep is required or allowable for on-duty employees. Neither was the quality of the sleep experienced identified. (2).

Another finding in the research is that employees often will sleep less the night before their scheduled workday. The amount of sleep lost by the employee depends on the time required to travel from home to work. An employee living one hour away may have to awake at 5 a.m. to be ready for a 7 a.m. shift start time. Because there are fewer frequent transitions from workdays and off days with the 48/96 schedule, there is less opportunity for lost sleep. (2)

There also may be additional opportunities for sleep if employees are permitted to remain at rest for a specified number of hours during the morning of the following 24-hour shift.

Based on the literature reviewed, it is reasonable to conclude that it is feasible for employees to work 48 hours if fatigue is closely monitored, and efforts are implemented to counteract dangerous sleep deprivation. Although Widmar claims sleep deprivation can be managed through departmental policies, it is possible that departments would make sleep available as an option instead of implementing a compulsory sleep policy. This may prove to be dangerous considering that firefighters are generally not aware of their own fatigue until it is too late. Similarly, firefighters wishing to perform above and beyond employer expectations may be less likely to take advantage of extra rest on duty. Thus, department leaders should strongly consider a compulsory sleep policy and closely monitor sleep patterns in an effort to counteract the high potential for dangerous sleep deprivation.

•••

The literature reviewed revealed benefits and challenges of the 48/96 schedule. It is clear that firefighters were initially skeptical about working 48/96 rotations but indicated significant support for the schedule pattern after trial periods. Fire department managers can benefit from organizational cost savings in terms of reduced sick time, improved morale, and improved employee productivity while on duty.

However, the potential for sleep deprivation and fatigue over a 48-hour work period introduces additional risk to departments failing to implement preventative measures. In the absence of empirical studies to quantify the effects of sleep deprivation and fatigue among firefighters, it remains difficult to confidently determine the extent of risk assumed by firefighters working 48-hour shifts. Public safety agencies would benefit from an experimental study of fatigue and sleep deprivation among firefighters specifically. Such a study, combined with a larger independent study of 48/96 schedule implementations, would be beneficial for departments considering an organizational change of this magnitude.

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Additional Resources

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Appendix C

Interview with Dr. Blayne Laws, MD

Mental Health Physician

Andy Smith conducted a phone interview with questions on the health and wellness of firefighters working a 48/96 schedule. Below is a brief transcript of the answers and concerns from Dr. Laws.

- More quality time at home with family shows a significant reduction in stress and a significant reduction in mental health disorders due to the following reasons:
 - Family life is better due to being able to plan.
 - It takes three quality nights of sleep to recover from lack of sleep.
 - This could be six straight nights of no sleep and after three days of quality sleep you are “caught up”.
- Mental shift in younger personnel that cannot handle the physical and emotional fatigue the way “older” personnel can.
- The younger generation (15-30 years of age) cannot differentiate between physical and emotional fatigue leading to more PTSD and decreased ability to handle the traumatic calls.
 - More sleep significantly increases their ability to process this information and be able to control their emotions better.
 - Compounding effects of “shift work” and lack of sleep at night without a three-day recovery period has exponential effects on all body systems, especially increasing the likelihood of having cancer, depression, PTSD and committing suicide.

Dr. Laws’ biggest concern with the 48/96 schedule is that personnel would make more mistakes on the second day and stated that naps should be mandatory on the second shift of a tour. He said naps DO NOT assist in recovery from lack of sleep but do assist in the short-term fatigue and help your body make more sound decisions. Overall, Dr. Laws stated he believed the 48/96 work schedule would be beneficial to our department, especially in younger personnel. Dr. Laws said he believed the fire service would have trouble gaining employees in the very near future, if we are not already having issues (statement was completely unprovoked), due to the schedule and the nature of what the fire service does. He also stated that employee retention would be “a nightmare” because after a year or two of employment, he could see the younger personnel on our current 24/48 schedule start “dropping like flies”. He goes on to say that with no sleep and no recovery, they typically are less likely able to handle the things the way older personnel can, since their parents and grandparents have “babied” them throughout their lives and that they need more recovery time and time to process their thoughts.

Appendix D

Survey Responses from NEFDA 48/96 Departments

On September 8, 2020, phone interviews were conducted with Association members from Haltom City, Watauga, Hurst, and Trophy Club. Additionally, members from Keller and Southlake were contacted. Keller is switching to the 48/96 schedule in January 2021. The same questions were asked to each department. Keller could not provide some of the answers because they have not yet switched. Below are the questions and a summary of the answers from the departments. If there were any differences, they are noted in the summary.

- Why did you decide to switch to a 48/96?
- Did your department have a trial period?
- What are the maximum hours that can be worked before mandating time off?
- Did you change your policies to reflect the second day of a tour? Any changes?
- What pay cycle are you currently on and what pay cycle did you change to?
- Have you seen in changes in sick-time usage?
- Has there been any concerning signs of fatigue?
- How does overtime work, including mandatory overtime?

In summary, all of the departments stated that they wanted to switch to the 48/96 schedule due to morale issues and longer time off between shifts. It was specifically asked if health and wellness was the primary concern and it was not, but stated as second or third most important. All of them did discuss how much personnel physically and mentally felt much better after being off for four consecutive days. All departments stated they are going to perform a one-year trial period. At the end of the trial, each department will vote to determine if they will continue permanently. Keller has not yet started, but they stated there would not be a trial and it would be permanent from their start date. Again, Keller was also the only department that was different in regard to maximum hours worked. Keller has set theirs at 72 hours with at least 12 hours off before returning to work. All other cities changed theirs to 96 hours with at least 24 hours off.

One of the most diverse issues addressed is whether or not any changes in duties or policies occurred on the second day of a tour. All cities continued their normal wake-up tones, however, each department allowed Officers to have discretion whether personnel were allowed additional rest or not. All of the cities were excited that Administration was allowing the Officers to manage their personnel and be held accountable for meeting the department needs.

Haltom City was the only city that had the same pay cycle that we currently have and then switched to a 12-day pay cycle on the 48/96 schedule. Other cities are going to 18-day pay cycles and even a 24-day pay cycle. Keller is staying on their current 28-day pay cycle. Of all the cities, Haltom City was most comparable in this aspect. Additionally, FLSA hours were discussed. The transition to a 12-day pay cycle had the least amount of financial impact and maintained two

paychecks per month that were equal. This was an important factor for Bedford Fire Department members due to the inability to accurately explain the inconsistent paychecks in the past. Although there is roughly a cost of about \$14K in FLSA overtime, this number is reduced due to personnel taking vacation or sick days throughout the year.

Most departments stated they have seen a reduction in sick time and even acknowledged that people who had abused sick time were no longer abusing it. This topic also correlated with overtime but had differences based on their staffing models. We could not compare to cities that run on a constant staffing model because their overtime needs were much higher.

When asked if there has been any signs or concerns of fatigue, departments stated that it was not any worse than previous schedules. All of the departments on the current 48/96 stated that personnel seemed more rested when returning to work and attitudes and morale were much better. Overall, departments had nothing negative to say, even after a busy tour.

Focus should be directed toward the concept and improving the overall health and wellness of personnel. The studies and facts are represented from all over the United States. Hundreds of departments have switched, and more are looking to. The fire service is just that, a service. It is not a business, and we must be committed to the well-being of our personnel to ensure the greatest service.



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Body – 10 Year

Paint – 10 Year

Pump – 7 Year

Tank – Lifetime

Plumbing – 10 Year

Engine – 5 Year

Transmission – 5 Year







Type Type	Pro	Con
100' Rear Mount Platform	<p>Overall length (Compared to TDA) Compartment space (295 Cubic Feet)</p> <p>FF's working off platform</p> <p>650# tip load flowing 2000gpm 16-18' outrigger stance</p>	<p>Overall height Bucket hangs over cab Maneuverability and platform accessibility Hit platform may mean total replacement Ground ladders limited/wide stance</p>
100' Mid-Mount Platform	<p>Low overall height Overall length (Compared to TDA) FF's working off platform</p> <p>500# tip load flowing 1500gpm 18' outrigger stance</p>	<p>Tail swing Compartment space (175 Cubic Feet) Maneuverability Hit platform may mean total replacement Ground ladders limited/wide stance</p>
Tractor- Drawn Aerial	<p>Maneuverability Compartment space (500 Cubic Feet) 500# tip load flowing 1500gpm Bolt on aerial egress (easy to replace when struck) 16' outrigger stance More ground ladder storage Low ground ladder access Modular compartment design means ease of accident repair Modular Design allows replacement of truck while reusing ladder</p>	<p>Overall length FF working off ladder tip</p>

A Complete Guide to Tractor Drawn Aerial Fire Trucks

December 7, 2021



As fire departments are asked to do more with less, the resurgence of tractor drawn aerials is no surprise.

What is a Tractor Drawn Aerial?



A [tractor drawn aerial](#) is the most maneuverable type of fire apparatus because of its unique design consisting of three distinct parts: a tractor, a trailer and a tillerman's cab. A typical height of a tractor drawn aerial is approximately 11' 2" whereas rear mount aerial ladders typically range anywhere between 11' 6" to 12' 2" in height. The length of a tractor drawn aerial typically ranges between 57' to 63'.

Depending on your geographic location, you may have heard of this apparatus referred to as a tractor drawn aerial, a tiller fire truck or a hook and ladder fire truck.

Tractor drawn aerials [can be traced back to the late 1800s](#) when the trailers, pulled by horses, were given rear steering. Today, tractor-drawn aerials are known for their maneuverability and ability to carry many ground ladders and equipment.

How Does a Tractor Drawn Aerial Work?



A [tractor drawn aerial](#) is designed to have two operators. The main driver sits in the front cab and steers the front axle and the other sits in the rear tiller cab and steers the rear axle. When required for maintenance, the rear axle can be locked and the front operator can drive the truck like a tractor trailer.

Why Are More Fire Departments Choosing Tractor Drawn Aerials?



When most fire department representatives and city council members see a tiller truck for the first time, they often express disbelief that a truck of such size can be so maneuverable.

It's all about the design features unique to this type of apparatus and several are outlined in more detail below.

Increased Compartment Space



The sheer size of a tractor drawn aerial means that it offers ample storage. In fact, the compartment volume for the apparatus can be as much as 650 cubic feet. That’s a significant increase when comparing it to a straight-frame aerial with typically less than 200 cubic feet. Moreover, a tiller can typically manage 4000 lbs or more of equipment.

With the increased storage capabilities, tractor drawn aerials can accommodate more ground ladders than straight-frame aerials. This is due to a significantly larger rear storage area from the added length of a trailer, and the absence of a torque box and pedestal typically found on straight frame aerials. In addition, even more ground ladders can be stored on the outside of the trailer.

Tractor drawn aerials provide fire departments with superior capacity and flexibility in storing tools and equipment.

Maneuverability



So how does a fire truck that spans between 57' to 63' in length offer the greatest maneuverability? It's all in the mechanics.

Tractor drawn aerials are highly maneuverable because of the fifth wheel articulation and the unique ability to steer the rear of the trailer independently. This design feature means fewer 3-point and wide-swinging turns and greatly reduces the need to go around the block to get a better position.

This maneuverability is especially critical in firefighting operations, allowing the turntable on a tiller truck to be positioned closer to buildings and structures on scene.

Tiller trucks can turn easily in suburban cul-de-sacs, traffic circles and around narrow urban street corners. That's why you'll often see tractor drawn aerials on college campuses with lots of alleys and walkways, in modern suburbs where many streets end in a cul du sac, and in communities with a higher percentage of apartment and condominium complexes.

Faster Set-Up Time

One of the features of a tiller truck is the fact that it only has two stabilizers. This is a great advantage when response time is the highest priority. Moreover, the stabilizers on a tiller can be set up by one person at one centralized location.

A tiller truck is an all-in-one performer that can be designed in several configurations, such as a quint, a traditional ladder, or a rescue truck with aerial ladder. Its versatility also aids in fast response times, allowing firefighters to get on scene quickly with a lot of equipment and firefighting gear on board.

Improved Visibility



The way a tiller truck is designed allows the tiller operator to sit higher than the driver, which provides a second set of eyes in several critical situations, including:

- Crossing through intersections
- Traffic and road blockages en route
- Setting up at an emergency
- Managing wires and other obstacles

Condensed Fleet Size

Fire departments are challenged with resources and by choosing a tiller truck, fire departments can condense fleets without compromising on performance.

Tiller fire trucks can function as a [quint](#), combining a ladder and pumper truck. With the large amount of storage space, they can function as rescue vehicles or just all-around workhorses responding to every call.

Lighter Weight Means Less Wear and Tear



Even though the tractor drawn aerial is a large apparatus, the overall weight of the apparatus is approximately significantly lighter than an aerial platform.

With a lighter overall weight, fire departments benefit from less wear and tear on the brakes, tires and suspension system with an increase in driveline performance.

Spartan ER Builds 105-Foot Tractor-Drawn Aerial Quint for Wake Forest (NC) Fire Department

7.29.2021

By [Alan M. Petrillo](#)

Wake Forest (NC) Fire Department put together an apparatus committee to design the layout it wanted on a new tractor-drawn aerial (TDA) quint it wanted to purchase. The committee knew that it needed to have a large amount of compartment space for the various fire and rescue disciplines the rig was going to have to handle, as well as the ability to fight fire by having it carry a pump and a tank, making the truck what's called a "quiller."



Spartan ER built this 105-foot Tractor Drawn Aerial (TDA) quint, known as a

quiller, for Wake Forest (NC) Fire Department with a Waterous CXS 1,500-gallons-per-minute pump, and a 200-gallon polypropylene water tank. (Photos courtesy of Atlantic Coast Fire Trucks.)

Daryl Cash, Wake Forest's services chief, says, "The apparatus committee put in a lot of time and effort on designing the layout of the trailer because we do fire, search and rescue, extrications, and Type 2 water rescues, and all those functions had to be accounted for on the quiller." Cash notes that Wake Forest checked out five major manufacturers of TDAs, "and the one best-suited to the needs of Wake Forest was Spartan ER."

Lance Dill, marketing and sales manager for Atlantic Coast Fire Trucks, who sold the quiller to Wake Forest, says the apparatus committee had a lot of good questions about the Spartan ER rig. "They wanted a truck they could use without restriction and like the design of the Spartan ER ladder," Dill points out. "They also were concerned about getting the maximum amount of compartment storage space on the vehicle, as well as more than 300 feet of ground ladders, and for the rig to carry a pump and water tank, but still wanted to keep the truck as short as possible."

To accommodate those preferences, Spartan ER put a volute style Waterous CXS 1,500-gallons-per-minute (gpm) pump on the quiller, and a 200-gallon polypropylene water tank instead of the typical 300-gallon tank on a TDA in order to keep the length shorter. "The 105-foot aerial ladder has a waterway and an Akron Brass StreamMaster™ II 1,500-gpm monitor at the tip," Dill says.

Randy Hummer, aerial account manager for Spartan ER, says the Wake Forest quiller has 466 ½ cubic feet of compartment space, and 372 cubic feet of ground ladder storage that holds one 45-foot Bangor extension ladder, two 35-foot extension ladders, two 28-foot extension ladders, one 28-foot extension ladder, one 24-foot extension ladder, three 16-foot roof ladders, a 10-foot folding ladder, a 14-foot Fresno combination ladder, and a 17-foot Little Giant folding ladder, along with a 16-foot roof ladder on the aerial's fly section.

"The quiller is built on a Spartan Gladiator tractor and cab chassis with seating for six firefighters, five of them in H.O. Bostrom self-contained breathing apparatus (SCBA) seats," Hummer says, "powered by a 600-horsepower (hp) Cummins X15 diesel engine, and an Allison 4000 EVS automatic transmission."

Hummer notes that the tractor and cab have the Spartan Advanced Occupant Protection System which includes front and side impact protection for the driver and officer, and also side curtain airbags for the seating positions in the crew cab. "It also has an Advanced Seat Belt System where retractor pre-tensioners tighten the seat belts around the occupants, securing them in seats in the event

of a crash, and integrated outboard crash sensors on the perimeter of the vehicle,” he says. The four-section, 105-foot aerial ladder has a full-length aerial walkway lit by blue LED lighting, and is controlled by an AL-11 turntable digital control system that displays the aerial’s extension, elevation and rotation, and the truck’s engine vital signs, Hummer adds.

Dill says that the Wake Forest quiller has an 8-kW Harrison hydraulic generator, 360 degrees of HiViz Fire Tech LED lighting, including scene, headlight, compartment, and ground lighting, and Whelen LED warning lighting and a Roto Ray light on the front of the cab.

Cash, who chaired the apparatus committee, points out the new quiller “can get to places, like around garden apartments with narrow, one-lane accesses where we can’t get an engine, and we can jackknife the quiller to get closer to a building, which you can’t do with a straight chassis aerial.”

He notes Wake Forest Fire Department employs more than 80 full-time firefighters, 20 part-timers, and 28 volunteers at five different stations housing seven companies: Engine 1, Engine 2, Engine 3, Engine 4, Engine 5, the quiller, a 100-foot platform, and a reserve tiller. The department protects the Town of Wake Forest and a surrounding 42-square-mile area and answers nearly 4,000 emergencies each year. Its entire full-time staff is North Carolina Firefighter Level 1 and 2, Hazardous Materials Operations Level, and EMT (emergency medical technician) certified.

ALAN M. PETRILLO is a Tucson, Ariz.-based journalist, the author of three novels and five non-fiction books, and a member of the *Fire Apparatus & Emergency Equipment* editorial advisory board. He served 22 years with Verdox (NY) Fire Department, including the position of chief.

<https://www.fireapparatusmagazine.com/features/spartan-er-builds-105-foot-tractor-drawn-aerial-tda-quint-for-wake-forest-nc-fire-department/#gref>



CITY OF CORINTH
Staff Report

Meeting Date:	1/13/2022	Title:	Review LCFD – Location Report – Capstone – December 2021
Ends:	<input type="checkbox"/> Resident Engagement <input checked="" type="checkbox"/> Proactive Government <input type="checkbox"/> Organizational Development <input type="checkbox"/> Health & Safety <input checked="" type="checkbox"/> Regional Cooperation <input type="checkbox"/> Attracting Quality Development		
Governance Focus:	<i>Focus:</i> <input checked="" type="checkbox"/> Owner <input type="checkbox"/> Customer <input type="checkbox"/> Stakeholder		
	<i>Decision:</i> <input type="checkbox"/> Governance Policy <input checked="" type="checkbox"/> Ministerial Function		
Owner Support:	<input type="checkbox"/> Planning & Zoning Commission <input type="checkbox"/> Economic Development Corporation <input type="checkbox"/> Parks & Recreation Board <input type="checkbox"/> TIRZ Board #2 <input type="checkbox"/> Finance Audit Committee <input type="checkbox"/> TIRZ Board #3 <input type="checkbox"/> Keep Corinth Beautiful <input type="checkbox"/> Ethics Commission N/A		

Item/Caption

Review and discuss the Fire Station Location Study performed by the UTA Capstone class.

Item Summary/Background/Prior Action

The City engaged a UTA Capstone class to examine the current fire station locations and the need for a potential fourth station. For the purpose of this study, there were three key areas of focus pertaining to the future of the cities of Corinth and Lake Dallas and the towns of Hickory Creek and Shady Shores as they relate to the Lake Cities Fire Department:

1. The population and population projections
2. New development proposed both in the comprehensive land-use plan and strategic plan (if applicable)
3. Zoning and future land use (including thoroughfares).

The full report is attached.



Fire Station Location Study for the Lake Cities Fire Department

Submitted to

City of Corinth, City of Lake Dallas, Town of Hickory Creek, and
Town of Shady Shores
and

Bob Hart

Department of Public Affairs

College of Architecture, Planning and Public Affairs

by

Rachel Balthrop Mendoza, Burton K. Barr, Destiny DeLillo, Shannon
Stephens, and Chris Webb

December 8, 2021



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Contents

Introduction and Opportunity Statement	5
Appreciation	8
Study Methodology	8
Quantitative	8
Qualitative	8
GIS Analysis	9
Future Planning & Development	9
Comprehensive Plan Background and Overview	9
City of Corinth	11
City of Lake Dallas	19
Town of Hickory Creek	23
Town of Shady Shores	25
Service Provision Through Mutual Aid Contracts	26
Overview of Fire Standards	29
National Fire Protection Association	31
Insurance Services Office	39
Center for Public Safety Excellence	42
American Heart Association	44
Response Time Analysis and Location Review	45

Engine Response Review	46
Ambulance Response Review	49
Current Engine Response	51
Fire Station #2 Relocation Engine	52
Fire Station #4 Engine Response	54
Facility Assessment	55
Introduction to Lake Cities Fire Department	55
Facility Assessment of Existing Fire Stations	56
Fire Station #1	56
Fire Station #2	58
Fire Station #3	61
Site Assessment of Existing Fire Stations	63
Fire Station #1	63
Fire Station #2	64
Fire Station #3	66
Site Assessment for Proposed Fire Stations	67
Proposed Fire Station #4	67
Proposed Relocation of Fire Station #2	72
Overview of Client Policies and Asset Management Plan	74
FY 2021-2022 Operating and Capital Improvement Plan Budgets	76

Fire Station Location Recommendations	77
Recommendations – Fire Station Locations	78
Appendix	81
Appendix A - Site Photos	81
Fire Station #1	81
Appendix A - Site Photos	85
Fire Station #2	85
Appendix A - Site Photos	88
Fire Station #3	88
Appendix A - Site Photos	92
Potential Site for Fire Station #4 and Vicinity (Lake Sharon Drive at Oakmont Drive)	92
Appendix A - Site Photos	96
Potential Site and Vicinity for Fire Station #2 Relocation (Corinth Parkway at Shady Rest Lane)	96
Appendix A - Site Photos	97
Residential Planned Development in Vicinity of Proposed Fire Station #2 Relocation Site	97
References	99

Introduction and Opportunity Statement

The Lake Cities Fire Department (LCFD) provides fire, rescue, and emergency medical services to the residents and visitors of Corinth, Hickory Creek, Lake Dallas, Shady Shores, and portions of unincorporated Denton County. According to the LCFD, their mission is to be there, ready to respond, compassionate in their care, and safe in their work. Their vision is to be a recognized leader in delivering professional and innovative emergency and life-safety services corresponding to the core values of loyalty, respect, and courage. The fire district they cover is approximately 22 square miles with a population of about 38,000. Lewisville Lake surrounds the southern border, and Denton surrounds the northern border. The current multi-city contractual relationship provides the most efficient, most effective, and most affordable service delivery system to all residents in each city. The existing model used by LCFD is effective according to several evaluations; splitting or attempting “cheaper” service delivery increases the risk and cost to communities. The Operational and Administrative Analysis by the Center for Public Safety Management, LLC (as commissioned by Corinth and, thereby, LCFD) shows the existing stations in the 90th percentile of performance measures. Due to a narrow road network and irregular lakefront areas, the travel times shown are higher than the benchmarks developed by NFPA and ISO. From interviews with each city or town manager of the involved jurisdictions, the managers indicated the risk of somewhat longer travel times was acceptable to the communities served (“Operational and Administrative Analysis, Corinth, Texas for Lake Cities Fire Department”, 2019). This report also led to actions that will increase the standards to the department overall, including beginning the

process to become accredited through the Texas Fire Chiefs Association (TFCA) Best Practice Program.

LCFD’s three fire station facilities are exposed to some of the most intense and demanding uses of any public local government facility due to being occupied and in use 24 hours a day, 7 days a week. As these facilities age, it becomes essential to evaluate the current conditions of the fire stations and their expected useful life span so a rehabilitation and replacement plan may be established. Forecasting of commercial and residential development and travel times from current fire station locations also put LCFD in a unique position to evaluate the need for response coverage as it relates to fire station locations. Corinth owns a donated lot on the NE corner of Oakmont and Lake Sharon, which could be a potential location for a fourth fire station. Corinth, as the employer of personnel and the contracting entity, may seek to establish a prioritization framework for the facilities asset class that incorporates the key components of functional and legislative requirements, energy conservation programs and upgrades, customer complaints, health and safety concerns, and customer expectations balanced with willingness-to-pay initiatives.

This report aims to present opportunities for the potential replacement and locations of future fire station across the Lake Cities. The findings in this report include a summary of the issues and the methodology used to determine any relocations or new builds based on data-driven analysis, potential funding resources, and scenarios for future development. It is important to note there are no federal or state regulations in the United States regarding what a minimum level of fire services must be. Each community is expected to understand the local fire risks, its financial capacity, and then choose its

level of fire services through the public policy process. If fire services are delivered at all, existing federal and state regulations specify how to safely provide for the personnel administering and the public receiving the services.

While GIS and call data, industry standards, and the identification of a few potential funding sources will help drive the research for the recommendations made by the group, some key focus areas help map the direction of the project: (1) service provision through mutual aid contracts, (2) where infrastructure currently exists, (3) response and travel times, and (4) future area planning, development, and capacity to meet demand. The focus areas will review aspects encompassing utilities; site and construction challenges; personnel, equipment, and apparatus; acquisition costs; and roadway accessibility, all while considering the economic and social climates of the area. The provided recommendations strive to further provide realistic options inclusive of future growth and development of the four contracted cities.

Appreciation

The UTA Capstone Fire Station Location Project team who worked on this project would like to thank the respective staff of LCFD, City of Corinth, City of Lake Dallas, Town of Shady Shores, and the Town of Hickory Creek. The project team extends a special thank you to the personnel who provided invaluable data and provided insight used to prepare this project report.

Study Methodology

The project team used both quantitative and qualitative data analysis in the evaluation of the current LCFD facilities and recommendations for future facilities. Maps from the City of Corinth’s and the Denton County Appraisal District Geographic Information Systems (GIS) were used to create illustrations.

Quantitative

Quantitative methods emphasize objective measurements and the statistical, mathematical, or numerical analysis of data collected through differing methods. Quantitative data collected by the project team was used to validate other information gathered throughout the project in an unbiased manner.

Qualitative

Qualitative methods of analysis involve gathering non-numerical data through observation. Site visits and interviews with staff are the primary qualitative sources the project team used in drafting this report. Qualitative research allowed the project team to

assess current and proposed facility locations, along with areas of existing and future residential and commercial development growth in each of the communities.

GIS Analysis

Geographic Information System (GIS) is a system that creates, manages, analyzes, and maps all types of data. GIS connects data to a map, integrating location data (where things are) with all types of descriptive information (what things are like there) (ESRI, 2021). Response location and call type data noted in the report are the actual incident locations recorded and mapped by the LCFD.

Future Planning & Development

Comprehensive Plan Background and Overview

A comprehensive or comp plan is a tool that community leaders can use to establish a vision for how a community should develop with goals in place that will help make that vision a reality. Comprehensive plans are not short-term in scope or establishment. Most comp plans take at least a year to create and typically provide development goals over a period of at least ten years. Comprehensive plans focus on multiple areas ranging from planning and future land uses to economic development opportunities to assessing potential transportation and thoroughfare needs. Input for the comprehensive plan doesn't only come from staff and community leaders. Residents have opportunities to make their voices heard by providing input on how they would like to see the community develop.

Comprehensive plans provide a road map of how the community will progress and offers insight into what needs or wants the community is looking to fulfill, making them useful for developers, residents, and community staff. However, while the community council approves comp plans, they are prone to drawbacks. Unlike approved ordinances, comprehensive plans are not required to be followed. A change in direction from a council or failure to adhere to or meet goals established in a comprehensive plan could render the document useless. Comp plans run an inherent risk of becoming outdated or no longer feasible due to their forecasted length of time. For example, a comprehensive plan created in 2000 may have called for establishing an outlet or shopping mall, but by 2010, resources would be better focused elsewhere. In an effort to account for these changes, some communities may opt to update or tweak their plan every few years.

In this study and in an effort to ensure our recommendations aligned with community visions and goals, we assessed the various comprehensive, strategic, and zoning plans for the four communities (Corinth, Lake Dallas, Hickory Creek, and Shady Shores). A detailed breakdown of our research into each community is provided within this section. Some key points or areas of focus are the comprehensive plan, a review of infrastructure capacity, and economic development initiatives, among other items.

For the purpose of this report, there are three key areas of focus pertaining to the future of the cities of Corinth and Lake Dallas and the towns of Hickory Creek and Shady Shores as they relate to the Lake Cities Fire Department:

1. The population and population projections
2. New development proposed both in the comp plan and strategic plan (if applicable)
3. Zoning and future land use (including thoroughfares).

It should be noted, not all focus area information was available or up-to-date. In these instances, the information that was available was used and evaluated to its fullest extent to gain a better understanding of where the community is and where it is trying to move towards. City and town staff were also able to provide some additional insight and context.

City of Corinth

The City of Corinth has an estimated 22,634 residents. This population growth is expected to continue for the foreseeable future. As revealed in the comp plan, a significant number of individuals are looking to stay and age in place instead of making a number of moves throughout their adult lives. This means the number of individuals and families moving into the community are likely to remain, while the number of residents moving out will lag. The surplus in population growth and economic and strategic plan improvements for the City will increase strain on the community’s fire and emergency response teams.

The City of Corinth adopted *Envision Corinth 2040: Comprehensive Plan* in July 2020. The plan itself is thorough in its presentation of where Corinth is currently positioned and what steps will be needed to achieve the community’s goals. The comp plan covers many different facets of city development. However, when evaluating potential impacts on the future of the Lake Cities Fire Department, the population projections and economic development and planning objectives spelled out in the comp plan were of primary concern.

At the time the comprehensive plan was approved, Corinth’s population was estimated to be 22,235 residents. This population estimate represents an 11.9% increase from the 2010 census population of 19,878. The DFW metroplex has continued to

experience a population boom since 2019/2020, and Corinth is no exception. Corinth projects to experience continued population growth with an estimated 2024 population of 24,275 residents, or a 10.5% increase in population from when the comp plan was approved. Factors that may affect these estimates mainly revolve around the City’s ability to continue development with limited space to grow. Nonetheless, the experienced growth rate and the future projected growth help highlight the need for increased staffing and coverage by the Lake Cities Fire Department. While some of this can be handled by improving existing facilities, it also reinforces the need for an additional facility in the near future.

