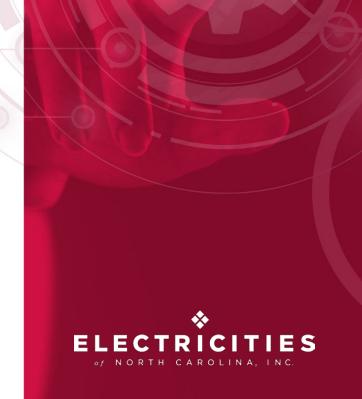


5G, Fiber, and Broadband: Opportunities for Your Community



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



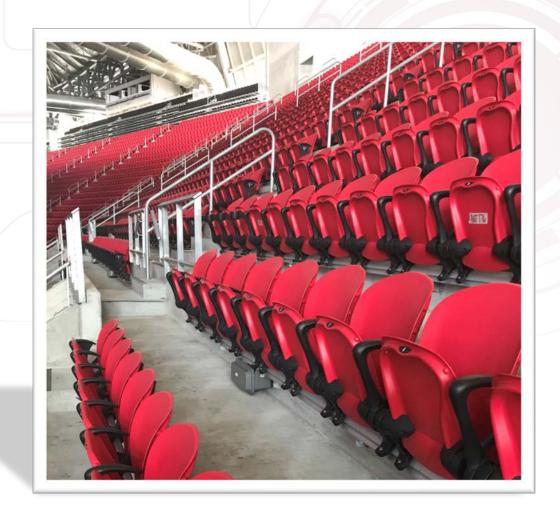
5G REQUIRES COMPATIBLE DEVICES

• 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





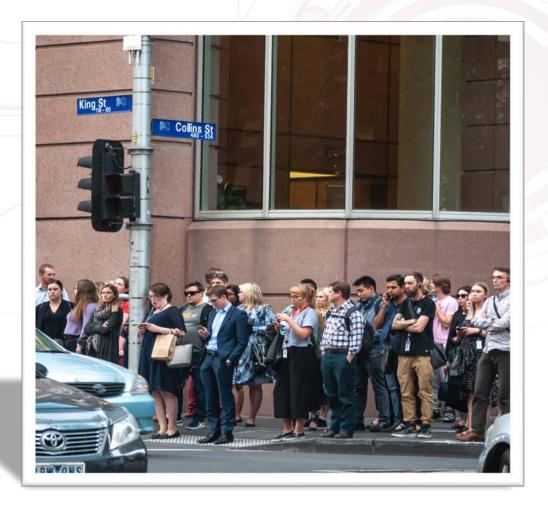




Q: WHY POLE ATTACHMENTS?

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

NOTICE



Radio frequency fields be this point may exceed the general public exposure I

Obey all posted signs and si guidelines for working in rad frequency environments.

In accordance with Federal Communications Commissions Ru frequency emissions 47 CFR 1.1307(b)

ACAUTION



Beyond this point: Radio frequency fiel site exceed the FCC human exposure.

For your safety, obey all pos site guidelines for working in frequency environments.

In accordance with Federal Communications Comfrequency emissions 47 CFR 1.1307(b)





Beyond this point: Radio frequency fields at this site exceed the FCC rules for human exposure.

Failure to obey all posted signs and site guidelines for working in radio frequency environments could result in serious injury.

n accordance with Federal Communications Commissions Rules on radio

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











The energy behind public power

www.waterfordconsultants.com

FOLLOW US ON SOCIAL MEDIA:



@Waterford411



/company/waterford-consultants