

# How Everything Fits *(or at least How it Should)*

September 12, 2023



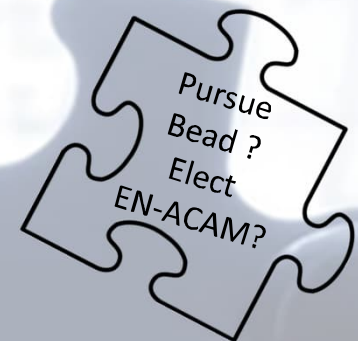
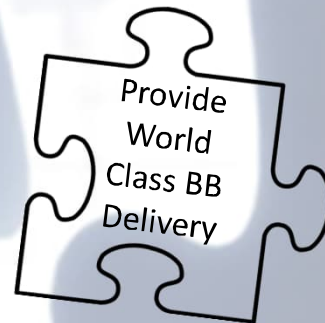
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## How Everything Fits (or at Least How it Should)





# Where do we need to Go....





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Bandwidth Delivery...

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Consumer  
Demands?



# Exponential Growth

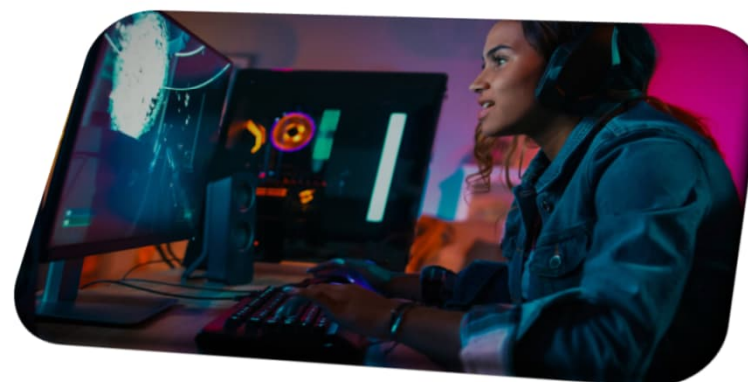


TECHNOLOGY  
TRENDS



## Application Categories Driving Data Traffic

- Streaming Data
- Gaming Data
- Emerging Metaverse
- *Other Data*







# Satisfy the Demand

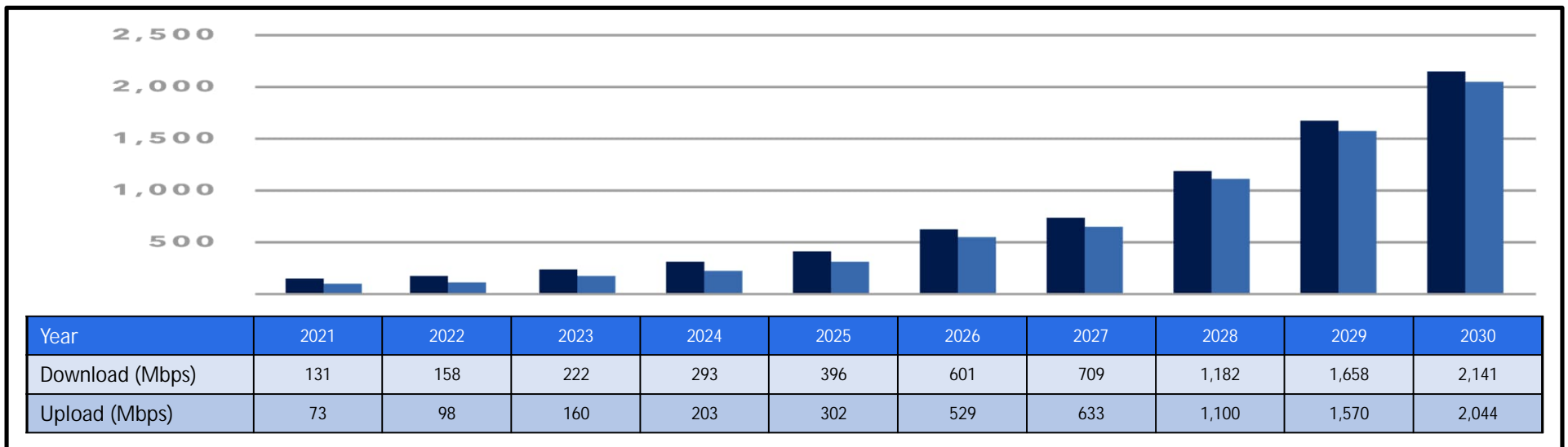
- Create value, stickiness, and subscriber relationships
- Fill up the BB pipe, Diversify
  - Security Monitoring
  - Streaming Video
  - Managed WiFi
  - Managed IT
  - E-Sports
  - Gaming
  - VoIP





## Forecast from Fiber Broadband Association

Projected Peak Bandwidth Requirements – Household of Four:



- Does not include early adopters, radiologists, power users/gamers, and others may require much more.
- Source: Fiber Broadband Association Technology Committee.