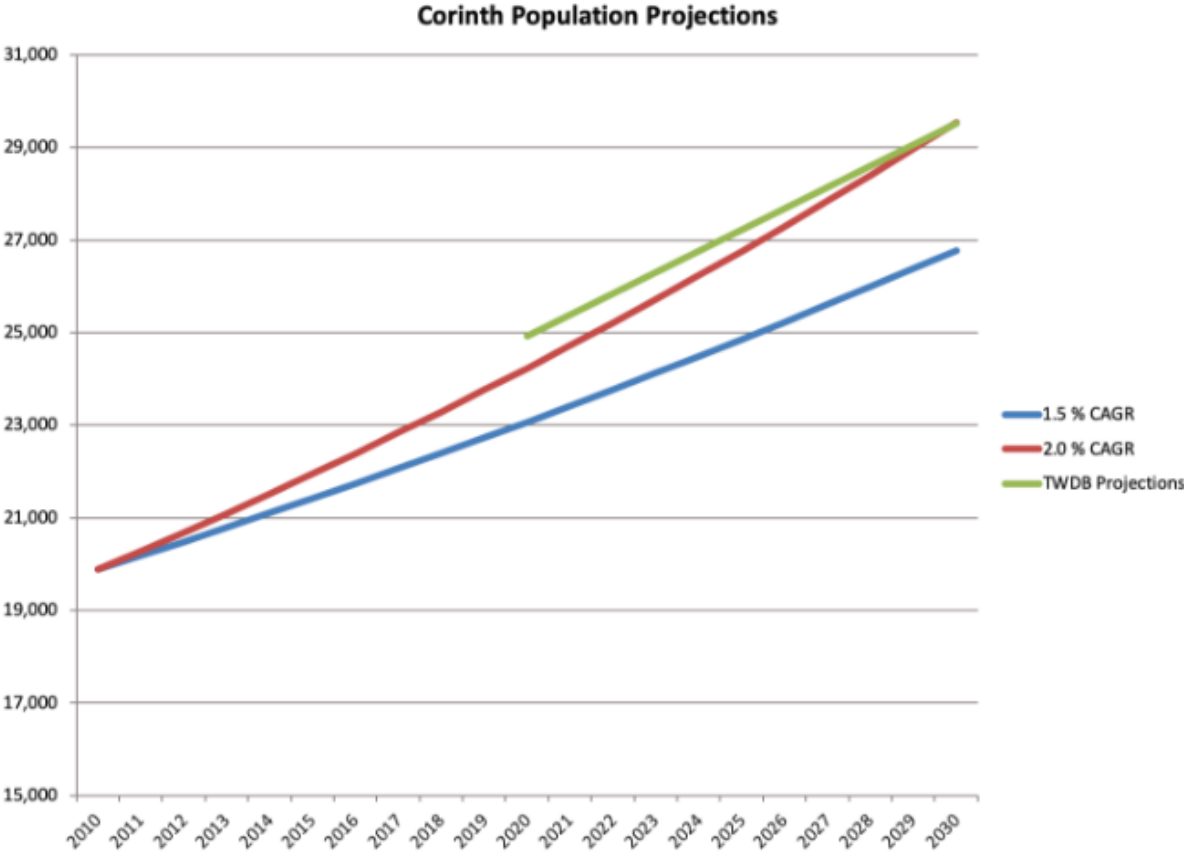


Figure 1: Corinth Population Projection

When evaluating the population of Corinth, another item to note is the age distribution of the citizens. Approximately 33% of residents are younger than 24 years old, 43.5% of residents are between the ages of 25 and 55, and 23.5% of residents are greater than 55. Residents that are considered to be part of the prime labor force (ages 25-44) contribute to 29% of the overall population. Two things are at play when it comes to the age diversity present within Corinth: (1) a growing number of people are choosing to age in place; and (2) at the same time, millennials are likely to seek transportation networks, trails and open space, quality schools, and smaller lots/dwellings for easier maintenance. The older population seeks out smaller home formats for easier upkeep and is looking to relocate closer to friends and family. It is because of this trend that a new city center is proposed.

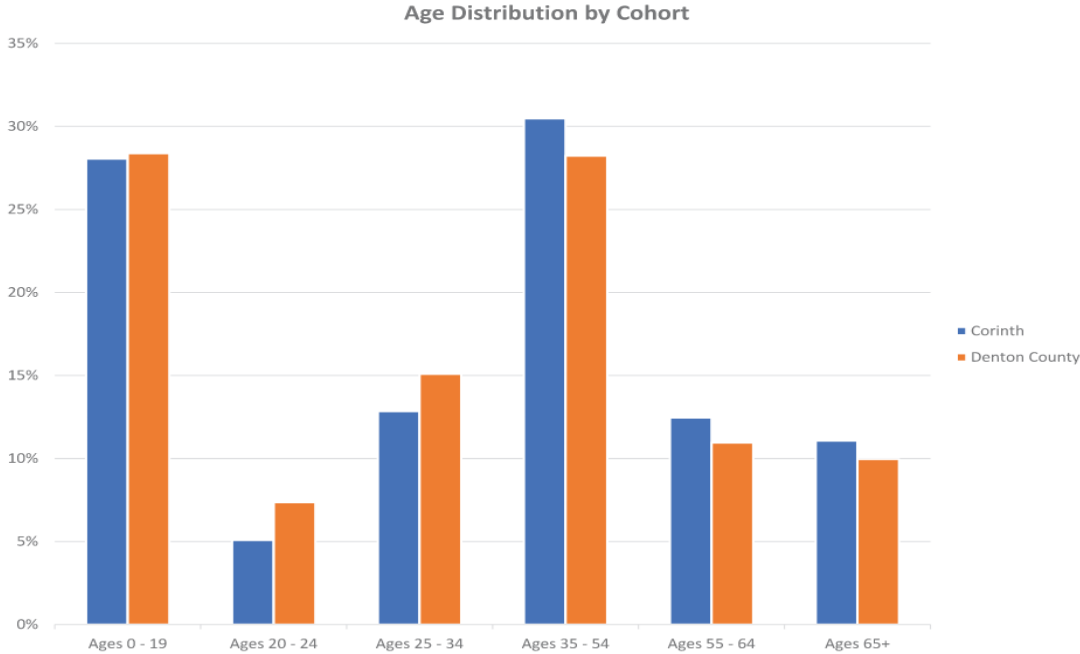


Figure 2: Corinth Age Distribution

As part of the development strategy for Corinth, five different key focus areas were selected for the possibility of redevelopment, providing a more diverse urban landscape for residents and visitors alike. The primary focus and most crucial area defined in the comprehensive plan is the New City Center which focuses on Transit-Oriented Development (TOD). The focus area is primarily clustered around Corinth Parkway and extends as far north as Walton Drive and as far south as Lake Sharon Drive. The overall concept is to provide a pedestrian-friendly mixed-use development that will allow residents to live, shop, and eat within the development while being close to a future Denton County Transit Authority (DCTA) rail station.

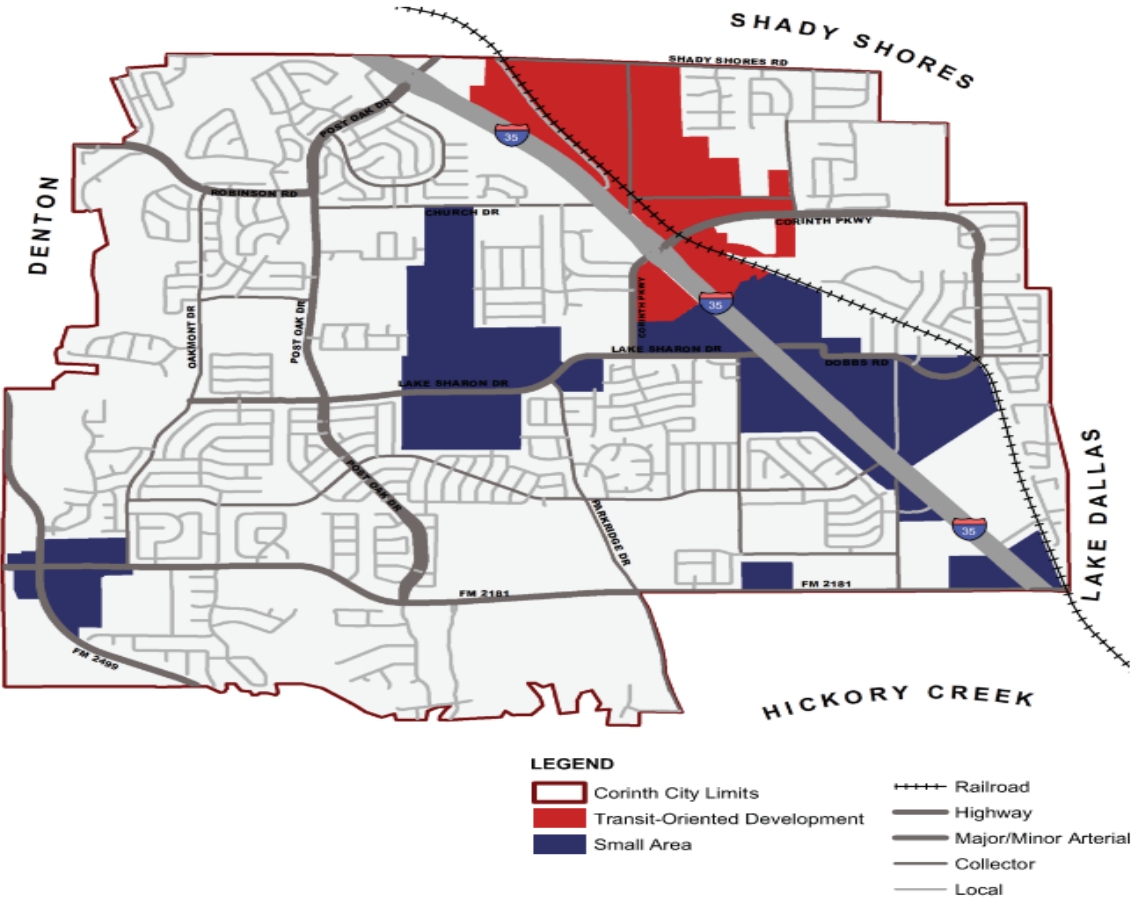


Figure 3: Corinth Development Focus Areas

Corinth has already taken steps to see this plan through with the introduction of Agora at Corinth. From a fire standpoint, the main impact of a new city center such as the Agora is three-fold. First, a significant number of new office/retail spaces and restaurants are being introduced in a relatively confined area. Per the Agora at Corinth website, the overall buildout will consist of 65,000+ sq. feet of retail and 35,000+ sq. feet of restaurant space. Second, in addition to the retail/restaurant area, numerous new residential spaces (combination of single-family homes and multifamily apartment units) are being added.



Figure 4: Overview of Agora Development Scope

As part of the development, the Agora at Corinth is proposed to have 1,184 new homes and apartments. Third, with the sharp increase in office/retail and restaurant area and along with single-family and multifamily residences, there will be a large population nucleus made up of residents and visitors focused in this relatively small area that does not exist currently.

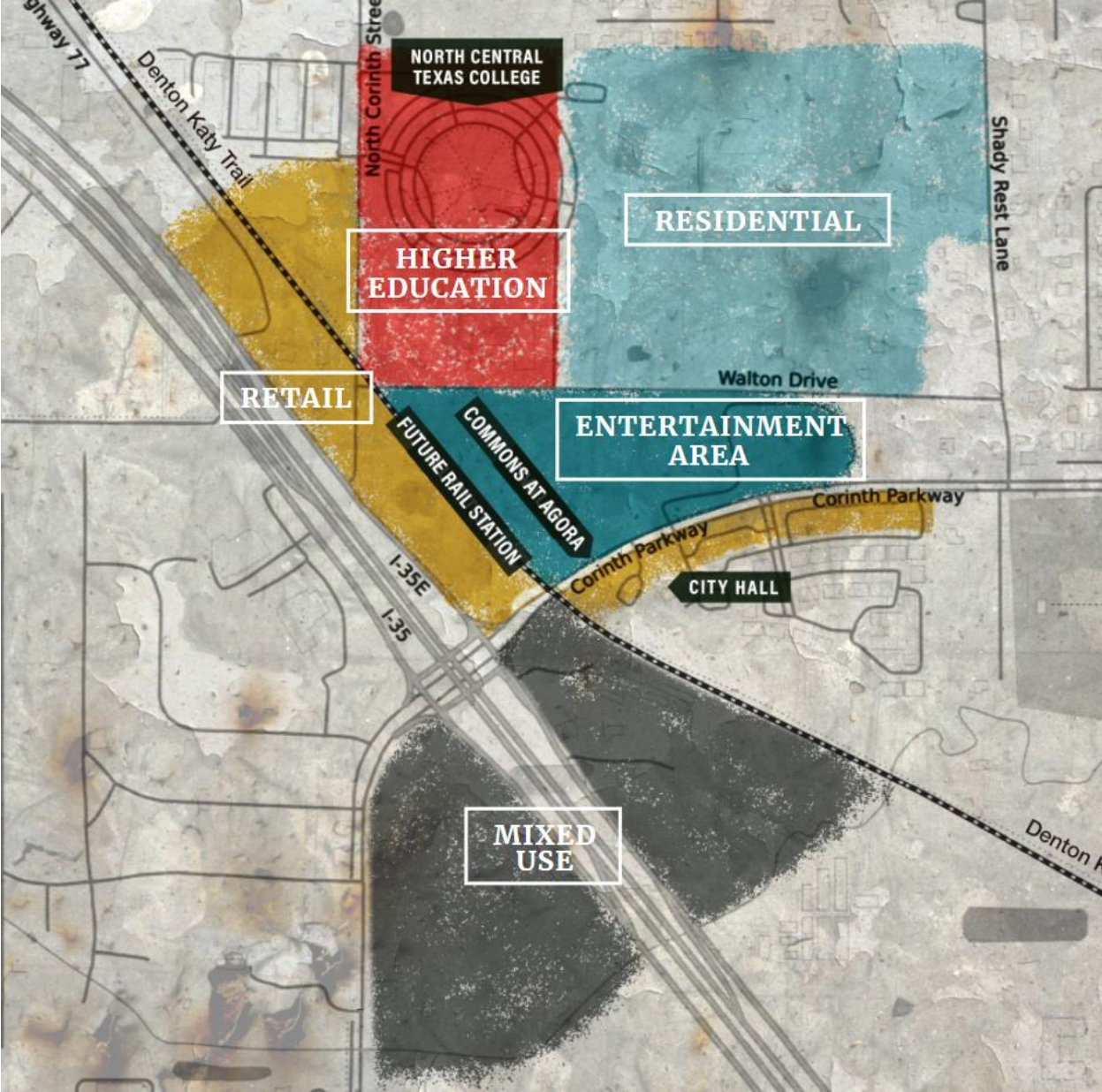


Figure 5: Overview of Agora Land Use Plan

Overall, the Agora is the largest proposed development within the four cities that participate in the Lake Cities Fire Department and will likely have the largest impact on the population within the LCFD. Per *Fire Station Location Planning*, properties within high-value areas or districts should be prioritized. High-value districts are areas where “high-value property and concentrated development coincide” (American Society of

Planning Officials, 1957). Due to the density that typically accompanies these high-value districts, the “amount of property that can be damaged or destroyed by even a small fire...is relatively large” (American Society of Planning Officials, 1957). Due to the concentration of office/retail, restaurants, and residences within this development, along with current fire station location best practices, there is a need to consider relocating Fire Station #2 to be closer to the new TOD development.

Early in the process of reviewing both the existing LCFD sites and exploring other possibilities for relocating or establishing a new station, it was made known that the City of Corinth currently owns a piece of property located on the northeast corner of Lake Sharon Drive and Oakmont Drive intersection. The property serves as a buffer between Oakmont Drive and single-family homes in the Cypress Point Estates subdivision. The property appears to have never been developed and currently remains un-platted. After visiting the site and researching the location further, and if the site were to be selected as a future LCFD station, a list of opportunities and challenges present themselves.

Opportunities

Opportunities for this site include the fact that Corinth already owns the property; the site also has access to Oakmont and Lake Sharon Drive, two significant thoroughfares in the western part of Corinth which would significantly improve response time to this portion of the LCFD coverage area. Oakmont Drive is classified as a collector street and Lake Sharon Drive as a minor arterial. Oakmont allows for easy access north to Robinson Road (another minor arterial) and south to FM 2181, which is classified as a major arterial. At the same time, Lake Sharon provides easy access all the way to the western city limit and east all the way over to I-35E. Based on the response time maps, a station in this

area could significantly reduce response times to a large portion of western Corinth. With the site already belonging to the City, no additional funds would need to be set aside to purchase the property. Both water and sewer appear to be readily available to the site, so work on development could begin right away.

Challenges

Challenges facing this property include the shape, overall size, and potential issues with the City of Corinth Master Thoroughfare Plan. While the property is in a great location, the shape of the property restricts ingress to one street and egress to the other. Additionally, a facility built on this site will likely face size constraints due to the narrow width of the lot. There is also the need for the addition of easements, possible right-of-way dedications, and building setbacks. Another hurdle that became apparent is the proposed roundabout in the Master Thoroughfare Plan for this intersection. Due to the City Council-approved thoroughfare plan showing a roundabout, City Council action would be required to update the plan. Based on the increased area, a roundabout would require additional land to be dedicated. Including a roundabout at this intersection would likely remove this property from contending as a possible site due to the need for the dedication of additional land, the limited sightline visibility introduced, and the fact that traffic is not halting at either a stoplight or stop sign.



Figure 6: Corinth Master Thoroughfare Plan for Oakmont – Lake Sharon Intersection

However, a fire station located along Lake Sharon and west of I-35E would be ideal for the LCFD. In fact, there are several parcels of property located on Lake Sharon and both Oakmont and Post Oak that would be more suitable for a fire station and provide the increased coverage area that this section of town needs.

City of Lake Dallas

Lake Dallas is a community bordered by Shady Shores to the North, Corinth to the West, Hickory Creek to the South, and Lewisville Lake to the East. The overall footprint of the City is the smallest in the LCFD, but it boasts the second largest population with a 2020 estimate of 8,124 residents (United States Census Bureau, July 27, 2021). The community consists mostly of residential zoning but does have a commercial, retail, and

light industrial component. These non-residential zones tend to have direct access to I-35E or the Union Pacific railroad that largely parallels the interstate. Lake Dallas is home to Fire Station #1 and is located in the Lake Dallas downtown area. While a fire station has been located on the same property since the 1960s, the current station was newly constructed in 2001.

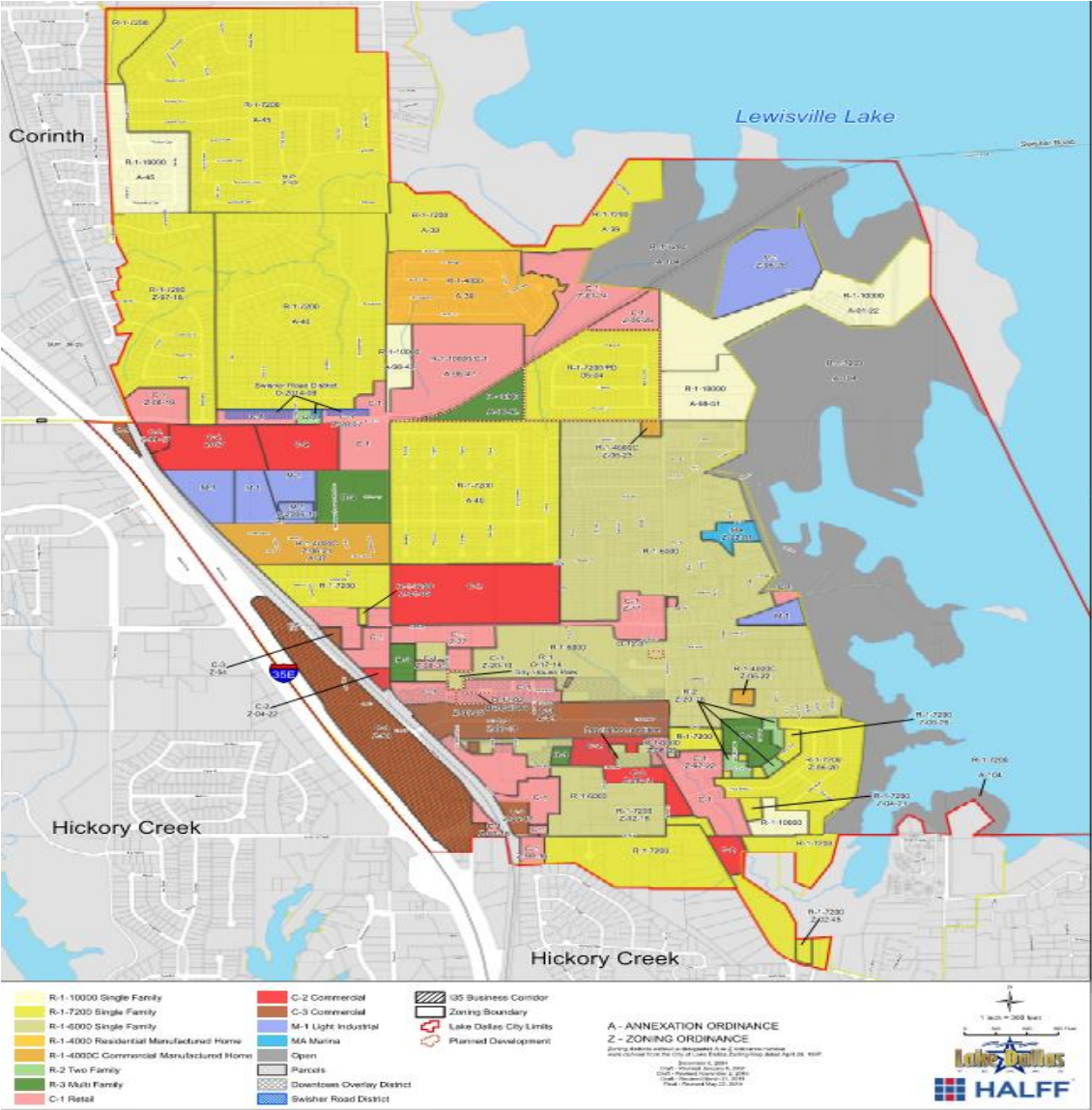


Figure 7: Zoning Map for Lake Dallas

Lake Dallas’s comprehensive plan, the *Vision Lake Dallas 2030 Comprehensive Plan*, was approved in July 2018. While this plan thoroughly discusses potential areas of

improvements, development, and redevelopment scenarios around the community, the primary focus for this study was the downtown revitalization section. With Fire Station #1 located downtown, a redevelopment plan in this area could present some unique possibilities for LCFD in the future.

The overall downtown framework in the comp plan seeks to increase the footprint of downtown while also increasing the presence of local businesses, providing a greater opportunity for Lake Dallas residents to shop in Lake Dallas. Challenges currently facing downtown Lake Dallas include:

- A lack of density.
- A combination of different architectural styles that don't mesh well.
- Roadways that need repair and are not pedestrian-friendly.

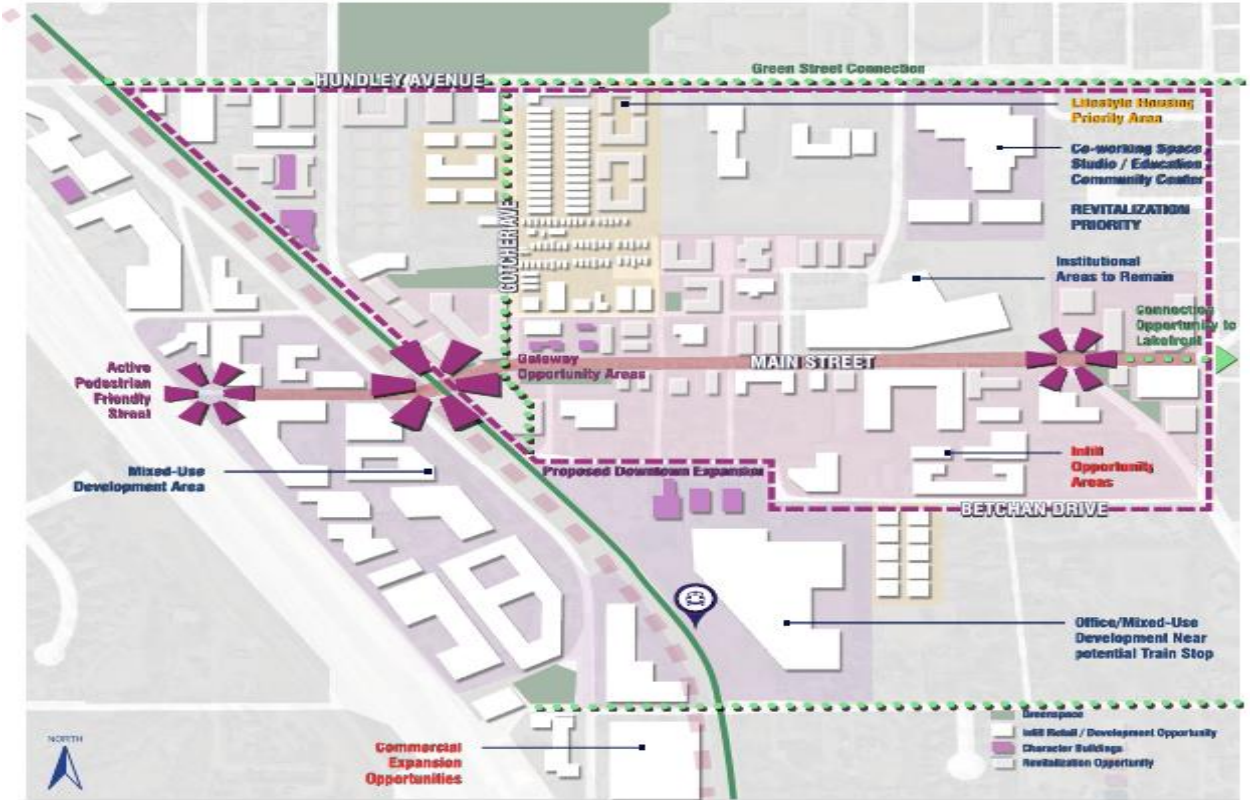


Figure 8: Preferred Downtown Development Pattern

As a way to address the challenges facing their downtown area, the comp plan established action items to help provide guidance and give direction to the city. The first items involve developing a Downtown Master Plan and reinstating the economic development corporation to help focus on marketing downtown Lake Dallas. Both steps are now complete since the publishing of the plan. Per the Lake Dallas Community Development Corporation (LDCDC), new mixed-use storefronts have been established. The LDCDC also purchased property around Main Street to market to developers in an effort to revitalize the downtown area. In order to allow developers some freedom in creating a new structure and establish a general style in downtown Lake Dallas, any existing structures located on property that LDCDC has purchased will be demolished.

This is where LCFD has an opportunity to act. Fire Station #1 is located directly on Main Street and could provide an opportunity for Lake Dallas to redevelop the site into something more in line with their overall vision for downtown. At the same time, with the LDCDC clearing off structures on nearby properties, LCFD has an opportunity to construct a new building to the standards necessary as demand continues to rise while also remaining in the downtown area.

From a planning perspective, the general location of Fire Station #1 is still the ideal location for a fire station in this area. With the station located on Main Street in downtown Lake Dallas, LCFD personnel has a few route options should there be a need to respond to an emergency along or north of Main Street. Main Street west to I-35E and Shady Shores Road are both considered major arterials (4-lane roads) in the Lake Dallas Thoroughfare Master Plan. An additional option to go north to service properties closer to the lake would take responders up Lakeview Drive, a minor arterial (2-lane road). In

addition to this, should the station either remain where it's currently located or move to a new site in the downtown Lake Dallas area, utilities will likely be readily available to the site.

Moving the station from the general downtown area could have a negative ripple effect. For instance, if the station were moved further north to Hundley Drive, it would add to response times in the Hickory Creek peninsula because of the increased distance. Due to a lack of neighborhood connectivity and circulation, there is already a delicate balance in regard to response time in this area. Additionally, the surface streets in this area tend to be winding and narrow. If the station moved further south down Main Street to help provide better response times in the Hickory Creek peninsula could prove catastrophic. Main Street is the quickest and most direct access to Lake Dallas from far eastern Hickory Creek. Should Main Street in this area be blocked for any reason, emergency responders would effectively be cut off from delivering services to their service area.

Town of Hickory Creek

Lewisville Lake largely surrounds Hickory Creek, with the lake making up the western, southern, and eastern border of the Town. Similar to Corinth, Hickory Creek is bisected by I-35E. The portion of Hickory Creek located west of the interstate shares a city limit with Corinth. The eastern half of the Town shares its city limit with Lake Dallas. By overall area, Hickory Creek is the second-largest community in the Lake Cities Fire Department. With an estimated 2020 population of 4,999, the Town is the second smallest community within LCFD's coverage area (United States Census Bureau, July 27, 2021).

The Town of Hickory Creek's current comprehensive plan was approved in 2008 and is now considered out-of-date and will be establishing a new comprehensive plan

beginning next year. The zoning map for Hickory Creek is also dated, with the most recent document available online having a date of February 14, 2005. However, a master thoroughfare plan from 2017 is available, and the Hickory Creek Economic Development Corporation (HCEDC) provides information on available pad sites for future development.

