

# Idaho Association of Cities: Planning for Your Next Broadband Adventure

---

Eric Forsch | Broadband Development Manager



# Why Definitions Matter

**"Broadband"** *noun* /'brɒd,bænd/

"High-speed, reliable internet." All broadband is an internet connection, not all internet connections are broadband. Can be delivered via multiple technologies, including fiber, fixed wireless, digital subscriber line (DSL), or cable.

## Federal and State Definitions

The federal definition sets the floor for what qualifies as broadband and can receive federal funding.

Definitions can effectively include or exclude the types of technologies/projects that receive funding.

States can have definitions that differ from the federal government depending on state priorities.

# Definitions

**Community anchor institutions.** Schools, libraries, medical and health care providers, public safety entities, institutes of higher education, and other community support organizations.

**Internet backbone.** The primary data routes on the internet, including those that transport internet traffic between countries. It consists of high-capacity fiber-optic lines that carry large amounts of data. Local or regional networks can connect to the backbone for long-distance data transmission. These lines are owned by commercial, government, and academic centers.

**Internet service provider (ISP).** A company that provides individuals, businesses, anchor institutions, etc., with a connection to the internet. ISPs include telephone and cable companies, wireless ISPs, electric cooperatives, municipal utilities, and mobile wireless providers. They use different technologies, including fiber, cable, DSL, and fixed wireless, to deliver internet service to their customers.

**Last mile.** The part of a telecommunications network that connects the local provider to the residential or small-business customer.

**Middle mile.** A physical network that links the backbone to local internet networks, often called last-mile networks. In some communities, the middle mile may connect community anchor institutions to each other, enabling them to share applications, infrastructure, and other resources.

**Open access network.** Networks that are owned by one entity and available for separate service providers to sell retail services. Networks that receive public funds, or that are operated by a public or nonprofit entity, are often required to provide open access.

**Speed.** The rate at which a device can send or receive data. Speed is defined for both download (the rate at which data are sent from the internet to a device) and upload (the rate at which data are sent from a device to the internet), conveyed in megabits per second.

**Take rate.** The percentage of customers within an ISP's service area who subscribe to, or "take," the service.

**Unserved area.** Areas that lack access to broadband service as defined by the state or federal program.

**Underserved area.** Areas that have internet service at speeds higher than those that are defined as unserved but lower than those that have broadband service as defined by the state or federal program.

# Getting from Point A to Point B

- 
- A detailed cross-sectional diagram of a cable assembly. The diagram shows a central core of 8 individual strands, each with a grey outer layer (4) and a blue inner core (3). This core is surrounded by a thick blue layer (2), which is then wrapped in a green outer sheath (1). The entire assembly is shown in a perspective view, with the layers clearly defined and numbered 1 through 8.
- 1 – Polyethylene
  - 2 – Mylar tape
  - 3 – Stranded steel wires
  - 4 – Aluminium water barrier





# Broadband Networks

## Provider Tiers

**Tier 1** - providers whose networks form the internet backbone; deliver traffic to the entire internet through agreements with other Tier 1 providers.

**Tier 2** - providers primarily focused on regional consumer and commercial service; peer with other Tier 2 networks and purchase access to Tier 1 networks.

**Tier 3** - usually last mile providers; must purchase access to connect customers to the global internet.

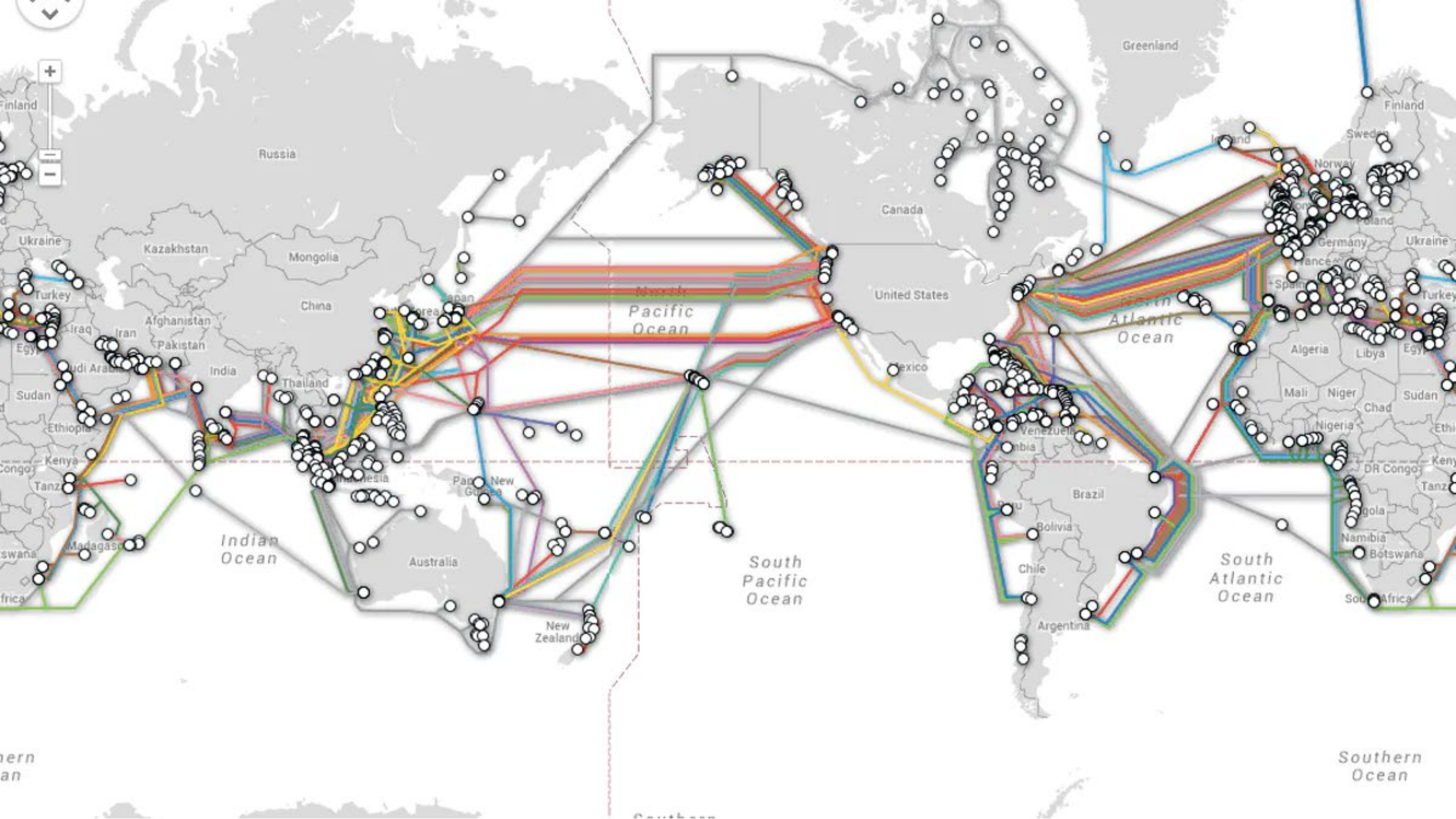
## Definitions

**Internet backbone.** Major data routes hosted by companies, governments, academic, or other networks. Think transoceanic cables. The largest providers operate Tier 1 networks.

**Middle mile.** The physical network that links the backbone to local internet networks, often called last-mile networks. In some communities, the middle mile may connect community anchor institutions to each other, enabling them to share applications, infrastructure, and other resources.

**Last mile.** The part of a telecommunications network that connects the local provider to the residential or small-business customer.

