



5G, Fiber, and Broadband: Opportunities for Your Community

5G: COMING TO A POLE NEAR YOU

Introduction

Electric utilities are receiving hundreds of pole attachment applications from wireless carriers and infrastructure companies for small cell antennas and radios. This session provides a basic understanding of the technology, its equipment and steps to ensure worker safety.



HOW DID WE GET HERE: THE EVOLUTION OF 5G

1G; **The “Brick”**

- The first analog cell phones enter the world

2G; **Blackberry**

- New features like SMS and voicemail come to mobile handsets

3G; **Web Browsing, Photos**

- Higher data transfer rates enable mobile web browsing, image sharing and GPS location-tracking

4G; **The Facetime, Uber**

- Broadband delivers deep web functionality to our smartphones



5G: FAST, FAST & FASTER

- Download speeds of >2 Gbps measured on mobile device speed tests
- VZ offering 2 Gbps fixed wireless to the home in some markets



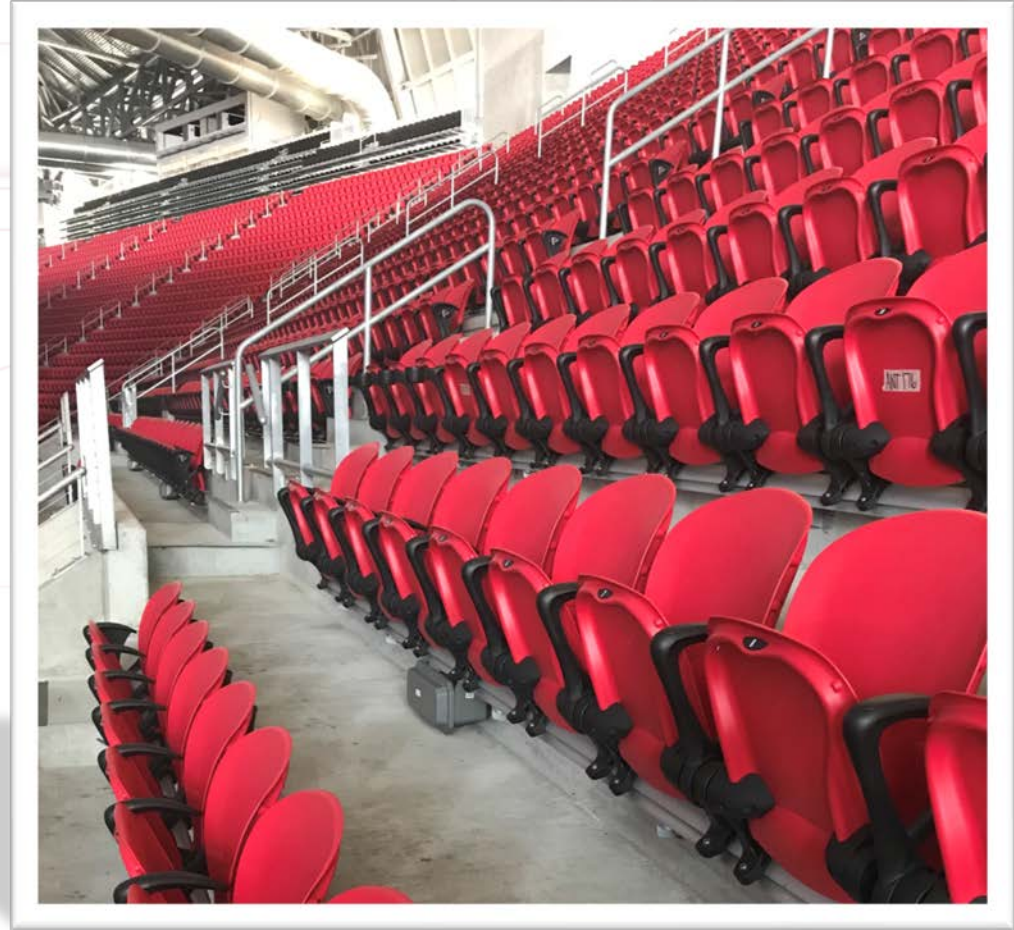
5G REQUIRES COMPATIBLE DEVICES

- Samsung, LG and Motorola make the only available mobile 5G devices



BENEFITS OF 5G MOBILE

- Stream 4k movies with no buffering
- Video chat in HD with near zero lag time
- Flash loading - downloads in seconds vs. minutes
- Responsive gaming
- Available in 13 NFL stadiums



