

Impacts of Statewide GIS Data on NC Broadband Expansion

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North Carolina's Current Investment Plan

2022 - 2024: American Rescue Plan Act - Over \$1 billion total funding:



INFRASTRUCTURE

\$971M

Ensure availability of internet service at speeds of at least 100/20 Mbps for more than 98% of North Carolina households

\$380M

- GREAT Grant (\$350M American Rescue Plan Act; \$30M State CIF)

\$400M

- Completing Access to Broadband (CAB)

\$90M

- Stop-Gap Solutions

\$100M

- Broadband Pole Replacement Fund

\$1M

- Broadband Mapping



AWARENESS AND DIGITAL LITERACY

\$50M

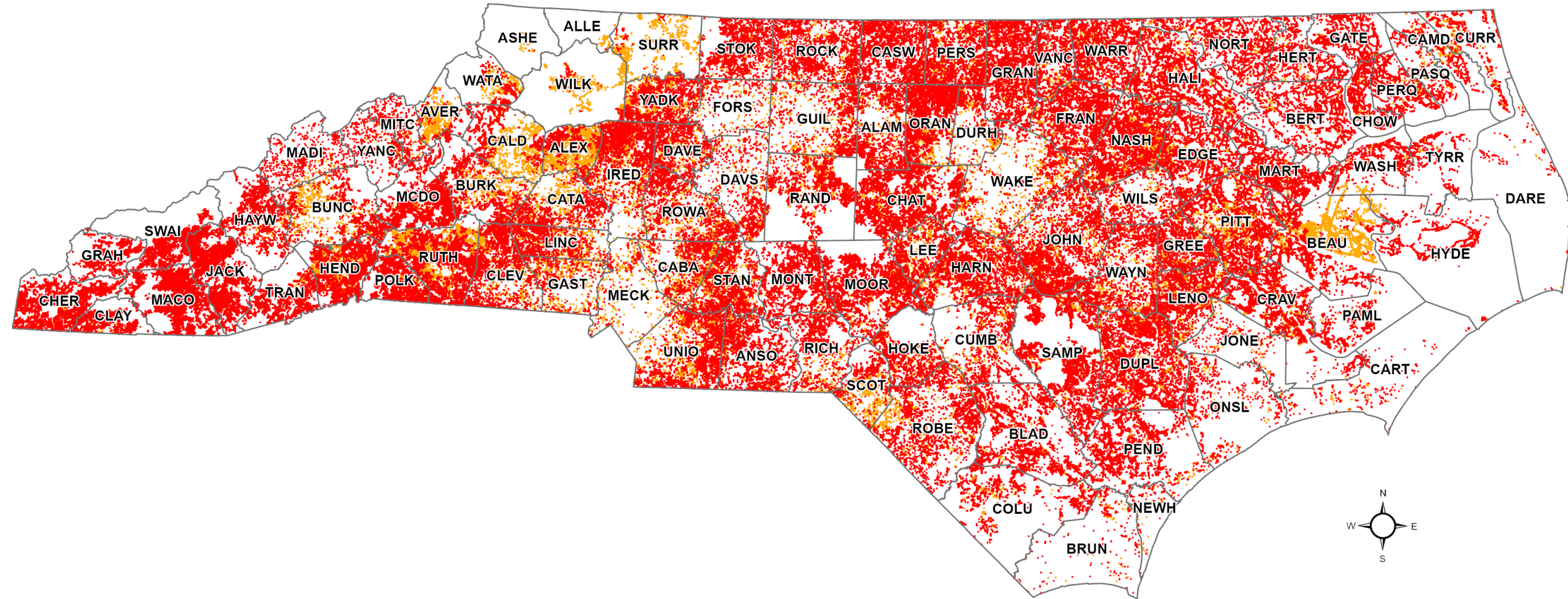
Improve awareness and enable North Carolinians to realize the benefits of high-speed internet through digital literacy and upskilling aimed at accessing the digital economy.

- Increase enrollment in the Affordable Connectivity Program
- Increase access to devices for households
- Increase access to high quality digital literacy and skills training
- Build local digital equity capacity

Beginning late 2024: Bipartisan Infrastructure Bill Allocation through BEAD to NC - \$1.5 Billion

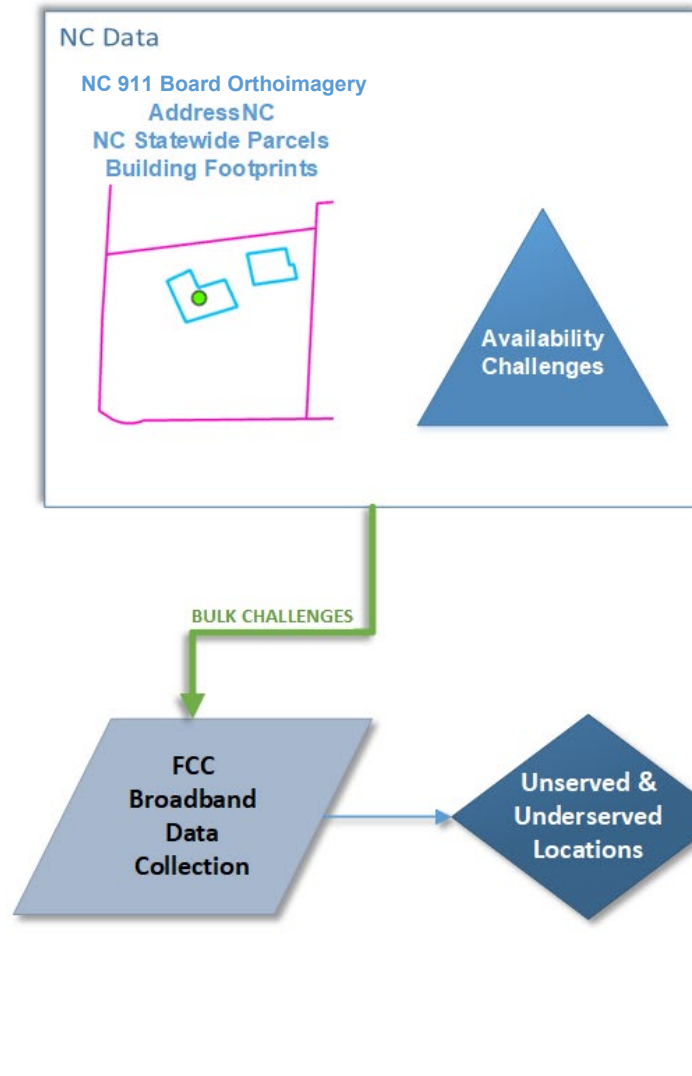
NC Broadband Profile

FCC Broadband Data Collection - Version 2 - Unserved/Underserved - Service as of Dec 2022



