Q3 BEAD & DIGITAL EQUITY UPDATES AND PLANS

Sept. 18, 2023

N.C. Department of Information Technology
Division of Broadband and Digital Equity

NCDIT NORTH CAROLINA DEPARTMENT OF INFORMATION TECHNOLOGY

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MAGGIE WOODS

DIGITAL EQUITY MANAGER
NCDIT DIVISION OF BROADBAND AND DIGITAL EQUITY

AGENDA

1. Digital Equity Plan Updates and Resources
2. BEAD Updates since June and Plans through December
3. Broadband Workforce Plan
4. Questions & Answers

KEY REQUIREMENTS: DIGITAL EQUITY PLAN

- Identify barriers to digital equity for general and covered populations
- Develop measurable objectives for overcoming barriers
- Asset Inventory and Needs Assessment
- Integrate local digital inclusion plans into the state plan
- Interagency coordination
  - Connect to education, workforce, and health priorities

Covered Populations

- Aging individuals
- Immigrants
- Individuals who live in households at or below 150% of Federal poverty level
- Individuals with disabilities
- Individuals with a language barrier, including individuals who are English learners and have low levels of literacy
- Individuals who are members of a racial or ethnic minority group
- Individuals who primarily reside in a rural area
- Incarcerated individuals, other than individuals who are incarcerated in a Federal correctional facility
- LGBTQI+ people
- Veterans

DIGITAL EQUITY CORE PLANNING TEAM

Bruce Clark
Center for Digital Equity at Queens University of Charlotte

Sara Nichols
Land of Sky Regional Council

Merald Holloway
MDC Rural Forward

Kenny Sherin
N.C. Cooperative Extension

Cristina España
North Carolina Governor Roy Cooper's Office of Public Engagement and Inclusion

Amanda Johnson
State Library of North Carolina

Mavis Hill
Tyrrell County Community Development Corporation

Lakisha Jordan
WinstonNet

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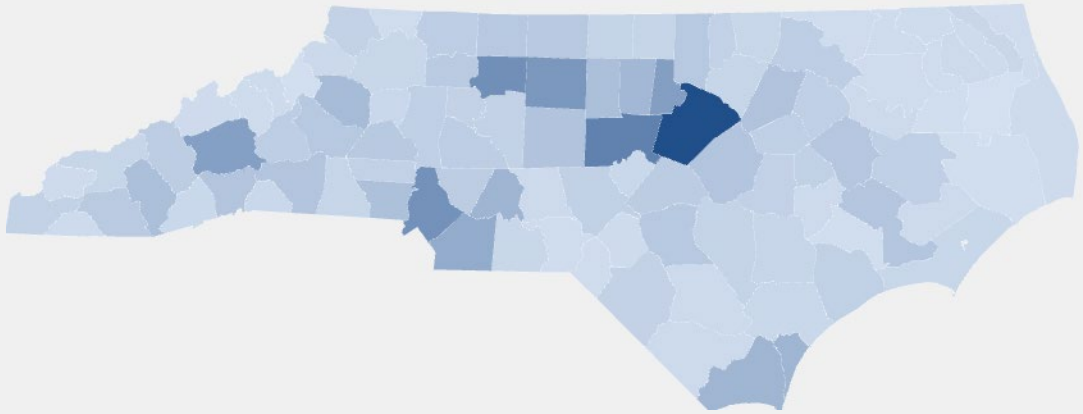
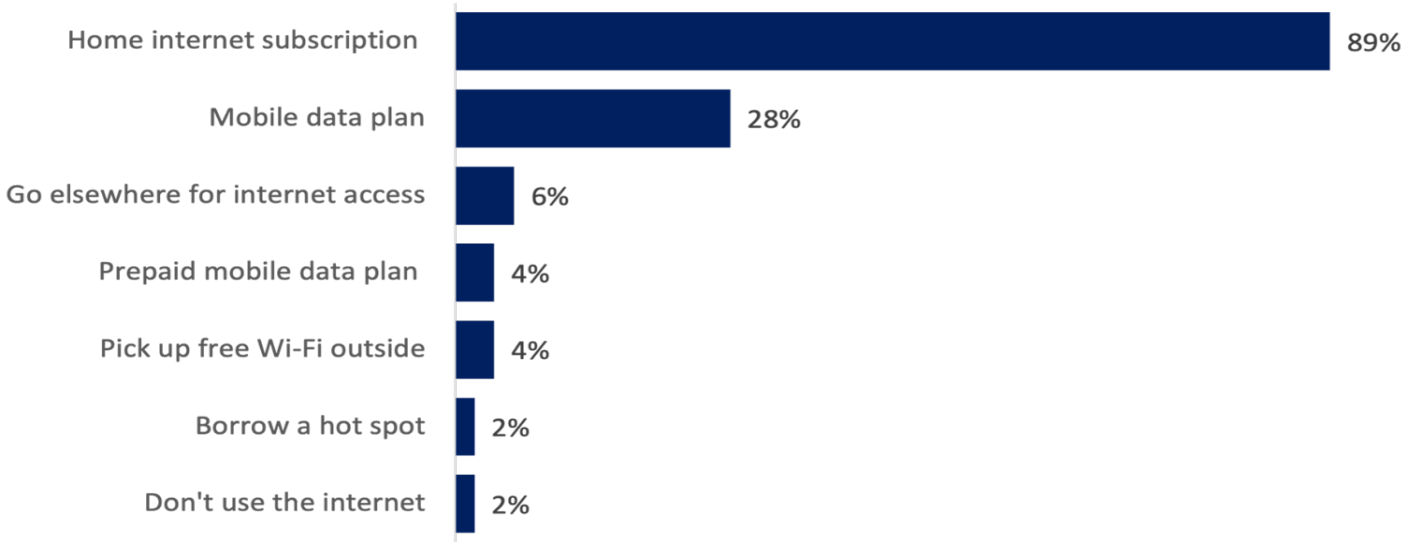
DIGITAL EQUITY SURVEY INITIAL FINDINGS