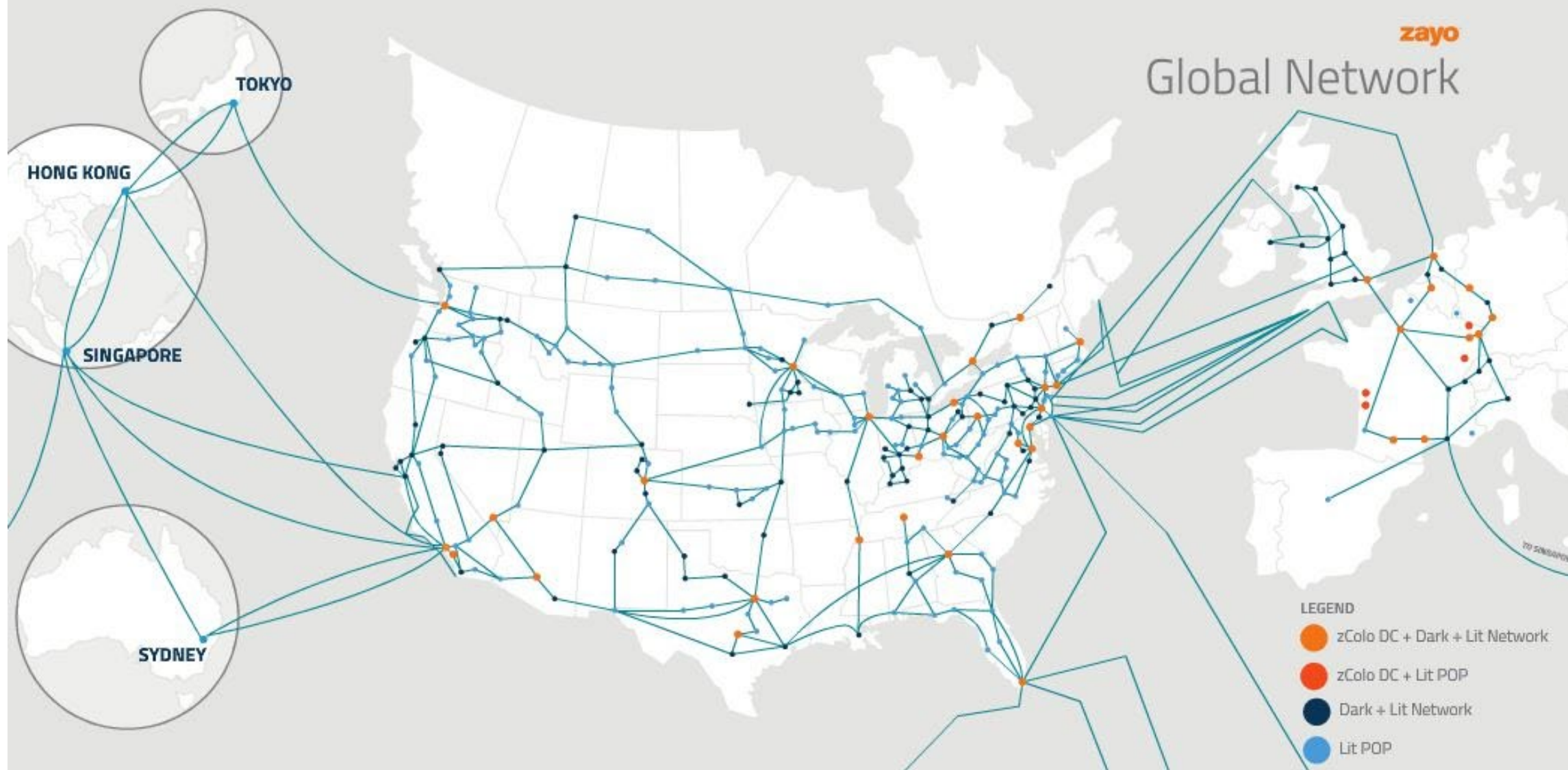
**“Last” last mile.** Line extensions, multi-family units, and reliability.

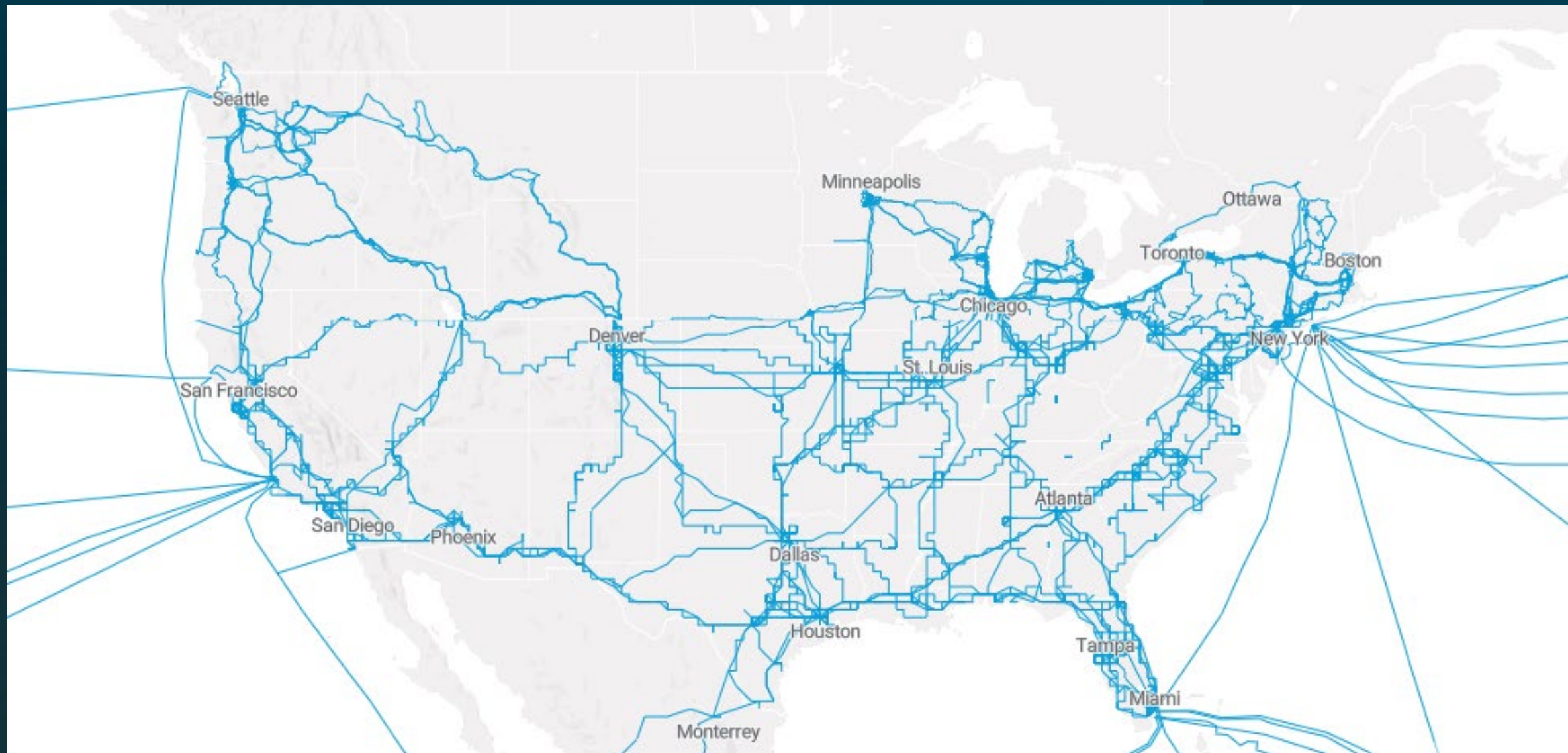




zayo

## Global Network







# WHAT IS BROADBAND?

In its simplest form, the term broadband refers to high-speed internet access that is always on and faster than dial-up. However, as demand for faster and faster internet speeds has increased, so too has the speed definition of broadband. Currently, the Federal Communications Commission defines broadband as an internet connection with a download speed of 25 Megabits per second and an upload speed of 3 Megabits per second. Fixed, terrestrial broadband is high-speed data transmission to homes and businesses that is designed for permanent, stationary use and includes fiber, cable, DSL, and fixed wireless technologies.

## Mobile Broadband

High-speed internet designed for use on-the-go with seamless connectivity from one location to another.



## Fixed Wireless

Broadband service provided between towers and customers using radio waves. Primarily found in rural areas.



## Satellite

Broadband service provided by satellites orbiting the earth. Satellite service can be impacted by line-of-sight and latency.



## Cable

Internet provided by a cable television company over a mixed coaxial and fiber-optic network.



## DSL

Digital-subscriber line (DSL) is broadband delivered over a mixed network of fiber and traditional copper phone lines.

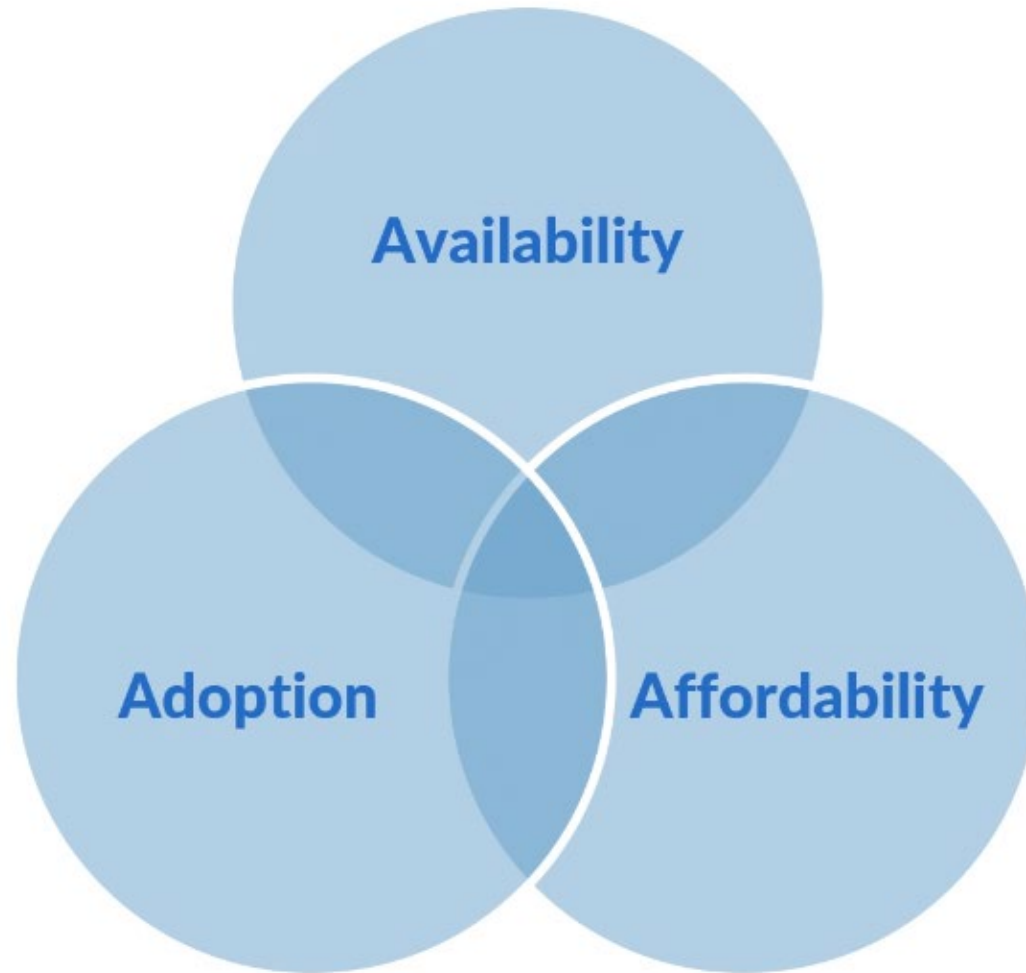


## Fiber

Fiber-optic service uses transparent glass fibers to carry data across distances. Some customers can receive fiber connections directly to their home, but fiber is also used to transport data from communities to the



