

# Broadband Mapping in North Carolina

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# Broadband Infrastructure Office

- NC Department of Information Technology - Broadband Division
  - Broadband Infrastructure Office
  - Office of Digital Equity & Literacy (new)

## BIO Focus Areas:



# Broadband Mapping

- Mapping broadband: infrastructure itself, “coverage” information for fixed serves, “coverage” information for mobile services
- In 2018 – launched GREAT Grant program. Incenting private providers to deploy service to unserved locations. Requires location level.
- In 2021 – looking at 5-6 new infrastructure deployment programs with State ARP dollars. Requirements in both US Treasury Guidance and State legislation.
- FCC Digital Opportunity Data Collection

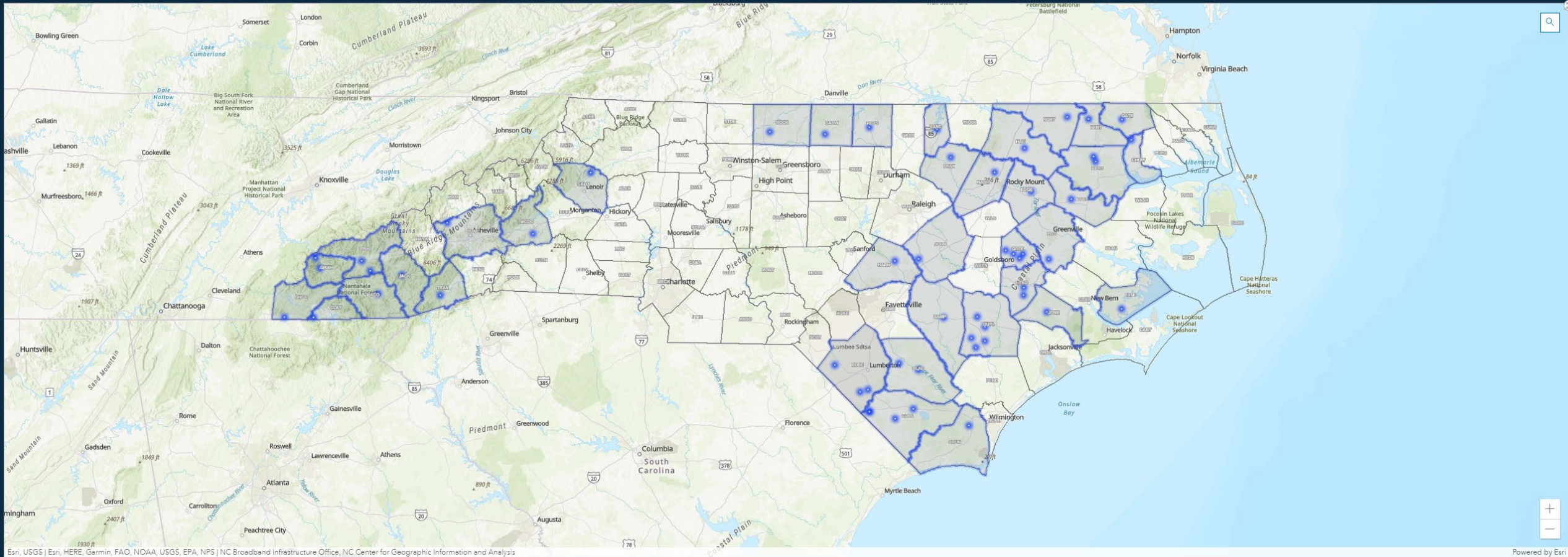


# GREAT Grant Program

NC GREAT Grant Projects

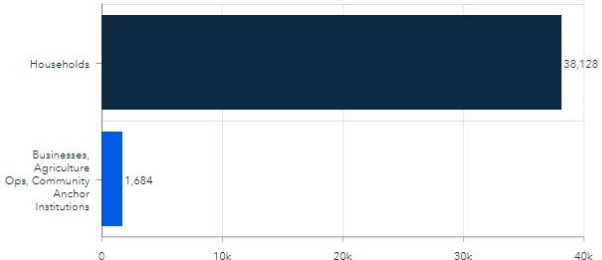
County Filter:  
ALL COUNTIES

Provider Filter:  
ALL PROVIDERS



Esri, USGS | Esri, HERE, Garmin, FAO, NOAA, USGS, EPA, NPS | NC Broadband Infrastructure Office, NC Center for Geographic Information and Analysis

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Total Grant Amount  
**\$54.8M**

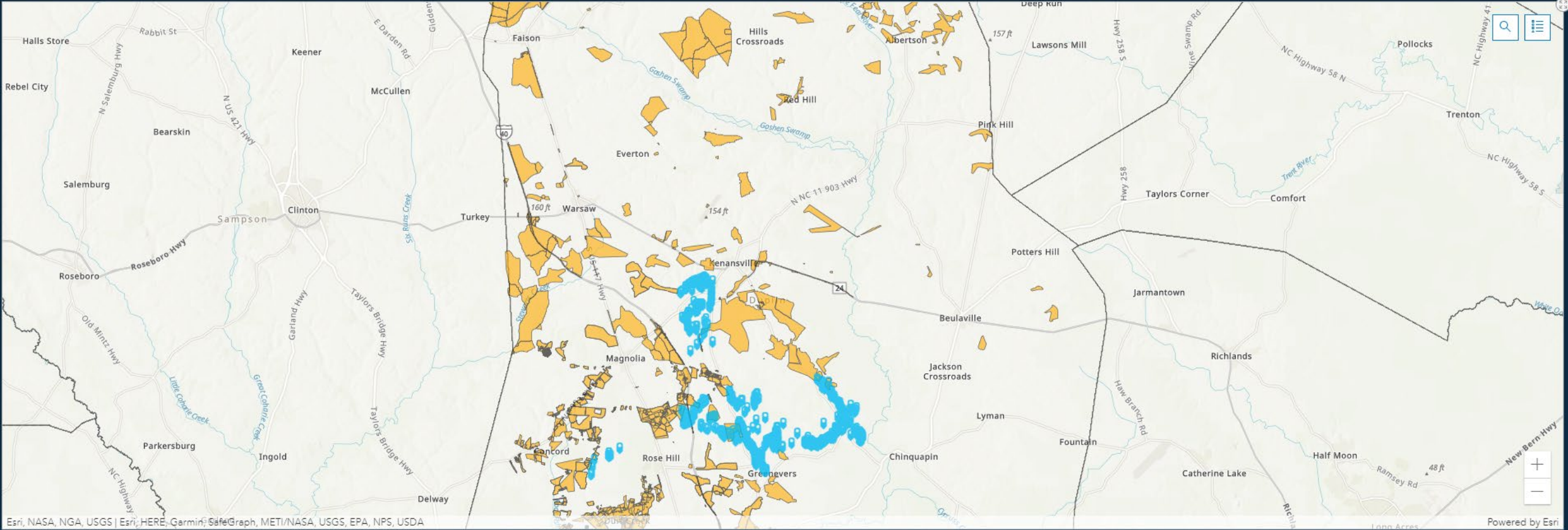
Total Project Cost  
**\$90M**

NCBIO GREAT awards summary



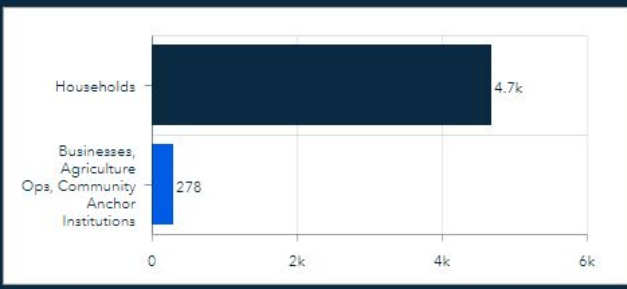
NC GREAT Award Counties

# GREAT Grant Program



Esri, NASA, NGA, USGS | Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA

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Total Grant Amount  
**\$6.3M**

