

A decorative graphic on the left side of the slide consisting of numerous thin, curved lines in various colors (red, blue, green, purple, orange) that originate from the top left and fan out towards the bottom right, mimicking the look of fiber optic cables.

# Fiber Deployment 5G and What's Next?

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President and CEO

Fiber Broadband Association

# Agenda:

- **About the Fiber Broadband Association**
- **Fiber Deployment is on the Rise**
- **Why Fiber?**
- **What's Next?**
- **Regulatory, Policy Issues and Research**



# About the Fiber Broadband Association

## Our Mission

The Fiber Broadband Association's mission is to accelerate deployment of all-fiber access networks by demonstrating how fiber-enabled applications and solutions create value for network operators and their customers, promote economic development and enhance quality of life.

## Our Vision

To be the voice for ultra high-speed wireline broadband deployment throughout the Americas.



# About the Fiber Broadband Association



- **Fiber Broadband Starter Kit & Workshop** for companies, organizations, communities to learn how to build **all-fiber networks**.
- **Thought Leadership** on all things fiber through our **Optics** online magazine.
- **Collaborate** with industry allies to propel fiber deployment forward for a **broadband future** here and around the **globe**.
- **Connect** vendors, manufacturers, contractors, network operators, engineering firms and all contributors to fiber deployment **-the Fiberverse**.
- **Remove barriers** to deployment while supporting pro-fiber policies in all forums.



# Fiber Broadband Association: Chapters, Committees & Groups



❖ Fiber Council Global Alliance (Europe, Asia, MENA, Africa)

❖ Chapters and Affiliates

- Fiber Broadband Association – LATAM
- Fiber Optics Sensing Association

❖ Committees

- Public Policy Committee
- Conference Planning Committee
- Technology Committee
- Marketing Committee

❖ Groups

- Deployment Specialist Working Group
- Canadian Policy Committee
- Women in Fiber



# Fiber Deployment is on the Rise

## United States

- **41 Million** Homes Marketed
- **17%** Growth over 2018
- **18.6 Million** Homes Connected

