

# THE STATE OF FIBER – NORTH AMERICA

CREATED BY: Gary Bolton, *President & CEO*

DATE: April 2023

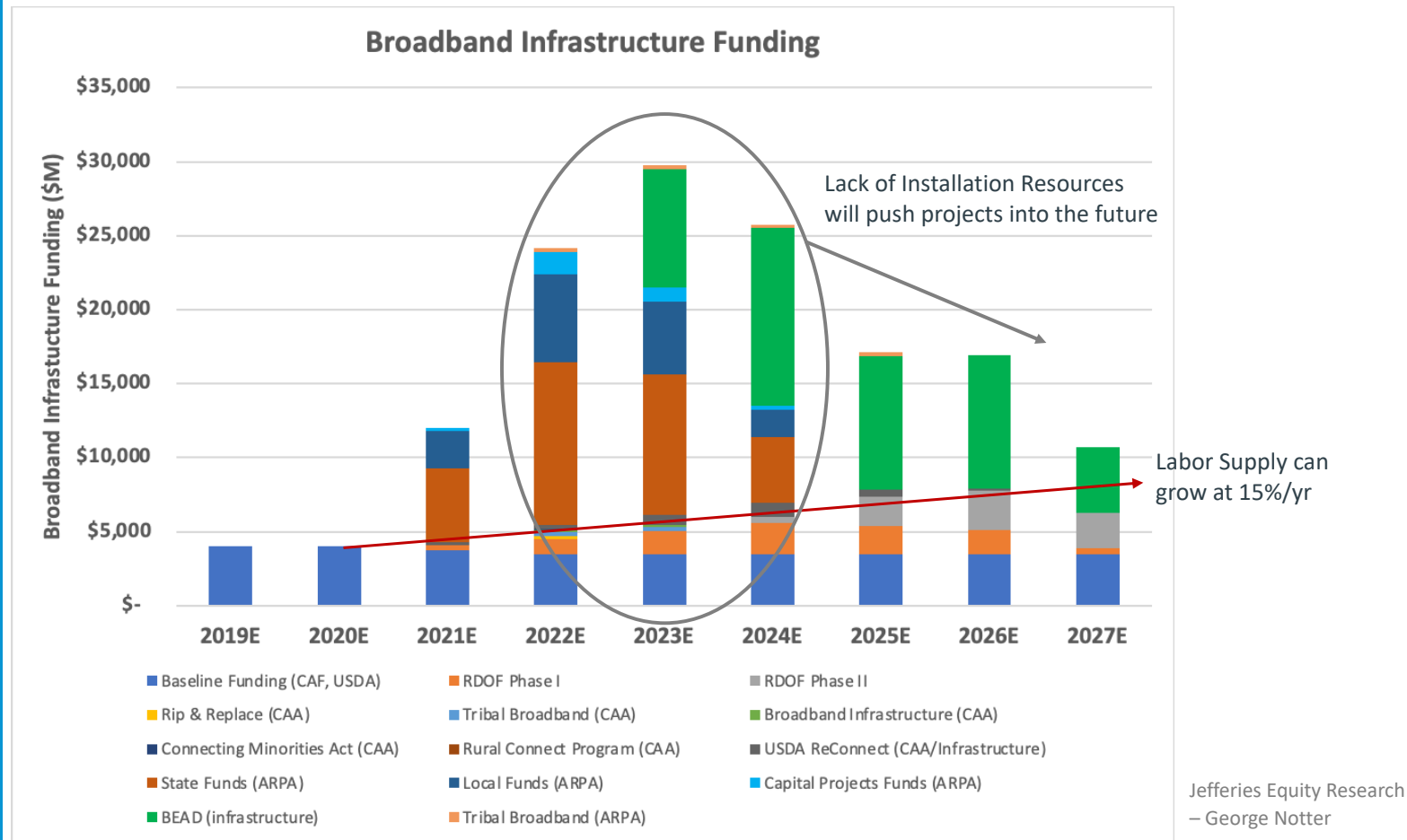


An aerial photograph of a farm at sunset. A long, straight road runs vertically through the center of the image. On either side of the road are various farm buildings, including barns, silos, and houses. The fields are a mix of green and brown, suggesting different crops or stages of harvest. The sun is low on the horizon, creating a warm, golden glow over the entire scene. The sky is filled with soft, colorful clouds.

*A Once In A Generation Opportunity*

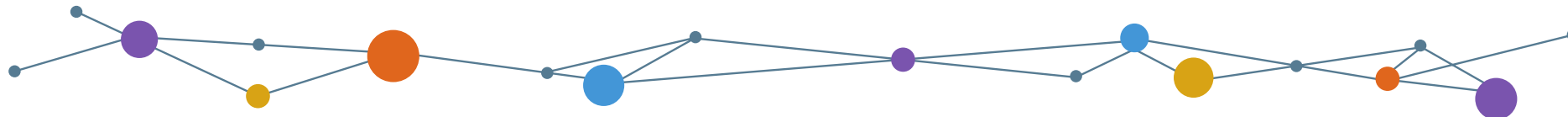
# 7x

## Increase in Broadband Infrastructure Public Funding



# The Administration's Marching Orders

- NTIA has determined that “**Priority Broadband Projects**” are those that use **end-to-end fiber-optic architecture**.
  - **Only end-to-end fiber will** “ensure that the network built by the project can easily scale speeds over time to ... meet the evolving connectivity needs of households and businesses” and “support the deployment of 5G, successor wireless technologies, and other advanced services.”<sup>65</sup>
  - End-to-end fiber networks can be updated by replacing equipment attached to the ends of the fiber-optic facilities, allowing for quick and relatively inexpensive network scaling as compared to other technologies.
  - Moreover, new fiber deployments will facilitate the deployment and growth of 5G and other advanced wireless services, which rely extensively on fiber for essential backhaul.