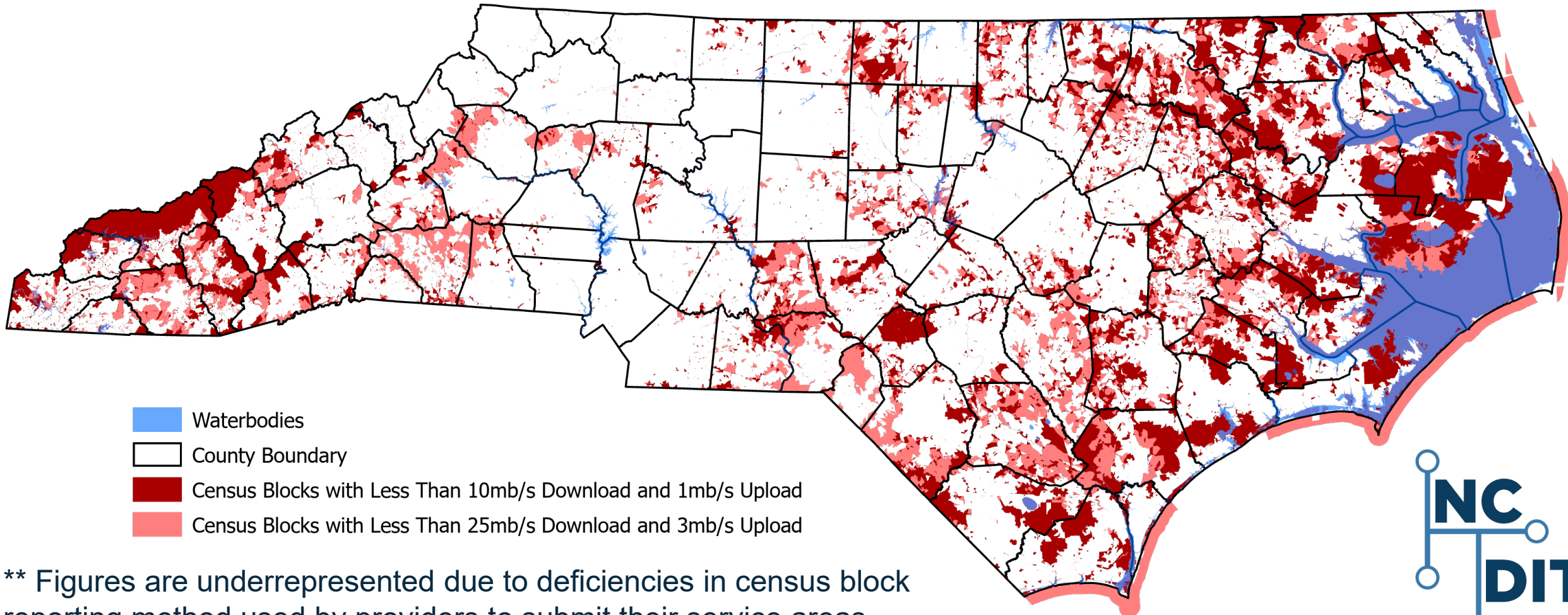
Total Project Cost  
**\$10.1M**

NC GREAT Round3 Awarded Locations

NC GREAT ROUND1 Awarded Blocks

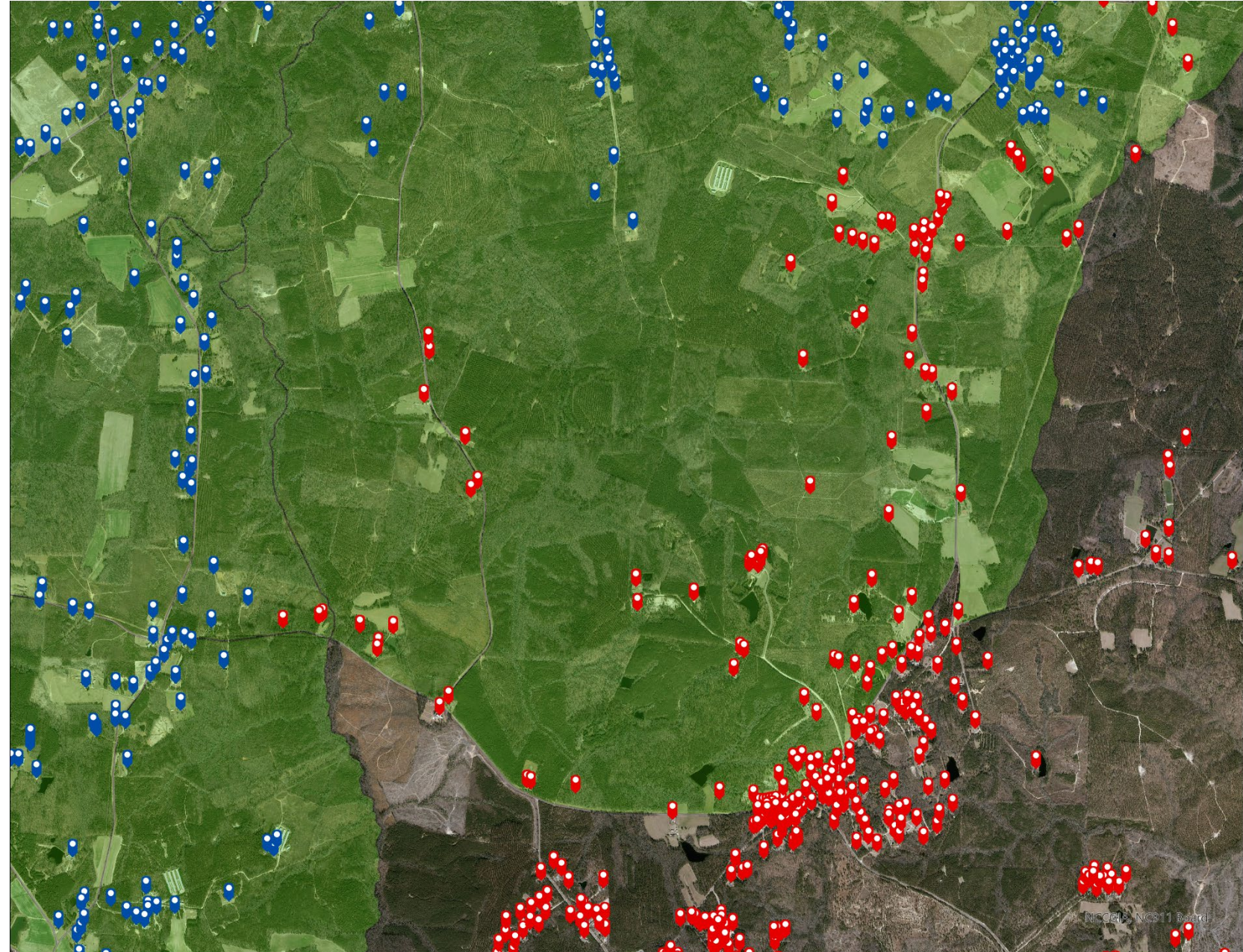
# FCC Fixed Broadband Deployment Data

- Less Than 10/1 Service Availability – 79,955 Households\*\*
- Less Than 25/3 Service Availability – 186,789 Households\*\*



\*\* Figures are underrepresented due to deficiencies in census block reporting method used by providers to submit their service areas.

