

# QC

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PHOTOS COURTESY OF MIAMI-DADE COUNTY COMMISSIONER ELAINE HIGGINS

## WIRELESS COMMUNICATIONS

# The New World of 5G

Connectivity and the cost of progress

by Michele Cohen Marill

In a smart city, autonomous trucks and cars may move in managed traffic flow along optimized routes. With augmented reality glasses, inspectors might see holograms describing the properties they visit. Water quality, air monitoring, energy use, parking fees, pothole repair – every function in a smart city has an added layer of efficiency.

Futuristic capabilities require the swift flow of data, which is why cities in Florida and around the country are vying to be among the first to obtain ultrafast 5G mobile communications.

However, progress comes with growing pains. Building a new information superhighway can be disruptive and sometimes even destructive.

5G installations in the right of way are referred to as small cell nodes: the radio frequency transmission equipment that is attached to new or existing utility poles and connected to a network of underground fiber optic cable. The signals travel through the cables to a hub (typically a cell tower), enabling global transmission. **Orlando** estimates telecommunications companies could install up to 25,000 new poles to support 5G antennas in the city.

“5G is the first new infrastructure system that’s been installed in the U.S. since the electrical grid,” said **Douglas Metzger**, **Orlando’s chief planner**.

Installing 5G infrastructure is not only a technology issue because it impacts the aesthetics and safety of the streetscape and rights of way. However, the Florida Legislature and Federal Communications Commission limit the permitting authority of local governments. By state law, cities and counties must allow 5G poles and equipment in the public rights of way without charge, and although they may set some design standards, local governments must approve or deny

most permits within 60 days of a telecommunication company’s application. (For details, see “What Cities Can’t Do About 5G,” p. 23.)

State and federal officials preempted local authority because they say they don’t want local governments to stand in the way of progress, said **Gary Resnick**, a **city commissioner** of **Wilton Manors**. An attorney specializing in telecommunications law, Resnick has helped draft local ordinances regarding 5G installations. “Cities have never stood in the way of advancements in telecommunications,” he noted. “The industry has to understand that cities have other interests, too, to make sure their residents are protected.”

## SEEKING BEAUTY AND BANDWIDTH

**Coral Gables** is a prime example of the delicate balance between the promise and potential pitfalls of 5G. Created in the 1920s as a lush “city beautiful,” Coral Gables aims to blend historic charm with high-tech functionality. The city’s real-time computer-generated dashboards already display traffic incidents, safety issues, waterway depth and air quality, among other sensor-enabled systems. Becoming 5G-ready would boost the city’s bandwidth and expand its capacity to connect devices and sensors in what’s known as “the Internet of Things.”

Coral Gables has an underground fiber optic network, but a recent incident highlights what can go wrong during efforts to upgrade that infrastructure. The city was in the middle of a \$23 million streetscape improvement project, with wide sidewalks along its Miracle Mile and a pedestrian plaza on another street, when a subcontractor doing fiber optic repair work destroyed some new Brazilian cobblestone pavers.

Fortunately, the tile could be replaced as part of the ongoing installation. But future damage would not be so easily repaired, said Coral Gables **Assistant City Manager Eduardo "Ed" Santamaria**. "Once these improvements go in, they are longtime investments," he said. "Once you cut into them, it's never the same."

Santamaria is a strong proponent of Coral Gables' Smart City Initiative, and he looks forward to the benefits of 5G connectivity. But he also wants to safeguard the aesthetic standards that have defined Coral Gables for almost a century. The city has created design standards for 5G equipment, and Santamaria hopes to open a dialogue with wireless carriers even before they apply for permits.

"We're trying to cooperate with carriers in a balanced manner so that we are meeting the needs of the carriers and the city's aesthetic quality," he said.

### 5G 'FREE FOR ALL'

Nearby, in the Miami district of Miami-Dade County, 5G installation came as a sudden and unwelcome surprise, said **Miami-Dade Commissioner Elaine Higgins**.