# The Digital Divide







**Why is this such a  
problem now?**



# Why Speeds Matter

Figure 4. Application speed requirements

Use case		Download requirements	Upload requirements
Videoconference – 1:1	1080 HD	3.0 Mbps	3.8 Mbps
	720 HD	1.2 Mbps	1.2 Mbps
	High-quality	0.6 kbps	0.6 kbps
Videoconference – Group call	1080 HD	3.0 Mbps	3.8 Mbps
	720 HD	1.8 Mbps	2.6 Mbps
	High-quality	600 kbps	1.0 Mbps
Streaming	4K UHD	25 Mbps	N/A
	Full HD	5 Mbps	N/A
	SD quality	3 Mbps	N/A
Gaming	Competitive	50 Mbps	10 Mbps
	Highly interactive	25 Mbps	5 Mbps
	Casual	3 Mbps	0.5 Mbps

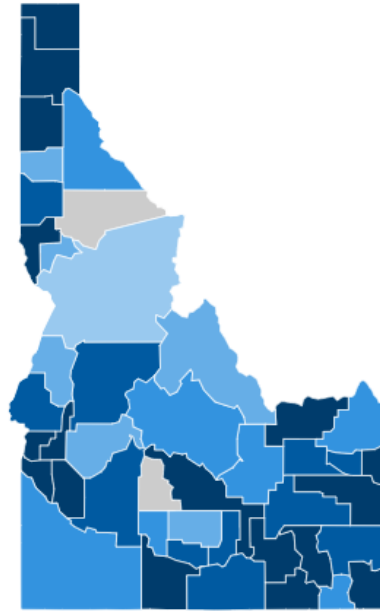
Sources: Deloitte analysis of suggested bandwidth requirements of streaming and videoconferencing platforms

# Maps showing FCC fixed broadband availability and broadband usage based on Microsoft data updated as of November 2019

## Idaho

FCC indicates broadband is not available  
to 252K people

Previous FCC 2018 report indicated broadband was not available to 190K people

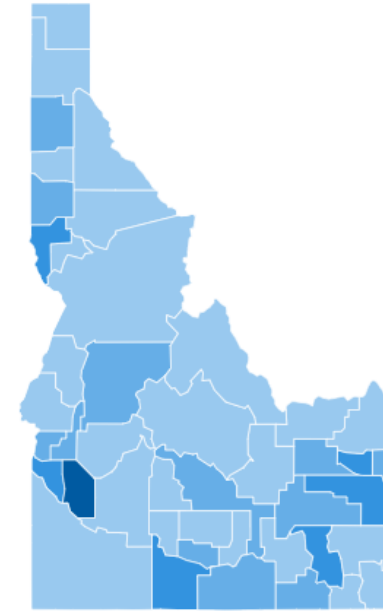


FCC broadband has or "could" provide greater than or equal to  
25Mbps / 3Mbps



Microsoft data indicates ~1.0M people do  
not use the internet at broadband speeds

Previous data from September 2018 indicated ~1.1M people did not use the internet at  
broadband speeds



Broadband speed greater than or equal to 25Mbps





## Layers

▼ ☒ Ookla Median Download Speed

...

▶ ☐ 100 m Bins

...

▶ ☐ 500 m Bins

...

▶ ☒ States

...

▼ ☒ Counties

...

- ☐ Below 10 Mbps
- ☐ 10 - 25 Mbps
- ☐ 25 - 50 Mbps
- ☐ 50 - 100 Mbps
- ☐ Above 100 Mbps
- ☐ No Data

▶ ☒ Tracts

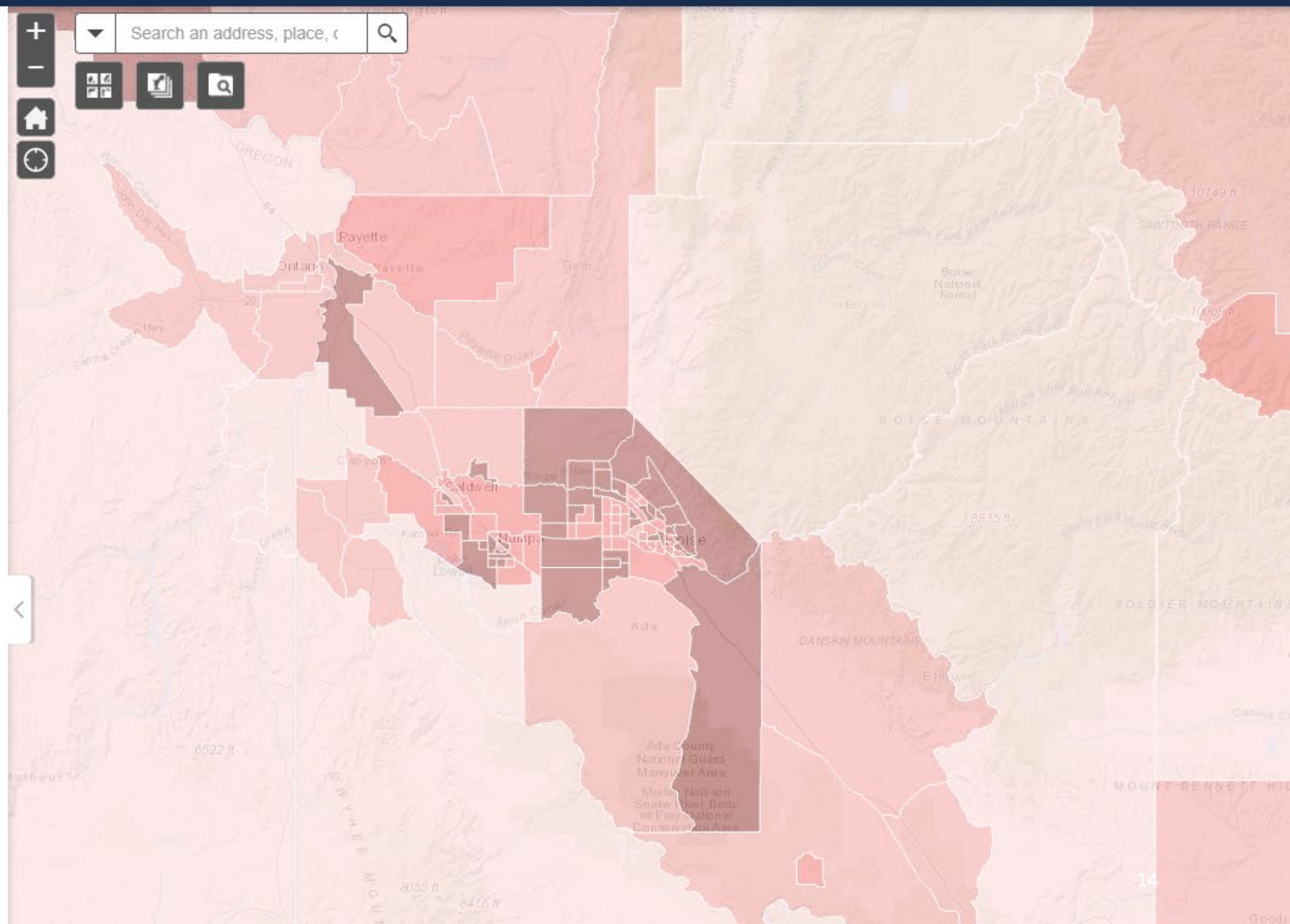
...

▶ ☒ Block Groups

...