- Unserved Broadband Serviceable Locations (Less Than 25mb/s Download and 3mb/s Upload)
 - 376,039 Locations – **Increase of 122,630 from Version 1 to Version 2 – Largest Increase of any State**
- Underserved Broadband Serviceable Locations (Less Than 100mb/s Download and 20mb/s Upload)
 - 127,391 Locations

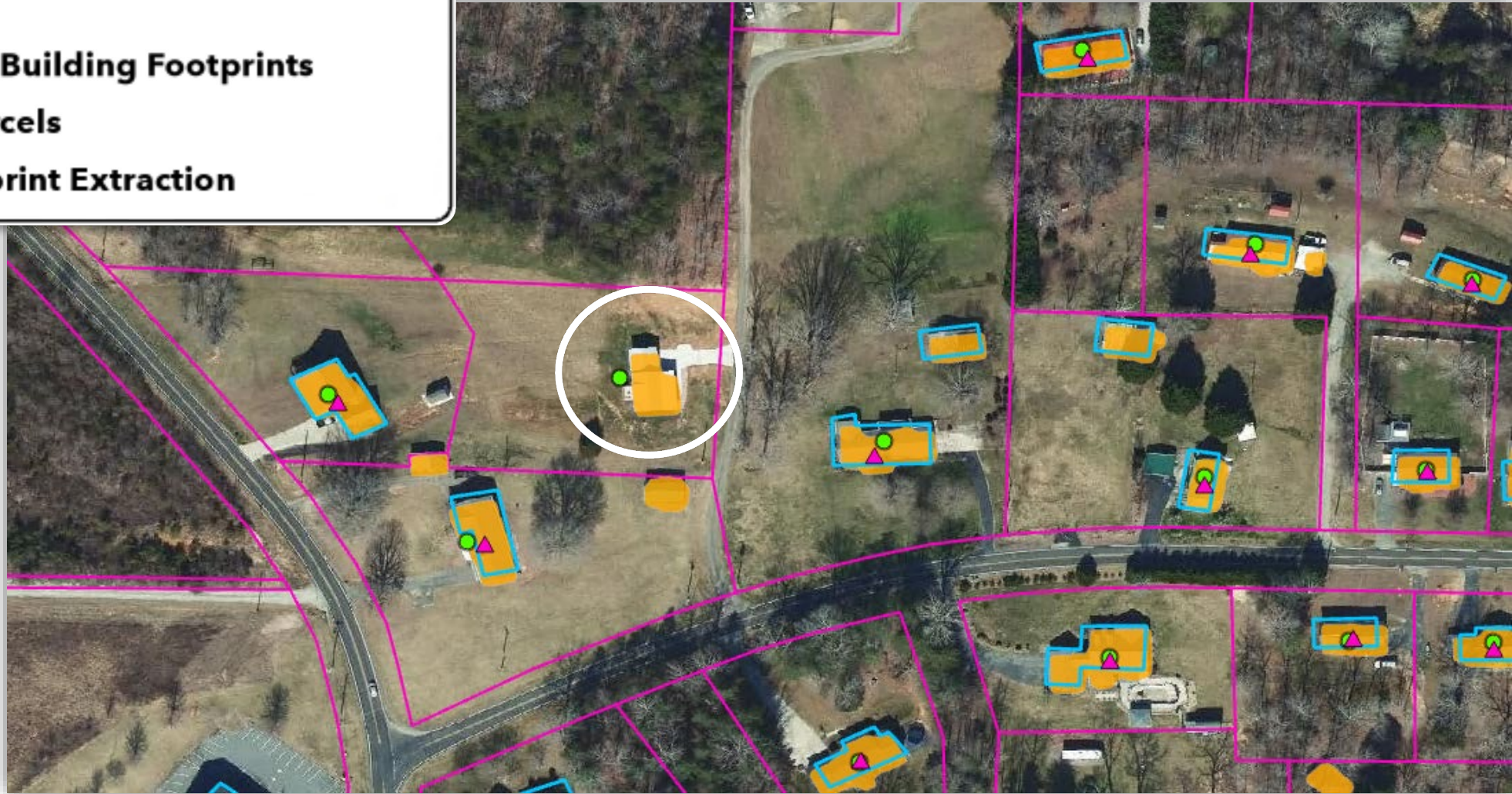
NC BROADBAND GIS DATA WORKFLOW



- Location challenge process relies on NC Statewide GIS Datasets to ensure FCC location data is accurate
 - 5,580 challenges in 27 counties submitted in Sep '23
 - 11,525 challenges in 12 counties so far for Mar '24 submission
- Unserved Locations:
 - Less Than 25mb/s Download and 3mb/s Upload Speeds
- Underserved Locations:
 - Less Than 100mb/s Download and 20mb/s Upload Speeds
- Remove previously funded locations from State and Federal programs

FCC BROADBAND SERVICEABLE LOCATION FABRIC

- ▲ FCC Broadband Serviceable Location Fabric
- AddressNC
- NCEM Statewide Building Footprints
- NC Statewide Parcels
- AWS ML/AI Footprint Extraction

