



**TO: Honorable Mayor and Council**  
**FROM: Steve Kemp, City Attorney**  
**RE: Small Cells**  
**DATE: November 2, 2018**

Recently, there has been significant public attention pertaining to small cells and the advent of 5G service. As this will directly impact our citizens, the purpose of this report is to provide background information to the Council and our citizens.

Currently, most cellular phone service in Colorado, as in much of the United States is either 3G or 4G service.<sup>1</sup> 4G service has a broader bandwidth and greater capacity. Ericcison estimates that currently there are more than 4.5 billion 4G mobile users having access. This continual increase in users is causing 4G service to slow. This service is characterized by the use of cellular towers that capture the signal and relay it to the next cellular tower. 4G networks use low-frequency waves, which easily travel long distances and circumvent large obstacles such as buildings or dense forests, according to Wired Magazine. Consequently, carriers create vast 4G networks without installing large numbers of antennas.

5G mobile networks offer much potential. Connection speeds could increase drastically with 5G networks, which are more than 100 times faster than current 4G models. However, their core architecture presents serious problems from an implementation standpoint. The 5G networks in development, on the other hand, operate within the higher frequencies of the wireless spectrum and rely on millimeter waves to transmit data. These waves do not travel as far as those emitted in 4G setups and have a tougher time navigating physical obstacles. This necessitates more antennas. These antennas are commonly referred to as small cell antennas. The image below represents how these antennas look.<sup>2</sup>

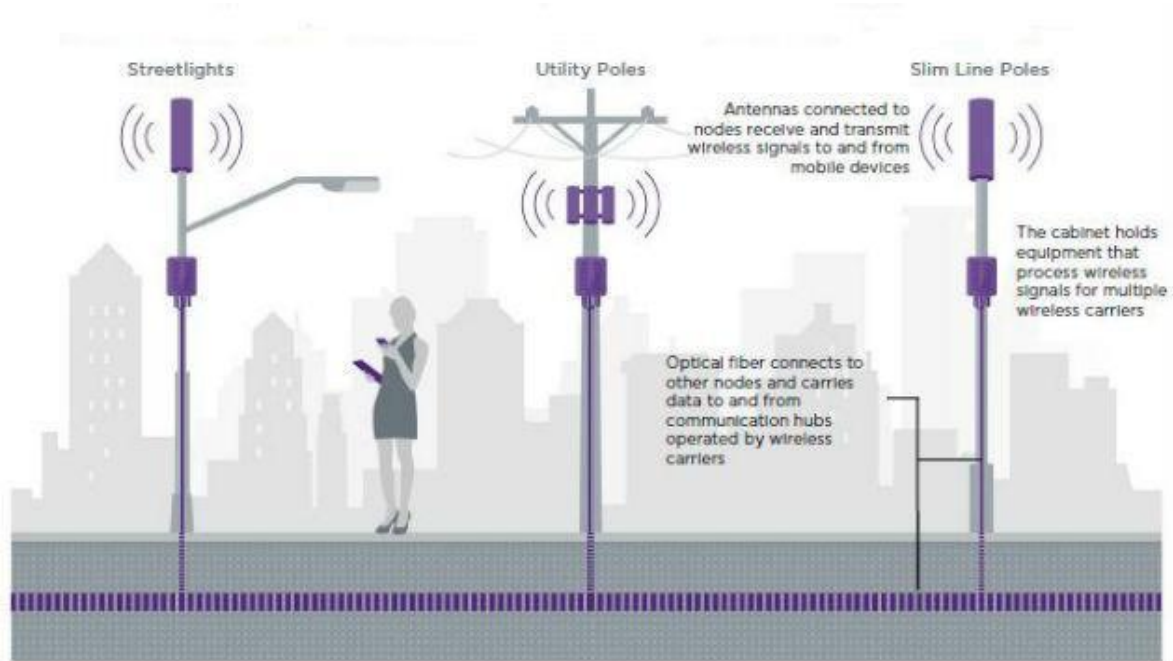
Four companies are in the process of obtaining wireless licenses with the City of Littleton for small cell technology. They include subsidiaries or contractors of: Verizon, AT&T, Sprint-T-Mobile. In 2016, the City adopted a wireless facilities code to require the licensing of small antennas both city wide and upon individual sites. Under Colorado law,

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<sup>1</sup> "G" stands for generation. 3G means the 3<sup>rd</sup> Generation of technology.

<sup>2</sup> City of Evanston, IL and Crown Castle Wireless

the city is entitled to charge fees for the master license and individual sites.<sup>3</sup> Currently, the City Manager has executed master licenses with subsidiaries Sprint and AT&T, with Verizon soon to follow. Once the master licenses are executed, individual site permits will follow:



However, the Federal Communications Commission (FCC) has voted on new rules intended to encourage widespread 5G small-cell deployment. The rules, modeled after laws passed in 20 states so far, would limit the fees that localities can collect when approving plans to deploy 5G small cells. According to the FCC, the new rules would also place other "modest guardrails" on municipal rules "that may prohibit service." They would also require local governments to approve or disapprove 5G small-cell plans within a specific time frame.

The proposed regulations would rest on laws designed to encourage the deployment of the 200-foot towers built for wireless coverage, updating them for the deployment of small cells, which are typically attached to structures like light poles or buildings. Littleton, as part of Colorado Communications and Utilities Association and many other cities across the United States are contesting the FCC authority to impose such rules.

The deployment of 5G over time will be significant. Estimates of the number of small cell antennas required are as high as 1500 per square mile, which equates to one every thirty square feet. In Littleton, Xcel Energy will not permit the installation small cell antenna's on electric distribution lines, which will increase the pressure to locate alternative sites.

<sup>3</sup> Local Authority is under major attack in this area. As of October 1, 2018, 20 states prohibit cities from regulating and charging for small cell antenna's even those located on city infrastructure.

Many of these small cell antenna's may be located in stand along poles as displayed above or on City infrastructure.

Most of the cities located in the Front Range have been approached regarding the location of these small cell antenna's. Regardless of the FCC actions we can expect to continue to see their location in Littleton. This office is working with Public Works and Community Development on location and site issues.

If you have further questions, please do not hesitate to contact me.