▶ ☒ Blocks

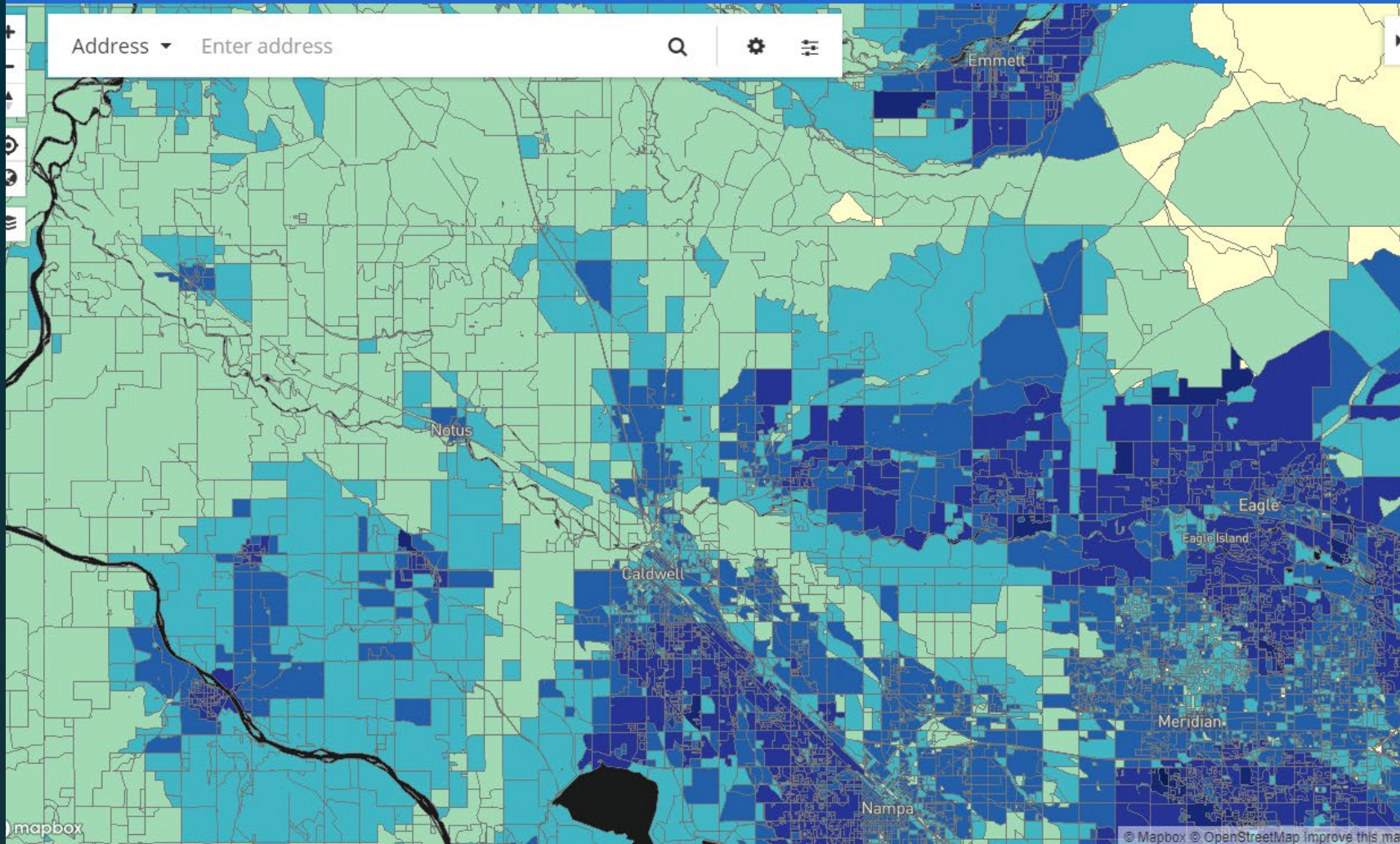
...





# Infrastructure Gaps





## All Providers Reporting Service

### Number of Fixed Residential Broadband Providers



### Broadband

**Technology** ADSL, Cable, Fiber, Fixed Wireless

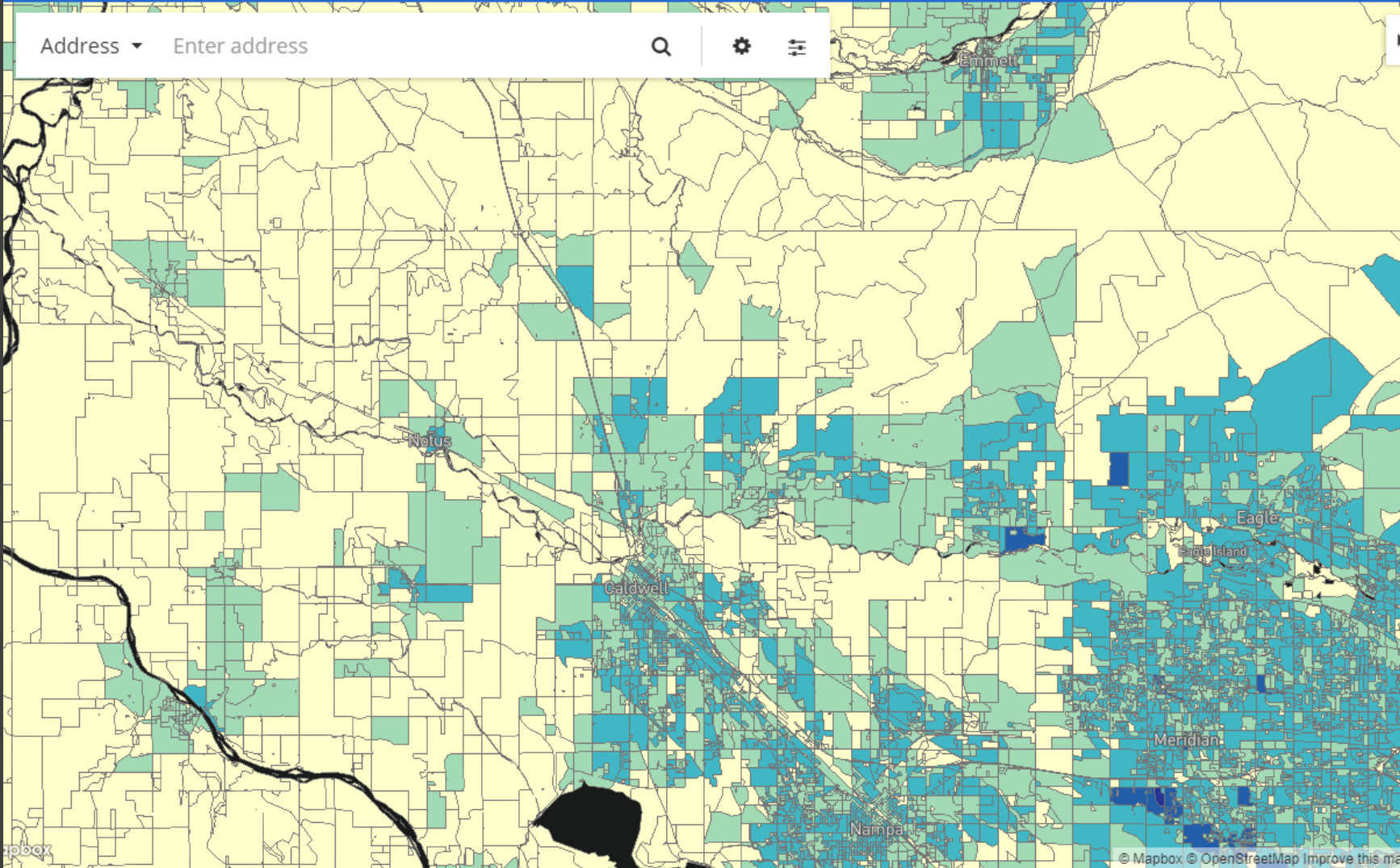
**Speed**  $\geq 25/3$  Mbps

**Date** June 2020 (latest public release)

Please click on the map or search for a location.

# Fixed Broadband Deployment

Location Summary Area Summary Area Comparison Provider Detail Data Download About



## All Providers Reporting Service

### Number of Fixed Residential Broadband Providers



### Broadband

**Technology** ADSL, Cable, Fiber, Fixed Wireless  
**Speed**  $\geq 100/10$  Mbps  
**Date** June 2020 (latest public release)

Please click on the map or search for a location.



A group of six construction workers in high-visibility vests are working in a residential yard. They are installing large orange pipes, likely for irrigation. One worker is on the left, bending over a large black plastic container. Another worker is in the center, holding a long orange pipe. Three workers are on the right, standing near a small tree. A yellow bucket is on the left. A silver car is parked in the background. The word "Affordability" is overlaid in large white text.