# Broadband Insights Report (OVBI)

2Q23



## Usage

The monthly weighted average data consumed by subscribers in 2Q23 was 533.8 GB, up 9% from 2Q22's average of 490.7 GB.



## Power Users

The super power user category consuming 2 TB or more per month increased by 26% since 2Q22.

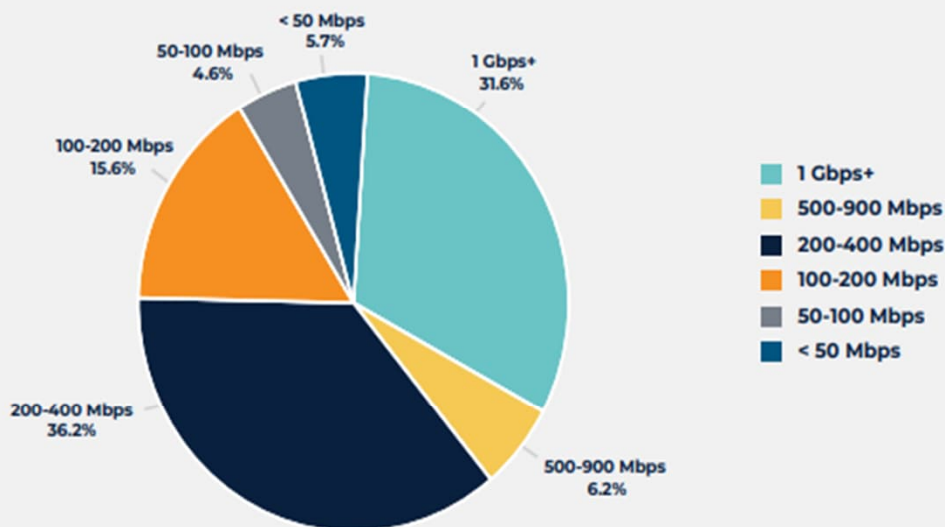


## Speed Tiers

The percentage of subscribers on gigabit speed tiers more than doubled over the previous year, reaching 31.6% in 2Q23.

FIGURE 5

## Provisioned Broadband Speeds — 2Q23



OpenVault Broadband Insights Report 2Q23



- The percentage of subscribers on gigabit speed tiers reached 31.6% in 2Q23, an all-time high and more than twice the percentage observed one year ago (14.2%).
- There are now 3.5x more UBB subscribers (44.5%) than FRB subscribers (12.5%) provisioned for gig+ speeds, the widest gap observed thus far.
- FRB operators have 2x more subscribers than UBB operators in speed tiers below 200 Mbps (37.1% vs. 18.4%).
- The percentage of subscribers provisioned for speeds under 100 Mbps (10%) continues to decrease, dropping 30% since 2Q22.

# How Long Will Technologies Be Competitive

Technology	Best Case Max Sub Speed	Year Exceeded by Demand
LEO	1G	2028
FWA (mid-Band)	1G	2028
FWA (mmWave)	2G	2030
DOCSIS 4.0	10G/6G	Maybe 2034
*FTTP	*Roadmap to 100G and beyond	Many decades from now

\*FTTP PON will not be bottleneck. Bottlenecks in 100% FTTP networks come from backhaul links being undersized. Requires continuous backhaul capacity planning.

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Bandwidth...

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Can you get  
there?





