

THANK YOU FOR ATTENDING TODAY



This session will be recorded and closed captioning is available.



Use the Chat to share your thoughts with the group throughout the session.



Use the Q&A box to post questions to the panelists during the meeting.



Use the raise hand feature to be unmuted if you wish to speak to the group.



A Q&A session will also follow the presentation.



BEAD & DIGITAL ACCESS STAKEHOLDER SESSIONS

ctc technology & energy
engineering & business consulting

Statewide Sessions

AGENDA



Introductions

Broadband Technology Overview

Broadband Funding and Programmatic Opportunities

Community Engagement

Survey, Discussion, Q&A

BROADBAND TECHNOLOGY OVERVIEW

An introduction to broadband infrastructure and technologies for communities and local policymakers



DEFINITIONS AND CONCEPTS: BITS AND BYTES



These two are frequently confused but are distinct—both are measures of digital information, but one refers to speed and the other refers to amount of data

BITS PER SECOND (SOMETIMES SHORTENED TO "BITS")

- Used to describe a measure of speed—how fast data travel across a network (“bandwidth”)
- The number of bits per second tells us how fast the communication is moving on the network
 - In a roads analogy, “bits per second” are analogous to a car’s miles per hour
 - **Megabit = 1,000,000 bits**
 - **Gigabit = 1,000 megabits**

A “BYTE” IS EQUAL TO 8 BITS

- Used to describe the amount of data stored (memory capacity)
- The number of bytes tells us how much information is involved
 - In a roads analogy, “bytes” is analogous to the number of cars on the road
 - **Megabyte = 1,000,000 bytes**
 - **Gigabyte = 1,000 megabytes**

• “My internet speed is really fast — it’s up to a gigabit per second.”

BROADBAND TECHNOLOGY

• “My data plan with T-Mobile lets me send or receive a total of five gigabytes per month.”

FEDERAL AND STATE BROADBAND SPEED THRESHOLDS



**25/3
Mbps**

The FCC's definition is 25 megabits per second down and 3 megabits per second up (25/3 Mbps)

**100/20
Mbps**

Congress set a new 100/20 Mbps standard in the American Rescue Plan Act and Infrastructure Investment & Jobs Act

**100/100
Mbps**

State threshold for adequate broadband 100/100 Mbps

HOW MUCH BANDWIDTH DO WE NEED?

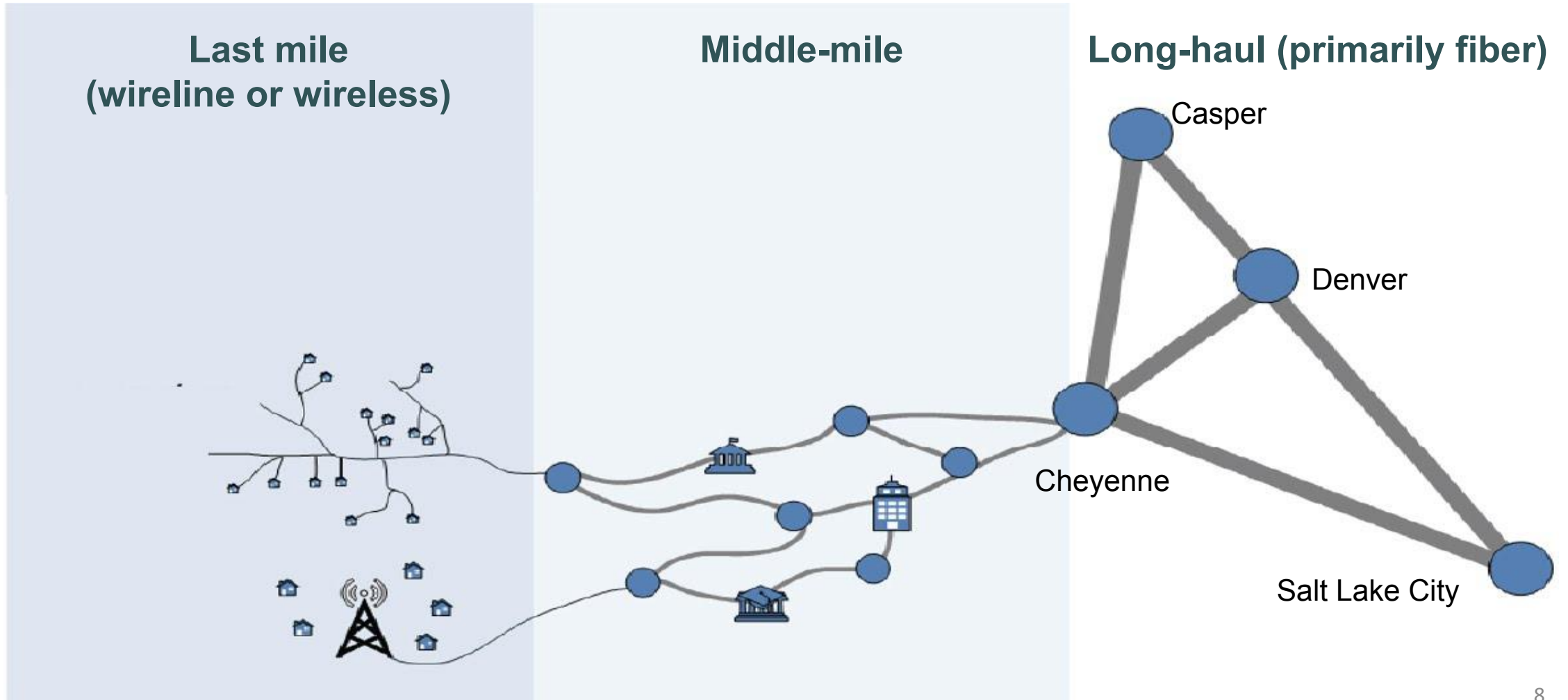
Today we need more bandwidth than minimum 25/3 Mbps broadband speeds defined by FCC



