

Network Nodes/Small Cell Networks

Why are we here today?

On September 1, 2017, Senate Bill 1004 (Chapter 284) went into effect and required all municipalities to allow the deployment of network nodes in the public right-of-way (ROW).



What are Network Nodes?

- Formal Definition - An operator controlled, low powered radio access at a fixed location that enables wireless communications between user equipment and a communication network.

OR

- In Layman's Terms - Mobile phone, voice and data relays placed strategically to add capacity, increase data speeds and enhance area coverage.



Network Node Installation Types

- Utility Pole – node on non-City owned pole
- Service Pole – node on City owned pole connection to node
- Node Pole – node on new pole
- Transport Facility – underground fiber connection to node



Utility Pole Installation



Node Pole Installation



Service Pole Installation



Network Nodes/Small Cell Networks

Agenda

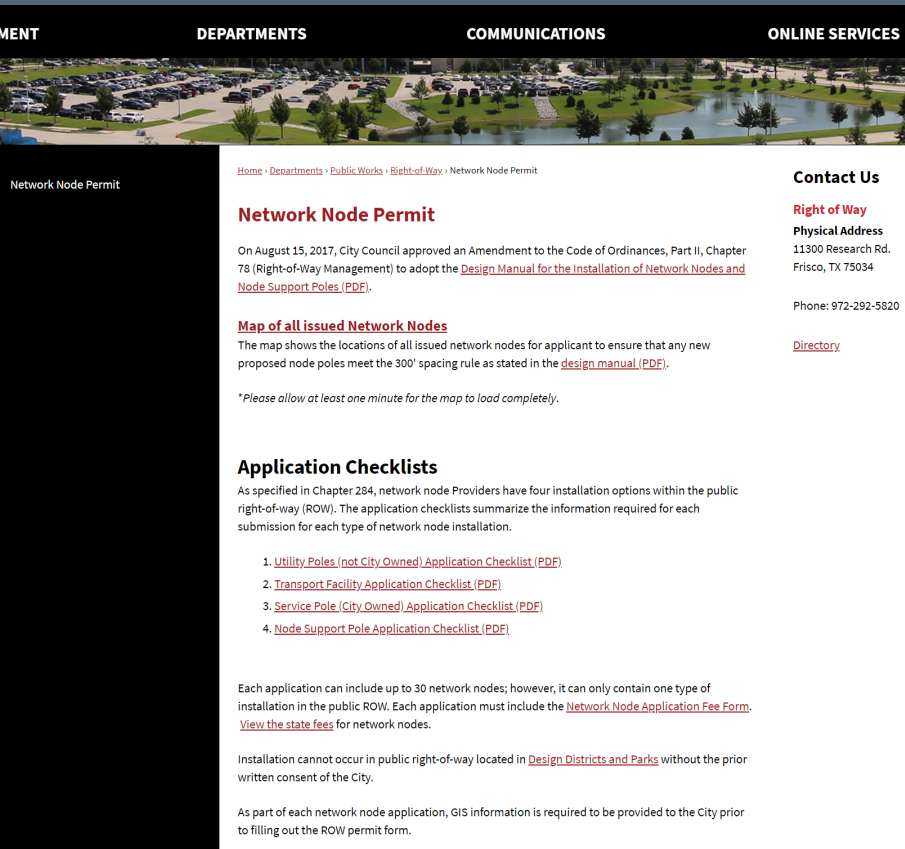
- *Frisco's process for managing submittal/review deadlines, reviews and fees*
- *Frisco's Lessons Learned*
- *Learn how other municipalities are managing network nodes/small cells*



Network Node Submittal Process

Website outlines submittal process for installing network nodes in City ROW

www.friscotexas.gov/networknodepermit



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Network Node Permit

On August 15, 2017, City Council approved an Amendment to the Code of Ordinances, Part II, Chapter 78 (Right-of-Way Management) to adopt the [Design Manual for the Installation of Network Nodes and Node Support Poles \(PDF\)](#).

Map of all issued Network Nodes

The map shows the locations of all issued network nodes for applicant to ensure that any new proposed node poles meet the 300' spacing rule as stated in the [design manual \(PDF\)](#).

**Please allow at least one minute for the map to load completely.*

Application Checklists

As specified in Chapter 284, network node Providers have four installation options within the public right-of-way (ROW). The application checklists summarize the information required for each submission for each type of network node installation.

