Keynote

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Geographic Information Officer
North Carolina Center for Geographic Information and Analysis

North Carolina GIS – A Roadmap for State Coordination

Tim Johnson
NC Geographic Information Officer
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Courage is what it takes to stand up and speak; courage is also what it takes to sit down and listen.

- Winston Churchill

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The Beginning …

Land Resources Information Service

Created in 1977 with GIS as a core technology to support inventory of land resources for planning purposes

One of the first state government GIS agencies nationally

Eventually became CGIA

Land Records Modernization

Program established in 1977 to develop common standard for parcel mapping in county government and provide technical and financial assistance

Public Records Law

Chapter 132 of NC General Statutes

- Broad right of access to all types of records of public agencies
- Exceptions include confidential or personal records
- May charge for providing access (copies)

Qualified Exception for GIS

- Copies at reasonable cost
- May require "…the copy will not be resold or otherwise used for trade or commercial purposes"

Original Mission

Build statewide GIS database and provide GIS services to other public sector agencies

Enhanced Mission

Provide staff support to collaborative body to maximize value of geospatial and minimize duplication

NC DIT

NCGICC

The North Carolina Geographic Information Coordinating Council (GICC)

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DAVIDSON COUNTY
ESTABLISHED 1822
NORTH CAROLINA DEPARTMENT OF THE SECRETARY OF STATE
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
NC 911 Board
NORTH CAROLINA
ASSOCIATION OF COUNTY COMMISSIONERS
FOUNDED 1908
DEQ
NORTH CAROLINA
Department of Environmental Quality
NCGICC
GREENSBORO
NORTH CAROLINA
NC OSBM
OFFICE OF STATE BUDGET
AND MANAGEMENT
N★C THE UNIVERSITY OF
NORTH CAROLINA SYSTEM
DUKE
ENERGY®
NCLM
NC LEAGUE OF MUNICIPALITIES
N★C DPS
North Carolina Department of
PUBLIC SAFETY
GPI
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TECHNOLOGY

NC General Statute 143B 1420-1422

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"Data is shared at the speed of trust."

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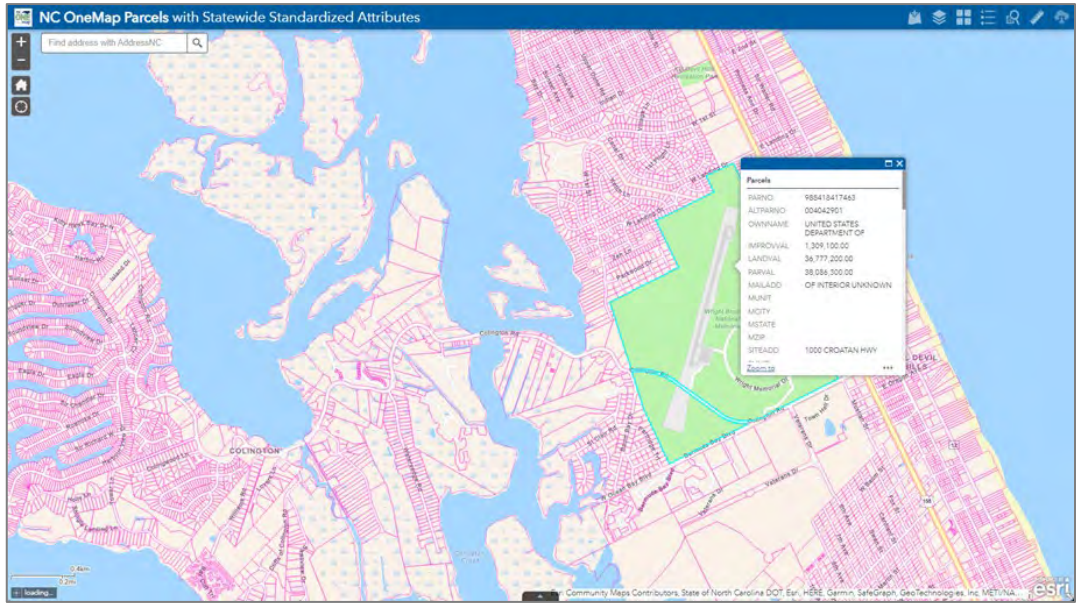
Parcels
Roads
Hydrography
Elevation
Admin Boundaries
Address Points
Orthoimagery
Geodetic Control
nc ONE map

NC OneMap: A Statewide Community

- 20+ years ago NC GICC committed to a vision of:
  - Current, accurate geospatial data
  - Free data discovery and access
  - Data sharing without restriction
  - Data that are reliably maintained, documented through recognized, reliable sources
- Brings together foundational and thematic data from disparate sources into a curated "first-stop shop" for geospatial information
- Data partners cover all levels of government, academia, and private companies



"Seamless" parcels for all 100 NC counties
www.nconemap.gov/pages/parcels

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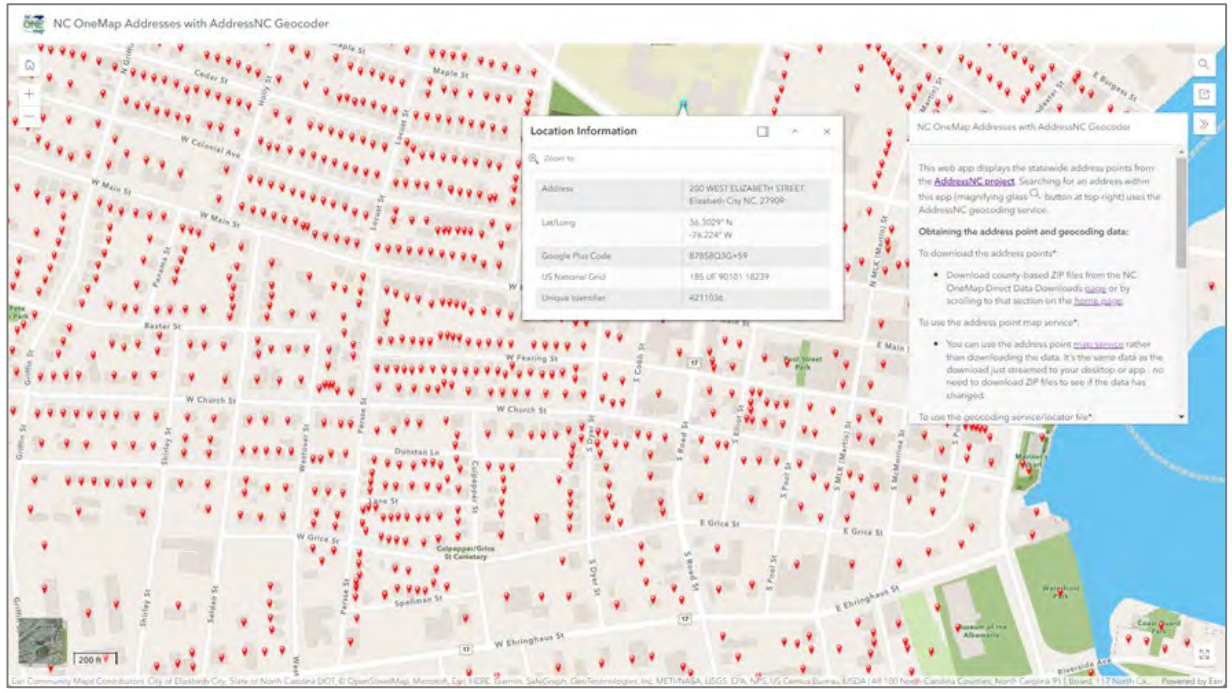
NC OneMap: Varied Uses and Users