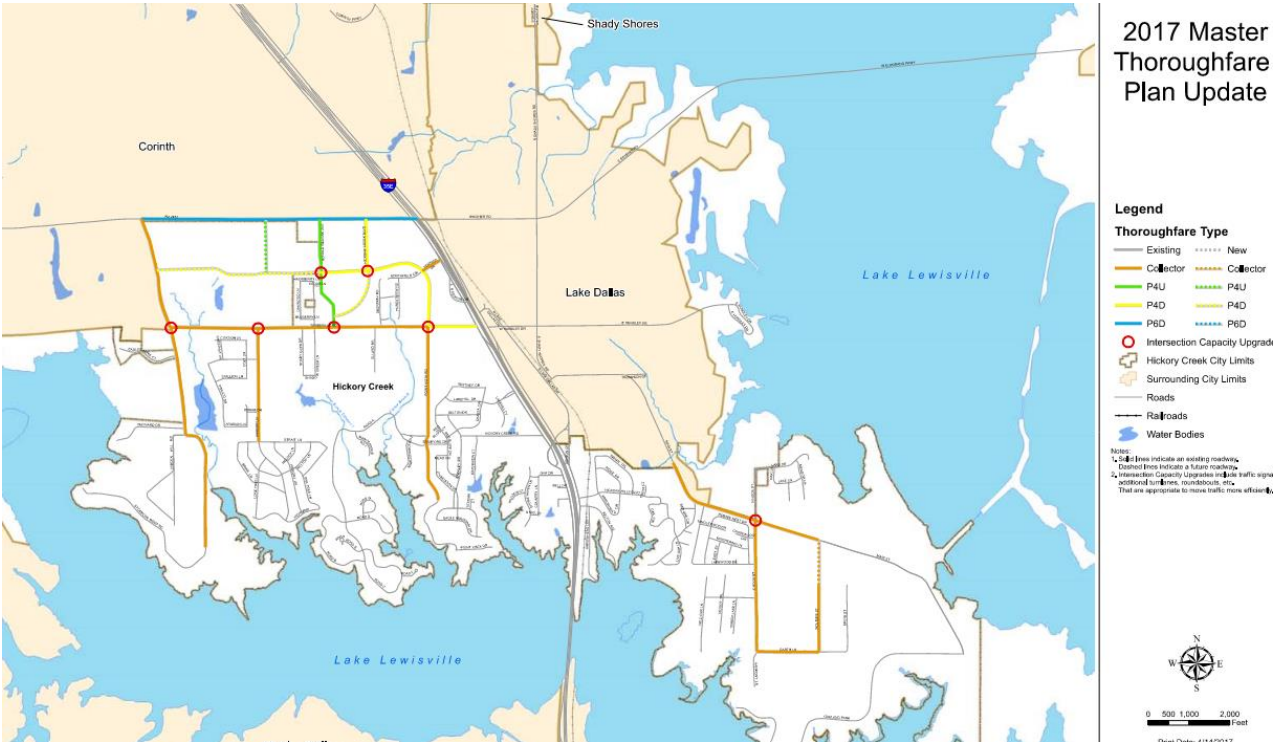


Figure 9: Hickory Creek Master Thoroughfare Plan

The Town’s apparent lack of roadway circulation and connectivity between communities appears to be an issue in reviewing the available data. Geographically, this is understandable because of the numerous inlets and coves present along the lake border. The area of Hickory Creek that offers the greatest circulation within the community is the area bordered by I-35E, Turbeville Rd, Parkridge Dr, and FM 2181. This area is also where the HCEDC is focusing on for future development.

From a planning perspective, if a fire station were to be located in or near Hickory Creek on the west side of I-35E would make the most sense. While not located directly in the community of Hickory Creek, Fire Station #3 effectively provides this coverage to the Hickory Creek community. Like the Lake Dallas situation, if a station were to be placed deeper in Hickory Creek, the ability to respond quickly to emergencies is hindered because of the lack of available roadway networks.

Town of Shady Shores

With an estimated 2,958 residents, Shady Shores is the smallest community by population in the Lake Cities Fire Department coverage area. It is bordered to the west by Denton and Corinth, the north by Denton County, the east by Lewisville Lake, and the south by Lake Dallas. The community does not have much in the way of zoning, with most existing zoning consisting of planned development (PD) districts. It is also unique in its roadway makeup. Most roads in the community are neighborhood/residential streets. A considerable number of roads in Shady Shores are private and are therefore not maintained by the Town. While there are numerous access points from surrounding communities into Shady Shores, many of these access points lead to dead-end streets or do not provide any sort of connectivity to other neighborhoods.

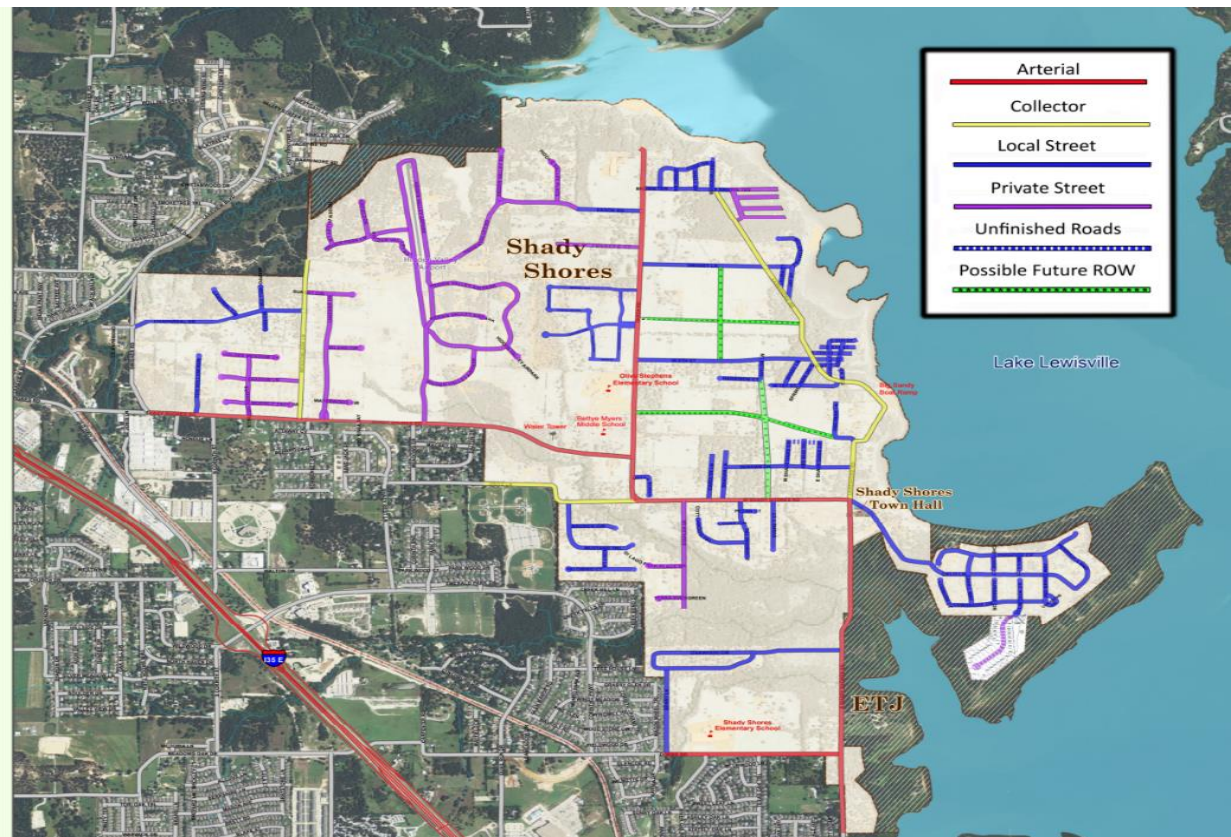


Figure 10: Shady Shores Master Thoroughfare Plan

With a lack of roadway circulation and a larger population in the neighboring community of Corinth, a station located outside of Shady Shores, which can still provide a quick response time to the community, is more ideal for the LCFD as a whole. Fire Station #2, whether it remains in its current location or is moved to a location nearer to the Agora development, will provide this service to Shady Shores.

Service Provision Through Mutual Aid Contracts

The City of Corinth contracts with the City of Lake Dallas and the Towns of Hickory Creek and Shady Shores to provide fire services to all entities. Historically, the organizations have entered into interlocal agreements (ILAs) with the City of Corinth to detail the provision of services and outline expectations and compensation, among other

aspects. Each agreement is tailored to the community being served by Corinth. Each has specificities related to the respective communities, mainly by the level of compensation.

As provided by Corinth, each agreement provides fire services details as to their meaning, service levels, equipment used, and reporting. “Fire services,” as defined in each ILA, include, but are not limited to, the following:

“Fire protection, including firefighting, fire suppression, and fire rescue services; emergency medical services including ambulance and paramedic services; fire prevention services...; public education and assistance services...; emergency management services [including] the development, design, and implementation of disaster catastrophe protection and safety plans, and coordination with other emergency management coordinators, personnel, and agencies” (City of Corinth, 2020, p. 7).

There are specific service levels expected to be maintained by Corinth to each entity. While not overly detailed, each agreement mentions they must provide fire services “at a minimum level comparable to that which is currently provided...” (City of Corinth, 2020, p. 7). Of note is the inclusion that a level of service provided must not negatively impact the ISO rating for any of the cities. Details regarding ISO ratings are detailed in a subsequent section of this report.

All fire departments will have standard operating procedures and/or local rules that details their minimum staffing. Corinth mentions briefly in each ILA that their minimum staffing includes having at least “9 firefighters and 1 captain per shift and at least one paramedic on each ambulance” (City of Corinth, 2020, p. 7). Apparatus in service are also outlined as to their number and minimum levels. For Lake Cities Fire Department

(LCFD), at least “two fire apparatus and 2 ambulances shall be operational each day for fire services” (City of Corinth, 2020, p. 7).

Each ILA has a term of five (5) years; there are provisions in each, however, outlining the timing expected to renew (City of Corinth, 2020). Initially, cost estimates are to be provided by Corinth. Also mentioned in the ILAs is that each organization must provide notice before the two-year mark preceding the expiration of the agreement that each party intends to renew for a subsequent term (City of Corinth, 2020). Each of the agreements also lays out the level and method of compensation for fire services. Due to their differing size of service coverage areas, levels vary for the City of Lake Dallas and the Towns of Shady Shores and Hickory Creek. Each organization is provided with the option to pay increasing amounts each year over the term of the ILA or to pay an average, fixed amount over the five-year agreement (City of Corinth, 2020). There is a provision in each ILA regarding adjustments for compensation rates if there are unfilled positions within LCFD. Each entity is given a monthly credit over time if the positions remain vacant (City of Corinth, 2020).

Among other legal aspects included in each ILA, there is a specific provision in which Corinth is given the exclusive right to provide fire services within the limits of the covered region. Further, the ILAs designate sole authority with the Fire Chief or his designee(s) to “direct the firefighting, rescue, fire prevention activities, and emergency operations” of any scene or incident (City of Corinth, 2020, p. 3).

Overview of Fire Standards

Before considering future fire station locations, it is essential to discuss national standards impacting fire and EMS services. The United States has not adopted a formal national regulation when determining fire station locations, on-duty minimum firefighter staffing, and minimum fire apparatus requirements related to unit type and numbers of each to be in-service. As a result, community leaders maintain the ultimate responsibility to determine the level of fire protection services they will provide for their respective communities. When choosing the level of fire protection, each community must consider three determining factors: the cost to the community, an acceptable level of risk, and an adequate level of fire protection. Multiple nationwide organizations exist to provide recommended standards and best practices. Each city ultimately decides on its fire deployment model, resulting in each community having a highly customized fire station facility location and the apparatus deployment model that best suits its needs. With the advancement of geographic information system (GIS) technology, communities have become increasingly strategic in decision making. GIS technology can populate geographic information and combine it with specific tabular data, producing detailed layers of emergency service-related information over spatial areas. Trend analysis and risk assessments are now more readily available to community leaders when formulating short-term adjustments to current deployment models and long-term development plans. High call volume areas can be reviewed alongside travel time modeling from existing and future-planned fire station locations, providing a real-time illustration of service provision. Specific GIS information combined with recommended national standards and best practices are the typical foundation for developing a fire service deployment model.

The Administration Division of the Lake Cities Fire Department utilizes GIS technology in cooperation with the City of Corinth GIS Manager to determine the agency's response time constructs for all areas served by LCFD. These constructs are used to validate factual response time histories against national industries standards and best practices. At the time of this report, LCFD leadership is in the process of compiling data for accreditation through the Texas Fire Chiefs Association (TFCA) Best Practice Program. A formal all-hazards risk assessment will be a major component of the initial stages of the accreditation process. The National Fire Protection Association (NFPA), specifically the 2020 edition of the NFPA's 1710 Standard, Insurance Services Office (ISO), the Center for Public Safety Excellence, and the American Heart Association (AHA) are all influential organizations typically referenced when determining appropriate fire department deployment models. Components within the report will parallel the national standards and best practices generated by these influential organizations. The roles of these organizations vary in their application of determining a fire protection deployment model. The NFPA and the AHA use quantitative data from emergency incident data points to decide appropriate fire and emergency medical deployment models. However, the CPSE and ISO use qualitative information based on the combination of quantitative data and field-specific industry or community trends. Community and fire department leadership are responsible for thoroughly understanding all applicable standards and practices to decide the level of fire and emergency medical protection for the service area. This section intends to communicate their application.

National Fire Protection Association

The National Fire Protection Association (NFPA) is a self-funded nonprofit organization founded in 1896 that dedicated its mission to eliminating death, injury, property, and economic loss due to fire, electrical and related hazards (NFPA.org, n.d.). To minimize the risk and effects of fire events, the NFPA produces a number of codes and national standards through the consensus of industry professionals and technical committees. These codes and standards are only applicable and enforceable after being formally adopted. Additionally, many of the NFPA's standards are used to determine benchmarks for industry compliance when clear legal standards are absent or fail to be adopted. Fire Service Leaders in Texas are not required to adopt any NFPA standard outside of what their community has adopted as a code or ordinance or any standard formally adopted by the Texas Commission on Fire Protection (TCOFP).

The NFPA does not have a legal standard regarding fire station locations. However, the NFPA does provide recommendations in their latest *Fire Protection Handbook* publication. It recommends that each community perform a risk assessment to establish an optimal fire service response to the community's unique needs and hazards. The components of the risk assessment must be structured to serve all sections of the community fairly, equitably, and effectively. At its core, the *Fire Protection Handbook* (Granito, 12-4, 2008) recommends the assessment include measurements to:

- Reduce the number of fires and other emergency incidents
- Reduce loss of life in fires and accidents
- Reduce the number and severity of injuries in fire and other emergency incidents

- Reduce the commercial, economic, and social impact of fires and other emergency incidents
- Safeguard the environment and heritage (both built and natural)
- Provide true value for money spent

NFPA ultimately recommends that a community risk assessment determine the location of a fire station, not the number or types of specific buildings located within a spatial area.

A critical component of the risk assessment is the occupancy types required for fire service protection.

The NFPA describes these types:

	Description	Personnel and Apparatus
High-hazard occupancies	Schools, hospitals, nursing homes, explosive plants, refineries, high-rise buildings, and other high life hazard or large fire potential occupancies	At least 4 pumpers, 2 ladder trucks, 2 chief officers, and other specialized apparatus as may be needed to cope with the combustible involved; not fewer than 24 firefighters and 2 chief officers. Extra staffing of units first due to high-hazard occupancies is advised. One or more safety officers and a rapid intervention team(s) are also necessary
Medium-hazard occupancies	Apartments, offices, mercantile, and industrial occupancies not normally requiring extensive rescue or fire-fighting forces	At least 3 pumpers, 1 ladder truck, 1 chief officer, and other specialized units as may be needed or available; not fewer than 16 firefighters and 1 chief officer, plus a safety officer and a rapid intervention team.
Low-hazard occupancies	One, two, or three-family dwellings and scattered small businesses and industrial occupancies	At least 2 pumpers, 1 ladder truck, 1 chief officer, and other specialized apparatus as may be needed or available; not fewer than 14 firefighters and 1 chief officer, plus a safety officer and a rapid intervention team

	Description	Personnel and Apparatus
High-hazard occupancies	Schools, hospitals, nursing homes, explosive plants, refineries, high-rise buildings, and other high life hazard or large fire potential occupancies	At least 4 pumpers, 2 ladder trucks, 2 chief officers, and other specialized apparatus as may be needed to cope with the combustibles involved; not fewer than 24 firefighters and 2 chief officers. Extra staffing of units first due to high-hazard occupancies is advised. One or more safety officers and a rapid intervention team(s) are also necessary
Medium-hazard occupancies	Apartments, offices, mercantile, and industrial occupancies not normally requiring extensive rescue or fire-fighting forces	At least 3 pumpers, 1 ladder truck, 1 chief officer, and other specialized units as may be needed or available; not fewer than 16 firefighters and 1 chief officer, plus a safety officer and a rapid intervention team.
Low-hazard occupancies	One, two, or three-family dwellings and scattered small businesses and industrial occupancies	At least 2 pumpers, 1 ladder truck, 1 chief officer, and other specialized apparatus as may be needed or available; not fewer than 14 firefighters and 1 chief officer, plus a safety officer and a rapid intervention team
Rural operations	Scattered dwellings, small businesses, and farm buildings	At least 1 pumper with a large water tank, once mobile water apparatus, and such other specialized apparatus as may be necessary to perform effective initial fire-fighting operations; at least 12 firefighters and 1 chief officer, plus a safety officer and a rapid intervention team
Additional alarms		At least the equivalent of that required for rural operations for second alarms; equipment as may be needed according to the type of emergency and capabilities of the department. This may involve the immediate use of mutual-aid companies until local forces can be supplemented with additional off-duty personnel. In some communities, single units are "special called" when needed, without always reporting to a multiple alarm. Additional units also may be needed to fill at least some empty fire stations.

Table 1: Cascades of Events Chart (NFPA 1710, 1710-20)

It is important to note that this deployment model is a recommendation in NFPA's *Fire Protection Handbook* and not a published standard that has completed the industry consensus process. Since high-hazard occupancies require a more significant number of resources for control and extinguishment, the NFPA further recommends strategically placing fire protection resources as a component of the life-hazard and response time analysis. However, these building types are to be factored within the equation and not the sole product of the equation. According to the *Fire Protection Handbook*, "far too many resources are devoted to residential areas, where the most fire deaths occur, and too many resources are devoted to business districts where fewer deaths occur" (Granito, 12-3).

When deciding on fire station locations, another recommended component of *the Fire Protection Handbook* is the combined analysis of the fire department's response goals. The response goals can be a condition of multiple factors, including existing NFPA standards and complementary national best practices. Response goals are influenced by fire department performance and spatial conditions within the community, such as geographic and road conditions. Therefore, when determining fire station locations, the *Fire Protection Handbook* recommends completing a traffic study when forecasting intersection delays, travel times and that route access be a condition of fire station location determination (NFPA, 12-234). Locations along major traffic routes could have an increased cost to the community based on property value cost to acquire them and a potential revenue loss if a commercial or industrial occupancy were interested in the site. To address this, NFPA's *Fire Protection Handbook* recommends locating the fire stations

on secondary routes just off the primary route locations. Other conditional location factors recommended by NFPA (Acomb and LeBoeuf, 2008, 12-235) for consideration are to:

- avoid congested thoroughfares
- locate egress curb cut at least 100 feet from an intersection
- allow for a minimum of 60 feet apparatus apron measure from the street right-of-way to the apparatus bay doors
- avoid locating the station at the bottom of a hill, avoid permanent barriers such as railroad tracks, one-way streets, or bridge prone to high-water risk
- avoid close proximity to schools or entertainment venues with heavy pedestrian and vehicle traffic
- allow 2 percent minimum slope of apparatus apron
- ensure minimum road width of 24 feet
- ensure good visibility and clear site lines for both approaching and exiting vehicles

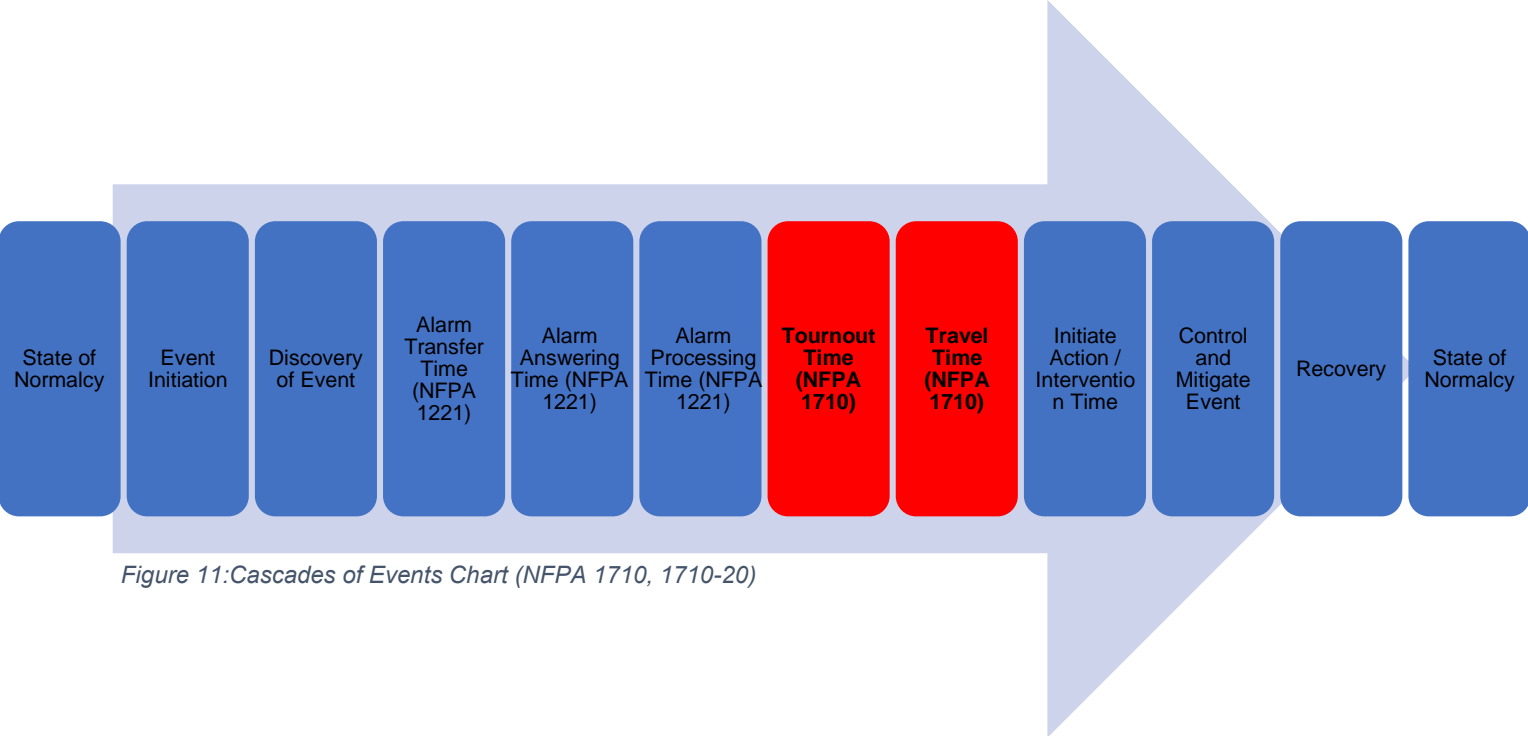


Figure 11: Cascades of Events Chart (NFPA 1710, 1710-20)

NFPA 1710

Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments

NFPA 1710 is the vetted standard within the American professional fire service that determines the nationally accepted baseline for fire department deployment and response times. This standard is specifically used to determine the benchmark for fire department deployment models and measures fire department response times and emergency incident firefighter and fire apparatus assignment. Materials included in the standard detail recommend timelines and resource deployment, from the emergency incident's first report to the incident's control and mitigation phases. When combined with the national standards for emergency call taking, processing, and dispatch as determined by NFPA 1221, NFPA 1710 is designed to benchmark the total response standard for fire departments regarding receiving and responding to fire and emergency medical incidents with appropriate resources.

Response times are critical for fire and emergency medical-related incidents. Recipients of emergency services often perceive value in the rapid arrival of emergency service professionals. Delays in arrival are typically associated with inadequate performance, create a poor perception of the effectiveness of local government, and are the origin of public complaints. Significant delays in emergency medical incidents only add additional links to the chain of survival, making time a critical factor in fire events. "Fire growth can expand at a rate of many times its volume per minute" (NFPA, 12-217). Modern combustible and construction techniques have produced a more volatile fire

atmosphere than the previous generation's legacy fires. Delays in suppression efforts are the primary cause of increases in civilian fire injuries, fatalities, and monetary losses. Efficient fire department response coupled with appropriate resources can promote locating and extinguishing fires in their developing stages or the room they originated in.

Flame Spread	Civilian Deaths (Per 1000 fires)	Civilian Injuries (Per 1000 fires)	Average Dollar Loss per Fire
Confined fires or contained fire identified by incident type	0.0	8.7	\$200
Confined fire or fire spread confined to object of origin	0.4	11.1	\$1,200
Spread beyond the room of origin but confined to the floor of origin	16.2	76.3	\$35,000
Spread beyond the floor of origin	24.6	55.0	\$65,000

Table 2: Loss Rates by Fire Spread in 2012-2016 Home Structure Fires (NFPA 1710, 1710-22)

Rigid standards are expressed for two critical areas that the fire department has complete control over; 1) Turnout time and 2) Travel time. Given the nature of the events, NFPA 1710 is predominately a time-based standard defined by the following.

Category	Definition
Turnout time	the time interval from when the emergency response units notification process initiates to when the point of travel begins. The notification process usually begins with an audible alarm or visual annunciation, or both.
Travel time	the time interval which begins when a unit is en route to the emergency incident and ends when the unit arrives at the scene. (NFPA 1710, 1710-9)

Table 3: Two Critical Areas the Fire Department has Complete Control Over

Understandably, the fire department cannot control the location of the emergency incidents. However, the fire department does have control over the fire station location and its ability to respond to emergency events within these guidelines.

Turnout Time Standards	Time
Emergency medical incidents	60 seconds
Fire events	80 seconds for fire events
Travel Time Standards	Time
First-arriving engine	240 seconds (4 minutes)
Second-arriving company	300 seconds (5 minutes)
Full alarm assignment arrival	
Low and medium hazards	within 480 seconds (8 minutes)
High hazard and high	within 610 seconds (10 minutes 10 seconds)

Table 4: Time Standards Prescribed by the NFPA 1710

NFPA 1710 also expands beyond time estimates and recommends specific company and scene staffing standards based on proven scientific models. The on-duty fire apparatus crew size recommended staffing is four firefighters for each engine and truck company. These standards recommend expanding to five firefighters for areas of high call volume or geographic restrictions and to 6 firefighters for dense urban areas, respectively (NFPA 1710, 1710-26). NFPA 1710 also recommends initial alarm deployment models of 15 firefighters to low hazard incidents, 28 firefighters to medium hazard incidents, and 43 firefighters to high hazard incidents.

Lake Cities Fire Department (LCFD) aligns their emergency response policies with NFPA 1710 standards - *Standard Operating Procedure 204 Section III*:

EMS Code 3	Time
Turnout Time	performance objective of 60 seconds
Travel Time	performance objective 240 seconds
Response Time (Initial Arriving ALS unit)	300 seconds (5 minutes)

Fire and Rescue Code 3	Time
Turnout Time	performance objective of 80 seconds
Travel Time	performance objective 240 seconds
Response Time (Initial Arriving ALS unit)	320 seconds (5 minutes, 20 seconds)

Table 5: Lake Cities Fire Department (LCFD) Emergency Response Policies

Adopting standards similar to NFPA 1710 2020 Edition will play a key role in the fire station site selections to keep response time to the prescribed department standard.

Insurance Services Office

The Insurance Services Office (ISO) is a national nonprofit organization that has developed a schedule to determine the major elements of a community's fire prevention and fire suppression capabilities. This schedule is used to develop a Public Protection Classification (PPC) score for the department ranging from 1 to 10. A score of one represents the best possible score, with ten being the worst. “The schedule is a property insurance rating tool, and is not intended to analyze all aspects of a comprehensive public fire protection program” (ISO, 2012, p. 1).

Each community is graded in four areas:

- emergency communications
- water supply
- multi-factor fire department capabilities
- community risk reduction efforts.

Two specific criteria are utilized to evaluate the fire department: 1) systematic performance analysis and 2) road mile criteria for engine and ladder companies for areas served by the fire department (ISO, p. 2).

The systematic performance section is calculated by the following:

- specific department's staffing levels
- existing apparatus
- adequacy of equipment on apparatus
- evaluation of training
- the existence of automatic aid
- the geographic distribution of fire companies
- operational consideration
- National Incident Management System (NIMS) training requirements for fire company officers

(Pietsch, 2018, p. 3)

The road mile criteria for engine and ladder companies require each area within the protection district to have an engine company with 1.5 road miles and a ladder company within 2.5 road miles. ISO permits the use of data history provided by a community computer-aided dispatch (CAD) to determine if their current deployment model meets the criteria for the initial arriving engine company and full-alarm assignment according to the standards set by NFPA 1710 (ISO, p. 31) versus using the road mile criteria assessment.

Communities may choose to emphasize the PPC rating since it could directly impact the residential and commercial insurance costs within their community. Additionally, an exemplary score can be attributed to the leadership and professionalism of the fire department and public government investment, serving as a point of pride. The PPC score is dedicated to protecting the insurance industry's respective interest in property loss, so a community's need for fire protection services may differ from the PPC scoring

criteria. ISO does not set standards and has limited information on recommending fire station locations within a community. The schedules produced, however, are primarily resource and response-time-based. In order to continue meeting the response distances within a potentially fast-growing community, it would likely require a methodical addition and relocation of fire department resources, increasing cost to the community to maintain the response area thresholds. Each community should conduct a cost-to-benefit analysis to determine if their desire to achieve and maintain an exemplary PPC score is in accordance with their financial goals and objectives.

To determine a likely ISO PPC score and acquire recommendations on improving areas of possible low scoring, LCFD contracted the services of Mike Pietsch, P.E., in 2018. Mr. Pietsch conducted the evaluation prior to a scheduled request for re-evaluation of the LCFD in the spring of 2018. In Mr. Pietsch's assessment, he estimated that the department would receive a PPC score of 81.92 and suggested the following improvements: (1.) increasing firefighter staffing levels on in-service apparatus (2.) adding a fourth fire station to assure a PPC score of 2. However, LCFD performed better than Mr. Pietsch's original estimates, receiving a score of 88.43 and ranking their PPC score a 2, very close to the exemplary score of 1. In correspondence between Mr. Pietsch and B. Shepard, after reviewing the official ISO report, Mr. Pietsch suggested making up the "4.21 points lost for not having enough fire stations and 1 of 3 we do have is in a terrible location." (M. Pietsch to B. Shepard, personal communication, May 19, 2018). Mr. Pietsch also referenced the poor location of Fire Station #2. Within his official report submitted to LCFD leadership, Mr. Pietsch mentioned relocating Fire Station #2 to the area of Corinth Parkway and Shady Rest Lane in preparation for their ISO re-evaluation (Pietsch, p. 18).