# Affordability



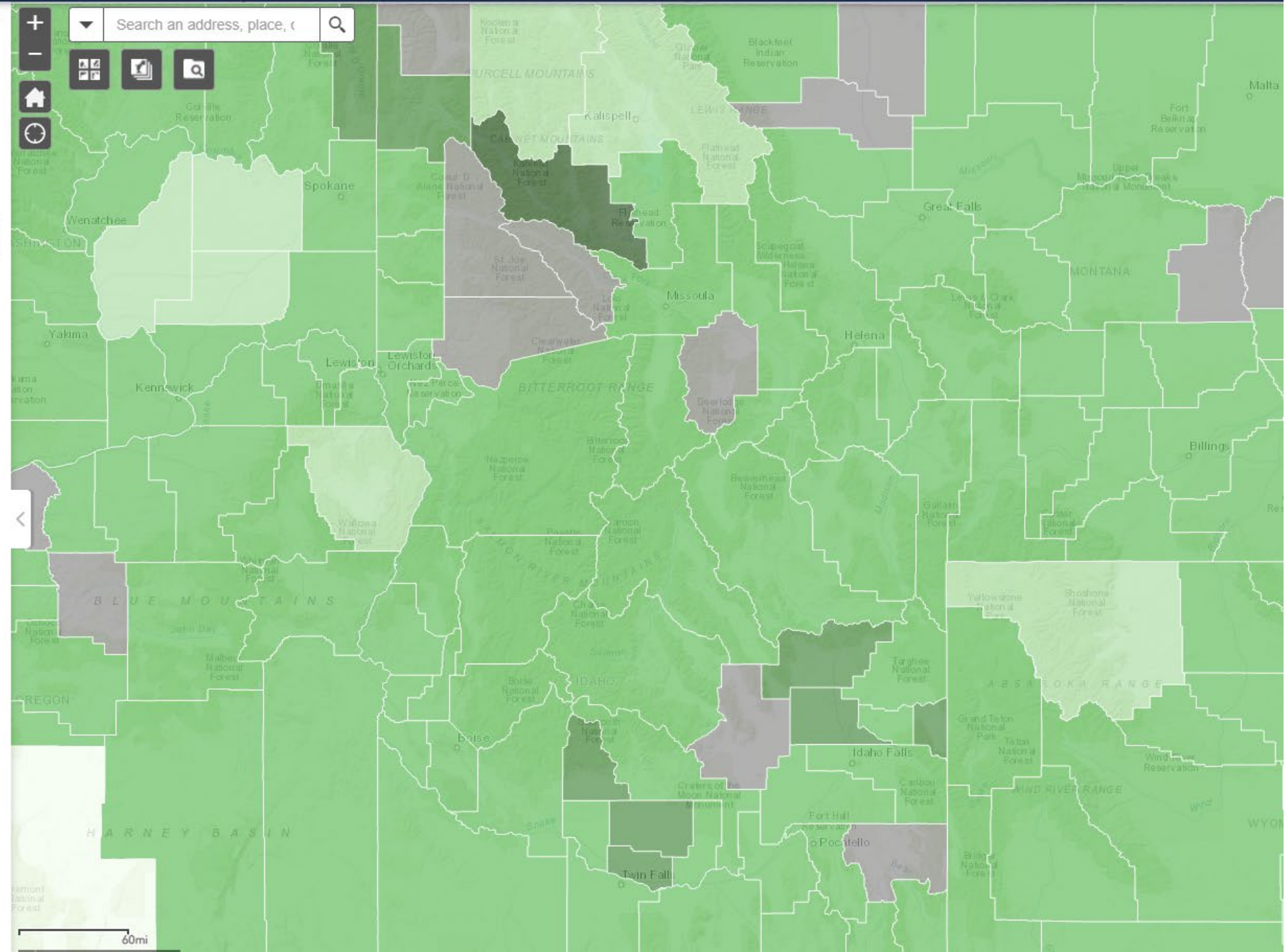
# Home Broadband Connection by Income

*% of U.S. adults who say they have a broadband connection at home, by annual household income*

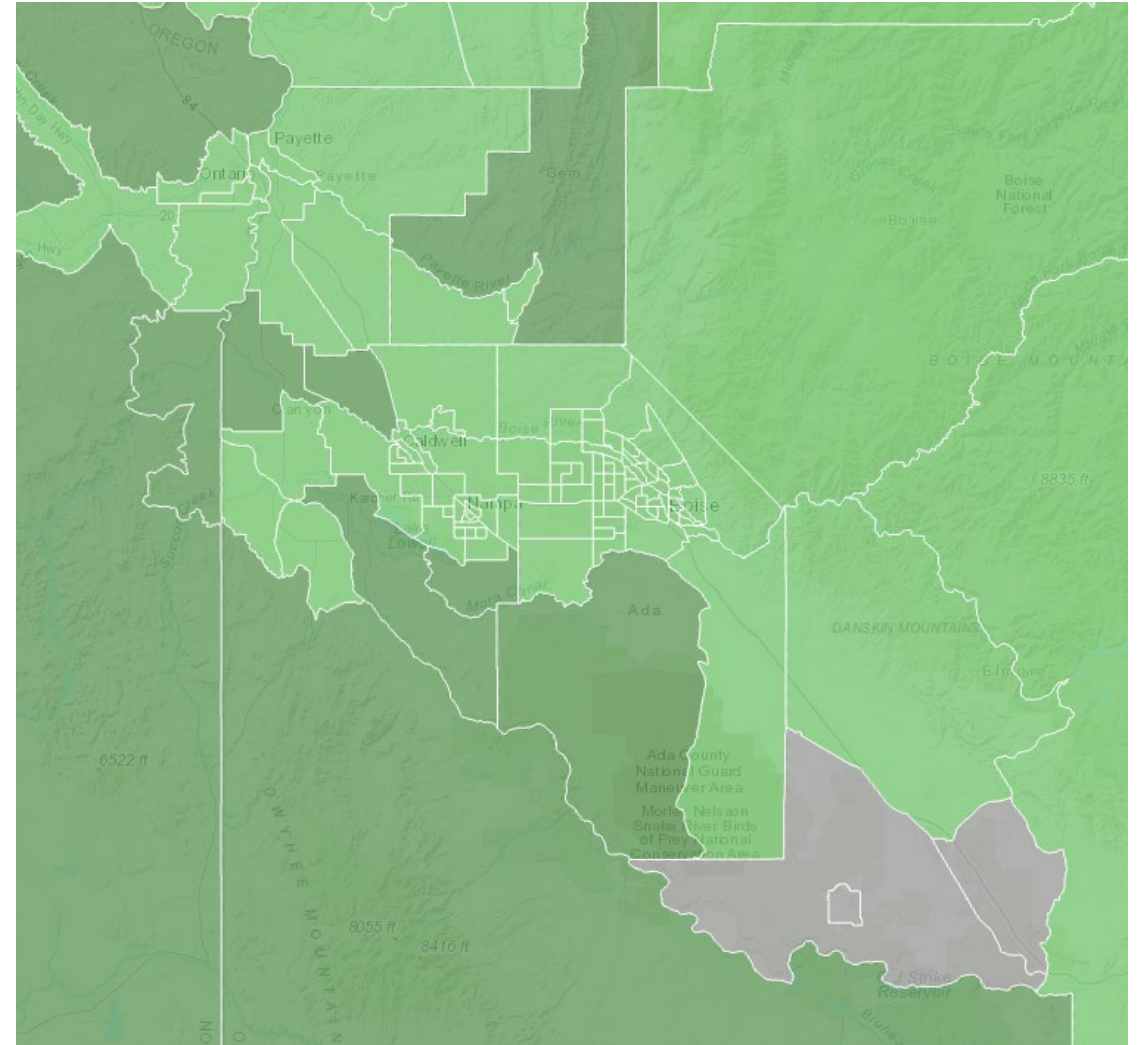
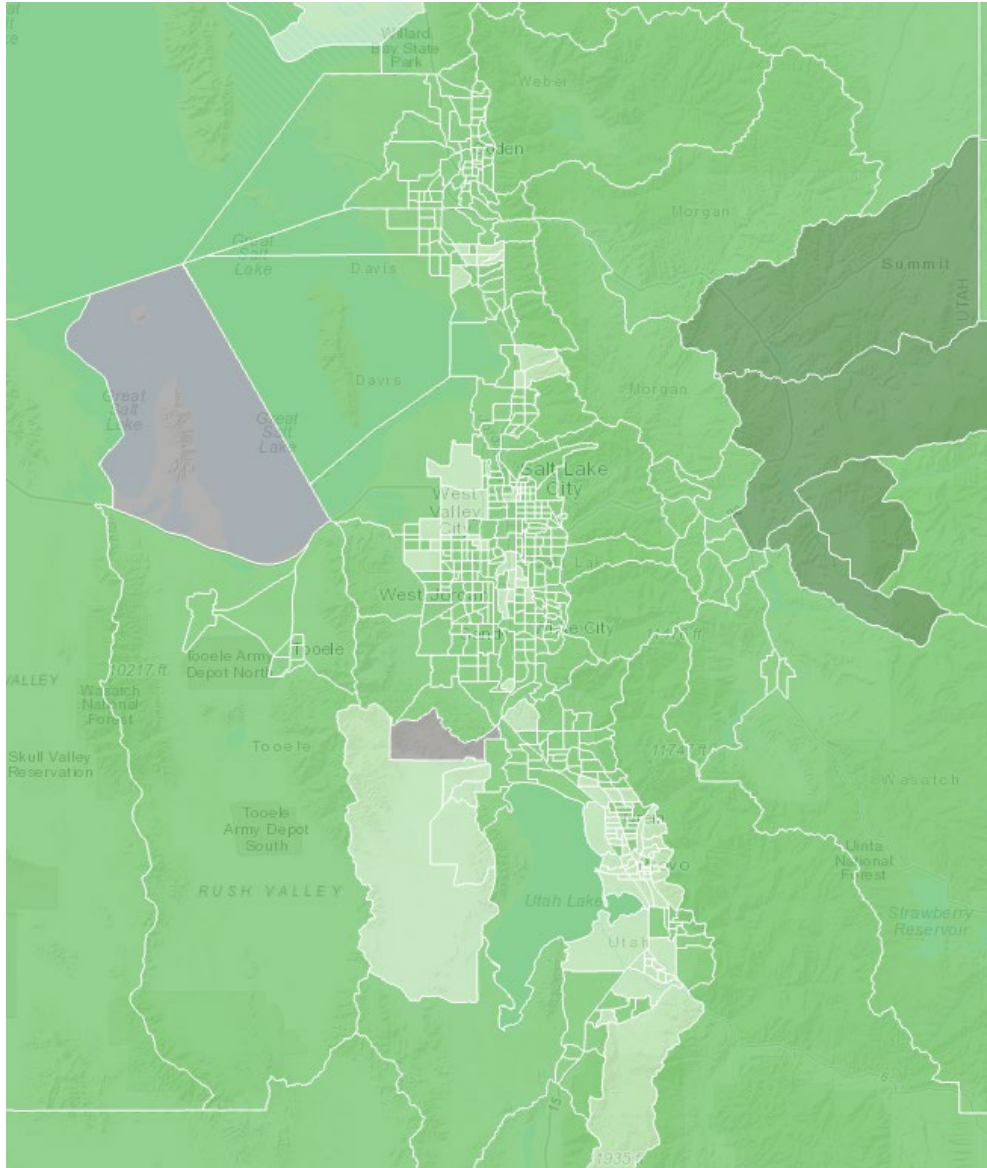