Standardized addresses for all 100 NC counties
www.nconemap.gov/pages/addresses

- Customers range from GIS professionals, to foresters, engineers, teachers, students, realtors, landscapers, planners, and surveyors (you name it!) covering a myriad of use-cases
- Operates under a series of best practices so data are presented in a cohesive, documented manner
- Supports flexible uses of data through web services, downloads, and web apps
- CGIA manages NC OneMap but is also a data contributor

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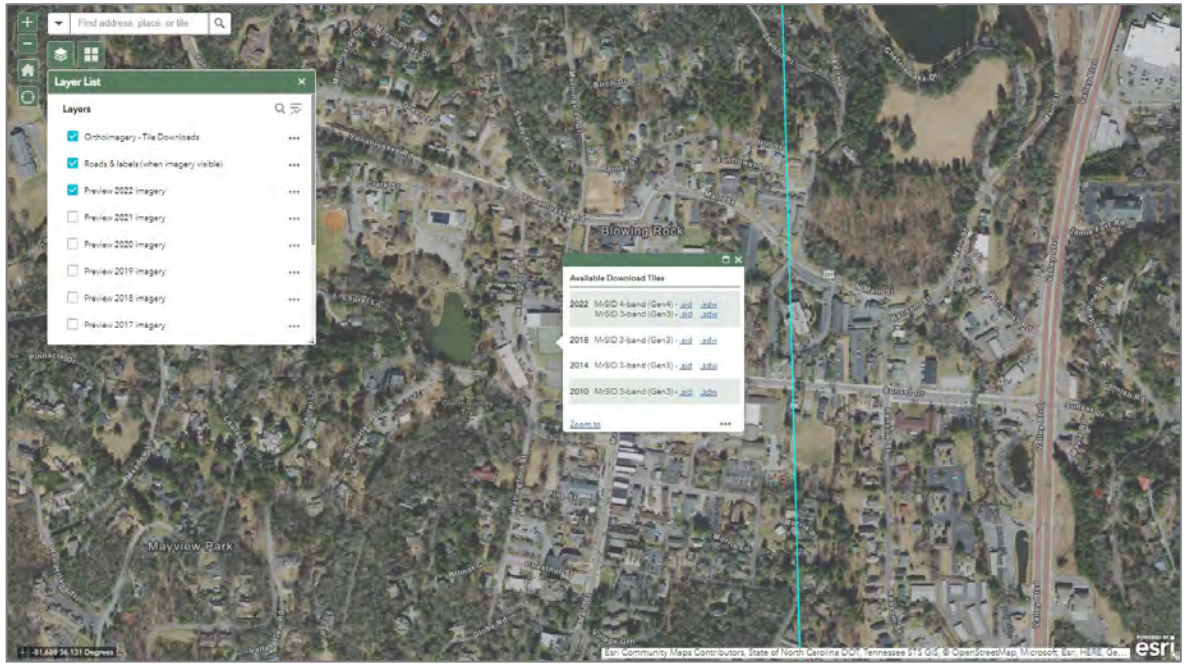
Why Does It Matter?

- Major investments in data acquisition and maintenance (imagery, parcels, addresses, others). Good ROI for NC citizens/GIS community.
- Through geospatial coordination and free, reliable data, NC OneMap provides a critical function that helps:
  - Governments to make better-informed, critical decisions
  - Promote economic vitality in NC communities
  - Promote public safety by protecting North Carolina people and property



6”-pixel imagery for all 100 NC counties since 2010
www.nconemap.gov/pages/imagery

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North Carolina Orthoimagery

Foundational Documents

Business Plan

Business Plan for Orthoimagery in North Carolina

Statewide Mapping Advisory Committee

Working Group for Orthophotography Planning

October 2010

North Carolina
Geographic Information Coordinating Council

NCGICC

Standard

State of North Carolina
Department of the Secretary of State

ELAINE F. MARSHALL
SECRETARY OF STATE

Order Adopting North Carolina Orthophotography Standards For Base Mapping

WHEREAS, the Department of the Secretary of State (Department) is required by G.S. §102-17 and §147-54.3 to adopt technical standards and detailed specifications for base mapping to be used to achieve a greater degree of statewide standardization for use in land records, and

WHEREAS, over the past year the Department has worked extensively and cooperatively with stakeholders to produce a set of revised standards for Orthophotography, and

WHEREAS, the North Carolina Geographic Information Coordinating Council has recommended the adoption of the revised standards, and

WHEREAS, I have considered the recommendations of the staff of the Department of the Secretary of State, as well as the recommendation of the North Carolina Geographic Information Coordinating Council,

NOW, THEREFORE, IT IS HEREBY ORDERED AND DECREED that pursuant to the authority granted me by G.S. §102-17 and §147-54.3(e), effective on this date, I hereby adopt the revised Orthophotography Standards for use to achieve a greater degree of statewide standardization of land mapping for use in land records in the State of North Carolina.

A copy of the adopted Orthophotography Standards is posted on the Land Records Management page of the Department's website at http://www.secretary.state.nc.us/land/ThePage.aspx or may be obtained by contacting the Department at:

Land Records Manager
N.C. Department of the Secretary of State
P.O. Box 29626
Raleigh, NC 27626-0626
By Facsimile: (919) 807-2285
By Email: tmorgan@sosnc.com

This the 11th day of December, 2014.