# There Are Nearly 140 M Broadband Addressable U.S. Homes

## Census Data And FBA/ RVA Provider Study 2022



129.9 Million Households (single and multi family)

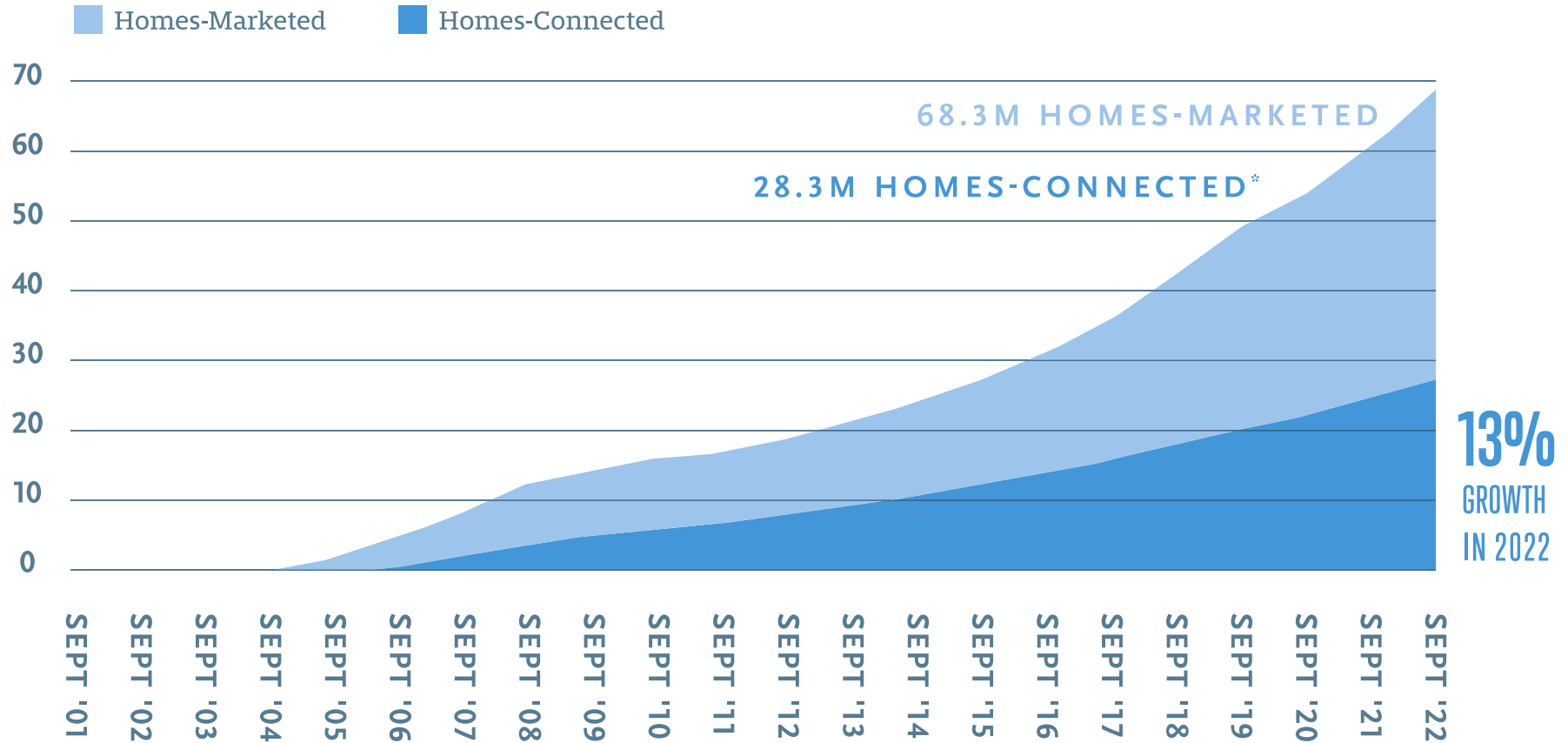


Est 8.7 Million Second Homes/ Airbnb



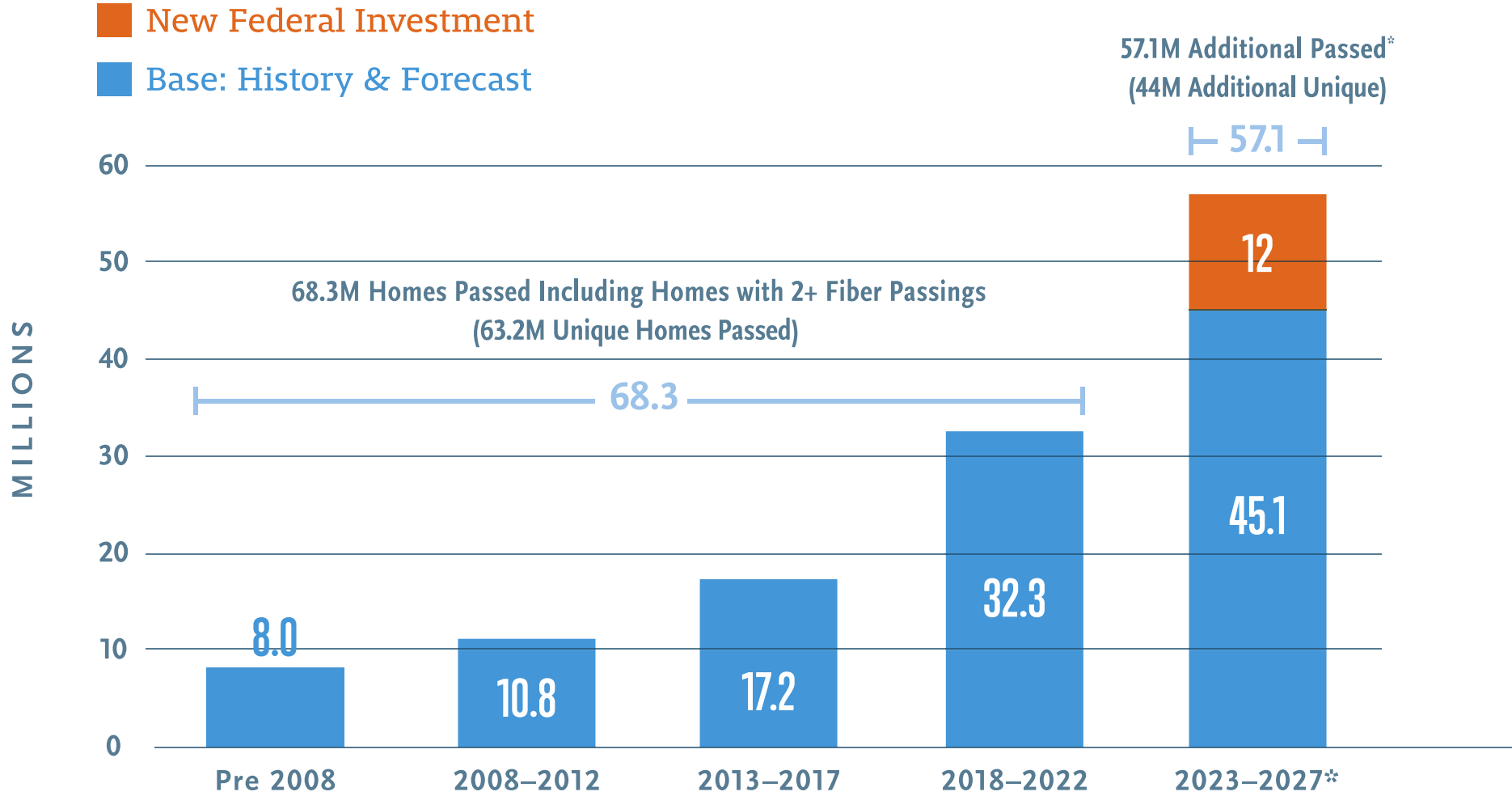
# Fiber Broadband Now Passes Over 68 Million U.S. Homes

