



## *Wireless broadband, small cells and 5G*

Kevin Curtin, AT&T Georgia

Bob Davis, Verizon





Georgians are rapidly abandoning landlines in favor of mobile phones making reliable wireless connectivity at home an important consideration for home buyers and renters.

- >50% of Georgia households have moved away from landlines and are wireless-only.
- The average North American home had 14.7 connected devices in Q2 2016.
- 67% of Americans moving to a new community rank reliable wireless as more of a must-have than good schools (65%) and affordable housing (60%).

**Our Georgia communities are increasingly turning to wireless networks and mobile technology to operate smarter and more efficiently.**



# The Way Georgia Communicates is Changing...

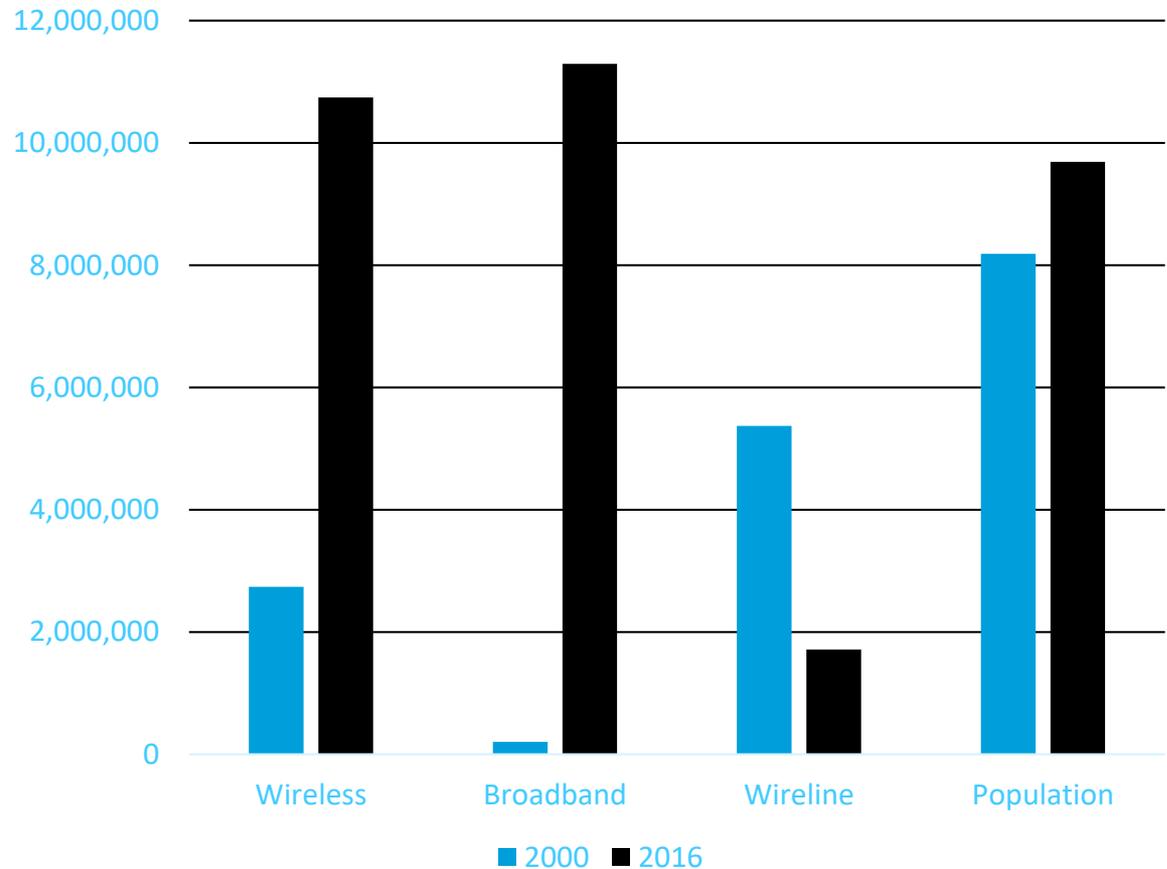
From 2000-2016,  
Georgia has seen:

292% increase in wireless  
phone subscribers<sup>1</sup>

5,440% increase in broadband  
subscribers<sup>2</sup>

68% decrease in switched  
access lines<sup>3</sup>

18% increase in population<sup>4</sup>



<sup>1</sup> FCC Local Competition Report May 2001 (as of 12/31/00), Table 9; FCC Voice Telephone Services Report February 2018 (as of 12/31/16), Supplemental Table 1.