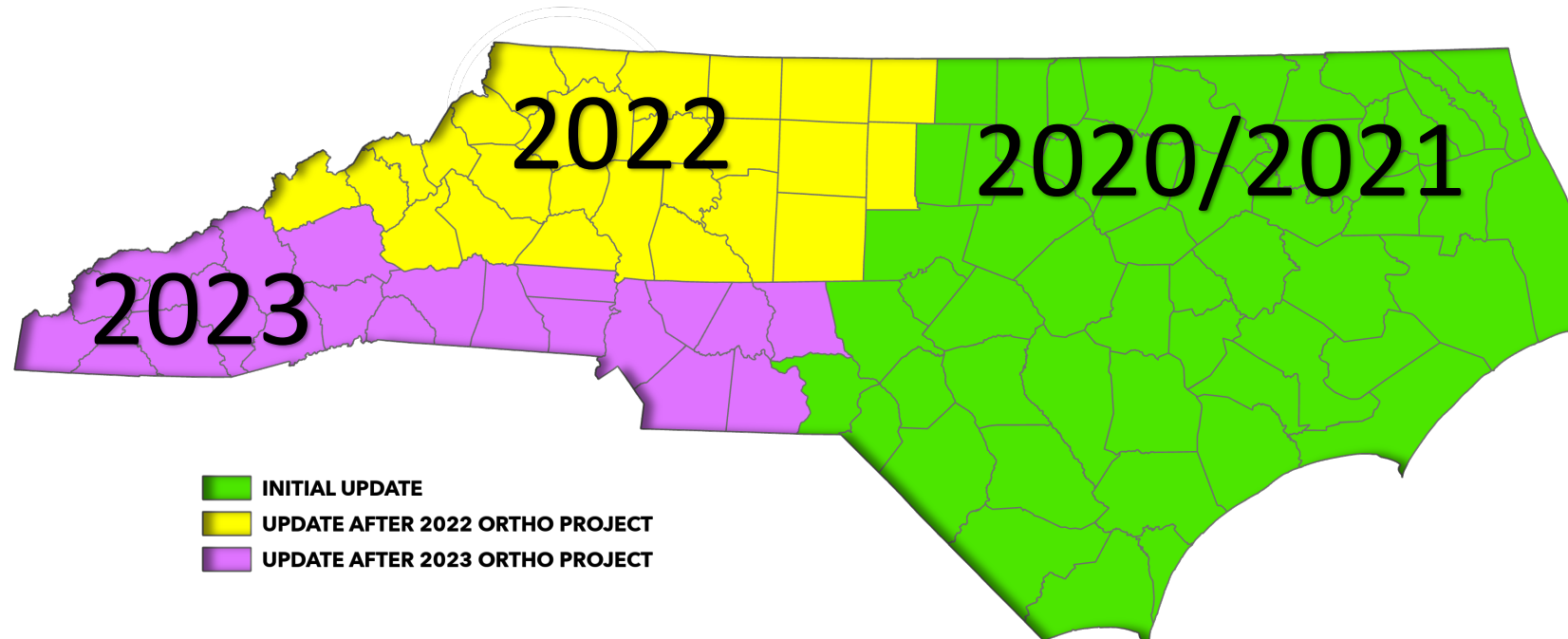


Working Group for Building Footprints

Summary of Recommendations

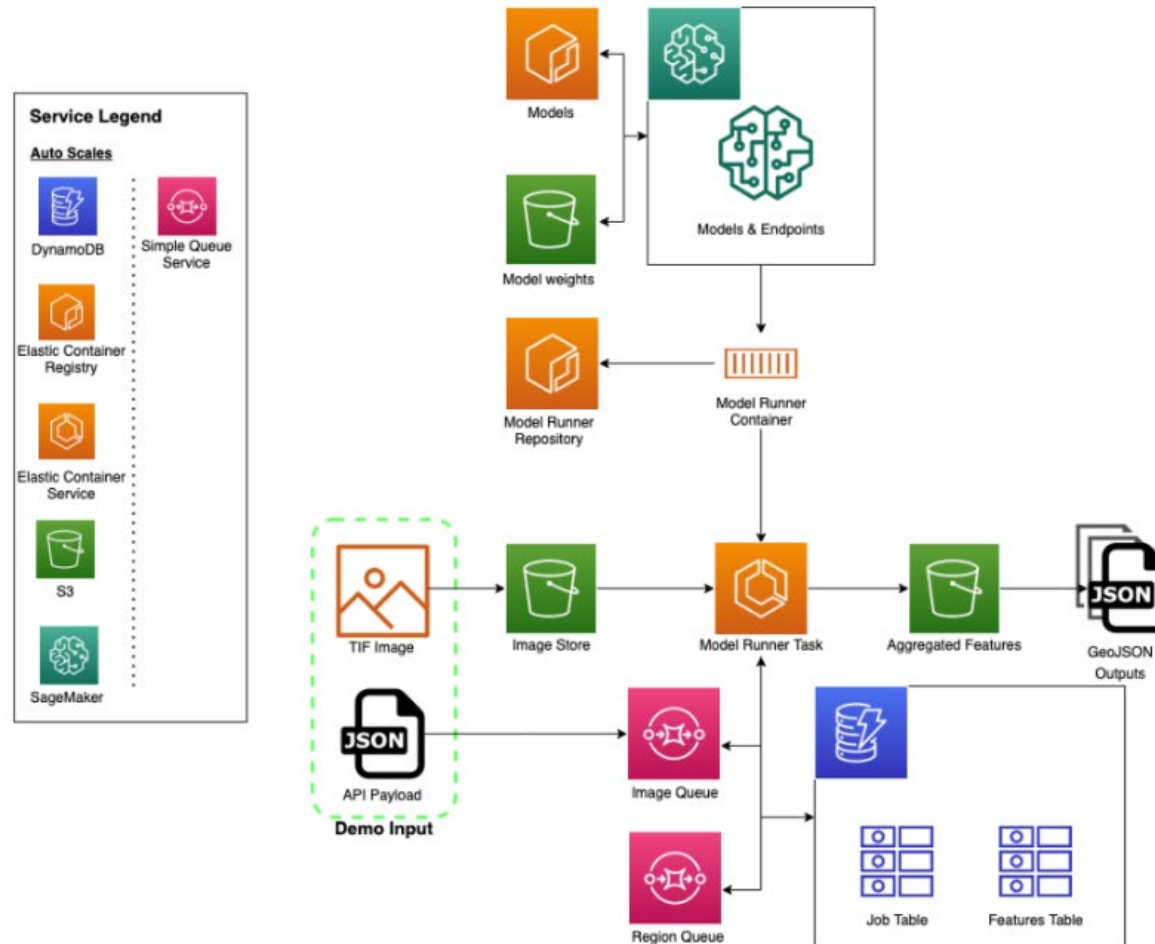
1. Align schedule with and derive data from the 911 Board statewide orthoimagery annual phase

- A quarter of the state is updated each year that maximizes pace with growth
- Establishes a maintenance schedule for keeping this valuable dataset current
- Orthoimagery is high resolution directly related to precision and accuracy