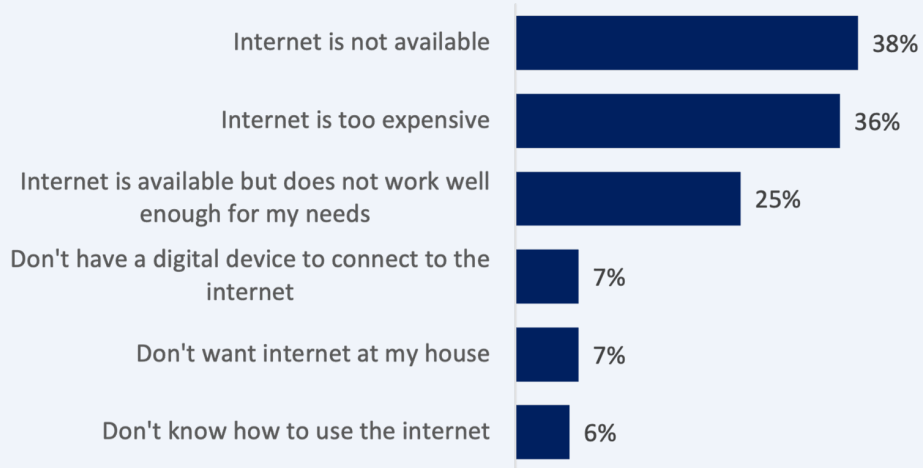
RESPONSES (AS OF SEPT. 6):

- 5,726 Responses
  (does not include final paper copies)
- 665 Zip Codes (88%)
- 100 Counties (100%)

How do you and others in your household primarily connect to the internet at home?



What is preventing you from connecting at home through a non-mobile service?

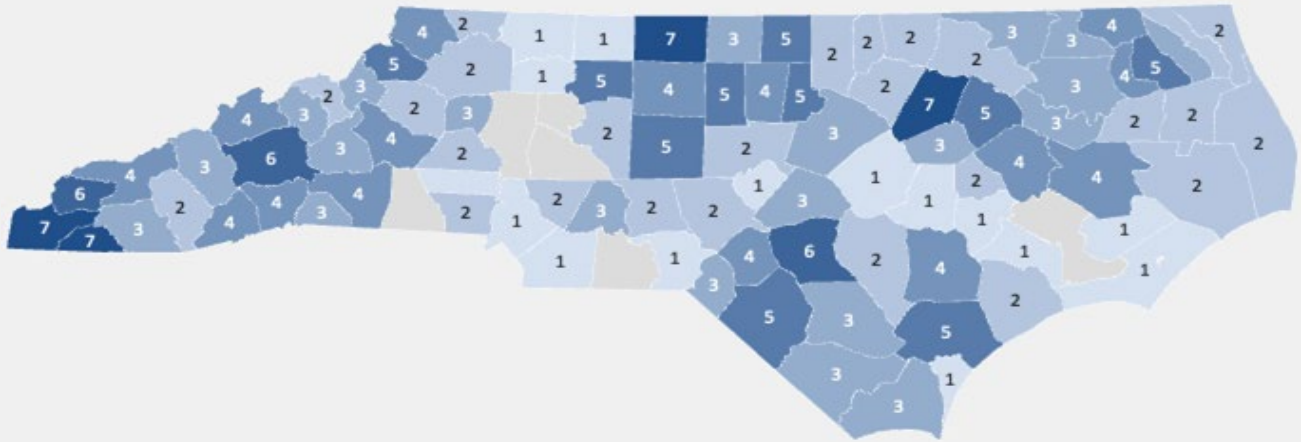


DIGITAL EQUITY ASSET INVENTORY

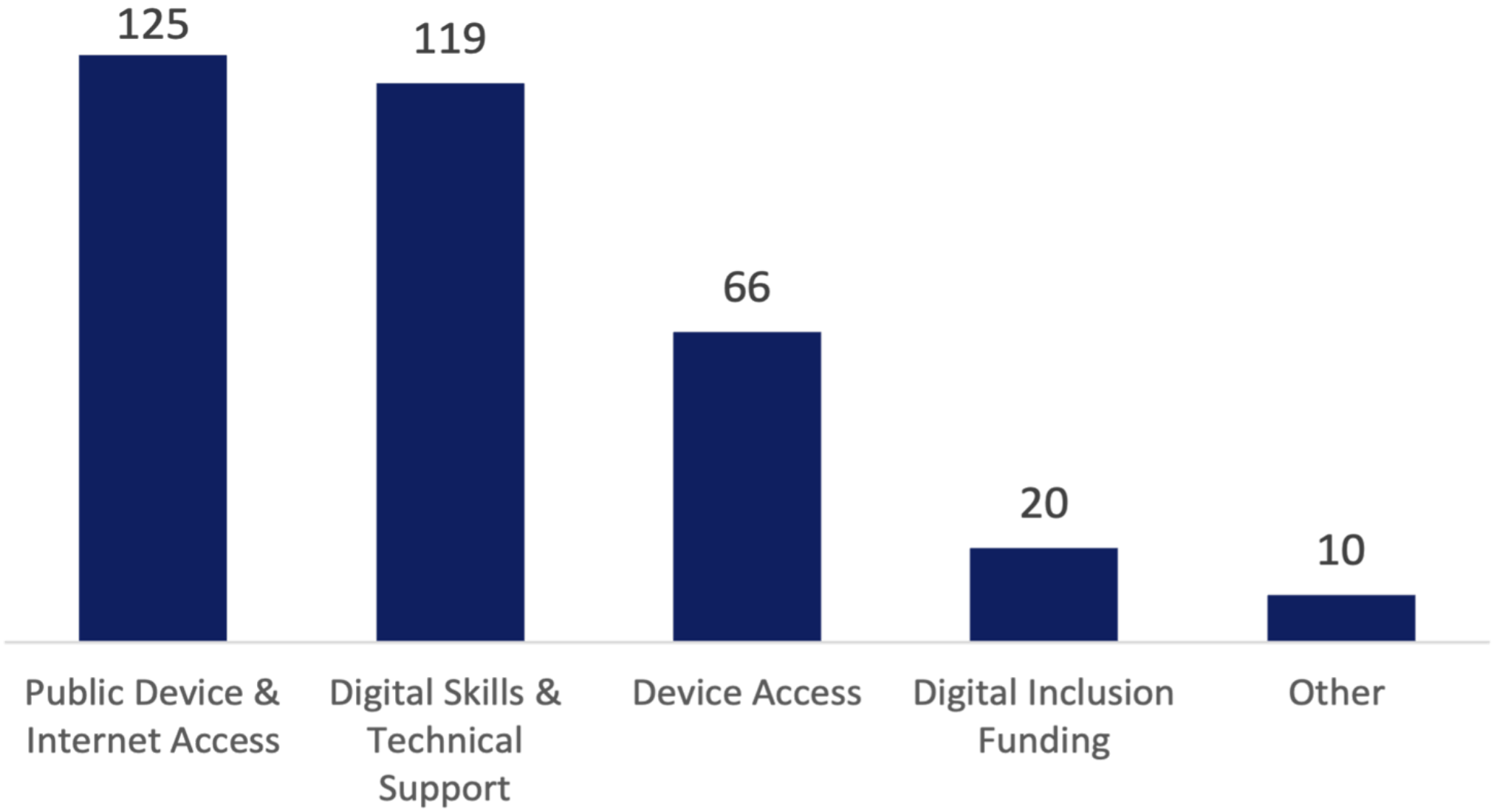
- Initial scan yielded 1,000+ assets (600 individual assets)
- 228 organizations filled out the Asset Inventory Survey
  - Device Access
  - Digital Skills (Classes and Training)
  - Technical Support (break/fix and troubleshooting of devices, equipment, and network)
  - Public Devices and Internet Access
  - Digital Inclusion Funding
  - Any Other Digital Inclusion Supports