"We began to see holes in our sidewalks literally everywhere: up in front of art and public places, in front of historic structures, the entrance to an apartment building," she said. "The quality of the workmanship was just horrific."

As Super Bowl LIV was looming, which was touted as a debut of 5G, carriers rushed to install hardware on downtown streets. It felt like a free-for-all, Higgins said. "All I want is a slow, careful, considerate roll-out. That's not what we're getting. We're getting fierce competition for the best locations."

5G uses low voltage, high frequency radio waves – which create a very small coverage area, typically a tenth of a mile or less – to transmit data much faster than the existing 4G wireless network. However, those signals travel a shorter distance and are less able to penetrate barriers such as walls or trees. Instead of relying on cell towers transmitting signals for miles, 5G requires "small cell" antennas to be positioned near buildings and about two or three city blocks apart, or about every 300 or 500 feet.

Some cities prefer for carriers to "collocate" their antennas: to install their 5G equipment on existing utility poles or to

## What Cities Can't Do About 5G

- ▶ **Reject 5G.** Some people worry about the health effects of 5G radio frequency energy, but cities can't ban 5G service. That action is prohibited by the Federal Communications Commission. The FCC determined that 5G radio frequency exposure levels are safe.<sup>1</sup>
- ▶ **Delay the permitting process.** Under Florida law, cities have 14 days after an application is filed to request a change in the proposed location of equipment or poles and 30 days to negotiate that change. If they can't reach an agreement, the city must approve or deny the application within 90 days of its filing. Uncontested applications are deemed to be approved if the city fails to act within 60 days.<sup>2</sup>
- ▶ **Require companies to collocate equipment.** Cities cannot require carriers to put the equipment on a specific pole, to add the equipment to an existing pole or even to notify the public of the placement of equipment in the right of way, according to state law.<sup>2</sup>
- ▶ **Charge high fees for use of city property.** Carriers can access the public right of way free of charge. Fees to put 5G facilities on public poles cannot exceed \$150.<sup>2</sup>

## What Cities Can Do About 5G

- ▶ **Draft an ordinance with aesthetic standards that 5G companies must adhere to.** For example, cities may require poles to match existing poles or for equipment to be concealed.<sup>2</sup>
- ▶ **Deny unsafe placement of equipment.** Cities can deny a permit if poles would interfere with clear traffic sight lines or traffic control operations or would impede pedestrians in a way that violates the Americans with Disabilities Act.<sup>2</sup>
- ▶ **Maintain construction requirements.** For example, cities may require construction companies to have insurance and performance bonds and to follow codes regarding excavation and restoration of the right of way.<sup>3</sup>
- ▶ **Work collaboratively with carriers.** You may be able to offer a streamlined approach to permit approvals if the carriers agree in advance to certain design and location guidelines.<sup>4</sup>

### Sources

- <sup>1</sup> Federal Communications Commission. "Accelerating wireless and wireline broadband deployment by removing barriers to infrastructure investment." Effective January 14, 2019. [bit.ly/2uLu63p](https://www.fcc.gov/document/accelerating-wireless-and-wireline-broadband-deployment-by-removing-barriers-to-infrastructure-investment).
- <sup>2</sup> Florida Statutes, Chapter 2019-131. Signed by the governor on June 25, 2019. [laws.flrules.org/2019/131](https://www.flsenate.gov/legislation/statutes/html/amendments.htm#2019-131).
- <sup>3</sup> "Small cells/Big changes: What cities need to know about telecommunications." Florida League of Cities Annual Conference presentation. August 17, 2018. [bit.ly/2FNsM2h](https://www.flcities.org/~/media/Files/2018-2019/Small%20cells%20Big%20changes%20What%20cities%20need%20to%20know%20about%20telecommunications.pdf).
- <sup>4</sup> Douglas Metzger, chief planner, City of Orlando, personal interview.

share poles with their competitors. But state law prohibits them from requiring collocation. So, while Miami was focused on sprucing up its streetscape for Super Bowl visitors, the graffiti of utility markings appeared on sidewalks, and contractors dug up concrete to install poles, leaving hasty asphalt patches.