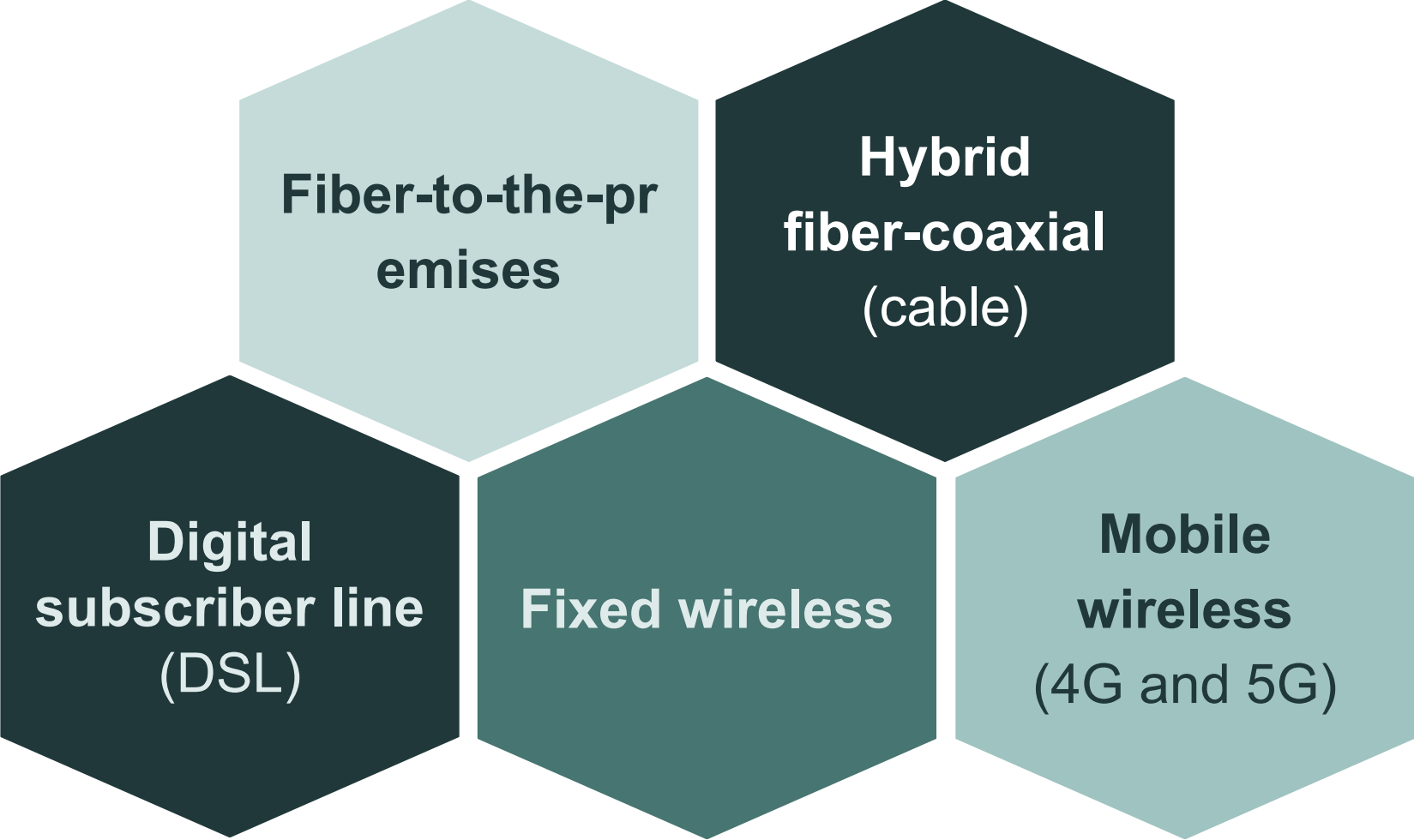
With augmented reality, other anticipated applications, and increased usage we will soon need much higher speeds