# Once in a Generation Funding Opportunities



## USF Broadband Funding

ACAM I	Sunsets 12-31-2026
ACAM I Revised & ACAM II	Sunsets 12-31-2028
Alaska Plan	Sunsets 12-31-2026
EN-ACAM*	Sunsets 12-31-2038
Legacy (CAF-BLS, HCLS)	Needs proceeding to Sunset
Legacy → EN-ACAM*	Sunsets 12-31-2038

\* Would commence 1-1-2024 if elected





# ReConnect 5

- Round 5 of the ReConnect Program is targeted for Q4 2023
- Expected application deadline 8-12 weeks after release of the NOFO
- Focus may be on *unserved locations*, 25/3 Mbps or less







## The Enhanced A-CAM Offer

Offer extends most A-CAM support timelines by 10 years

- The extension is 12 years for A-CAM I carriers that did not elect the second revised offer (A-CAM I Non-Revised)

The basic obligation is to offer voice and terrestrial 100/20 Mbps service to all EA-CAM required locations in the electing carrier's study area by the end of 2028

- A one-year extension for final deployment may be applied (this would be in addition to the current A-CAM 12-month allowance for the final deployment milestone)

Electing carriers are obligated to serve 100 percent of unserved locations with service levels consistent with BEAD requirements

- Unserved locations are those where at least 100/20 service is not available or there is not enforceable commitment (this differs from BEAD that defines unserved as locations lacking 25/3)

Election for EA-CAM is no later than Friday September 29<sup>th</sup>, 2023

- EA-CAM election is designed to be aligned with BEAD program timeline
- The EA-CAM offer is conditioned on having at least 50% of the total unserved locations for A-CAM carriers elect



## The Enhanced A-CAM Offer – Compliance Requirements

- Identification of technology Intended to Use to meet program requirements
- Offer Broadband and Standalone facility-based voice service to 100% of locations in study area
- Speeds of at least 100/20 Mbps and roundtrip Latency of 100 milliseconds or less
- Offer service at rates that are reasonably comparable to rates for comparable offerings in urban areas
- Subject to the same performance testing requirements as all other high-cost support recipients
- May not receive or use BEAD Program funding or other future federal grant funding, unless otherwise specified by the Commission or Wireline Competition Bureau, that supports broadband deployment for those locations for which they are receiving Enhanced A-CAM support
- Must participate in ACP and make available Lifeline service to qualifying low-income consumers
- Enhanced A-CAM carriers must implement operational cybersecurity and supply chain risk management plans by January 1, 2024
- Enhanced A-CAM recipients remain subject to all other reporting and record retention requirements currently applicable to all high-cost support recipients, including the requirement to retain all records for at least 10 years from receipt of funding. *CPR's remain a requirement*
- Subject to random compliance audits and other investigations



## Deployment Milestones

Milestone Date	Deployment Requirement
Dec 31, 2023	2023 A-CAM milestone met*
Dec 31, 2025	None
Dec 31, 2026	50% of required (unserved) locations
Dec 31, 2027	75% of required (unserved) locations
FCC to determine if a one-year extension for final milestone is appropriate	
Dec 31, 2028	100% of required (unserved) locations

\* A-CAM or Legacy 2023 deployment milestones are required to be met, otherwise, AE-CAM support will be held until prior compliance is satisfied





## **The Enhanced A-CAM Offer – Considerations**

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Current settlements vs. the Enhanced A-CAM offer

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Cap X needed to build to 100% of locations at 100/20

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Buildout timeline

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Expected ARPU from new builds

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Competitive Overlap

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BEAD opportunities/threats

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Consequences of not taking the offer

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## BEAD – Broadband Equity, Access, and Deployment Program

- BEAD program allocation of \$42.45B
  - Minimum amounts allocated to states and territories
  - Majority of funds allocated to states based on the ratio of unserved locations in the state to total unserved locations in the nation
- Performance requirements
  - Subgrantees have four years to deliver high-speed broadband to eligible locations from the date of the award (only one-year extension possible)





# Threats







- Provision of meaningful, state of the art services in rural America has always been about attacking both heads of the two headed dragon:



Promoting effective advocacy related to perpetuating predictable and sufficient support, and maximizing settlements thereby creating a revenue/margin base that supports the viability of relatively limited operational scale married to high-cost service areas; and,

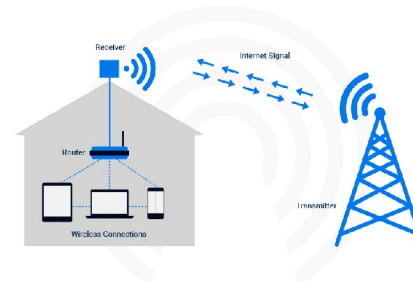


Sharpening the competitive saw – ensuring that you're continually evolving your competitive stature/market relevance so that you can expand and diversify your revenue position via a compelling suite of service offerings.

