

UPDATE: CELLULAR AND FIBER IN THE RIGHT OF WAY

JOSHUA BRODER, CEO, TILSON



ABOUT ME/TILSON

Interest disclosure –

- CEO @ Tilson now, recovering network engineer and right of way access and network densification junky
- ~550 employees, 23 offices (three in NE)
- Consulting for agencies, finance and industry
- Deployment for power companies, broadband providers, cellular, public safety – 5G push
- Affiliate that provides pole ownership as a service, CLEC nationally
- WIA and NATE members (workforce development advocacy)



CHANGING NETWORKS

LTE densification

- Macro offload
- Localized capacity

Deeper spectrum with 4.5G and 5G

- CBRS and LAA
- Very high and very low band

Infrastructure for 5G

- **Dense fronthaul fiber**
- Clear path for street level colocation and new poles
- Power



What's driving small cells in 4G?



**What's driving small cells
in 5G?**

**Mobility coverage for the
big guys**

**Fix wireless for broadband
– competitive with
fiber/cable**



Why do we care about an unregulated business?

- Largest driver of fiber deployment
- Dense deployments of 4G provides broadband that is getting close to cable performance
- 5G provides broadband with fiber like speeds
- Pole attachment is regulated (federal and state frameworks)
- Other users are seeking third party attachment – municipal fiber providers, WISPs, etc. in the wake of loosening attachment regulation
- Regulatory drivers to tighten up pole attachment AND loosen it up, polarity





IF 5G ROW COLOCATION WERE A MICHAEL BAY MOVIE...

What carriers want is hard

- Speed
- Scale
- Cost
- Power and space where there is none

The conditions are hard

- Community needs
- Incumbent utility needs
- History

Just like the Stan – hostile landlords, difficult power

5G and 4G



4G antenna

5G antenna and radio

Power service weather head for both 4G & 5G



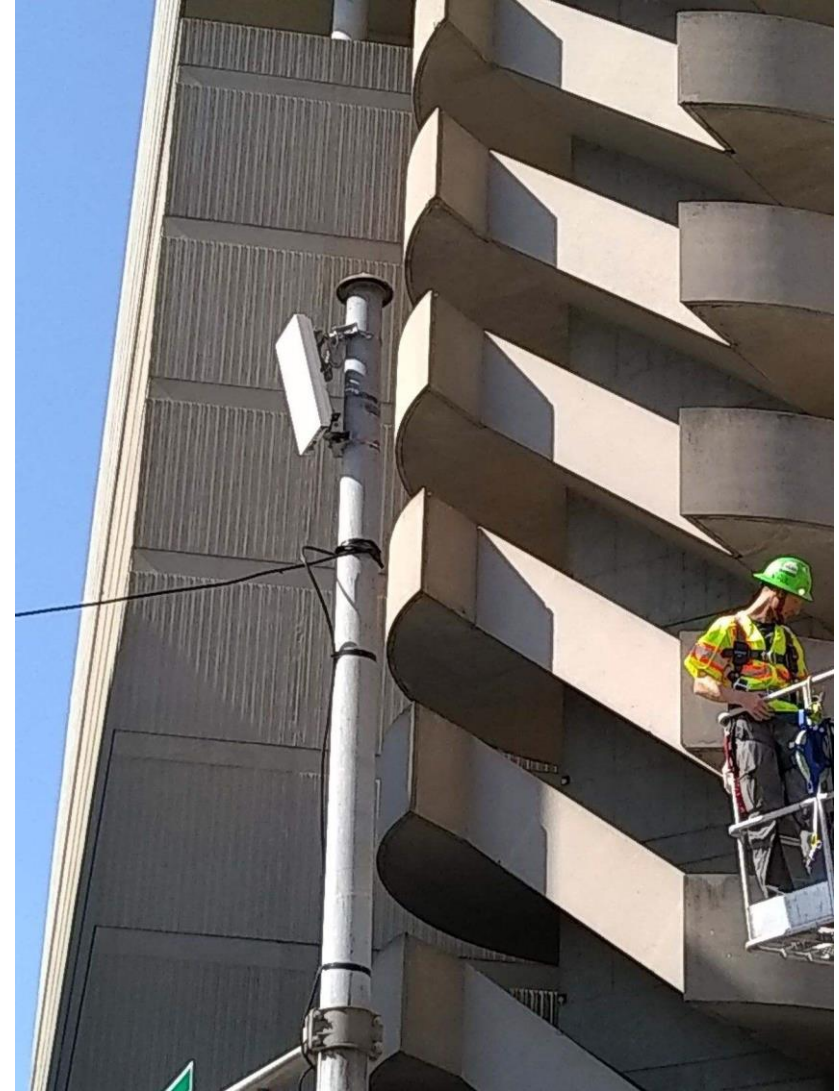
4G antenna

5G antenna and radio

4G enclosure

Power service for both LTE & 5G

5G SOLO



STREET OPENING

- Primary cost in underground fiber deployment in New England is pavement restoration, pavement restoration standards vary widely by municipality
- Pole attachment timeframes can drive projects underground
- Costs associated with that restoration vary from \$10-\$250 per foot of fiber installed depending on municipal standard
- Most costly/deployment inhibiting standards are:
 - Curb to curb restoration
 - Concrete restoration when micro trenching no available
- Micro trenching standards not available or permissive in some communities
- Inhibits deployment of fiber



CASE STUDY: JERSEY SHORE

- 22 Sites in one municipality
- 4 are WiFi only for an ISP
- 18 are high power LTE for cellular carrier + WiFi for ISP
- Poles owned by Tilson's CLEC
- ILEC owns the fiber that feeds the cellular carrier and ISP
- Smart Cities tech – already purchased by city, potentially to be implemented on same sites
- 5G will go on these sites – providing faster broadband than WiFi, more 5G sites needed than current 4G footprint



PROLIFERATION OF POLES

- Attachment standards more restrictive than code for various reasons
- Cluttered OSP
- Drives need for new pole placement
- Rise of infrastructure providers
- 5G use case accelerating the process

Pole Condition	PECO (Exelon)	JCP&L PennPower (First Energy)	PSE&G	ACE (Exelon)
Transformers	X	X	X	X
Regulators	X	X	X	X
Reclosers	X	X	X	
Switches	X	X	X	X
Capacitors	X	X	X	X
Primary Meters	X	X	X	
Terminal Poles	X	X	X	
Cutouts/Disconnects	X			
Lightning Arrestors	X			
Primary Power			X	
Multiple Primary Circuits	X			
Junction poles	X	X		
Primary Risers	X		X	
Fiber Splice Closers	X			
Cabinets	X			
Cable TV Power Packs	X		X	X
Inaccessible by bucket truck	X		X	
Secondary Risers	X		X	X
Structural Repairs		X	X	X
Boxed Poles		X		
Congested Poles			X	X
Cross Arms		X		
Traffic Control Equipment			X	
Open Wire Primary				X





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