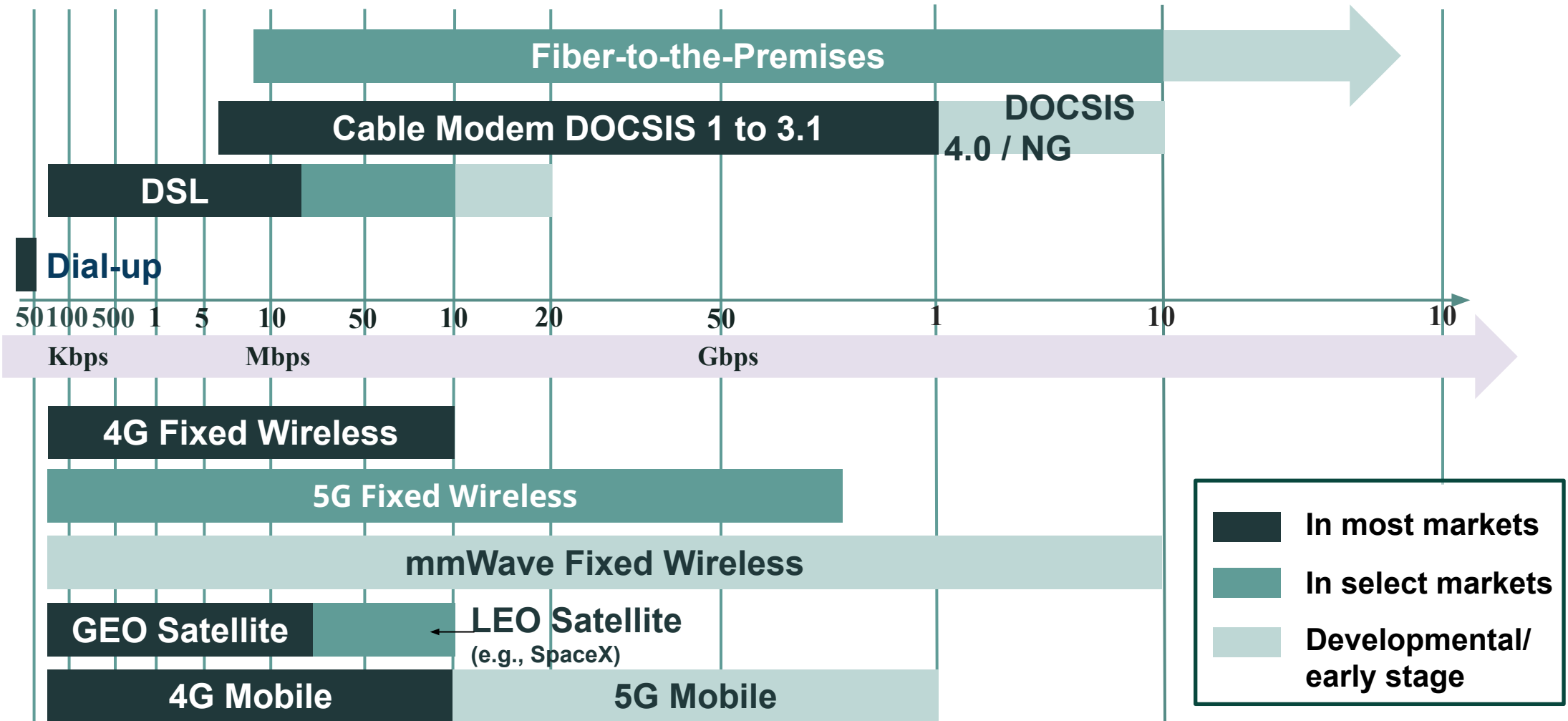
THE ELEMENTS OF A BROADBAND NETWORK



TYPES OF BROADBAND INFRASTRUCTURE

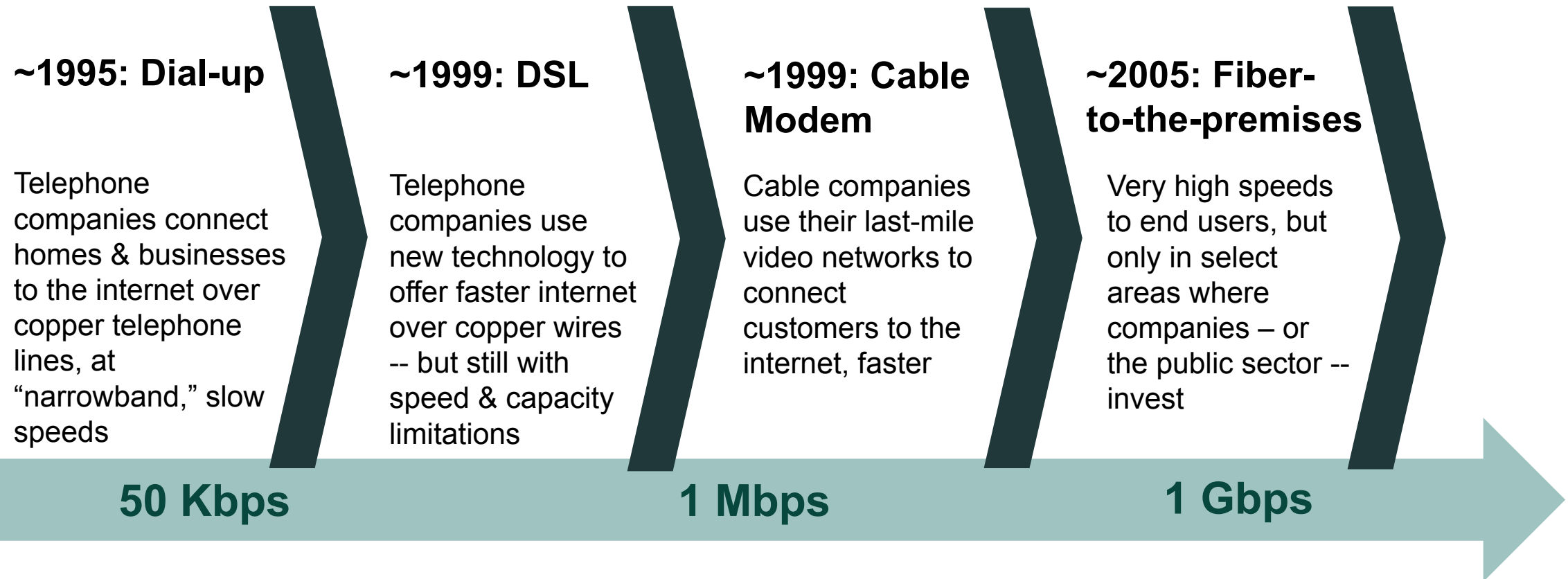


TYPICAL SPEEDS: WIRELINER AND WIRELESS TECHNOLOGIES



HOW DID WE GET HERE?

Broadband has developed through the evolution of technology & industry investment



WHAT IS “DIGITAL ACCESS”?

Generally, experts have identified five elements of digital connectivity:



Broadband Access:

Affordable, accessible, and reliable high-speed home internet service is available for all individuals



Accessible and Inclusive Content:

Public online content is inclusive and accessible by all individuals



Devices and Tech Support:

Individuals have access to a computer or tablet and technical support



Privacy and Security:

Individuals can protect their data privacy and online security



Digital Literacy and Skills:

Individuals have digital skills to support their ability to meaningfully use the internet in their daily lives

FUNDING AND PROGRAMMATIC OPPORTUNITIES

Funding overview and timeline

BROADBAND, EQUITY, ACCESS, AND DEPLOYMENT (BEAD)



National Telecommunications Information Administration (NTIA) grant program

- Funding helps states connect unserved addresses, then underserved addresses, then ensure community anchors institutions can get gigabit internet connection.
- Prioritizes fiber direct to end user for deployment of last-mile infrastructure, requires funded projects to offer low-cost options to eligible subscribers.
- At least \$100M to state plus allocation based on number of unserved addresses per FCC maps. States have challenged FCC maps with additional data.
- State must submit broadband Five-Year Action Plan, Initial Proposal for deployment projects (20% funding upon NTIA approval), and Final Proposal to complete deployment (remaining allocation upon approval)

BROADBAND FUNDING PRIORITIES AND TIMELINE



The Wyoming Business Council is developing a statewide plan for expanding broadband to all in-state addresses including through upcoming BEAD funds of **at least \$100 million**

Funds to be expended in order

1. Unserved locations: those that cannot get internet service of at least 25/3 Mbps
2. Underserved locations: those that can get internet service between 25/3 and 100/20 Mbps only
3. Community Anchor Institutions (schools, libraries, hospitals) – locations that cannot get 1 Gbps symmetrical
4. Low-income and affordable housing