Center for Public Safety Excellence

The Center for Public Safety Excellence (CPSE) is a not-for-profit organization founded to help high-performing fire departments continuously improve through the implementation of an accreditation process (www.CPSE.org, n.d.). An internal CPSE organization, the Commission for Fire Accreditation International (CFAI) has developed a process where fire departments can undergo a thorough self-assessment process focused on identifying strengths and areas of improvement (www.CPSE.org). The purpose of this accreditation process is to develop key characteristics within each department during the self-assessment process. The CFAI's *Fire and Emergency Service Self-Assessment Manual* (FESSAM) quantifies the character development to assure departments are community-driven, objective-based, strategic-minded, well organized, and properly equipped, staffed, and trained (CPSE FESSAM, 2015, p.10). CPSE awards accreditation to departments that meet or exceed their outlined performance indicators, spanning from ten CFAI accreditation categories with 252 total performance indicators.

The listed CFAI accreditation categories are:

1. Governance and Administration
2. Assessment and Planning
3. Goals and Objectives
4. Financial Resources
5. Programs
6. Physical Resources
7. Human Resources
8. Training and Competency

9. Essential Resources

10. External Systems Relationships

The self-assessment is subsequently followed by a peer team site visit and a formal CFAI review before accreditation is awarded. The accreditation is valid for five years, requiring annual submittals of compliance documents assuring continuous agency improvement. CPSE admits the accreditation process is in-depth but rewarding, claiming the 3-5 years the average department commits to going through the accreditation process will equip leaders with the tools to assist the agency in securing and increasing its resources, in addition to the many other professional development intangibles associated with the continuous improvement process.

CPSE does not employ formal criteria for fire station location determination or structured deployment models. Any formal process associated with CPSE is based on the results of the department's Community Risk Analysis (Analysis) conducted as a component of the accreditation process. The Analysis should include all programs performed as a component of the fire department's protection services. Once the Analysis is complete, the accreditation process recommends that the department use the data to create goals and objectives for continuous improvement within all areas of protection services. The final process component is the development of the Standards of Cover (SOC), which benchmarks the goals and objectives based on the information revealed in the Analysis. It is within these phases that a community can determine a formal recommendation for fire station locations. Recommendations are based exclusively on self-assessment to meet the needs established by the fire department, and community served. The key benefits of this process are that it forces the department to look at its

current performance-based outcomes and use them as a component of future planning to maintain accreditation. Existing national standards are difficult to apply across the context of time and future planning. As a standard, they are subject to change at a different pace with the community. The accreditation process continually aligns the self-determined standards with the continual needs of the community.

American Heart Association

The American Heart Association (AHA) plays an increasingly important role in determining national best practices by generating data documenting the benefits of early recognition, proper advanced life support (ALS) treatment, and transportation to an appropriate emergency medical facility. The AHA includes several early requirements to increase the survivability rates of patients suffering from cardiac arrest through the Chain-Of-Survival components taught within their Basic and Advance Life Support courses. The Chain-Of-Survival found components taught include early activation of the EMS system, early high-quality cardiopulmonary resuscitation, early defibrillation, and early advanced cardiac life support (ACLS), placing the Lake Cities Fire Department as a key player in implementing these recommendations. Early arrival will require appropriate resource capacity and positioning within the coverage area to ensure the required high-quality CPR is being performed by LCFD paramedics, which are also equipped to provide rapid defibrillation and ALS care for the patients when needed. AHA programs such as Mission Life Line STEMI and Mission Lifeline Stroke have been instrumental in setting the standard of appropriate care for patients suffering from heart attacks and stroke. While not formal standards, these programs have become the benchmark for prehospital emergency care provider programs. Data from 2010-2016 has illustrated clear

improvements in patient outcomes in the rapid delivery of ALS treatments such as early electrocardiograph (ECG), early aspirin administration, and appropriate diagnosis of stroke or myocardial infarction by paramedics (American Heart Association, n.d.). AHA does not formally state any deployment of models or response criteria. All of AHA's data and service recommendations associate the increased time for properly trained and equipped prehospital professionals to arrive with the decrease in patient survival in cases of cardiac arrest and poor patient outcomes related to heart attacks or stroke.

Response Time Analysis and Location Review

When evaluating fire and EMS services, response times are typically the primary measurement used. As stated in the previous section, the LCFD attempts to achieve a five-minute response time for EMS calls and a travel time of four minutes for fire calls. A primary challenge faced by Fire Departments is identifying the necessary resources to provide the highest level of service and safety. Relevant and concise data related to the fire department's response times are essential in providing the department's preparedness for and response to emergency situations. In order to provide efficient and safe levels of service, a Fire Department's state of readiness must always be at maximum levels.

This section focuses on the emergency response data for the department from the last three years (2019 – 2021). The following maps and illustrations are designed to illustrate the response times for the entire LCFD service area. This information is important when evaluating the response times and comparing them to the standards

policies adopted by the LCFD. The section also portrays the difference between response time for all of the fire stations and coverage areas.

The following illustrations graphically show the areas around each of the fire stations, associating response times with a specific color. Ideal response times are represented with the color green, but change to yellow as response times increase. All response times used in this section were provided by the City of Corinth's GIS Department. It's important to note the illustrations do not take into account seasonal traffic or daily commuter traffic.

Engine Response Review

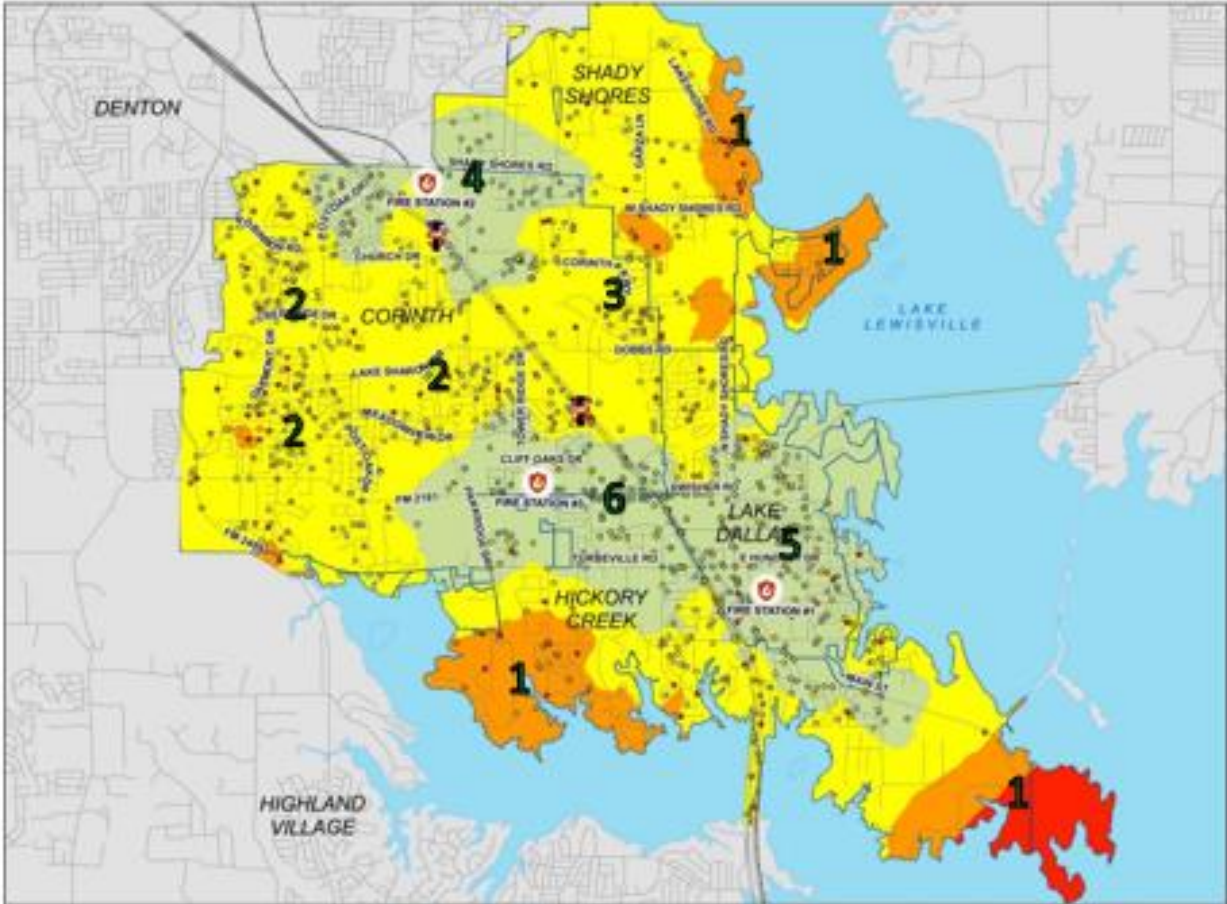


Figure 12: Engine Response Time Mapped

1. The area covered in number 1 represents the outlying portions of the service area and is currently associated with high response times due to their distance from current facilities and/or poor road conditions from their locations. This area is regularly in the 8 to 10- and 10 to 30-minute classification when calls occur, but current volume trends do not demand adding stations to these areas, nor would it be economically feasible to do so.
2. The area covered in number 2 has a significant call density that sees regular 6 to 8-minute response times and an occasional 8 to 10-minute response times. The surroundings are predominantly residential and indicate the area as underserved, considering that most fire injury and fatality incidents are in these occupancy types. Call volume in these areas is greater per density than in areas served by the current Fire Station #2 and Fire Station #3. All drive time analysis, NFPA 1710 standards, LCFD ISO consultant, and this group recommend placing a fourth fire station in the general area of the intersection of Lake Sharon and Oakmont.
3. The area labeled as number 3 contains a planned development site currently under construction. It typically sees a 6 to 8-minute response time, with an occasional 8 to 10-minute response. Target hazards include a nursing home and college in the vicinity. All of this suggests the area is underserved for pending growth and anticipated increased call volume. This group's recommendation is to relocate Fire Station #2 to this area based on our findings, NFPA 1710, and LCFD ISO consultant.
4. The area covered within the number 4 receives regular response times of 0 to 4 minutes to the Post Oak neighborhood West of I-35 and the Shady Shores area

East of I-35. However, LCFD is unable to produce response times of less than 6 to 8 minutes to the Robinson Road area for this district. The call density in the spatial area East of I-35 is low compared to the northwest section of Corinth. The group recommends the northwest area would be better served by a future Fire Station #4 and relocation of Fire Station #2.

5. The area labeled number 5 is currently served by Fire Station #1. The response district has the highest call density per spatial area, and LCFD regularly meets 0 to 4-minute response times. The group does not recommend any station location changes for this area.
6. The area covered by number 6 has good coverage of the commercial area near I-35 and is currently served by Fire Station #3. LCFD will be able to respond to areas of future growth off of FM2181, west of the station, with regular 0 to 4-minute response times. The group does not recommend any station location changes for this area, with good coverage of this commercial area near I-35 as currently served by Fire Station #3. LCFD will be able to respond to areas of future growth off of FM2181 west of the station with regular 0-4-minute response times. This group does not recommend any station location changes for this area.

Ambulance Response Review

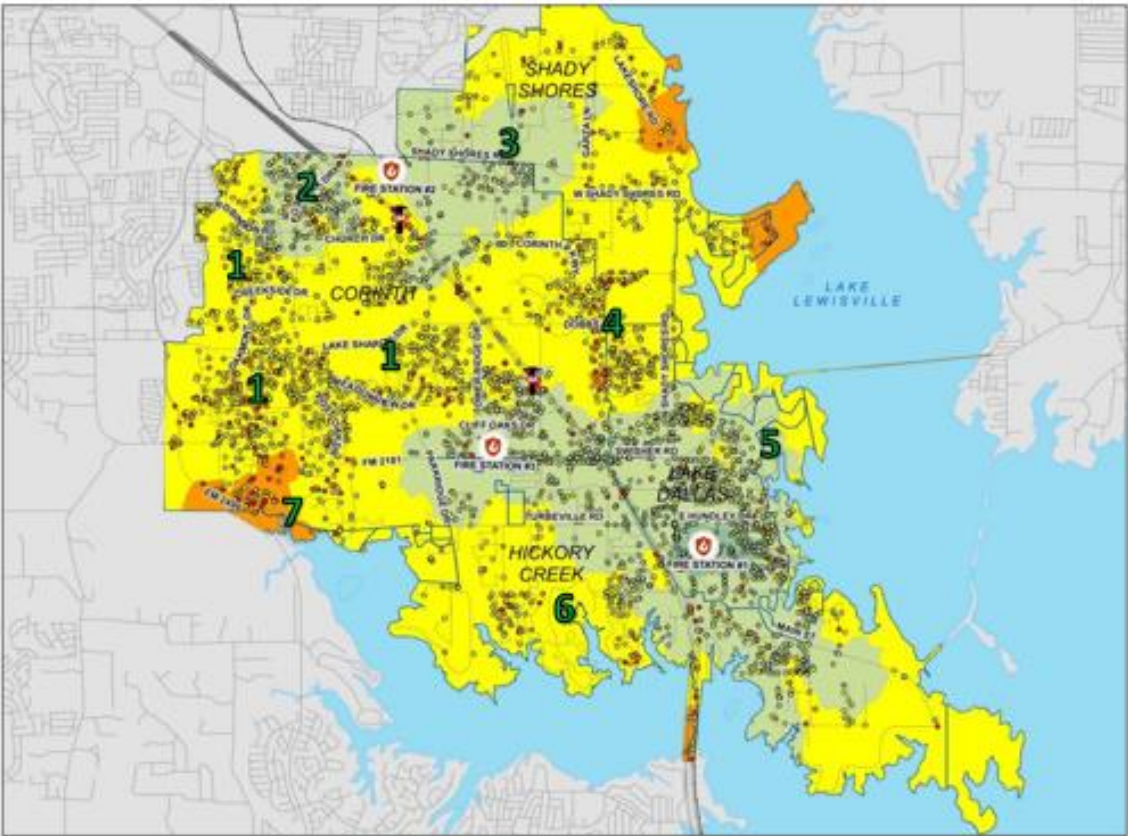


Figure 13: Ambulance Response & Incident Location Map

The region labeled one demonstrated higher call volume densities within spatial areas. The area has a regular response time of 6 to 8 minutes from the current ambulance locations. The area would be better served by having an ambulance assigned to the recommended Fire Station #4 location. The call density for the region warrants further discussion and consideration of the placement of a third ambulance at Fire Station #3, until the opening of Fire Station #4. Response from Fire Station #3 will assist current high response times to the western and southwestern regions than the current ambulance locations average.

1. The area labeled number 2 shows a call volume density region sufficiently covered by Fire Station #2's. Relocation of Fire Station #2 would not produce a service drop (see Fire Station #4 response map).
2. Area number 3 of the map shows that a moderate call volume density exists in the spatial region off Shady Shores and is currently well covered. Relocating Fire Station #2 would not yield a service drop to this region (see Fire Station #2 Relocation Map).
3. For the area labeled number 4, there is significant call density in this region, and it is currently underserved with regular 6 to 8-minute response times. This area would see a marked improvement with the relocation of Fire Station #2.
4. The region labeled number 5 is currently well served by Fire Station #1 and can meet high call volume density with good response times.
5. The area labeled number 6 has a moderate call volume with increased response times of 6 to 8 minutes. This area will prove to be a challenge as call volumes are not sufficient to warrant facility allocation or consideration of relocating Fire Station #3. The group advises continuing monitoring trends in the Hickory Creek region.
6. Number 7 has moderate call volume in the region with consistent 8 to 10-minute response times. The area is at the edge of the department response coverage. The location of a Fire Station #4 location would improve response times in the area.

Current Engine Response

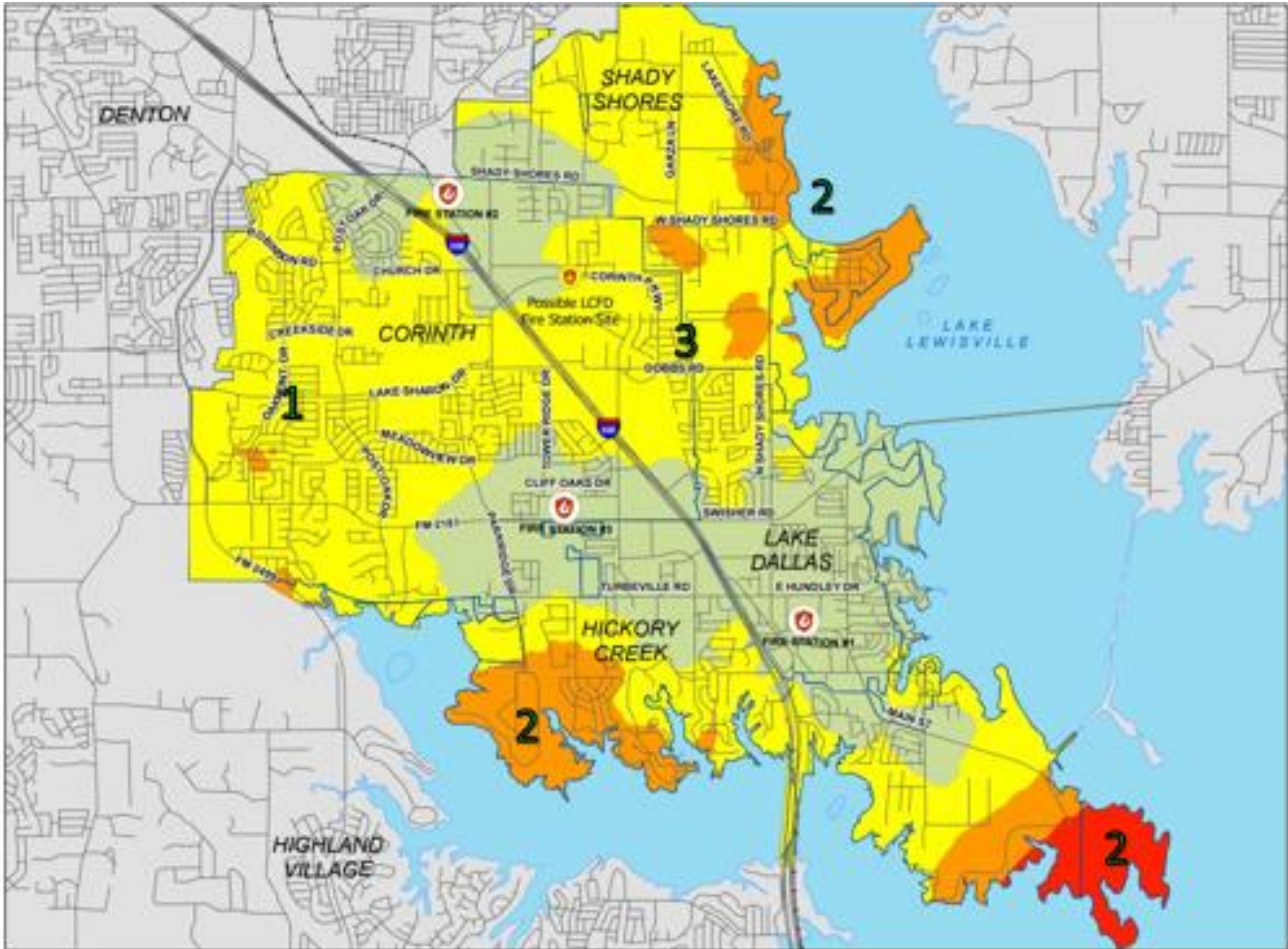


Figure 14: Current Engine Response Map

- 1. This region is currently away from known underservice secondary to current fire station locations. It contains primarily residential areas with regular 6-8-minute response times. The planned future site in the region will provide a significant boost in fire protection and emergency medical services.

- 2. These areas are all on the fringe of their respective response districts. They will always prove to challenge meeting response times based on the distance from locations placed to meet core-city required coverage. Call volumes will most likely never warrant station or resource placement. The current street conditions in some

of these areas add to response delays due to the lack of developed and maintained infrastructure.

3. This area has a significant amount of planned growth. Current response times from Fire Station #2 in this region produce regular 6-8 minute response times.

Fire Station #2 Relocation Engine

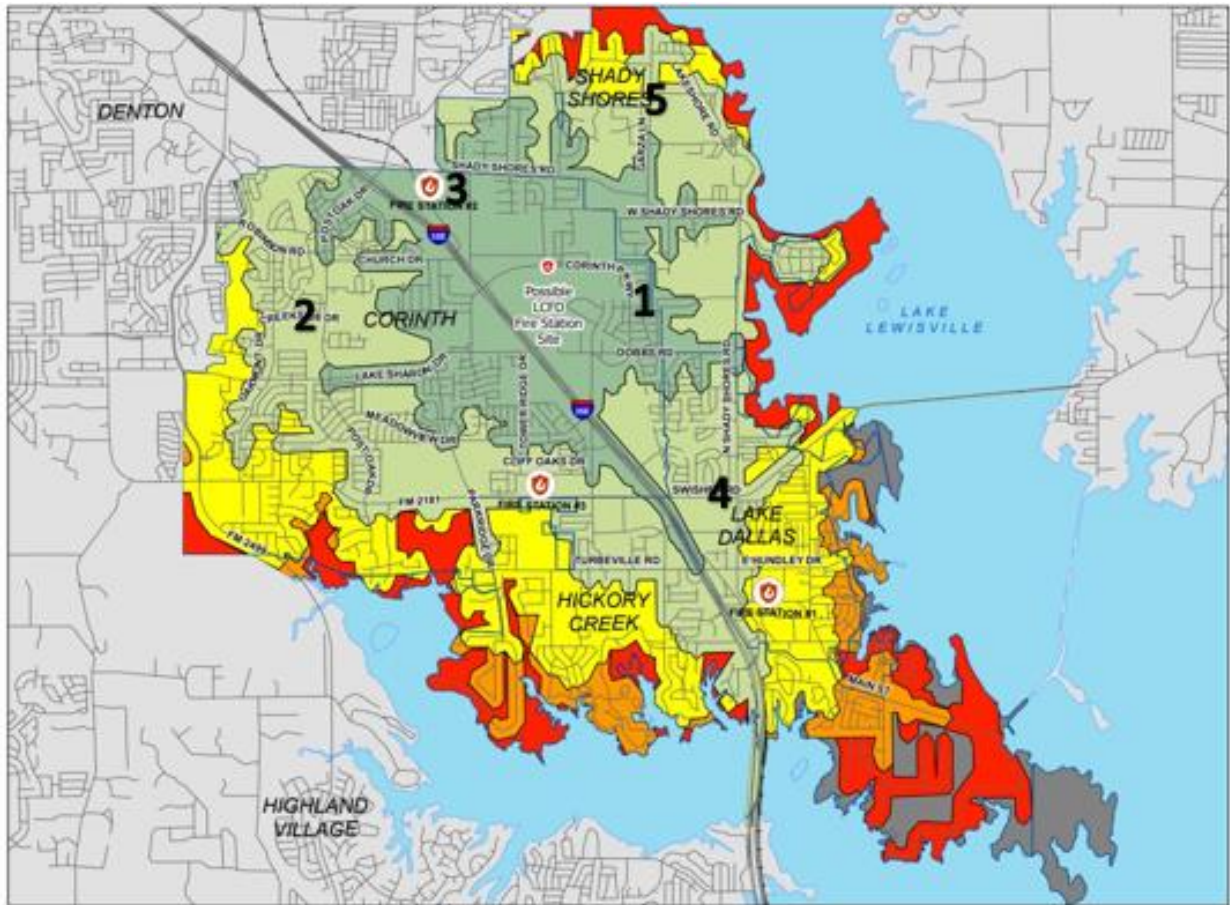


Figure 15: Fire Station #2 Relocation Engine Response Map

1. This area has seen increased improvement in current moderate call volume density with 6 to 8-minute response times. Relocation of Fire Station #2 would produce immediate improvement.

2. Relocation will increase response times to assist the western areas of the response region based on GIS drive time analysis. It will also provide a service increase if no changes to current resource plan or as a second-in resource to future Fire Station #4 apparatus.
3. Current Fire Station #3 region here is still fully covered in 0 to 4-minute response time projections. The area should see no decrease in level of service.
4. This is an area of high call density for Fire Station #1 resources. Relocation will improve assistance to Fire Station #1 as second-in resources or to manage call overlap situations.
5. This region is projected to see improvement in majority of Shady Shores service area compared to current location (see Ambulance Response and Incident Location Map).

Fire Station #4 Engine Response

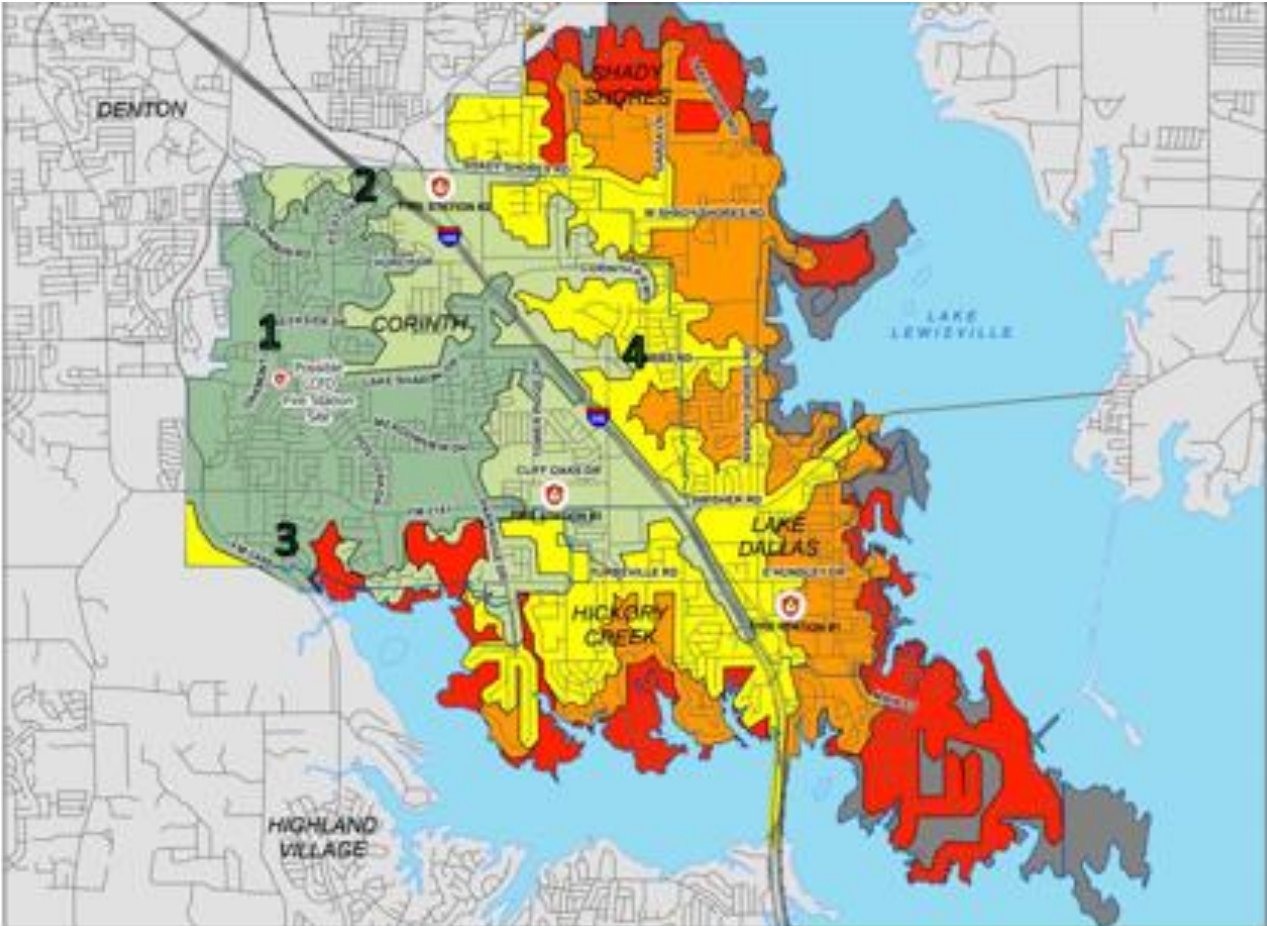


Figure 16: Fire Station #4 Engine Response Map

1. Relocation will provide immediate service increase to this current high call volume density area. A station here will bring the region to regular 0 to 4-minute responses compared to current regular 6 to 8-minute times.
2. This area should not see any service decrease with planned Fire Station #2 relocation to Post Oak region West of I-35.
3. Significant service improvement will come to this area that currently sees 8 to 10-minute response times (see Ambulance Response and Incident Map).

4. Apparatus in this location will be available to respond to planned future growth as additional resources for call overlap or critical incidents.

Facility Assessment

Introduction to Lake Cities Fire Department

The Lake Cities Fire Department is located along the Interstate 35 corridor in Denton County. Municipalities served include Corinth, Hickory Creek, Lake Dallas, and Shady Shores. Originally, the department started as volunteer fire departments in Lake Dallas and Corinth but found challenges in deploying volunteer resources as commercial and residential populations grew in the region. The fire service district is approximately 22 square miles with a population of approximately 38,000. Lewisville Lake surrounds the southern border, and Denton surrounds the north border. The department currently operates out of three fire stations and a headquarters building. The varying divisions for the department include administration, operations, training, fire prevention, and emergency management.

The Administrative division provides for planning, staffing, budgeting, direction, coordination, evaluation, and logistical support of all divisions within the department. The Operations division delivers the applicable techniques and methods for mitigation of non-emergency and emergency calls that endanger life, environment, or property. The Training division evaluates the effectiveness of departmental personnel on a permanent basis and provides training that meets all state and federal requirements, as well as the mission expectations of the department. The Fire Prevention division is accountable for fire and life safety inspections, fire investigations, construction plan reviews, code

enforcement, and public education and information. It is a vital part of the city government, in charge of developing and adopting fire and life safety codes for the safety of the multiple cities served. The Emergency Management division is tasked with coordinating the activities of various municipal departments and organizations responsible for continued operations during disasters, organizing interlocal agreements for resource utilization, connecting with state and federal agencies, providing education and training, and increasing the capabilities to respond to hazards that threaten the region. The department is considered a career fire department and consists of 53 personnel.