5G DELIVERS FUTURE TECHNOLOGIES

- 5G Promises faster download speeds and more network capacity
- Self-driving cars, smart cities, telemedicine and immersive education



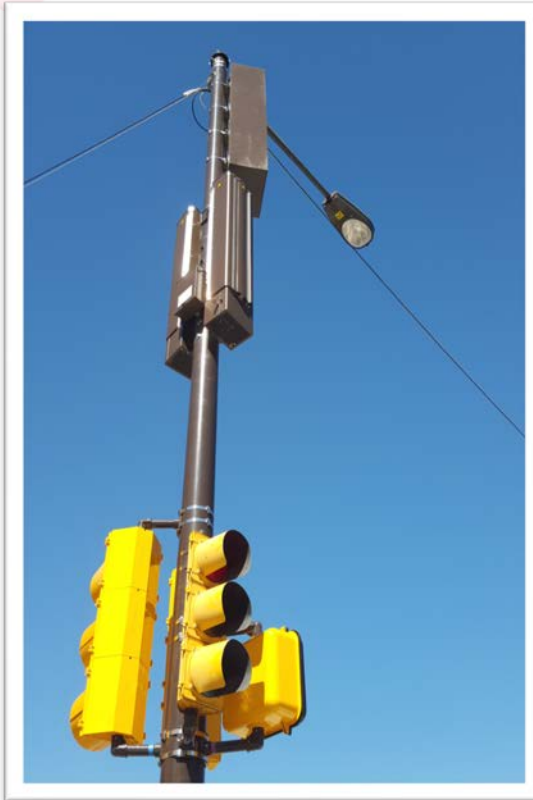
Q: WHY POLE ATTACHMENTS?

A: CAPACITY & COVERAGE

- 5G provides enhanced capacity, but shorter wave lengths means smaller coverage areas and more sites