Elaine F. Marshall
Elaine F. Marshall
North Carolina Secretary of State

PO Box 29622 • Raleigh, NC 27626-0622

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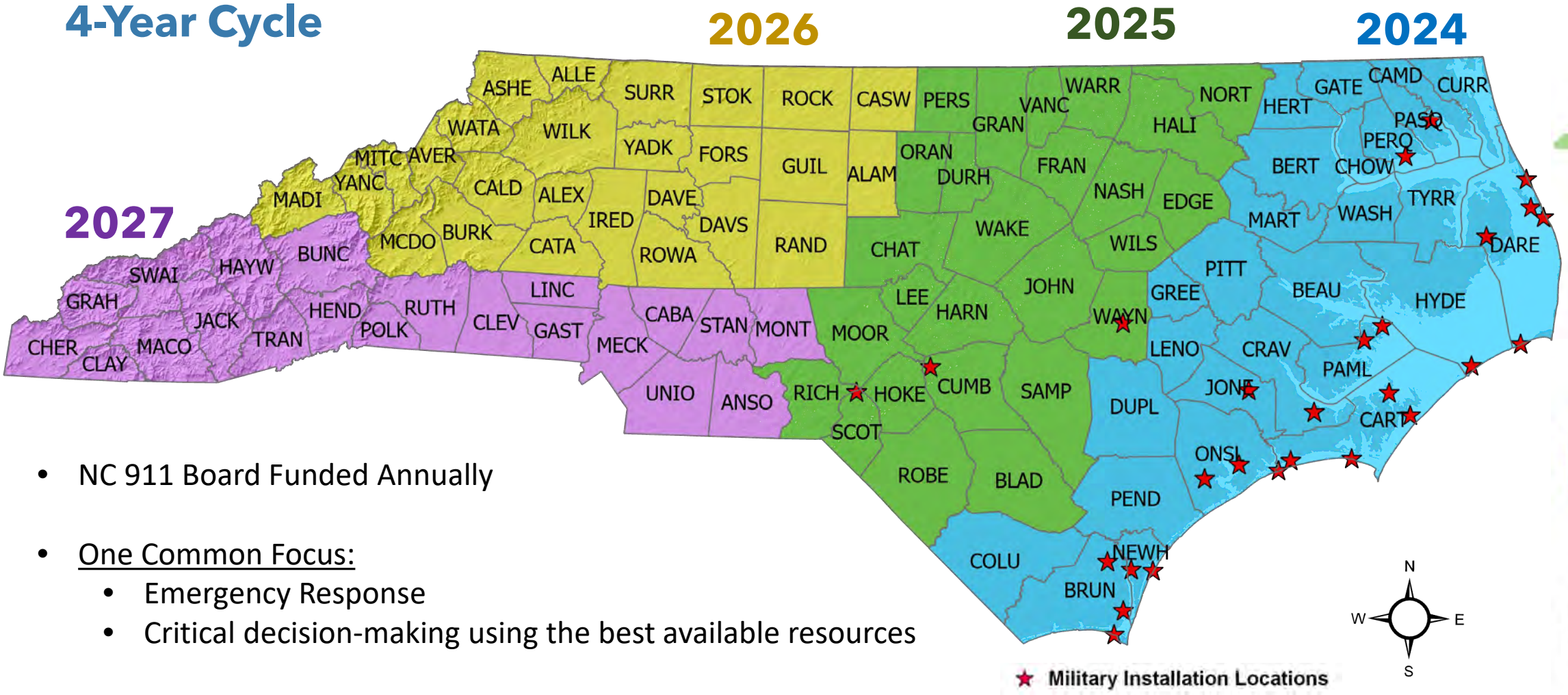
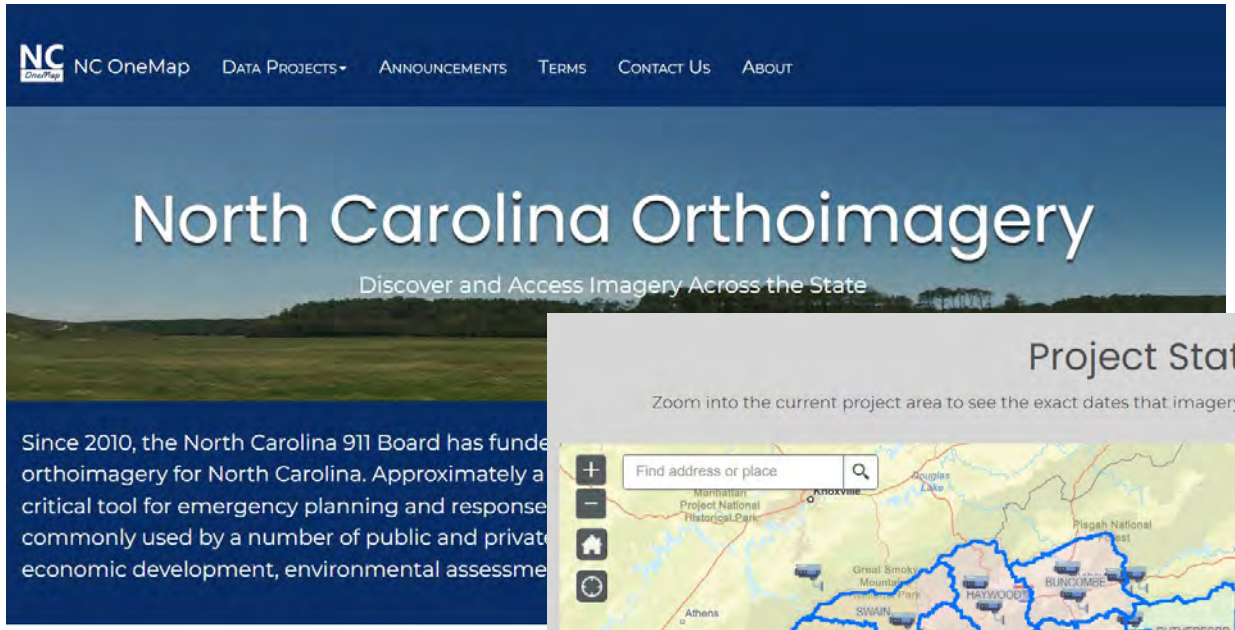
NC Orthoimagery Program Cycle