<sup>2</sup> FCC High-Speed Services for Internet Access: Status as of December 2000 (Table 7); FCC Internet Access Service Report February 2018 (as of 12/31/16) \*Connections/lines over 200 Kbps.

<sup>3</sup> FCC Local Competition Report May 2001 (as of 12/31/00), FCC Voice Telephone Services Report April 2017 (as of 06/30/16), Supplemental Table 1.

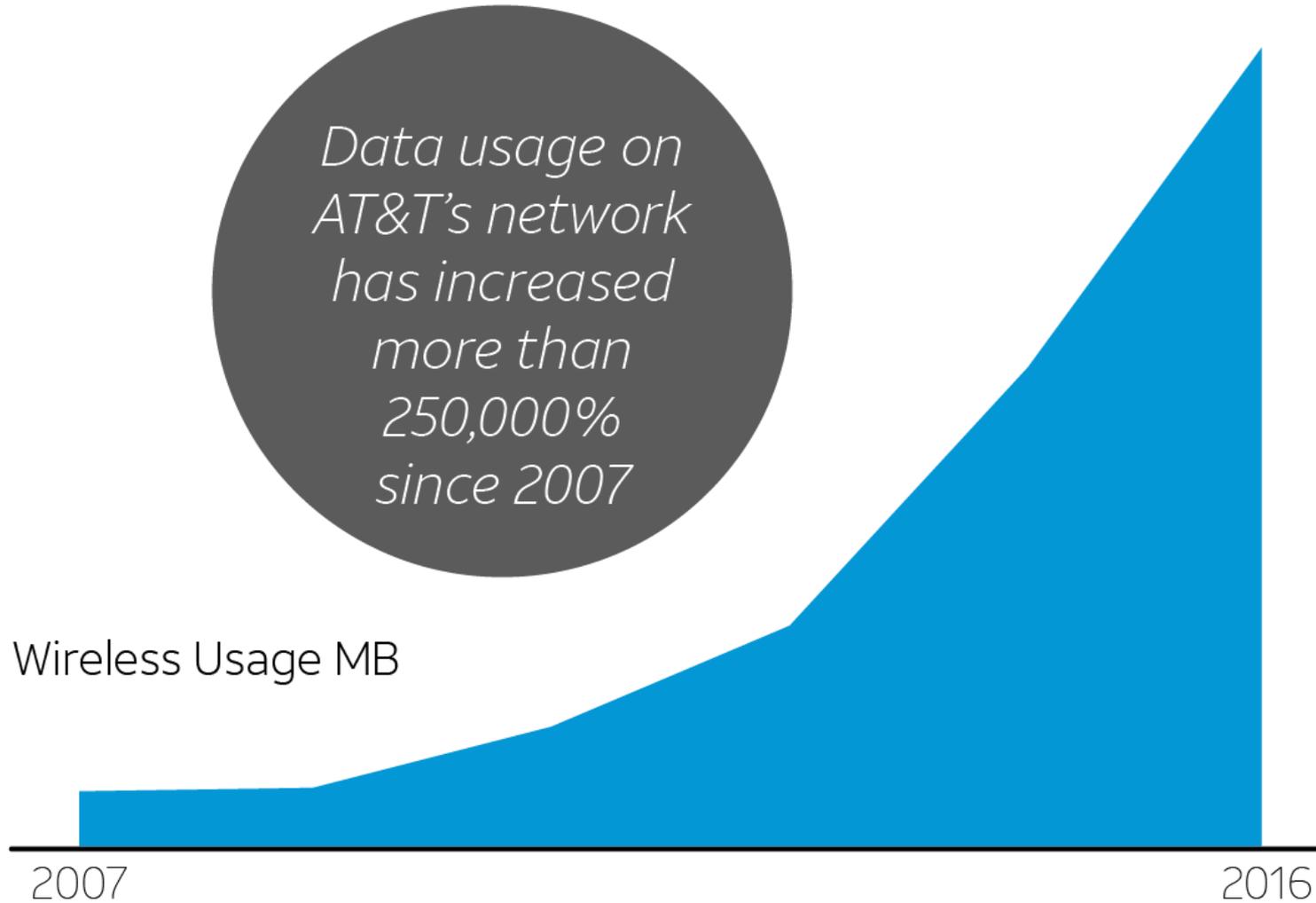
<sup>4</sup> U.S. Census Bureau Quick Facts 2016 (July 1) Estimate Nevada; U.S. Census Bureau Nevada 2000.