# FCC Fixed Broadband Deployment Data



FCC Form 477 –  
Served Census Block

Served Household

Unserved Household

# Community Surveys

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

All Survey Data

General Survey Data

Farm Survey Data

Phone Survey Data

**NC DIT**  
Broadband Infrastructure Office

NORTH CAROLINA  
DEPARTMENT OF  
INFORMATION  
TECHNOLOGY

About

Tool Tips

Broadband Survey Data (General, Phone, and Farm)

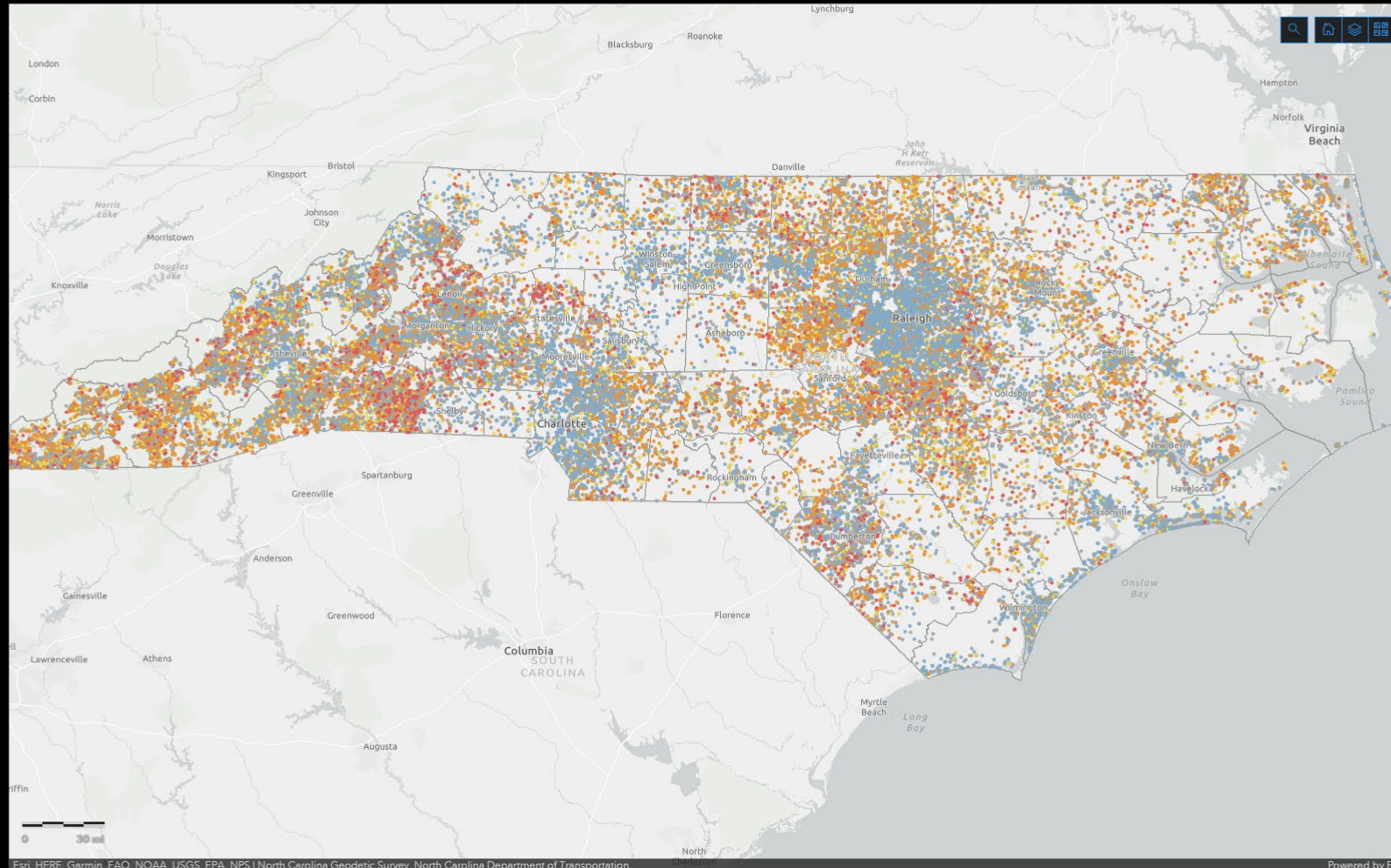
Select a category  
All Counties

NC Broadband Survey Points (General, Phone, & Farm)

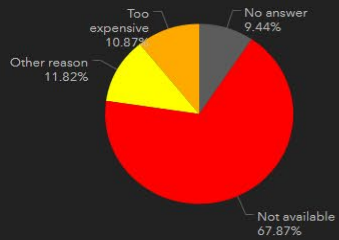
Service Level (calculated field):

- No Internet
- Under 25/3
- Under 25/3 (Fastest)
- Over 25/3
- Other

NC Counties



Primary Reason for No Internet



(Click slices to filter map survey points.)

Number with Speeds Under 25/3

8.1k

out of 42.7k Surveys with Speed Test Results

Total Survey Responses  
(General, Farm, & Phone)

63.3k

Number without Internet  
(excluding cellular and satellite)

16.2k  
out of 63.3k

Wireline % Access: Internet

Number Without Access to Cellular Service

2.6k  
out of 63.3k

Cellular % Access: Cell

Esri, HERE, Garmin, FAO, NOAA, USGS, EPA, NPS | North Carolina Geodetic Survey, North Carolina Department of Transportation