RESPONSES (AS OF SEPT. 6):

- 94 Counties Represented
- Numbers indicate the number of organizations identified in the Asset Inventory Survey by county

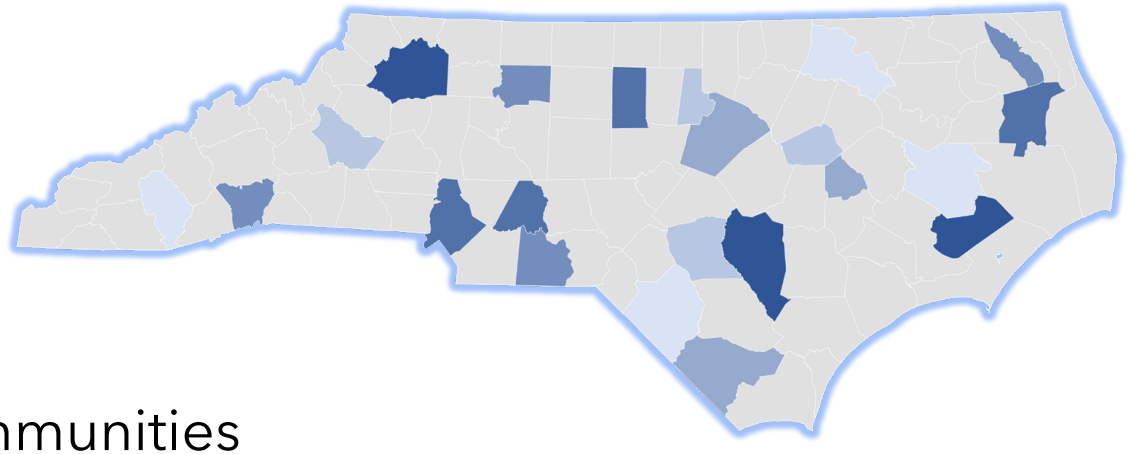


DIGITAL INCLUSION CATEGORY



LISTENING SESSIONS - COVERED POPULATIONS

- 23 Listening Sessions (19 in-person; 4 virtual)
- 8-12 Individuals
- Semi-structured format
- All prosperity regions
- All Covered Populations
- Collaborating with trusted partners in communities
  - Rural Forward
    - NC Counts
    - Disability Rights
    - Hispanic Federation
    - AMEXCAN
    - The Industrial Commons
    - OurJourney2gether
    - Tyrrell County Justice Center
    - NC Tech Paths
    - Youth Navigating Toward Opportunity



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PRELIMINARY FINDINGS: INTERNET ACCESS

Barriers

- Limited service providers
- Inadequate broadband coverage
- Poor connectivity
- Limited data caps
- Affordability - especially in rural areas
- Lack of community spaces to access free internet
- Digital redlining is an issue in many urban and rural communities

Needs

- More public Wi-Fi in downtown areas
- More options for service providers
- More affordable and reliable service
- Infrastructure

PRELIMINARY FINDINGS: DEVICES

- Lack access to necessary equipment to work from home - especially in rural areas
- Many families need other equipment (e.g., printers) to support children at home
- Devices at public spaces often have time limits

PRELIMINARY FINDINGS: TRAINING/SKILLS

- Aging individuals have some of the greatest needs with basic skills and internet safety
- Incarcerated individuals have access to courses online but are limited in the amount of time they can use tablets and the speed is often not adequate
- There is a great need for more digital literacy training across the state
- Communities would like digital literacy trainers to be individuals from their communities
- Telehealth was brought up several times as an area of interest

PRELIMINARY FINDINGS: COMMUNITY ORGS

- Individuals overwhelmingly indicated that **local organizations that are already supporting their communities are where we should focus our efforts and funding**

- These organizations understand the needs of their communities and are actively working to support them, have developed trusting relationships, are places where community members already visit, and have the desire to support digital equity initiatives

