Future of Fiber

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Agenda

• Who Is FBA
• Current Fiber Deployment Statistics
• Driving the Future of Fiber
  • 5G & Applications
  • Smart Communities
• Future Growth & Funding
• Barriers to Deployment
• Thank You!
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*.
- **Research & 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.
State of Fiber Today: *Deployment is on the Rise*

**United States**
- **49.2 Million** Homes Marketed
- **17% Growth in 2019**
- **20.5 Million** Homes Connected

**North America**
- **70 Million** Homes Marketed
- **15% Growth in 2019**
- **27.3 Million** Homes Connected

According to a 2019 study from RVA, LLC
State of Fiber Today

According to a 2018 study from RVA, LLC

Reviewing fiber route miles, i.e. the number of linear miles fiber is deployed overhead or underground – whether single or multiple fiber strands/lines.
Driving the Future of Fiber: 5G
The Road to 5G is Paved with Fiber

Use Cases Demand 5G
- Enhanced mobile broadband capacity/speed
- Low latency - gaming and AVs
- 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
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 km²

4G
1 site every 2 km
Cell density= 5 x 5
= 25 cells/100 km²

5G
1 site for every 0.5 km
Cell density= 20 x 20
= 400 cells
Driving the Future of Fiber: Smart Communities

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

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

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

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

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

• Only 33% of cities without fiber report small cell activity, versus 60% of cities with fiber to the residence

• 2019 Research confirms a positive correlation between availability of fiber networks & GDP
Fiber Adds To Home Value

RVA Consumer Study May 2016

- MDU Condo Own ($8,528/ $300,000): 2.8%
- MDU Rent ($80/ $1000): 8.0%
- Home price ($9,734/ $300,000): 3.2%
Fiber and Lowering Unemployment

• Our study in Tennessee found that access to high speed broadband can **significantly reduce unemployment rates**, especially in rural communities.

• Counties with access to high speed broadband have a **0.26% lower unemployment rates** compared to low speed counties.

According to 2019 study from FBA, University of Tennessee at Chattanooga and Oklahoma State University
Driving Future of Fiber: Growth & New Opportunities for Deployment
Broadband Funding Opportunities

FCC
- RDOF/ Connect America (CAF)
- E-Rate, Schools & Libraries, Rural Healthcare

USDA RUS
- Traditional Telecom Programs (Loans/Guarantees)
- Broadband Program (Grants, Loans/Guarantees)
- Community Connect Programs (Grants)
- Pilot Reconnect Program (Grants, Loans/Guarantees)

State Funds
- Universal Service Programs
- Broadband Deployment Programs

Public Private Partnerships
- Models Vary by Risk, Benefit, Control
FBA Study: Deploying Fiber to 90% of US Households

- We can reach 90% of U.S. homes with fiber broadband networks in the next 10 years.
- Reaching 90% of U.S. homes will cost approximately $70B.
- We can achieve this with:
  - Targeted government support
  - Muni builds
  - Private sector innovation
  - Public-private partnerships
  - Innovative deployment models

According to 2019 study from FBA and Cartesian
FBA RESEARCH: NEW Weighting Methodology to Improve Funding Decisions

• Our research shows that the FCC’s CAF II auction penalized fiber broadband providers:
  • It disincentivized participation by gigabit providers and few areas saw gigabit bids.
  • It failed to consider the socioeconomic benefits produced by different access technologies and use cases—e.g., telecommuting, remote health and learning, e-commerce, and video streaming.

• To determine weights in future auctions, the FCC should use a methodology that accounts for the full benefits of different technologies.

According to 2019 study from FBA and Cartesian
Barriers to Fiber and 5G Deployment

**Lack of Skilled Labor/Workforce**
- DOL grants and apprenticeship programs
- Working with Community Colleges on Curriculum
- Certifications
- Second Career/Vets

**Railroad Crossings**
- No federal law
- Some state caps
- Charges for crossing fees arbitrary and vary dramatically by RR

**Poles**
- Industry solutions work
- Some compliance issues
- Outliers on unreasonable fees, surveys
- Not enough certified make-ready crews

**ROW & Permits**
- Positively work with cities and states
- Some delays remain
- Federal permitting delays; *Mobile Now* streamlined
- E.g. State ROW treating fiber different
FIBER CONNECT
Fiber: We are the Difference

June 1-3, 2020
May 31: Fiber Starter Kit Workshop
Gaylord Opryland Resort
Nashville, TN

Save the Date!
North America’s Premier Fiber Event

www.FiberConnect.org