4-Year Cycle

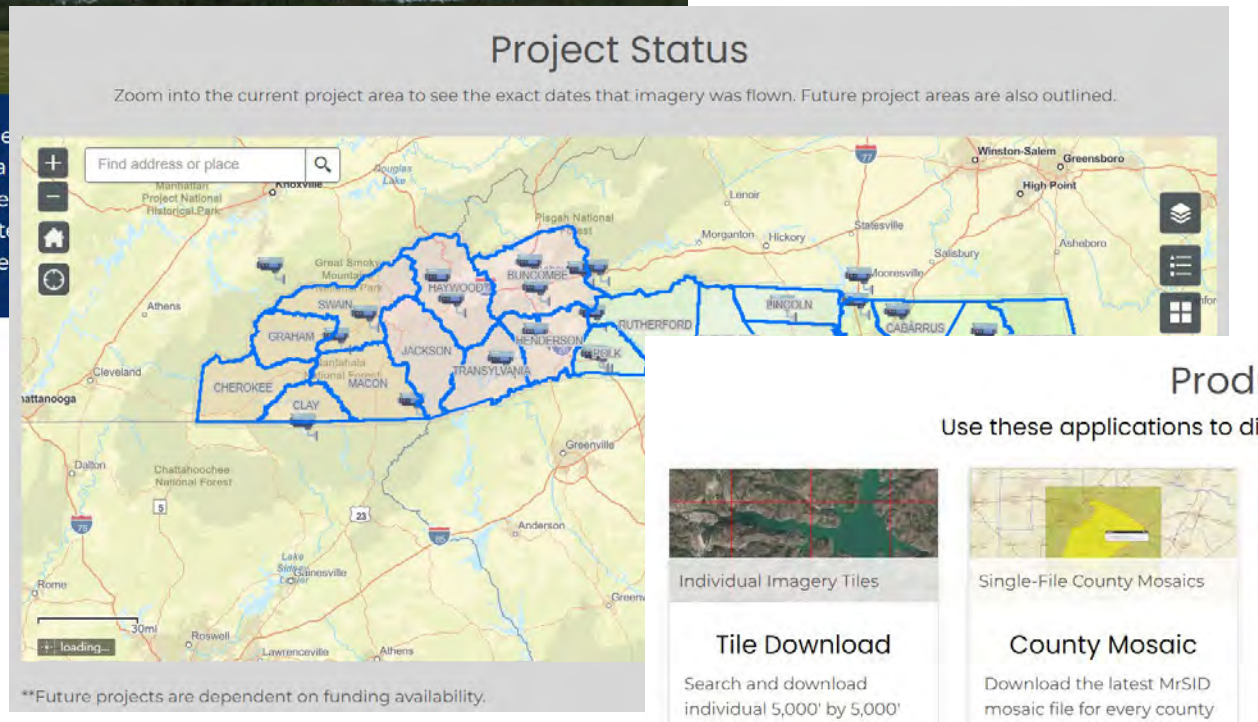


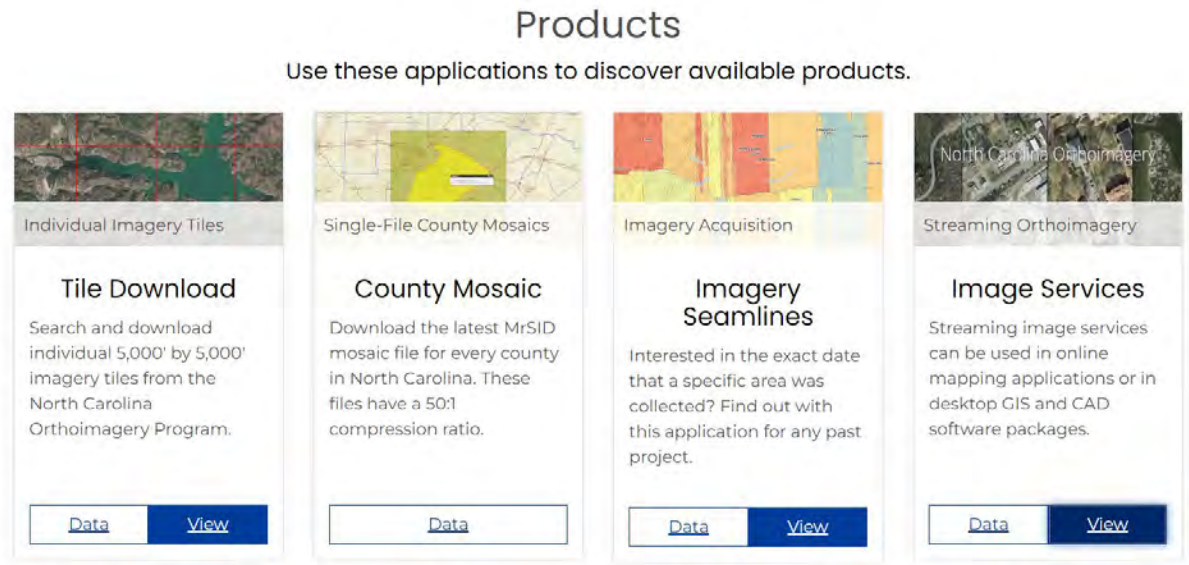
- NC 911 Board Funded Annually
- <u>One Common Focus:</u>
  - Emergency Response
  - Critical decision-making using the best available resources
- Proactive approach to create up-to-date, visually consistent imagery product across all 100 counties
- End product free to all citizens of North Carolina

NC True Ortho Approach to Urban Areas



https://www.nconemap.gov/pages/imagery





https://services.nconemap.gov/secure/rest/services/

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Seamless Parcels Working Group