FBA/ RVA Provider Study 2022



\*27.6M Internet homes connected plus 0.7M television or landline connections

# Five Year U.S. FTTH Forecast Versus Past Construction



\*Based RVA forecast of 2023-2027

# 88%

of NA Operators  
offer 1G+ service  
under \$100

Jaimie Lenderman Omdia (Fiber for Breakfast 2022)



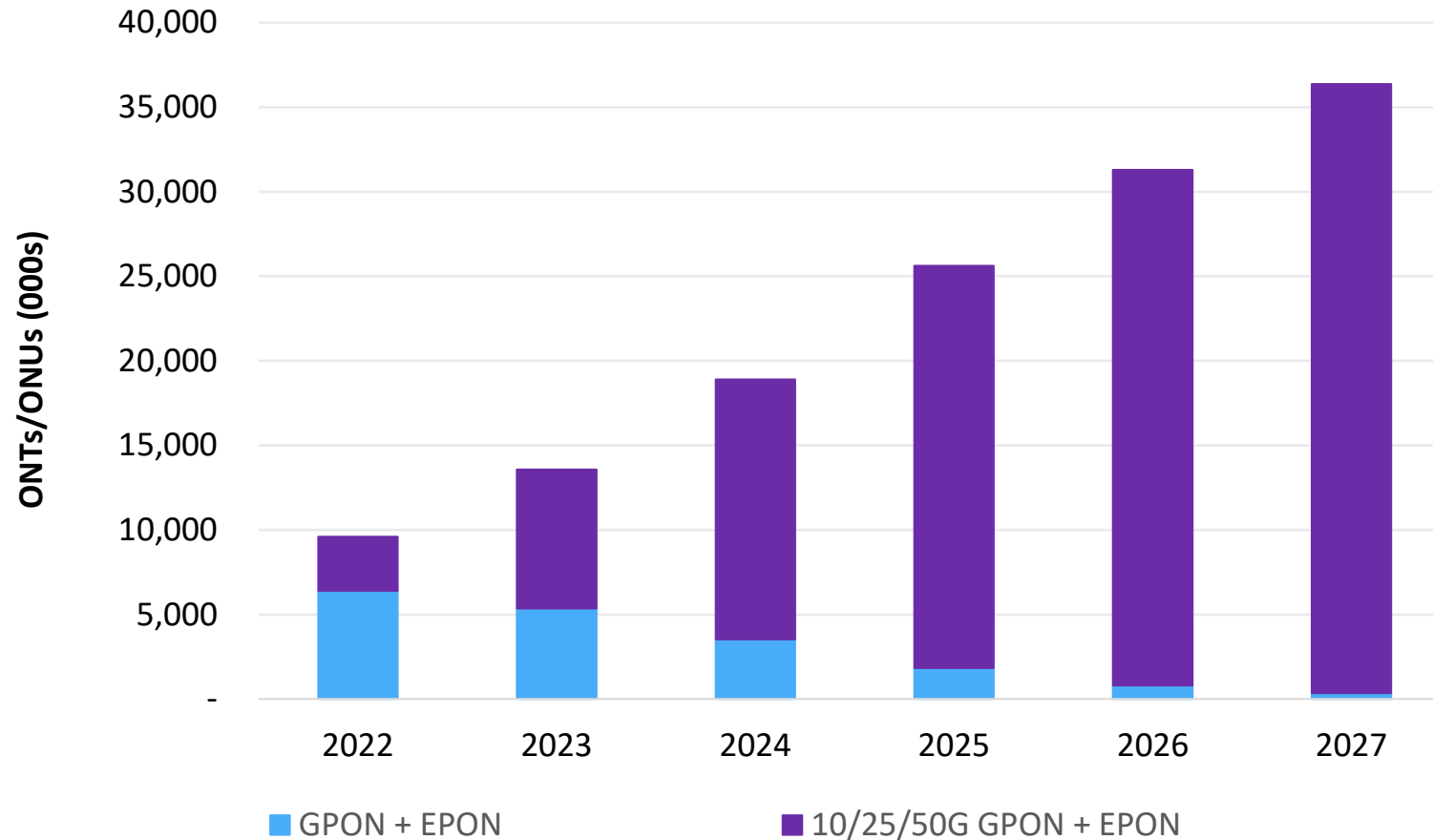
## Service Provider marketing strategies and subscriber perception

- **1G and faster take up rates still nascent, but marketing has shaped consumer perception.**
  - Operators should offer 1G even if most subscribers take up <1G.
- **If competitive gigabit service becomes available, there is risk of sub churn.**
  - A sub may perceive the competitor's network as superior, even if they do not take the gigabit service.
  - Especially true with symmetrical service



# 10G Symmetric has Crossed the Tipping Point

PON ONT/ONU ports, North America, 2022-27



- Several operators are installing 10G ONT/ONUs at the customer premise.
- The cost difference between 10G PON and older gen has declined to less than cost of a truck roll.
- Operator can eliminate the cost of a truck roll in the future by deploying 10G now.

