



SUPPLY CHAIN & WORKFORCE DEVELOPMENT

IN PREPARATION FOR IIJA BROADBAND PROGRAMS

MAY 2022



AGENDA

Welcoming Remarks

Sarah Bleau, Director, Enabling Middle Mile Broadband Infrastructure Program, Office of Internet Connectivity & Growth, NTIA

Broadband Supply Chain

Maureen Russell, Senior Telecommunications Policy Advisor, Office of Policy Analysis and Development, NTIA

Broadband Workforce Development

Lucy Moore, Special Policy Advisor, Office of the Assistant Secretary, NTIA

Questions & Answers Discussion

Moderator: **Sarah Bleau**, Director, Enabling Middle Mile Broadband Infrastructure Program, Office of Internet Connectivity & Growth, NTIA

TODAY'S FOCUS

What this webinar is



An **overview of supply chain and workforce development**, including suggestions and best practices for states

What this webinar is not



Guidance on **requirements** that will be included in IIJA Notices of Funding Opportunities

TODAY, WE WILL FOCUS ON BROADBAND SUPPLY CHAIN AND WORKFORCE DEVELOPMENT

SUPPLY CHAIN



Understand **the broadband supply chain**, including security requirement

Review **drivers** of ongoing broadband supply chain challenges

Consider **strategies** to **ease constraints**

WORKFORCE DEVELOPMENT



Understand **workforce needs** for broadband deployment

Review **drivers** of labor shortages

Consider **strategies** to **ease workforce shortages**

THE BROADBAND SUPPLY CHAIN

Maureen Russell, Senior Telecommunications
Policy Advisor, Office of Policy Analysis and
Development, NTIA

BROADBAND DEPLOYMENT RELIES ON A COMPLEX SUPPLY CHAIN

Various materials are needed during deployment

Passive Infrastructure: The physical layer of material needed to enable connectivity

- Examples: Fiber-optic and copper cables, ducts, conduit, utility poles, adaptors, splitters, towers, antennas, power equipment

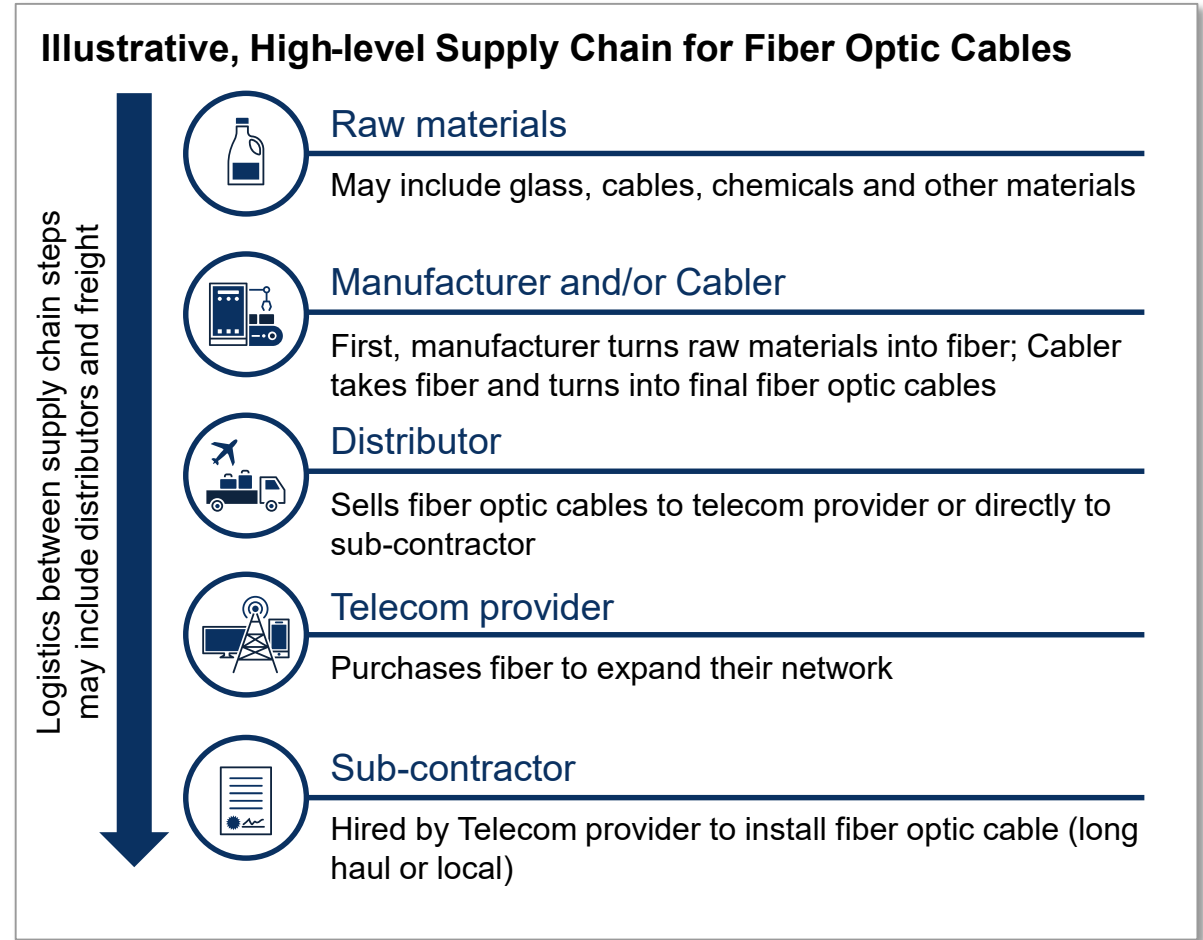
Active Infrastructure: The electronic elements that enable passive infrastructure to transmit data