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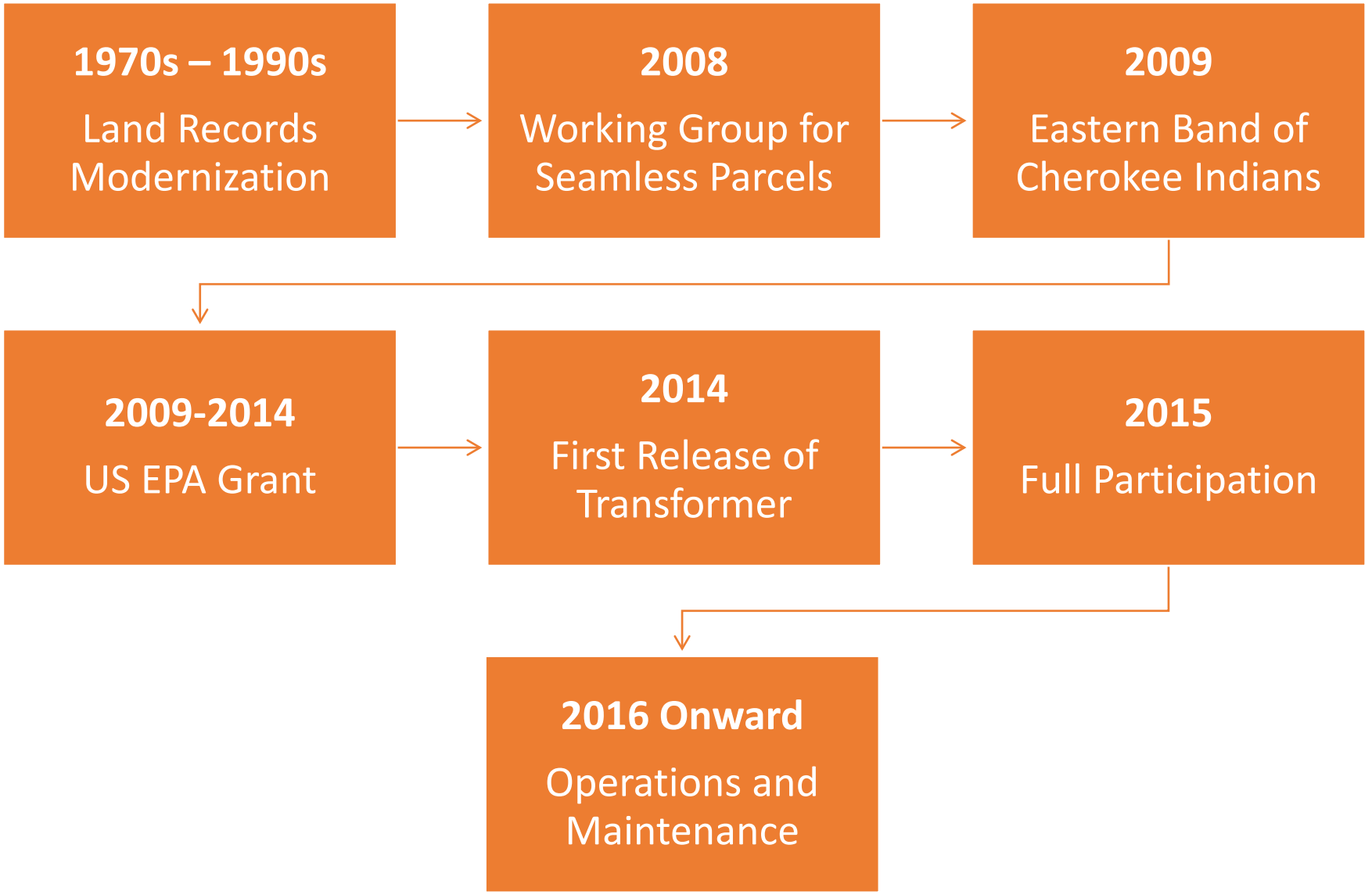
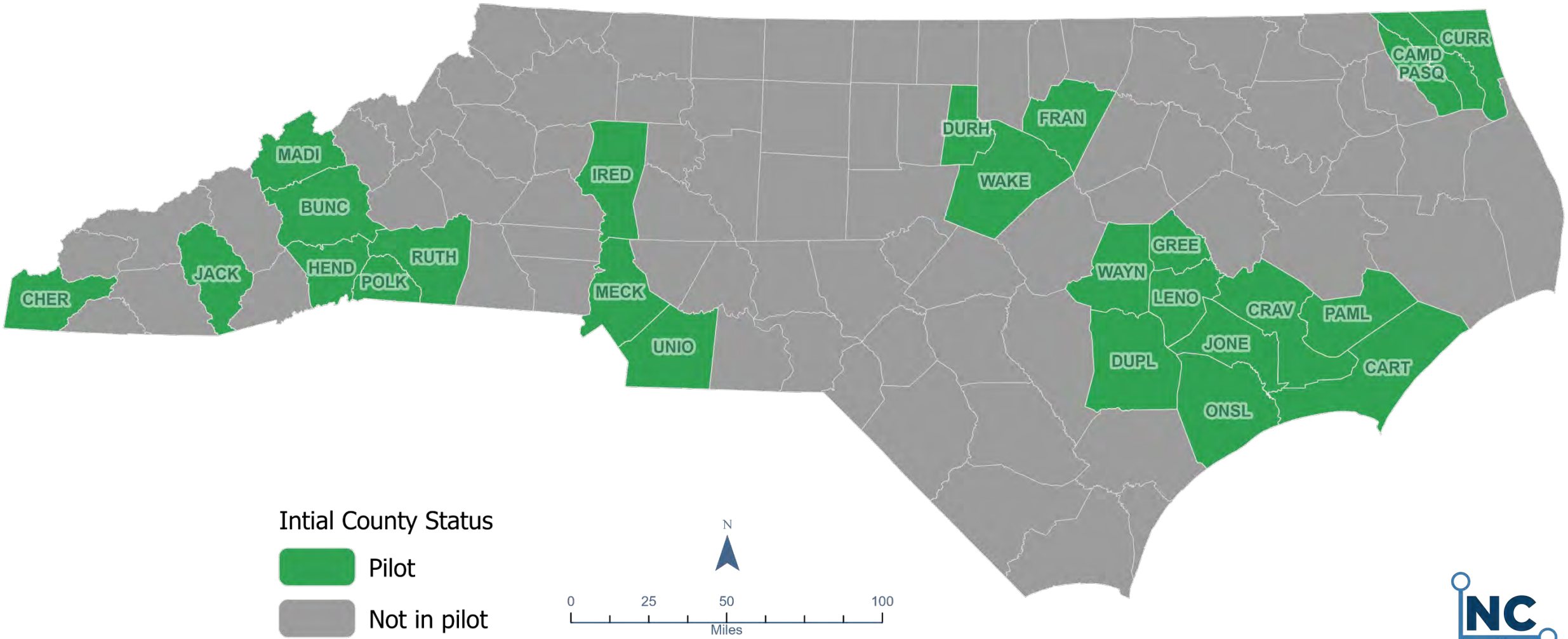
History and Background



Map of Pilot Counties



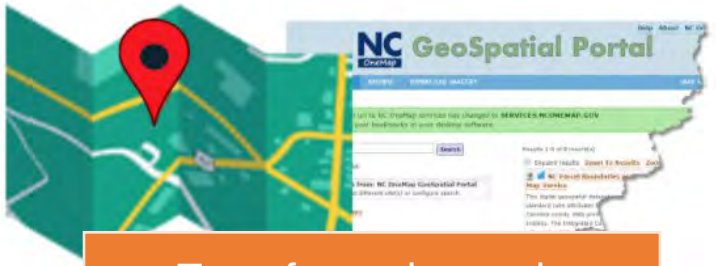
NC Parcels Workflow

Parcel data uploaded to NC Parcels Transformer

2

Local government attributes are matched to those found in state standard. Geometry unaltered.