PRELIMINARY FINDINGS: EXISTING RESOURCES

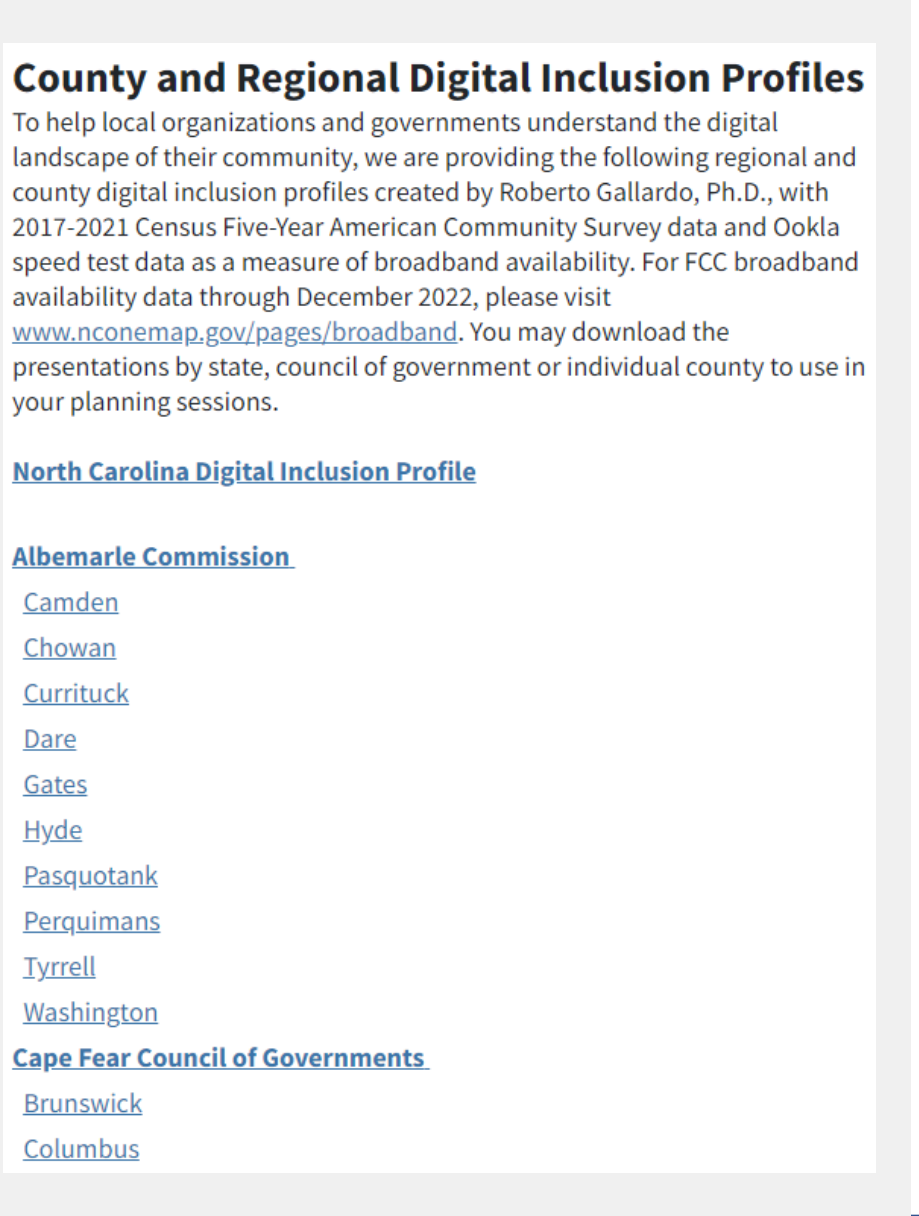
- Free Wi-Fi in public spaces is a common solution for individuals that do not have access to high-speed internet in their homes
- Transportation proves to be an issue for many community members
- Buses with hotspots were suggested several times
- Faith-based organizations were frequently brought up as potential sites for digital literacy training and access to free Wi-Fi
- Community colleges were suggested as places already offering digital skills training
  - Other organizations suggested included local nonprofits, community centers, libraries, schools, and senior centers
- Language barriers pose an additional barrier to access to the internet, devices, and digital skills
  - Suggested several times that digital literacy training be interwoven with English language courses

DIGITAL EQUITY RESOURCES

- **Digital Inclusion Profiles**
  - State
  - Council of government/regional
  - County
  - https://www.ncbroadband.gov/digitalequity

- **Digital Equity Interactive Map**
  (Coming Soon)

- **Draft Digital Equity plan available for public comment in fall 2023**



County and Regional Digital Inclusion Profiles

To help local organizations and governments understand the digital landscape of their community, we are providing the following regional and county digital inclusion profiles created by Roberto Gallardo, Ph.D., with 2017-2021 Census Five-Year American Community Survey data and Ookla speed test data as a measure of broadband availability. For FCC broadband availability data through December 2022, please visit www.nconemap.gov/pages/broadband. You may download the presentations by state, council of government or individual county to use in your planning sessions.