Facility Assessment of Existing Fire Stations

Fire Station #1



Figure 17: Lake Cities Fire House #1

Fire Station One, also known as “The Falcon’s Nest” is located at 275 W. Main Street, Lake Dallas, Texas 75065. It is the department’s first fire station and was built in the

1960's by its volunteer members. The original fire station was torn down and replaced by the current building in 2001. The facility is approximately 5,852 square feet and includes two apparatus bays, offices, dormitories, kitchen, and gear storage space. The station has a washer and dryer, gear extractor (washing machine for turnout gear), air compressor for filling SCBA cylinders, and an emergency natural gas backup generator to supply basic power during short outages. The facility is limited in size and in its ability to provide additional resource deployment.

The following features should be considered when renovating and/or expanding the fire station:

- Building access and security systems that help to keep the building's equipment and vehicles safe while the department provides emergency medical services from both ambulances and fire apparatus that have drugs onboard (Scott, 2018).
- Alerting systems that are integrated throughout the building to keep first responders safe, aware of their timing, and to inform them of call information in an accelerated manner.
- Improved air circulation to help mix air in the top of the apparatus bays. Low-speed, high-volume fans help to improve overall air quality and comfort. Adequate ventilation helps to create a more energy-efficient heating and cooling system and can assist with natural airflow to dry personal protective equipment (PPE) after washing.
- National Fire Protection Association (NFPA) 1500 specifies that fire departments contain all vehicle exhaust emissions to a level of no less than 100% of effective capture (NFPA, 2021). The Centers for Disease Control and Prevention (2017)

requires emissions to be reduced to the lowest feasible level to limit impact on a firefighter's health. Vehicle exhaust in the apparatus bay can be mitigated by whole-house, filter, and tailpipe extraction systems (Scott, 2018). A vestibule airlock with two doors helps to stop airflow from the apparatus bay into the interior of the fire station and mechanical systems for the station should be designed to maintain a positive air pressure flow.

Apparatus assigned to this fire station include:

- Engine E591
- Medic M591

Fire Station #2



Figure 18: Lake Cities Fire Station #2

Fire Station Two, also known as “The Ghost House” is located at 2700 W. Shady Shores Road, Corinth, Texas 76208. Originally a 1958 residential dwelling, this location became the department’s second fire station when the structure was modified to function

as a fire station in 2003. The facility has approximately 8,518 square feet of main area and 2,552 square feet of additional storage. The fire station includes four apparatus bays, offices, dormitories, locker room, kitchen, and gear storage spaces. The station has a washer and dryer, gear extractor washing machine for turnout gear, and an emergency natural gas backup generator to supply basic power during short outages. Additionally, the location has a maintenance/storage area for reserve equipment and an outdoor training facility. The facility has adequate size, however, due to changing residential and commercial growth in the region, the station's location is not ideal to serve the forecasted development in the area. Additionally, approximately one-quarter of the fire station's response capacity is not being utilized due to its proximity to the City of Denton's coverage area.

The following modern fire station features should be considered when designing or renovating the fire station:

- Building access and security systems that help to keep the building's equipment and vehicles safe while the department provides emergency medical services from both ambulances and fire apparatus that have drugs onboard (Scott, 2018).
- Alerting systems that are integrated throughout the building to keep first responders safe, aware of their timing, and to inform them of call information in an accelerated manner.
- Improved air circulation to help mix air in the top of the apparatus bays. Low-speed, high-volume fans help to improve overall air quality and comfort. Adequate ventilation helps to create a more energy-efficient heating and cooling system and can assist with natural airflow to dry PPE after washing.

- National Fire Protection Association (NFPA) 1500 specifies that fire departments contain all vehicle exhaust emissions to a level of no less than 100% of effective capture (NFPA, 2021). The Centers for Disease Control and Prevention (2017) requires emissions to be reduced to the lowest feasible level to limit impact on a firefighter's health. Vehicle exhaust in the apparatus bay can be mitigated by whole-house, filter, and tailpipe extraction systems (Scott, 2018). A vestibule airlock with two doors helps to stop airflow from the apparatus bay into the interior of the fire station and mechanical systems for the station should be designed to maintain a positive air pressure flow.
- Turnout gear should be stored away from living quarters to protect firefighters from off-gassing of harmful contaminants. Additionally, washing facilities for contaminated tools and materials should be located away from interior access points to the fire station (Centers for Disease Control and Prevention, 2017).

Apparatus assigned to this fire station include:

- Engine E592
- Medic M592
- Brush B592
- Squad S592
- Utility ATV U592
- Reserve Brush Truck B591
- Reserve Medic M59

Fire Station #3



Figure 19: Lake Cities Fire Station #3

Fire Station Three, also known as “The Heavy House” is located at 3750 Cliff Oaks Drive, Corinth, Texas 76210. This location is the department’s third and newest fire station and opened in 2019. The station was awarded the Texas Masonry Council’s Golden Trowel Award for the dynamic design and functionality of the building. The facility is approximately 13,000 square feet and includes three apparatus bays, offices, dormitories, locker room, kitchen, and gear storage spaces. The station has an advanced ventilation and exhaust removal system, washer and dryer, gear extractor washing machine for turnout gear, air compressor for filling SCBA cylinders, and an emergency natural gas backup generator capable of supplying full power to the facility during outages. An updated hose training tower and Fire Headquarters building is co-

located on the property. The facility is situated to respond to growth in the area and is capable of handling additional resource deployment.

The following modern fire station features should be considered when making improvements to the fire station:

- National Fire Protection Association (NFPA) 1500 specifies that fire departments contain all vehicle exhaust emissions to a level of no less than 100% of effective capture (NFPA, 2021). The Centers for Disease Control and Prevention (2017) requires emissions to be reduced to the lowest feasible level to limit impact on a firefighter's health. Vehicle exhaust in the apparatus bay can be mitigated by whole-house, filter, and tailpipe extraction systems (Scott, 2018). A vestibule airlock with two doors helps to stop airflow from the apparatus bay into the interior of the fire station and mechanical systems for the station should be designed to maintain a positive air pressure flow.

Apparatus assigned to this fire station include:

- Quint Q593
- Heavy Rescue R593

Site Assessment of Existing Fire Stations

Fire Station #1



Figure 20: Fire Station #1 Aerial

Fire Station #1 is in the downtown area of Lake Dallas. The site is undersized and surrounded by both existing residential and commercial development. The Lake Dallas Elementary School is located to the east of the fire station. The station has two apparatus bays facing Main Street, with no rear entry or secondary points of egress when responding to calls. The City of Lake Dallas does own the property adjacent to the current location (303 Alamo Avenue) making expansion possible. If expansion is considered, Alamo Avenue would likely need to be closed to vehicular traffic. Expansion and renovation of this facility is recommended as response and call data validate the need for the current location. Additionally, access to primary road corridors is beneficial with this site.

Fire Station #2



Figure 21: Fire Station #2 Aerial

Fire Station #2 is along the northern city limits of Corinth. The site abuts the Anchor Bay Boat and RV Storage facility to the east. The Shiloh Cemetery and multi-family residential development is located to the north of the fire station. The station has three apparatus bays facing Shady Shores Road, with no rear entry. The City of Corinth’s Public Works facility is to the south of the current location. The rail corridor, commercial development, and Interstate 35 lie to the west. The site has adequate acreage, however, due to additional commercial and residential growth in the areas to the south and northwest, the station’s location is not ideally situated for the current response districts. Additionally, approximately one-quarter of the station’s capacity is not being utilized due to the station’s proximity to the City of Denton emergency response area. The City of Denton opened Fire Station #8 in February 2021 (3113 Colorado Boulevard, Denton, Texas 76210), is approximately 2.8 miles away, and currently serves southeast Denton including the Pecan Creek Apartments and Interstate 35 to the northwest of Fire

Station #2. The existing property could be utilized as a Regional Fire Training Facility in the future.



Figure 22: Proximity Map Showing Denton Fire Station #8 Response Area and Lake Cities Fire Station #2

Fire Station #3



Figure 23: Fire Station #3 Aerial

Fire Station #3 is along the southern city limits of Corinth and across the street from the town limits of Hickory Creek. The site shares space with the City of Corinth’s Police Department and Fire Headquarters building. The station has three apparatus bays facing Cliff Oaks Drive and is the only fire station that allows pull-thru access for fire apparatus. Lake Dallas High School and Corinth Elementary school are north of the current location. Significant multi-family, single-family residential and commercial development surround the site. The station’s location is ideally positioned to meet current and future growth in the response areas within the Town of Hickory Creek and City of Corinth.

Site Assessment for Proposed Fire Stations

Proposed Fire Station #4



Figure 24: Proposed Vicinity Map for Fire Station #4

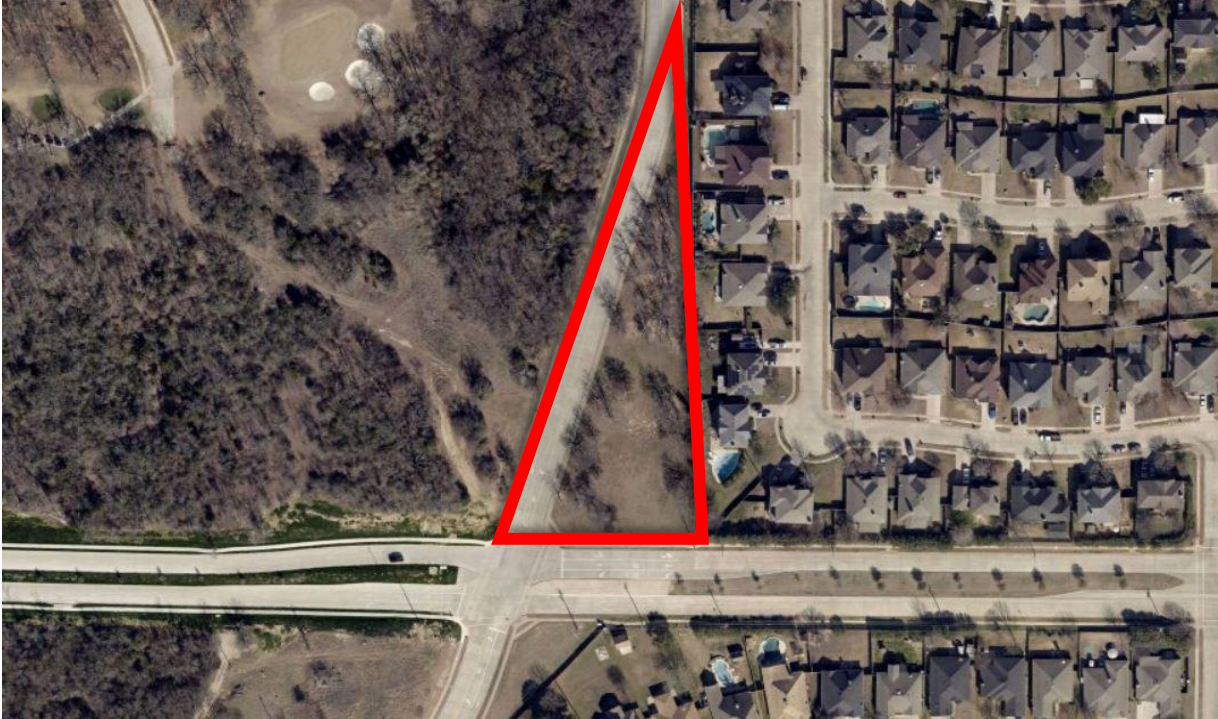


Figure 25: Aerial of City of Corinth Owned Parcel on the northeast corner of Lake Sharon Drive and Oakmont Drive

A proposed Fire Station #4 location could be in the vicinity of Lake Sharon Drive and Oakmont Drive. The red triangle represents a 1.093-acre parcel currently owned by the City of Corinth on the northeast corner of Lake Sharon Drive and Oakmont Drive. The site is narrow, undersized, and directly abuts a residential neighborhood. If this site is utilized, the fire station will likely need to be a two story, two apparatus bay station. The site may be too narrow to allow pull-thru bay construction and may not allow for a secondary point of egress. The City of Corinth’s Master Thoroughfare Plan calls for a roundabout to be constructed at this intersection. Future expansion would not be possible given challenges presented by the site.



Figure 26: Aerial of Endeavor Energy Resources LP properties

Another possible location for Fire Station #4 is on the northwest corner of Lake Sharon Drive and Oakmont Drive. Endeavor Energy Resources LP currently owns two properties along Lake Sharon Drive. One of the parcels is approximately 5 acres and is

directly north of the Lake Sharon Pump Station. The other parcel is along the southern perimeter of the Oakmont Country Club and is approximately 19 acres. There are some overhead utility lines running through the property.

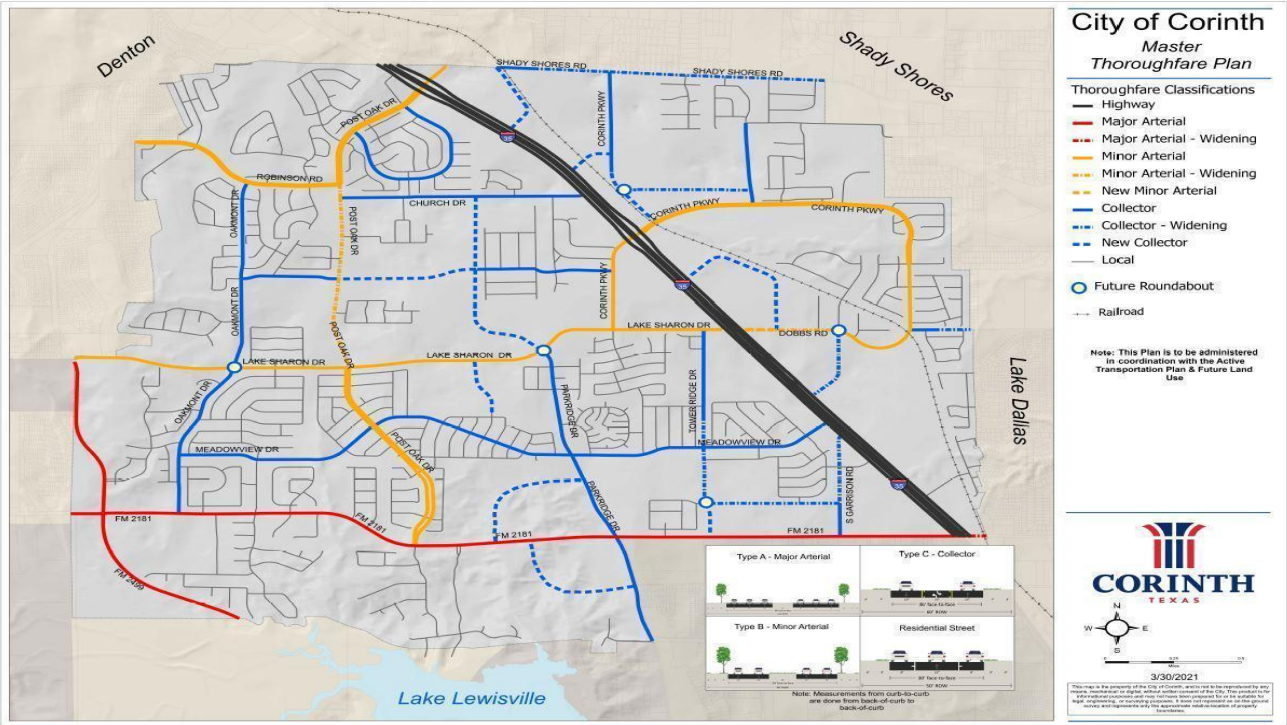


Figure 27: City of Corinth Master Thoroughfare Plan

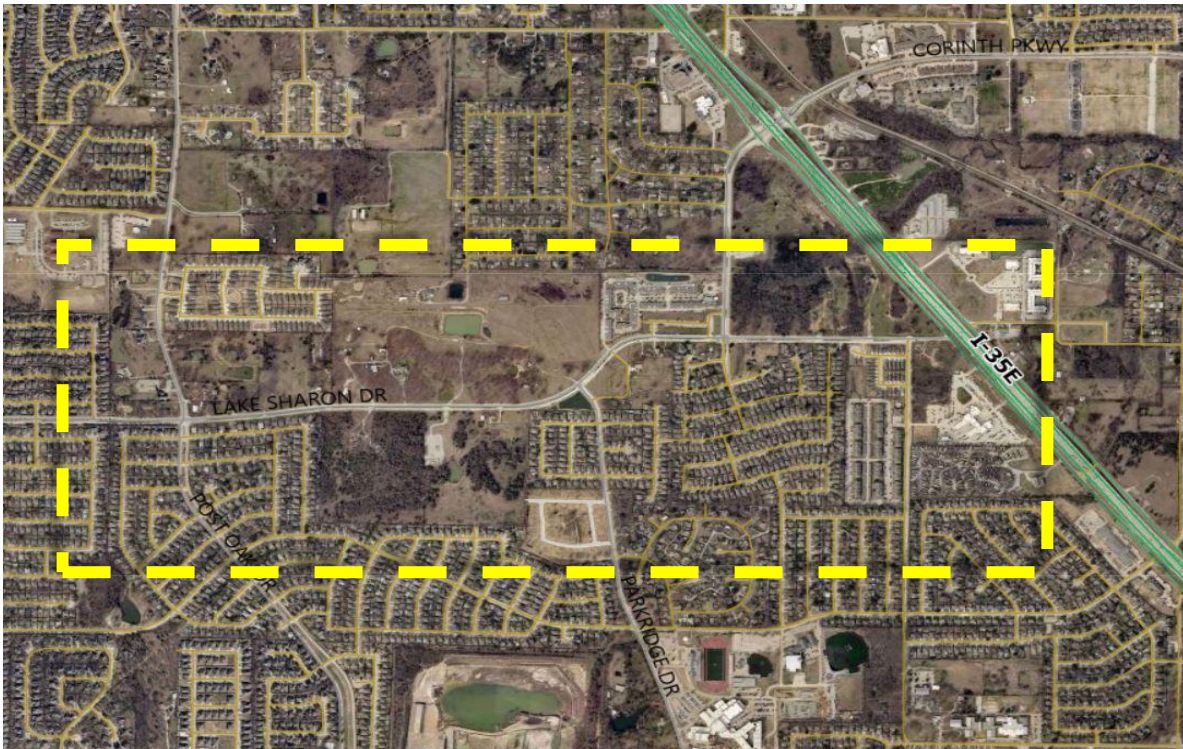


Figure 28: Aerial of Lake Sharon Drive and Post Oak Drive Vicinity

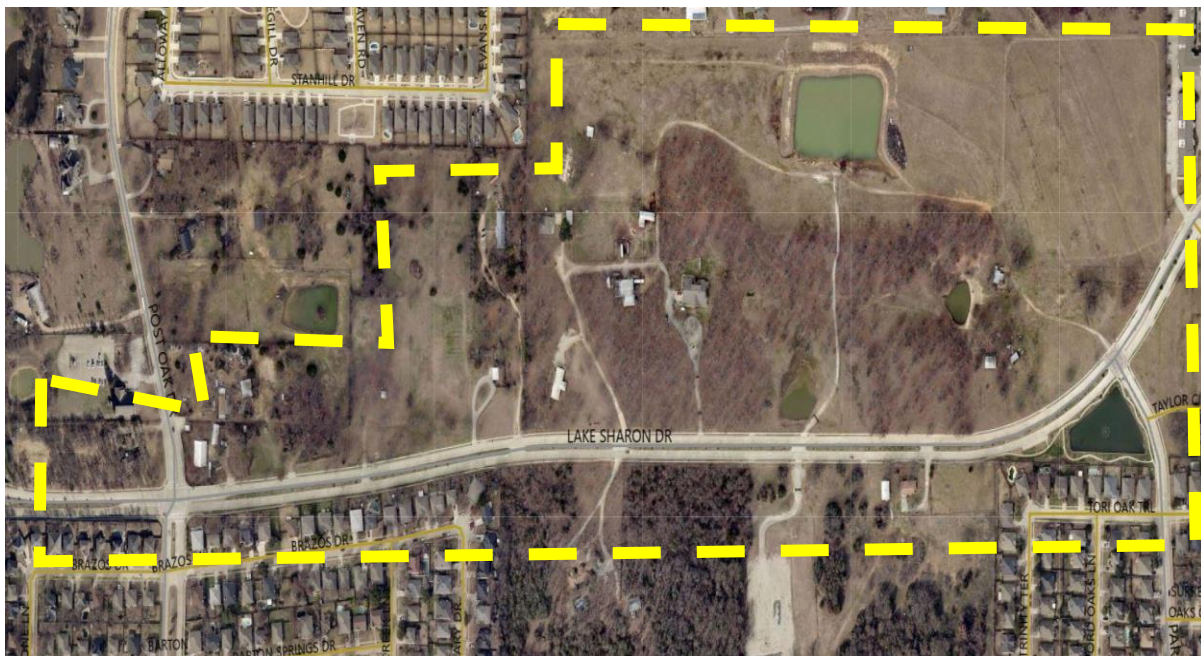


Figure 29: Aerial of Lake Sharon Drive Corridor and Possible Future Residential Development

A final recommendation for placement of a proposed fourth fire station would be along the Lake Sharon Drive corridor near the intersections of Post Oak Drive or

Parkridge Drive. The existing and proposed road network system identified in the City of Corinth's Master Thoroughfare Plan notes that Post Oak Drive is considered an arterial road. Parkridge Drive is proposed to be expanded to the north to create a collector road to Church Drive. Also of note, significant real estate along Lake Sharon Drive is owned by Meritage Homes of Texas LLC. With additional future residential development in this area, a fire station along this corridor will help to serve existing and new growth. Additionally, the City of Corinth may have an opportunity to work with the developer during the planning stage to dedicate acreage in the development along Lake

When considering potential sites to locate a fourth fire station, call location data, engine response data, and drive time analysis were all considered and evaluated. The properties detailed in the area offer quick access to Barrell Strap Road and Post Oak Drive which are minor and major thoroughfares that serve the significant existing and expanding residential development north of Lake Sharon. The vicinity proposed offers improvement in all areas along the west side of the fire response area and a station located in this area will add significant value for the citizens in the region.

Proposed Relocation of Fire Station #2



Figure 30: Aerial Map for Proposed Site of Fire Station #2 Relocation



Figure 31; Aerial view of property at Corinth Parkway and Shady Rest Lane

This site is the proposed location to relocate Fire Station #2 in the future. The property is approximately 2.23 acres and is located on the northwest corner of Corinth

Parkway and Shady Rest Lane. The property is large enough to construct a fire station similar in size and scope to that of Fire Station #3 and would provide access to primary thoroughfares. Significant mixed-use, retail, multi-family, and single-family residential, and other transit-oriented development is planned for this area. The Agora at Corinth project is a public-private partnership with Denton County, North Central Texas College, City of Corinth, Corinth Economic Development Corporation, Wolverine Interests, and Realty Capital. The first two phases of the development, the Commons at Agora and the Parkway at the District, are scheduled to begin construction by early 2022. Additionally, the project calls for approximately 65,000+ square feet of office and retail space, 35,000+ square feet of restaurant space, and 1,184 homes and apartment units to be added to the region.

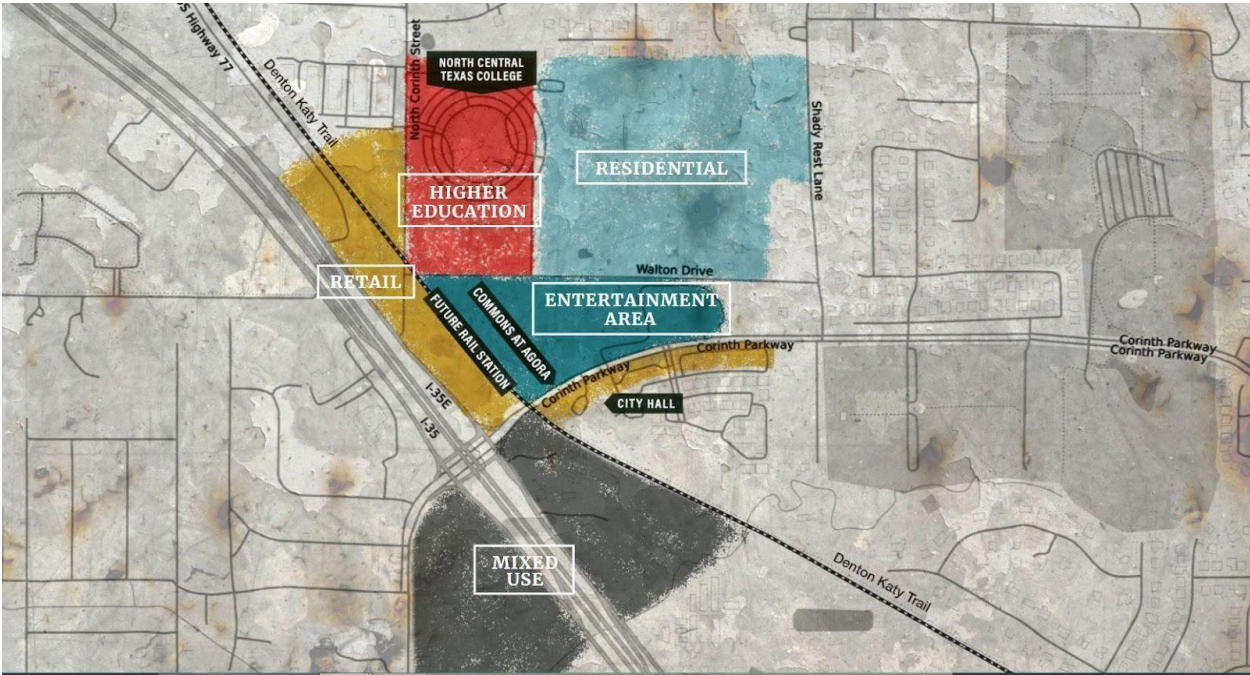


Figure 32: Rendering of Agora at Corinth Planned Development

Overview of Client Policies and Asset Management Plan

In December 2018, the City of Corinth City Council adopted Resolution 18-12-6-17, which approved a strategic asset management policy for the city. The policy aims to promote good stewardship of infrastructure assets, improve accountability and transparency, and adopt best practices related to asset management. The plan creates a framework to guide decision-making and sets benchmarks for asset management and encourages a “fix it first” approach to existing assets. Additionally, the strategy seeks to capture all known current and future costs for capital projects over the lifetime of the capital asset. The policy states that elements of the asset management system should be in line with the city’s risk management structure. Key objectives for the plan include defining asset performance measures, review of available resources, identification of performance gaps and options to cure if possible, and to outline sustainable improvements. For the purpose of this study, we will focus on portions of the 2018 Asset Management Plan related to buildings, facilities, machinery, and equipment.

The 2018 Asset Management Plan (AMP) indicates that the City of Corinth has significant building component assets with a useful life of 20-75 years and a 2018 replacement cost of almost \$23M (City of Corinth, 2018, p. 71). The city’s most significant investment period in buildings and facilities came during the 2015-2018 budget cycles. Approximately 98 percent of the building assets have at least 10 years of useful life remaining, and 94 percent are in good to very good condition (City of Corinth, 2018, p. 75). In terms of buildings and facilities, the plan recommends for the city to assess risk and plan for short-, medium-, and long-term capital needs and investments. The plan does not call for major investments in buildings and facilities until fiscal year (FY) 2043.

The Asset Management Plan (AMP) also addresses machinery and equipment. For this study, we will focus on the fire equipment section of the plan. As of 2018, the plan suggests that fire equipment constitutes approximately 28 percent of the total asset class, has a useful life of 4-10 years, and totals about \$566,000 (City of Corinth, 2018, p. 79). Beginning in FY 2014, the city invested significant resources into fire equipment. While the current condition of fire equipment is considered good to very good, additional investments in fire equipment are forecasted to continue in the future. Again, for this asset class, the plan recommends that the city assess risk and plan for short-, medium-, and long-term capital needs and investments.

Growth, demand, and risk assessment are key factors for the City of Corinth to consider when discussing capital improvement plans of assets. The plan suggests four points to consider when assessing risk (City of Corinth, 2018, p. 106): An asset's importance in an overall system,

- The criticality of the function performed,
- The exposure of the public and/or staff to injury or loss of life; and
- The consequence of failure

While these points are predominantly concerned with the physical condition of assets such as buildings and facilities, machinery, and equipment, special care should be taken when assessing how the condition and functionality of assets affect the public safety, fire services, and emergency management divisions. In these departments, the consequences of failure are great, and the function performed is critical.

FY 2021-2022 Operating and Capital Improvement Plan Budgets

A review of the approved FY 2021-2022 operating and capital improvement plan budget provides critical insight into the City of Corinth's current and future planning initiatives. Interlocal agreements were renewed with Hickory Creek, Lake Dallas, and Shady Shores to provide fire services for the next five years. In November of 2020, the citizens of Corinth approved the creation of a fire control, prevention, and emergency services district. One-quarter of a cent of sales tax revenue will be allocated in the district to help partially fund the Lake Cities Fire Department (City of Corinth, 2021, p. 4). The budget anticipates the fund will generate approximately \$465,615 in this budget cycle. Additionally, the FY 2021-22 budget calls for this amount to be used to help offset fire service costs that were historically funded from the General Fund. The city plans to continue investing heavily in infrastructure, economic and transit-oriented development, asset management while seeking ways to diversify the city's tax base and revenue streams through various strategic initiatives.

In 2019, the Corinth City Council adopted an ordinance establishing Tax Increment Reinvestment Zone (TIRZ) #2 to help provide additional resources related to the transit-oriented development associated with the Agora at Corinth planned development. The 2018 Asset Management Plan (AMP) assigned a low overall score to the city, mainly due to underfunding the required amounts to maintain and plan future capital improvements. The FY 2021-2022 budget proposes setting aside a capital reserve fund for this program, the first initiative since adopting the plan. The city intends to use federal American Rescue Plan grant funds to replace the backup generator at Fire Station #2 and repurpose the older unit being replaced at Fire Station #1. By doing this will provide both fire stations

with sufficient capacity to operate at higher efficiency during power outages. The General Fund anticipates approximately \$6.8M will be expended for the Lake Cities Fire Department during FY 2021-2022.