3



Transformed parcels available from NC OneMap Hub

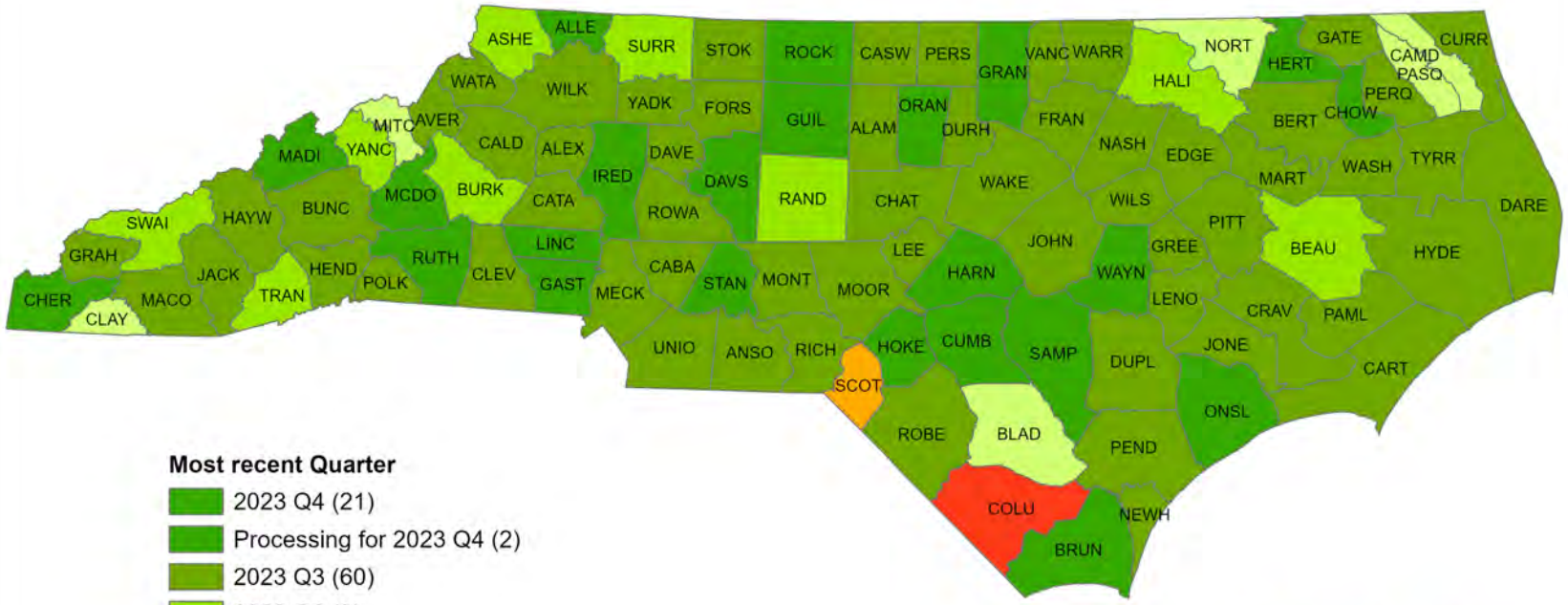
4

Local government GIS offices create and maintain parcel data. Retain ownership

1

NC Parcels Project Status by County

November 8, 2023



Most recent Quarter

- 2023 Q4 (21)
- Processing for 2023 Q4 (2)
- 2023 Q3 (60)
- 2023 Q2 (9)
- 2023 Q1 (6)
- 2022 Q3 (1)
- 2022 Q2 (1)

Sources:
NC Center for Geographic Information and Analysis and the Working Group for Seamless Parcels, Statewide Mapping Advisory Committee.

0 25 50 100
Miles

NCGICC

Benefits of NC Parcels Layer

- Counties can access their data on NC OneMap to back up their local data if their system has been compromised
- Emergency preparedness, response, recovery and mitigation
- Transportation planning / landowner notification
- Public health analysis
- Economic development
- Land conservation
- Broadband access and availability

User Stories: Equitable Broadband Access in NC

FCC Broadband Fabric Location Challenges

- FCC Broadband Serviceable Locations
- Fabric Challenge Locations

NextGen 911 in North Carolina

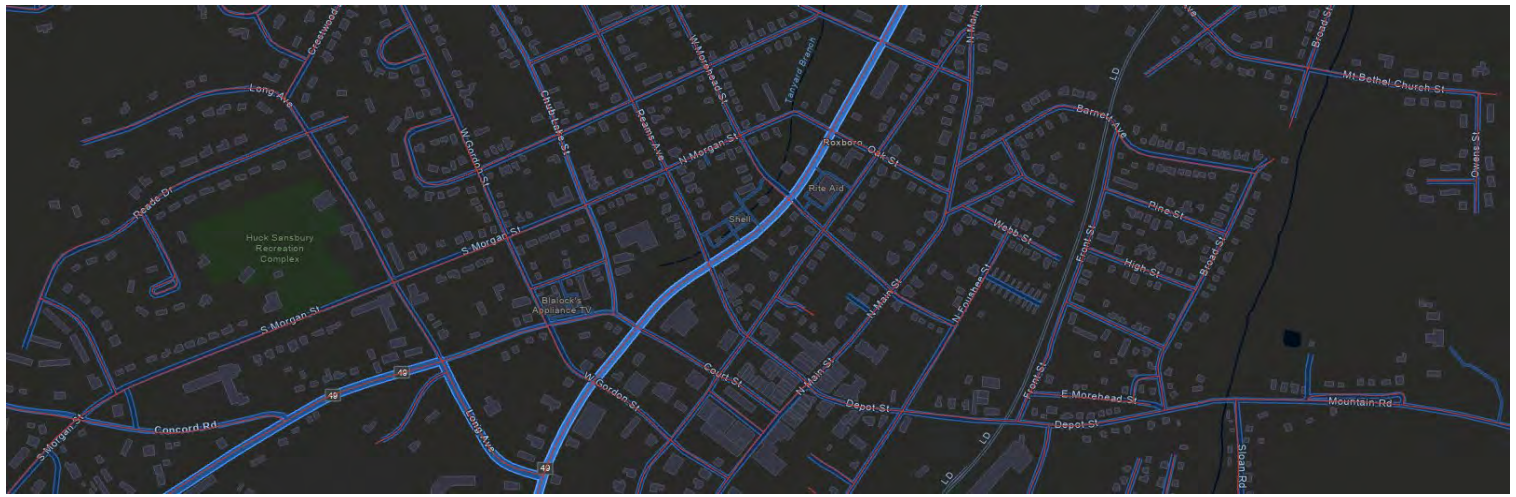
Communication

Collaboration

Coordination

NextGen 911 in North Carolina

- Road Centerlines
- Address Points
- Emergency Services Boundaries (Fire, Law, and EMS)
- PSAP Boundary
- Provisioning Boundary
- ALI Database