North Carolina Digital Inclusion Profile

Albemarle Commission

Camden
Chowan
Currituck
Dare
Gates
Hyde
Pasquotank
Perquimans
Tyrrell
Washington

Cape Fear Council of Governments

Brunswick
Columbus

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EMILY GANGI

POLICY DIRECTOR
NCDIT DIVISION OF BROADBAND AND DIGITAL EQUITY

CYNTHIA LISTON

LISTON CONSULTING, LLC

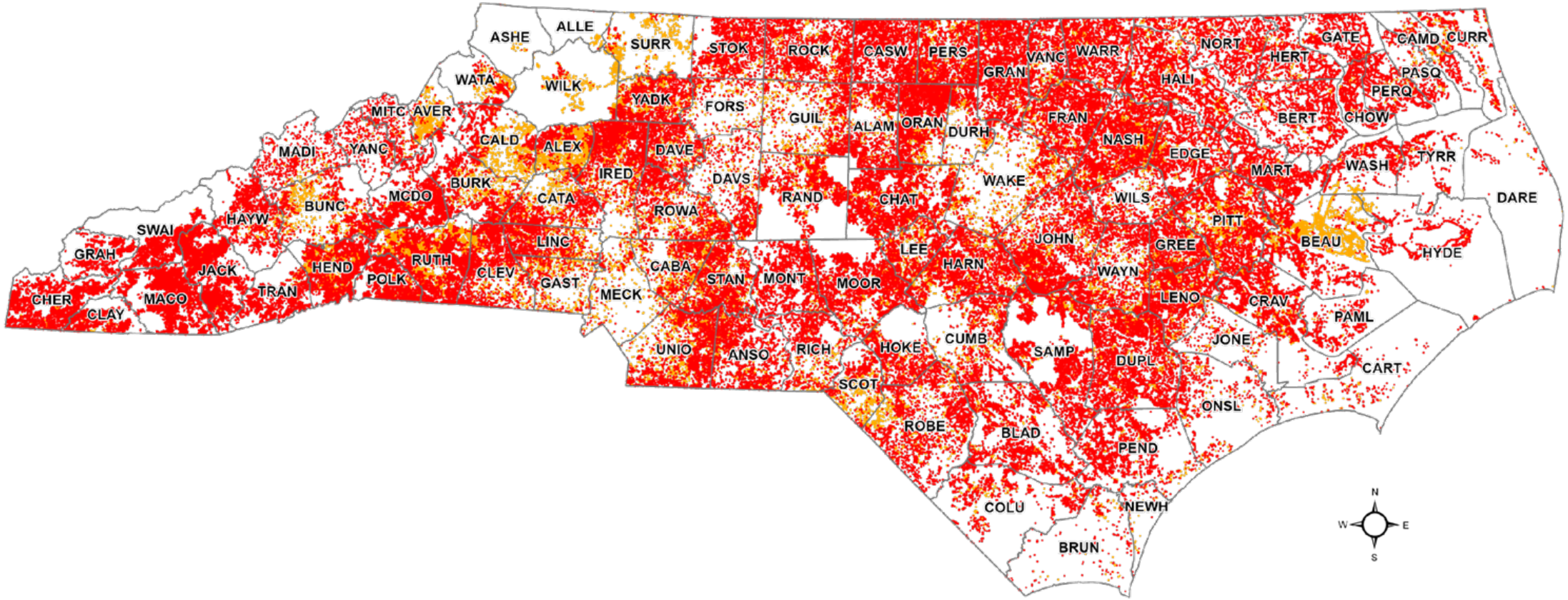
JOHN QUINTERNO

SOUTH BY NORTH STRATEGIES, LTD.

NC BROADBAND PROFILE

Evolving identification of Unserved Locations

New FCC Broadband Data Collection Serviceable Location Fabric – December 2022



- Unserved Broadband Serviceable Locations (Less Than 25mb/s Download and 3mb/s Upload)
  - 374,412 Locations = 409,445 units (homes and businesses)
- Underserved Broadband Serviceable Locations (Less Than 100mb/s Download and 20mb/s Upload)
  - 127,956 Locations = 145,778 units (homes and businesses)

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BROADBAND EQUITY, ACCESS, & DEPLOYMENT (BEAD) FUNDING

$1.5 billion to make sure all North Carolinians can access reliable high-speed internet

Eligible uses of funding include:

- Infrastructure for homes and businesses
- Upgrades to infrastructure for community anchor institutions
- Mapping and data collection
- Internet and Wi-Fi infrastructure for multi-family residential buildings
- Broadband adoption, including affordable internet capable devices and sign-up assistance
- Training and workforce development
- Digital equity programs

BEAD & DIGITAL EQUITY TIMELINE

November 2022:
NC awarded funds for planning

January to August 2023:
Local Coordination:
Listening Sessions;
Needs Assessment;
Asset Inventory

June 2023:
Notice of State Funding Allocation from NTIA;
Draft Plan posted for public comments

July 2023:
BEAD Five-Year Plan submitted to NTIA;
N.C. Broadband Workforce Advisory Committee began meeting

Fall 2023:
Draft Digital Equity Plan posted for public comments

October 2023:
Digital Equity Plan due to NTIA unless requested extension granted. If so, plan due in Jan/Feb.

December 2023:
BEAD Initial Proposal submitted to NTIA

2024:
BEAD Challenge Process to determine eligible locations, Subgrantee Selection Process, and Final Proposal due Dec. 2024

2024-2028:
BEAD and Digital Equity Plans Implemented & Additional Federal Funding Sought