Planning

Provisional grant program

Deployment

2023

2024

2025

ADDITIONAL OPPORTUNITIES FOR EXCESS BEAD FUNDS



Broadband Connectivity

Installing or providing low-cost internet to multi-dwelling units for low-income residents; supporting sign-up for broadband subscriptions and subsidies; subsidizing broadband subscriptions

Digital Skills and Digital Navigators

Supporting programs to teach digital literacy skills from entry level to coding; supporting digital navigator programs to provide 1:1 support to help people use the internet

Covered Populations

Focused programs on covered populations such as seniors, veterans, individuals with disabilities, incarcerated individuals, or English learners

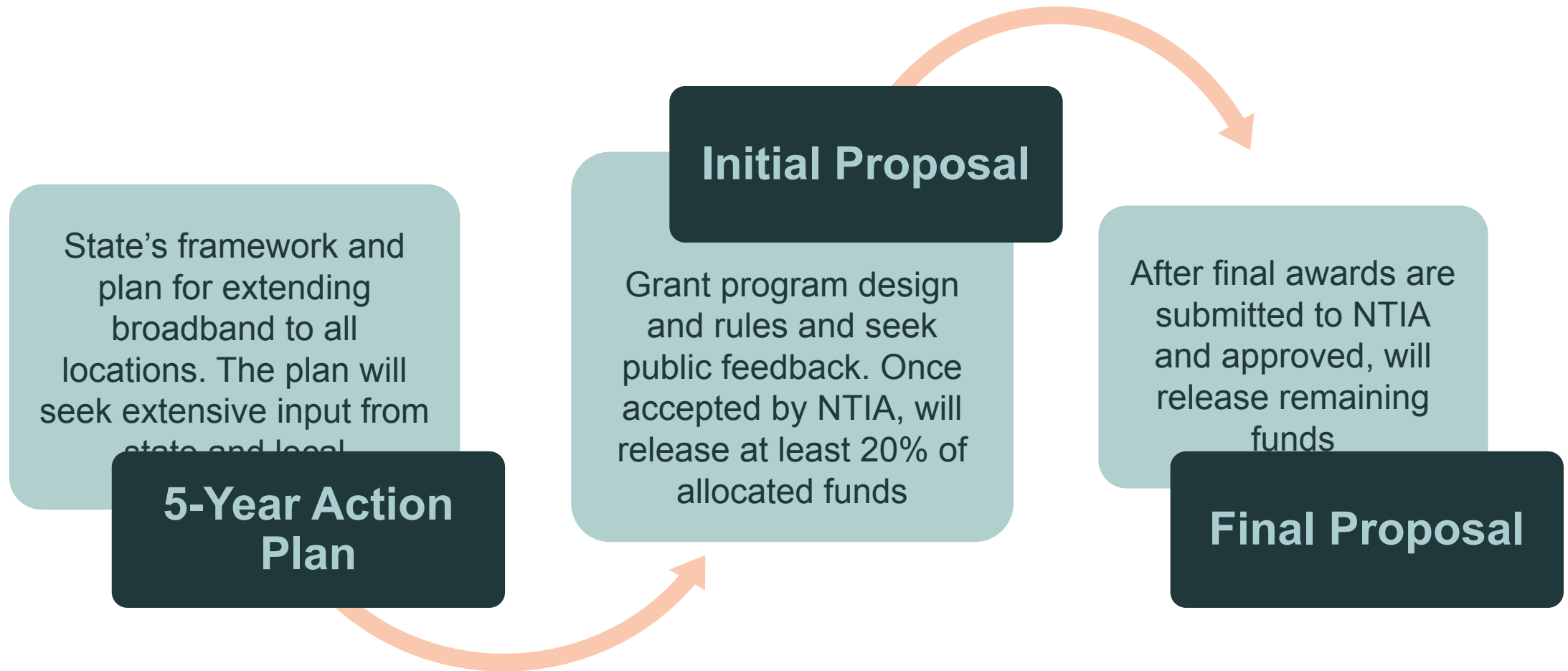
Workforce Development

Investing in workforce training to supply workers for infrastructure deployment projects

Telehealth Services

Digital training to support the use of telehealth services

REQUIRED PLANNING WILL RESULT IN RELEASE OF FUNDS



BROADBAND SERVICE DEPLOYMENT UNDER BEAD

Broadband service project areas prioritize unserved address locations

- State issues subgrants and requires matching funds to deploy broadband infrastructure and deliver service
- Projects comply with fair labor standards
- State workforce development plan supports readiness and new jobs to underrepresented groups
- Low-cost service options available to households qualifying for the Affordable Connectivity Program (ACP)
- Low-cost service parameters address affordability for middle class and support service availability to underrepresented groups
- Promote compliance with environmental laws, cybersecurity, and fair and equitable labor practices



STATE DIGITAL EQUITY (ACCESS) PLANNING & CAPACITY (SDEP)



National Telecommunications Information Administration grant programs

- Funding helps states plan for and prepare digital equity programs
- States' planning efforts and must identify needs and barriers to digital equity and outline specific measures aimed at closing the gaps and addressing those barriers
- After State plan is approved, the State will be eligible to receive Digital Equity Capacity Grant program funding
- Competitive grants for digital equity (available to a range of entities to be determined) will open after Digital Capacity grants applications available to States

DIGITAL ACCESS FUNDING PRIORITIES



The Wyoming Business Council is developing a statewide plan for advancing digital equity, including for how to utilize upcoming federal funds

Program areas:

- **Broadband Access:** Individuals have more affordable, accessible, and reliable high-speed home internet service
- **Devices and Tech Support:** Individuals have access to a computer or tablet and technical support
- **Digital Literacy and Skills:** Individuals have digital skills to support their ability to meaningfully use the internet in their daily lives
- **Accessible and Inclusive Content:** Public online content is inclusive and accessible by all individuals
- **Privacy and Security:** Individuals can protect their data privacy and online security

Covered Populations:

- Rural residents
- Low-income individuals
- Veterans
- Seniors
- Individuals with disabilities
- English learners
- Racial and ethnic minorities
- Incarcerated individuals

DIGITAL CONNECTIVITY FUNDING OPPORTUNITIES



State Digital Equity Capacity Grant Program:

In 2024, the WBC will receive money from NTIA to implement the Wyoming Statewide Digital Equity Program over five years

Digital Equity Competitive Grant Program:

In 2025, NTIA will open a program to fund annual digital equity grants for four years. Wyoming communities and organizations can apply directly to NTIA.