# Consumer and business demand for wireless data is on the rise.

*Data usage on AT&T's network has increased more than 250,000% since 2007*

Wireless Usage MB



# Why Small Cells?

- To support rapid increases in data usage and mobile applications;
- To handle the growing number of new connected devices in the marketplace;
- To build the infrastructure for 5G mobile broadband technology; and,
- To position Georgia as a leader in connectivity and help ensure the state has the 21<sup>st</sup> century infrastructure needed to remain the #1 state to do business.

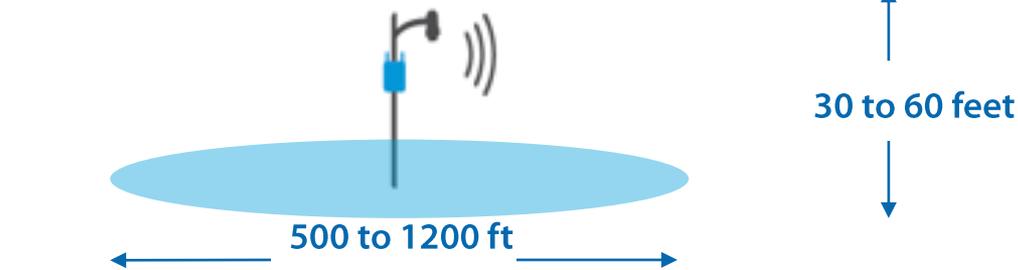


# The footprint, or service area, of a site is determined by height and frequency band.



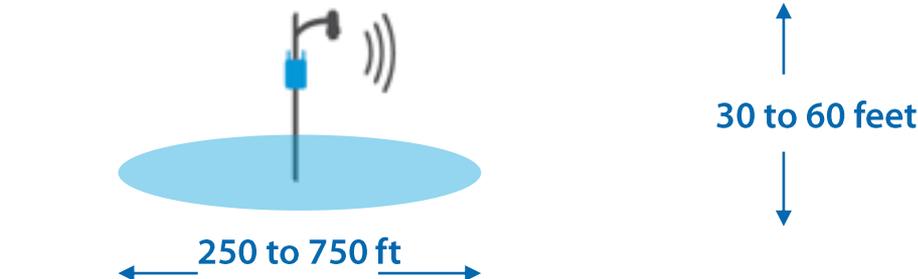
## Macrocell (4G LTE)

*The common form factor for wireless communication. Higher height and lower frequencies used result in the larger service area.*



## Current Small Cell (4G LTE)

*Uses the same frequencies as macrocells, in addition to utilizing unlicensed spectrum. Due to lower height, footprint is smaller. Increases capacity or coverage in target areas.*