- [Utility Poles \(not City Owned\) Application Checklist \(PDF\)](#)
- [Transport Facility Application Checklist \(PDF\)](#)
- [Service Pole \(City Owned\) Application Checklist \(PDF\)](#)
- [Node Support Pole Application Checklist \(PDF\)](#)

Each application can include up to 30 network nodes; however, it can only contain one type of installation in the public ROW. Each application must include the [Network Node Application Fee Form](#). [View the state fees](#) for network nodes.

Installation cannot occur in public right-of-way located in [Design Districts and Parks](#) without the prior written consent of the City.

As part of each network node application, GIS information is required to be provided to the City prior to filling out the ROW permit form.

Contact Us

Right of Way
Physical Address
11300 Research Rd.
Frisco, TX 75034

Phone: 972-292-5820

[Directory](#)

- Link to City Design Manual
- Link to Map Showing all Applications Submitted
- Application Checklists for Each Type of Submittal
- Link to Network Node Fees and Application Fee Form
- Collocation Agreement Process for Service Poles
- Steps for submitting GIS Information and Application

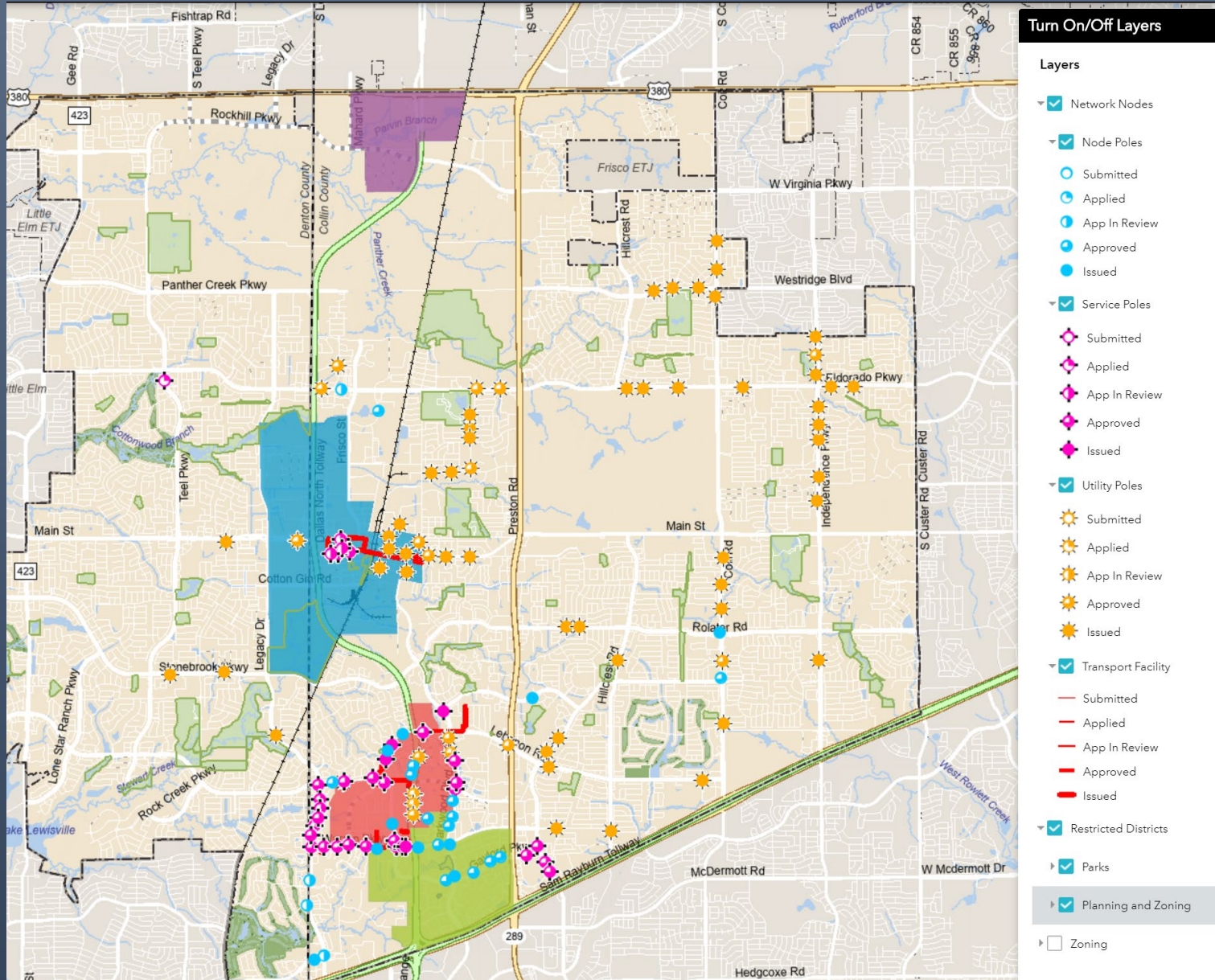


Network Node Design Manual Highlights

- Node and service poles are required to be on breakaway bases
- Must comply with visibility and accessibility standards, cannot obstruct sidewalks
- Color of all node equipment is required to match pole
- Spacing Requirements - 300 ft between node poles
- Advance approval is required to install new node poles:
 - In Municipal Parks
 - In Design Districts
 - On City Property
- New node poles are not allowed in the public ROW adjacent to residentially zoned land when the roadway is less than 50 ft wide
- No interference with City's traffic signal system, public safety radio system, private police cell system or other City communication infrastructure



Interactive Map of Submittals & Status



Application Checklist for Each Type

- Fillable pdf checklist required to be submitted with each node
- Submittal instructions and completion review deadline
- Identifies key items that need to be included with each submittal
- Requires applicant contact information and signature
- Informs applicant when a network node location is vested



Network Node #: _____

Network Node – Service Pole (City Owned) Application Checklist (rev. 09-2019)

GENERAL INFORMATION

- 1) See **Section 78-400** of the Right of Way Ordinance for the design manual for the installation of network nodes and node support poles.
- 2) Application will be reviewed for completion within thirty (30) days after submittal to the City.
- 3) All required materials shall be submitted as a paper copy to the ROW Department and in digital format as a PDF, unless specifically instructed otherwise. All digital items shall be submitted via the City's website following the instructions outlined at www.FriscoTexas.gov/NetworkNodePermit
- 4) The annual right-of-way rental fees are due to the City when the ROW permit is issued at the pre-construction meeting, which is also when the network node location's vested rights go into effect.