AWS BUILDING FOOTPRINT INFERENCE PIPELINE

Architecture Diagram – Inference Pipeline

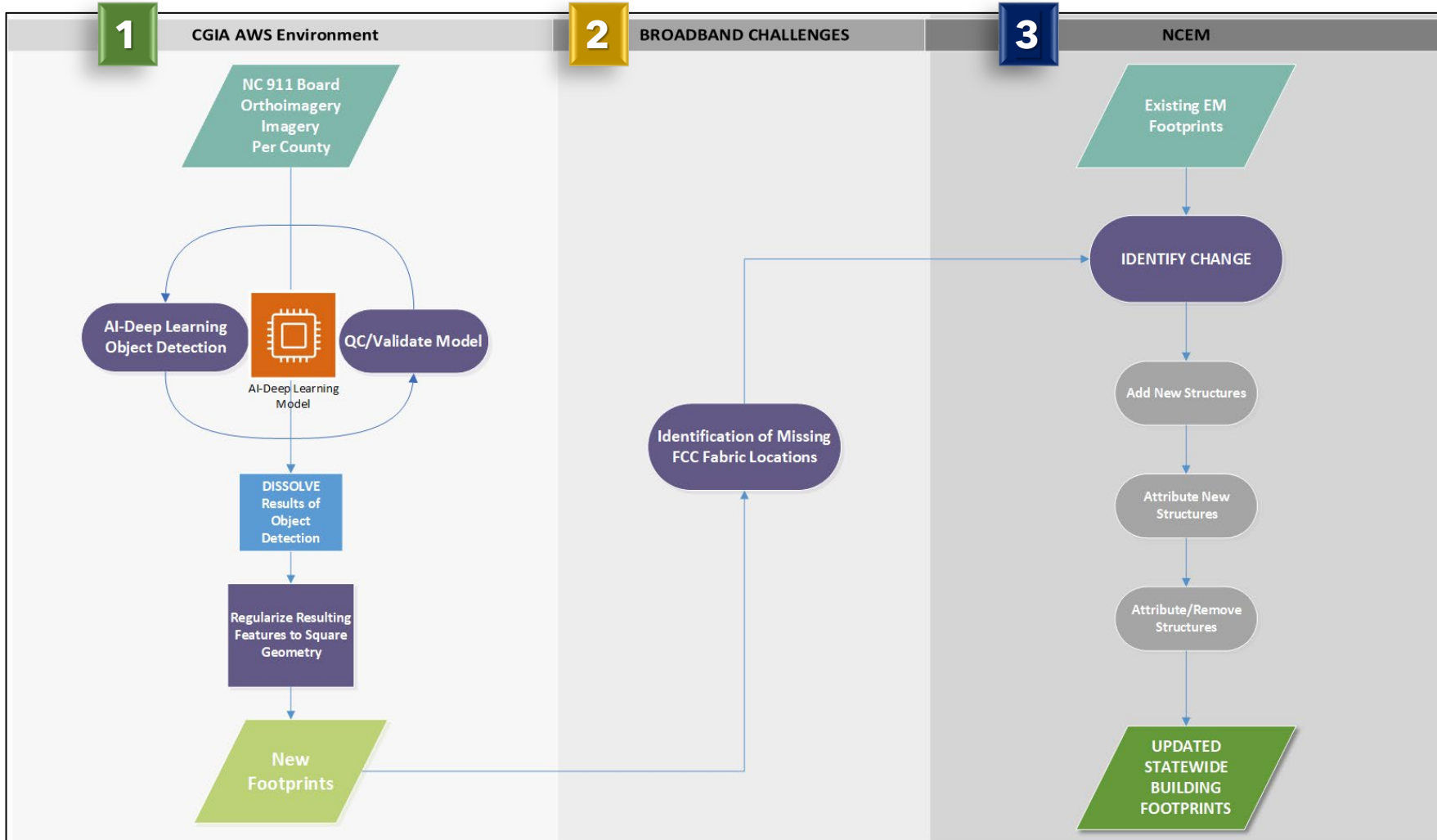


3 Pipelines:

1. Labeling
2. Training
3. Inference

- Imagery Stored in S3
- Models run from AWS SageMaker Notebook using python libraries for machine learning

BUILDING FOOTPRINT IMPLEMENTATION PLAN



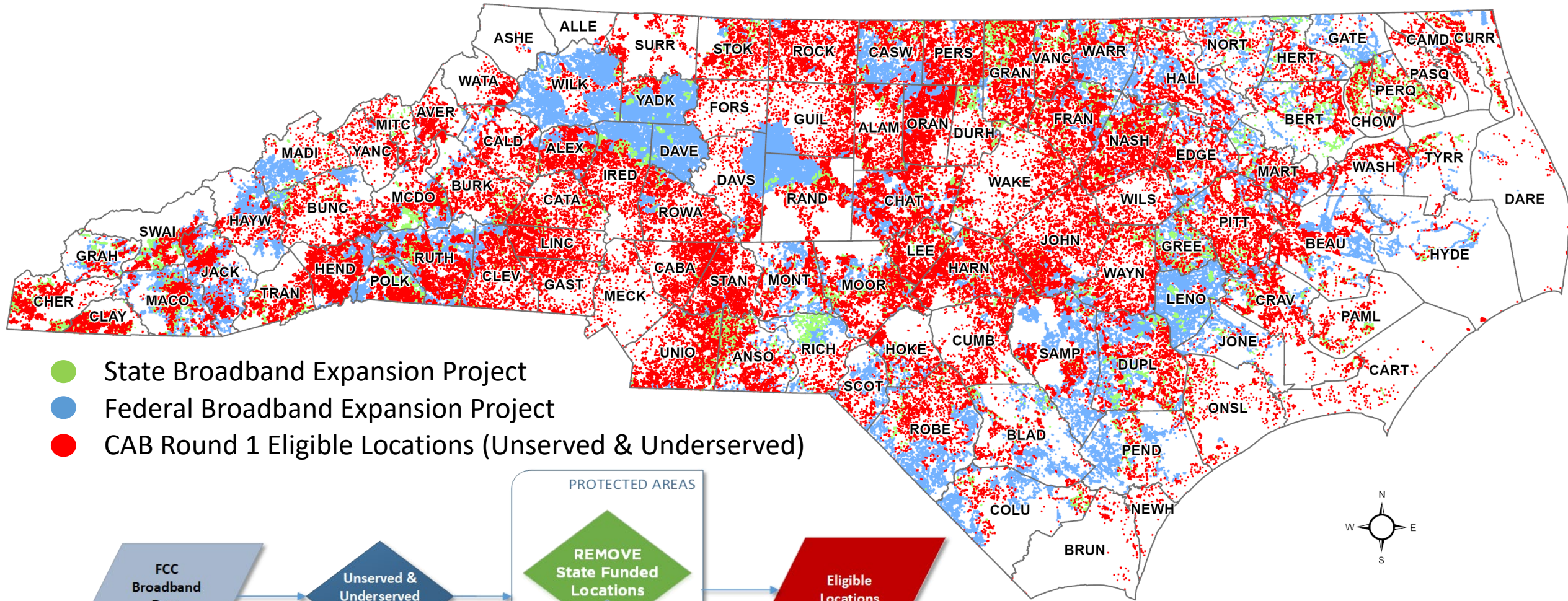
- **Step 1 complete**
- Step 2 in progress
- Step 3 initiation Q1 2024 for the 2022 and 2023 project areas
- Continue feature extraction routines after 2024 Coastal Orthoimagery Project