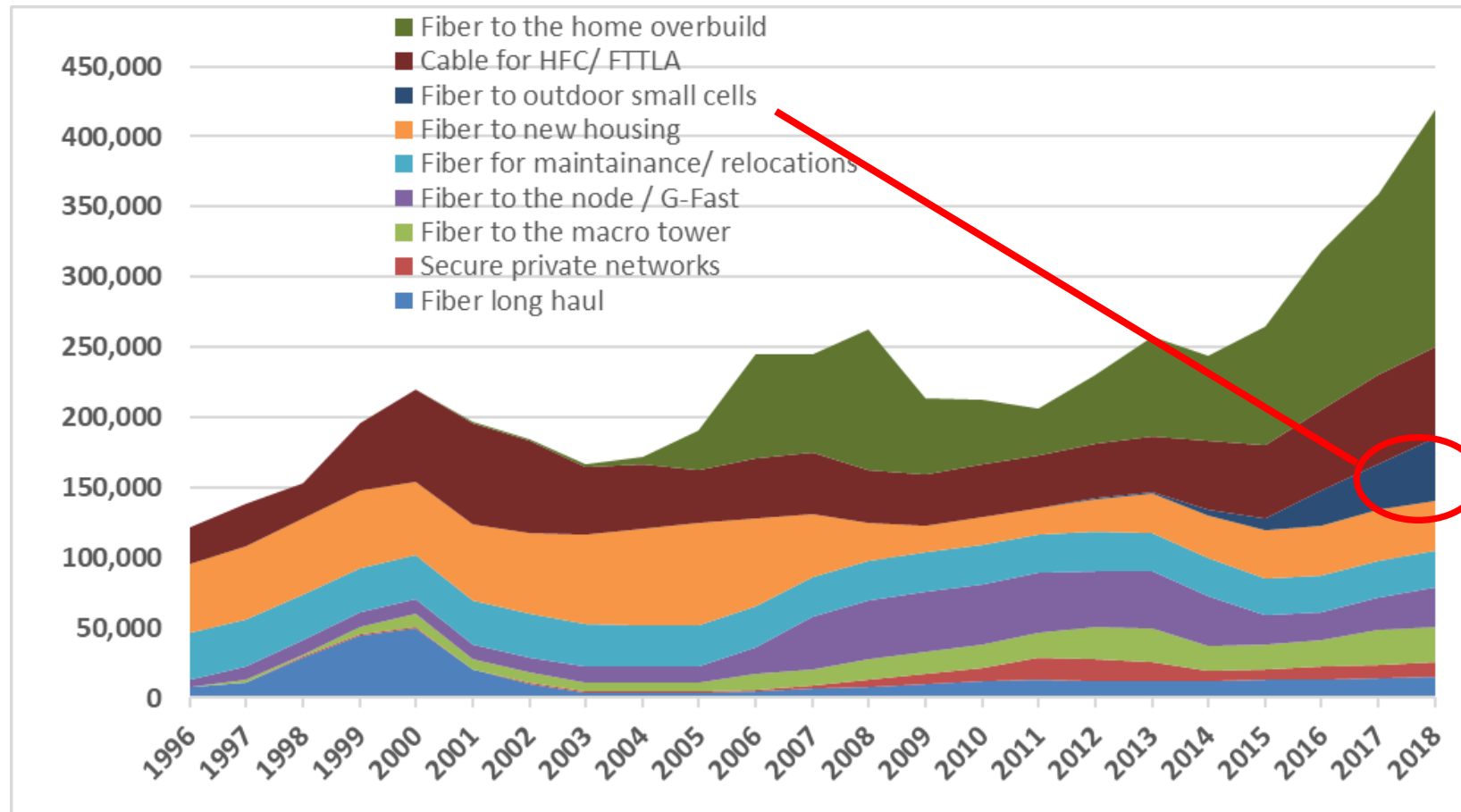
## North America

- **59.9 Million** Homes Marketed
- **22% Growth** in 2017
- **23.8 Million** Homes Connected



# Total Fiber Deployment Is At Record Levels – And Small Cell Is Just Starting

## RVA Ongoing Analysis



Reviewing fiber route miles, i.e. the number of linear miles fiber is deployed overhead or underground – whether single or multiple fiber strands/ lines.