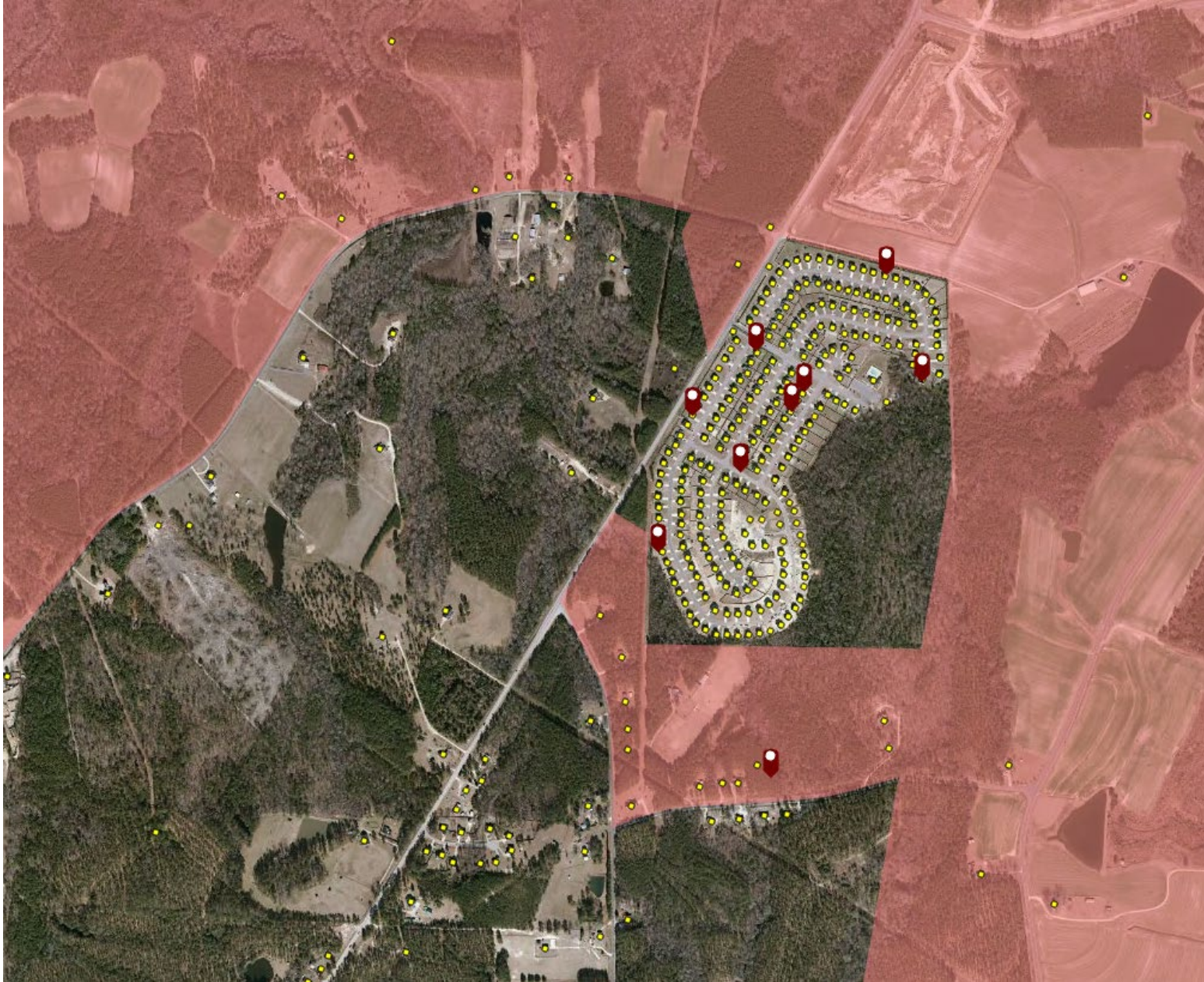
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**About:** The NC OneMap dashboards provide location-based information on broadband availability, as collected from citizens. This Survey data consists of data collected through three specific online surveys: 1) General Survey, 2) Farm Survey, and 3) Phone-based Internet Reporting Tool. The dashboards are updated daily with new data gathered from newly surveyed North Carolinians. The dashboards were created in collaboration with Broadband Infrastructure Office, the NC Center for Geographic Information and Analysis (CGIA), and the Friday Institute for Educational Innovations at NC State University.

**Disclaimer:** Since those with poor connectivity are more likely to participate in these surveys, the dashboards may display survey results that do not reflect the full picture of the availability and accessibility of internet within North Carolina. These dashboards are



# Community Surveys



Community Survey with  
Less Than 25/3 Service



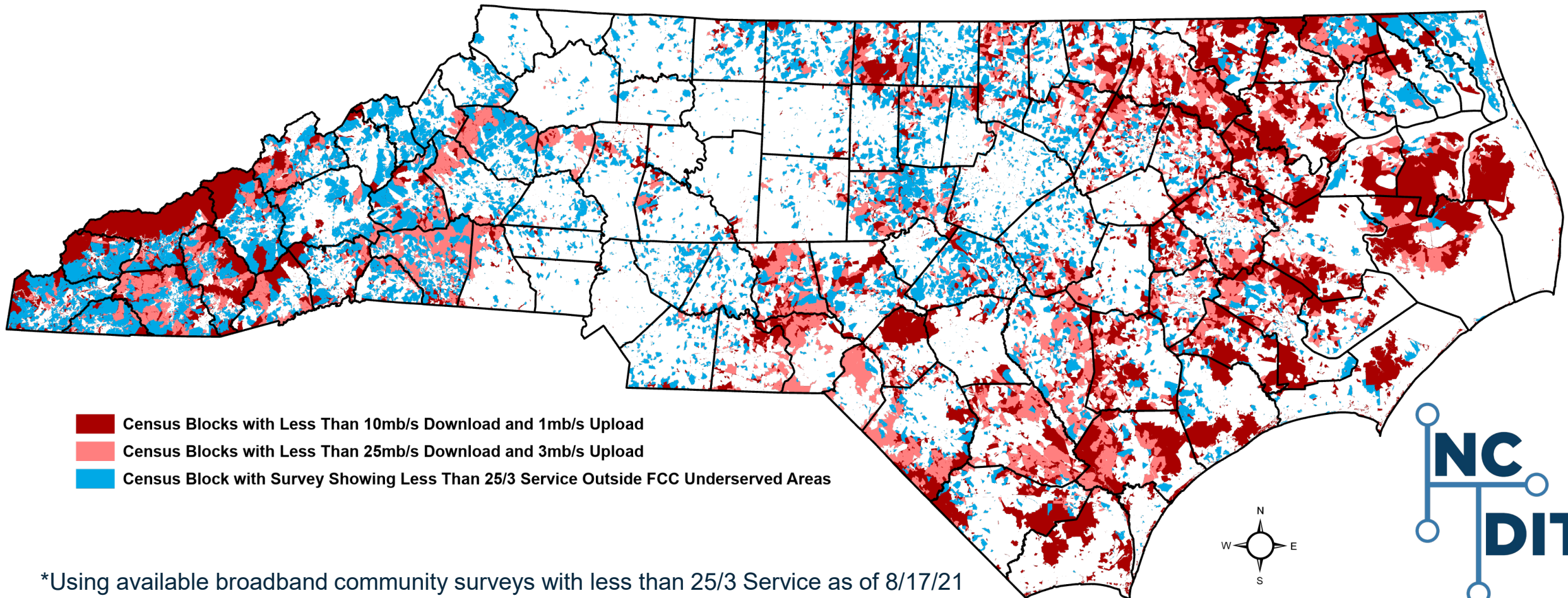
Address Point



FCC Form 477 –  
Underserved Census Block  
(Less Than 25/3)