 - * Check the box when the item is complete and provide the page(s) # that correlates to the item.

APPLICATION CHECKLIST

Item – Service Pole (City Owned) Application Checklist	Applicant
Do you have a signed collocation agreement with the City of Frisco? (Must have to apply) Owner's Project # _____? (Each pole must have a unique project #)	* <input type="checkbox"/> - Pg # _____
Total number of Pole(s) _____?	
Total Number of Network Node(s) included with this application? _____	
Do you have the required application fee form? For a list of current fees see www.FriscoTexas.gov/PWFeeSchedule (Application Fee estimate to be filled in by Applicant, and then confirmed by the City) **Limit of 30 nodes per application**	<input type="checkbox"/> - Pg # _____
An aerial map showing the location of the existing pole or structure to which the network node is proposed to be attached, and a street view image of the same.	<input type="checkbox"/> - Pg # _____
Construction and engineering drawings sealed by a Texas Professional Engineer for wireless facility proposed to be attached to a service pole, a decorative pole or other City-owned or structure with a certification from the engineer that the existing pole or structure foundation have sufficient structural stability to support the proposed wireless facility, includes the network node, and can bear the wind load without pole modification. Drawings must also address the design of the connection of any items to the pole.	<input type="checkbox"/> - Pg # _____
If reinforcement is necessary, provider shall submit sealed construction and engineering drawings of the proposed alteration to the existing pole with a certification from the Texas Professional Engineer that the modified pole will be structurally stable and can bear the wind load to support the wireless facility, which includes the network node.	<input type="checkbox"/> - Pg # _____
Any re-enforcement or replacement of a pole shall match the color of the existing pole.	<input type="checkbox"/> - Pg # _____



Network Node #: _____

Network Node - Node Support Pole Application Checklist (rev. 09-2019)

GENERAL INFORMATION

- 1) See **Section 78-400** of the Right of Way Ordinance for the design manual for the installation of network nodes and node support poles.
- 2) Application will be reviewed for completion within thirty (30) days after submittal to the City.
- 3) All required materials shall be submitted as a paper copy to the ROW Department and in digital format as a PDF, unless specifically instructed otherwise. All digital items shall be submitted via the City's website following the instructions outlined at www.FriscoTexas.gov/NetworkNodePermit
- 4) The annual right-of-way rental fees are due to the City when the ROW permit is issued at the pre-construction meeting, which is also when the network node location's vested rights go into effect.
 - * Check the box when the item is complete and provide the page(s) # that correlates to the item.