- Examples: Terminals, routers, servers, and switches

Other materials, including construction equipment

- Examples: Trucks, fuel, drills and other machinery, generators

And many activities throughout the production, logistics, and deployment of those materials



CYBERSECURITY REQUIREMENTS ALSO IMPACT SUPPLY CHAIN COMPLEXITY

Network planning and deployment should aim to protect cybersecurity interests

Network infrastructure devices are ideal targets for malicious cyber actors

The risk of cyberattacks must be mitigated by reducing supply chain vulnerabilities during network planning, deployment, and maintenance

For example:

- During sourcing, refer to the FCC's Covered List
- Identify critical suppliers and set robust security requirements for their procurement; conduct regular monitoring to ensure suppliers are continuing to comply with requirements



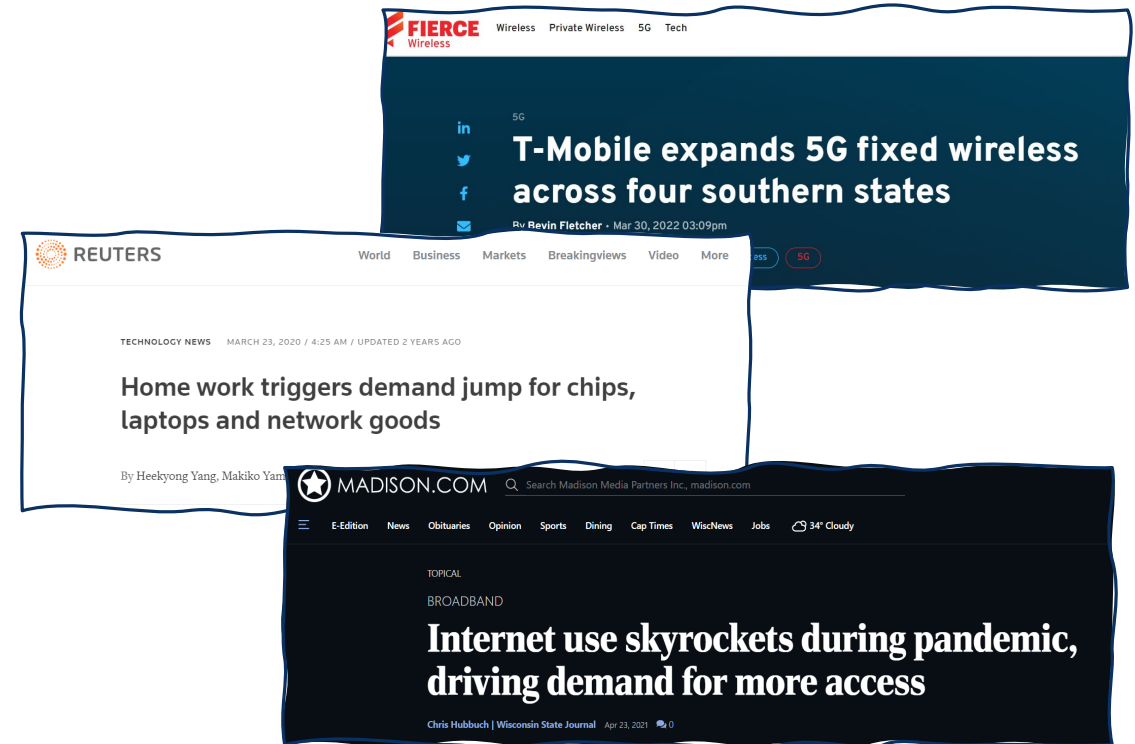
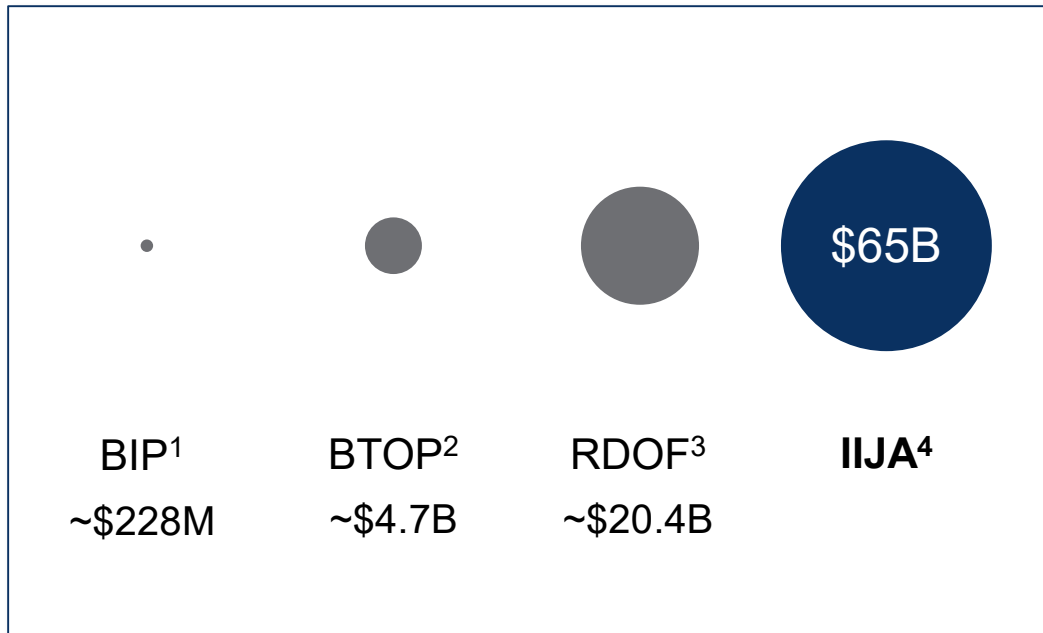
For further guidance, refer to:

Source	Description
NTIA's Communications Supply Chain Risk Information Partnership	A program designed to help small / rural providers' and equipment suppliers' better understand supply chain risks
NIST SP 800-161	Guidance on identifying, assessing, and mitigating ICT supply chain risks at all organizational levels
FCC's Covered List	List of communications equipment and services that pose an unacceptable risk to national security or the security and safety of United States persons
NCSC's Framework for Assessing Risks	A NCSC document introducing a framework for assessing risks
<i>For your constituents:</i> Privacy + Security Skills Resources	A digital skills resource library to help individuals learn about protecting themselves online

THE SIZE AND SPEED OF NEW DEPLOYMENT WILL EXACERBATE ONGOING SUPPLY CHAIN CHALLENGES

IIJA represents an unprecedented increase in the scale of federal broadband investment...

...As network operators and subscribers also continue to exhibit strong demand






1. Broadband Initiatives Program, 2. Broadband Technology Opportunities Program, 3. Rural Digital Opportunity Fund, 4. Infrastructure Investment and Jobs Act