Miami's experience is a cautionary tale for other municipalities, said Higgins. "The quantity of construction that is going on in the right of way is unlike anything I've ever seen before, and it's coming to a town near you."

Higgins has gained assurances that some poles will be moved or replaced after the Super Bowl to improve the aesthetics. The county is developing design standards.

**COLLABORATION WITH CARRIERS**

Other cities are trying to get ahead of the 5G gold rush by setting standards for the type of poles that can be used. For areas that need special aesthetics, such as downtown plazas, parks or historic districts, they seek collaborative agreements with carriers and their representatives related to design.

"Make sure you have used every tool allowable to the city in the law to ensure the look and feel of your city, as much as you can, stays the same," advised **Amber Hughes, senior legislative advocate for the Florida League of Cities**, which has filed a limited lawsuit against the state related to the use of municipal property.

Orlando is working with the Orlando Utilities Commission to conduct a study of the optimal small cell equipment configuration in the city's densest areas. The city has adopted specific design requirements for areas, such as downtown, that blend small cell installations into their surroundings.

Small cell equipment, which is typically placed on or near small cell poles, is to be camouflaged. For example, in downtown Orlando, some of the small cell equipment cabinets are concealed in black trash can containers.

Creating a plan for the overall configuration of nodes has enabled Orlando to streamline the permitting process, said Metzger. Yet even with that planning, problems arise. "Craftsmanship matters," he said. "The quality of the installation is just as important as the documents we approved."

The city has asked wireless providers to fix crooked antennas or other haphazard installation. "Those kinds of things can be



small and annoying, but good craftsmanship is often the difference between seen and not seen," Metzger said.

While cities have limited power over the process, carriers aim for swift approval of the installation. They are often willing to work with city officials to ensure a smooth process. One application called for a pole directly in front of Orlando's City Hall. City officials collaborated with the wireless provider to re-configure and locate the small cell node so the equipment and pole would be less obtrusive.

"We have developed good relationships with the wireless providers," said Metzger. "They understand that the city wants their technology, but they also understand we want it to blend with our city aesthetics."

One other wrinkle: The Florida Department of Transportation, which controls many of the major roadways in the heart of cities, isn't covered by the state restrictions and provides permits for equipment placed along state roads. Once again, cities rely on goodwill and collaboration to maintain their aesthetic requirements.

**5G BENEFITS YET TO COME**

So far, most of the new infrastructure has been enhancing 4G connectivity, but not delivering the super-fast 5G service. 5G-enabled phones are just beginning to hit the market. That lag in 5G availability means city officials are more likely to hear about installation problems than awe over its capabilities.

"We have not seen a single person come to City Council and say, 'I want faster 5G service right now,'" said **Keith Wilkins, city administrator of Pensacola**. "I'm sure people will love the speed and all that, but there's not been a positive lobby on this stuff."

The City Council did hear from residents who were upset by unsightly poles. Pensacola officials are working with carriers to improve the aesthetics, and they have lobbied for changes in state law to restore some local authority.

In time, cities will experience the benefits of 5G as it enables a new lifestyle, most city leaders agree. "If you want to be able to stream [the equivalent of] 'Game of Thrones' in your autonomous car while being driven home at the end of the day, then you want 5G," said Metzger.

Michele Cohen Marill is a freelance writer. **QC**

**Resources**

Florida League of Cities. "Wireless deployment (5G) resources." [flcities.com/wireless-deployment-\(5g\)](http://flcities.com/wireless-deployment-(5g)).

National League of Cities. "Small cell wireless technology in cities." [nlc.org/resource/small-cell-wireless-technology-in-cities](http://nlc.org/resource/small-cell-wireless-technology-in-cities).