The proposed FY 2021-2021 Capital Improvement Plan (CIP) projects continue long-term investment in infrastructure, quality of life, and economic and transit-oriented development of close to \$5M over the next five-year budget. In the City of Corinth's 2020 Comprehensive Annual Financial Report (CAFR), capital assets are defined as assets that have "initial, individual costs of more than \$5,000 and an estimated useful life in excess of two years" (City of Corinth, 2020, p. 46). Buildings are considered to have a useful life of 40 years, land improvements for 10-20 years, and machinery and equipment for 5-20 years. Additionally, any "costs that do not add to the value of the asset or materially extend the life of the asset are not capitalized" (City of Corinth, 2020, p. 46). The city utilizes a capital replacement internal service fund for purchasing fire department vehicles and equipment. The fund's purpose is to help spread out the high cost of replacing fire services equipment over several years, which normalizes departmental capital spending on an annual basis. Expenditures from the Fire Department Capital Replacement Fund are anticipated to be around \$400,000 in FY 2021-2022.

Fire Station Location Recommendations

The following recommendations are based upon the information contained in this report. The Elected and Administrative personnel for the Lake Cities Fire Department are encouraged to analyze the data and response time illustrations to help determine an adequate response time for the community. The goal should be to determine an

acceptable minimum response time for the four communities that can be delivered fairly across the entire service area.

Recommendations – Fire Station Locations

- Renovate and expand Fire Station #1 site for current and future needs. As the project team understands, the current property contains a deed restriction where the property reverts to the original owner's family should the site not be used as a fire station. The existing property sits on approximately .72 acres. The City of Lake Dallas owns the property at 303 Alamo Avenue which is approximately .26 acres. If these two properties were combined, approximately one acre would be available to construct an up-to-date fire station and possibly add a 3rd apparatus bay. Parking for the fire station could be relocated to the adjacent property allowing for the existing facility to be expanded and reconfigured allowing pull-through bays. Additionally, the site at 219 Main Street is currently a retail business and sits on approximately .1721 acres. The property has a current appraised value of \$172,501. If the City of Lake Dallas were to acquire this property, the additional acreage combined with the existing properties could provide a very complementary footprint to design and reconstruct the existing fire station. In this scenario, the ad valorem taxes, and street closure of Alamo Avenue between Main Street and Market Street would need to be considered. This project could be a part of the Lake Dallas Downtown revitalization efforts in the future.

- Construct, equip, and staff a fourth fire station in the proximity of Lake Sharon and Oakmont with an engine company and ambulance. The addition of this fire station will decrease response times within the district's western areas in accordance with NFPA 1710 recommendations. The fire station will add a fourth engine company to the LCFD deployment model, increasing overall community fire protection and positively increasing the ISO scoring matrix. The City of Corinth currently owns a 1.093 tract of land located on the northeast corner of Lake Sharon and Oakmont, which could be used for the location of the fire station. However, it is not ideal based on the size and dimensions of the property. Creative and possibly limiting architectural and construction techniques would be required to make this location feasible for a facility large enough to house an engine company and ambulance while still providing public and employee access. Locations on Lake Sharon within the vicinities of Post Oak Drive or Parkridge Drive would provide the same area service increases while affording more accommodating land options for the construction of a modern fire station facility.
- Relocate Fire Station #2 from 2700 W. Shady Shores to a centralized location within the immediate vicinity of Corinth Parkway and Shady Rest Lane. Relocation to this area would centralize the facilities response capabilities, serve to cover current target hazard developments (North Central Texas College, Corinth Rehabilitation Suites on the Parkway), provide fire and medical protection to planned future mixed-use development (Agora), and generate an immediate service increase to the eastern boundaries (West Shady Shores Road to Swisher

Road). It would also decrease response times to the NFPA 1710 recommendations.

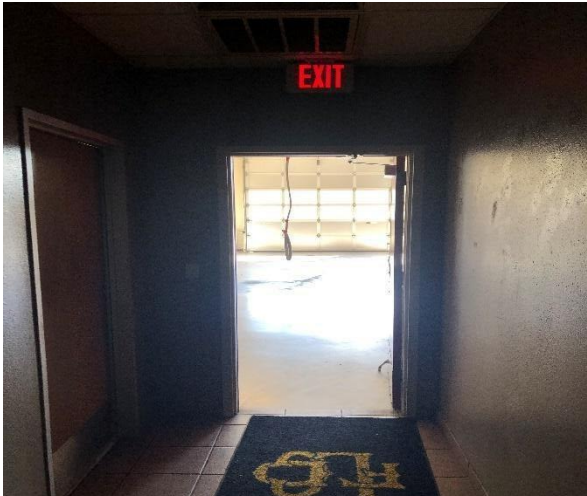
- Utilize the current Fire Station #2 site as a fire and rescue training center. It would permit on-duty personnel to conduct fire drills within the LCFD response areas without creating a negative environmental impact on existing community development, making it an ideal location.
- Continue preventative maintenance practices at all three existing fire stations to maintain each of the properties current condition. In the future, all three facilities could benefit by adding a vestibule area to all access points into the main buildings from the apparatus bays.

Appendix

Appendix A - Site Photos

Fire Station #1









Appendix A - Site Photos

Fire Station #2



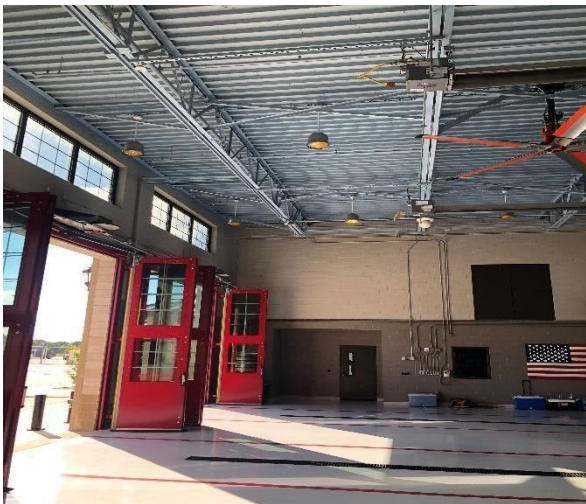




Appendix A - Site Photos

Fire Station #3









Appendix A - Site Photos

Potential Site for Fire Station #4 and Vicinity (Lake Sharon Drive at Oakmont Drive)









Appendix A - Site Photos

Potential Site and Vicinity for Fire Station #2 Relocation (Corinth Parkway at Shady Rest Lane)





Appendix A - Site Photos

**Residential Planned Development in Vicinity of Proposed Fire Station #2
Relocation Site**





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CITY OF CORINTH
Staff Report

Meeting Date:	1/13/2022	Title:	Presentation American Planning Association Excellence Award
Ends:	<input type="checkbox"/> Resident Engagement <input checked="" type="checkbox"/> Proactive Government <input type="checkbox"/> Organizational Development <input type="checkbox"/> Health & Safety <input type="checkbox"/> Regional Cooperation <input type="checkbox"/> Attracting Quality Development		
Governance Focus:	<i>Focus:</i> <input checked="" type="checkbox"/> Owner <input type="checkbox"/> Customer <input type="checkbox"/> Stakeholder		
	<i>Decision:</i> <input type="checkbox"/> Governance Policy <input checked="" type="checkbox"/> Ministerial Function		
Owner Support:	<input type="checkbox"/> Planning & Zoning Commission <input type="checkbox"/> Economic Development Corporation <input type="checkbox"/> Parks & Recreation Board <input type="checkbox"/> TIRZ Board #2 <input type="checkbox"/> Finance Audit Committee <input type="checkbox"/> TIRZ Board #3 <input type="checkbox"/> Keep Corinth Beautiful <input type="checkbox"/> Ethics Commission N/A		

Item/Caption

Presentation of the 2021 Richard R. Lillie Texas Chapter of the American Planning Association Excellence Award.

Item Summary/Background/Prior Action

For the third consecutive year, the City of Corinth has received the Richard R. Lillie Planning Excellence Award from the Texas Chapter of the American Planning Association. The award recognizes planning excellence in municipalities throughout the State. Evaluation criteria include the level of training of Planning Commissioners and professional staff, professional qualifications of the planning staff, breadth and currency of master plan components and completion of other planning related projects. The goals of the program include:

- Increasing community awareness of the importance of planning,
- Recognizing planning departments which meet certain professional requirements,
- Recognizing planning efforts that have achieved community support,
- Encouraging the funding of professional training for Planning Commissioners and staff, and
- Aiding economic development and community image.

The City of Corinth first earned this award in 2019.



American Planning Association
Texas Chapter

Creating Great Communities for All

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APA Texas Chapter
www.txplanning.org

November 12, 2021

The Honorable Bill Heidemann, Mayor
City of Corinth
3300 Corinth Parkway
Corinth, Texas 76208

Dear Mayor Heidemann,

It is with great pleasure that the Texas Chapter of the American Planning Association presents a 2021 Certificate of Achievement for the Richard R. Lillie, FAICP Planning Excellence Program to the to the City of Corinth and its Planning Department. Corinth is one of only of 34 Texas cities to receive such recognition this year.

This Certificate is in recognition of the professional planning standards demonstrated by your planning staff and the support provided by your City Council and Planning Commission. More specifically, the City of Corinth meets the Chapter's goals for increasing awareness of professional planning in meeting a variety of professional requirements. Please share this award with your City Council, Planning Commission, and staff.

The Board of Directors and members of the APA Texas Chapter thank you for your continued support of your community's planning program.

With warmest regards,

Chance Sparks, AICP, CNU-A
Chapter President, APA Texas Chapter

cc: Mike McAnelly, FAICP, Executive Administrator
administrator@apatexas.org

The Texas Chapter of the American Planning Association is a 501(c)3 organization (23-7431522) as determined by the Internal Revenue Service. Gifts are tax deductible as allowed by law. Please consult your tax advisor for more information.



American Planning Association
Texas Chapter

2021

Section F, Item 1.

Creating Great Communities for All

CERTIFICATE OF ACHIEVEMENT
Richard R. Lillie, FAICP Program for
PLANNING EXCELLENCE

Presented to the

City of Corinth

*Recognizing a commitment to professional planning by City Administration, Elected and Appointed Officials,
and exemplary professional standards demonstrated by the Planning Staff*

Awarded by
Texas Chapter of the American Planning Association

A handwritten signature in blue ink, appearing to read 'Chance Sparks'.

Chance Sparks, AICP, CNU-A
Chapter President



CITY OF CORINTH
Staff Report

Meeting Date:	1/13/2022	Title: Minutes Approval of Meeting Minutes
Ends:	<input type="checkbox"/> Resident Engagement <input checked="" type="checkbox"/> Proactive Government <input type="checkbox"/> Organizational Development <input type="checkbox"/> Health & Safety <input type="checkbox"/> Regional Cooperation <input type="checkbox"/> Attracting Quality Development	
Governance Focus:	<i>Focus:</i> <input checked="" type="checkbox"/> Owner <input type="checkbox"/> Customer <input type="checkbox"/> Stakeholder	
	<i>Decision:</i> <input type="checkbox"/> Governance Policy <input checked="" type="checkbox"/> Ministerial Function	
Owner Support:	<input type="checkbox"/> Planning & Zoning Commission <input type="checkbox"/> Economic Development Corporation <input type="checkbox"/> Parks & Recreation Board <input type="checkbox"/> TIRZ Board #2 <input type="checkbox"/> Finance Audit Committee <input type="checkbox"/> TIRZ Board #3 <input type="checkbox"/> Keep Corinth Beautiful <input type="checkbox"/> Ethics Commission N/A	

Item/Caption

Consider and act on minutes from the December 16, 2021, City Council Meeting.

Item Summary/Background/Prior Action

Attached are the minutes, in draft form, and are not considered official until formally approved by the City Council.

Staff Recommendation/Motion

Staff recommends approval of the minutes.



CITY COUNCIL WORKSHOP AND REGULAR SESSION - MINUTES

Thursday, December 16, 2021 at 5:45 PM

City Hall | 3300 Corinth Parkway

**STATE OF TEXAS
COUNTY OF DENTON
CITY OF CORINTH**

On this, the 16th day of December 2021, the City Council and the Corinth Economic Development Corporation, of the City of Corinth, Texas, met in a Workshop Session at the Corinth City Hall at 5:30 P.M., located at 3300 Corinth Parkway, Corinth, Texas. The meeting date, time, place, and purpose as required by Title 5, Subtitle A, Chapter 551, Subchapter C, Section 551.041, Government Code, with the following members to wit:

Council Members Present:

Bill Heidemann, Mayor
Sam Burke, Mayor Pro Tem
Scott Garber, Council Member
Steve Holzwarth, Council Member
Tina Henderson, Council Member
Kelly Pickens, Council Member

Staff Members Present:

Bob Hart, City Manager
Lana Wylie, City Secretary
Patricia Adams, City Attorney
Michael Ross, Fire Chief
Lee Ann Bunselmeyer, Finance, Communications & Strategic Services Director
Brett Cast, Chief Budget Officer
Glenn Barker, Public Works Director
Elise Back, Economic Development Director
John Webb, Planning & Development Director
George Marshall, City Engineer
Andrea Parker, Engineering Services Coordinator
James Trussell, Multi-Media Specialist

Mayor Heidemann called the Workshop Session to order at 5:45 P.M.

WORKSHOP AGENDA

1. Interview candidate for Place 9 on the Keep Corinth Beautiful Board.

The City Council interviewed Julie Hill for placement on the Keep Corinth Beautiful Board.

2. Receive a presentation and have a discussion on the Meadowview Park upgrades.

The item was presented and discussed.

3. Continue the discussion from the November 18, 2021, Workshop Session and provide staff direction on Home Rule Charter amendments.

The item was presented and discussed.

4. Discuss Regular Meeting Items on Regular Session Agenda, including the consideration of closed session items as set forth in the Closed Session agenda items below.

Item #13 was discussed.

ADJOURN WORKSHOP

Mayor Heidemann adjourned the Workshop Session at 6:33 P.M., and immediately convened into the Closed Session Meeting.

CLOSED SESSION

The City Council will convene in such executive or closed session to consider any matters regarding any of the items posted on the Agenda as well as the following matters pursuant to Chapter 551 of the Texas Government Code. After discussion of any matters in closed session, any final action or vote taken will be public by the City Council. City Council shall have the right at any time to seek legal advice in Closed Session from its Attorney on any agenda item, whether posted for Closed Session or not.

Section 551.071 - Legal Advice. (1) Private consultation with its attorney to seek advice about pending or contemplated litigation; and/or settlement offer; and/or (2) a matter in which the duty of the attorney to the government body under the Texas Disciplinary Rules of Professional Conduct of the State of Texas clearly conflict with Chapter 551.

a. C&JJ Investments, LLC v. City of Corinth, Cause No. 21-5053-431, (431st Judicial District, Denton County, Texas).

b. Proposed purchase offer from Texas Department of Transportation for a portion of the property located at the southeast corner of Lake Sharon and I35E (6801 S IH 35E). (F/Y)

Section 551.072 - Real Estate. To deliberate the purchase, exchange, lease, or value of real property if deliberations in an open meeting would have a detrimental effect on the position of the governmental body in negotiations with a third person.

a. 1.747 acres, more or less, of land consisting of Lots 1,2, and 3, Block B of the F&H Addition north of Walton Drive and east of North Corinth Street. (H3)

b. Lot 1, Block A of the F&H Addition. (H3)

Section 551.087 - Economic Development. To deliberate or discuss regarding commercial or financial information that the governmental body has received from a business prospect that the governmental body seeks to have locate, stay, or expand in or near the territory of the governmental body and with which the governmental body is conducting economic development negotiations; or to deliberate the offer of a financial or other incentive to a business project.

a. Project Agora.

Mayor Heidemann recessed the Closed Session Meeting at 6:44 P.M. Action on Closed Session items took place at the end of the Regular Session Meeting.

CALL TO ORDER, INVOCATION, PLEDGE OF ALLEGIANCE & TEXAS PLEDGE

Mayor Heidemann called the Regular Session Meeting to order at 6:52 P.M.

PROCLAMATIONS AND PRESENTATIONS

1. Recognition of Eagle Scout Court of Honor recipient - Luke Davison.

Mayor Heidemann read and presented Luke Davison with a Proclamation honoring his Eagle Scout achievement.

CITIZENS COMMENTS

Please limit your comments to three minutes. Comments about any of the Council agenda items are appreciated by the Council and may be taken into consideration at this time or during that agenda item. Council is prohibited from acting on or discussing items brought before them at this time.

No comments were made.

CONSENT AGENDA

All matters listed under the consent agenda are considered to be routine and will be enacted in one motion. Should the Mayor or a Councilmember desire discussion of any item, that item will be removed from the Consent Agenda and will be considered separately.

2. Consider and act on minutes from the November 18, 2021, City Council Meeting.
3. Consider and act on minutes from the December 2, 2021, Joint Workshop Meeting with the City Council and Corinth Economic Development Corporation (CEDC).
4. Consider and act on an amended Interlocal Agreement between the Lake Cities Fire Department (LCFD) and the Little Elm Fire Department to include North Central Texas College (NCTC) in the Fire Training Field collaboration regarding the ownership, management, use and rental, maintenance, and operation of the facility located at 2708 Shady Shores Road, behind the Lake Cities Fire Department.
5. Consider and act on the purchase of Meadowview Playscape and maintenance materials with Child's Play in an amount not to exceed \$133,860 using BuyBoard, Contract 592-19, and authorizing the City Manager to execute the necessary documents.
6. Consider and act on a two-year piggyback contract with the City of Denton to use Floyd Smith for concrete street and sidewalk repairs in the amount not to exceed \$90,000 for the fiscal year 2021-22, and not to exceed \$100,000 in the fiscal year 2022-23 and authorizing the City Manager to execute the necessary documents.
7. Consider and act on an Interlocal Cooperative Agreement for Library Services between the City of Corinth, Texas and City of Denton, Texas.

Motion made by Mayor Pro Tem Burke to approve the Consent Agenda as presented. Seconded by Council Member Henderson.

Voting Yea: Mayor Pro Tem Burke, Council Member Garber, Council Member Holzwarth, Council Member Henderson, Council Member Pickens

BUSINESS AGENDA

8. Consider and act on an Ordinance amending Section 52.07, Garbage Collection Fees, of the Corinth Code of Ordinances relating to charges for certain refuse and recycling services; providing that this ordinance shall be cumulative of all ordinances of the City of Corinth; providing a savings clause; and providing an effective date.

Motion made by Mayor Pro Tem Burke to approve Ordinance No. 21-12-16-30, amending Section 52.07, Garbage Collection Fees, relating to charges for certain refuse and recycling services. Seconded by Council Member Pickens.

Voting Yea: Mayor Pro Tem Burke, Council Member Garber, Council Member Holzwarth, Council Member Henderson, Council Member Pickens

- 9. Consider and act on an Ordinance of the City of Corinth approving an amendment to the fiscal year 2021-2022 budget and annual program of services to provide expenditures of funds to pay for garbage services; and providing an effective date.

Motion made by Mayor Pro Tem Burke to approve Ordinance No. 21-12-16-31 approving an amendment to the fiscal year 2021-2022 budget and annual program of services to provide expenditures of funds to pay for garbage services. Seconded by Council Member Holzwarth.

Voting Yea: Mayor Pro Tem Burke, Council Member Garber, Council Member Holzwarth, Council Member Henderson, Council Member Pickens

- 10. Consider and act on authorizing the execution of the Chapter 380 Economic Development Agreement with Wolverine Interests, L.L.C. for the development of a mixed-use development in the Agora at Corinth.

Motion made by Mayor Pro Tem Burke to approve the Chapter 380 Agreement with Wolverine Interests, LLC as presented, authorizing the Mayor or his designee to execute the necessary documents. Seconded by Council Member Henderson.

Voting Yea: Mayor Pro Tem Burke, Council Member Garber, Council Member Holzwarth, Council Member Henderson, Council Member Pickens

- 11. Consider and act on the Unimproved Property Contract with Wolverine Interests, L.L.C. for the sale of 4.692 acres to Wolverine for a mixed-use development and authorize the execution of necessary documents by the Mayor or his designee.

Motion made by Council Member Holzwarth to approve the Unimproved Property Contract with Wolverine Interests, LLC for the sale of 4.692 acres to Wolverine for a mixed-use development, authorizing the Mayor or his designee to execute the necessary documents. Seconded by Mayor Pro Tem Burke.

Voting Yea: Mayor Pro Tem Burke, Council Member Garber, Council Member Holzwarth, Council Member Henderson, Council Member Pickens

- 12. Consider and act on the execution of the Unimproved Property Contract with M.R. Development Corporation and Carleton Development Limited for the sale of 5.918 acres formerly known as the Honse Property to M.R. Development and Carleton Development for a multifamily development and authorize the execution of necessary documents by the Mayor or his designee.

Motion made by Mayor Pro Tem Burke to approve the Unimproved Property Contract with MR Development Corporation and Carleton Development Limited, for the sale of 5.918 acres to MR Development and Carleton Development for a multifamily development, authorizing the Mayor or his designee to execute the necessary documents. Seconded by Council Member Henderson.

Voting Yea: Mayor Pro Tem Burke, Council Member Garber, Council Member Holzwarth, Council Member Henderson, Council Member Pickens

13. Consider and act upon the recommendation of the Planning & Zoning Commission to appoint Wade May as Chair and Cody Gober as Vice Chair for 2021-2022 term.

This item was tabled to a future meeting.

14. Consider and act on nominations, appointments, and removal of board members for the Keep Corinth Beautiful Board.

Motion made by Mayor Pro Tem Burke to remove Tara Lancaster from the Keep Corinth Beautiful Board, Place 7 and to appoint Julie Hill to the Board, Place 9. Seconded by Council Member Pickens.

Voting Yea: Mayor Pro Tem Burke, Council Member Garber, Council Member Holzwarth, Council Member Henderson, Council Member Pickens

15. Consider and act on Contract Amendment No. 2 with Jones|Carter to add the engineering of N. Corinth Street from Walton Drive to N. Corinth Street in the amount of \$49,650.00 for a total contract price of \$971,340 for design of the streets and park civil infrastructure and authorize the City Manager to ratify any necessary documents.

Motion made by Council Member Henderson to approve Contract Amendment No. 2 with Jones|Carter to add the engineering site design of the Commons at Agora in the amount of \$49,650.00 and authorize the City Manager to ratify any necessary documents. Seconded by Council Member Pickens.

Voting Yea: Mayor Pro Tem Burke, Council Member Garber, Council Member Holzwarth, Council Member Henderson, Council Member Pickens

16. Consider and act on an Ordinance of the City of Corinth approving an amendment to the fiscal year 2021-2022 budget and annual program of services to appropriate and transfer monies from the General Fund to the Economic Development Foundation (“CEDF”) in order to provide for the funding of the purchase of land by the CEDF and related closing costs; and providing an effective date.

Motion made by Mayor Pro Tem Burke to approve Ordinance No. 21-12-16-32, amending the fiscal year 2021-22 Annual Program of services for the General and the Economic Development Foundation Funds. Seconded by Council Member Pickens.

Voting Yea: Mayor Pro Tem Burke, Council Member Garber, Council Member Holzwarth, Council Member Henderson, Council Member Pickens

RECONVENE IN OPEN SESSION TO TAKE ACTION, IF NECESSARY, ON CLOSED SESSION ITEMS

Motion made by Mayor Pro Tem Burke to approve the Settlement Agreement and Release between the City, C&JJ Investment LLC, and Twisted Motors to resolve C&JJ Investments v. City of Corinth, District Ct. #21-5053-431 with no payment being made by the City. Seconded by Council Member Henderson.

Voting Yea: Mayor Pro Tem Burke, Council Member Garber, Council Member Holzwarth, Council Member Henderson, Council Member Pickens

Motion made by Mayor Pro Tem Buke to approve the sale of a portion of the property located at the Southeast corner of Lake Sharon and I-35 to the Texas Department of Transportation for right of way purposes and authorize the City Manager to sign documents necessary to close the sale to TxDOT and to convey the property to TxDOT. Seconded by Council Member Pickens.

Voting Yea: Mayor Pro Tem Burke, Council Member Garber, Council Member Holzwarth, Council Member Henderson, Council Member Pickens

Motion made by Mayor Pro Tem Burke to approve the purchase of a portion of the F&H Addition located at the North East and West intersection of Walton Drive and North Corinth Street from John Hoeffler and Bob Fritz for the properties as described as 6,242 SF of Lot 1 Block A of the F&H Addition and Lots 1, 2, 3 Block B of the F&H Addition consisting of 1.747 acres and authorize the City Manager to sign documents necessary to close the purchase in the amount of \$899,589.00. Seconded by Council Member Henderson.

Voting Yea: Mayor Pro Tem Burke, Council Member Garber, Council Member Holzwarth, Council Member Henderson, Council Member Pickens

COUNCIL COMMENTS & FUTURE AGENDA ITEMS

The purpose of this section is to allow each Council Member the opportunity to provide general updates and/or comments to fellow Council Members, the public, and/or staff on any issues or future events. Also, in accordance with Section 30.085 of the Code of Ordinances, at this time, any Council Member may direct that an item be added as a business item to any future agenda.

The City Council and City Manager wished everyone a Merry Christmas and Mayor Heidemann thanked everyone for all that they do.

ADJOURN

Mayor Heidemann adjourned the Regular Session Meeting at 7:43 P.M.

Approved by Council on the _____ day of _____ 2022.

Lana Wylie, City Secretary
City of Corinth, Texas



CITY OF CORINTH
Staff Report

Meeting Date:	1/13/2022	Title:	Public Hearing UDC Text Amendment to Masonry Screening Wall Requirements
Ends:	<input type="checkbox"/> Resident Engagement <input checked="" type="checkbox"/> Proactive Government <input type="checkbox"/> Organizational Development <input type="checkbox"/> Health & Safety <input type="checkbox"/> Regional Cooperation <input checked="" type="checkbox"/> Attracting Quality Development		
Governance Focus:	<i>Focus:</i> <input checked="" type="checkbox"/> Owner <input type="checkbox"/> Customer <input checked="" type="checkbox"/> Stakeholder		
	<i>Decision:</i> <input checked="" type="checkbox"/> Governance Policy <input type="checkbox"/> Ministerial Function		
Owner Support:	<input checked="" type="checkbox"/> Planning & Zoning Commission <input type="checkbox"/> Economic Development Corporation <input type="checkbox"/> Parks & Recreation Board <input type="checkbox"/> TIRZ Board #2 <input type="checkbox"/> Finance Audit Committee <input type="checkbox"/> TIRZ Board #3 <input type="checkbox"/> Keep Corinth Beautiful <input type="checkbox"/> Ethics Commission Planning & Zoning Commission made recommendation to approve as presented by Staff at their meeting on December 13, 2021.		

Item/Caption

Conduct a public hearing to consider testimony and take action on a proposed amendment to the City’s Unified Development Code (UDC), Section 4: Sign and Fence/Screening Regulations, Subsection 4.02.11. Screening Requirements for Residential and Nonresidential Properties, Subsection 4.02.11.C.1. Nonresidential Construction Abuts Residential Zoning Classifications (ZTA21-0001).

Item Summary/Background/Prior Action

At their respective Workshop Sessions (October 7 and October 21, 2021 – City Council) and (November 15, 2021 – Planning & Zoning Commission), both City Council and Planning & Zoning Commission discussed the merits of considering an amendment to the UDC Section 4, Subsection 4.02.11.C.1., that would permit alternative compliance design options to the strict requirement of a masonry screening wall installation where nonresidential construction abuts residential zoning classification.

In those discussions, it was directed that alternative design options would be appropriate in certain instances when considering the following factors:

- The character of a property or area,
- The unique site conflicts where existing features might create a less desirable result,
- The intensity of the nonresidential use, and
- Where it is not a “best practice” to require a masonry wall given the uniqueness of the situation and proposed site design such as projects where interconnectivity among land uses and walkability is desired to foster an urban development pattern

Alternative design options discussed included opaque vegetative screens (living screen), berms, combination of masonry wall, decorative metal with vegetative screen, and a no screening option based on uniqueness of an area.

Further, it was discussed that alternative compliance would be reviewed and approved at staff level with the option to defer to City Council.

Attachment A contains the proposed text amendment to Subsection 4.02.11.C.1. based on concepts noted above.

Public Hearing

On December 13, 2021, the Planning & Zoning Commission conducted a Public Hearing to receive public comment on this item. No public comments were received.

The Notice of Public Hearing was published in the Denton Record-Chronicle on Saturday, November 20, 2021.

Planning and Zoning Commission Recommendation

The Planning & Zoning Commission recommended approval of the draft text amendments as presented by Staff.

Financial Impact

N/A

Applicable Owner/Stakeholder Policy

City Council

Staff Recommendation/Motion

This item will be presented on January 20, 2022, for City Council's consideration.

Draft Text Amendment
Language Amending Subsection 4.02.11.C.1 – Nonresidential Construction Abuts Residential Zoning Classification

Staff Commentary: The following draft is proposed to amend the Unified Development Code (UDC) Section 4: Subsection 4.02.11 – Screening Requirements for Residential and Nonresidential Properties by adding new language to Subsection 4.02.11.C.1, as it pertains to nonresidential construction abutting residential zoning classification. The new language to be added is shown with red underline. Existing UDC language is shown in black.