DRIVERS OF SUPPLY CHAIN CHALLENGES WILL VARY DEPENDING ON MATERIALS AND TECHNOLOGY

Illustrative, non-exhaustive

Examples of supply chain constraints

Category	Sample material	Drivers of expected shortage
 Passive infrastructure	Fiber	<ul style="list-style-type: none"> • Demand has increased significantly in recent years as carriers and tech companies increasingly move to replace older technology or expand • Fiber supply is limited: production is capital-intensive, high-tech, difficult to ramp up quickly • Constraint will be particularly high for sub-grantees without existing supplier contracts (e.g., smaller providers)
 Active infrastructure	Semiconductor chips	<ul style="list-style-type: none"> • Impacted by worldwide semiconductor shortage and shipping constraints: most chips are manufactured overseas, and deliveries are already delayed by months • Broadband electronics (like modems, central office electronics, and satellite ground equipment) compete with other high-demand goods for chips (like cars)
 Construction equipment	Bucket trucks	<ul style="list-style-type: none"> • Key to aerial deployment, bucket trucks have been impacted by worldwide chip shortage • Shortage in bucket trucks for purchase have led to a subsequent increase in the price of used trucks and rentals • Widely-used, broadband competes with other construction projects for use of trucks

WHILE INDUSTRY IS WORKING TO IMPROVE SUPPLY CHAIN, STATES CAN ALSO TAKE ACTIONS TO EASE CHALLENGES



Planning and policy

Regional planning

- Work with providers and other stakeholders to coordinate regional planning & identify potential efficiencies

Policies and mechanisms

- For example, consider “dig once” policies to lay conduit today, in preparation for adding future fiber when available
- *For more, please see NTIA's [Enabling Conditions](#) webinar (Apr. 6, 2022)*

Plan for supplier resilience

- Weave risk-based assessments into vendor engagements and acquisition strategies



Asset sharing and pooling

Existing infrastructure

- Map existing broadband assets to identify potential to utilize and avoid unintentional damage and delay
- Facilitate cooperation among providers and asset owners (e.g., brownfield deployment)

Public assets

- Where possible, make public infrastructure open access to speed deployment and reduce costs

Aggregate purchasing

- Consider pooling demand to support sub-grantees in finding suppliers (especially smaller providers)

BROADBAND WORKFORCE DEVELOPMENT

Lucy Moore, Special Policy Advisor, Office of
the Assistant Secretary, NTIA

BROADBAND DEPLOYMENT REQUIRES A WORKFORCE WITH DIFFERING FUNCTIONS AND NEEDS



Design & Planning

Specialized Broadband

Construction

Sample responsibilities

- Design proposed networks
- Ensure all technical, safety, permitting, and other requirements are met prior to and during construction

- Conduct all specialized labor for fiber, coaxial, and wireless technologies
- Install last-mile fiber at premises

- Perform all additional excavation, trenching, lashing, and other labor for safe installation of broadband network materials

Sample Roles

- Network architect or planner
- Project management
- Civil engineers

- Fiber splicer
- Installer (e.g., line, drop)
- Tower technician
- Tower climber

- Civil construction crew
- Machinery operator

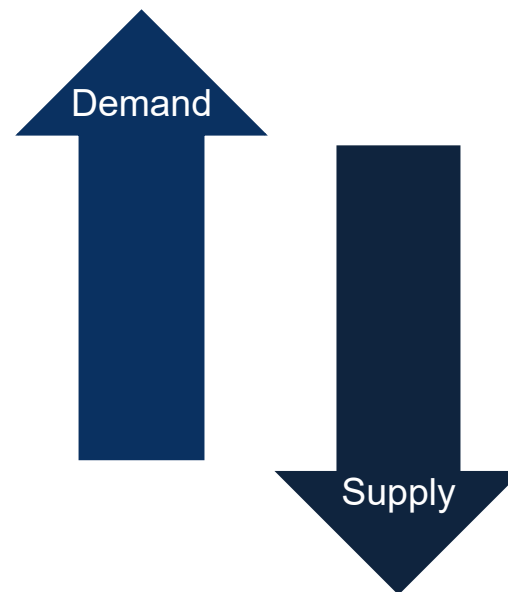
INTENSIFYING DEMAND COMBINED WITH A TIGHT LABOR MARKET WILL LIKELY LEAD TO BROADBAND LABOR SHORTAGES

New programs will greatly increase broadband labor needs...