With the FCC's recent EA-CAM order, the die on the first item may well be cast. Where we'll now train our attention is to the type of actions that all competitive commercial concerns must take in order to remain competitively relevant, and by extension, financially vibrant.

# Threats

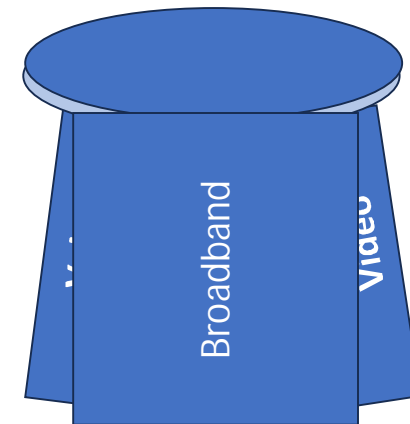
- Billions of Dollars for Funding
- Fixed Wireless
- Satellites
- Cable TV Providers
- Electric Providers
- Municipalities
- Cyber Security





- Similar to a range of other providers, the service / revenue base upon which our viability rests is (for most companies) shrinking.
- Service revenue attrition across all provider tiers in voice and data could wash out as much as \$50B-\$70B in annual revenue over the next 10 Years.

Competitive Position /  
Margin Contribution



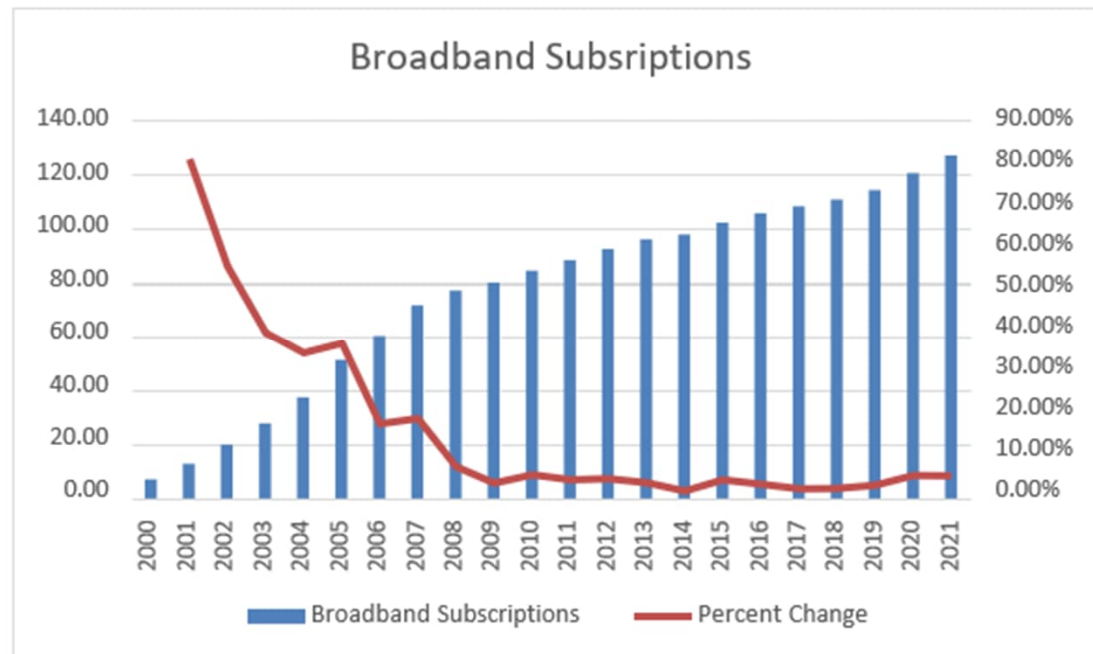
**Residential voice subscriptions below 35% market share with 60+% of homes now wireless only subscriptions. Annual attrition rate roughly 4.5%**

**Over the next 10-Years roughly 40M households will “cut the cord” Comcast customer losses 543k Q2 + 19k Net DECLINE in Broadband**





- Providers will chase this area of opportunity elevating the level of competition among market players.
  - Customers
  - Grant Funds



Broadband commoditization is a real threat over time, and its impacts are undeniable.

Growth in demand will blunt revenue / margin implications in the mid-term – next 2-4 years but growing availability / saturation of ultra-high bandwidth options will reignite pressure on top line ARPU.