4.02.11 - Screening Requirements For Residential And Nonresidential Properties

- A. Screening Height Between Nonresidential and Residential. Masonry screening walls separating nonresidential used and/or zoned areas from residential uses shall be at least six feet (6') in height, but not more than eight feet (8'), unless otherwise specifically permitted or required by this Section or unless approved by the City Council following a recommendation by the Planning and Zoning Commission in the consideration of a PD, Planned Development rezoning application, Site Plan, or Specific Use Permit.
- B. Masonry Screening Walls. Masonry screening wall shall be placed up to the property line except when deemed physically impractical by the property owner and the Building Official.
- C. Nonresidential Construction Abuts Residential Zoning Classification.
 - 1. Nonresidential construction which abuts the boundary of any property in a residential zoning classification shall require the Developer of the nonresidential use to erect a minimum six (6) foot high masonry screening wall along the common boundary before public works improvements having been accepted for platting purpose or before the issuance of a Certificate of Occupancy for zoning purposes.
 - a. Approval of Alternative Compliance. To provide greater flexibility in design while maintaining appropriate levels of screening between nonresidential construction and residential zoning classifications, the Planning and Development Director may administratively approve an alternative design deviating from the requirements of the masonry screening wall as required in Subsection 4.02.11.C.1, by considering the evaluation criteria outlined in Subsection 2.10.02.B. Additionally, it is at the discretion of the Planning and Development Director, to defer alternative compliance consideration to the City Council for review and approval as provided for in Subsection 2.10.02.A.3. In any instance, the Applicant shall have the burden of demonstrating that the proposed alternative design meets evaluation criteria for an alternative design as set forth in Section 2.10.02.B.
 - i. Design Options. Alternative compliance requests may include the following design options or combinations thereof, when presenting best practice alternatives to a masonry screening wall.
 - a) Opaque Vegetative Screen (Living Screen). Evergreen shrubs, minimum six feet (6') in height shall be installed in a landscape easement being a minimum width of 15 feet. The evergreen shrubs shall be installed to achieve 100% opacity at the time of planting. The species and spacing of the shrubs shall be determined during alternative compliance consideration. The landscape easement must be free of any other utility easements unless approved by the Director.



- b) **Earth Berms in combination with semi-opaque Vegetative Screen (Living Screen)** – Earth berms shall have a maximum slope of 4-to-1 ratio, requiring at least 4 feet of horizontal with for every one foot (1’) of vertical height. The level of opacity will be determined during alternative compliance consideration. Evergreen shrubs shall be installed and shall be accentuated with deciduous shrubbery with the specific plant material to be determined during alternative compliance consideration.
- c) **Decorative Metal Fence.** A decorative metal fence, a minimum of six feet (6’) in height shall be permitted in combination with opaque or semi-opaque Vegetative Screen (Living Screen).
- d) **No Screening.** A no screening option may be considered though must be justified as a best practice associated with fostering interconnectivity between uses and to promote walkability and a sense of place within the areas envisioned for Mixed Use -TOD within the Comprehensive Plan.

ii. **Application Requests.** A request for alternative compliance consideration shall occur at the time of Site Plan review and shall include an associated Landscape Plan for the subject property along with a graphic illustration showing an elevation view of the proposed design and a justification narrative. The graphic illustration shall clearly demonstrate how the alternative design meets the evaluation criteria outlined in Section 2.10.02.B. Further, the graphic representation shall include an illustration of opacity of plant material to be provided at time of planting as superimposed on a photograph or similar method to illustrate the effectiveness of the design to adequately screen abutting residentially zoned properties. If proposing a “no screening” option, the graphic shall clearly demonstrate why this option is a best practice to be considered.

a) Requests for alternative compliance shall be completed and prepared by a Registered Landscape Architect with the alternative design to identified on the approved landscape plan with a note indicating that:

- 1) All plant material shall be maintained in a healthy and growing condition and must be replaced with plant material of similar variety and size if damaged, destroyed, or removed.
- 2) An automatic irrigation system shall be installed.
- 3) Vegetative Screens (and associated landscaped areas) shall be kept free of trash, litter, weeds, and other such materials not a part of the landscaping.

iii. **Appeals from Administrative Decision.** The Applicant may appeal the decision of Staff to the City Council by requesting consideration under the established Alternative Compliance, Section 2.10.02.

2. The design and construction material of the screening fence shall be as specified in this Section.

D. Nonresidential Uses with Loading Docks.

1. Nonresidential uses with loading docks and delivery entrances that front a Collector Street or Arterial Street shall require the Developer to erect a minimum ten-foot (10') high masonry screening wall to screen views of loading docks and loading spaces intended for tractor/semi-trailer delivery.
2. If such service/loading areas are adjacent to residential uses, they shall be screened from view at a height of six feet (6') while standing at the highest grade on the residential property line.

E. Residential Construction Abuts a Collector or an Arterial Street.

1. When residential construction abuts a Collector Street or an Arterial Street (as defined in the City's Comprehensive Plan as amended from time to time), the Developer shall erect a minimum six (6) foot high masonry screening wall before the issuance of a Certificate of Occupancy.
2. When required by this section the masonry screening wall shall be placed within a lot owned and maintained by the Homeowners Association. If there is no Homeowners Association then the screening wall shall be placed on the property line between the lot and the required landscape buffer, in this instance the property owner shall be responsible for the maintenance of the required wall.

F. Screening Walls/Fences.

1. Any screening fence required by this Section shall be constructed of the following materials:
 - a. Brick, stone, or split-face concrete masonry unit; or
 - b. Pre-cast concrete wall or poured-in-place concrete wall with a similar appearance as brick, stone, or split-face concrete masonry unit.
2. All construction materials shall be earth-tone or traditional masonry colors including white.
 - a. An unfinished haydite block wall or a wall with non-traditional masonry colors shall be prohibited.
 - b. Where a masonry screening wall is constructed of split-face concrete masonry units or pre-cast concrete or poured-in-place concrete with a similar appearance as brick, stone, or split-face concrete masonry unit, the decorative or split-face side of the wall shall face the adjacent residential properties or street.
 - c. Smooth-faced concrete masonry units (e.g., haydite blocks) shall not be permitted as a construction material for a screening fence.

G. Screening Wall Design.

1. All walls shall be constructed with the same materials and same masonry percentages as the main building.
2. The screening wall shall be designed and constructed to prevent any drainage or erosion problems.
3. A minimum five-foot (5') wide screening fence maintenance easement shall be provided on all lots abutting the required screening along the full length of the required screening fence, unless separated by an alley. If platting, such easement shall be shown on the Preliminary Plat and Final Plat.

Staff Commentary: The language below is an excerpt of existing text UDC Subsection 2.10.02.B. – Alternative Compliance Evaluation Criteria. This language is not being amended though provided for ease of reference as Subsection 2.10.02.B below is cited as “Evaluation Criteria” in the draft text in Subsection 4.02.11.C.1.a., above.

The Evaluation Criteria (Subsection 2.10.02.B) is as follows:

B. Alternative Compliance Evaluation Criteria.

1. The Alternative Compliance standard(s) being sought shall be in agreement with, and shall promote, the recommendations and policies within the City's Comprehensive Plan.
2. The proposed standard(s) does not reduce a standard unless it is, to the greatest extent practical, equally mitigated or improved by increasing standards of other requirements.
3. The proposed standard(s) do not attempt to modify the land uses allowed in the zoning district in which the subject property is located, nor does the proposed standard(s) attempt to add a land use not normally allowed in the zoning district.

DRAFT



CITY OF CORINTH
Staff Report

Meeting Date:	1/13/2022	Title:	Program Solar Panel MOU
Ends:	<input type="checkbox"/> Resident Engagement <input checked="" type="checkbox"/> Proactive Government <input type="checkbox"/> Organizational Development <input type="checkbox"/> Health & Safety <input type="checkbox"/> Regional Cooperation <input type="checkbox"/> Attracting Quality Development		
Governance Focus:	<i>Focus:</i> <input checked="" type="checkbox"/> Owner <input type="checkbox"/> Customer <input type="checkbox"/> Stakeholder		
	<i>Decision:</i> <input type="checkbox"/> Governance Policy <input checked="" type="checkbox"/> Ministerial Function		
Owner Support:	<input type="checkbox"/> Planning & Zoning Commission <input type="checkbox"/> Economic Development Corporation <input type="checkbox"/> Parks & Recreation Board <input type="checkbox"/> TIRZ Board #2 <input type="checkbox"/> Finance Audit Committee <input type="checkbox"/> TIRZ Board #3 <input type="checkbox"/> Keep Corinth Beautiful <input type="checkbox"/> Ethics Commission N/A		

Item/Caption

Consider and act on a Memorandum of Understanding between the City of Corinth and iChoosr, LLC for the purpose of providing homeowners of Corinth with group purchasing power in the procurement of a high quality residential solar PV system installation, including financing options, and authorizing the City Manager to execute the necessary documents.

Item Summary/Background/Prior Action

iChoosr, LLC – Texas Power Switch currently works with Corinth’s residential customers to lower electricity bills through a group negotiated electric rate. Residents re offered an opportunity to register, without obligation. iChoosr negotiates rates with providers and presents the information to residents who either move forward with the new proposed contracted rate or stay with their current plan.

iChoosr is now launching a group buying program for solar power, like they are currently offering in Europe. The program follows the same process as the electric rate program, wherein, there is a registration, auction, recommendation, and then a decision by the resident. This program provides an option for residents to receive benefits of solar power and aligns with the City’s efforts as a Sol Smart City.

A link to the existing program in Europe is <https://solartogether.co.uk/ichoosr/home>

Financial Impact

There is no cost nor revenue to the city.

Applicable Owner/Stakeholder Policy

The MOU is consistent with the city’s designation as a Sol Smart City.

Staff Recommendation/Motion

Approval of the MOU and authorizing the city manager to sign documents on behalf of the city.



Solar Group Buying

Going solar made easy for residents

City of Corinth

December 14th, 2021



Content

- **History and Experience iChoosr**
- **Market dynamics Texas**
- **The Solar Together Approach**
- **Roles & Responsibilities**
- **Appendix**

History of iChoosr in Texas

- Started Operations in Texas in 2017
- Houston, Texas based Customer Care / Call Center
- Most Texas-based employees live in Austin, Texas
- Work with over 20 Texas cities today
- Have registered over 40,000 Texans into Texas Power Switch thus far
- All people that switch providers now receive 100% renewable electricity
- Extremely high customer satisfaction scores based on independent 3rd party survey.
 - City Leaders: 9.3 Net Promoter Score (scale 1-10)
 - Residents Feedback 9.0 Net Promotor Score (scale 1-10)



Results of Solar Group Buying Programs iChoosr



70

Solar group buying programs



109,000

Solarized homes



\$ 400,000,000

Investment by residents in Solar PV



20-35%

Savings against market average











Consistently high

Customer satisfaction

iChoosr organizes Solar Group Buying programs in four countries since 2012. Always in partnership with local governments. Partners include London, Suffolk, Sussex (UK), East-Flanders (Belgium), Yokohama, Osaka (Japan).

Results of Solar Group Buying Programs iChoosr

		Netherlands	Belgium	U.K.	Japan
REGISTRANTS		 438,000	 173,000	 123,000	 12,000
ACCEPTANTS		116,000	53,000	24,000	4,000
INSTALLATIONS		68,000	34,000	7,000	400
DISCOUNT		20-25%	25-40%	25-40%	25-30%



Market dynamics Texas

Clear benefits of solar..

For Residents

- Drastically reduce or even eliminate electric bills
- Protection against rising energy prices
- Reduce personal environmental footprint
- Less dependency on the grid (especially combined with battery storage)

For Cities

- Contributing to local energy resilience and affordability
- Boosting economy and creating jobs
- Taking steps in meeting sustainability goals
- Helps drive towards Sustainability Goals
- Increase in Community Home Values

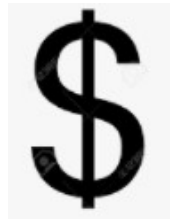
.. but low residential solar adoption in Texas

Texas cities have enormous rooftop solar potential. Dallas is in the top 10 nationwide.
source: Google Sunroof

but

Only 1% market penetration for residential solar in Texas.
source: Greentechmedia

Financial - Prices are (unnecessarily) high



Installer weariness - Which ones are trustworthy?



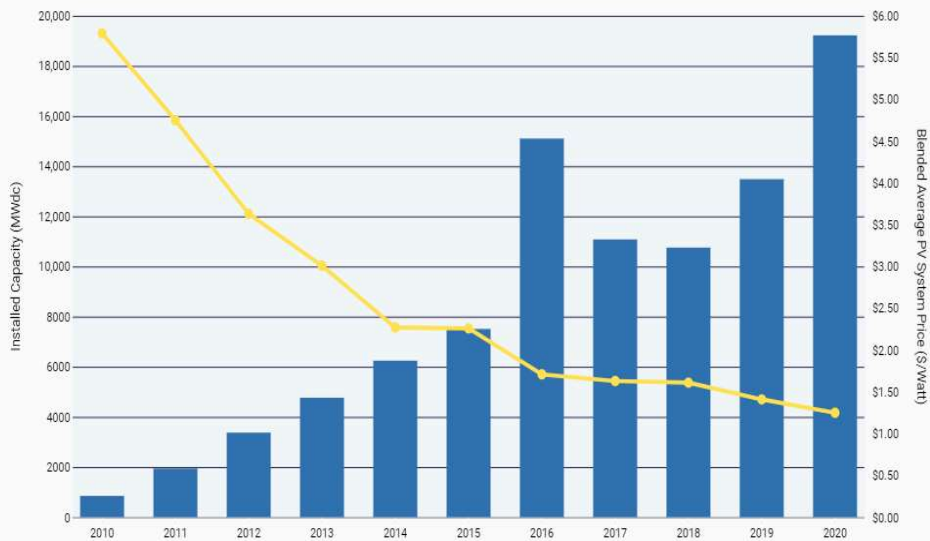
Complex topic - where to start?



iChoosr

Price of solar biggest driver of solar adoption

U.S. Solar PV price declines & deployment growth

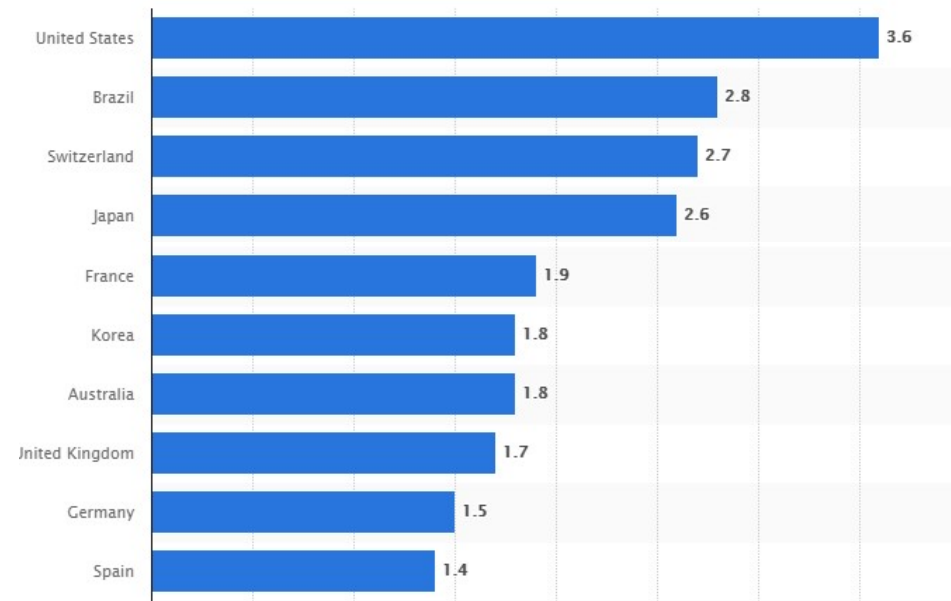


Source: SEIA/Wood Mackenzie Power & Renewables U.S. Solar Market Insight 2020 Year in Review



Source: SEIA/Wood Mackenzie Power & Renewables U.S. Solar Market Insight 2020 Year in Review

Prices of residential installed solar



Source: statista.com

High correlation between the price of solar and the adoption. Prices for residential solar in US at this moment highest worldwide. Much room for improvement..

Group Buying can overcome barriers



Group Buying for Solar works...

For Residents

- By coming together, residents get a better deal
- Hassle-free process without obligation
- Experts have vetted installers and have taken care of the research
- Customer service for support at all stages
- City backing gives reassurance

For Cities

- Help drive towards Sustainability Goals / Targets
- Drive resident satisfaction with another service that is no cost to the city.
- Measurable carbon reduction driven by resident investment in green energy
- Organization of the program handled by iChoosr
- Start a domino effect - Residents are 54% more likely to go solar if their neighbors have solar

Big results with little effort for the City

iChoosr

*source: "Solar power is contagious", Yale University

How it works – 5 easy steps



1. Sign up for free and without obligation (starting early May 2022, 4-5 weeks)

By answering a few questions about their roof, they are presented with an estimation of costs and savings.



2. Auction (early June, 1 day)

The auction is a reverse auction - so the lowest bid wins. Suppliers must comply with criteria to guarantee the quality of the offer. (more info on next slide)



3. Personal offer (preparation 2-3 weeks)

After the auction, all registrants will receive a personal recommendation with information about the winning supplier, the complete package, and a breakdown of costs and savings. Battery storage option available



4. Decision (offer available from second half of June, 4-5 weeks)

Through the website, helpdesk and info sessions participants will have access to all information to make a well-informed decision. An option with financing will be available. Next steps will be:

✓ Roof survey ✓ Permitting ✓ Installation



5. Savings on electricity (30 years)

Generate your own renewable electricity and save on your electricity bill

iChoosr

Selecting the best installers to guarantee the quality

1. Pre-qualification

The first potential of the installers is tested through a quick scan. The quick scan consists of online research (including customer satisfaction scores and website) and an efficiency scan (including inspection software and customer journey).



2. Qualification

iChoosr researches the experience, (financial) stability, safety measures and capacity of the installers extensively. Only installers who meet all requirements can bid during the auction.



3. Auction

By means of an auction, a winner or several winners are selected in a fair and transparent manner. With an auction we do not ask for the lowest price in the market, but for the lowest price for which an installer can deliver considering the benefits for them of serving a large group.



4. Delivery

The winning installer(s) then has (have) the time to realize the full delivery of (their part of) the project, usually within 4-6 months. This includes (remote) roof inspection & installation and arranging for permitting, financing if desired, and permission to operate.



See appendix II for more on qualification

Characteristics of Solar offer for Corinth residents (smaller system)

Indication of financial picture

	Utility (cost of doing nothing)	Solar system paid from savings	Solar system financed with a loan
Monthly solar payment	\$0	\$0	\$89
Monthly utility payment electricity ¹	\$183	\$64	\$64
Upfront cost Market ²	n/a	\$23,520 \$17,405 (incl. tax credit) ³	\$0
Upfront cost Group With 22% group discount ⁴	n/a	\$18,346 \$13,576 (incl. tax credit) ³	\$0
Loan assumptions	n/a	n/a	Term 20 year Interest rate 5%
Payback period Incl tax credit & discount	n/a	9 years	Instant savings, without investment
30-year savings Incl performance loss 0,7% / year	\$0	\$25,132	\$17,258

...and protection against rising energy rates

Solar system

70% offset (12,600 annual kwh of solar generation)

70% of yearly electricity need met for a household with annual electricity consumption of 18,000 annual kwh (=average in Corinth)

Size

8.4kw (~24 panels)



Notes

- 1) Based on \$0.12kwh average electricity price (Texas Power Switch participant data 2021) and \$6.50 extra monthly charge for adding solar
- 2) Based on \$2.8/w average Texas marketprice (Solarreviews.com/solar-panel-cost/texas)
- 3) Based on Federal solar investment tax credit (ITC) = 26% in '22 (expected to be lower in '23)
- 4) Based on estimation of solar installers in DFW region

Characteristics of Solar offer for Corinth residents (larger system)

Indication of financial picture

	Utility (cost of doing nothing)	Solar system paid from savings	Solar system financed with a loan
Monthly solar payment	\$0	\$0	\$115
Monthly utility payment electricity ¹	\$183	\$28	\$28
Upfront cost Market ²	n/a	\$30,240 \$22,378 (incl. tax credit) ³	\$0
Upfront cost Group With 22% group discount ⁴	n/a	\$23,587 \$17,455 (incl. tax credit) ³	\$0
Loan assumptions	n/a	n/a	Term 20 year Interest rate 5%
Payback period Incl tax credit & discount	n/a	9 years	Instant savings, without investment
30-year savings Incl performance loss 0,7% / year	\$0	\$32,917	\$22,794

...and protection against rising energy rates

Solar system

90% offset (16,200 kwh)

90% of yearly electricity need met for a household with annual electricity consumption of 18,000 kwh (=average in Corinth)

Size

10.8kw (~31 panels)



Notes

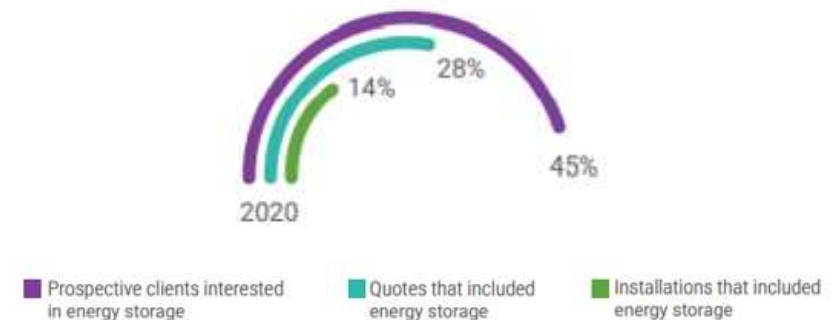
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- 3) Based on Federal solar investment tax credit (ITC) = 26% in '22 (expected to be lower in '23)
- 4) Based on estimation of solar installers in DFW region

Battery Storage - still early days

Market insights

- Consumers are interested, but uptake is still low
- Prices are still high: \$ 7,000 - \$ 14,000
- Electricity companies in Texas offer net metering
- The consequence is that financial savings are not yet a driver for storage, only resilience is
- The expectation is that prices will go down the coming years, so storage will become more (financially) attractive
- We will require the winning installer to have an option for storage option

Solar customers interested in storage (Texas)



Source: EnergySage's 2020 Solar Installer Survey

"still a rich man's game, you'd never get payback for a battery unless your considerations are the zombie apocalypse or secession."

(Kyle Frazier, the chief revenue officer at Freedom Solar)

Impression of running solar group buying program in the UK

The screenshot shows the top section of the website. On the left is the Suffolk County Council logo. To its right is a navigation menu with links: 'How does it work?', 'Solar PV', 'Battery Storage', 'About us', and 'Questions?'. Further right is an email address 'aris@ichoosr.com' and social media icons for Facebook, Twitter, Instagram, and YouTube. On the far right is the 'Solar Together' logo, which features a sun and a house icon. Below the navigation is a large banner image of a brick house with solar panels on its roof. The banner text reads 'Solar Together Suffolk' and 'Group-buying for solar panels and battery storage: better offers together.' On the right side of the banner, there is a white box with the text 'Is your roof suitable for solar?' and 'What is the pitch of your roof?' Below this text are four house icons representing different roof pitches.

This section is a white box with a black border. It features the heading 'Register for free!' in bold. Below the heading is the text 'Receive a highly competitive, personal recommendation for our group-buying scheme'. Underneath that is 'A total of 2,715 households have already registered. Join them today!'. At the bottom of the box are two green buttons with white text and arrows. The first button says 'Solar panel system >' with 'with optional storage' below it. The second button says 'Storage only >' with 'already have solar PV' below it.



Why join Solar Together?

- ✓ Register for free and without obligation
- ✓ Buy solar panels at a highly competitive price

Link: <https://solartogether.co.uk/suffolk/home>

Roles & Responsibilities

Roles & Responsibilities

iChoosr

- Create communication materials and plan
- Provide website for registration and personal offer
- Provide all customer service
- Organize auction for qualified solar installers
- Installer management to secure high level customer service and good quality installs
- Report program results to the City via regular reports
- Assume all costs for marketing and customer care

City

- Endorse the program- same as Texas Power Switch
- Actively promote the program through their communication channels (offline and online; link to registration page on prominent place of city website, social media, ..)
- Review & approve communication materials and plan

Thank you

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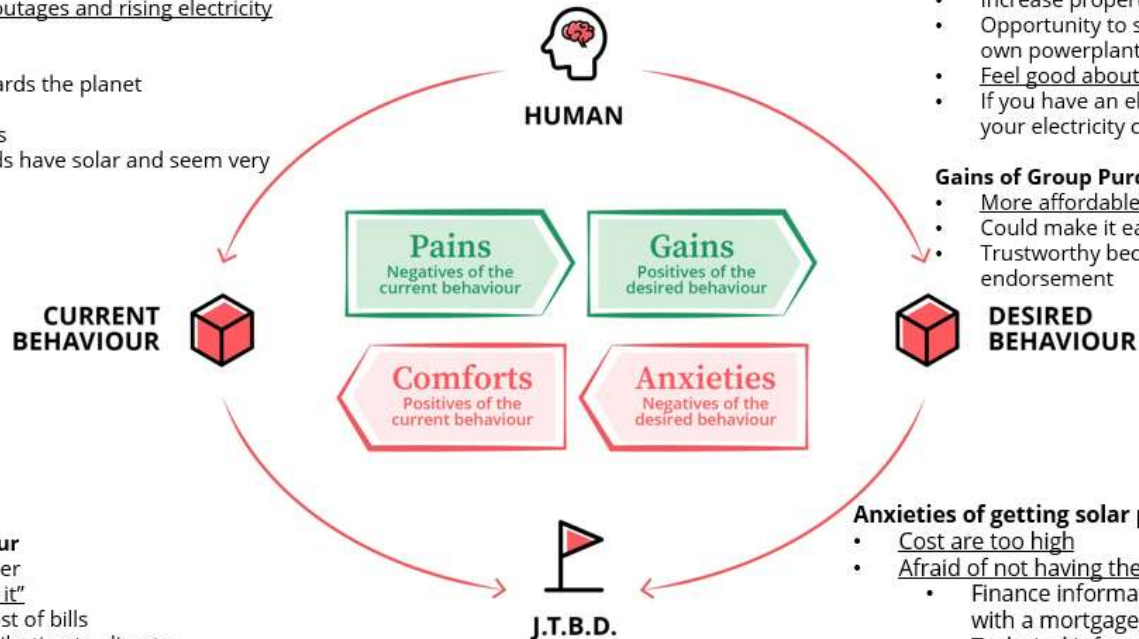
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Appendix

Appendix I - Influence framework Texas resident

Pains of having no solar panels

- Very expensive electricity bills
- Dependence on the grid: outages and rising electricity prices
- Climate change:
 - Responsibility towards the planet
 - Large footprint
- Anxiety missing Tex credits
- Fear of missing out: Friends have solar and seem very happy about it



Gains of Solar panels

- Reduce electricity bills, save money
- Increase property value
- Opportunity to sell excess energy to the grid, have your own powerplant
- Feel good about yourself reducing footprint
- If you have an electric vehicle added incentive to reduce your electricity costs + increase your self sufficiency

Gains of Group Purchasing

- More affordable because of discount
- Could make it easier and information more accessible
- Trustworthy because of installer vetting and City endorsement

Comforts of current behaviour

- Happy with current provider
- "If it's not broken, don't fix it"
- Happy enough with the cost of bills
- Happy enough to be contributing to climate change with a 100% renewable energy
- No debt (some people do not want to take out a loan)
- No risk of not living to see the ROI
- House looks nicer without them

1. Save money/reduce electricity bill
2. Reduce energy consumption/environmental impact

Anxieties of getting solar panels

- Cost are too high
- Afraid of not having the right information to make a decision
 - Finance information: cost, ROI in years, how to merge with a mortgage,
 - Technical information: will the panels be strong enough for wind, hail
 - Finding the information in one place
- The panels
 - Reliability and quality (will they really last 30 years?)
 - Appearance on house
- Aggressive salespeople/trustworthy salespeople. Noise from commercial parties
- Permitting HOA / city / grid
- Unsure what happens when moving

Anxieties of group purchasing

Sometimes they get the idea they have to organize with neighbors

Appendix II - Installer vetting

Step 1. PRE-QUALIFICATION	<i>The basis for participation are key figures that show that experience has been built up within the solar world. Two most important pillars: customer satisfaction & quality.</i>
Residential Solar Experience	It needs to be a mature company that has moved past the start-up phase. Track record of at least 500 - 1.000 residential solar installations.
Relevant Quality marks/Certificates	Installer needs to meet market standards and should be able to show this by having the necessary certificates e.g. NABCEP.
History/ establishment	Experience in residential solar > 3 years
Company size FTE	Number of FTE > 15
Installation capacity/region coverage	An installer should be able to handle around 200 residential installations in the Dallas metroplex within 3-6 months.
Online reviews	An installer should have a good reputation on quality and customer service. We would like to see a significant amount of online reviews with on average at least 4 out 5.
CRM software	Installers should have a sophisticated enough CRM system e.g. salesforce and software which they use to remotely design the solar system.
Off site/ design software	
Quality Products	We only work with installers that use quality components (Tier 1) that meet the market standards e.g. LONGi, Trina Solar, Canadian Solar, SolarEdge and Enphase.
Step 2. QUALIFICATION	<i>After a positive result from step 1 a more in-depth qualification of the solar installer will follow.</i>
Financial stability	e.g. Due Diligence / check annual audited accounts
Insurance policies	e.g. Installers need to have the necessary insurance
Customer Satisfaction Rates reports	e.g. Installers need to show reports of last two years
Method of Approach	e.g. Installers are asked to explain their method of approach when participating in a project, touching predefined topics that iChoosr deems relevant.
Project Risk file	e.g. Installers should identify potential risks and how to mitigate.
Step 3. SIGN INSTALLER AGREEMENT	<i>After a positive result from step 1 and 2 the installer should commit to all requirements of the program by signing the installer agreement contract. Only after this, they can participate in the auction.</i>

MEMORANDUM OF UNDERSTANDING

CITY OF CORINTH and ICHOOSR, LLC

This Memorandum Of Understanding (“MOU”) is by and between the City of Corinth, Texas, a home rule municipality (the “CITY”), and iChoosr, LLC, a Delaware limited liability company (“ICHOOSR”) (each a “Party” or collectively the “Parties”) acting by and through their authorized representatives,

WHEREAS, ICHOOSR has a registered office located at 251 Little Falls Drive, Wilmington, Delaware 19808;

WHEREAS, the Parties wish to enter into this Memorandum of Understanding (“MOU”) for the principal purpose of providing the residents of the CITY that are homeowners (“Residents”) with group purchasing power in the procurement of a high quality residential solar PV system installation (“Solar System”) including financing options;

WHEREAS, the Parties intend to offer Residents an opportunity to register and participate in the Texas Solar Switch program (“TSS program”), whereupon ICHOOSR will arrange a competitive bidding process of qualified solar installers that leads to a competitive personal Solar System offer for participating Residents.