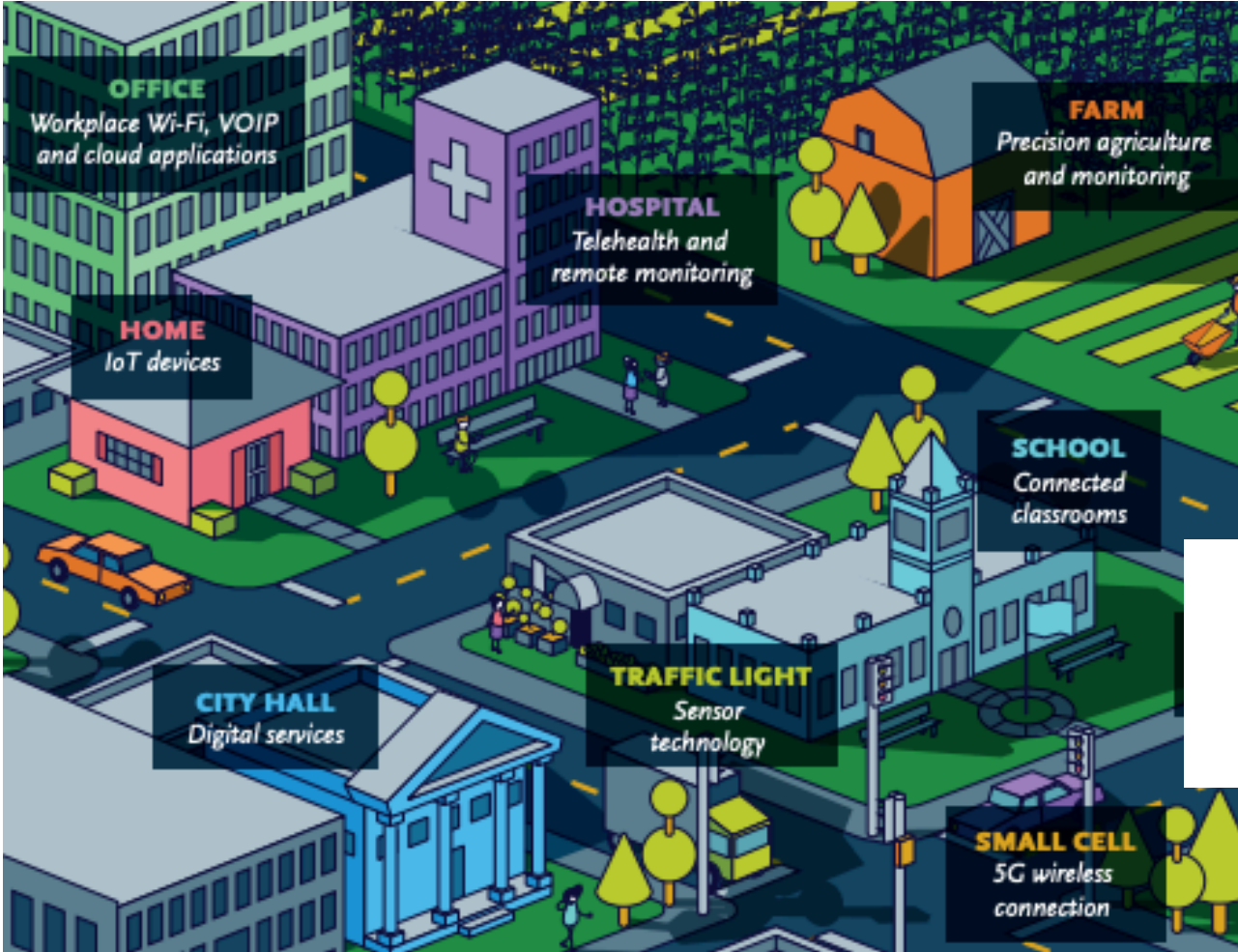
# Fiber Adds To Home Value

## RVA Consumer Study May 2016





# Why Fiber? 5G



\* Source: Qualcomm



# Why Fiber? 5G Use Cases

Femto  
cell

Micro  
cell

Pico  
cell

Metro  
cell

## Use Cases Demand 5G

Enhanced Mobile Broadband-capacity/speed  
Low Latency-gaming and autonomous vehicle  
Massive machine to machine communication  
Many IOT Devices

## Fronthaul/Backhaul/Midhaul

More fiber needed with 5G architecture.  
Fronthaul – computing/processing in centralized place. Backhaul – transmit information to final destination.

## Wireless Growth Demands Fiber

To meet 5G/wireless demands: estimated 1.4 million miles of fiber needed in top 25 US metros. A \$150-180 billion investment in the US in new fiber over 5-7 years.