Even before IIJA, broadband demand was strong and increasing

- At the pre-IIJA (2021) rate of deployment, expected 850K new broadband and 5G jobs through 2025¹

IIJA investment will accelerate workforce needs



...As broadband-specific roles face shortages

Drivers of broadband workforce shortages:

- **Skilled workforce shortage:** Specialized broadband labor, like fiber technicians, are in short supply; trainers also limited
- **Overall labor shortage:** An estimated 3.5M workers are still missing from workforce (vs. no-pandemic projections)²
- **Competing roles:** Other new IIJA jobs will likely seek similar worker profiles (e.g., construction)

¹ US Telecom Letter to Biden ([link](#)), ² Projections based on 2015-2019 growth, April, 6, 2022 WSJ article ([link](#))

LABOR CONSTRAINTS ARE LIKELY TO BE EVEN HIGHER IN RURAL AREAS

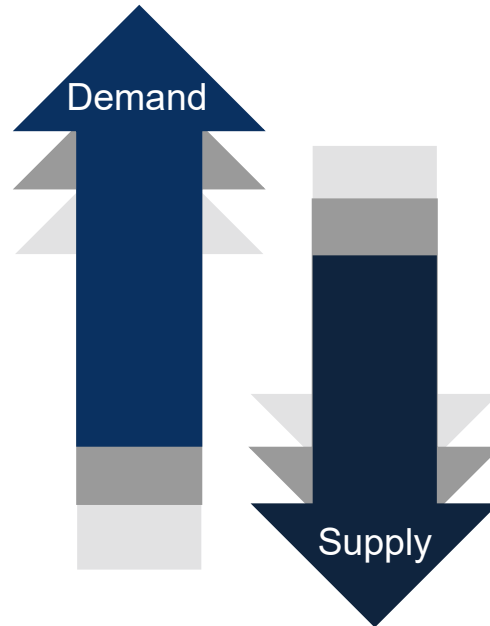
With BEAD's focus on unserved & underserved households, significant deployment will be rural

Rural America will have higher resourcing needs...

A higher percentage of remaining unserved and underserved areas are rural

Also, likely to see higher resourcing needs per location due to:

- Low population density
- Remoteness
- Difficult terrain



...Simultaneously, smaller potential workforce

Higher-skilled labor, like specialized broadband workers or network planners, may be particularly difficult to secure for rural deployment

Rural areas may continue facing broadband ops and maintenance labor shortages post-deployment, as workers relocate to new projects or returns to population centers

LABOR CONSTRAINTS AND POTENTIAL SOLUTIONS ARE LIKELY TO VARY BY WORKER NEEDED



Design & Planning



Specialized Broadband



Construction

Sample responsibilities

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Potential shortage mitigations

- Asynchronous planning across localities to allow for state-wide or regional pooling of design & planning labor

- Potential to re-recruit former workers
- Training and upskilling to meet demand increase

- Take advantage of the likely skill transferability between construction projects by coordinating with other civil works projects

3 WAYS STATES AND LOCALITIES CAN PREPARE NOW TO EASE WORKFORCE CONSTRAINTS

States have ample opportunity to begin to tackle workforce constraints today in preparation for future deployment. 3 tactics to consider include:

- 1 Facilitate matching between workers and opportunities
- 2 Invest in and promote training programs and apprenticeships
- 3 Bolster state and local offices, in size and capabilities

FACILITATE MATCHING BETWEEN WORKERS AND OPPORTUNITIES



Collaborate with stakeholders to assess and anticipate needs

- Collaborate with local stakeholders to identify labor gaps, assess roadblocks, and develop strategies to break down existing barriers
- Consider publishing aggregated data for use by partners running amplifying and parallel efforts



Match workers to opportunities

- Work with organizations / individuals already in contact with potential workers (e.g., State Workforce Agencies) to actively match workers to opportunities (e.g., training/upskilling, broadband projects)
- Conduct outreach to workers who are unemployed, experienced in telecoms, have recently retired, or are in adjacent regions / industries



Share information and elevate available positions

- Consider public campaigns, in partnership with stakeholders, to elevate public awareness of available positions
- Partner with employers to improve job quality (e.g., wages, benefits)
- Act as a clearinghouse on broadband projects, ensuring stakeholders know where to find relevant information



Louisiana encourages collaboration and proactive training efforts

- Used CPF funding to establish GUMBO broadband grant program in 2021
- To get ahead of constraints, encouraged GUMBO applicants to partner with community colleges to build broadband workforce dev. programs
- Since Dec. 2021 grant deadline, 3 certification programs are under development

INVEST IN AND PROMOTE TRAINING PROGRAMS AND APPRENTICESHIPS

Assess training needs

Types of programs and potential impact vary widely, including reskilling, upskilling, re-entry, and entry-level training

Consider:

- What type of training would most benefit your local population and providers (e.g., lead time, skills taught, entrance level)?
- Which employers can help create career pathways?
- How can you expand recruitment to new groups (e.g., women, BIPOC)?
- What should students earn at program completion (e.g., certificate, job)?

