

Background Information:

The Evolution of Wireless Communication: The concept of wireless communication has been around since the late 1800s, but really began to receive practical testing and application in the late 1970s and early 1980s. By the early 2000s, systems that would transport voice and data transmissions via radio frequency (RF) waves were starting to become commonplace for industry and government users. By 2010, individual ownership of mobile phones was mainstream. Today, most people use smart cell phones, tablets, laptops, or streaming devices. Since approximately 2011, Americans have been familiar with 4G or 4G LTE technology, which refers to devices able to wirelessly transmit and receive data at a capacity of approximately 12.5 megabytes per second.

Cellular service providers, also known as carriers, such as Verizon, Sprint, T-Mobile, and AT&T operate in a competitive environment. Because most people already have a cellular device, competition within the marketplace is more about market share than expanding the market. Carriers are competing over the same existing customers. This has fueled a race between the carriers to provide better coverage, faster upload and download speeds, fewer dropped calls and service interruptions, and more available features. There is also a great deal of energy behind concepts such as the Internet of Things (IOT), Smart Streets, and increasing automation and monitoring capacity in the public environment. This includes new types of sensors that monitor conditions and activities on city streets, interactive advertising and communications kiosks, and autonomous vehicles. All of this has created a need for sharing much more data at much higher speeds.

The Impact of 5G: The newest of wireless connectivity is referred to as 5G. This technology can transmit and receive wireless data at a capacity of 10 gigabytes per second, which is roughly one hundred times faster than 4G or 4G LTE technology. While carriers and cellphone manufacturers advertise 5G wireless capabilities, the reality is that 5G does not yet exist for most Americans. The technology works well in laboratory and controlled testing environments but has run into dependability and stability difficulties when deployed in real-world settings. In several large cities around the United States including Denver, limited test areas have been established to continue working out deployment problems. Users within these tiny test areas are able to tap into 5G coverage, but outside of these areas 5G is not available.

Carriers have already begun to provide 5G within urban and suburban households, as well planning accordingly by investing significantly in new infrastructure within the City of Pflugerville. This investment predominantly means hundreds of thousands of miles of new fiber optic cable being laid underground and the addition of small cell wireless facilities in public ROW. As a part of this effort, the City has been collaborating and in discussion with Wireless providers for City of Pflugerville receiving applications from wireless carriers seeking to place small cell facilities in the City's public ROW. The City anticipates receiving input from residents, business owners, and other interested or concerned parties as the new facilities begin to appear. Refer to the section below regarding Communication and Outreach on how City prepares to provide information related to small cell wireless facilities.

Small Cell Facilities: Major providers including AT&T and Verizon have relatively strong wireless cellular facility (WCF) networks established within the City. These networks are generally comprised of traditional macro networks, which consist of antennas and supporting equipment mounted on either exposed-girder towers, on building rooftops, or on building façades. These networks provide users with connectivity to wireless communication including phone calls, texting, the Internet, and other applications. The macro facilities are burdened by the volume of data and usage they must handle, especially in more populated areas, where more users tax the system simultaneously during peak activity times.

Small cell facilities provide supplemental support for the macro networks. They help to carry the ever-increasing data load, and allow for more users to have better connections, faster uploads and downloads, fewer “dropped” calls or interruptions, and more speed. Small cell facilities are not called “small cell” because of their size (although they are generally smaller than a macro site), but because of their lower level of functionality, range and capacity. Small cell installations cannot replace macro installations; they can only augment the performance of the larger sites and help to improve service in existing coverage areas. For now, the small cell poles going into City ROW only support the existing macro networks, which are 4G/LTE systems. The carriers plan to switch the poles over to 5G use as soon as this technology is fully functional and available.

Spacing and Appearance of Small Cell Facilities: Because 5G cannot travel over the same distances as 4G, more antenna sites are needed and they are spaced closer together. The locations of streetlights lend themselves to this new 5G application. Since most streetlights in the City are owned by Oncor, a carrier will apply to both the City and Oncor to replace an existing streetlight with a combination streetlight/small cell wireless pole. The City anticipates the new poles will have the same general appearance, color, finish, and height as the old poles. They will be bigger in diameter, have a large round cabinet built into the base of the pole and an enclosed antenna at the top that increases the overall height of the pole by roughly five feet. Attachment 1 provides diagrams of typical pole designs.