At the same time, higher operating and capital costs will introduce deflationary pressures on margins.

Unadjusted  
for inflation

Table 4: NOMINAL  
U.S. BROADBAND PRICES

BPI-CONSUMER CHOICE	
PRICE 2015	CHANGE
\$65.62	-29.9%
PRICE 2022	
\$45.97	
BPI-SPEED	
PRICE 2015	CHANGE
\$122.94	-40.2%
PRICE 2022	
\$73.55	

Adjusted for  
inflation

Table 5: REAL  
U.S. BROADBAND PRICES  
(adjusted for inflation)

BPI-CONSUMER CHOICE	
PRICE 2015	CHANGE
\$65.62	-44.6%
PRICE 2022	
\$36.33	
BPI-SPEED	
PRICE 2015	CHANGE
\$122.94	-52.7%
PRICE 2022	
\$58.12	

The **BPI-Consumer Choice** compares providers' most popular speed tier of broadband service in a given year to its most comparable 2022 service.<sup>1</sup>

The **BPI-Speed** compares providers' fastest speed tier option in a given year to the comparable plan in 2022.

USTelecom report 2021 Broadband Pricing Index

## Are you Ready.....?

1. Are we as an industry prepared to respond to such trends?
2. What specific steps are you taking as a company to successfully confront the changes forecasted?
  - Do you know under what conditions your business case becomes infirmed?
  - What are your plans to aggregate scale, drive operating costs lower, and accelerate innovation to win in the battle of product differentiation / customer experience?
  - Do you have a strategic plan that highlights where you believe you need to be from a margin / cost structure perspective, and have you developed a tactical roadmap to confront the changes forecasted?



The background of the slide is a high-angle, close-up photograph of numerous stacks of US one hundred dollar bills. The bills are bundled together with yellow rubber bands and are scattered across the frame, creating a sense of wealth and abundance. The lighting is dramatic, with some stacks in sharp focus while others are blurred in the background.