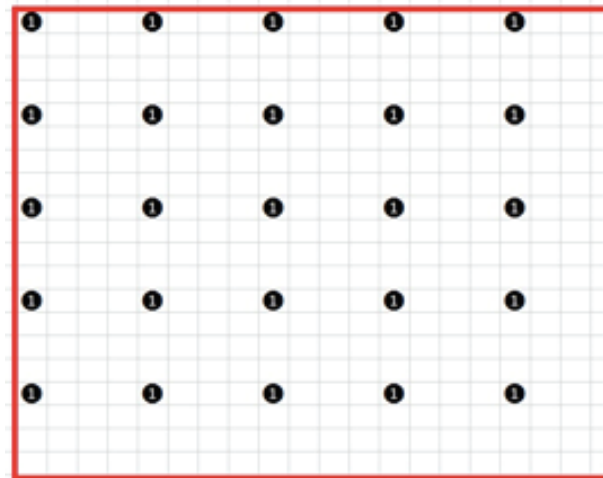
# Why Fiber? 5G Densification

*To go to 4G requires 25X more fiber*

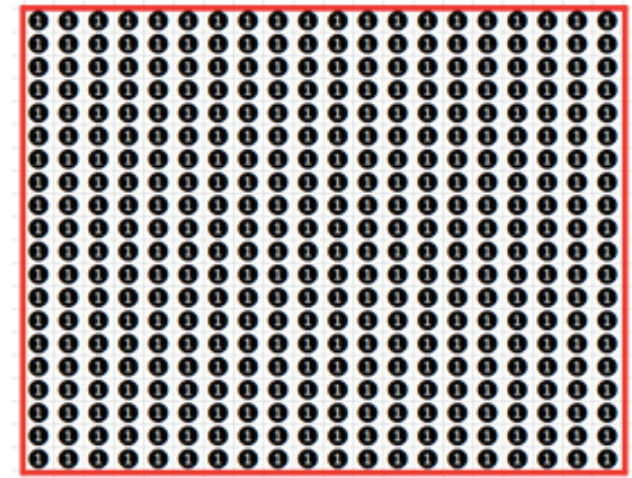
*To go to 5G requires at least 16X more fiber*



3G  
1 site every 10 km  
Cell density=1 cell/100 km<sup>2</sup>



4G  
1 site every 2km  
Cell density= 5 x 5  
= 25 cells/100 km<sup>2</sup>



5G  
1 site for every 0.5 km  
Cell density= 20 x 20  
= 400 cells



# Why Fiber? Smart Cities

## Smart Grid

### Energy Efficiency



EPB in Chattanooga built out a fiber network to reliably manage its energy and electrical systems

## Smart Health

### Healthier Cities



Hiawatha Broadband in Minnesota piloting project to use its fiber as a platform for home monitoring of patients with dementia

## Sensor Network

### Civic IoT



US Ignite and cities around the U.S. (and the world) are developing a smart city app store predicated on big bandwidth

## Smart Mobility

### Safer Streets



Verizon and the City of Boston are using sensors and advanced traffic signal controls to measure traffic, improve safety

## City Wi-Fi

### Connected Community



Santa Monica City Net provides fiber-supported Wi-Fi to its residents in public places



# Why Fiber? Smart Cities

According to 2018 research from RVA, LLC:

## Fiber Cities are more likely to be Smart Cities

- Cities with fiber have, on average, **37% more deployed small cells** and just **over 35% more smart city applications**
- **33% of cities without fiber** report small cell activity, versus **60% of cities with fiber** to the residence



# Why Fiber? Smart Homes

Modern homes require a huge amount of bandwidth—**more than 100 MBPS!**—and fiber broadband offers the fastest, most reliable connections.