Layers 🔍 ☰

- ☒ BroadbandNOW Average Minimum Monthly Cost Information
  - ☐ 100 m Bins
  - ☐ 500 m Bins
  - ☒ States
  - ☒ Counties
  - ☐ Below \$25
  - ☐ \$25 - \$50
  - ☐ \$50 - \$100
  - ☐ \$100 - \$150
  - ☐ Above \$150
  - ☐ No Data
- ☒ Tracts
- ☒ Block Groups
- ☒ Blocks







Cost Comparison between Salt Lake City and Boise

# Devices





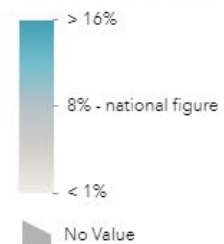


## Layers

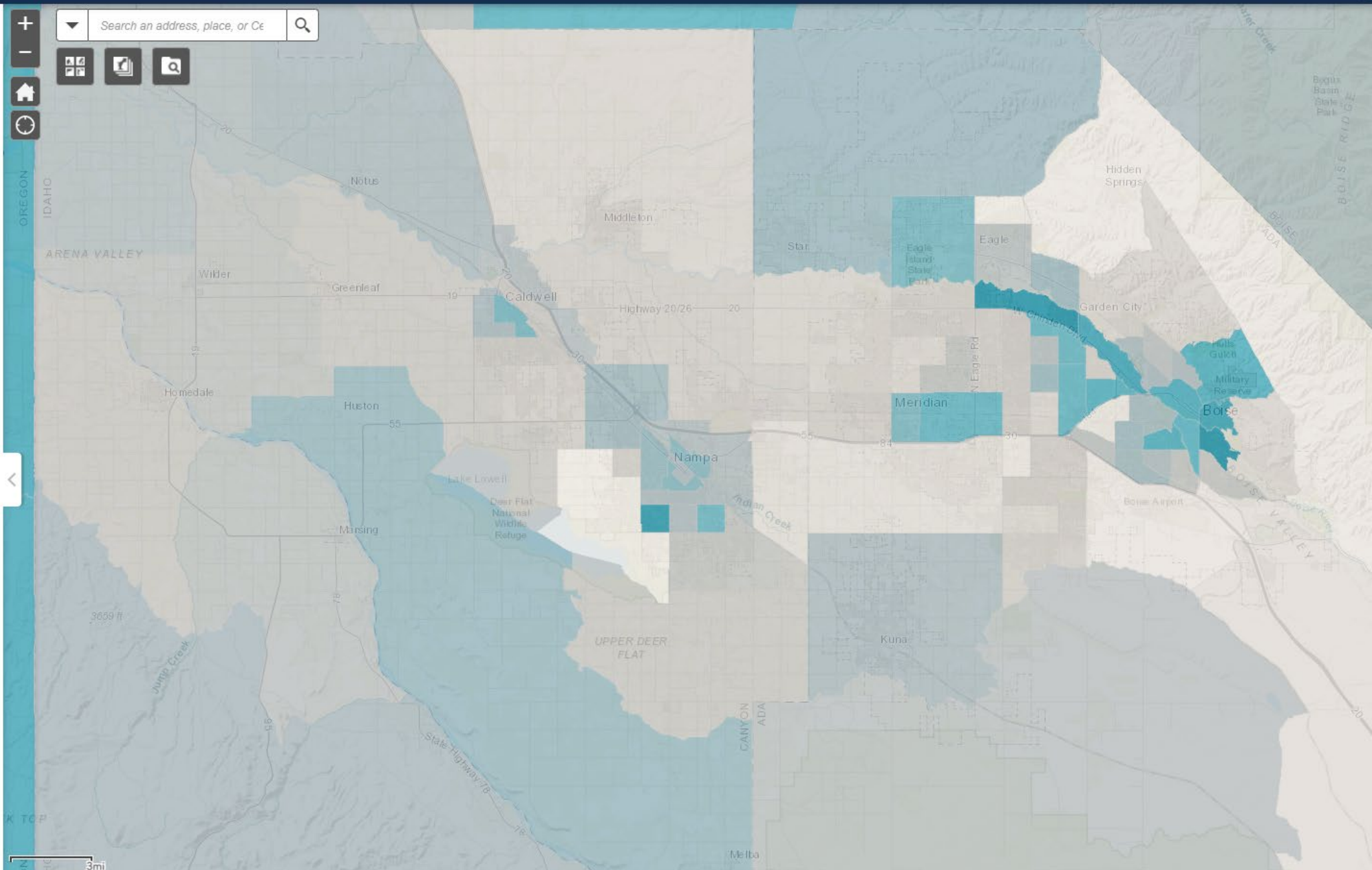


- ☒ ACS Internet Access by Education Variables - Boundaries - State ...
- ☒ ACS Internet Access by Education Variables - Boundaries - County ...
- ☒ ACS Internet Access by Education Variables - Boundaries - Tract ...

Percent of Population 25 Years and Over who are High School Graduates (Includes Equivalency) or Have Some College or Associate's Degree in Households that Have No Computer



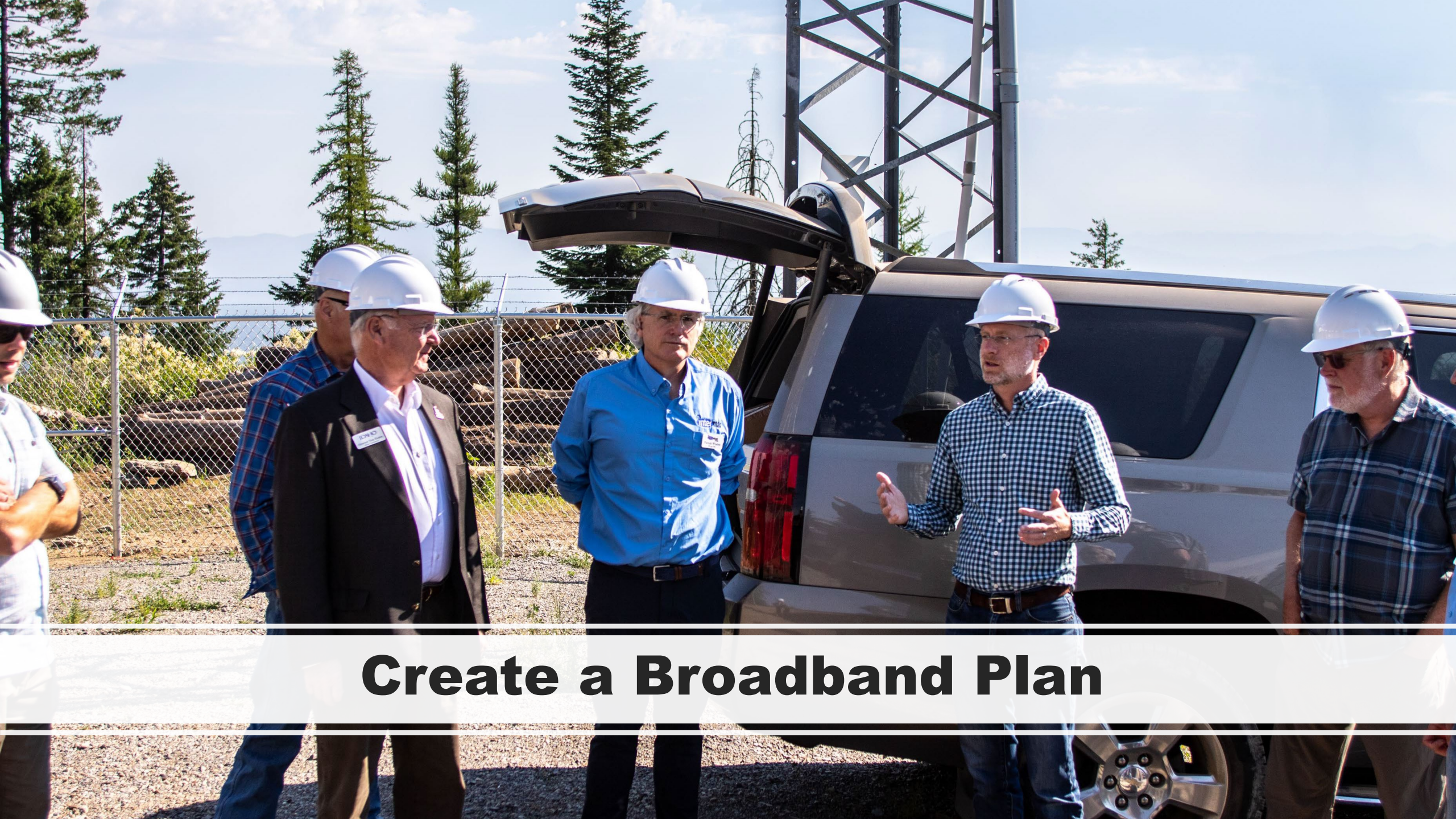
- ☐ Households With No Computer Available ...
- ☐ Households with No Smartphone ACS 2018 ...
- ☐ Households with a Smartphone Only ACS 2017 - Households with a Smartphone Only (%) ...
- ☐ FCC Maximum Advertised Download Speed ...





# Near Term Solutions for Communities





**Create a Broadband Plan**





# **Multi-Family Housing Unit Policies**





**Include Fiber in other Infrastructure Builds**



# Create more Public Wi-Fi Solutions

- More and more services are moving online.
- Versatile (libraries, parks, city hall, parking lots)
- Easy to contract with an ISP
- Helps families with no other internet options
- Can be driver for economic growth (coffee shop, brewery, food hall)





## Idaho Public Library Wi-Fi



This map shows free W-Fi at public libraries in the State of Idaho. Click on the icons to see more information about each location.