# Possible Underserved Census Blocks

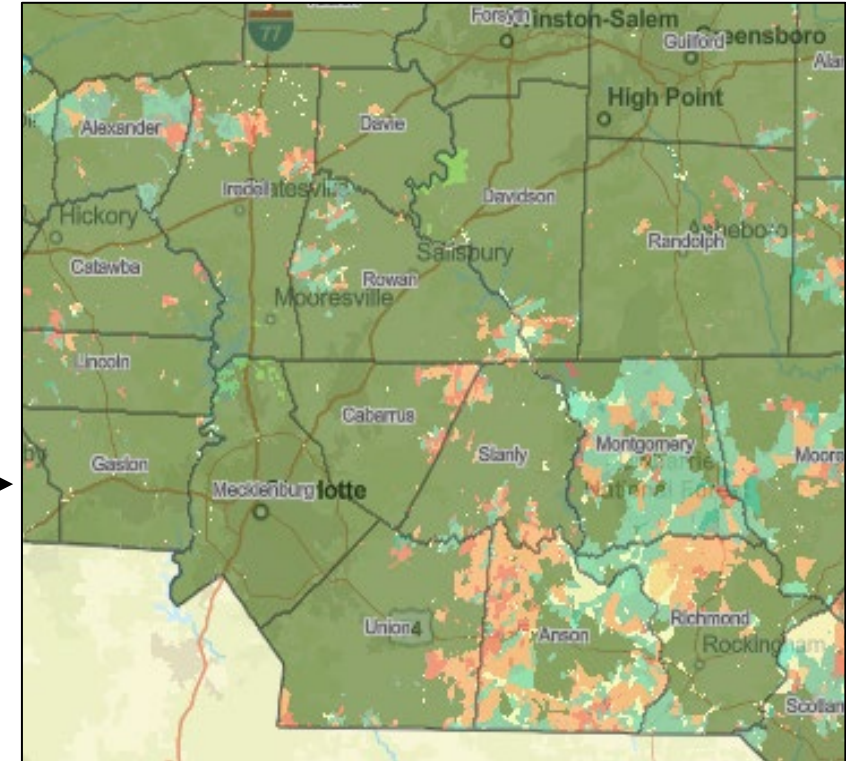
- Less Than 10/1 Service Availability – 79,955 Households (1.8% of all households in NC)
- Less Than 25/3 Service Availability – 186,789 Households (4.3% of all households in NC)
- Blocks with at least 1 community survey showing Less Than 25/3 service – 457,732 Households\* (10.5%)



\*Using available broadband community surveys with less than 25/3 Service as of 8/17/21

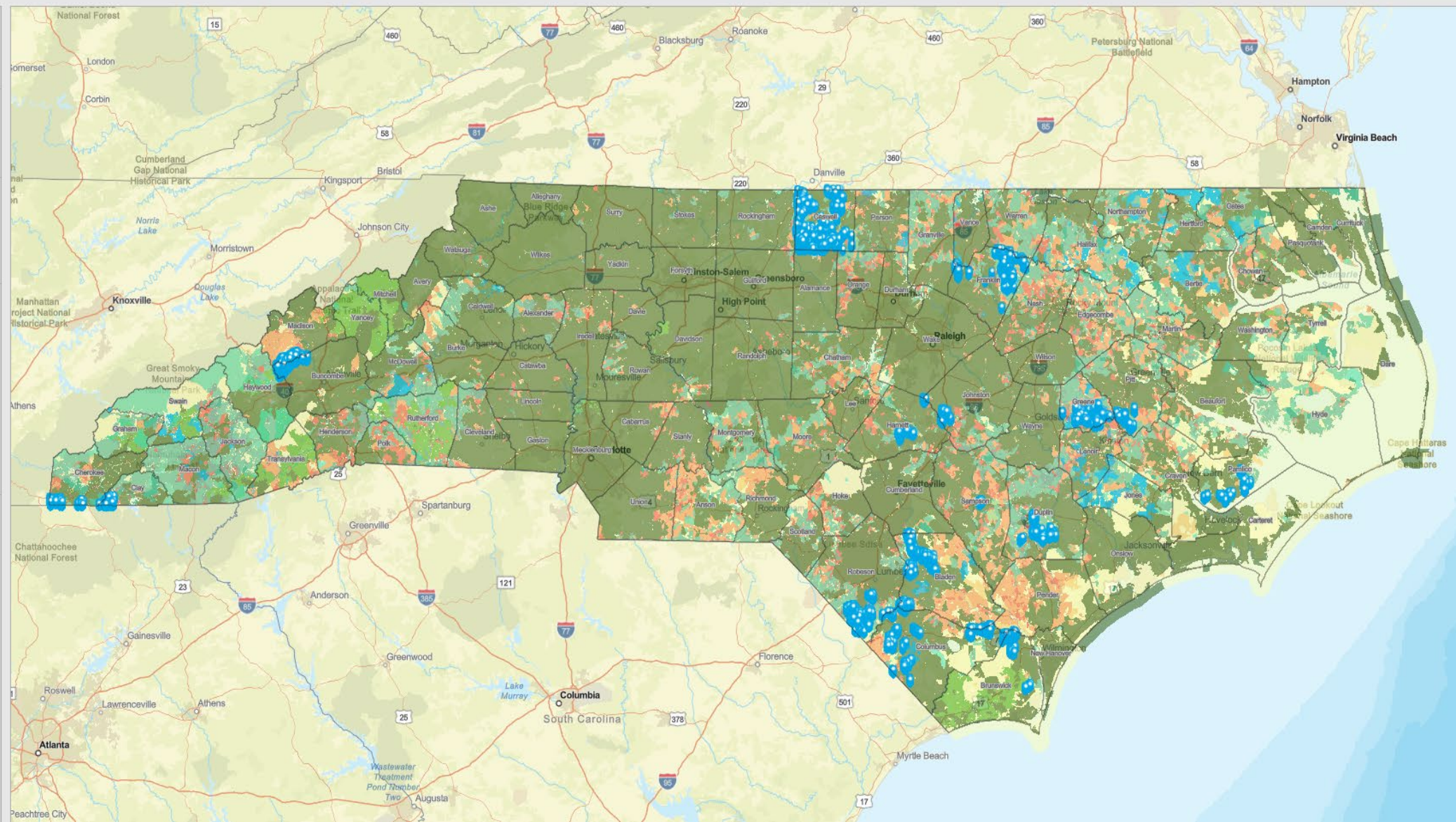
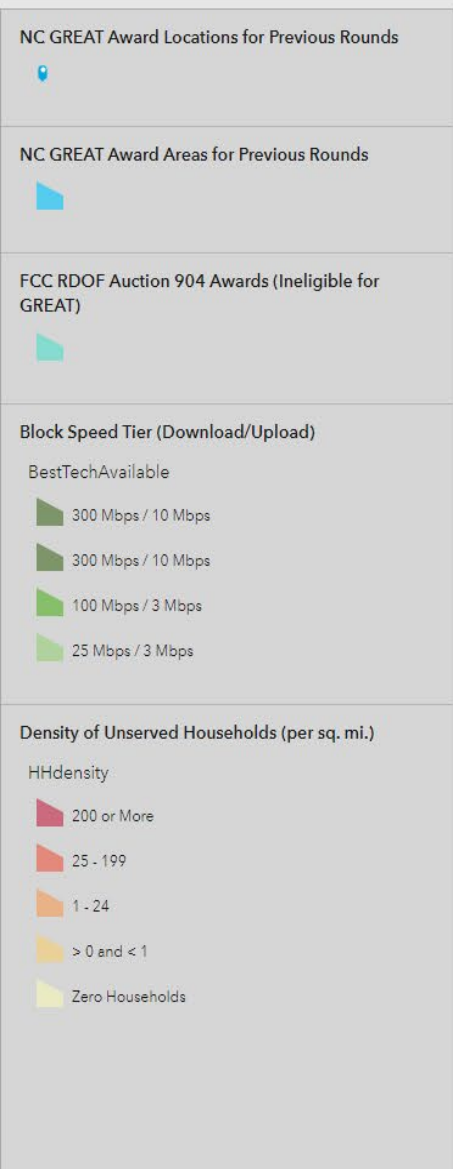
# Defining Eligible Locations – Moving Forward