# 25G PON Now In Commercial Deployment

**TECH**

## The nation's fastest communitywide internet? New 25-gig service launches at \$1,500 per month



**Saleen Martin**

USA TODAY

Published 4:49 p.m. ET Aug. 31, 2022 | Updated 6:50 p.m. ET Sept. 2, 2022

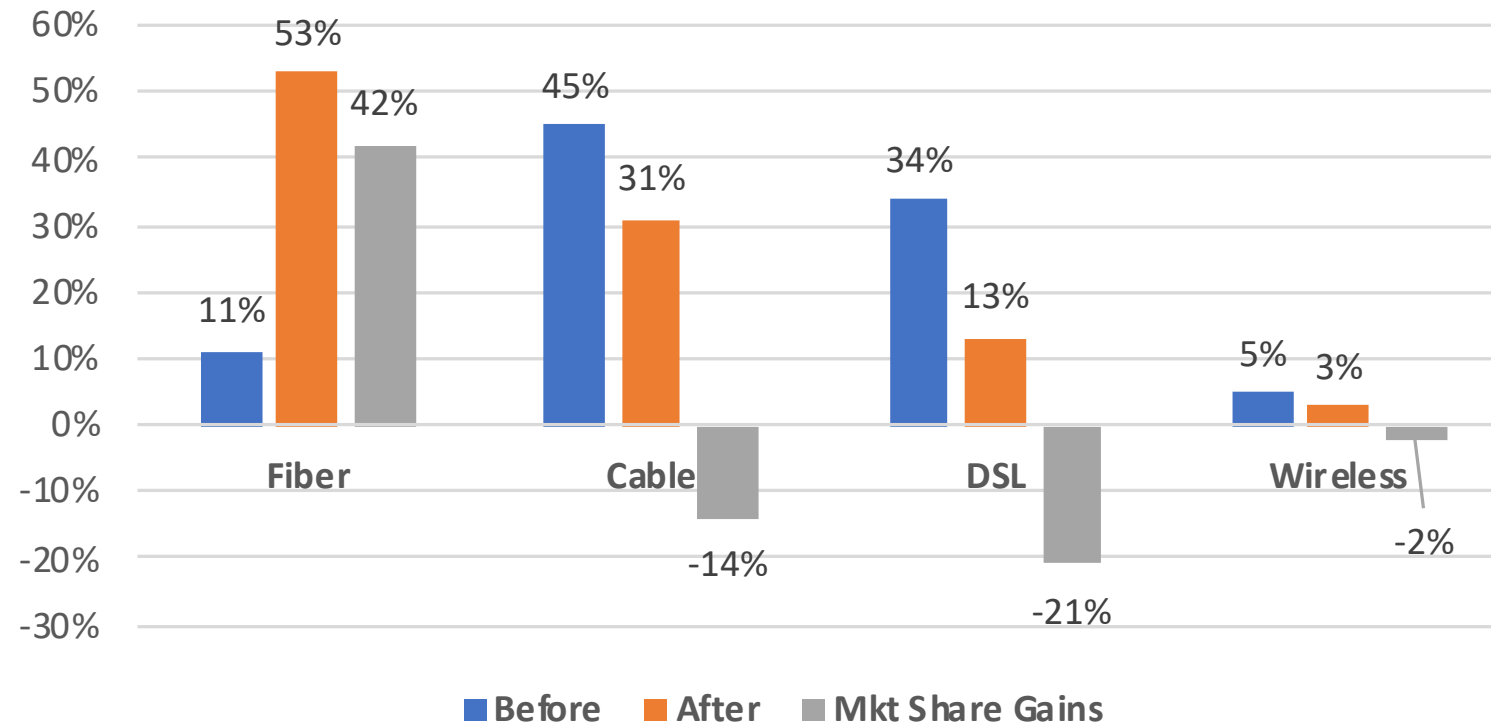


- AT&T, EPB, Google Fiber, and LUS Fiber committing to deploy 25G PON
- 25G PON trials include AIS (Thailand), Bell (Canada), Chorus (New Zealand), CityFibre (UK), Delta Fiber, Deutsche Telekom AG (Croatia), Fiberhost (Poland), Frontier Communications, Hotwire (USA), KPN (Netherlands), Openreach (UK), Proximus (Belgium), Telecom Armenia (Armenia), TIM Group (Italy), and Türk Telekom (Turkey)



# What Consumers Want...

**Market Share Gains from Consumer Churn**  
Same Residence in Past 3 Years (where fiber is available)  
*RVA Consumer Survey 2019*