162 views

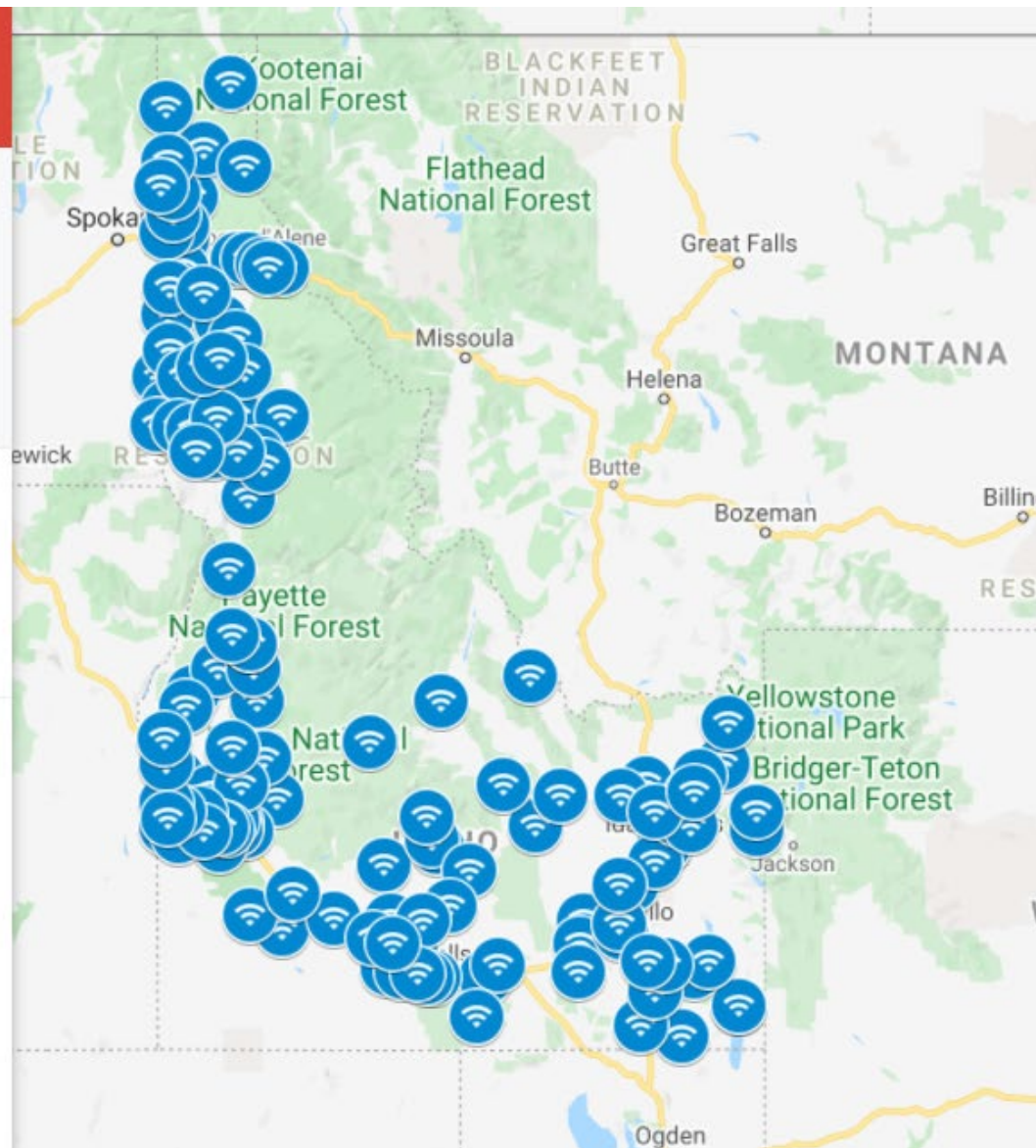
[SHARE](#)



**PUBLIC WI-FI**



**PUBLIC LIBRARIES**





# Grant Funding Options

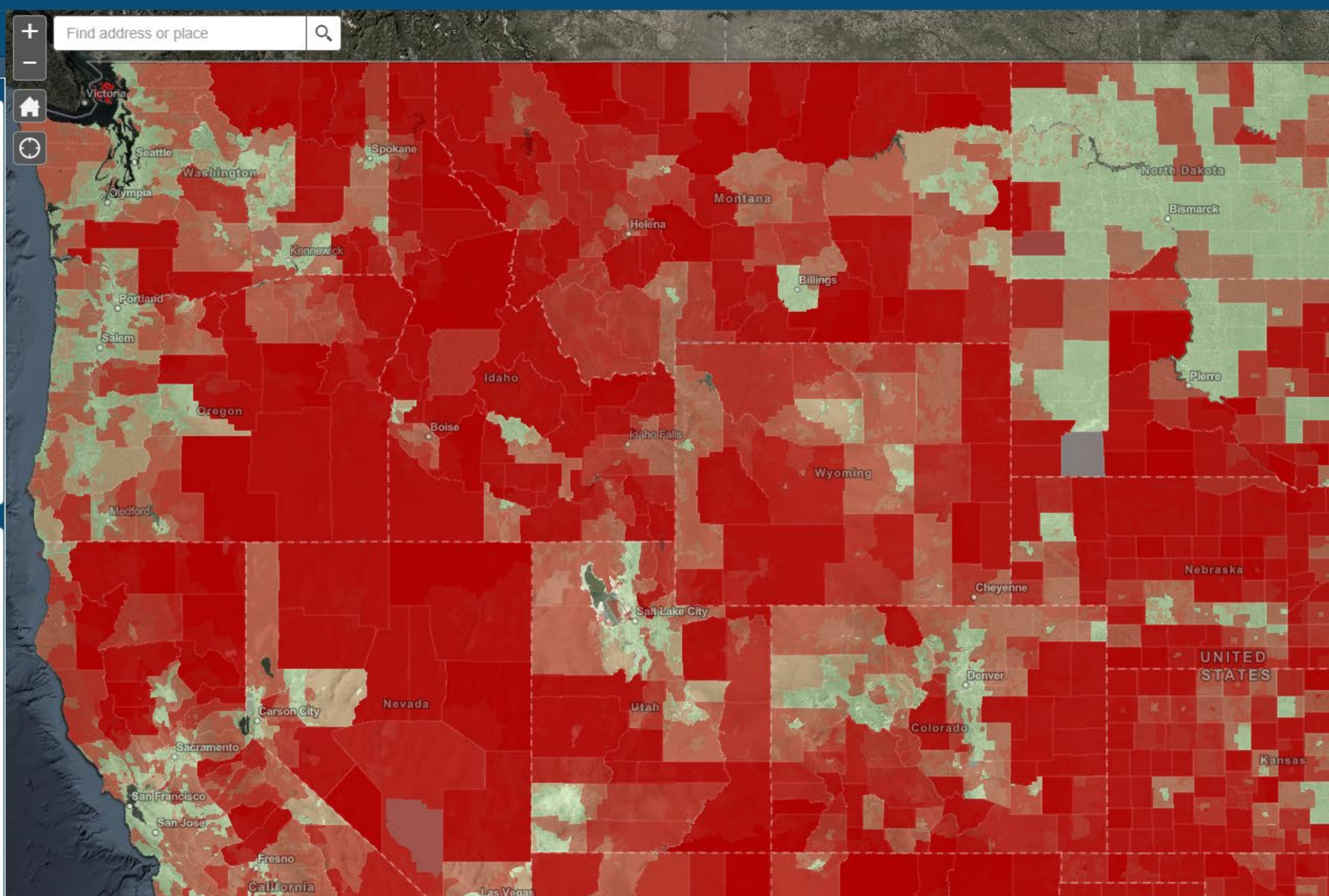


Indicators of Need

- ☒ Usage - 75% or More of Devices Connect to Microsoft Updates/Services via Fixed Broadband Download Speeds below 25 Mbps (County Level) ...
- ☒ Speed Tests - M-Lab Median Speeds Fixed Broadband Below 25/3 Mbps (County Level) ...
- ☒ Speed Tests - Ookla Median Speeds Fixed Broadband Below 25/3 Mbps (Census Tract Level) ...
- ☒ American Community Survey - 25% or More of Households Report No Internet Access (Census Tract Level) ...
- ☒ American Community Survey - 25% or More of Households Report No Computer, Smartphone or Tablet (Census Tract Level) ...
- ☒ FCC Form 477 - No Provider Reports Consumer Fixed Broadband Services at 25/3 Mbps (Census Block Level) ...