AWS BUILDING FOOTPRINT INFERENCE PIPELINE

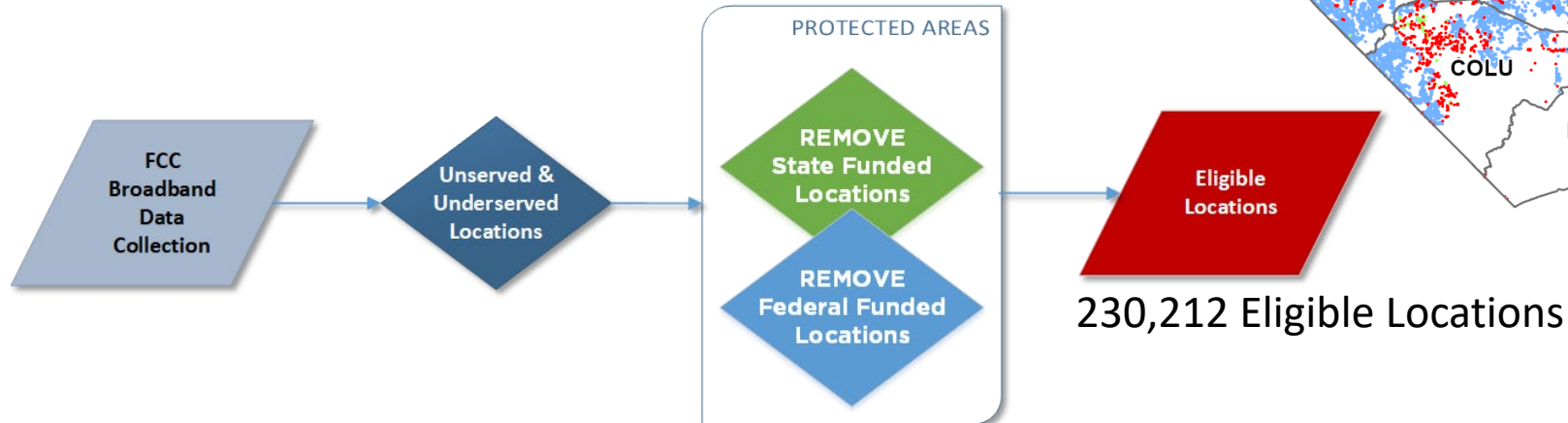


NC Broadband Profile

FCC Broadband Data Collection - Version 3 - Unserved/Underserved - Service as of June 2023



- State Broadband Expansion Project
- Federal Broadband Expansion Project
- CAB Round 1 Eligible Locations (Unserved & Underserved)



CAB PLANNING TOOL

NC Completing Access to Broadband (CAB) Planning Tool

County Filter:
ALL COUNTIES

RDOF Award Areas



Other Federal Broadband Award Areas Combined



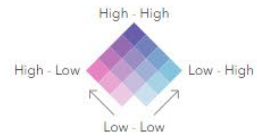
NC FCC Broadband Data Collection Aggregated to HexBins - UNSERVED

FCC Reported Unserved Locations - H3 level 6

Relationship

↖ Count of Unserved Locations (Less Than 25/3)

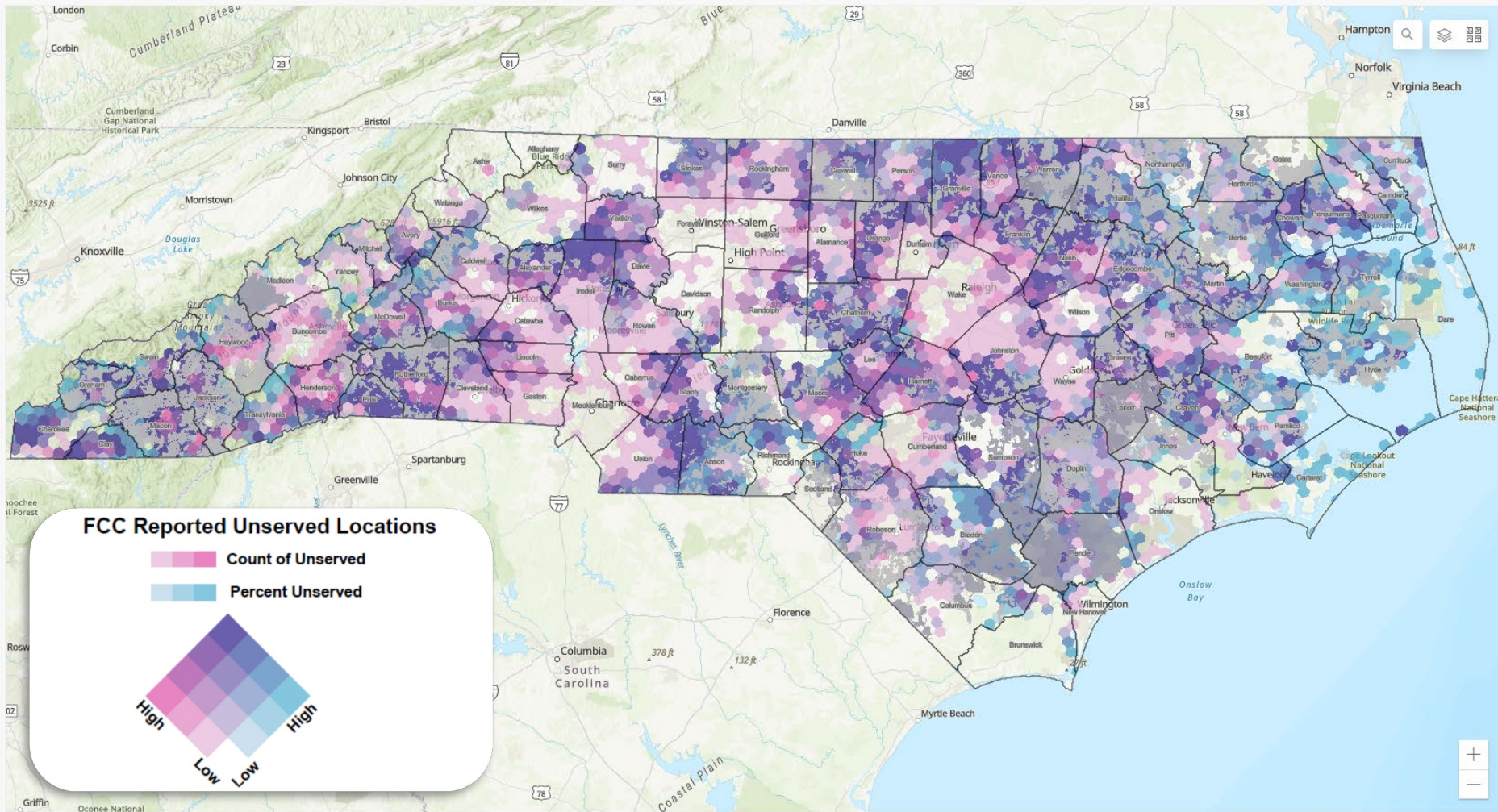
↗ Percent Unserved Out of All Locations in Area