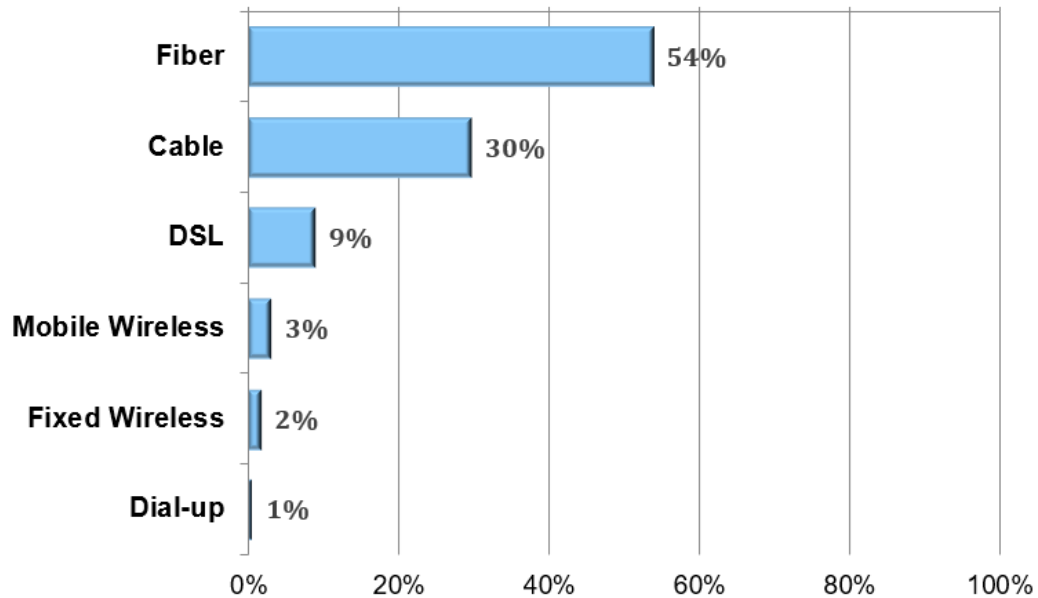


# What Consumers Want...

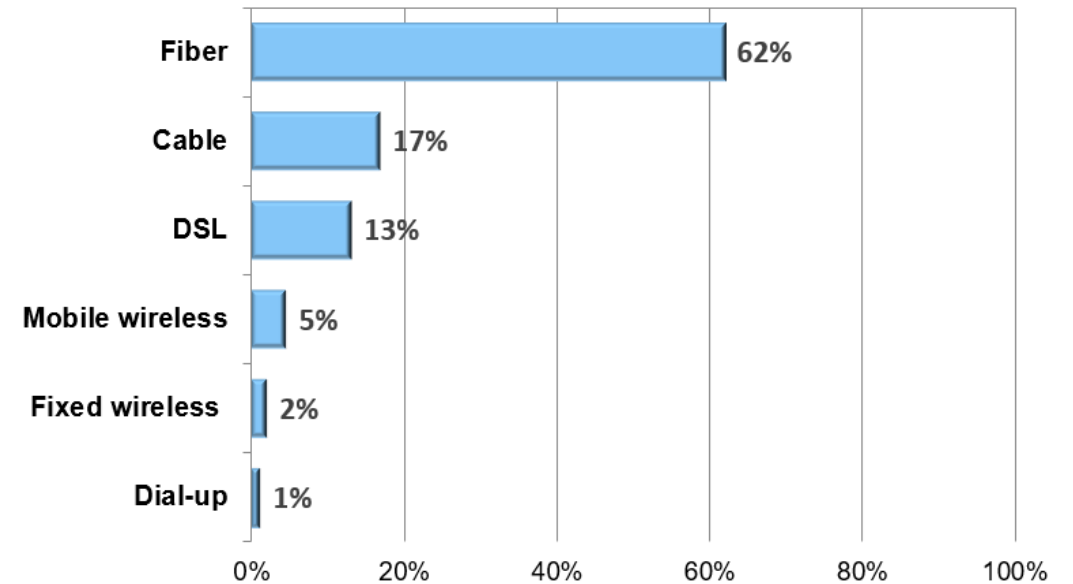
## In Mature Fiber Areas FTTH Wins In Market Share

(Market Share Is Higher Than “Take Rates” Which Include Non-Broadband Homes) RVA Consumer Study 2020

