ET 15-105

To: Federal Communications Commission
From: Corina Lopez, Vice-Chair, National League of Cities – Information Technology and Communications Committee & San Leandro, CA City Council Member (District 5)
Date: March 9, 2018
RE: Use of LTE-U in the 5 GHz band

Background

The FCC has approved LTE-U for deployment. This technology will operate in the 5 GHz unlicensed spectrum, the same as Wi-Fi technology. To date, LTE-U's coexistence with Wi-Fi technology has never been fully tested through an independent, unbiased body. The City of San Leandro joins other municipalities, including New York City, in voicing concern about the potentially negative impact a large-scale deployment of LTE-U could have on public Wi-Fi systems.

Technical Details

The gold standard in wireless coexistence strategies has been "Listen-Before-Talk." In practice, this means that devices first sense their environment before broadcasting transmissions of their own (e.g., determine which channels are in use on the spectrum at that moment, or identify if transmissions are currently occurring from other devices, etc.). LTE-U departs from this approach by utilizing a technique called Carrier Sense Adaptive Transmission (CSAT, a/k/a "duty cycling"). With duty-cycling, an LTE-U device will turn "off/on" based on a predetermined programmatic interval and will attempt, among other things, to align its cycle with its closest Wi-Fi neighbor. In this manner, other transmissions (e.g., Wi-Fi) can then take place in the periods where the LTE-U signal is "off."

The problem with this technique is that while an LTE-U device may align itself well with one nearby Wi-Fi device, typical public Wi-Fi deployments (such as the public systems installed in San Leandro) include multiple Wi-Fi access points. This creates an open question as to how an LTE-U device will impact the Wi-Fi devices within its range that it *is not* aligned with. Furthermore, LTE-U devices will not wait for Wi-Fi transmissions to complete before beginning their next "on" cycle. In either of these scenarios, an LTE-U device could begin transmitting data *at the same time* as a nearby Wi-Fi device, thus causing degradation in the quality and strength of the Wi-Fi signal. Herein lies the concern.

The City of San Leandro's Position

The City of San Leandro has made significant financial and organizational investments in the deployment of Wi-Fi in numerous public spaces throughout our community. Our system is currently active in our downtown area and community centers, and there are plans to expand it to local City parks and other public gathering places. These systems provide residents, businesses, and visitors with free, high-speed wireless Internet service and serve as an attraction, economic development tool, and public service for low-income residents caught in the digital divide. The City's concern is that LTE-U, if deployed in the public right-of-way alongside our Wi-Fi system, could harm our Wi-Fi network.

The FCC's decision to grant approval for LTE-U deployments feels premature, given that to date there has been no independent testing completed to ascertain the true impacts of LTE-U on Wi-Fi, particularly when both systems are deployed side-by-side in the public right-of-way. Without a more cautious, balanced approach to LTE-U deployments, our concern is that cities like San Leandro could become embroiled in the ongoing disputes between Wi-Fi providers and cellular carriers & chip manufacturers.

For these reasons, I respectfully urge the FCC to take a more pro-active approach in its role as a neutral arbiter on this issue in order to achieve a balanced resolution that benefits all stakeholders.