FCC Reported Service By Technology

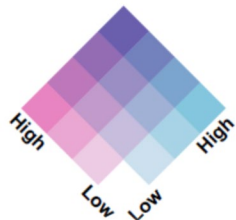
For detailed instructions for this tool and additional information on the data included in this map, use the [NC CAB Planning Tool Help](#).

- Filter by county using the dropdown in the upper right corner of this dashboard.
- Once a county filter has been applied, the list of providers in that county will populate on the right-hand side of the map.
- Selecting any provider in the list will display data from the FCC Broadband Data Collection aggregated to hexbins to show the percentage of locations within the hexbin where that provider has



FCC Reported Unserved Locations

- Count of Unserved
- Percent Unserved



Filter by County and then Select list item to see Broadband Provider Reported Service Area in the Unserved and Underserved Maps*

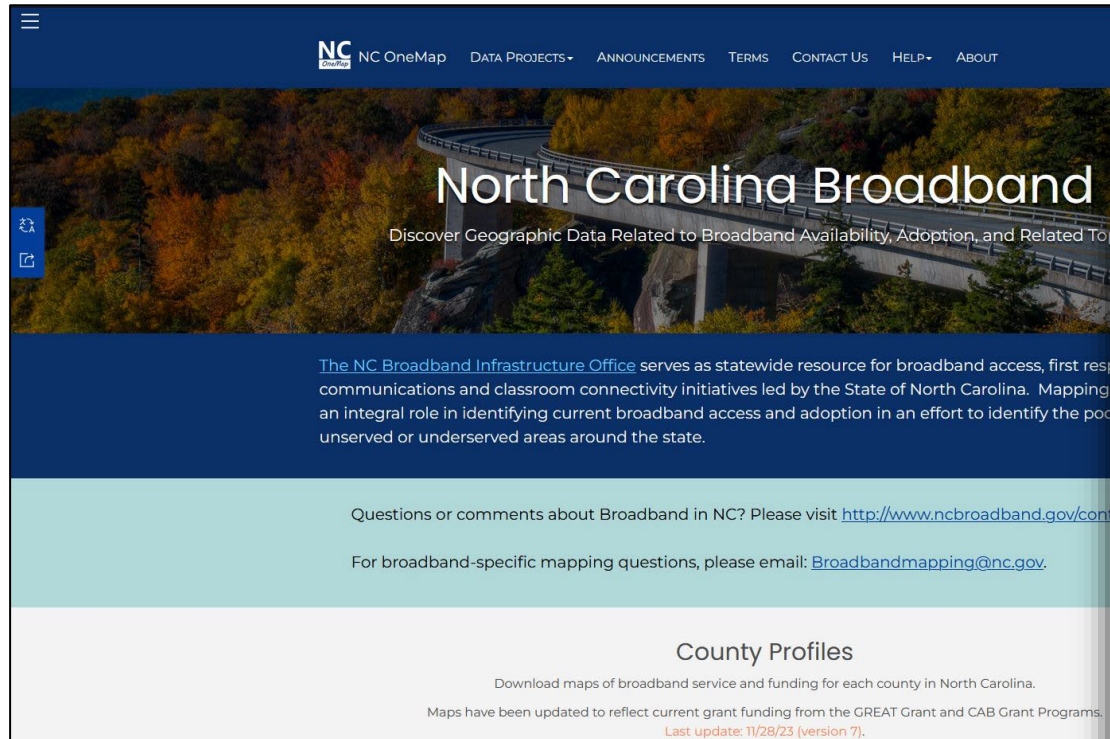
Selection required on one or more elements

*Locations reported as served at any speed level in latest FCC Broadband Data Collection.

Unserved Locations
221.7k
Does not include previously funded locations

Underserved Locations
8.5k
Does not include previously funded locations

NC ONEMAP BROADBAND PAGE



NC OneMap DATA PROJECTS ANNOUNCEMENTS TERMS CONTACT US HELP ABOUT

North Carolina Broadband

Discover Geographic Data Related to Broadband Availability, Adoption, and Related Topics

The NC Broadband Infrastructure Office serves as statewide resource for broadband access, first response communications and classroom connectivity initiatives led by the State of North Carolina. Mapping plays an integral role in identifying current broadband access and adoption in an effort to identify the most unserved or underserved areas around the state.

Questions or comments about Broadband in NC? Please visit <http://www.ncbroadband.gov/contact>