Support training

Facilitate higher education and private sector programs aimed at upskilling and training broadband workers

Support may include:

- Subsidies for program operations or scholarships
- Connecting or matching training programs, employers, and workers
- Incentivizing sub-grantees to support training or partner with existing programs

Keep trainers in mind

Lack of adequate trainers may become a bottleneck for the expansion of training programs

Trainers should have boots-on-the-ground experience, knowledge of current regulations, and the correct teaching certifications

Reinforce trainer numbers by:

- Supporting re-entry outreach to retired Telecom or construction workers
- Potentially competing with private sector offers or otherwise financially incentivizing roles



Training Program Best Practices

- Partner with employers on program development; determine specific skills employers need
- Establish career pathways, with guaranteed and funded jobs or apprenticeships
- Ensure classes are accessible for all (e.g., working professionals, parents)
- Consider wraparound services
- Ensure trainers are comfortable teaching remotely

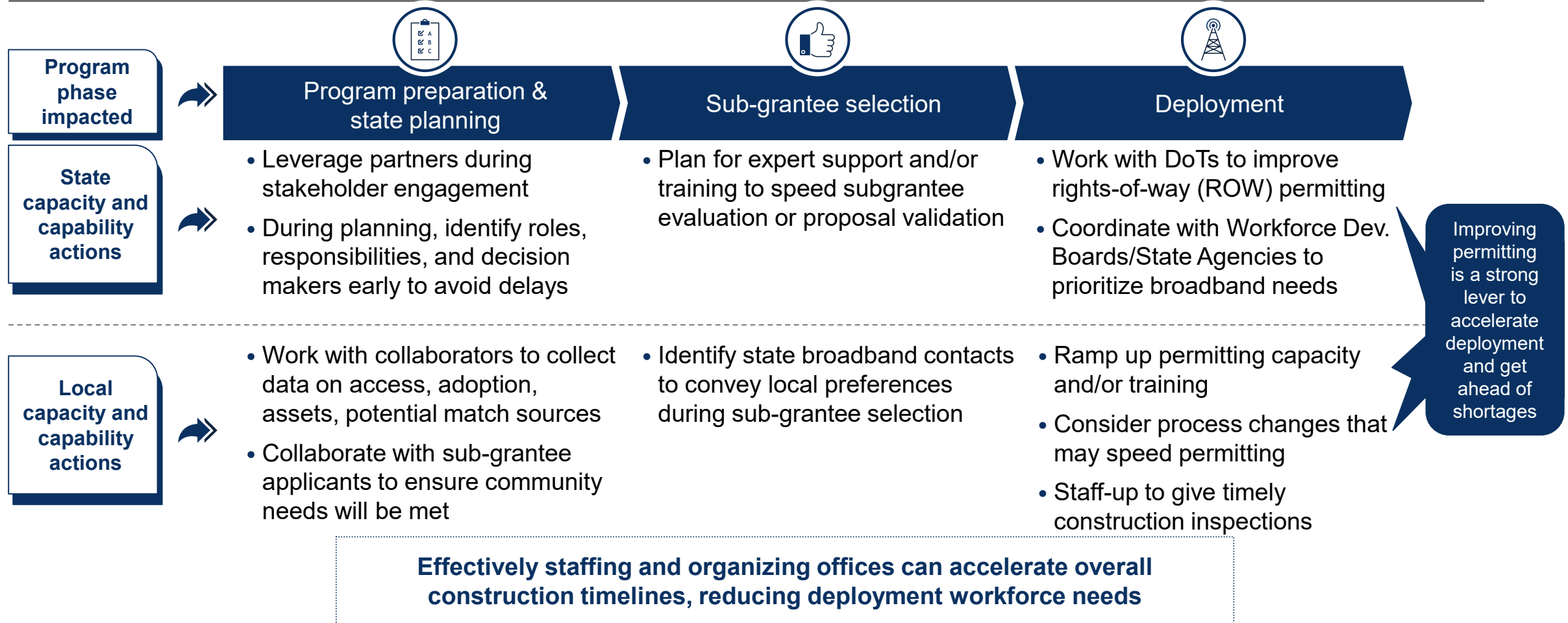
TRAINING PROGRAM EXAMPLES





	Broadband Academy at Northwood Technical College	Fiber Broadband Association Optical Telecom Installation Certification (OpTIC)	North America's Building Trades Unions (NABTU)	Verizon Skills Forward
Focus	<ul style="list-style-type: none"> Upskilling, entry level Certification focus 	<ul style="list-style-type: none"> Advanced entry level Certification focus 	<ul style="list-style-type: none"> Entry level (Apprenticeship Readiness Program), Advanced (Registered Apprenticeship) Career pathway 	<ul style="list-style-type: none"> Reskilling / general digital skills Career pathway
Partnerships	<ul style="list-style-type: none"> Education initiated Scholarships through Wisconsin State Telecommunications Association 	<ul style="list-style-type: none"> Trade association initiated Partners with veterans programs, community and technical colleges 	<ul style="list-style-type: none"> ARP: Driven by community groups, in partnership with state & local Building Trades Councils Reg. Ap.: Driven by building trades unions, with employers 	<ul style="list-style-type: none"> Private sector initiated Partners with nonprofit on job matching (Generation USA), colleges for delivery
Description	<ul style="list-style-type: none"> A continuing ed program at a public technical college Provides training, professional development, and cross-training for broadband customer service specialists and installers 	<ul style="list-style-type: none"> Curriculum developed by FBA and taught through partner colleges to train future fiber technicians Currently being piloted at Wilson Community College 	<ul style="list-style-type: none"> ARP: Intro to each construction craft; also offers train-the-trainer Reg. Ap.: "learn and earn" career training in 1 of 15 construction crafts at the jobsite and in the classroom 	<ul style="list-style-type: none"> Provides 100% free, online programs focused on technical and soft skills for the general public—preparing more people to fully engage in the digital world