DIGITAL ACCESS OBJECTIVES – IMPACT ON STATE OUTCOMES



Measurable objectives

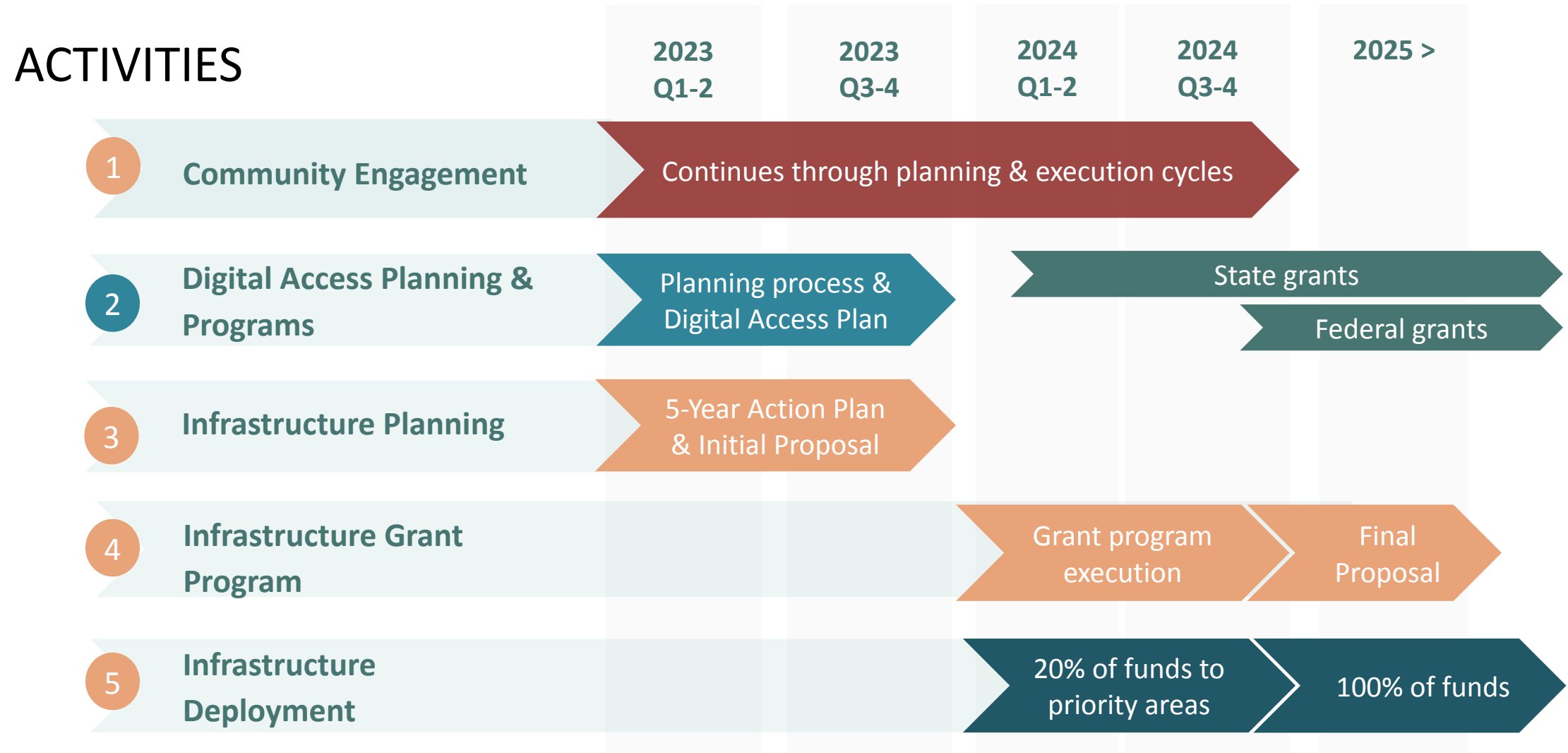
- **Broadband Access**
- **Digital Literacy & Skills**
- **Privacy & Security**
- **Devices & Technical Support**
- **Accessible & Inclusive Content**
- **Affordability**

Assess
Impact

State outcomes

- **Economic & Workforce Development**
- **Education**
- **Health**
- **Social & Civic Engagement**
- **Delivery of Essential Services**