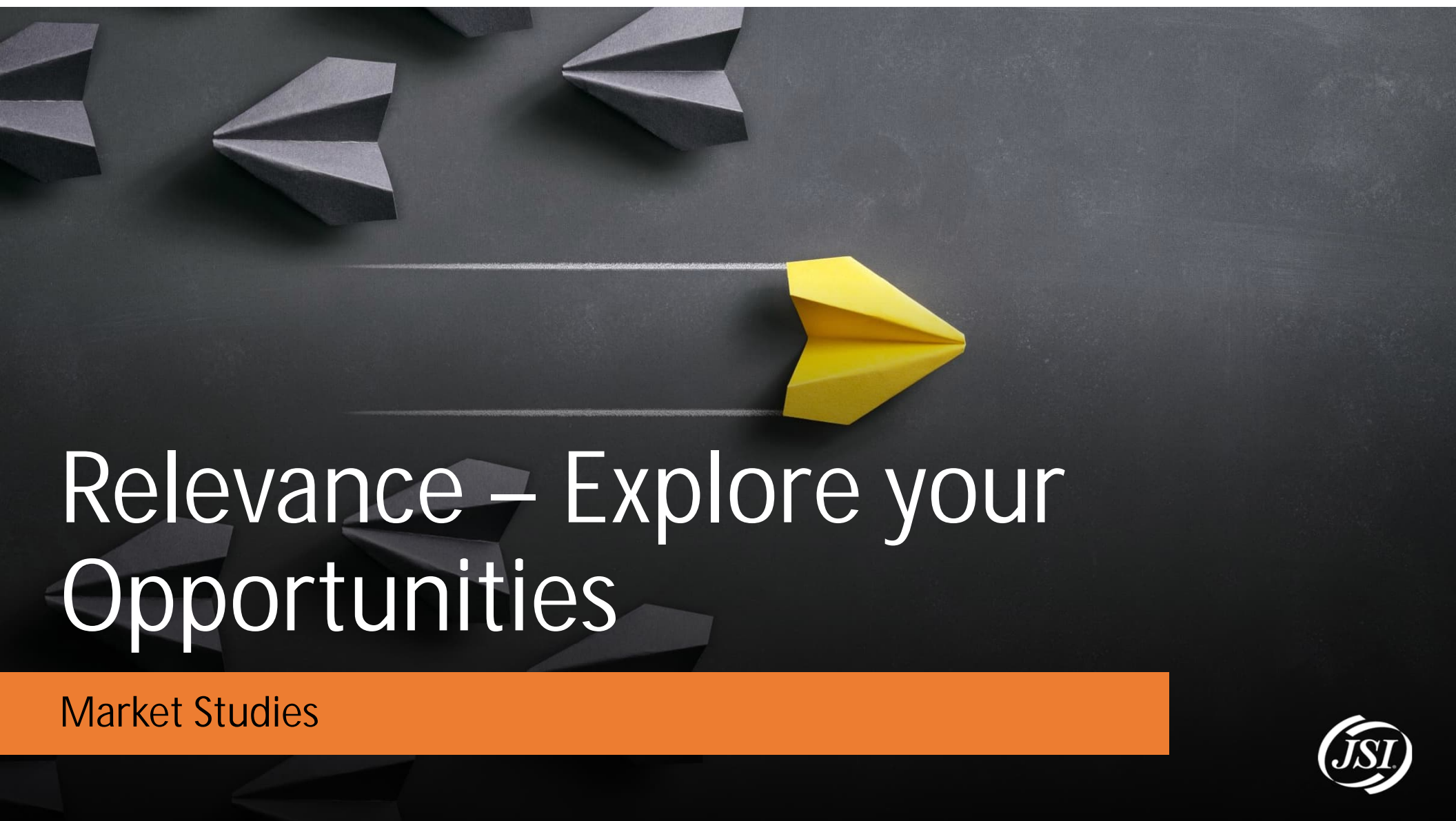
# Funding Threats

\$42.45B in funding makes all areas attractive

100/20 Mbps Standard invites competition

CABLE and Electric Providers are looking for new revenue streams





# Relevance – Explore your Opportunities

Market Studies



- Broadband, our central source of service-related margin, is forecasted to become increasingly competitive with margin squeeze exposure created by:
  - Rising Costs
  - Commoditization Pressures
- Important to aggressively evaluate expansion opportunities to secure needed, sustainable scale, while carefully and objectively identifying and evaluating such opportunities.