# What's Next?

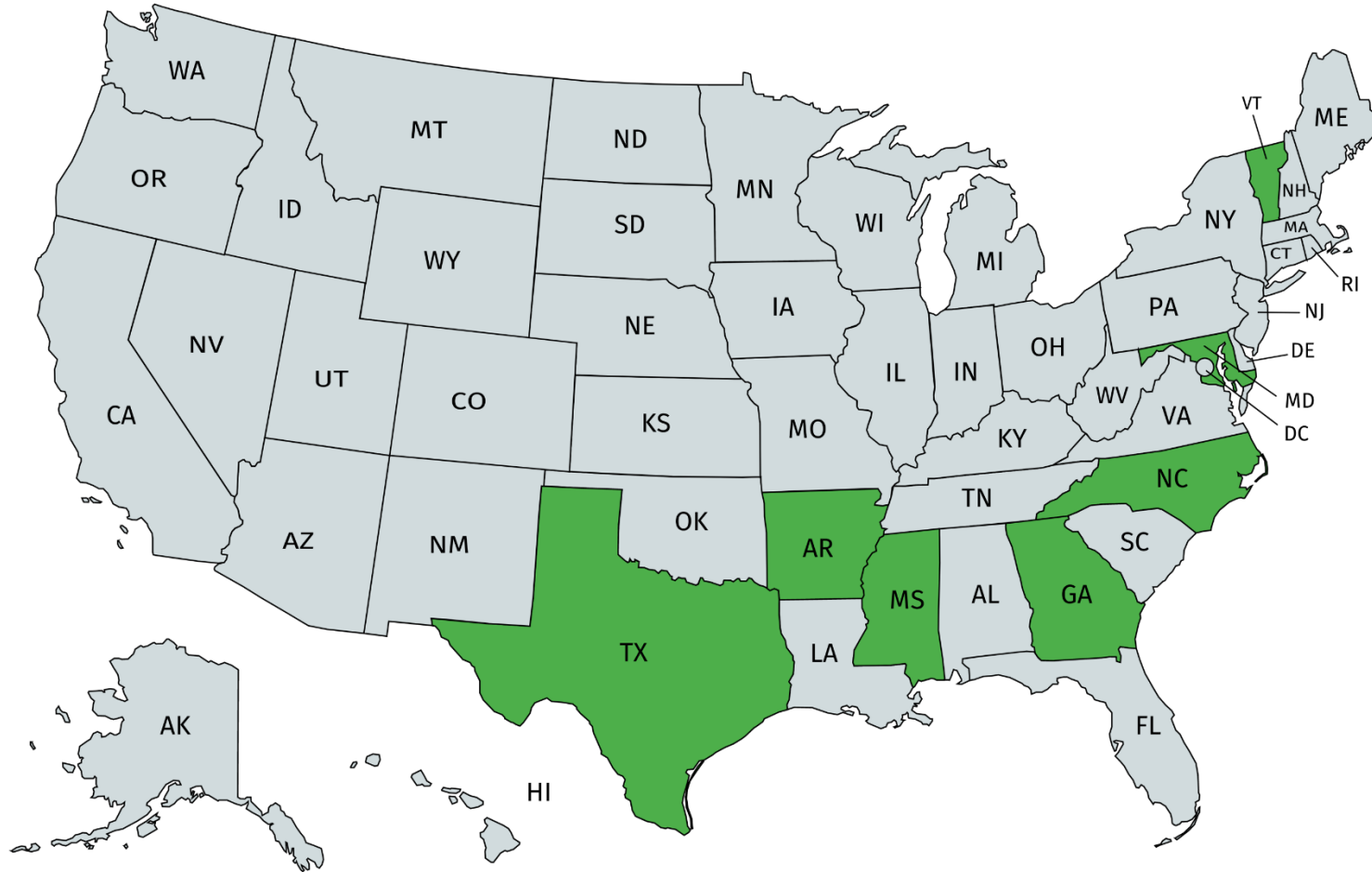
## *Rural growth*

- More than **19 million Americans** lack access to broadband—and the vast majority live in rural communities.
- **24% of rural Americans** lack access to 25 Mbps service. By contrast, **less than 2% of urban Americans** lack this same broadband access.



# What's Next?

## *Opportunities for Deployment*





# Regulatory, Policy & Research

## Barriers to Deployment

-Encourage forward-leaning rights of way, pole attachment, battery back-up policies and more to help build fiber faster

## Funding Policies

-RDOF: \$20B/10 years  
-RUS Reconnect Fund \$600M  
-Connect America Fund Phase II  
-Weighting Methods should recognize benefits of fiber

## Community Broadband

-Fiber network ownership agnostic  
-Support state legislative changes to allow electric co-op & muni network deployment

## Legislative

-Pallone Bill \$40B over 10 years to rural areas  
-Dig Once Bills  
-Infrastructure packages

## FBA Research

- ❖ Availability of High Speed Broadband Can Reduce Unemployment Rate
- ❖ Rural Deployment Cost Study to Deploy All-Fiber Networks
- ❖ Impact of Fiber Networks on GDP



# The FBA

## Fiber Broadband Association Membership

- Join a Committee or Group
- Benefit from FBA's educational webinars and certification programs
- Network with key leaders in the industry; stay current on issues
- Learn more at:  
[www.fiberbroadband.org/join](http://www.fiberbroadband.org/join)

## FBA Regional Meeting Nov 5-7, 2019, Fort Collins, CO

- Attend FBA's Broadband Starter Kit Workshop
- Learn from industry leaders about deploying and growing fiber networks
- Network with industry leaders
- Learn more at:  
[www.fiberbroadband.org](http://www.fiberbroadband.org)