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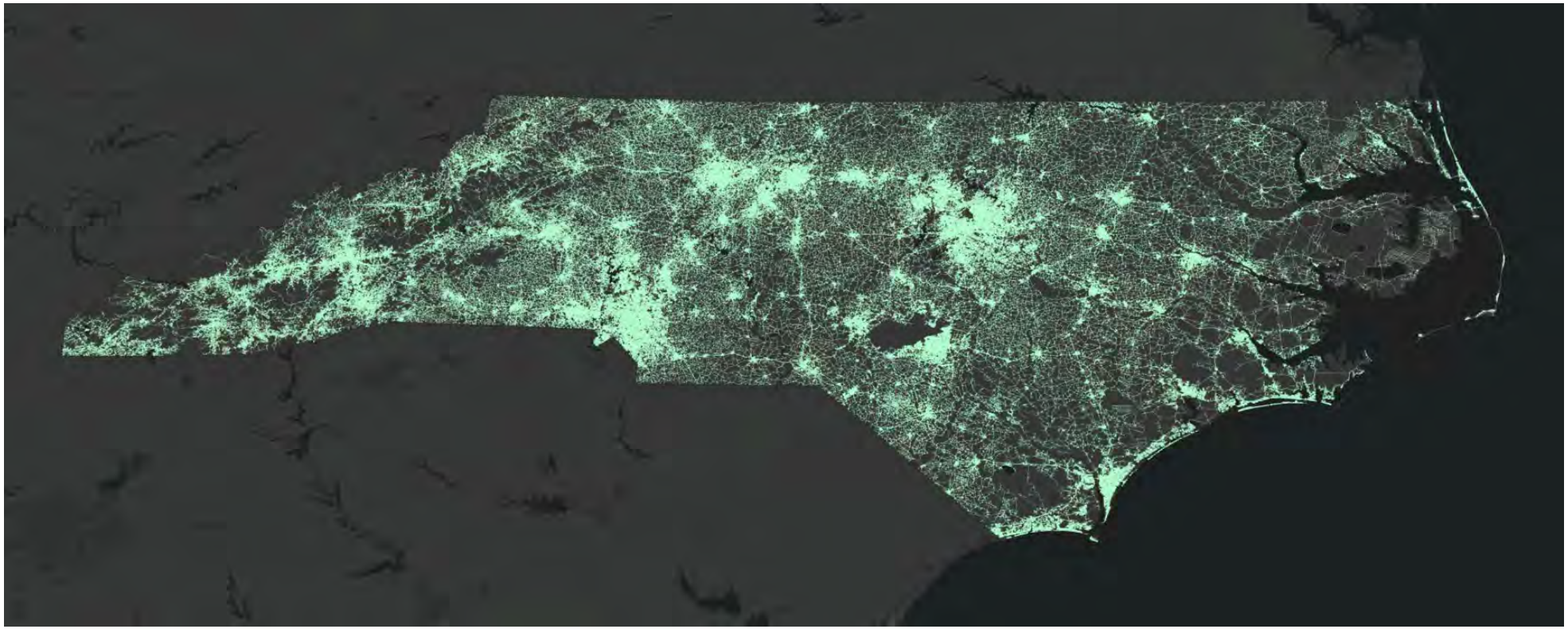
NextGen 911: Road Centerlines

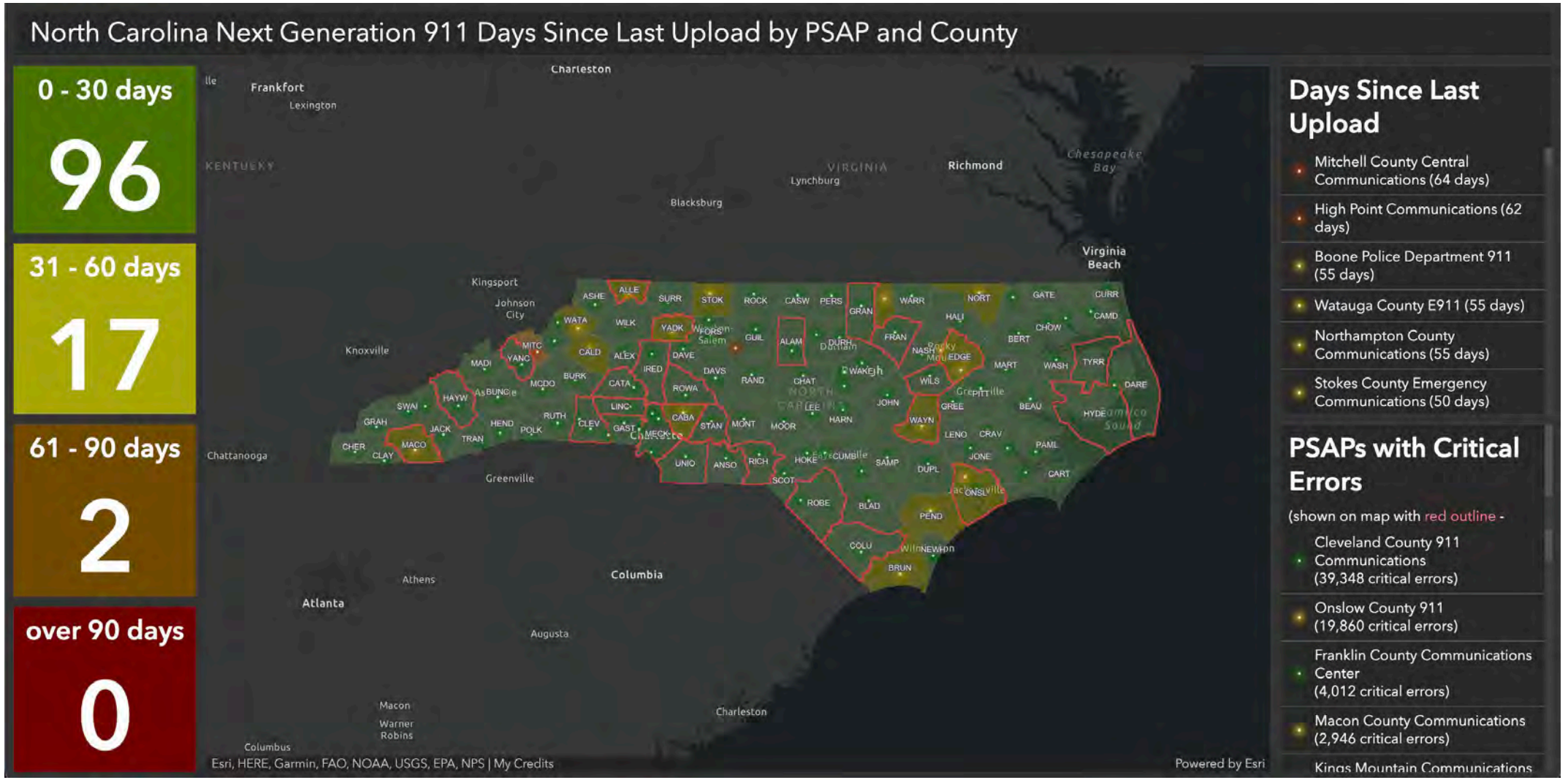
- 873,000+ road centerline segments are currently in the i3 ready database



NextGen 911: Address Points

- Over 5.6 million address points are currently in the i3 ready database

NextGen 911 GIS Update Dashboard



https://nconemap.maps.arcgis.com/apps/dashboards/47592879688f49c39ade923066691b69

NC DIT 911 Board

- Oversees state building codes
- Secures property insurance for state owned buildings
- Trains and certifies NC fire and rescue personnel
- Community risk reduction
- Provides fire department ratings inspections

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Tracking Fire Fatalities

- OSFM GIS provides a real time map on the OSFM web page displaying fire fatalities across the state.
- Fatality data collected through the Fire Investigations Unit
- GIS also provides annual reports visualizing the fire death related statistics from the previous year.