BEAD & DIGITAL ACCESS TIMELINE






COMMUNITY ENGAGEMENT

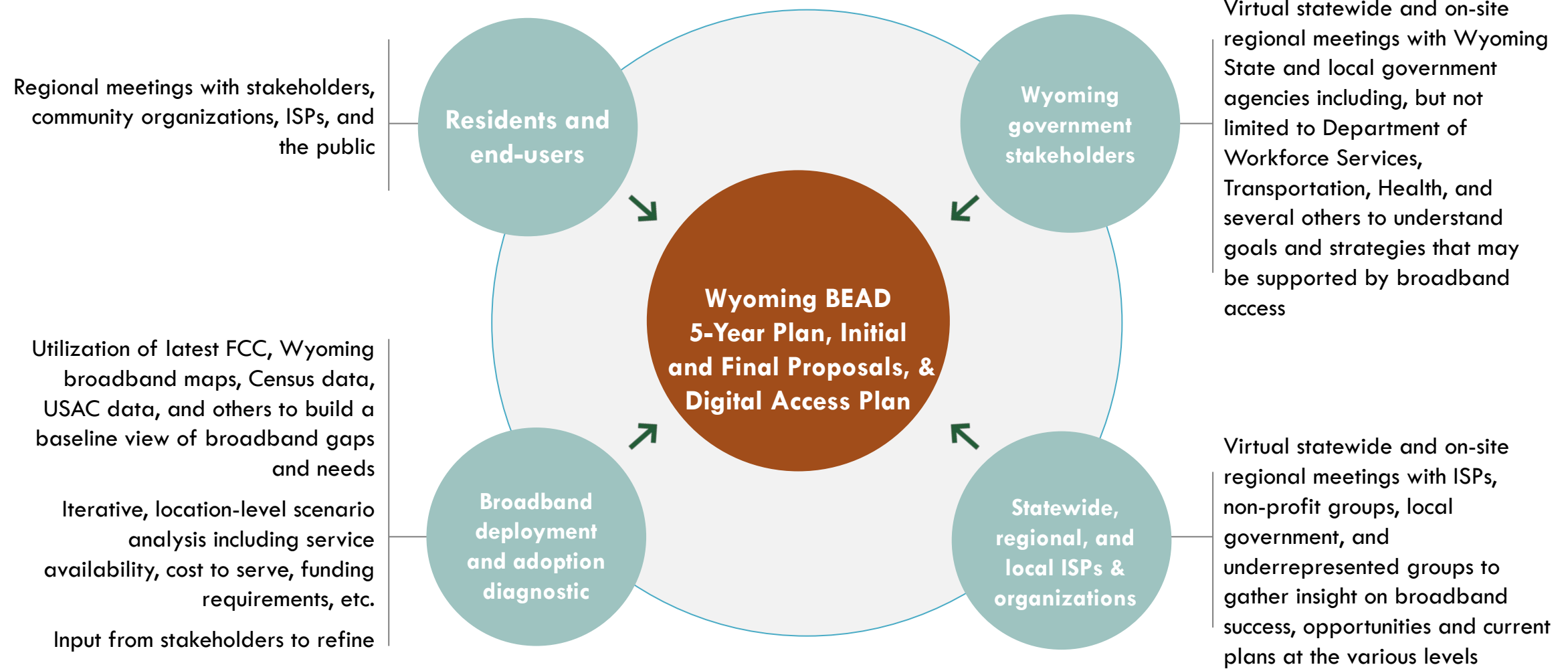


ENGAGEMENT OUTREACH TRACKS

1 Community Engagement Continues through planning & execution cycles

	April	May	June	July	Aug – Dec
Statewide virtual facilitated sessions for: State Agencies, Local & Regional Governments, CAIs, ISPs, Digital Access and Covered Population Orgs., Workforce Development Orgs., and Business & Economic Development Orgs.					
Surveys and inventories for: Digital Asset Programs, CAI Access, Agency Assets, Covered Populations Access Barriers, Workforce Development Opportunities					
Regional meetings					
Impact analysis; share results					

STAKEHOLDER INPUT IS VITAL



STAKEHOLDER GROUPS



State Agencies & Local and Regional Governments*

Government roles in providing assets to facilitate broadband deployment and as community anchors

**separate meetings*



Internet Service Providers

ISP roles in providing affordable broadband and workforce development



Community Anchor Institutions (CAI)

CAIs' roles in broadband resilience and needs for service



Workforce Development

Workforce development to support bottlenecks in broadband deployment and maintain infrastructure



Digital Access Orgs & Covered Populations Reps

Organization roles in advocating and supporting digital access and opportunity programs and methods for measuring success



Business & Economic Development

Industry and development organizations' roles in fostering growth in communities

STAKEHOLDER SURVEYS & INVENTORIES



State & Local Government Asset Inventory

Infrastructure-related assets that may help facilitate or reduce the cost of broadband deployment in the state



Community Anchor Connectivity

Barriers and obstacles to clients, facility access, criticality of internet to mission and program capacity



ISP Workforce Preparedness

Sources for hiring, workforce programs, ACP, internet skills and adoption, collaboration in community, deployment approaches, disaster recovery plans



Workforce Programs Inventory

Workforce programs profile, barriers to developing diverse & skilled workforce, ISP workforce-related questions



Digital Access Program Inventory

Program details, planned program types & areas of focus, broadband impacts on programmatic outcomes



Barriers & Obstacles for Covered Populations

Internet, computer & content access, digital skills, data security, barriers & obstacles, broadband impacts on programmatic outcomes

AFFORDABLE CONNECTIVITY PROGRAM



The Affordable Connectivity Program (ACP) is an FCC program that helps connect families and households struggling to afford internet service

Benefits for eligible households:

- Up to \$30/month internet service discount
- Up to \$75/month internet service discount on qualifying Tribal lands
- One-time discount up to \$100 for a device
- Some low-cost service plans can be entirely subsidized

Household income and federal assistance programs determine eligibility*

Apply for ACP: affordableconnectivity.gov

ACP Enrollment Support: (877) 384-2575

* See all eligibility criteria at affordableconnectivity.gov

SUBMITTING AN FCC BROADBAND MAP CHALLENGE



Communities can challenge data in the FCC's broadband map

Map may contain errors which can be remedied via a challenge process

Ways to challenge:

- Challenge an individual address*
- Challenge bulk addresses**
(requires individual address input)

Types of information to challenge:

- Address fabric data (building locations and unit counts)
- Reported service coverage

What can my organization do?

- Educate partners and residents
- Support coordination of bulk challenges

* <https://help.bdc.fcc.gov/hc/en-us/articles/10475216120475-How-to-Submit-a-Location-Challenge->

** <https://www.fcc.gov/news-events/events/2022/09/broadband-serviceable-location-fabric-bulk-challenge-process-webinar>

STATE AGENCIES AND LOCAL GOVERNMENT

www.surveymonkey.com/r/WY_AgencyAssetInventory01

www.surveymonkey.com/r/WY_WorkforceDevelopment01



STAKEHOLDER GROUPS



State Agencies & Local and Regional Governments*

Government roles in providing assets to facilitate broadband deployment and as community anchors

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CAIs' roles in broadband resilience and needs for service



Workforce Development

Workforce development to support bottlenecks in broadband deployment and maintain infrastructure



Digital Access Orgs & Covered Populations Reps

Organization roles in advocating and supporting digital access and opportunity programs and methods for measuring success



Business & Economic Development

Industry and development organizations' roles in fostering growth in communities

GOVERNMENT AGENCY ASSET INVENTORY



- **Physical assets** (conduit, fiber, structures, real estate, poles, etc.) available for lease to ISPs for broadband deployment
- **Capital construction projects** that include opportunities for placement of communications facilities
- **Analysis of skilled labor availability and workforce readiness** as it may impact state broadband policies and deployment goals
- **Agency role in tracking and monitoring** broadband or other communications outages
- **Planning or development of regulations** related to reliable and resilient broadband or other communications services
- **Policies and strategic plans** related to broadband digital equity, infrastructure deployment, economic development, resilience, partnerships, business planning and related efforts



DISCUSSION



- What does digital connectivity look like for your organization and your constituents?
- What are the broadband funding priorities for your organization?
- What broadband planning and related work has your organization conducted or is aware of?
- Are there additional partners that should be included in data collection and the planning process?