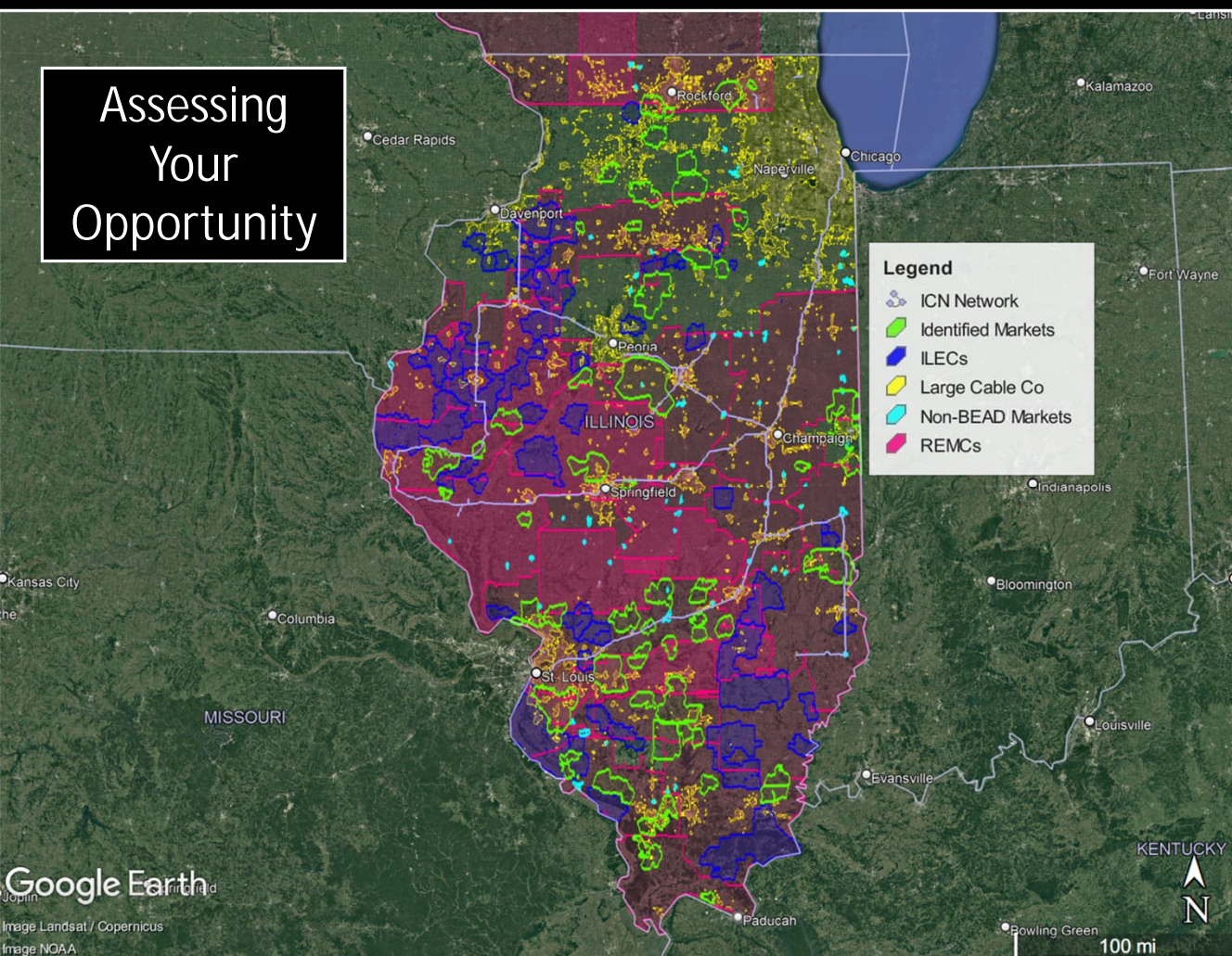




- Capital and execution cycles are at a premium:
  - Pragmatically, and comprehensively identify available market opportunities - both grant eligible and non-eligible.
  - Ensure you have the tools to 1) vet individual markets and 2) identify the combination of markets that optimize IRR.
  - Create a lens by which you maximize opportunity, while ensuring you have the capital and execution capacity to pursue the opportunities identified.



## Assessing Your Opportunity



In examining opportunities, it behooves the industry to not take a step back and examine broader opportunities to secure scale.

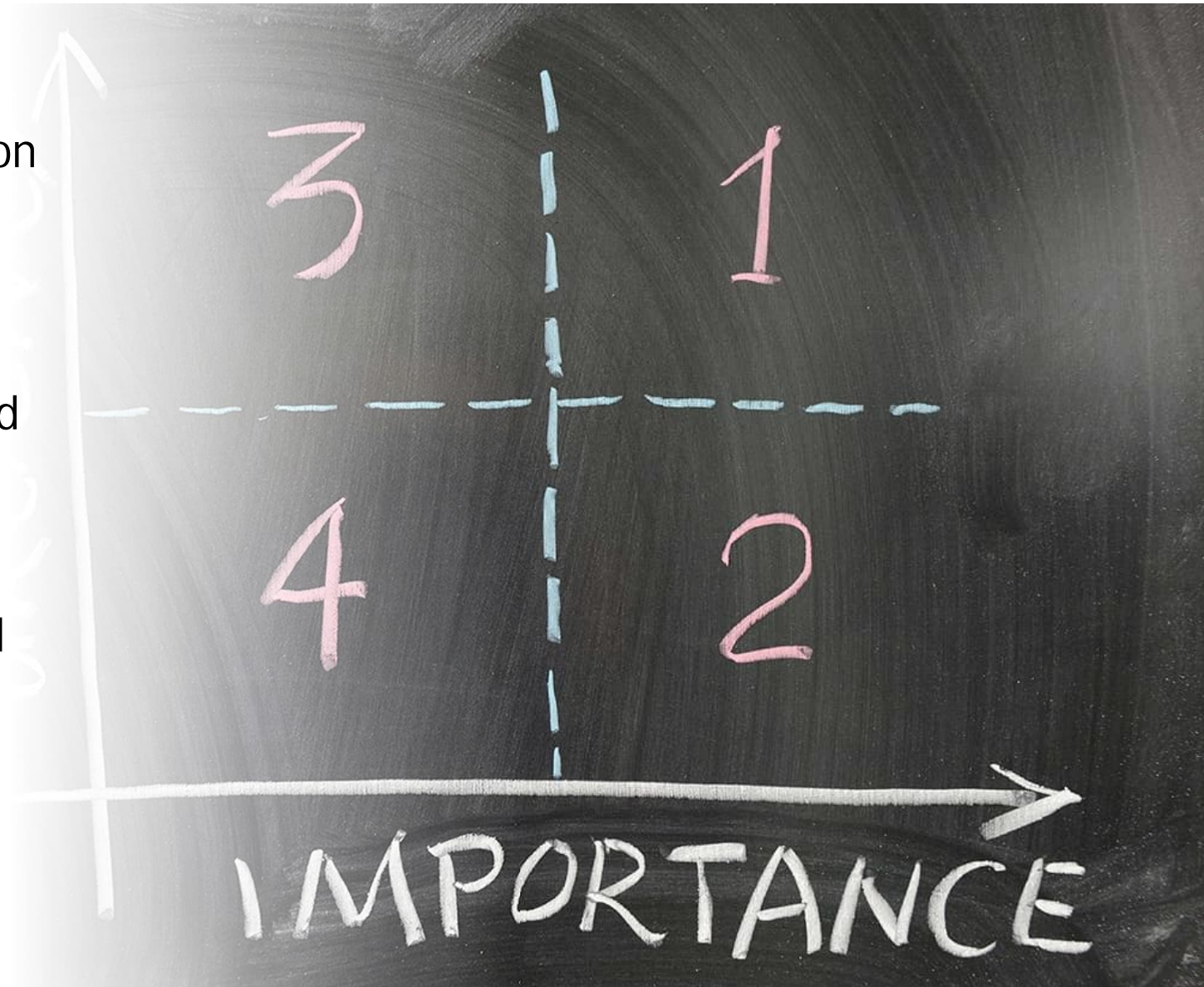
In doing so, its equally important to pragmatically examine factors that could effect:

- The financial feasibility of the initiative;
- The potential partnerships that could be formed to attack a particular market; and,
- The potential competitors that could be contesting the capital necessary to pursue those markets, or may be crafting their own strategies to pursue and thereby foreclose expansion into those markets.



With capital and execution cycles at a premium, important to have objective criteria upon which to:

- Prioritize markets based on objective measures.
- Chronologically stage builds to maximize market momentum and cash flow.



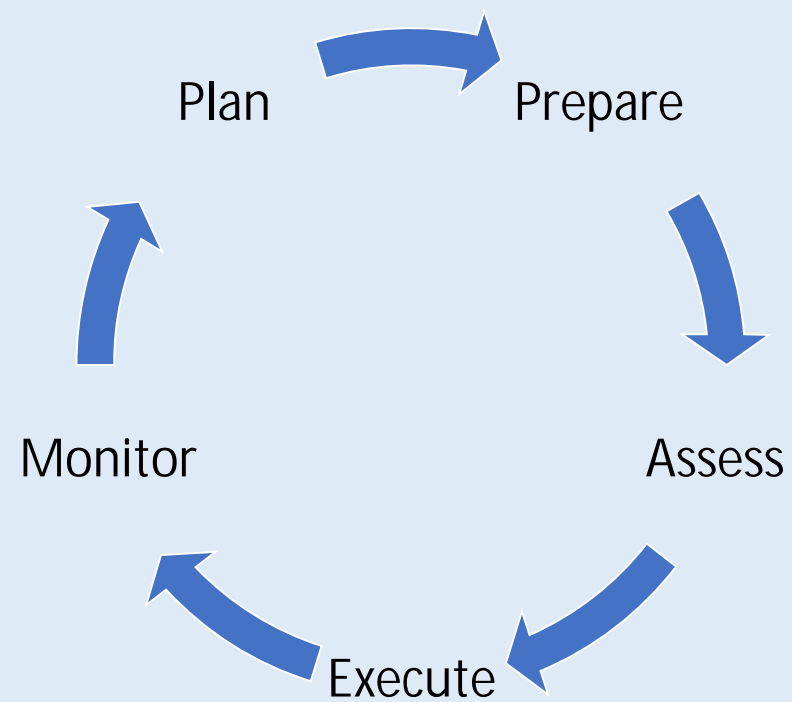


# BROADBAND FOR ALL

Accessible Health Care | Boost K-12 Learning | Economic Opportunity

- Fiberizing your Network increases overall value to the enterprise
- Enables offering *World Class State of the Art* Broadband services
- Contributes to Eliminating the digital divide
- Encourages Economic Development
- Keeps your relationship with your subscribers' *sticky*





# Thanks....

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