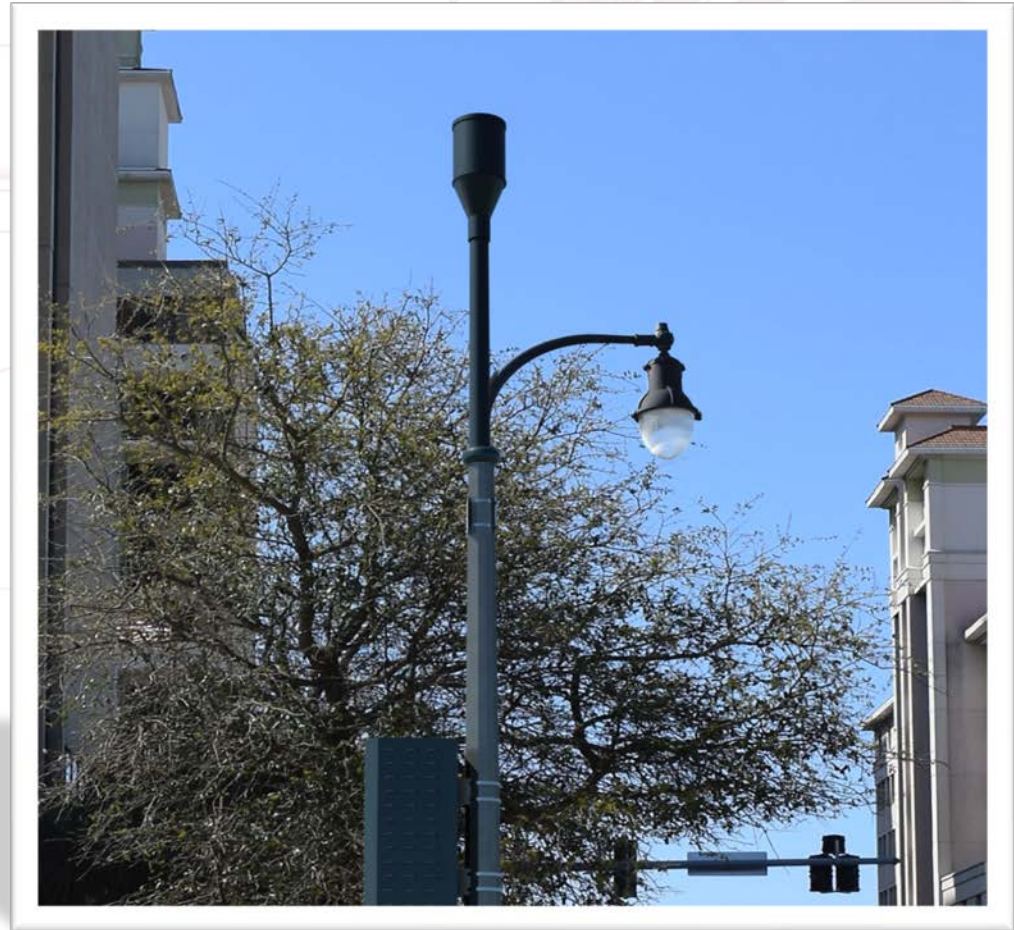
EXAMPLES OF ANTENNA ATTACHMENTS



AESTHETICS

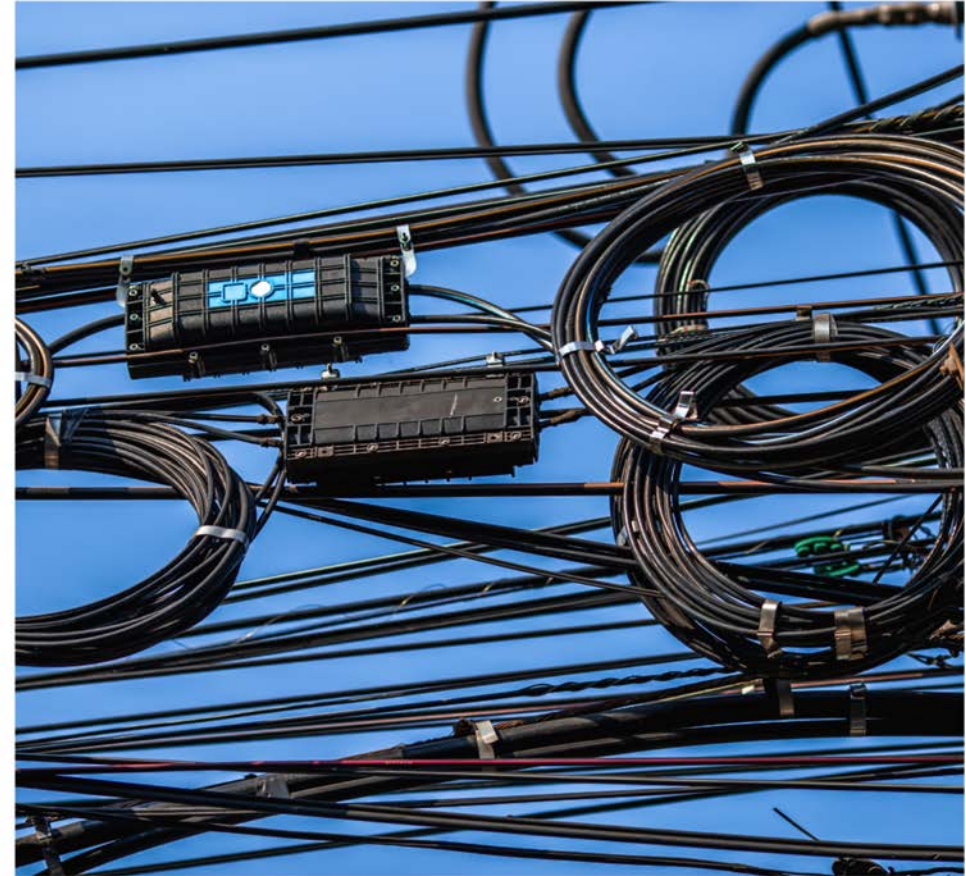
Aesthetics requirements must be:

- Reasonable
- No more burdensome than those applied to other types of infrastructure deployments
- Published in advance



POWER AND BACKHAUL

- Each small cell requires fiber and 100A, 120/240v electrical service



REQUIRED SIGNAGE

Notice:

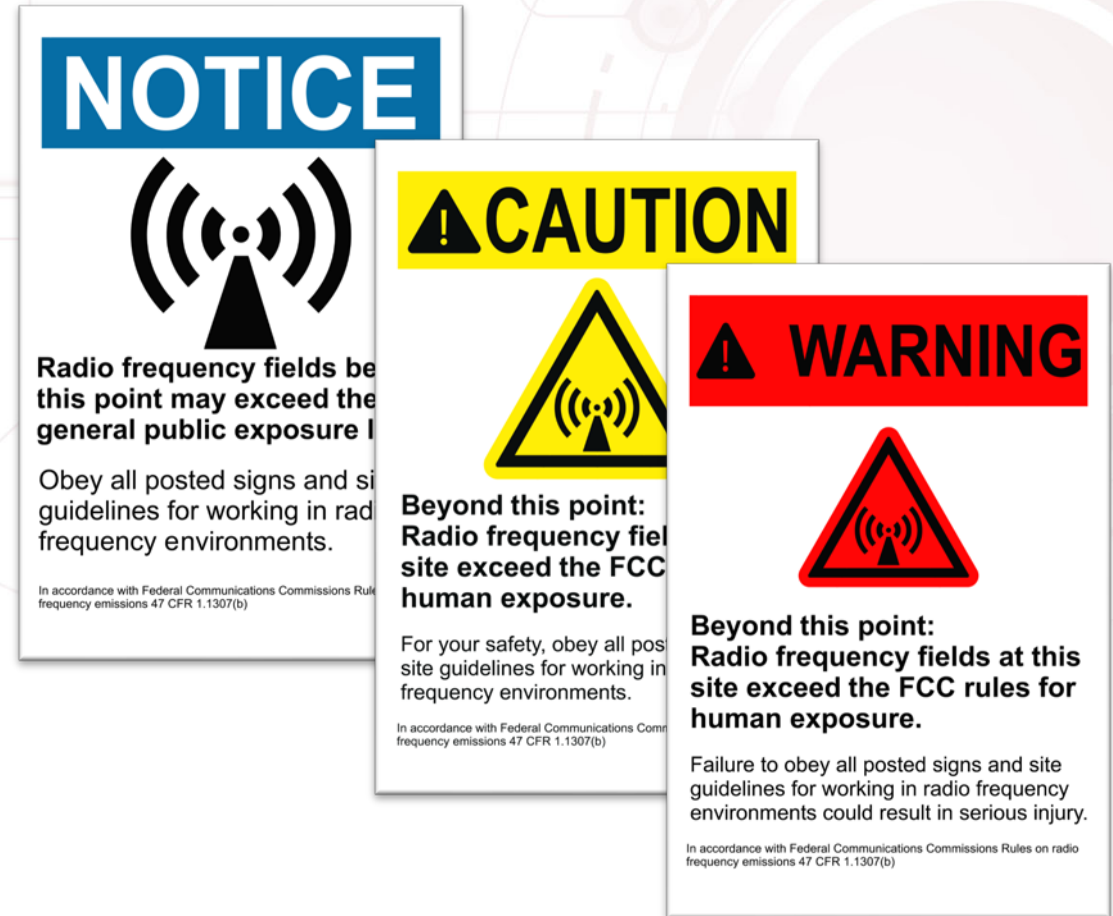
- Levels may exceed General Population MPE limits

Caution:

- Level may exceed Occupational MPE limits

Warning:

- Levels exceed 10x the Occupational MPE limits



ENSURING A SAFE WORKING ENVIRONMENT

- Require RF exposure studies on all antenna installations
- Provide RF safety training
- Equip employees and vendors with RF safety equipment
- Update safety procedures for RF





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