### Tier 1 Area (Verizon Fios Example)



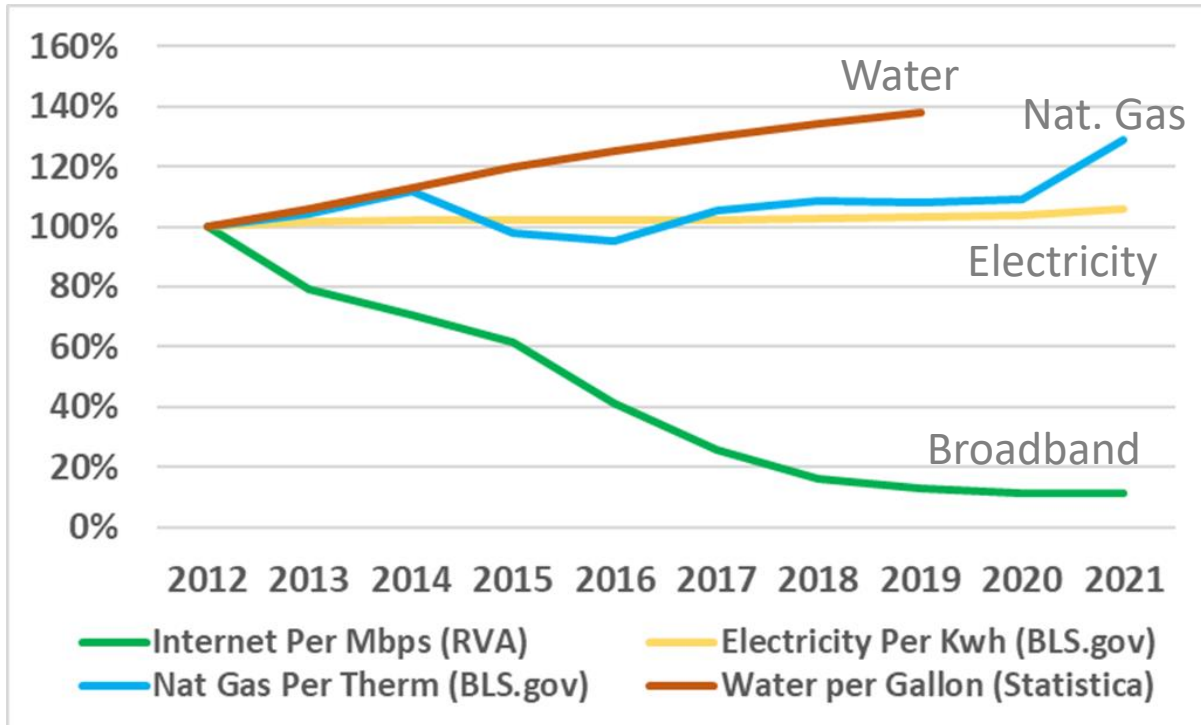
### Tier 2-3 Areas



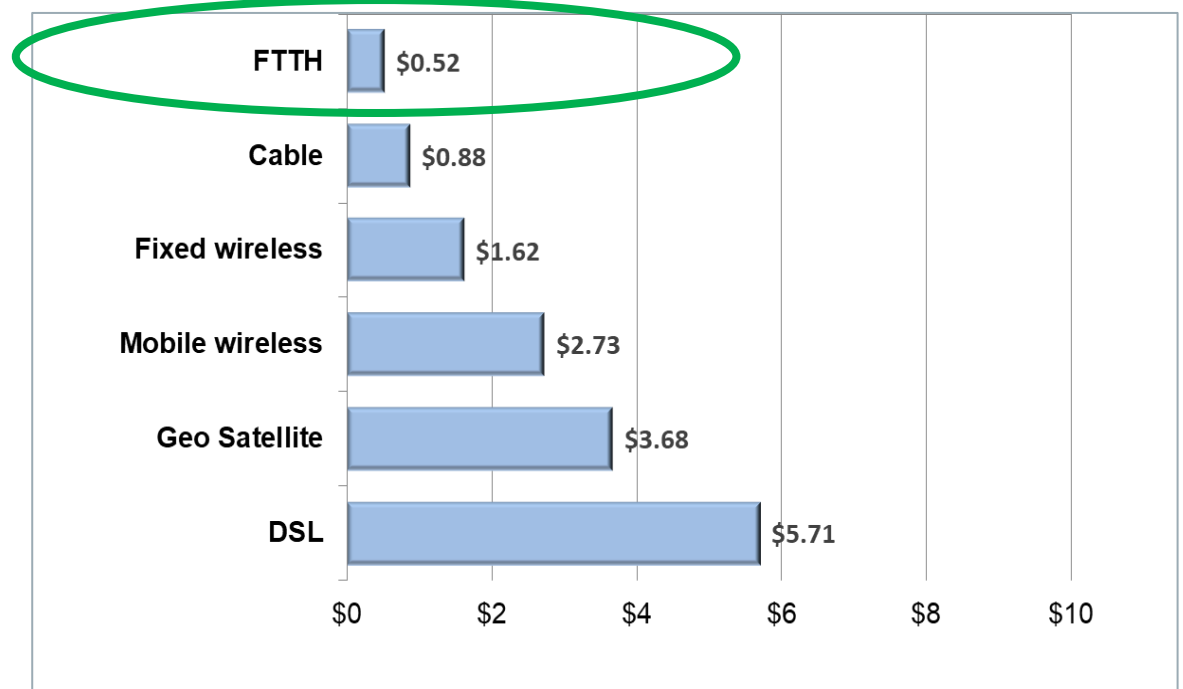
# FTTH Reduces Broadband Cost



### Broadband Cost Change Per Unit Of Measure



### Cost Per Mbps – Blended Download And Upload



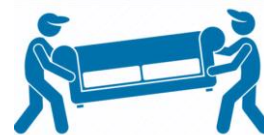
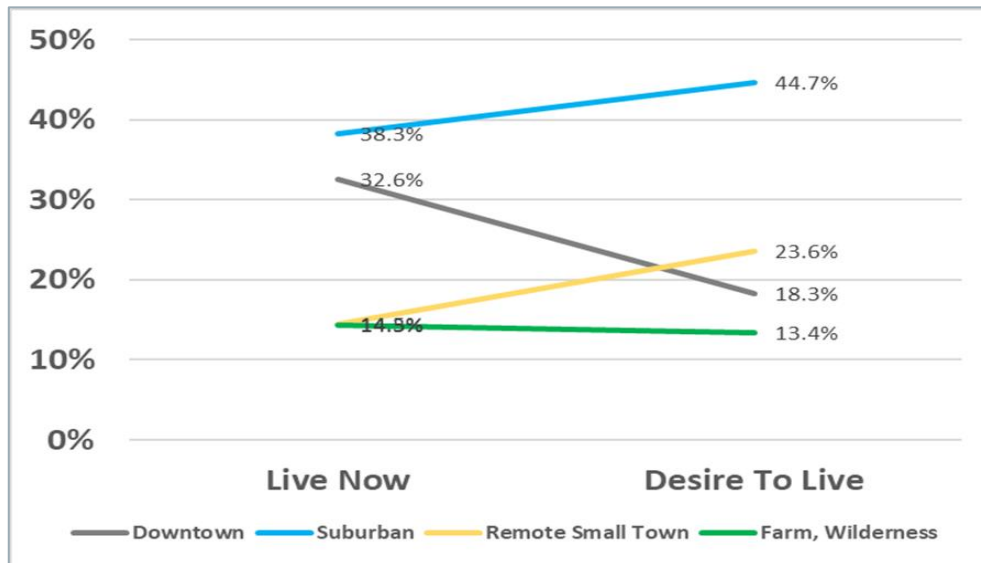
FBA/RVA Broadband Consumer Studies (2022)

# FTTH Facilitates Rural Migration Trends

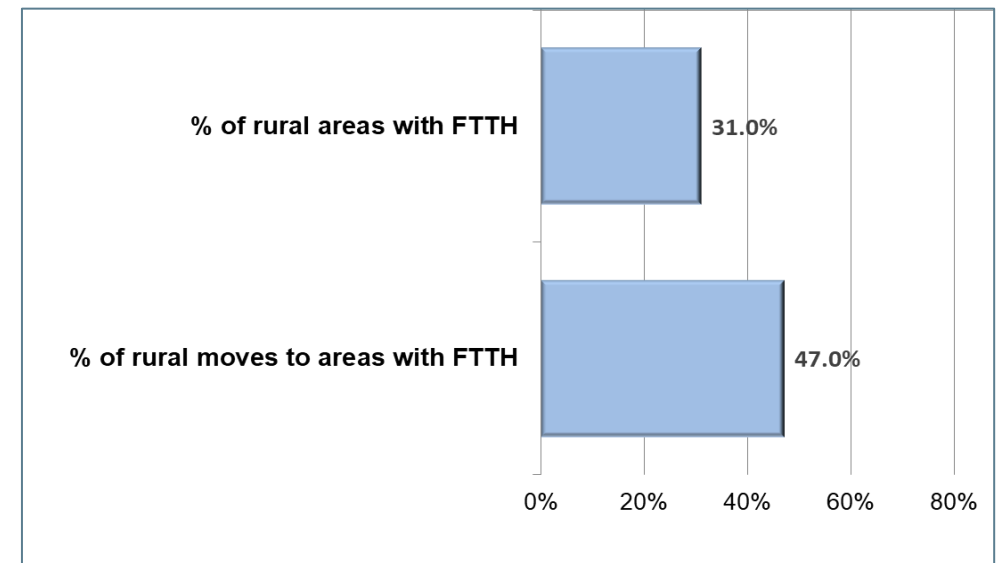
Those desiring more rural living cite affordability, safety, and high-speed broadband as particularly important. They are trading off desires for walkable retail with nature, and greenspace. (Note: the apparent dramatic shift will be dampened by various factors)

About half of those moving to rural settings in the past year moved to areas with FTTH providers (although only 31% of rural areas actually have FTTH).