APPLICATION CHECKLIST

Item – Node Support Pole Application Checklist	Applicant
Is this exclusively in TxDOT Right-of-Way? If yes, then you will not submit a network node for this type to the City of Frisco? Owner's Project # _____? (Each pole must have a unique project #)	* <input type="checkbox"/> - Pg # _____
Total number of Pole(s) _____?	
Total Number of Network Node(s) included with this application? _____	
Do you have the required application fee form? For a list of current fees see www.FriscoTexas.gov/PWFeeSchedule (Application Fee estimate to be filled in by Applicant, and then confirmed by the City) **Limit of 30 nodes per application**	<input type="checkbox"/> - Pg # _____
Aerial Map and street view image showing location of each new pole location.	<input type="checkbox"/> - Pg # _____
Geographic Information System (GIS) data submitted to the City as outlined at www.FriscoTexas.gov/NetworkNodePermit . Attach confirmation email from Frisco GIS.	<input type="checkbox"/> - Pg # _____
Certification that new pole location meets 300 ft minimum spacing requirement, but if not, then Provider must provide evidence or other material supporting a claim that the minimum spacing requirement would prohibit the placement of new node support poles in the subject area.	<input type="checkbox"/> - Pg # _____
Scaled dimensional drawings or pictures of the proposed node support pole and any other proposed wireless facilities to be installed in connection with the proposal, indicating the spacing from existing curbs, driveways, sidewalks, and other existing poles. This shall include a before-and-after photo simulation image of the pole and all proposed attachments and	<input type="checkbox"/> - Pg # _____

HB 284 - Network Node Fees

- Each application can include up to 30 nodes of the same installation type
- Each application must include a filled-out Network Node Fee Form

ROW Network Node Fees

Network Node Installation Type	First 5 Nodes Submitted Per Application	Each Additional Node Up To 30 Per Application	Each Pole Per Application	Per Node	Per Pole
	Application Fee	Application Fee	Application Fee	Annual Rental Fee	Annual Rental Fee
Utility Poles (not city owned)	\$500	\$250	N/A	\$250	N/A
Transport Facility	N/A	N/A	N/A	\$336	N/A
Service Pole (city owned)	\$500	\$250	N/A	\$250	\$20
Node Support Pole	\$500	\$250	\$1,000	\$250	N/A

Network Node Application Fee Form

Project Number	Node Fees	Pole Fees	# Nodes	# Poles
1 FRISG_046	\$ 500	N/A	4	0
2 FRISG_047	\$ -	-		
3 FRISG_055	\$ -	-		
4 FRISG_056	\$ -	-		
5	\$			
6	\$			
7	\$			
8	\$			
9	\$			
10	\$			
11	\$			
12	\$			
13	\$			
14	\$			
15	\$			
16	\$			
17	\$			
18	\$			
19	\$			
20	\$			
21	\$			
22	\$			
23	\$			
24	\$			
25	\$			
26	\$			
27	\$			
28	\$			
29	\$			
30	\$			
TOTAL		\$ 500.00		

Example - Utility Pole Application



Collocation Agreement - Service Poles

- Instructions on City Website
- Created standardized agreement
- Must include location map and photo simulation as an exhibit



Collocation Process

1. Company must include an exhibit that shows the location of the pole that they want to collocate on and a photo simulation of what it will look like with the network node on it.
2. Company will obtain the latest standard [Collocation Agreement \(DOC\)](#) form from City's Website.
3. Company will edit the Agreement and enter the particular information concerning their request.
4. Company shall send over a PDF version of the Agreement [via email ROW Tech](#) with their signature on their portion of the agreement PDF must be clear and legible.
5. The ROW Manager will review the agreement and forward to the City's attorney for review and approval.
6. The City's attorney will review it and return the agreement to the ROW Manager. **All correspondence between the City attorney and the Company will go through the ROW Manager until both parties are in agreement and have signed it.**
7. The ROW Manager will forward the signed agreement to the City Secretary for both the City Manager and City Secretary to sign.
8. Once the agreement is fully executed, the city management staff will send it back to the ROW Manager, who will forward it to the company.
9. The company can then submit their application for the network node installation with a copy of the fully executed [Collocation Agreement \(DOC\)](#).

