

Raycap

State of Play: How Small Cell
Concealment can Assist Municipalities
and Utilities in Fast-Tracking
5G Deployments



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yours thrive.®*



Over the past year, the United States has made great strides in expanding 5G connectivity across the country; with all the leading carriers outlining ambitious plans to extend coverage to more cities and metropolitan areas.

The 5G rollout gathers pace

While there is optimism about the potential of 5G to enrich people's everyday lives and empower businesses, some municipalities are concerned about the pace of the rollout and the impact it may have at a local level. Indeed, municipal authorities and utilities are beginning to exert increasing influence over the location and aesthetic form, fit and function of the small cell sites required to reach the level of network densification that will facilitate 5G coverage at a local level.

Looking at news stories from around the country, it becomes evident that municipalities, utilities, carriers and their partners are now exploring options for deployment, including concealing small cell sites and co-locating equipment from multiple carriers within them. Raycap is ready to help with a range of 5G mmWave small cell concealment and integration solutions to help these stakeholders find the optimal solutions for their particular deployments.

Residents generally accept 5G

Aesthetics has emerged as a significant point of contention for both city authorities and resident groups. That said, there is growing support for 5G installations, as long as the small cell sites blend into the environment and retain the historic character of neighborhoods and surrounding buildings.

Indeed, a recent analysis by Axiom, which drew upon a PWC survey of 800+ respondents, found that residents are generally in favor of 5G small cell sites.¹ This support is mainly due to the benefits of enhanced data download speeds and connectivity that 5G mmWave networks will bring. That said, the support is contingent on residents' concerns about how small cell sites look, and where they are located, being addressed. Interestingly, the same research found that residents are opposed to small cell sites being installed in front of their own homes, but that they had no issue with the sites obscuring their neighbors' yards.

Architectural and historic preservation is a vital issue too. Municipalities and residents are concerned that the future proliferation of 5G small cell sites may potentially change the physical character of their towns and cities. This has led to indecision from some local authorities. For instance, in September 2019, the City of New Orleans was reported to be undecided about how to incorporate 5G small cell nodes in the city's historic French Quarter.² In line with some other municipalities, it was proposed that 5G mmWave radios and their associated antenna systems could be concealed within existing streetlights. That is just one viable solution, however, and other concealment options for 5G small cell sites are now available as well.

Proven concealment solutions

With potentially one or more 5G small cell sites set to be installed on every street, municipalities are rightly concerned about the visual impact. That's a lot of electronics being installed and maintained in plain sight. Yet for some time, municipalities have been told that 5G millimeter wave signals are degraded when they pass through most materials and that 5G radios can't be concealed.

That's not the case anymore, as Raycap now offers InvisiWave®, a unique 5G mmWave material that can conceal 5G radios while minimizing loss of signal strength. The groundbreaking concealment material has been tested and approved for use at the mmWave frequencies commonly used for 5G networks and, crucially, is entirely backwards compatible with widely used frequencies for 4G and earlier technologies.

The InvisiWave material can be used in pole toppers, surrounds and radomes on pole configurations, as well as panels in other concealments like side-mounted shrouds mounted on buildings. It is fabricated with a smooth, hydrophobic surface and has the durability to stand up to environmental extremes. What's more, it can be painted to match the existing architecture.

With InvisiWave, municipalities have more latitude in deciding where and how to use concealment. This streamlines the process of defining regulations and procedures that speed up deployment of 5G networks while maintaining control over the urban aesthetic environment. With an eye towards future developments, familiar and convenient pole-mounted enclosures from Raycap are available for 5G mmWave nodes.

Municipalities are rolling out 5G guidelines

With increasing awareness about options for mitigating aesthetic impacts, municipalities are moving ahead with policies to regulate the deployment of 5G small cells on their streets and buildings.

While the FCC's 2018 Wireless Infrastructure Order did restrict some local control,³ it also allows municipalities to adopt policies that set aesthetic regulations. For instance, officials in Winchester, Massachusetts recently sought to implement aesthetic regulations for the 5G small cell facilities in the town.⁴ These sought to address issues like color, placement, concealment of cables and wires and landscaping requirements.

Elsewhere, some local authorities, such as the City of Virginia Beach, Virginia, have released very detailed design guidelines for small cell infrastructure.⁵ The main takeaways are that these types of guidelines specify that new poles cannot be placed within close proximity of mature trees and that historic buildings should not be considered as appropriate host sites. With an eye towards future deployments, they also encourage carriers to co-locate their equipment in the same small cell site; wherever possible.

A recently installed small cell pole features an InvisiWave radome concealment for 5G mmWave radio/antennas, and a side mounted equipment shroud.



Existing street poles are seen as viable sites

Given their ubiquity, existing streetlight poles are seen as a “backbone” for 5G mmWave small cell deployment and have been identified by some municipalities as the ideal home for 5G small cell wireless facilities.

For instance, authorities in Northwest Arkansas indicated they would prefer equipment installations on existing poles or easements along roadways.⁶ This emerged after concerns were expressed about the potential for new small cell poles to interfere with traffic signals or cause blind spots for drivers.

However, utilities such as Xcel and Southern Company have raised concerns about the viability of installing small cell transmitters within existing street poles and questioned their structural stability and the associated risk of street lights falling over.⁷

In any case, future success requires that small cell sites that can accommodate multiple carriers. In line with this, Raycap designed new generation small cell street poles, toppers and shrouds to meet 5G rollout requirements and support municipality efforts to build a smart and attractive city. Raycap small cell poles combine and conceal all the electronics needed for 5G wireless networks as well as accommodating lighting, monitoring and other functions. Raycap sells them to integration partners who install radios, antennas and other active equipment. All that is needed then is to set the pole on the foundation and hook up the feed lines for power and fiber.



Small cell poles are staged for integration at one of Raycap's three USA production facilities.

Unique solutions

Municipalities now have an increasing number of options to integrate small cell sites within new or existing lighting poles. Crucially, where co-location is required or deemed preferable, Raycap offers proven steel poles, toppers and cage shrouds that can accommodate multiple tenants.



Customization is another crucial facet of 5G small cell concealment, particularly in areas where the installations need to blend in with existing environments seamlessly. In these instances, custom-made mounts, shrouds and enclosures to conceal or partially conceal equipment on existing metal or wooden poles are among the range of choices. Raycap offers these types of engineered solutions that can also integrate its other technologies, such as InvisiWave and Strikesorb® surge protection devices, to provide municipalities with complete solutions for custom shrouds, street furniture and electrical protection of network infrastructure equipment.

Conclusion

As solutions are emerging to help municipalities move ahead with 5G policies and deployments, municipalities are beginning to work together with utilities, carriers and tower companies to define approaches that work for everyone. For many 5G sites, concealment will be one of the primary considerations, and Raycap is an ideal partner and information resource to help all key stakeholders find the right balance of performance and aesthetics.

Talk to Raycap about its 5G small cell solutions that include AC power protection.

Contact us today at info@raycap.com

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