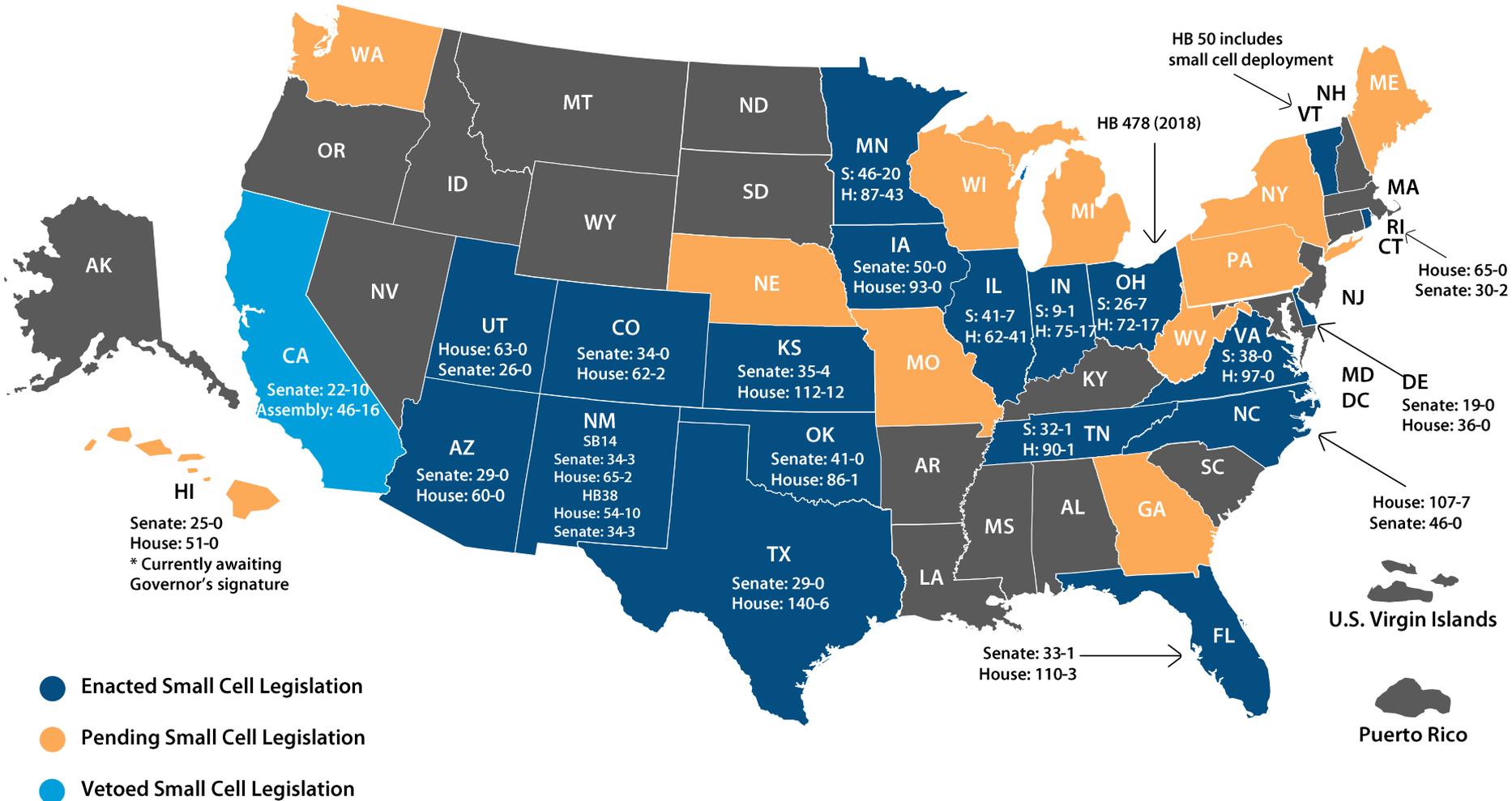
## Future Small Cell (5G)

*Very high frequencies enabled by future 5G technology result in smaller footprint, but can be used in future 5G in order to meet the exponential increased capacity demand. These frequencies are not used for wireless service today.*