Course length	<ul style="list-style-type: none"> Broadband customer service specialist: 8 weeks Broadband Installer: 16 weeks 	<ul style="list-style-type: none"> 144 hours followed by 2,000-hour apprenticeship 	<ul style="list-style-type: none"> ARP: approx. 4-8 weeks Reg. Ap.: 3-5 yrs., depending on craft training req. 	<ul style="list-style-type: none"> For IT Support Specialist: <ul style="list-style-type: none"> Full time - 12 weeks Part time - 23 weeks
Certification or employer partnership	<ul style="list-style-type: none"> Broadband Customer Service CE Certificate Broadband Installer CE Certificate 	<ul style="list-style-type: none"> Certification as an FBA Accredited OpTIC Technician Pilot partnered with Greenlight Community Broadband for internship placing commitments 	<ul style="list-style-type: none"> ARP: works to place graduates into Reg. Apprenticeship Reg. Ap.: Certificate, other credentials, depending on craft (e.g., license for electrician) 	<ul style="list-style-type: none"> CompTIA A+ Assistance finding work or continuing ed

BOLSTER STATE AND LOCAL OFFICES AND CAPABILITIES TO AVOID FUTURE BOTTLENECKS

Illustrative actions to take today



EXISTING FEDERAL PROGRAMS COULD POTENTIALLY FUND WORKFORCE DEVELOPMENT SOLUTIONS

 Name of Existing Federal Program/Resource	 Description
Workforce Innovation and Opportunity Act (WIOA) (link)	<ul style="list-style-type: none"> • Primary federal source of workforce development funding, administered by Department of Labor • Funding coordinating entity may vary by state – often Workforce Development Boards
Strengthening Community Colleges Training Grants (second round) (link)	<ul style="list-style-type: none"> • \$45M in grant funding, authorized by WIOA and available to higher ed institutions; applications due June 6, 2022 • Awarded grants will focus on accelerated learning strategies that support skill development, rapid reskilling, and employment through targeted industry sectors and career pathway approaches
Employment and Training Administration (ETA) (link)	<ul style="list-style-type: none"> • A part of the Department of Labor, the ETA administers federal grants to states for employment-related programs, primarily provided through state and local workforce development boards • A current list of funding opportunities is available on the ETA site
USDA Rural Business Development Grants (RBDG) (link)	<ul style="list-style-type: none"> • A competitive grant designed to support activities leading to the development or expansion of small and emerging private businesses in rural areas (incl. workforce development) • Applications are closed for 2022, but re-open annually
The Federal Resources Playbook for Registered Apprenticeship (link)	<ul style="list-style-type: none"> • A guide on using select federal funds and resources to support apprenticeship, with additional information on available funding and programs



For a full list of available federal grants, visit:

www.grants.gov

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