Additional Layers

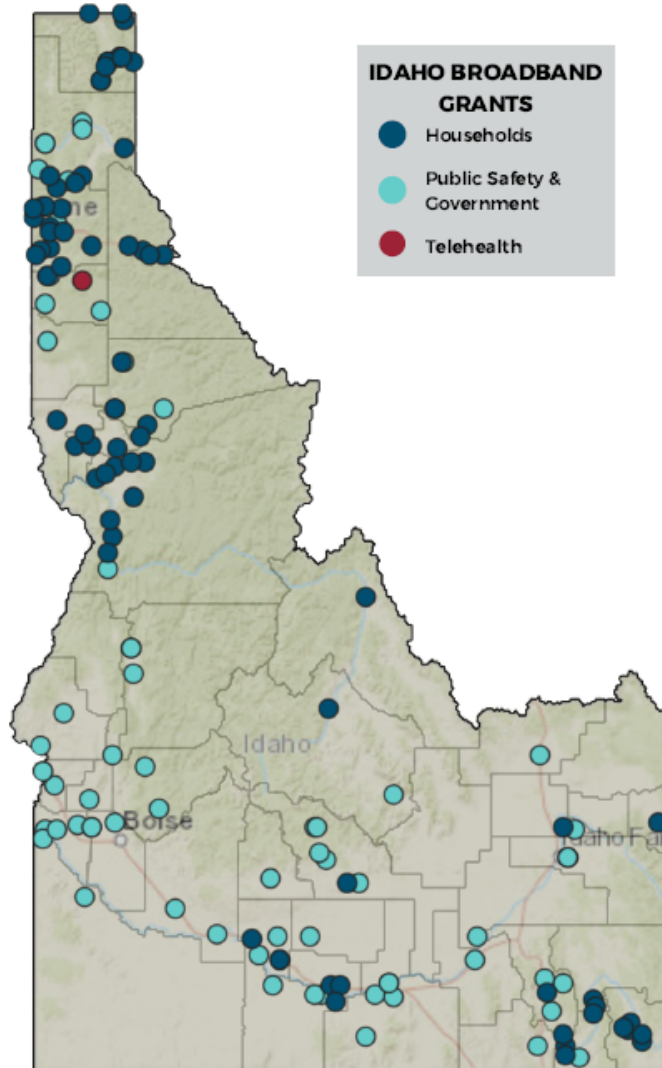
- ☐ Minority Serving Institutions (NTIA MSIs) ...
- ☐ American Community Survey - High Poverty Communities 20% or More of Households Below Poverty Level (Census Tract Level) ...
- ☐ Tribal Lands (Census AIANNH) ...
- ☒ County Boundaries (Zoom Out) ...
- ☒ Tract Boundaries (Zoom In) ...
- ☒ Census Block Boundaries (Zoom In) ...







# IDAHO BROADBAND GRANT PROGRAM



The Idaho Broadband Grant funded projects across Idaho, improving broadband infrastructure and service for Idaho households, businesses, libraries, healthcare clinics, hospital facilities, public safety organizations and local governments.

**The Idaho Department of Commerce granted \$38,361,250 to complete 83 broadband expansion projects in Idaho through the grant.**

**\$38M**  
FUNDS  
AWARDED

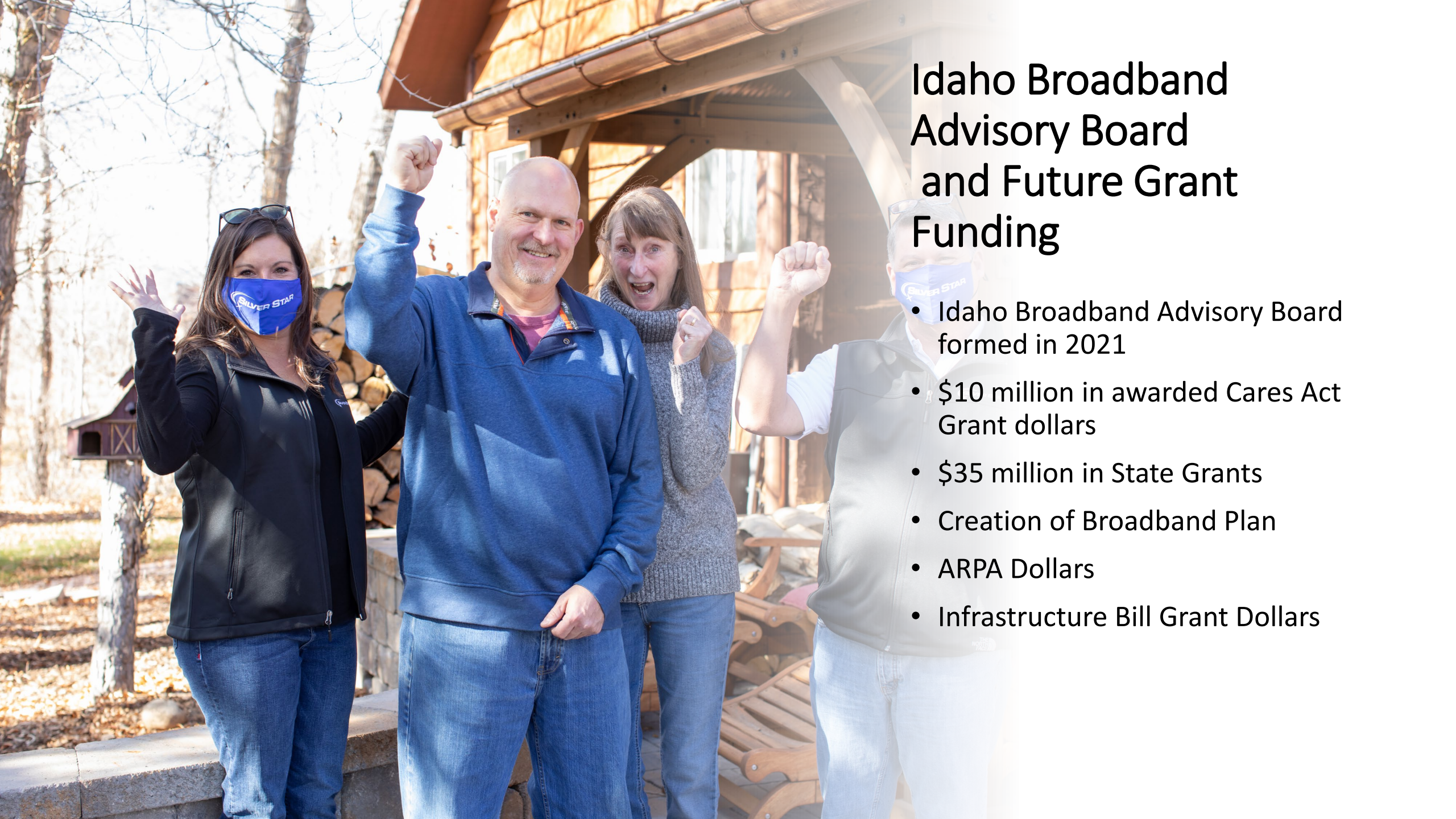
**30,000+**  
HOUSEHOLDS  
SERVED

**147**  
COMMUNITIES  
IMPACTED

*"Our historic broadband investments mean students and families across Idaho will have the tools they need to succeed. First responders will have the connection and communication they need to do their jobs, and healthcare providers can expand their utilization of telemedicine. The benefits of these completed projects are just the beginning of many more in Idaho."*

**- Governor Brad Little**



A photograph of four people (three women and one man) standing outdoors in front of a wooden building with a stone fireplace. They are all smiling and raising their fists in a celebratory gesture. The woman on the far left is wearing a black jacket and a blue face mask with 'SILVER STAR' written on it. The man in the center is wearing a blue sweatshirt. The woman next to him is wearing a grey sweater. The person on the far right is wearing a grey vest over a white shirt and a blue face mask with 'SILVER STAR' written on it. The background shows a wooden building with a stone fireplace and some trees.

# Idaho Broadband Advisory Board and Future Grant Funding

- Idaho Broadband Advisory Board formed in 2021
- \$10 million in awarded Cares Act Grant dollars
- \$35 million in State Grants
- Creation of Broadband Plan
- ARPA Dollars
- Infrastructure Bill Grant Dollars



# ARPA Dollars

---

- Grants to Idaho Cities and Counties and State
- Idaho's Share | **State Receives \$1.19 billion**
  - Counties Receive \$346,590,252 for 44 Counties
  - Cities Receive \$233,088,607
- Projects must provide broadband that delivers speeds of 100/100 Mbps or if that isn't feasible 100/20Mbps.
- Target Underserved (25/3Mbps) and unserved (10/1) areas.
- Areas not currently served by wireline connection.

# Infrastructure Bill

---

- Idaho Allocation
  - Idaho will receive \$128 million dollars if approved by House
- Requirements
  - Treasury Rules being written
  - Underserved Speeds will be 100/20Mbps, Unserved Speeds 25/3Mbps.
  - Delivery of 100/100Mbps and 100/20 Mbps for new investment.
- Coordinate
  - Look at existing infrastructure in community including community owned infrastructure or future infrastructure plans to leverage dollars.
  - Coordinate with schools, libraries, and state and local governments to stretch dollars.
  - Start a community broadband plan.





## Resources on the Idaho Commerce Page

---

### Additional Idaho Broadband Resources

#### **Idaho BroadbandNow Map**

Combination of data from FCC, NTIA and other sources, giving county and city statistics on broadband connectivity including pricing, providers and advertised speeds.

#### **FCC Broadband Map**

Map from the FCC showing residential broadband connectivity as reported by ISPs to the FCC. Data is reported down to the Census block level but may overstate reported service since providers may not offer service to every home in that Census block.

#### **Idaho Broadband Task Force**

Information on the Idaho Broadband Task Force, meetings, and recommendations.

#### **Idaho Department of Transportation Dig Once Map**

Idaho Department of Transportation's Dig Once Map allows communities and ISPs to take advantage of earth-moving activities to deploy conduit and fiber more effectively.

#### **Local Highway Transportation Advisory Committee Map**

Map from LHTAC showing projects in pre-design, design, bidding and construction.

#### **Wi-Fi Locations Available to Idaho Students**

Public Wi-Fi locations in Idaho reported from the Idaho Department of Education including



**Questions?**