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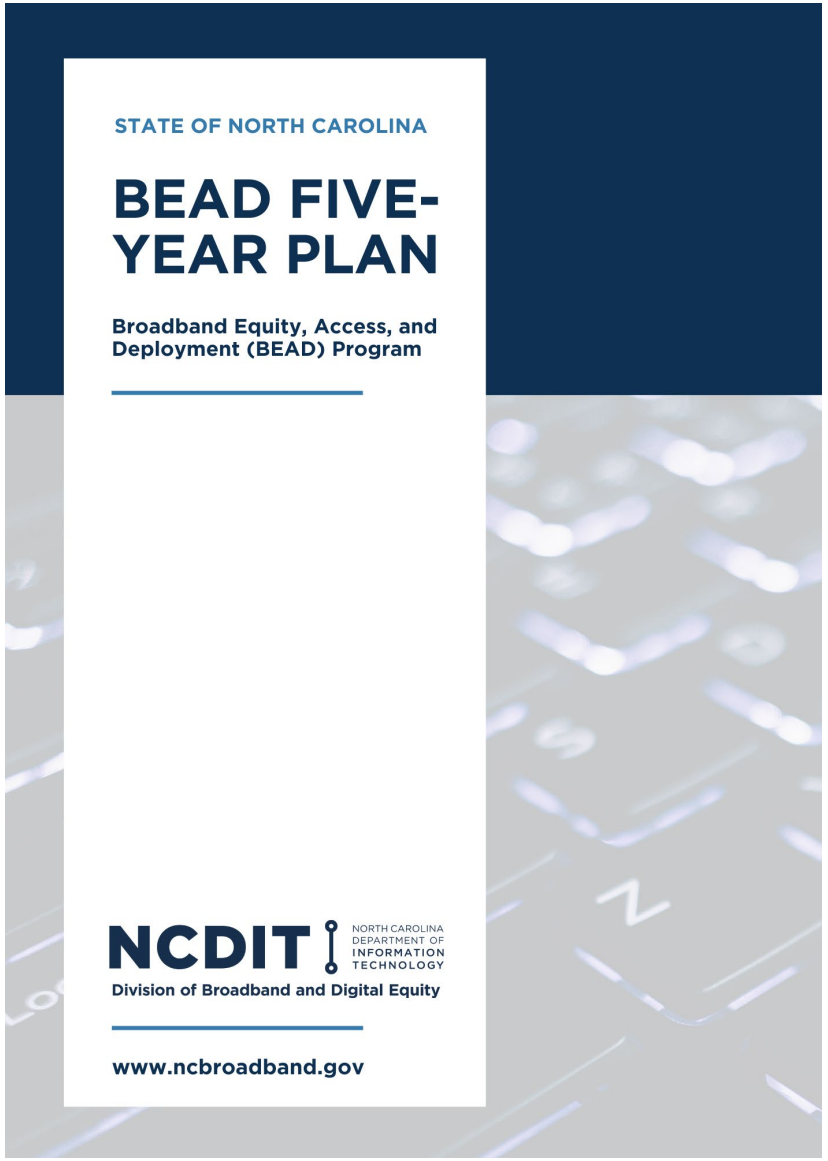
BEAD FIVE-YEAR PLAN

- Made the draft BEAD five-year action plan available for public comment on June 26
- Refined plan based on comments received (partners listed in plan), and then submitted it to NTIA on July 28
- Plan was approved by NTIA in August
- Approved plan is available at https://www.ncbroadband.gov/documents/bead-5-year-plan-final/download?attachment



BEAD INITIAL PROPOSAL DUE DEC. 27

Includes two volumes that may be submitted consecutively or simultaneously

Required sections are listed below:

VOLUME 1

A. Existing Broadband Funding (Requirement 3)
B. Unserved and Underserved Locations (Requirement 5)
C. Community Anchor Institutions (CAIs) (Requirement 6)
D. Challenge Process (Requirement 7)

*Challenge Process may not begin until Volume 1 is approved by NTIA

BEAD INITIAL PROPOSAL

VOLUME 2

E. Objectives (Requirement 1)

F. Local, Tribal, & Regional Broadband Planning Coordination (Requirement 2)

G. Local Coordination (Requirement 4)

H. Deployment Subgrantee Selection (Requirement 8)

I. Non-deployment Subgrantee Selection (Requirement 9)

J. Eligible Entity Implementation Activities (Requirement 10)

K. Labor Standards and Protections (Requirement 11)

L. Workforce Readiness (Requirement 12)

M. Minority Business Enterprises (MBEs)/ Women's Business Enterprises (WBEs)/ Labor Surplus Firms Inclusion (Requirement 13)

N. Cost and Barrier Reduction (Requirement 14)

O. Climate Assessment (Requirement 15)

BEAD INITIAL PROPOSAL

VOLUME 2 (continued)

P. Low-Cost Broadband Service Option (Requirement 16)

Q. Middle Class Affordability (Requirement 20)

R. Use of 20 Percent of Funding (Requirement 17)

S. Eligible Entity Regulatory Approach (Requirement 18)

T. Certification of Compliance with BEAD Requirements (Requirement 19)

FUNDING REQUEST

- Project Plan/Narrative
- Consolidated Budget Form

CRAFTING A BROADBAND WORKFORCE PLAN

- A high-quality workforce is critical to achieving North Carolina's broadband deployment goals
- A workforce plan is a required component of the state's BEAD initial proposal due on Dec. 27
- The advisory committee will provide input and guidance on:
    - Needs and gaps in workers, skills and certifications
    - Education & training assets to leverage and develop
    - Effective strategies and investments to address broadband workforce needs, including a focus on equity and building a diverse workforce

BROADBAND WORKFORCE ADVISORY COMMITTEE

Alan Fitzpatrick
Open Broadband

Amelia DeJesus
Wireless Infrastructure Association

Andrea DeSantis
Policy Advisor, Office of Governor Roy Cooper

Andrew Gardner
N.C. Community Colleges

Annie Izod
NC Works Commission, N.C. Department of Commerce

Debbie Kish
Fiber Broadband Association

Gary Beasley
Central Carolina Community College

Jennifer Tracy
Spectrum/Charter

John Chamberlain
Commscope

Keith Busby
Communication Workers of America

Kim Shepherd
SkyLine

Kristie Van Auken
N.C. Department of Public Instruction

Mauricio Solano
El Centro Hispano

Maya Norvel
Corning

Michelle Slaton
Piedmont Triad Workforce Development Board

Robert Doreauk
AT&T

Shinica Thomas
Wake County Commissioner

Wes Hill
Wilson Community College

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RESEARCH & ANALYSIS

- **Occupational analyses** to shed light on the projected impact of broadband investments on key jobs in the sector

- **Interviews and listening sessions** to hear directly from employers and education partners about broadband workforce needs, assets, and potential strategies

- Combined with **advisory committee input and national resources**, these are informing the workforce plan

INITIAL FINDINGS:
BROADBAND WORKFORCE ANALYSIS

John Quinterno | South by North Strategies, Ltd.