- **What assets does your organization have that can help the State optimize broadband access for your constituents?**
- **What are the barriers to broadband access, devices and digital skills for your constituents?**
- **Discuss your role in workforce development.**

COMMUNITY ANCHOR INSTITUTIONS

www.surveymonkey.com/r/WY_AgencyAssetInventory01

www.surveymonkey.com/r/WY_CommunityAnchors01



COMMUNITY ANCHOR INSTITUTIONS IN BEAD



- **CAI connectivity:** After unserved and underserved locations, BEAD funds can support access to 1 Gbps internet for CAIs
- **State identifies eligible CAIs** and assesses needs
- **State applies the definition** and determines CAI types to serve, and its basis if selecting CAIs not in explicitly in definition
- **Challenge process:** Organizations not selected as eligible CAIs will have opportunity to challenge state determination



Definition:

“Entity such as school, library, health clinic, health center, hospital or other medical provider, public safety entity, institution of higher education, public housing organization, or community support organization that facilitates greater use of broadband service by vulnerable populations, including, but not limited to, low-income individuals, unemployed individuals, children, the incarcerated, and aged individuals.” (BEAD NOFO p. 11)

COMMUNITY ANCHOR INSTITUTIONS SURVEY



- **Profile:** Organization focus, groups you serve, and programs or services that facilitate use of broadband internet services by your clients
- **Barriers and obstacles:** Describe what prevents members of the communities you serve from accessing or using broadband internet
- **Facility access:** Level of internet access your organization's locations have and need. Can you get at least 1 Gigabit per second? If not, why not?
- **Criticality of service:** Criticality of broadband internet service to your mission. Has your organization been consulted in emergency or resilience planning?
- **Workforce development:** Is your organization involved in telecom or technology workforce programs?



DISCUSSION



- **What does digital connectivity look like for your organization?**
- **What are the broadband funding priorities for your organization?**
- **What broadband planning and related work has your organization conducted or is aware of?**
- **Are there additional partners that should be included in data collection and the planning process?**

INTERNET SERVICE PROVIDERS

www.surveymonkey.com/r/WY_ISP01



WHAT ROLES CAN AN ISP PLAY IN SUPPORTING BROADBAND AND DIGITAL ACCESS PROGRAMS?



Broadband Access:
Affordable, accessible, and
reliable high-speed
home internet service is
available for all
individuals



**Accessible and
Inclusive Content:**
Public online content is
inclusive and accessible by
all individuals



**Devices and Tech
Support:**
Individuals have access
to a computer or tablet
and technical support



Privacy and Security:
Individuals can protect
their data privacy and
online security



**Digital Literacy
and Skills:**
Individuals have digital
skills to support their
ability to meaningfully
use the internet in their
daily lives

INTERNET SERVICE PROVIDERS SURVEY



- Sources used for hiring workers for broadband service deployment
- Workforce development or apprenticeship programs. How you will work with the state on workforce development for broadband deployment, including programs to support diversity.
- Participation in the Affordable Connectivity Program, subsidized service offerings speeds and costs
- Internet skills and adoption programs
- Collaboration with communities to close the digital divide
- Approaches to deploying broadband in areas most expensive to serve
- Continuity and disaster recovery plans



DISCUSSION



- **What types of broadband-related jobs currently have workforce development?**
- **What types of jobs need state support (e.g., new policies or investment) to ensure sufficient workforce development?**
- **What workforce development considerations should be built into the grant design?**
- **Based on your participation in other private/public funding efforts (ARPA) what should Wyoming consider for its BEAD grant program design?**

Are there other jobs that need support?

- Network design engineers
- Telecommunications construction workers
- Make-ready line workers
- Outside plant fiber technicians
- Heavy equipment operators
- Inside plant technicians
- Customer support technicians
- Customer care representatives
- Project management
- Trainers

What role should ISPs have in developing the needed workforce?

WORKFORCE DEVELOPMENT

www.surveymonkey.com/r/WY_WorkforceDevelopment01

https://www.surveymonkey.com/r/WY_DEProgrammaticInventory01



WORKFORCE DEVELOPMENT STAKEHOLDERS



Telecommunication providers

Construction companies

Industry associations

Trade groups

Rural cooperatives

Municipal associations

Vocational non-profits

**Communications/
electric trade unions**

Community colleges with technical programs

State and local workforce development agencies

Equipment manufacturers

BOTTLENECKS COULD HINDER THE MASSIVE CONSTRUCTION EXPECTED



Physical Assets

Fiber optic cable, splitters, cabinets, handholes, conduit, multiport terminals, network electronics

Distribution and Logistics

Supplier stocks, delivery, warehousing/storage

Workforce

Design, field, construction, project management, quality control/inspection

STATE WORKFORCE PLAN

Plan to achieve a diverse, skilled, and sufficient workforce for building and maintaining high-speed Internet infrastructure, including specialized telecommunications and construction jobs

Must address:

- Compliance with federal labor and employment laws – i.e., fair labor practices, civil rights and nondiscrimination
- Skilled workforce activities – developing a highly skilled workforce and ensuring state subgrantees do the same
- Equitable training and workforce development activities – ensuring fairness and diversity
- Contracting requirements



INCORPORATION OF THE PLAN

Workforce Development Mitigation can be incorporated into the state plan in multiple ways

Strategies for Intervention

Requirements for workforce labor standards and activities in grant eligibility

Additional points in grant proposal scoring for compliance with pay and labor standards, apprenticeship programs and other workforce development priorities