|  |  |
|--|--|
| Fiber to the home<br>(Tech Code 50)                  | >= 300 Mb/s Download and<br>10 Mb/s Upload |
| Cable (DOCSIS 3.1+)<br>(Tech Code 43)                |  |
| Cable (DOCSIS 3.0)<br>(Tech Code 42)                 | = 100 Mb/s Download and<br>3 Mb/s Upload   |
| Cable (DOCSIS <2.0)<br>(Tech Codes 40 or 41)         | = 25 Mb/s Download and<br>3 Mb/s Upload    |
| VDSL<br>(Tech Code 12)                               | >= 10 Mb/s Download and<br>1 Mb/s Upload   |
| Fixed Wireless<br>(Tech Code 70)                     |  |
| ADSL2, ADSL2+<br>(Tech Code 11)                      |  |
| ADSL, all other Copper<br>(Tech Codes 10, 20, or 30) | = 3 Mb/s Download and<br>768 kb/s Upload   |



# Defining Eligible Locations – Moving Forward

NC GREAT Eligible Areas 2021



# GREAT Grant Program

- Growing Rural Economies with Access to Technology

About

Zoom in on the map to display the North Carolina 2014 Master Address Data.

In the Select tool, check the box next to the NC Master Address Layer and click to create a polygon around Address Points to select locations. Double-click to finish drawing your selection area. Holding Shift and drawing a subsequent polygon will allow you to add to the selection without losing your previous selection.

Once all locations to be served are selected, using the '...' button next to the number of selected locations will give options for exporting the selection. Select 'Export to CSV' to download the selected points as a comma delimited excel file.

The Pie Chart in this map will change based on the user selection to display what

Legend Layer List

CAF\_BroadbandDeployments\_NC

NC Master Address Dataset 2014

GREAT Caswell Special Round Pre-Approved Blocks

GREAT Ineligible Areas

FCC Less Than or Equal to 10mb/s Download and 1mb/s Upload (Dec 2010)

Percentage of Selected Address Points within FCC Speed Tiers

| FCC Speed Tier    | Percentage |
|-------------------|------------|
| Greater than 25/3 | ~15%       |
| Less Than 10/1    | ~35%       |
| Less Than 25/3    | ~50%       |

Select

Layer

- NC Master Address Dataset 2014 145
- GREAT Caswell Special Round Pre-Approved Blocks 0

Esri, NASA, NGA, USGS, FEMA | Esri Community Maps Contributors, State of North Carolina DOT, Esri, ...

# Statewide GIS Datasets and the Location Fabric

Addresses, parcels, and building footprints



Focus on specific locations and attaching the level of service at individual locations to the granular data.



# NC OneMap – Broadband Apps & Data

<https://www.nconemap.gov/pages/broadband>

NC OneMap DATA PROJECTS ANNOUNCEMENTS TERMS CONTACT US ABOUT

## North Carolina Broadband

Discover and Access Geographic Data related to Broadband availability, adoption, and related topics.

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

For questions or comments about Broadband in North Carolina, please contact the NC Broadband Infrastructure Office at: [www.ncbroadband.gov/contact](http://www.ncbroadband.gov/contact).

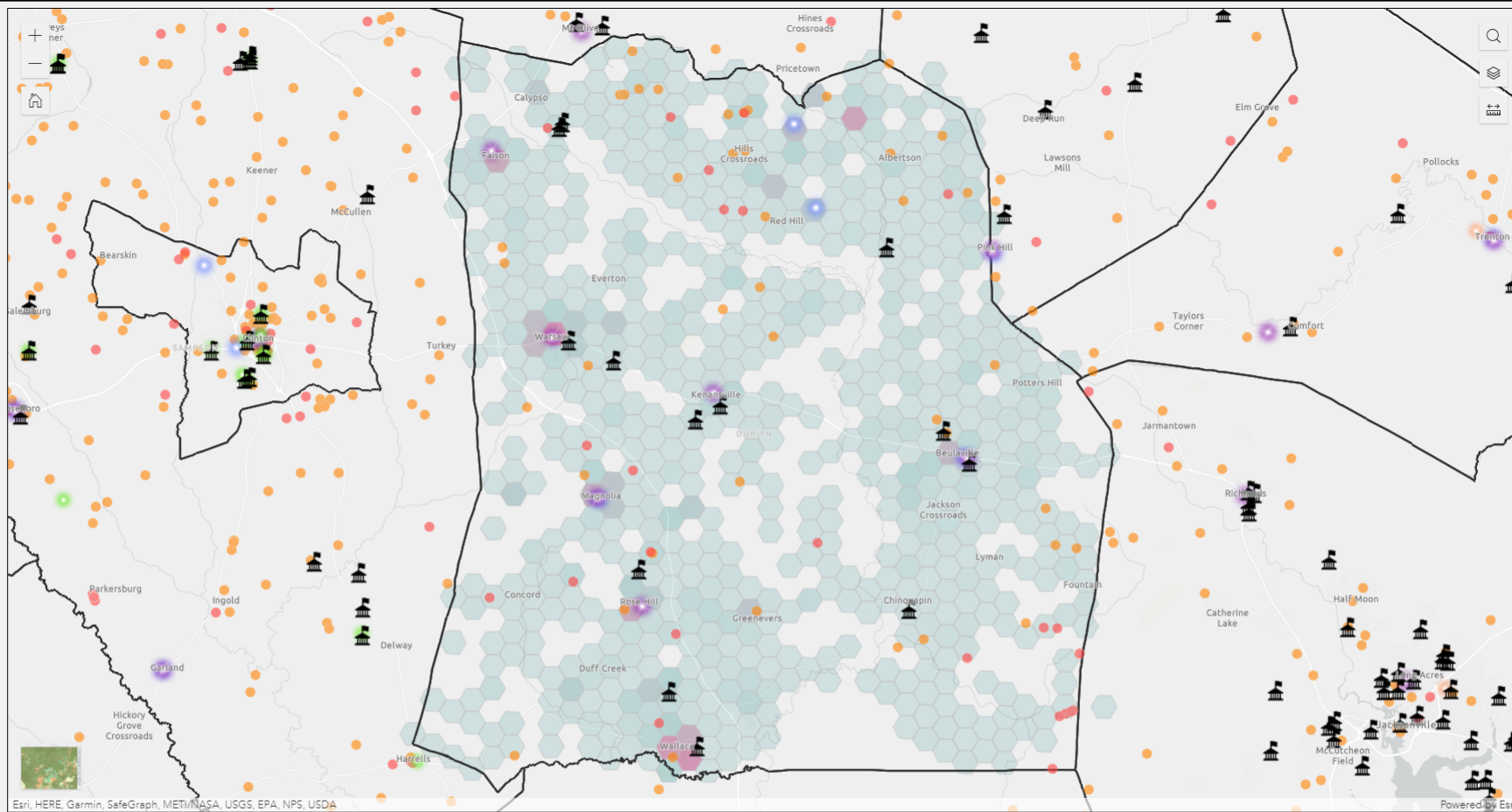
### Grant Programs

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



# Remote Learning Working Group Dashboard

- Search
- Buncombe County
  - Burke County
  - Cabarrus County
  - Caldwell County
  - Camden County
  - Carteret County
  - Caswell County
  - Catawba County
  - Chatham County
  - Cherokee County
  - Chowan County
  - Clay County
  - Cleveland County
  - Columbus County
  - Craven County
  - Cumberland County
  - Currituck County
  - Dare County
  - Davidson County
  - Davie County
  - Duplin County**
  - Durham County
  - Edgecombe County
  - Forsyth County
  - Franklin County
  - Gaston County