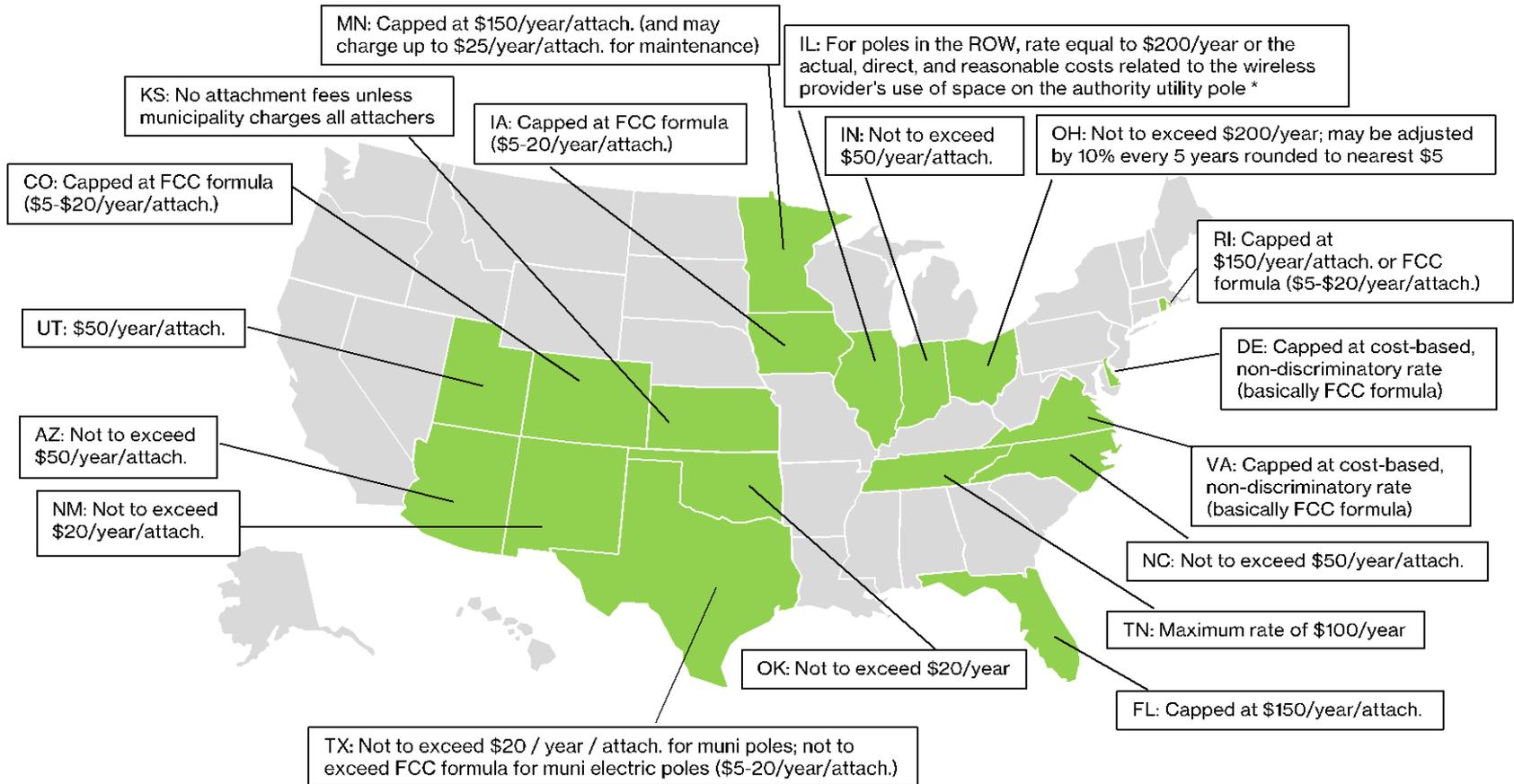
- Heights and service areas are approximations
- Small cell sites supplement vs. replace macrocell sites



# Small Cell Legislative: Bipartisan Issue



# Small cell laws across our nation: attachment rates



\* Illinois data does not include the City of Chicago.



# Why is small cell legislation needed in Georgia?

## Small Cell Challenges – Highlights: COUNTY EXAMPLES

### Cobb County – (inability to deploy in County & high fees)

- Timeline Issues:
  - A 6 month delay between when AT&T reluctantly agreed to terms of Master Agreement and when it was signed and effective by Cobb County
    - Feb 17 (AT&T signed County agreement) to June 17 (Agreement signed by Commission Chair)
- Issues:
  - To date, 0 small cells by AT&T have been deployed due to:
    - County will not allow AT&T to attach to County facilities after multiple meetings and applications.
      - AT&T tried to attach to traffic signal poles and roadway directional signs.
      - AT&T is not allowed to place new poles at all within the County because the County determined they need more practice with the agreement process.
      - AT&T offered to place new poles with street lights and give them to the County, but they refused.
- Fees:
  - \$900 yr/node for attachments on third party poles
  - \$1200 yr/node for attachments on county owned poles/facilities

### Gwinnett County – (length of time to deploy and invest)

- Timeline Issues:
  - AT&T inquired about the small cell process in February 2017.
  - After many inquiries, in May 2017, the County stated they would provide Master Agreement for review and signature.
  - In September 2017, AT&T received the County draft MLA and provided feedback.
  - Between October and November, 2 calls occurred between AT&T and County to discuss MLA.
  - 1 year since initial small cell discussions with Gwinnett County to begin investing and still no agreement in place.
- Proposed Fees:
  - \$1350 yr/node for new pole placements
  - \$500 yr/node for attachments on 3rd party poles
  - \$500 yr/node for additional carriers that collocate on a pole

# Why is small cell legislation needed in Georgia?

## Small Cell Challenges – Highlights: MUNICIPAL EXAMPLES

### Atlanta- (excessively high fees)

- City passed an ordinance in June 2017.
  - Fees:
    - \$7,712 for the installation of a new wooden pole in public ROW.
    - \$16, 212 for the installation of a new metal pole in public ROW.
    - \$432 for placement of small cell on a third party pole in ROW.
    - \$1,400 initial fee for placement of small cell on city owned pole, with an \$800 annual fee after.

