Committee on Right of Way, Utilities and Outdoor Advertising Control 2019 Annual Meeting

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Small Cell Equipment in DOT Rights-of-Ways
The world is at the cusp of the next industrial revolution.

The revolution will be driven by the deployment of 5G technologies.

5G will enable the successful deployment of autonomous vehicles, IoT (Internet of Things), and ultimately Smart Cities/Communities/Environments.

In order to effectively deploy 5G, the wireless industry has developed the ‘small cell’ concept.
The Race Has Begun

• Currently the wireless industry is racing to deploy the small cell infrastructure that will be required to support 5G; fiber and antenna locations.

• CTIA estimates that by 2026 there will be over 800,000 new 5G small cell installations deployed nationwide.

• The wireless industry is targeting utility poles and streetlights in the public rights-of-ways.
What We Know Today…

- Technology is changing exponentially.
- The wireless industry knows very little about public rights-of-ways.
- New technologies will not exist without wireless infrastructure; antenna locations and fiber!
Macro vs. Small Cell

• Macro - Umbrella Coverage
  - Traditional towers and roof top installations
  - Ground mounted equipment
  - Signal covers large geographic area
  - Provides overlay network; emergency power backup

• Small Cells - Capacity
  - New smaller installations less than 50’
  - Pole mounted equipment preferred
  - Closer to customer, thus smaller footprint
  - Capacity offload for network; no emergency power backup
Macro / Small Cell Network

Diagram showing the relationship between macro towers and small cells within a network.
Macro Monopole
DOT Streetlight
Small Cells

- **Specifications:**
  - Height - less than 50’.
  - Equipment - less than 28 cubic feet.
  - Antennas - each antenna less than 9 cubic feet.

- **Equipment Overview:**
  - **Antennas** – Broadcasts the wireless signal.
  - **Equipment Cabinets** – Radios.
  - **Coaxial Cables** – Provides connectivity from the radio equipment to the antennas.
  - **Fiber Demarcation** - Connectivity to the network.
  - **Power** - Disconnect and meter.
Why Public Rights-of-Ways?

- Close to the customers; businesses, residents, and vehicular traffic.
- Similar types of installations.
- Numerous collocation opportunities.
- Access to fiber and power.
FCC Rulings and Orders

- **FCC Order 11-50 (April 7, 2011):**
  - Wireless guidelines for attachments to utility poles.
  - Established review timelines and fees.
- **FCC Ruling (September 27, 2018):**
  - Application Review:
    - 60 days for collocations.
    - 90 days for new structures.
  - Application Fees:
    - Collocations- $500 per application, up to five locations, and $100 for each beyond five.
    - New Pole- $1,000 per application.
    - “or” cost based, “reasonable approximation of costs”.
  - Reoccurring Fee:
    - $270 per year for both collocation or new pole.
    - “or” cost based, “reasonable approximation of costs”. 
State Legislation- Virginia

- **2017- SB1282**:  
  - Small cell collocations on existing structures in the rights-of-ways.  
    - Rights-of-way permit processes; timelines and fees.  
    - Zoning processes; timelines and fees.

- **2018- HB1258**:  
  - New small cell structures in the rights-of-ways.  
    - Zoning processes; timelines and fees.

- **2018- SB823**:  
  - Fees for new structures in VDOT rights-of-ways.  
    - $1,000/year for 50’ or less.
It is estimated that antennas points (small cells) will be required along every 500’ to 1000’ of highway right of ways for the deployment of 5G to support autonomous vehicles.
Opportunities

- Design guidelines based on best practices.
- Look for common goals.
- Create efficient application processes.
- Reinforce RF safety guidelines for workers.
Design Guidelines

Best Practices:

• Preserve the safety of highway systems.

• Protect the integrity of DOT’s greatest asset - ROWs.

• Encourage the development and deployment of future technologies.
Common Goals

- **Identify potential shared resources:**
  - Poles: Lighting, cameras, ITS devices.
  - Conduits.
  - Fiber.
  - Advancements in new technologies.
Application Considerations

- Creation of efficient processes that leverage asset management technology.

- Applicant to perform 99% of work:
  - Impact to local communities? (Zoning?)
  - Impact of proposed frequencies on ITS?
  - Compliance with FCC regulations?
Compliance with FCC Regulations

- Worker safety is paramount!
- Protects DSRC enabled devices.
Ultimate Benefits

- Education
- Health Care
- Transportation
- Public Safety
- Job Creation
- Economic Development
Conclusion

We are not building an infrastructure for what we know today, but for future technologies that will truly surprise us.
Questions

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