**Schools**

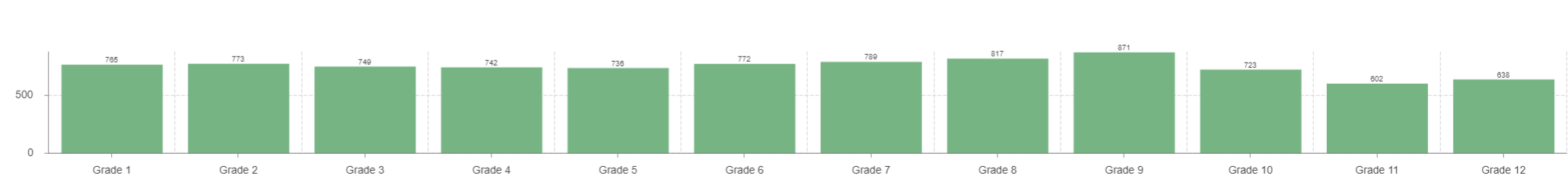
**Public Wi-Fi Spots**

- NC Public Wifi - Schools (2020)
- NC Public Wifi Spots - Libraries (2020)
- NC Public Wifi Spots - State (2020)
- NC Public Wifi Spots (2020)

**Broadband Community Surveys**

- Service Level: No Internet (Survey Points)
- Service Level: Under 25mb/s download and 3mb/s upload (Survey Points)

NCDPI 2020 21 Students Aggregated Large Hexbins Merged





Students By Grade

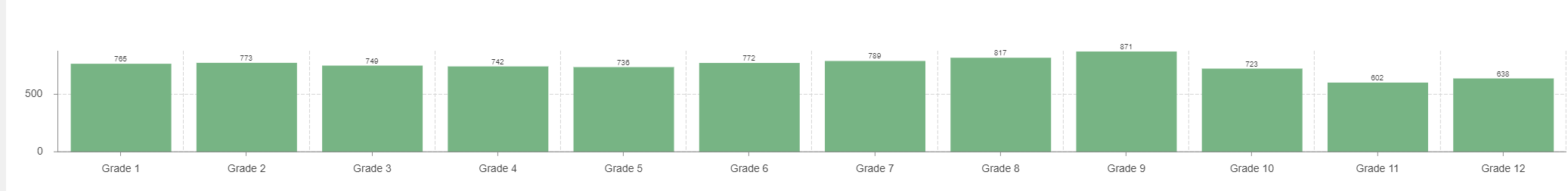
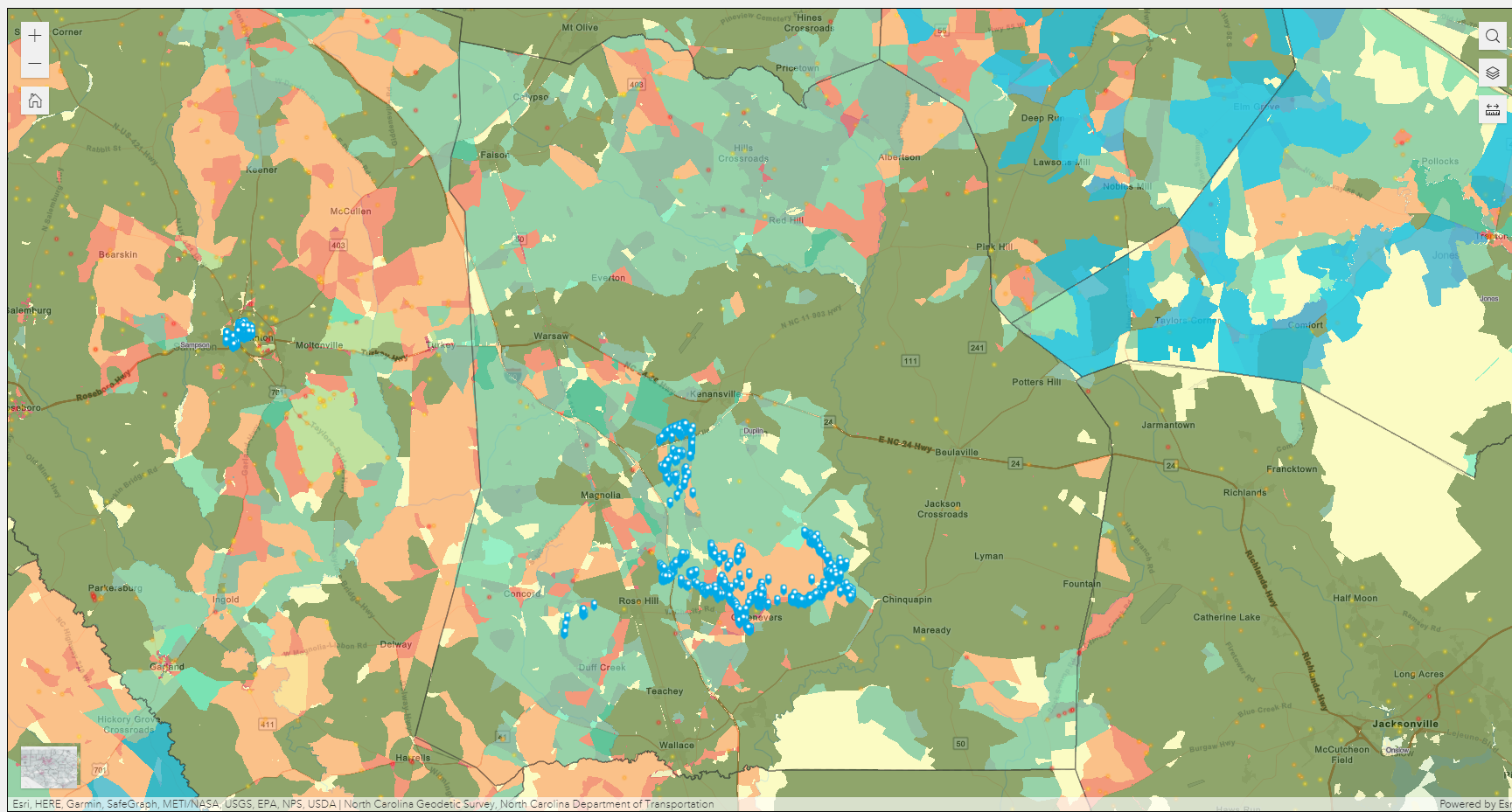
Students By Race