NC'S BROADBAND SECTOR: OVERVIEW

- The high-speed internet sector consists of business establishments engaged in specific industries and workers engaged in specific occupations
- No specific "broadband" categories in federal statistical systems; this analysis focuses on six key industries and 20 detailed occupations
- North Carolina was home to 1,422 business establishments in the six key industries in 2021; wired and wireless telecommunications carriers were 61% of the total
- The six key industries had 36,384 payroll positions in 2021; wired and wireless telecommunications carriers accounted for 60% of the total
- Compared to other states, North Carolina has a greater presence of fiber optic cable manufacturing; that industry accounted for 9% of total payroll employment

OCCUPATIONAL ANALYSIS: KEY INSIGHTS

- National research suggests that 20 detailed occupations will be most directly affected by a sizable federal investment in broadband infrastructure
- The most critical detailed occupations are installation, maintenance, and repair ones (e.g., telecommunications line installers and repairers)
- Critical occupations generally require some level of formal education beyond high school but shorter than a four-year degree (e.g., vocational training)
- Key occupations typically pay higher wages and provide key benefits
- **Selected upcoming broadband investments in North Carolina may generate 6,174 jobs above and beyond baseline forecasts (~1,235/year for five years)**
- Addressing challenges will require different thinking & sectoral collaboration

POTENTIAL EXTRA DEMAND: BEAD + ARPA

Table. Changes in Estimated Number of Direct Jobs Resulting from Federal BEAD and ARP Funding in 12 Key Occupations in the Broadband Sector Most Impacted by Federal Investment, Ranked by Size, North Carolina, 2023

				Federal BEAD Funds	Federal ARP Funds	Combined Federal BEAD and ARP Funds
SOC Code (6-Digit)	SOC Title	Estimated Share of Jobs	Direct Jobs Per $1 million	Estimated Direct Jobs at $1.5 Billion	Estimated Direct Jobs at $0.9 Billion	Estimated Direct Jobs at $2.5 Billion
49-2022	**Telecommunications Equipment Installers and Repairers (except line installers)**	**13.8%**	**0.3**	**529**	**323**	**852**
49-9052	**Telecommunications Line Installers and Repairers**	**9.2%**	**0.2**	**353**	**216**	**569**
41-3091	Sales Representatives of Services (except advertising, insurance, financial services, and trave	6.4%	0.2	244	149	394
43-4051	Customer Service Representatives	6.3%	0.2	241	147	388
47-2061	Construction Laborers	4.7%	0.1	180	110	291
49-9051	**Electrical Power-Line Installers and Repairers**	**4.1%**	**0.1**	**159**	**97**	**256**
15-1253	Software Developers and Software Quality Assurance Analysts and Testers	2.7%	0.1	102	62	164
13-1198	Project Management Specialists and Business Operations Specialists (All Others)	2.4%	0.1	94	57	151
49-1011	First-Line Supervisors of Mechanics, Installers and Repairers	2.4%	0.1	94	57	151
17-2072	**Electronic Engineers (except computer)**	**2.2%**	**0.1**	**84**	**51**	**135**
49-2021	**Radio, Cellular, and Tower Equipment Installers and Repairers**	**0.8%**	**0.0**	**31**	**19**	**50**
49-9098	**Helpers, Installation, Maintenance and Repair Workers**	**0.3%**	**0.0**	**11**	**7**	**18**
	Subtotal	55.4%	1.4	2,121	1,296	3,417
	All Other SOC Detailed Occupations (Remaining 855)	*44.7%*	*1.1*	*1,711*	*1,045*	*2,756*
	Total	**100.0%**	**2.5**	**3,832**	**2,341**	**6,173**

Note: Detailed occupations in **SHADED BOLD** are highly critical (specialized) to broadband expansion.

Sources: Author's analysis based on data provided by NC Department of Information Technology; and Marcela Escobari, Dhruv Gandhi, and Sebastian Strauss, How Federal Infrastructure Investment Can Put America to Work (Washington, DC: Brookings Institution, 2021), Appendix A.

TRAITS OF BROADBAND OCCUPATIONS

- With two exceptions, all essential occupations require less than a four-year degree for entry, typically a high school degree or vocational training
- In 15 of the 20 essential occupations, median wages exceed the statewide median (e.g., $31.81/hour vs. $20.10/hour for electrical power line installers)
- Median wages exceed the statewide value in 5 of the 6 most highly critical occupations; the exception is helpers, installation and maintenance workers.
- Relatively high shares of workers in installation, maintenance, and repair occupations have access to retirement, medical, and paid leave benefits
- N.C. workers are much less likely to be members of a labor union than in other states (3%); nationally, 12% of telecommunications workers are unionized

MODELING ANNUAL NEED: ALL SOURCES

Table. Annualized Change over Five Years in Estimated Number of Direct Jobs Resulting from Federal BEAD and ARP Funding in 12 Key Occupations in the Broadband Sector Most Impacted by Federal Investment, Ranked by Share of Baseline Job Openings, 2024-2028

SOC Code (6-Digit)	SOC Title	Total Openings (Baseline)	Federal BEAD Funds Per Year: Estimated Direct Jobs at $1.5 Billion	Federal ARP Funds Per Year: Estimated Direct Jobs at $0.9 Billion	Combined Federal BEAD and ARP Funds: Estimated Direct Jobs at $2.5 Billion	Combined BEAD and ARP Funds: Estimated Direct Jobs Per Year as Share of Baseline Openings
49-9052	**Telecommunications Line Installers and Repairers**	**480**	**71**	**43**	**114**	**23.8%**
49-2022	**Telecommunications Equipment Installers and Repairers (except line installers)**	**851**	**106**	**65**	**171**	**20.1%**
17-2072	**Electronic Engineers (except computer)**	**201**	**17**	**10**	**27**	**13.4%**
49-9051	**Electrical Power-Line Installers and Repairers**	**480**	**32**	**19**	**51**	**10.6%**
49-2021	**Radio, Cellular, and Tower Equipment Installers and Repairers**	**112**	**6**	**4**	**10**	**8.9%**
15-1253	Software Developers and Software Quality Assurance Analysts and Testers	998	**20**	**12**	**32**	3.2%
41-3091	Sales Representatives of Services (except advertising, insurance, financial services, and trave	4,626	49	**30**	79	1.7%
47-2061	Construction Laborers	5,058	36	**22**	58	1.1%
13-1198	Project Management Specialists and Business Operations Specialists (All Others)	3,686	19	**11**	30	0.8%
49-1011	First-Line Supervisors of Mechanics, Installers and Repairers	3,906	**19**	**11**	**30**	0.8%
49-9098	**Helpers, Installation, Maintenance and Repair Workers**	**492**	**2**	**1**	**3**	**0.6%**
43-4051	Customer Service Representatives	13,679	**48**	**29**	**77**	0.6%
	Subtotal for Selected Occupations	34,569	425	257	682	2.0%