GIS Data Requirements

- GIS emails applicant to let them know if data provided is correct
- Once GIS data is approved, then applicant submits application in pdf format and pays application fees to start the shot clock

Follow these 3 steps to submit the GIS and digital information to the city:

Step 1

To begin the permitting process, the City of Frisco's GIS Division requires network providers submit GIS data associated with poles and network nodes. Download one of the GIS data structures as a template and complete for proper submittal. This is required prior to submitting a ROW permit application.

- [Node Pole Shapefile](#)
- [Node Pole Geodatabase](#)
- [Node Pole Spreadsheet](#)
- [Service Pole Shapefile](#)
- [Service Pole Geodatabase](#)
- [Service Pole Spreadsheet](#)
- [Utility Pole Shapefile](#)
- [Utility Pole Geodatabase](#)
- [Utility Pole Spreadsheet](#)

The following attributes are required for data approval:

- ProjectNumber (PROJECT_NO)
- NodeNumber (NODE_NO)
- Longitude (Spreadsheet Only)
- Latitude (Spreadsheet Only)
- PoleType (P_TYPE)
- PoleSubtype (P_SUBTYPE)
- PoleOwner (P_OWNER)
- PoleHeight (P_HEIGHT)
- PoleInstallType (P_INST_TYP)
- NetworkNodeType (NN_TYPE)
- NetworkNodeOwner (NN_OWNER)
- NetworkNodeBaseMountingHeight (NN_BASE_HT)
- NetworkNodePhysicalWidth (NN_WIDTH)
- NetworkNodePhysicalHeight (NN_PHYS_HT)

In addition, a separate PDF or image file of the proposed view of the project is required.

Step 2

Once the shapefile, geodatabase, or spreadsheet are populated with the required attributes, submit to the city as a .zip file using the [Network Node Permit Form](#).

The Network Node Permit Form shall also be used to submit all other application submittal requirements as a PDF to the city.

Step 3

Prior to final inspection, complete the following attributes for the poles and nodes installed. Append these attributes to the existing attributes previously submitted in Step 2. Then submit it to the city as a .zip file using the [Network Node Permit Form](#).

- PermitNumber (Permit_NO)
- PoleInstallDate (P_INSTALL)
- PoleImage (P_IMAGE)
- NetworkNodeSerialNumber (NN_SERIAL)
- NetworkNodeImage (NN_IMAGE)



Network Node Review Process

- Several Departments Involved in Review Process
 1. GIS
 2. Right Of Way (ROW)
 3. Planning Department
 4. Traffic Engineering
 5. Traffic Field Operations
 6. Police Department - Emergency Communications
 7. Traffic Signal Communications
 8. City Manager's Office



HB 284 - Network Node Deadlines

- Utility Pole and Service Pole Submittals
 - 30 days to deem application complete/incomplete
 - 60 days to approve/deny submittal after deemed complete
- Node Pole Submittal
 - 30 days to deem application complete/incomplete
 - 150 days to approve/deny submittal after deemed complete
- Transport Facility Submittal
 - 10 days to deem application complete/incomplete
 - 21 days to approve/deny submittal after deemed complete



Managing Network Node Deadlines

- ROW Technician – Key to Our Success
 - Educates all applicants of submittal process
 - Creates a new node permit in TrakIt, attaches submittal package, checks and applies application fees
 - Emails network node review group to remind them of approaching deadlines
 - Sends a complete/incomplete letter or approval/denial letter to applicant and attaches to permit in TrakIt
 - Coordinates with applicant to schedule pre-construction meetings
 - Maintains an updated spreadsheet of all active node permits that includes applicant, status, internal review deadlines, external re-submittal deadlines & notes



Lessons Learned – Foundations

- Verify node poles are installed in public ROW
 - Require all contractors to stake foundation location & ROW for approval prior to drilling