### Desires For Future Living



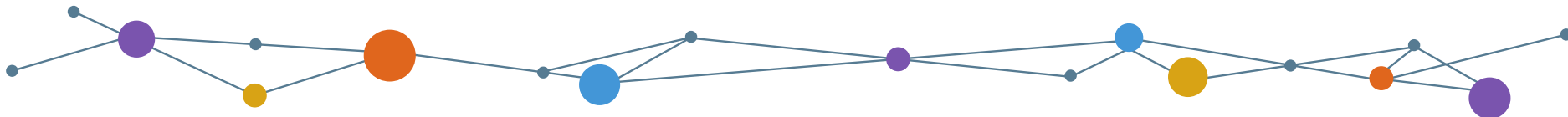
### Rural Moves Biased To FTTH Areas



FBA/RVA Broadband Consumer Studies (2022)

# Fiber is critical infrastructure for broadband:

- Speed of light
- Highly secure
- Limitless capacity
- Sustainability/multi-use
- Durability/reliability
- Energy efficient
- Low latency



A woman in profile is shown on the left side of the image, looking towards a large, glowing, circular structure on the right. The structure is composed of many thin, white, fiber-like strands that form a complex, swirling pattern. The overall scene is dark, with the glowing structure providing the primary light source. The woman's hand is reaching out towards the structure, suggesting interaction or exploration.