Staff anticipates coordinating with Utility providers and pole fabrication companies and Oncor to develop poles that can replace existing specialty poles within the City. City regulations require that the spacing of poles utilized by the same carrier be at least 250 feet apart as with current streetlight requirements. City staff will work collaboratively with network providers to prevent one carrier from monopolizing an area and also helps to prevent additional visual clutter in the public ROW. Poles are placed in the public ROW rather than on private property.

Estimated Quantity and Placement Requirements: The City should expect to see the installation of 500 to 1,000 small cell poles. This will coincide with approximately eight to ten miles of fiber-optic cable installed underground to support the above-ground pole network. Poles typically will be situated out of travel lanes and in-line with existing light poles. Driveways, sidewalks, crosswalks, ROW-dependent facilities including mail

boxes, manholes, and existing sub-surface and surface utilities cannot be unduly impacted. A new poles cannot be placed before the front plane of a home or business that is facing the public ROW. Instead, it must be located adjacent to the property line between two adjoining properties to minimize the burden for both property owners. If the carrier is replacing an existing street light pole with a light pole/small cell combination pole, then the new pole must be in the same location. The City has been made aware for intentions of small cell poles for placement in City's public ROW.

Safety: According to the FCC, a 0.026 inch-separation from an operational wireless antenna is safe. According to the FCC, this safety standard is considered to be 50 times higher than it needs to be for human protection. Due to their closer proximity, people typically receive more RF emission (radiation) from phones, tablets, and other handheld devices than from towers or WCF site. Due to elevation in the Front Range, people typically receive more exposure to radiation from the sun than from wireless transmissions.

Within the next six (6) months, the City should anticipate small cell poles to appear in various locations around the City. Citizens will become increasingly aware of the poles and sometimes question the safety of wireless transmissions. While the FCC, National Cancer Institute, EPA and other agencies maintain that wireless communications pose no threats to people or their pets, all agencies advocate that research and testing on wireless transmissions should continue to ensure the health and safety of the public.

The Legal Environment: The City is compelled to allow small cell poles by State and Federal laws that give access to the City's public ROW to wireless facility providers. The City can work to minimize potentially adverse impacts, but cannot prevent the use of the public ROW for small cell poles. Important State and Federal legislation related to the expansion of wireless transmission facilities includes:

In 2009, the FCC adopted a Report and Order known as the "Shot Clock Order" interpreting Section 332 of the Telecommunications Act of 1996.

In 2014, the FCC adopted a second Report and Order known as the "Collocation Order," which interpreted Section 6409 of the Middle Class Tax Relief and Job Creation Act of 2012.

In 2017, the Texas Legislature approved Senate Bill 1004, which provided a state-wide regulatory scheme concerning installation of wireless network equipment in the public ROW.

In 2018, a third Report and Order was issued by the FCC to further clarify the mandates of the previous Reports and Orders. The report:

Clarifies the prohibition against state and local governments to prohibit wireless infrastructure deployment.

Prohibits excessive fees and requires that fees are tied to the actual costs borne by the permitting locality.

Provides guidance on aesthetic and undergrounding requirements.

Establishes new “shot clocks” and requirements for reviews by the permitting locality.

Generally speaking, the rules mandated in these edicts prevent the City from prohibiting the use of its ROW for the installation of small cell poles, regardless of public opinion and input.

Communication and Outreach: The City has published a Frequently Asked Questions (FAQ) information that can be provided on the website regarding small cell wireless facilities. Staff has also collaborated with the GID Department, as established with this Ordinance a process of collecting data with the potential of publishing an interactive web map that will provide location for small cell wireless facilities in the public ROW. Staff has organized Quarterly Utility Coordination meetings, with the first anticipated to be held in June 2020, as the previously scheduled March 19th Utility Coordination meeting was postponed due to COVID-19. The City’s Small Cell Infrastructure Guidelines, which are also proposed as a separate Ordinance to be included in the City’s Engineering Design Manual, once approved, will be published on the City’s website as well. Staff will update and refine these and other communication resources as this issue evolves.