Installed on ROW line



Installed on Private Property

Lessons Learned – Breakaway Bolts

- Verify node poles and service poles are installed on breakaway bolts
 - Added requirement to checklist to help applicants be more aware of this requirement included in City’s Design Manual



Breakaway bolts



Non-breakaway bolts



Lessons Learned – Utility Pole Nodes

- Typically only allow one entity/conduit on each utility pole for maintenance purposes



Lessons Learned - Color

- Node antenna, cabinet and any other equipment on poles must be the same color as the pole or match as closely as possible



Utility Pole Installation



Node Pole Installation

Lessons Learned – Signage Requirements

- Must post name, location identifying number, and emergency telephone number on node pole that is visible to the public
- Signage shall not exceed 4"x6" in size
- No other signage or advertising is allowed on node poles, utility poles, service poles or network nodes, except as required by applicable laws or utility pole owner



Lessons Learned – Additional Items

- Transport Facilities – HB 283 conditions in HB 284
- Network Node changes once under construction
 - Location changes due to underground utility conflicts
 - Handling plan changes
- Main questions asked when applicant wants an Extension
 - How far along is the job now?
 - Why didn't it get done in the time allotted?
 - Is the requested extension adequate to get the job done completely?



How are other municipalities managing Network Nodes/Small Cells?

Recent Questionnaire from Michael Owens in Ft. Worth w/ other cities

EXECUTIVE SUMMARY

The City of Fort Worth's TPW Department is seeking ways to develop/enhance our Wireless Facilities program including its capacity for permitting and inspection of network node facilities with the goal to promote the effective deployment of 5G facilities. We have reached out to cities in North Texas, as well as the larger agencies state-wide.

The following is a high level summary of the input received:

- Overall, the consensus is that the fee levels set by the State as part of Chapter 284 of the Local Government Code do not cover the cost of the effort provided by the Cities for coordination, permitting, and inspection of facilities, and none of the Cities questioned have considered waiving/lowering fees to encourage the deployment of 5G in their jurisdictions. It is assumed that the modest application and ROW usage fees are not a big driver in provider's decisions of where to deploy 5G first.
- Review times for each of the Cities questioned vary, but in general, most are attempting to improve on the allowed Agency review times included in Chapter 284 (see below for detailed information regarding allowable review times in the code). How each agency has staffed the required efforts associated with 5 G deployment varies. However, in general most have absorbed by reallocating existing staff (a few FTEs may have been added) and very few employees are dedicated solely to 5G facilities, as most also permit/inspect other facilities.
- Specific goals/strategies deployed by the Cities vary, including: standardizing collocation agreements, pole designs, foundation pole bases, and electric connections; being flexible re: time extensions for contractors and allowing wooden poles for stand-alone poles in areas where utility poles are predominantly wooden; and approaching 5G deployment as part of larger strategy of moving towards becoming "Smart" City.
- Alternative construction techniques employed included the following: micro trenching in certain areas and as part of pilot projects; installation of fiber within storm drain pipe as part of pilot projects; and development of drop-in-place pole design utilizing standard foundations.

How many full time equivalent positions do you have that are dedicated to processing/reviewing applications and inspecting 5G installations?

<i>Arlington:</i>	0
<i>Austin:</i>	4 for permitting and "shepherding" process (they have a mix of 4G and 5G efforts)...for review other folks from other Departments (depending on location). Inspection is done by the "owner" of the
<i>Dallas:</i>	Maybe added 2 FTEs
<i>Frisco:</i>	5 zones with inspector in each zone – they review their portion (other dept/division)...no dedicated employees. They have a ROW Permit Tech (they use Trak It...allows them to sort and run report once a week)...the quarterback coordinated with group that review NN (not dedicated...maybe 60%).
<i>Houston:</i>	3FTEs dedicated to the work. If you add the employees who assist with processing, input, and approval that can creep up to 4FTEs.
<i>San Antonio:</i>	Fiber deployment team of 14 individuals in the past...In response to 5G: they have a 5-man team to manage permitting, monitoring and inspection for only 5G poles/nodes (2 for permitting/3 for inspection). 1 person specific to power permits
<i>Fort Worth:</i>	We do not have any employees dedicated to only 5G efforts



Thank you!

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