### Marietta – (burdensome ordinance & high fees)

- City passed an ordinance in January 2018.
- Issues
  - Ordinance limits placement of small cells in city's most populated downtown areas.
  - Ordinance includes "Antennas shall not be perceptible by average person from 250 away."
  - Ordinance includes small cells are "not permitted on poles with traffic lights or poles that sign poles" and small cells "shall not be permitted at signalized intersections of the City-owned Rights of Way."
- Fees:
  - \$250 yr/node annually for 3rd party poles, plus \$200 yr/node for "Annual Right of Way mitigation fee"
  - \$900 yr/node for attachments on city owned facilities.

### Brookhaven – (excessively high fees)

- Fees:
  - \$1,500 yr/node for existing 3rd party owned poles · \$500 yr/node for each collocated node on existing 3rd party pole.
  - \$5000 yr/node for attachments on newly place poles · \$1000 yr/node for attachments collocated on newly place poles.
  - \$5000 yr/node for attachments on city owned poles/infrastructure · \$1500 yr/node for attachments collocated on city owned poles/infrastructure.
- Issues:
  - AT&T initially reached out to Brookhaven in early 2017, and draft Ordinance was just sent to AT&T in February 2018.

# Little Rock – a city embracing innovation

## Little Rock:



- Enacted ordinance facilitating efficient small cell deployments, supporting denser networks and faster data speeds:
  - Created a “permitted use” standard, which takes the review of a small cell application to a maximum of 60 days;
  - Approved a simple 2 page permitting form that can be used for up to 25 small cells; and,
  - Established a reasonable, 1 time permitting rate of \$100 per 5 small cells and \$50 per each additional small cell with recurring \$20 annual fee.

As a result, AT&T is scheduled to efficiently meet the 2018 small cell build plan close to 100 nodes.

# Examples of Small Cells deployed in our communities



# Driving Job Growth and Economic Development

- Ongoing advancements in wireless technology are crucial pieces of the economic development puzzle.
- Over the next 7 years, Accenture estimates telecom operators are expected to invest about \$275 billion in infrastructure, creating up to 3 million jobs.

In Georgia cities, Smart City technology and 5G investments are expected to have the following economic impact:

## Atlanta

Pop: 456,002  
Jobs: 4,256  
GDP growth: \$694M  
Network investment: \$375M  
Smart Grid & Transportation: \$263.21M

## Albany

Pop: 73,801  
Jobs: 689  
GDP growth: \$112M  
Network investment: \$61M  
Smart Grid & Transportation: \$42.6M

## Athens

Pop: 123,371  
Jobs: 1,152  
GDP growth: \$188M  
Network investment: \$101M  
Smart Grid & Transportation: \$71.21M

## Blue Ridge

Pop: 1,391  
Jobs: 13  
GDP Growth: \$2M  
Network investment: \$1M  
Smart Grid & Transportation: \$0.42M

## Augusta

Pop: 197,081  
Jobs: 1,840  
GDP growth: \$300M  
Network investment: \$162M  
Smart Grid & Transportation: \$113.76M

## Columbus

Pop: 197,485  
Jobs: 1,843  
GDP growth: \$301M  
Network investment: \$162M  
Smart Grid & Transportation: \$113.99M

## Dahlonega

Pop: 6,437  
Jobs: 60  
GDP Growth: \$10M  
Network investment: \$5M  
Smart Grid & Transportation: \$1.92M

## Dublin

Pop: 16,104  
Jobs: 150  
GDP growth: \$25M  
Network investment: \$13M  
Smart Grid & Transportation: \$4.81M

## Macon-Bibb

Pop: 152,555  
Jobs: 1,424  
GDP growth: \$232M  
Network investment: \$125M  
Smart Grid & Transportation: \$88.06M