Note: Detailed occupations in SHADED BOLD are highly critical (specialized) to broadband expansion.

Sources: Author's analysis based on data from NC Department of Commerce: Labor and Economic Analysis Division, Employment Projections, 2021-2030; and Marcela Escobari, Dhruv Gandhi, and Sebastian Strauss, How Federal Infrastructure Investment Can Put America to Work (Washington, DC: Brookings Institution, 2021), Appendix A.

BROADBAND WORKFORCE DEMOGRAPHICS

Compared to the state, broadband industries rely on a largely male workforce that skews older; workers also tend to identify as non-Hispanic white

- In terms of occupations, older, male, non-Hispanic persons predominate in installation, maintenance, and repair fields
- An above-typical concentration of Hispanic workers is in the utility system construction industry (13% vs. 8%); a similar pattern exists for African-American workers in the telecommunications industry (30% vs. 23%)
- Given this workforce's age structure, retirement and workforce exits are forecasted to account for a disproportionately large share of future openings before accounting for any new federal investments
- Industry will need to evolve its thinking on hiring sources and practices; short time frame likely necessitates collaborations among firms and government

INITIAL FINDINGS: EMPLOYER LISTENING SESSIONS AND EDUCATION & TRAINING CAPACITY SCAN

Cynthia Liston | Liston Consulting, LLC

EMPLOYER LISTENING SESSIONS

- Convened two sessions in June 2023
- Invited internet service providers active in the state; 15 participated, representing many regions across the state
- Areas of inquiry:
  - What are priority broadband jobs and credentials?
  - How are you finding and retaining employees?
  - What education programs/partnerships are currently underway?
  - What are your efforts to diversify the workforce?

FINDINGS: EMPLOYER PERSPECTIVES

- Existing credentials and training curricula are available to leverage, but there's no singular credential widely in use for fiber technicians
- Proximity to training is important to employers
- Pre-employment vs. post-employment training is a tension, with the latter more common
- Employers view community colleges as strong potential partners but most programs or partnerships mentioned are new or developing
- Employers would like to see more young people attracted to this field and more partnerships with high schools
- Employers seek a more diverse workforce
- Employers could do more to articulate career pathways in the broadband sector to make the industry more attractive to young people and job changers

INITIAL EDUCATION & TRAINING CAPACITY SCAN

- **From May to Sept. 2023, conducted interviews with:**
  - 8 state and community college leaders
  - 2 national associations
  - 1 employer training provider

- **Areas of inquiry:**
  - For which jobs is training provided?
  - How do you partner with providers?
  - What assets can we build from?
  - What are barriers and opportunities in the broadband education & training space?

EDUCATION & TRAINING CAPACITY SCAN

Recent non-credit training for fiber technicians

- Wilson Community College
- Cape Fear Community College

Wake Tech, Western Piedmont, and Roanoke-Chowan Community Colleges have offered telecom courses, but not in last 3+ years, based on the information we have

Catawba Valley CC and Central Piedmont Community Colleges are considering fiber tech courses

Two related credit-bearing programs:

- Guilford Tech CC: *Wireless Communications Certificate* within electronics degree
- Central Carolina CC: *Laser & Photonics Technology* degree program

FINDINGS: BROADBAND TRAINING

BARRIERS:

- Start-up and ongoing training costs
- Concern it may be difficult to find enough journeymen to scale apprenticeships
- Finding qualified instructors
- Skepticism within education about job demand numbers being “solid”

OPPORTUNITIES:

- Leverage the training capacity needed for broadband with the training needs for other sectors, including emerging ones (e.g., EV charging, construction, clean tech)
- Create non-credit to credit pathways into degree programs to create career advancement opportunities for those who start with short-term credentials.
- Wrap-around supports to help more people access & complete training
- Develop regional training hubs like how the state approached the biotech industry
- Partner with workforce boards and aligned funders

SAMPLE DRAFT WORKFORCE STRATEGIES

Training & Credentials:

- Develop fiber tech training hubs at community colleges that offer credentials valued by the sector

- Incentivize Internet Service Providers and manufacturers to provide in-kind support to education partners (e.g., equipment, consumables, instructors)

- Attract more electrical engineers / network architects to the broadband sector

Pathways and Supports:

- Partner with community organizations to help improve access to broadband training and provide wrap-around supports that enable completion

- Develop career pathway(s) for the broadband sector

- Create pathways in high schools through CTE and/or dual enrollment

WHAT'S NEXT?

Ongoing: Additional outreach, information gathering, analysis, and writing

November:

11/6: BEAD Initial Proposal Volumes 1 & 2 posted for public comments

11/15: Goal for posting Digital Equity Plan for public comments

TBD: Q4 Webinar Update in November or December

December:

12/5: BEAD Initial Proposal public comments due

12/27: BEAD Initial Proposal due to NTIA

QUESTIONS?

Place your questions in the Q&A feature

Visit the Division's website to learn more and see additional resources: **www.ncbroadband.gov/BEAD**

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