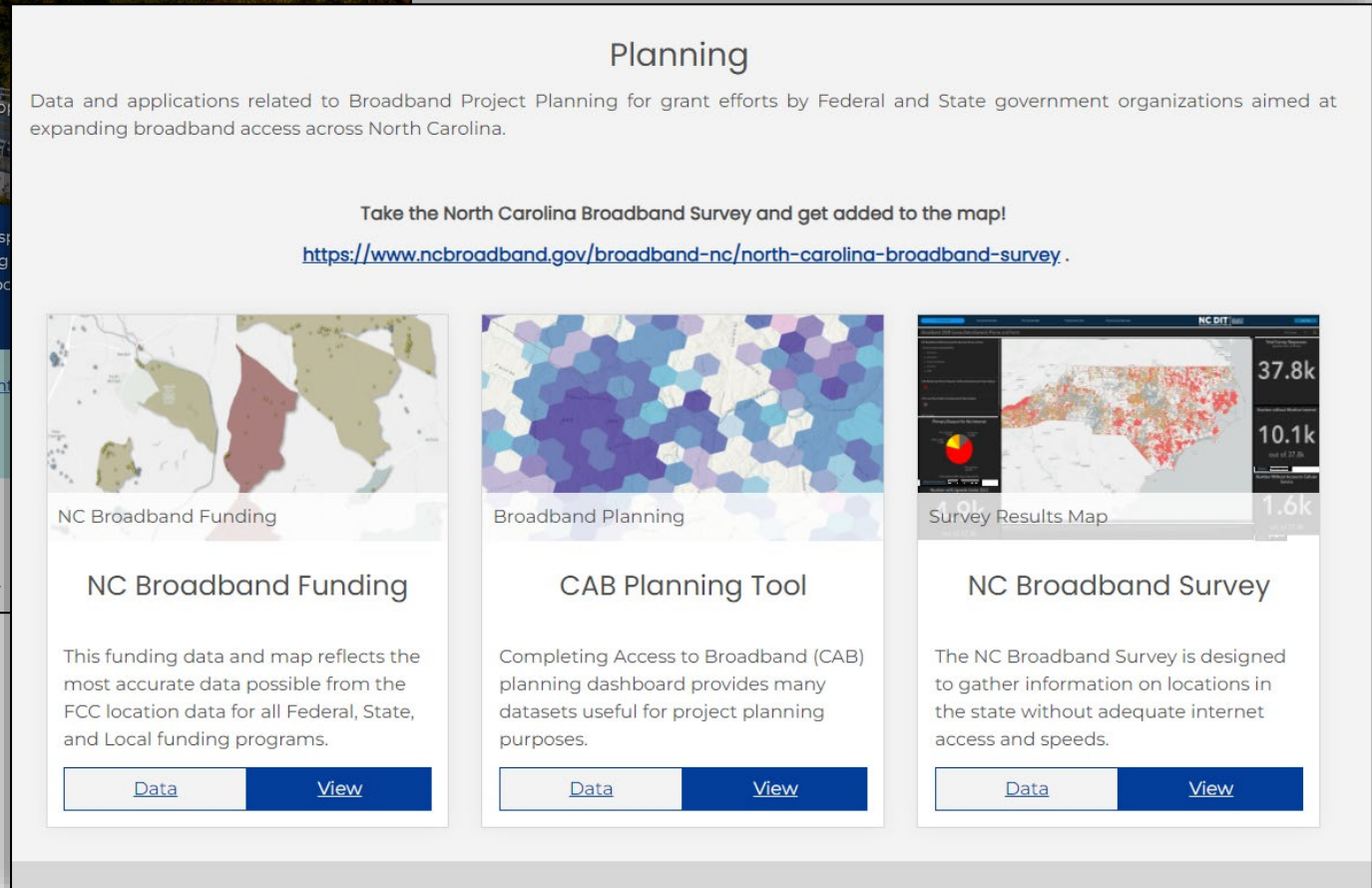
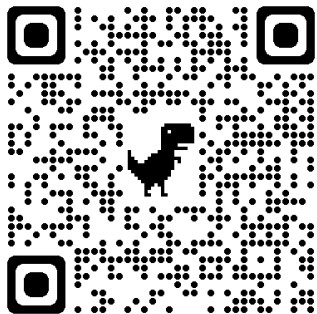
For broadband-specific mapping questions, please email: Broadbandmapping@nc.gov.

County Profiles

Download maps of broadband service and funding for each county in North Carolina.

Maps have been updated to reflect current grant funding from the GREAT Grant and CAB Grant Programs. Last update: 11/28/23 (version 7).

nconemap.gov/pages/broadband




Planning

Data and applications related to Broadband Project Planning for grant efforts by Federal and State government organizations aimed at expanding broadband access across North Carolina.

Take the North Carolina Broadband Survey and get added to the map!


<https://www.ncbroadband.gov/broadband-nc/north-carolina-broadband-survey>



NC Broadband Funding

This funding data and map reflects the most accurate data possible from the FCC location data for all Federal, State, and Local funding programs.

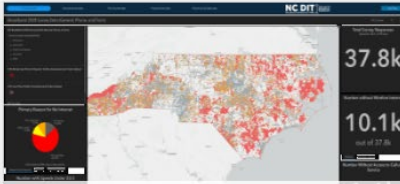
[Data](#) [View](#)



Broadband Planning

Completing Access to Broadband (CAB) planning dashboard provides many datasets useful for project planning purposes.

[Data](#) [View](#)



Survey Results Map

The NC Broadband Survey is designed to gather information on locations in the state without adequate internet access and speeds.

[Data](#) [View](#)

Accountability & Transparency

Broadband Project Tracking and Reporting

NC Broadband Grants (ARPA)

(Award Locations as of 10-11-2023)