## Gainesville

Population: 40,000  
Jobs: 373  
GDP Growth: \$61M  
Network investment: \$33M  
Smart Grid & Transportation: \$11.96M

## Rome

Pop: 36,407  
Jobs: 340  
GDP growth: \$55M  
Network investment: \$30M  
Smart Grid & Transportation: \$10.88M

## Savannah

Pop: 146,763  
Jobs: 1,370  
GDP growth: \$223M  
Network investment: \$121M  
Smart Grid & Transportation: \$84.71M

## Snellville

Pop: 19,738  
Jobs: 184  
GDP Growth: \$30M  
Network investment: \$16M  
Smart Grid & Transportation: \$5.9M

Low cost, multi-gigabit speeds

# OVER POWER LINES

Requires no direct  
electrical connection  
to the power line

Can run over  
variety of  
spectrum types

Delivers ultra-fast  
wireless connection to  
homes, businesses &  
devices

Delivers last-mile  
access without new  
fiber-to-the-home

Regenerates mmWave  
signals through plastic  
antennas and devices

Flexible enough to be  
configured with  
distributed antenna  
systems

# Where there are power lines, there can be broadband



No need to build new towers. No need to bury new cables in the ground. Easier to deploy than fiber.

Experimenting with multiple ways to send modulated radio signals alongside medium-voltage power lines. It doesn't transmit through power wires.

Empower and extend other access technologies, like 4G LTE and 5G.



Plastic antennas and other devices can mean low hardware and deployment costs, while maintaining the highest signal quality.

Technology can be a repeater as well as a distributor of the signal. So where there's power, there will be fronthaul and backhaul.

Georgia is site of only AirGig trial in the U.S., with AT&T collaborating with Georgia Power.

# Innovation on the Horizon: AirGig



[https://www.youtube.com/watch?v=ZF09OWzv\\_pw](https://www.youtube.com/watch?v=ZF09OWzv_pw)

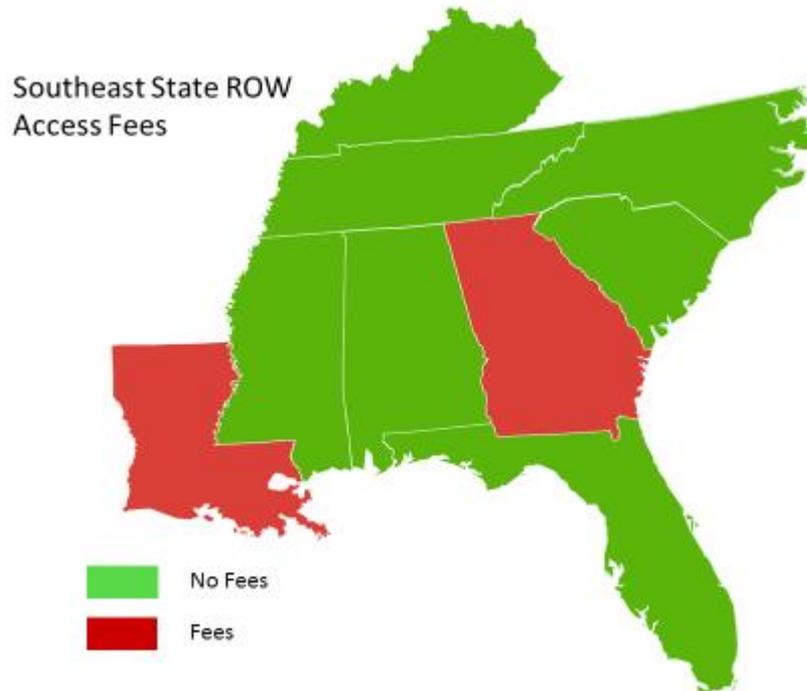
# Existing Infrastructure in Georgia's ROWs

Local governments, law enforcement agencies, electric, telephone, cable, and other companies currently attach infrastructure to utility poles.