# Remote Learning Working Group Dashboard

Search  

- Buncombe County
- Burke County
- Cabarrus County
- Caldwell County
- Camden County
- Carteret County
- Caswell County
- Catawba County
- Chatham County
- Cherokee County
- Chowan County
- Clay County
- Cleveland County
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- Craven County
- Cumberland County
- Currituck County
- Dare County
- Davidson County
- Devie County
- Duplin County
- Durham County
- Edgecombe County
- Forsyth County
- Franklin County
- Gaston County



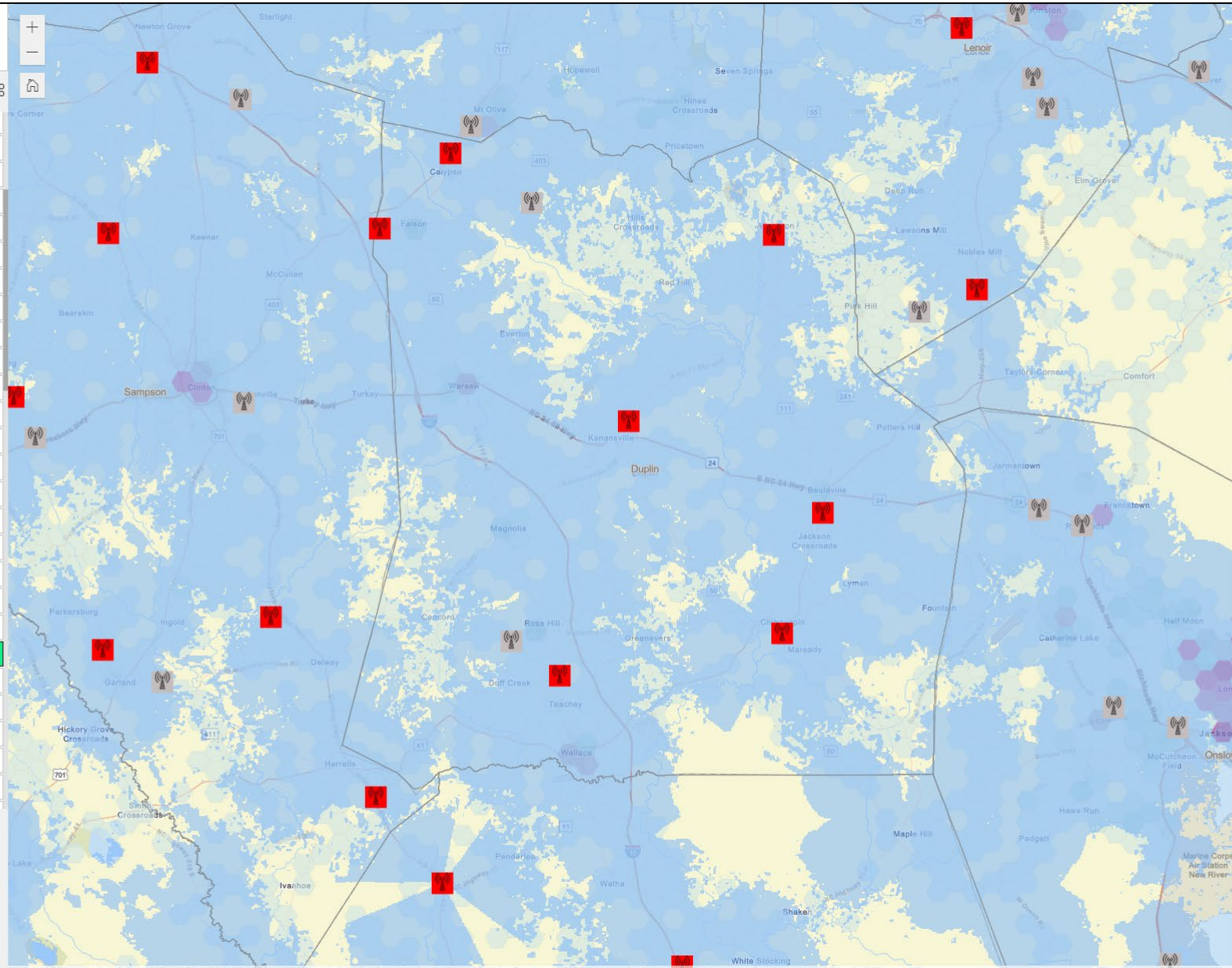
Students By Grade

Students By Race

# Remote Learning Working Group Dashboard

Search

- Buncombe County
- Burke County
- Cabarrus County
- Caldwell County
- Camden County
- Carteret County
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Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA | North Carolina Geodetic Survey, North Carolina Department of Transportation | Homeland Infrastructure Foundation-Level Data (HIFLD)

**Cellular Towers**

Structure Type

- Tower
- Lattice Tower
- Guyed Tower
- Monopole Tower
- Mast
- Pole
- Utility Pole
- Other

**AT&T Mobility LTE Data**

- AT&T Mobility LTE Data

**DPI 2020 21 Students Aggregated Large Hexbins**

Count of Points

- > 500
- 250
- < 50

- Cellular Towers
- NCDOT\_Q1\_2020BoundaryCountyPolygon
- AT&T Mobility LTE Data
- AT&T Mobility LTE Voice
- T-Mobile LTE Data
- T-Mobile LTE Voice
- UScellular LTE Data
- UScellular LTE Voice
- Verizon LTE Data
- Verizon LTE VOICE
- DPI 2020 21 Students Aggregated Small Hexbins
- DPI 2020 21 Students Aggregated Large Hexbins

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# Defining Eligible Locations – Moving Forward

- Depending on final State budget, NC is anticipating investing almost \$1B in broadband deployment through multiple infrastructure programs funded with American Rescue Plan dollars
- NC will also continue the State-appropriated GREAT Grant program
- “Eligible Locations” will need to be determined through both US Treasury Guidance for ARP and requirements in State legislation related to speeds, technologies, etc.
- Generally federal and State rules won’t allow funds to be invested in areas with other deployment projects. Tracking of other deployments with federal funds (FCC RDOF, USDA ReConnect, NTIA grants...) and local funds will be critical.
- BIO and CGIA are also assessing how to fold in other data sources to identify unserved areas in partially-served census blocks:
  - NC Broadband community surveys  
<https://www.ncbroadband.gov/broadband-nc/north-carolina-broadband-survey>
  - Ookla data
  - Data from grant applicants or potentially counties...



# Moving Forward - Future Steps

- GREAT Grant awards
  - Leverage new Next-Gen 911 Addresses
- Sunsetting the FCC Form 477 Census Block data collection
  - Implementation of new coverage area polygon collection by FCC
- Partnering with National Telecommunications and Information Administration
  - Working on improvements to Broadband Availability Map
- Continue development of Address-level data model for Broadband
  - AddressNC – implement by leveraging NextGen 911 data
  - Parcels – continue quarterly update cycle and improve attribution
  - Building Footprints – update NC Emergency Management dataset



# Questions?

[www.ncbroadband.gov](http://www.ncbroadband.gov)

<https://www.nconemap.gov/pages/broadband>

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