FILTER BY COUNTY:
ALL COUNTIES

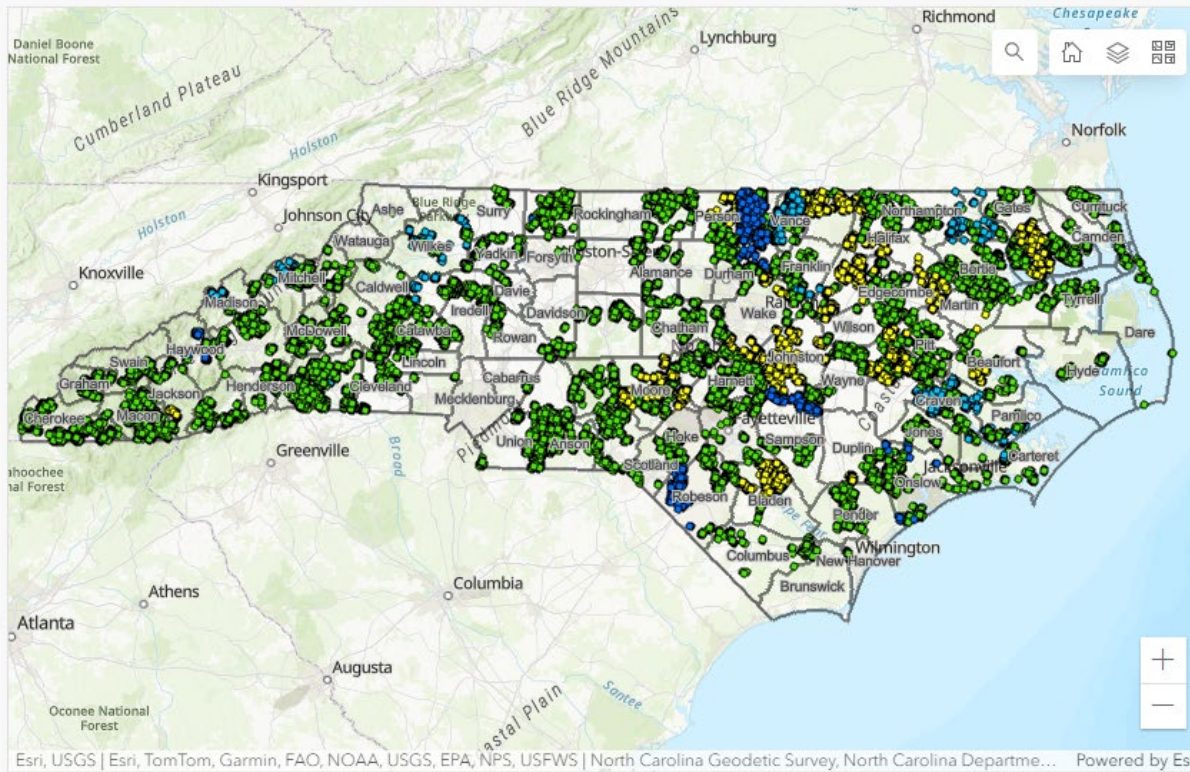
FILTER BY PROGRAM:
ALL PROGRAMS

Broadband Funding Locations

NC Broadband Grant Addresses

Funding Program - Contract Status

- GREAT - Contracted Project
- GREAT - Contingent Project
- CAB - Contingent Project
- CAB - Contracted



Avg Cost Per Location

\$4.9k

Total Project Cost

\$573M

Total Grant Amount

\$372.9M

Total Match Amount

\$200.1M

Total Awarded Locations

150,325

Households Served

145,708

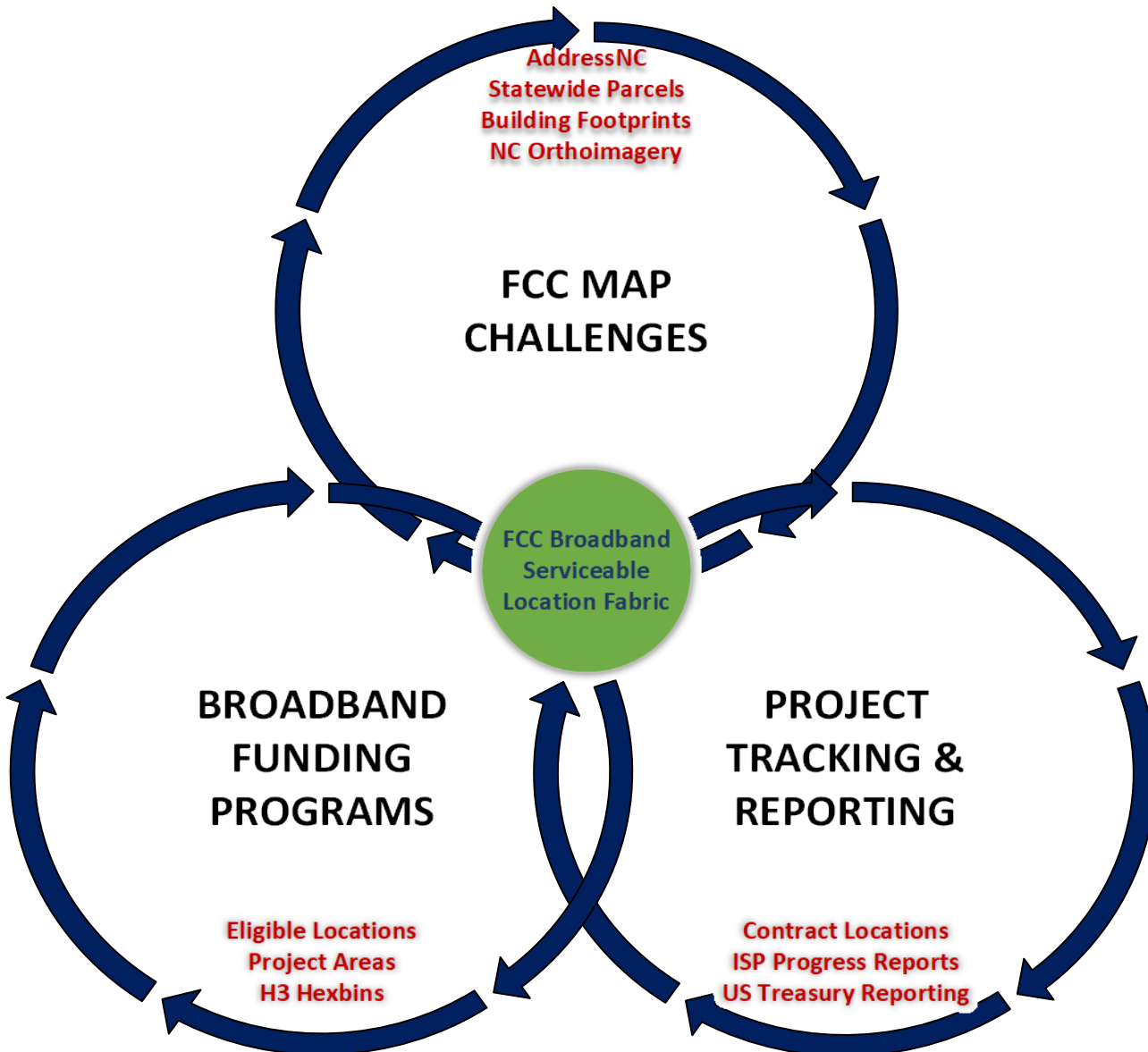
Businesses Served

4,617

Post Award Tracking

- 124 GREAT Grant Projects in 92 Counties
- 16 CAB Projects in 16 Counties
- Provider progress reports
- Location Build Status
- US Treasury Reporting
- Protected Locations for future programs

GIS AT THE CENTER



Location Challenges

- 5,580 challenges in 27 counties submitted in Sep '23
- 11,525 challenges in 12 counties so far for Mar '24 submission

Availability Challenges

- Bulk crowdsourced challenges using NC Broadband Survey

Upcoming Funding Programs

- Completing Access to Broadband (CAB)
- Stop-gap Program
- Pole Replacement Program
- Broadband Equity Access and Deployment (BEAD)

Tracking & Reporting Past Funding Projects

- 124 GREAT Grant Projects in 92 Counties
- 16 CAB Projects in 16 Counties

NEXT STEPS AND QUESTIONS

- Finalizing CAB Scopes of Work per County
- Complete CAB, Stopgap, Pole Replacement, and Digital Equity grants in 2024
- Begin BEAD Challenge Process by End of 2024
- **Community Anchor Institutions Data Compilation**
 - **Schools, Libraries, Health Care, Community Colleges, other Higher Education institutions, Public Safety and other community support organizations**

Please submit mapping questions to broadbandmapping@nc.gov
and program questions to CABprogram@nc.gov