State, industry, education, non-profit and other develop, engage in, and promote activities to mitigate bottlenecks

EXAMPLE ACTIVITIES



Develop core curriculum



Define and adopt unified fiber optic technical certification



Develop career path partnerships and apprenticeship best practices with industry partners



Develop incentives for train-the-trainer opportunities



Develop prison technical programs



Publicize training opportunities to diverse populations and connect them to apprenticeship programs



Establish career technical education programs

WORKFORCE DEVELOPMENT SURVEY



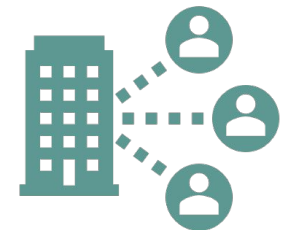
- **Profile of workforce development programs your organization provides or uses, including:**
 - Programs for job placement in the communications industry or transferable skill sets
 - Programs addressing any specific populations or communities (such as rural)
 - Current capacity for developing and offering trainings to meet workforce demands in the communications industry
 - Plans for developing and offering additional programs to meet future demands
 - Funding sources for training programs
- **Barriers and obstacles to developing a diverse, skilled workforce and how these can be mitigated**
- **ISP workforce related questions**



DIGITAL ACCESS PROGRAM INVENTORY



- **Profile:** Groups your organization serves, broadband/digital equity plans, part of a broadband coalition?
- **Existing programs:** Details on digital equity programs or services you offer, aspects of digital equity addressed, populations served, length of program activity, budget range, scope, scale, and so on
- **Planned programs:** New programs you may be developing
- **Programmatic impacts** of access to broadband by communities you serve. Metrics used to measure progress. Metrics the state should consider for economic and workforce, education, health, and civic and social engagement outcomes



DISCUSSION



- **What types of broadband-related jobs currently have workforce development?**
- **What types of jobs need state support (e.g., new policies or investment) to ensure sufficient workforce development?**
- **What workforce development considerations should be built into the grant design?**
- **What role should your organization have in developing the needed workforce?**

Are there other jobs that need support?

- Network design engineers
- Telecommunications construction workers
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- Outside plant fiber technicians
- Heavy equipment operators
- Inside plant technicians
- Customer support technicians
- Customer care representatives
- Project management
- Trainers

DIGITAL ACCESS AND COMMUNITY ORGANIZATIONS

Many who focus on covered and underrepresented
populations

www.surveymonkey.com/r/WY_DEProgrammaticInventory01

www.surveymonkey.com/r/WY_CoveredPopulations01



DIGITAL ACCESS CATEGORIES AND EXAMPLE STATISTICS



Broadband access

Households served by 100/20 Mbps

- % households subscribed to broadband service
- % subscribers that have reliable service

Digital literacy

Those who are confident using the internet

- % who access government services online
- % who use the internet for telehealth
- % who say using internet is important to their lives

Privacy & security

Those who didn't use internet in past year due to privacy concern

- % who didn't use internet in past year due to fear being scammed
- % who think they can adjust privacy settings
- % who think they can avoid phishing scams

Devices & support

Individuals who have a home computer

- % who know how to access tech support
- % primary computing device meets their needs
- % who can replace a damaged device in less than week

Accessible content

Government websites with high website accessibility scores

- % state and local governments that improve website accessibility score by 5 percent

Affordability

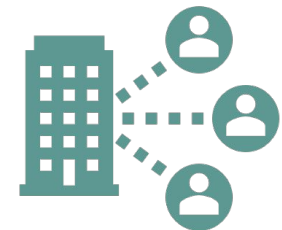
Low-income and middle-class affordable pricing

- % who say cost keeps them from subscribing

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COVERED POPULATIONS BARRIERS SURVEY



- **Internet access:** Individuals in covered populations' experience with internet service
- **Computer access:** Individuals' experience in accessing computers
- **Digital literacy and skills:** Individuals' ability to effectively use technologies, get information, and use the internet
- **Inclusive and accessible content:** Individuals' access to meaningful website content
- **Data privacy and cyber security:** Individuals' ability to secure their information and computers
- **Barriers and obstacles:** Unique barriers to accessing broadband internet, home computers, and website content; acquiring digital skills; and securing information
- **Programmatic impacts** of access to broadband



Covered Populations:

- Rural residents
- Low-income individuals
- Veterans
- Seniors
- Individuals with disabilities
- English learners
- Racial and ethnic minorities
- Incarcerated individuals

DISCUSSION



- **What does digital connectivity look like for your organization?**
- **What are the broadband funding priorities for your organization?**
- **What broadband planning and related work has your organization conducted or is aware of?**
- **Are there additional partners that should be included in data collection and the planning process?**

BUSINESS & ECONOMIC DEVELOPMENT

www.surveymonkey.com/r/WY_DEProgrammaticInventory01

www.surveymonkey.com/r/WY_WorkforceDevelopment01

www.surveymonkey.com/r/WY_CoveredPopulations01



BUSINESS & ECONOMIC DEVELOPMENT STAKEHOLDERS



**Telecommunication
providers**

**State economic
development
agencies**

**Industry
associations**

Trade groups

Rural cooperatives

**Municipal
associations**

**Chambers of
Commerce**

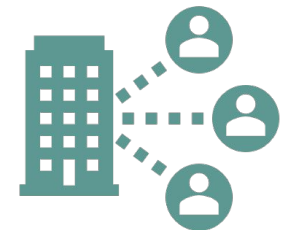
**Planning and land
use local agencies**

**Local, regional, &
tribal development
agencies**

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WORKFORCE DEVELOPMENT SURVEY



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 - Current capacity for developing and offering trainings to meet workforce demands in the communications industry
 - Plans for developing and offering additional programs to meet future demands
 - Funding sources for training programs
- **Barriers and obstacles to developing a diverse, skilled workforce and how these can be mitigated**



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Covered Populations:

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DISCUSSION



- **How do you view broadband enhancing your economic development opportunities?**
- **Do you have opportunities coming up that would support the expansion of broadband?**
- **What types of broadband-related jobs currently have workforce development?**
- **What types of jobs need state support (e.g., new policies or investment) to ensure sufficient workforce development?**

Are there other jobs that need support?

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