Only fiber can lead us  
to the metaverse



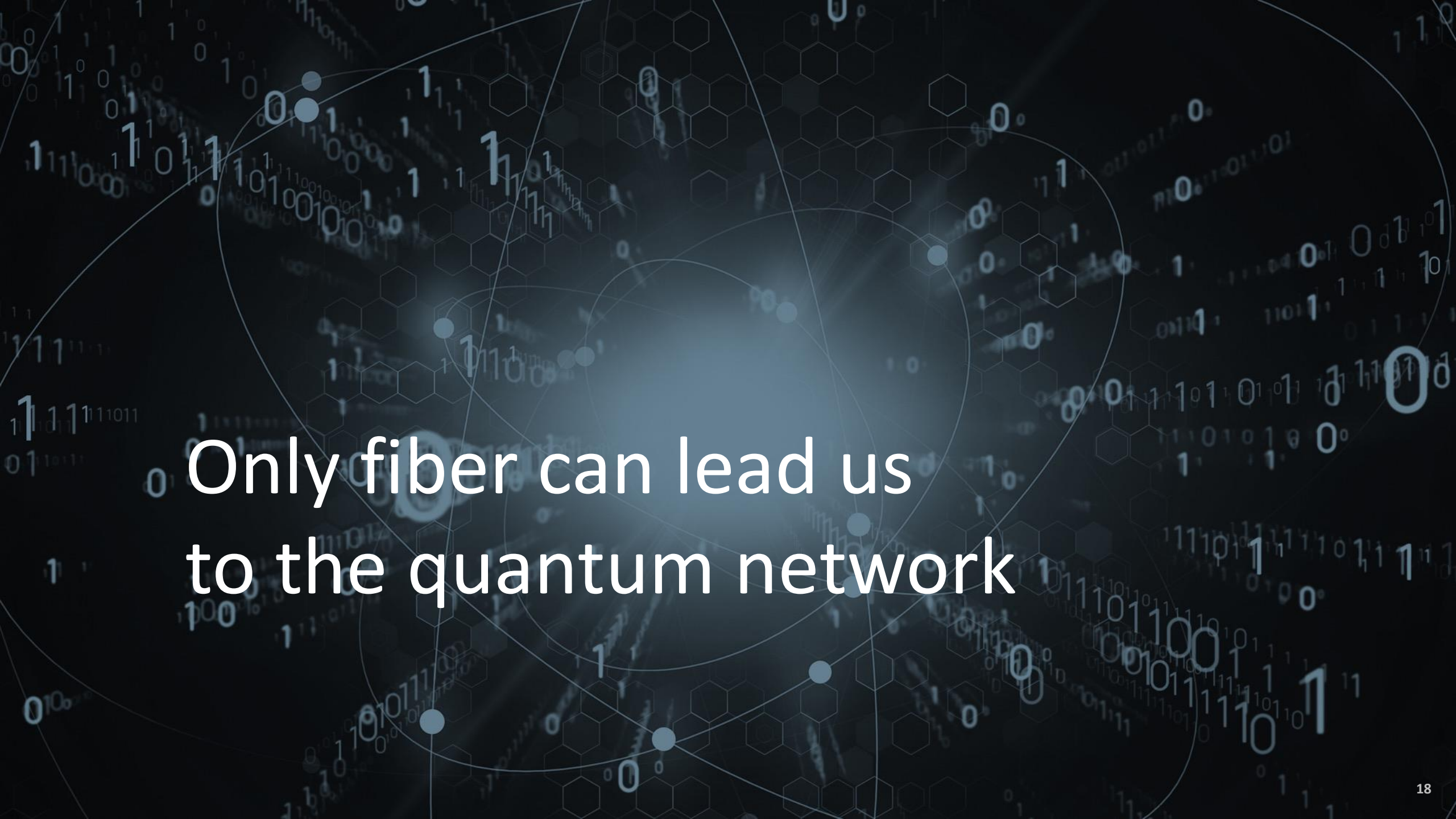


## Metaverse Requirements:

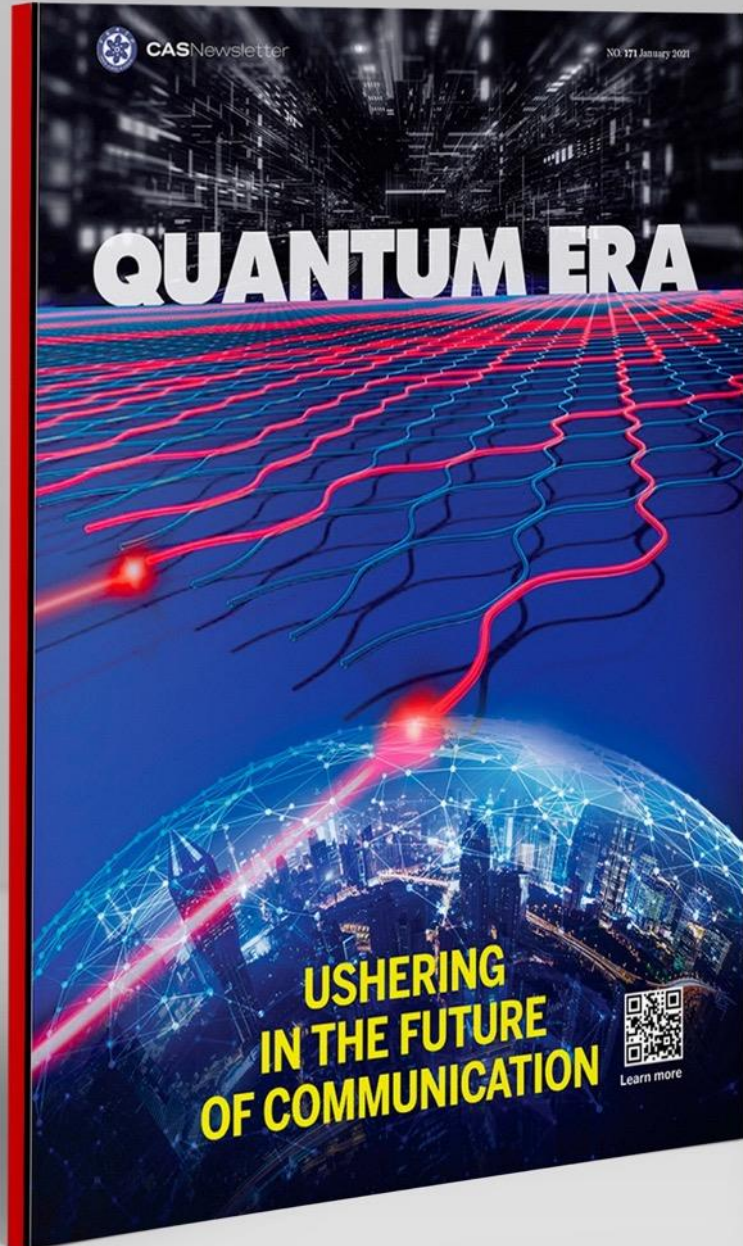
- Symmetric bandwidth
- Low latency
- Concurrency

**\$5 Trillion**  
market potential by 2030

– McKinsey



Only fiber can lead us  
to the quantum network



# Chattanooga Launches the World's First Commercial Quantum Network

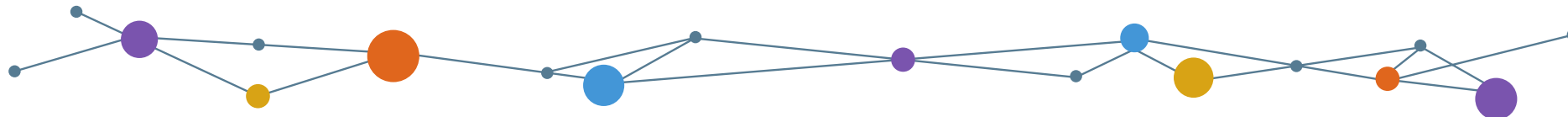
# When fiber leads,

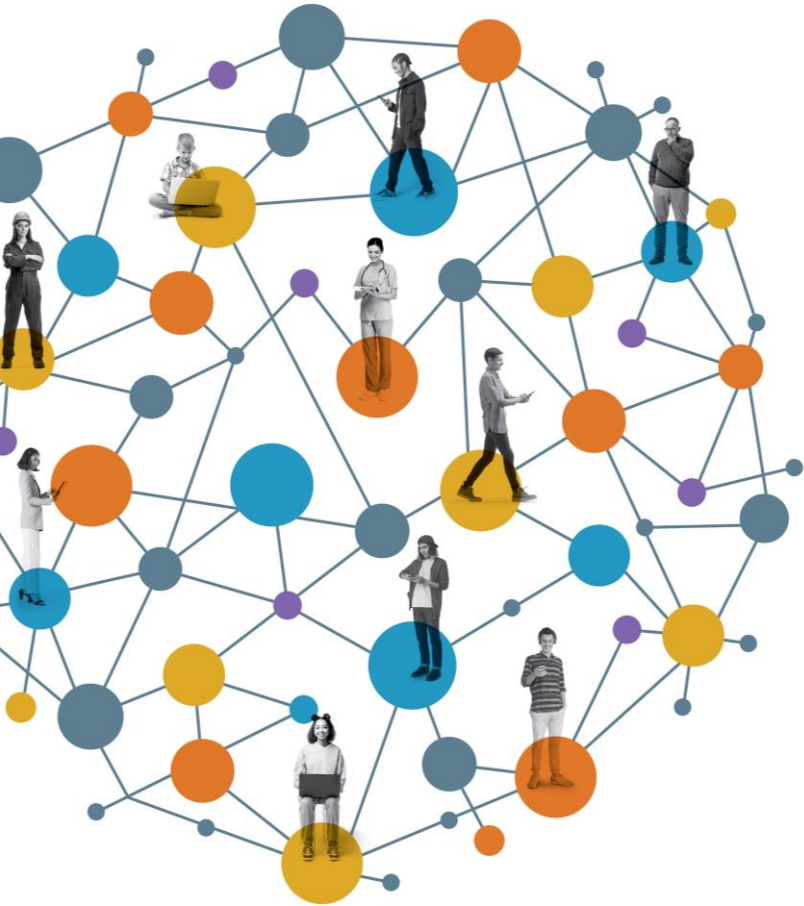
We can close the digital divide.

Raise the quality of life with education and job opportunities.

Eliminate poverty.

And create long-lasting sustainability.





When fiber leads,  
the future follows.