NOW, THEREFORE, in consideration of the foregoing and of the agreements herein contained, and other good and valuable consideration the receipt and sufficiency of which is hereby acknowledged and approved, the Parties agree as follows:

SECTION 1 - OBLIGATIONS OF THE PARTIES

The Parties acknowledge that no contractual relationship, joint venture, agency relationship, or partnership is created between them by this MOU, but agree to work together collaboratively to provide united, visible and responsive leadership of the TSS program and to demonstrate administrative and managerial commitment to the TSS program by means of the following services.

SECTION 2 – COOPERATION & RESPONSIBILITIES

The activities and services for the TSS program shall include, but not be limited to:

A) ICHOOSR shall:

1. Organize and help CITY actively promote at least one (1) TSS program each calendar year within the CITY, via agreed upon marketing and communications efforts as set out in the communications plan.
2. Organize one (or more) TSS programs per year which shall be made available to all Residents.
3. Provide the CITY with webpages and hyperlinks to the TSS program digital platform (website) to facilitate registration, auction and acceptance of a personal offer for participating Residents.
4. Set out information for Residents within the ICHOOSR website about the TSS program including the fact that participation is free and provides them with no obligation to accept any solar installer’s offer, including information pages and a Frequently Asked Questions (FAQs) section.
5. Arrange for a solicitation and extensive qualification procedure of solar installation providers. The purpose of this vetting process is to secure that only solar installers can participate that are able to - in a reasonable timeframe - install high quality solar PV systems complying within the relevant local laws & regulations.
6. Arrange for a competitive bidding process for these vetted and qualified solar installers for Solar Systems to ensure a competitive price to participants, while not guaranteeing this will result in a market-leading offer.
7. Actively manage selected solar installer to ensure installation goes in accordance with requirements.

8. Provide Customer Service for Residents, inclusive of a toll-free phone number program, and maintain a Texas based Customer Care Call Center for this TSS program.
9. Upon request from CITY, provide reports detailing the number of participants in the TSS program and the number of people who have confirmed that they wish to accept the Solar System offer. Such reports to be electronically accessible to the CITY.
10. Provide the option to carry out surveys among Residents or any sample thereof that it selects in order to obtain Residents' views in connection with the TSS program.
11. Obtain the CITY's prior approval for all marketing communications before posting, publishing or distributing such communications and ensuring that all marketing communications originate from ICHOOSR as a part of the TSS Program in cooperation with the CITY.

B) the CITY shall:

1. Host and actively encourage the use of one (or more) TSS program(s) each calendar year with ICHOOSR, via mutually agreed marketing and communication efforts as established in the communication plan that will be drawn up during a meeting between ICHOOSR and CITY representatives, and then shared during a kick-off meeting between the CITY and ICHOOSR.
2. Organize a kick-off meeting, and when necessary, follow-up meetings or calls, with ICHOOSR at the CITY's premises, where CITY staff that have a role in the TSS program will attend.
3. Include information regarding the TSS program on the CITY's web page, briefly explaining the TSS program and providing a hyperlink to the CITY's registration pages on the Texas Solar Switch platform, by using unique URL's which will be provided to the CITY by ICHOOSR for tracking purposes.
4. Allow ICHOOSR to utilize the CITY logo / emblem for purposes of demonstrating the CITY's support of the TSS program to Residents. All uses of the CITY logo / emblem shall be first approved by the CITY in writing, and the CITY logo / emblem shall only be used on documents which also include the ICHOOSR logo/emblem. Use of CITY logo / emblem shall not be used by ICHOOSR in such a manner as to infer or imply that the CITY and ICHOOSR have a partnership, joint venture or other relationship other than independent parties/contractors.
5. Allow iChoosr to utilize the name of the Mayor or "City Council" on a direct mailer to identify that CITY supports TSS program(s).
6. Include information regarding the TSS program in the CITY newsletter that is sent to Residents
7. Include information regarding TSS program in newsletters / bill inserts that are sent to Resident homes.
8. Obtain ICHOOSR's prior approval for all marketing and other communications before posting, publishing, transmitting or distributing such communications in any way.

SECTION 3 - RESOURCES

CITY shall provide one (1) or two (2) point(s) of contact to ICHOOSR, so that ICHOOSR may work with point(s) of contact to promote the TSS program.

ICHOOSR shall provide all other resources including the website, social media content, any brochures, Customer Care Center with a 1-800 contact number for questions about TSS program, and dedicated resource staff to support the TSS program for the CITY.

SECTION 4 - LIABILITY

No liability will arise or be assumed between either Party as a result of this MOU.

SECTION 5 – TERM

This MOU by and between the "Parties of this MOU shall remain in effect from February 1, 2022 ("Effective Date") for a period of five (5) years, at which time the MOU will automatically renew annually on the applicable anniversary date of the Effective Date of this MOU, unless terminated by either Party in accordance with Section 6 of this Agreement or as otherwise provided by law.

SECTION 6 - TERMINATION

Either Party may terminate this MOU for any reason with 90-days advance written notice.

SECTION 7 - UNDERSTANDING

It is mutually agreed upon and understood by the Parties:

1. Each Party will work together in a coordinated fashion for the fulfillment and success of the TSS program.
2. In no way does this MOU restrict either Party from participating in a similar memorandum of understanding or any other type of agreement with other Public or Private agencies, organizations, and individuals for the same or similar services as provided by ICHOOSR.
3. To the extent possible, each Party will participate in the development and success of the TSS program.
4. Nothing in this MOU shall obligate either Party to the transfer of any funds. Both Parties mutually agree that there is no financial arrangement between ICHOOSR and CITY and that all promotional documents shall clearly indicate the lack of financial arrangement or financial benefit to CITY as an entity.
5. This MOU is not intended to and does not create any right, benefit, or trust responsibility.
6. This MOU is effective upon signature and date from both Parties.

The Parties support the goals, responsibilities, and objectives of this MOU

The MOU has been signed by authorized representatives of ICHOOSR, and CITY. This MOU shall be effective as of the date first written above upon approval by the CITY.

iChoosr LLC

City of Corinth

JP HARPER
Vice President

Bob Hart
City Manager

Signature

Signature

Date

Date



CITY OF CORINTH
Staff Report

Meeting Date:	1/13/2022	Title: Agreement Broadband - ILA – Lake Cities
Ends:	<input type="checkbox"/> Resident Engagement <input checked="" type="checkbox"/> Proactive Government <input type="checkbox"/> Organizational Development <input type="checkbox"/> Health & Safety <input checked="" type="checkbox"/> Regional Cooperation <input type="checkbox"/> Attracting Quality Development	
Governance Focus:	<i>Focus:</i> <input checked="" type="checkbox"/> Owner <input type="checkbox"/> Customer <input type="checkbox"/> Stakeholder	
	<i>Decision:</i> <input type="checkbox"/> Governance Policy <input checked="" type="checkbox"/> Ministerial Function	
Owner Support:	<input type="checkbox"/> Planning & Zoning Commission <input type="checkbox"/> Economic Development Corporation <input type="checkbox"/> Parks & Recreation Board <input type="checkbox"/> TIRZ Board #2 <input type="checkbox"/> Finance Audit Committee <input type="checkbox"/> TIRZ Board #3 <input type="checkbox"/> Keep Corinth Beautiful <input type="checkbox"/> Ethics Commission N/A	

Item/Caption

Consider and act on an Interlocal Agreement (ILA) with Lake Dallas, Hickory Creek, and Shady Shores for legal services to prepare a contract and franchise agreement for the broadband initiative, with Corinth managing the legal services agreement in an amount not to exceed \$27,000.

Item Summary/Background/Prior Action

Staff is prepared to make a recommendation for the selection of an Internet Service Provider (ISP) to provide for a fourth broadband provider in Corinth and the Lake Cities. Council will be asked to act on this recommendation at the January 26th joint city council meeting. There is required legal work both prior and following the meeting to prepare a contract and franchise ordinance for the ISP. The city attorney and staff are recommending engaging the Kandutsch Law Office to supplement the city attorney. The proposed ILA is to have the City of Corinth engage the attorney and process payments for the legal work and be reimbursed by the other three lake cities. The agreement is for an amount not to exceed \$27,000. The allocated cost is:

The financial impact is based on each city’s population and land area.

- Corinth - \$14,040
- Lake Dallas - \$4,725
- Hickory Creek - \$5,130
- Shady Shores - \$3,105

Staff Recommendation/Motion

Staff recommends approval of the Interlocal Agreement with the Lake Cities and authorize the city manager to execute the legal representation agreement with The Kandutsch Law Office.

INTERLOCAL COOPERATION AGREEMENT FOR JOINT LEGAL SERVICES RELATED TO BROADBAND NEGOTIATIONS, CONTRACT DOCUMENTS AND FRANCHISE AGREEMENTS FOR THE CITY OF CORINTH, THE CITY OF LAKE DALLAS, THE TOWN OF HICKORY CREEK AND THE TOWN OF SHADY SHORES

This Interlocal Cooperation Agreement for Broadband Joint Legal Services for Broadband Negotiations, Contract Documents and Franchise Agreements (“the Agreement”) is made and entered into by and among the CITY OF CORINTH, a Texas home rule municipality, (“CORINTH”), the CITY OF LAKE DALLAS, a Texas home rule municipality (“LAKE DALLAS”) the TOWN OF SHADY SHORES, a Type A general law municipality (“SHADY SHORES”) and the TOWN OF HICKORY CREEK, a Type A General law municipality (“HICKORY CREEK”), Corinth, Lake Dallas, Hickory Creek and Shady Shores are collectively referred to herein as the “LAKE CITIES” and individually referred to as (“LAKE CITIES MEMBER”), each organized and existing under the laws of the State of Texas, the Texas Constitution and, as applicable, its Home Rule Charter, and acting by, through and under the authority of their respective governing bodies and officials.

RECITALS

WHEREAS, this Agreement is authorized pursuant to Chapter 791 of the Texas Government Code (hereinafter “Interlocal Cooperation Act”) to set forth the terms and conditions upon which the LAKE CITIES agree to jointly engage the services of an attorney who specializes in matters related to the acquisition and construction of a publicly owned broadband network serving all of the LAKE CITIES MEMBERS; and

WHEREAS, each LAKE CITIES MEMBER has identified concerns that their respective communities may not have the level of broadband access as defined and reported by the Federal Communications Commission; and

WHEREAS, each LAKE CITIES MEMBER recognizes that technology plays a pivotal role in the choice of businesses and residents to locate within their respective cities, that business operations and customer service require the presence of reliable technology resources, and that it is necessary to retain specialized legal representation and services to assist with the acquisition and construction of a publicly owned broadband network serving the LAKE CITIES MEMBERS as four client entities, including without limitation, upon request, advice regarding the selection of a service provider and the drafting and negotiation of a binding agreement between the Lake Cities and the selected service provider. (the “Project”); and

WHEREAS, LAKE CITIES have conducted a broadband study through Connected Nation and now desire to engage the services of an attorney who specializes in broadband matters to assist the LAKE CITIES MEMBERS with legal matters related to and arising out of the Project and the negotiation and execution of documents necessary for the completion of the Project; the LAKE CITIES MEMBERS believe that their individual best interests in the Project are aligned, do not conflict, and can best be served by entering into this Agreement for joint broadband legal services, and each of the LAKE CITIES MEMBERS ; could retain such services individually as a governmental function; and **WHEREAS**, LAKE CITIES have determined it appropriate to authorize CORINTH to enter into an agreement with Carl E. Katdutsch of Kandutsch Law Office

(“Attorney”) to provide legal advice and counsel and provide the services set forth in **Exhibit “A”** hereto to assist with the Project (the “Proposal”) and pursuant to this Agreement, to participate in the cost for the services provided by Attorney pursuant to the Attorney Proposal; and

WHEREAS, the scope of work to be performed by Attorney will be in accordance with the terms of this Agreement, including without limitation, Section 2 hereof, and the scope outlined in the Attorney Proposal, **Exhibit “A”** hereto, such scope having been agreed upon by each LAKE CITIES MEMBER; and

WHEREAS, the City Councils of each LAKE CITIES MEMBER has found that this Agreement and the services to be provided pursuant to this Agreement and the Attorney Proposal are valid governmental functions, will be paid by current revenues legally available to each LAKE CITIES MEMBER, and that the payments made hereunder fairly compensate for the services provided hereunder.

NOW THEREFORE, the LAKE CITIES, for and in consideration of the premises and the mutual covenants set forth in this Agreement, and pursuant to the authority granted by the governing bodies of each of the parties hereto, do hereby agree as follows:

1. **Term/Termination.** This Agreement shall be effective upon execution by all of the LAKE CITIES with the effective date being the date of signature of the last LAKE CITIES MEMBER to sign (“the Effective Date”). The term of this Agreement shall be for a period of twelve (12) months following the Effective Date. Any LAKE CITIES MEMBER may terminate its participation in this Agreement not earlier than thirty (30) days after providing written notice to the other LAKE CITIES MEMBERS. A LAKE CITIES MEMBER who exercises its right to terminate its participation in this Agreement pursuant to this Section 1 shall remain obligated to pay its portion of the costs for services provided pursuant to this Agreement (defined in Section 2) through the effective date of such termination.

2. **Scope of Work/Obligations/CORINTH as Liaison.**

(a) By execution of this Agreement, each LAKE CITIES MEMBER hereby requests and authorizes CORINTH to negotiate and enter into an agreement with Attorney to provide legal advice and counsel for the Project, including without limitation, legal advice and counsel concerning the acquisition and construction of a publicly owned broadband network serving the LAKE CITIES, including, upon request, assistance with the selection of a service provider and drafting and negotiation of necessary binding agreement(s) between the LAKE CITIES and the selected provider. Attorney will also, upon request, provide legal advice and counsel concerning any related matter that is within the scope of Attorney’s experience and expertise. The Attorney Proposal and the Services provided thereunder are set forth in detail in **Exhibit “A”**, a substantial copy of which is attached hereto and incorporated herein. The LAKE CITIES hereby authorize CORINTH to negotiate and execute a contract with Attorney consistent with the Attorney’s Proposal and the terms of this Agreement (“Attorney Agreement”). Upon execution of the Attorney Agreement by Corinth, a copy of the executed Attorney Agreement shall be provided to each LAKE CITIES MEMBER, shall replace and supersede the Attorney Proposal as **Exhibit “A”** hereto, and the Attorney Agreement shall be incorporated herein by reference as **Exhibit “A”**.

(b) Each LAKE CITIES MEMBER agrees to participate in the Project and to assist Attorney and CORINTH in the performance of the various Project components to further and support Attorney’s ability to render legal advice and counsel concerning the acquisition and construction of a publicly owned broadband network serving the LAKE CITIES, including, upon request, the selection of a service provider and drafting and negotiation of a binding agreement between the Lake Cities and selected provide, and upon request, legal advice and counsel concerning any related matter that is within the scope of work set forth in Exhibit “A” hereto. CORINTH also agrees to act as the liaison and point of contact for the Services; prepare, execute, and administer the communication with Attorney and the LAKE CITIES. Any payments owed the Attorney for the Services pursuant to Attorney Agreement shall be paid directly by CORINTH from funds currently available to CORINTH, and each LAKE CITIES MEMBER agrees to pay its share in accordance with **Section 3, “Consideration”** of this Agreement. Additionally, CORINTH agrees to monitor Attorney’s work and compliance with provisions of the Attorney Agreement.

3. **Consideration.** CORINTH, LAKE DALLAS, SHADY SHORES, and HICKORY CREEK each agree to pay its proportionate share of the costs of the Services provided by Attorney pursuant to the Attorney Agreement based upon the allocation set forth in the chart provided in this Section. The total cost of the Services shall not exceed **TWENTY-SEVEN THOUSAND AND NO/100 DOLLARS (\$27,000)**. CORINTH agrees to make payments to Attorney in accordance with the Attorney Agreement, and each LAKE CITIES MEMBER agrees to make payments to Corinth within thirty (30) days of receipt of invoice from CORINTH. The LAKE CITIES agree that the payments made hereunder by each of the LAKE CITIES MEMBERS for the Services and for services provided by CORINTH provide valid and sufficient consideration for the services rendered and payments made hereunder.

	Population		Land Area (miles)		Total Allocation	Total Cost
Corinth	22,634	60%	7.9	44%	52%	\$14,040
Lake Dallas	7,708	20%	2.7	15%	17.5%	\$4,725
Hickory Creek	4,718	13%	4.5	25%	19%	\$5,130
Shady Shores	2,764	7%	2.9	16%	11.5%	\$3105
	37,824	100%	18.00	100	100%	\$27,000

4. **Authorization.** The undersigned officers and/or agents of the LAKE CITIES represent and certify that this Agreement has been approved by their respective governing body and that each is a duly authorized official and possesses the requisite authority to execute this Agreement on behalf of its governing body.

5. **Original Counterparts.** This Agreement may be executed separately by the parties, each of which shall be deemed an original and all of which together shall constitute one

and the same instrument.

6. **Notice.** Notice as required by this Agreement shall be in writing delivered to the parties by certified mail at the address listed below. Each party shall notify the other parties in writing within ten (10) days of any change in the information listed in this paragraph.

CORINTH

Bob Hart, City Manager
3300 Corinth Parkway
Corinth, TX 76208
Telephone: (940) 498-3243

LAKE DALLAS

Kandace Lesley, City Manager
212 Main Street
Lake Dallas, TX 75065
Telephone: (940) 497-2226

HICKORY CREEK

John Smith, Town Manager
1075 Ronald Reagan Avenue
Hickory Creek, TX 75065
Telephone: (940) 497-2528

SHADY SHORES

Wendy Withers, Town Manager
101 S Shady Shores Road
Shady Shores, TX 76208
Telephone: (940) 498-0044

7. **Assignment.** The LAKE CITIES agree that the rights and duties contained in this Agreement will not be assigned or sublet without the prior written consent of each other LAKE CITIES MEMBER.

8. **Venue.** This Agreement shall be governed by the laws of the State of Texas and exclusive venue for any action relating to this Agreement shall be in Denton County, Texas.

9. **Independent Parties/Governmental Immunity.** Each LAKE CITIES MEMBER agrees and acknowledges that this Agreement does not create a joint venture, partnership, or joint enterprise, and that each is not an agent of any of the other entities and that each is responsible in accordance with the laws of the State of Texas for its own negligent or wrongful acts or omissions and for those of its officers, agents, or employees in conjunction with the performance of services covered under this Agreement. Notwithstanding the foregoing, nothing in this Agreement shall be construed as a waiver of any governmental immunity or other defense available to each LAKE CITIES MEMBER. The provisions of this section are solely for the benefit of the LAKE CITIES and are not intended to create or grant any rights, contractual or otherwise, to any third party. This Agreement is for the sole benefit of the LAKE CITIES and shall not be construed to create any third-party beneficiaries.

10. **Severability.** If any provision of this Agreement is determined by a court of competent jurisdiction to be unenforceable for any reason, then: (i) such unenforceable provision shall be deleted from this Agreement; (ii) the unenforceable provision shall, to the extent possible and upon mutual agreement of the LAKE CITIES, be rewritten to be enforceable and to give effect to the intent of the LAKE CITIES; and (iii) the remainder of this Agreement shall remain in full force and effect and shall be interpreted to give effect to the intent of the LAKE CITIES.

11. **Non-Waiver.** Any failure by a LAKE CITIES MEMBER to insist upon strict performance by any one or more of the other LAKE CITIES MEMBERS of any material provision of this Agreement shall not be deemed a waiver thereof, and the LAKE CITIES MEMBER shall

have the right at any time thereafter to insist upon strict performance of any and all provisions of this Agreement. No provision of this Agreement may be waived except by writing signed by the LAKE CITY MEMBER waiving such provision. Any waiver shall be limited to the specific purposes for which it is given. No waiver by any LAKE CITIES MEMBER of any term or condition of this Agreement shall be deemed or construed to be a waiver of any other term or condition or subsequent waiver of the same term or condition.

12. **Entire Agreement.** This Agreement (with all referenced Exhibits, attachments, and provisions incorporated by reference) embodies the entire agreement of the LAKE CITIES, superseding all oral or written previous and contemporary agreements among the LAKE CITIES relating to matters set forth in this Agreement. This Agreement cannot be modified without written supplemental agreement executed by all of the LAKE CITIES.

13. **Further Documents.** LAKE CITIES MEMBER agrees that at any time after the Effective Date, they will, upon request of another LAKE CITIES MEMBER, execute and deliver such further documents and do such further acts and things as the other LAKE CITIES MEMBERS may reasonably request in order to effectuate the terms of this Agreement. This provision shall not be construed as limiting or otherwise hindering the legislative discretion of the respective City Council seated at the time that this Agreement is executed or any future respective City Council.

IN WITNESS WHEREOF, this Agreement is executed this ____ day of _____ 2022, in quadruplicate originals.

APPROVED BY THE CITY COUNCIL OF THE CITY OF CORINTH, TEXAS:

CITY/GOVT ENTITIY OF CORINTH, TEXAS

Bill Heidemann, Mayor

Date

BY:

Bob Hart, City Manager

Date

ATTEST:

Lana Wylie, City Secretary

Date

APPROVED AS TO FORM:

Patricia Adams, City Attorney

Date

IN WITNESS WHEREOF, this Agreement is executed this ____ day of _____ 2022,
in quadruplicate originals.

**APPROVED BY THE TOWN COUNCIL OF THE TOWN OF SHADY SHORES,
TEXAS:**

Cindy Aughinbaugh, Shady Shores Mayor

Date

ATTEST:

Wendy Withers, City Secretary

Date

APPROVED AS TO FORM:

City Attorney

Date

IN WITNESS WHEREOF, this Agreement is executed this ____ day of _____ 2022,
in quadruplicate originals.

**APPROVED BY THE TOWN COUNCIL OF THE TOWN OF HICKORY CREEK,
TEXAS:**

Lynn Clark, Hickory Creek Mayor

Date

ATTEST:

Kristi Rogers, City Secretary

Date

APPROVED AS TO FORM:

City Attorney

Date

IN WITNESS WHEREOF, this Agreement is executed this ____ day of _____ 2022,
in quadruplicate originals.

APPROVED BY THE CITY COUNCIL OF THE CITY OF LAKE DALLAS, TEXAS:

BY:

Andi Nolan, Lake Dallas Mayor

Date

ATTEST:

Codi Delcambre, City Secretary

Date

APPROVED AS TO FORM:

City Attorney

Date

EXHIBIT "A"
ATTORNEY PROPOSAL

**(TO BE SUPERSEDED BY KANDUTSCH LAW OFFICE ATTORNEY AGREEMENT
IN ACCORDANCE WITH SECTION 2(a) OF THIS AGREEMENT)**

CARL E. KANDUTSCH, Ph.D., J.D.
The Kandutsch Law Office
2520 K Avenue, Suite 700-760
Plano, Texas 75074-7753
Tel: (214) 427-5354
Mobile: (207) 659-6247
Fax: (214) 291-5724
carl@kandutsch.com

December 7, 2021

City of Corinth
City of Lake Dallas
Town of Shady Shores
Town of Hickory Creek
Via e-mail attachment to Attorney Stephanie Lewis at stephanie@txmunicipallaw.com

CONFIDENTIAL ATTORNEY-CLIENT COMMUNICATION

Re: Legal Representation – Municipal Broadband Project

Dear Ms. Lewis:

Please read this letter carefully. It describes the terms and conditions under which the Kandutsch Law Office (referred to herein as “we”) will represent the City of Corinth, the City of Lake Dallas, the Town of Shady Shores and the Town of Hickory Creek (collectively referred to herein as “Lake Cities”) concerning the above-referenced matter. Our policy requires that each individual client sign a copy of this letter agreeing to the terms and conditions described below before we can engage in representation, provided that to the extent that any person or entity has been duly designated as the single representative of the four client entities, that representative may sign this letter on behalf of the separate client entities.

1. Scope of Representation. Initially, the scope of representation (the “Representation”) is as follows:

Provide legal advice and counsel concerning the construction of a publicly owned broadband network serving the four client entities, including, upon request, the selection of a service provider and the drafting and negotiation of a binding agreement between Lake Cities and the selected service provider. We will also upon request provide legal advice and counsel concerning any related matter that is within the scope of our experience and expertise.

Please note that the scope of the Representation does not include advice or services regarding the following: accounting, tax, financial, business, management, and related non-legal matters and advice; title searches, surveys, inspections and other non-legal work relating to real estate;

securities, labor, litigation, and other legal matters not within our areas of expertise. We would be happy to refer you to others who may provide you these services if needed.

2. Fees. Our fee ("Fee") will be based on an hourly rate of \$450, plus reimbursement of any out-of-pocket expenses actually incurred. We will meet with you to agree on the appropriate Fee structure before undertaking any particular task. Please note that we review the hourly rate periodically and may adjust it from time to time. If such adjustment is needed, you will be notified in writing at least 30 days before the adjustment is implemented. We require an initial minimum deposit (the "Deposit") of \$ 3,000.00, which amount will be deposited in a State Bar of Texas Interest on Lawyer's Trust Account, the interest on which benefits the Texas Equal Access to Justice Foundation. The Deposit will be applied to your account, including at our discretion, to any past-due amounts. We reserve the right to request a supplemental Deposit, over and above the initial Deposit, in the event of an increase in our anticipated fees and expenses during our Representation. Upon the termination of the Representation, we will promptly return any unearned portion of the Deposit, less any fees and expenses unpaid as of the date of our final invoice.

3. Invoices. We will provide you, on or about the last day of each month, with an invoice describing in reasonable detail any billable activities performed on your behalf in connection with the Representation, the date performed, as well as the amount of time billed at the current hourly rate with respect to each activity. Time will be billed in 6 minute intervals; for example, 6 minutes of activity will be shown on the invoice as ".10." Only meaningful, productive activity will be billed, and activity requiring less than 6 minutes will not be billed. You will also pay for such costs as copies, postage, fax, long distance, recording, FedEx, courier, etc. Because of the detailed nature of our invoices, our clients do not usually have questions about them. However, if any question should arise, please call us promptly so we can discuss the matter.

4. Payment of Invoices. Our agreement to provide legal services is conditioned not only on your execution of this engagement letter, but also on prompt payment of the Deposit and of each invoice. Payment of the amount stated on any invoice is due and payable upon receipt of the invoice. Our hourly rates do not include any interest for slow payment. Because of this, and the fact that we do not include a service charge for late payments, we must insist that our clients pay their invoices promptly. By your execution of this engagement letter, you agree that we are relieved from the responsibility of performing any further work should you fail to pay any invoice (including bills for expenses received from third parties) or for supplemental Deposits within 15 days of receipt. In that event, you agree that we may move to withdraw from the Representation and that you will promptly execute any withdrawal motions to accomplish this.

5. In representing you, we recognize that we may be disqualified from representing any client in any matter related to our representation of you. We also recognize that we may be disqualified from representing any client in any matter in which confidential information concerning you and made available to us during our representation of you becomes material or relevant to another matter or in which use or knowledge of such information could be adverse to your interest. We will not undertake to represent or advise any other person or entity whose interests are contrary to your own in the course of any negotiation or other matter that is part of

the Representation. You agree that, except as stated above, we will be entitled to represent the interests of any other client against you in business negotiations or other legal matters.

6. As is true with all legal services, we cannot and do not guarantee the results of our representation. We make no express or implied warranties, and we disclaim all such express or implied warranties concerning the Representation.

7. You may discharge us from the Representation at any time. We are free to withdraw at any time and without cause, subject to reasonable notice under the circumstances and to approval by any court or other forum in which your matter may be pending. We will be entitled to receive compensation from you for all services rendered and all disbursements made, under the provisions of this engagement letter agreement, up to the time of withdrawal. Circumstances may arise that will require us to withdraw from representation under the Texas Disciplinary Rules of Professional Conduct or other applicable professional standards. In such circumstances, as well as in the instances referred to in paragraph 5 above, we will cooperate in the transfer of the matter to other counsel of your choice.

8. Attorneys, like other professionals who advise on personal financial matters, are required by a federal law (the Gramm-Leach-Bliley Act) to inform their clients of their policies concerning privacy of client information. Because attorneys have been and continue to be bound by professional standards of confidentiality that are even more stringent than those required by this new law, we have always protected our clients' right to privacy. In the course of representing clients, we receive all manner of significant personal financial information from them. As a client of the Kandutsch Law Office, you are advised that all information we receive from you will be held in confidence and not released to outside persons, except as agreed to by you or as required under applicable law. We retain records relating to professional services we provide to assist our clients with their professional needs and in some cases, to comply with professional guidelines. To guard your nonpublic personal information, we maintain physical, electronic and procedural safeguards that comply with our professional standards.

At the end of the Representation, please let us know if you need any documents from our files. We will retain the documents for five years and then destroy them in accordance with our record-retention policy then in effect.

9. The Supreme Court of Texas has adopted and promulgated the Texas Lawyer's Creed. Although compliance with the Creed is voluntary, we have decided to adhere to its provisions. You can read the Creed online here: http://www.legalethictexas.com/Downloads/Texas-Lawyers-Creed/Texas_Lawyers_Creed.aspx.

We discuss the terms and conditions of our engagement candidly in this letter because you are entitled to know and we believe that a candid discussion now should avoid any misunderstandings later. Please sign a copy of this letter in the space below, expressing your agreement to the terms and conditions set forth above. After we received your signed copy of this letter and the required Deposit, we will commence our Representation.

Sincerely yours,

Carl E. Kandutsch

Carl E. Kandutsch

ACCEPTED AND AGREED TO ON _____, 2021.

CLIENT (if collectively represented by signatory):

By: _____
Name & Title

If not represented by a single representative:

CLIENT (if collectively represented by signatory):

By: _____
Name & Title

CLIENT (if collectively represented by signatory):

By: _____
Name & Title

CLIENT (if collectively represented by signatory):

By: _____
Name & Title

CLIENT (if collectively represented by signatory):

By: _____
Name & Title