# Georgia's ROW Laws Needs to Be Modernized

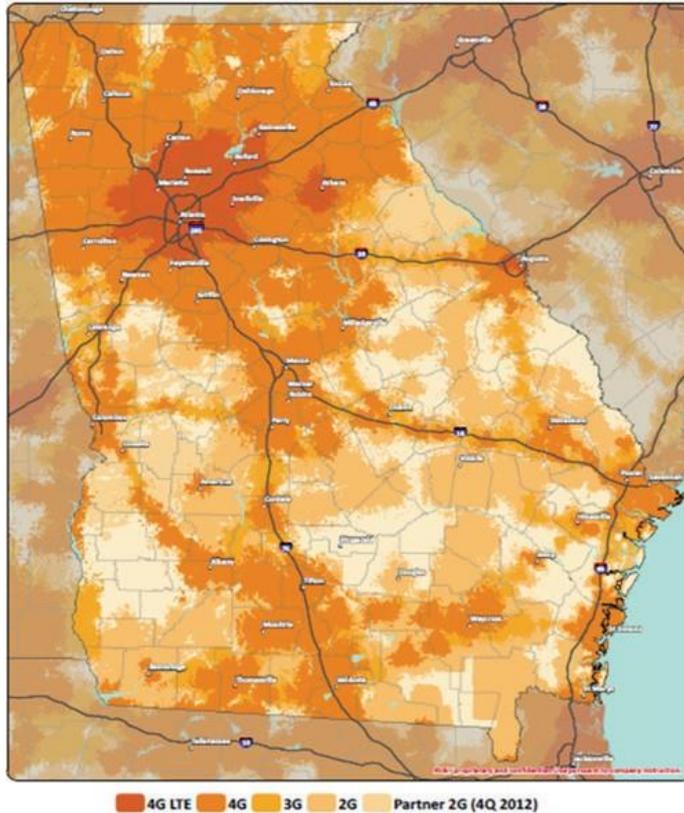
- 35 states with no fees assessed for State Right-of-Way access – Georgia is not one of them.



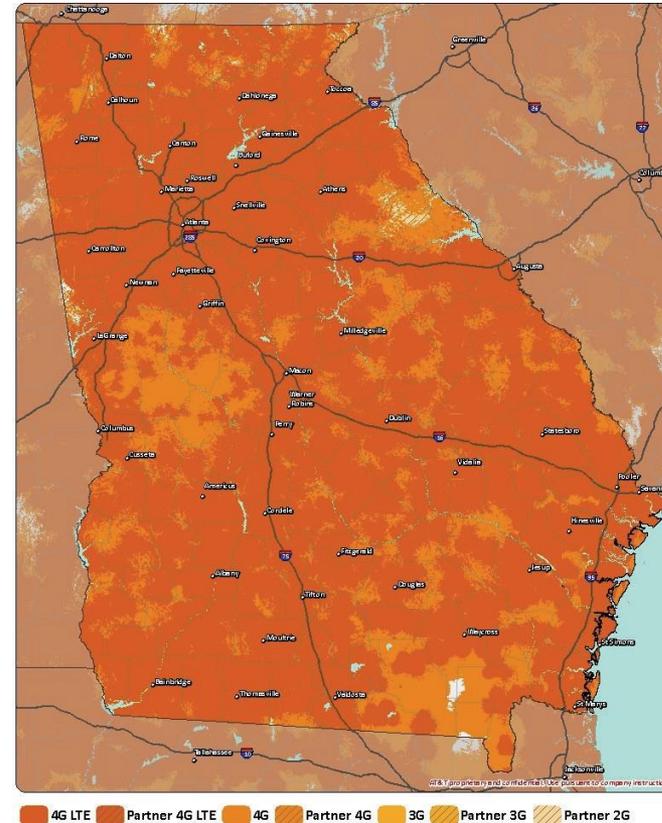
- Current Georgia telecom ROW statute was designed for traditional telephone service. Broadband only deployments are very costly in cities: between \$1,000 - \$5,000 per linear mile per year (O.C.G.A. 46-5-1).
- Unlike laws for wired telecom and cable/video providers (O.C.G.A. 36-76-1), there is no current statewide wireless ROW statute.

# With reasonable policies, wireless networks can thrive.

EOY 2012



EOY 2016



In 2014, the General Assembly passed the Mobile BILD Act (HB 176) that lowered financial barriers and streamlined and standardized aspects of cell tower siting.

The maps illustrate investment and enhanced statewide coverage spurred, in part, by HB 176. Similarly, statewide legislation will lower financial barriers and streamline and standardize aspects of small cell siting, which will encourage investment and improve wireless experiences in Georgia today and for years to come.



**AT&T**