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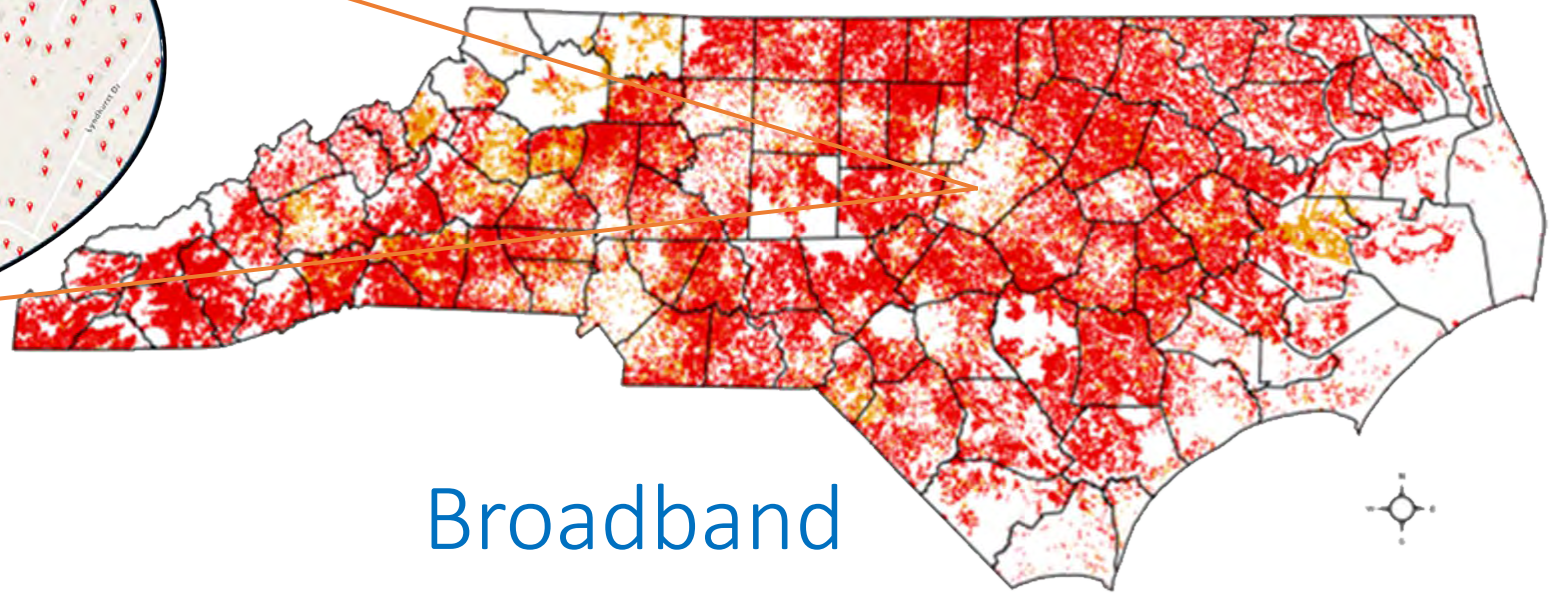
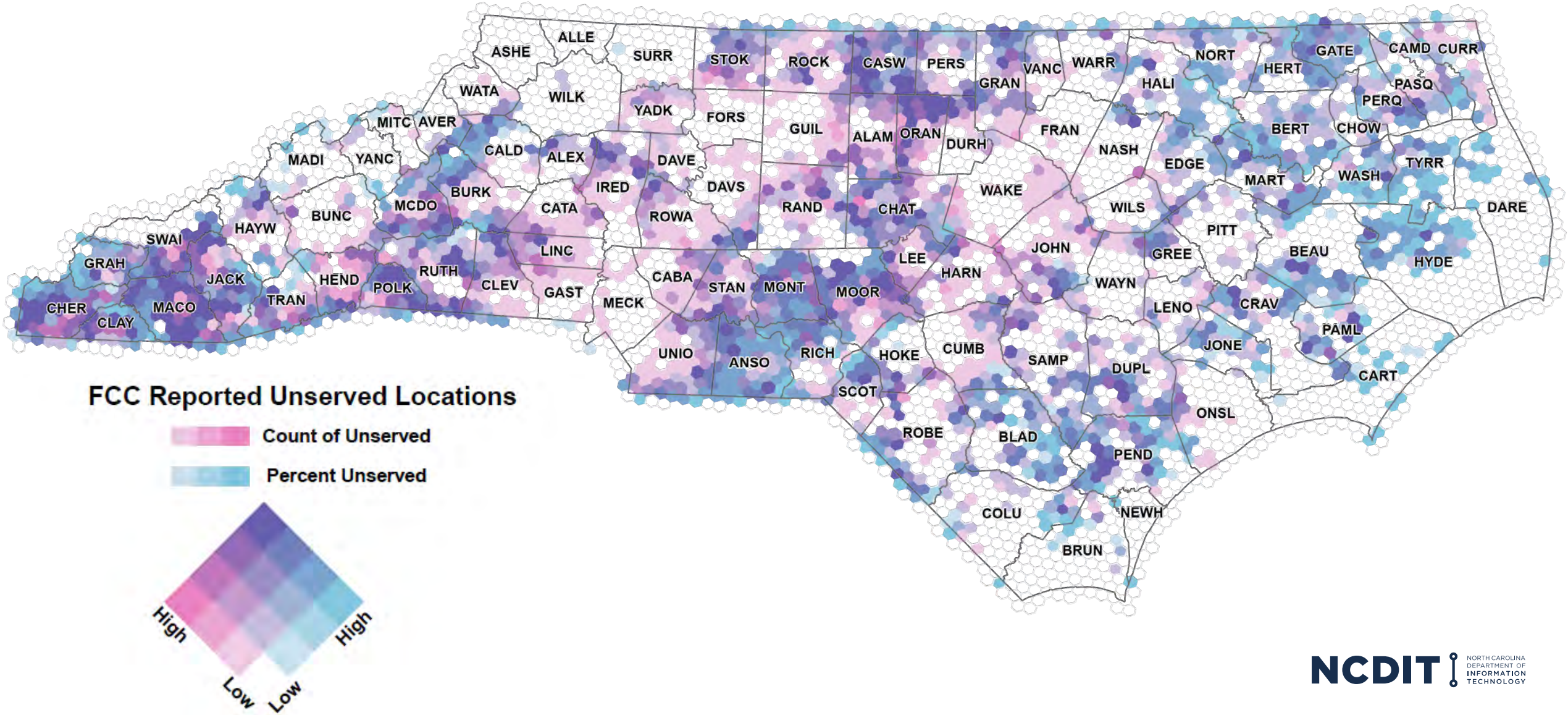
Current Model in North Carolina



NC Broadband Profile

Defining Eligible Project Areas



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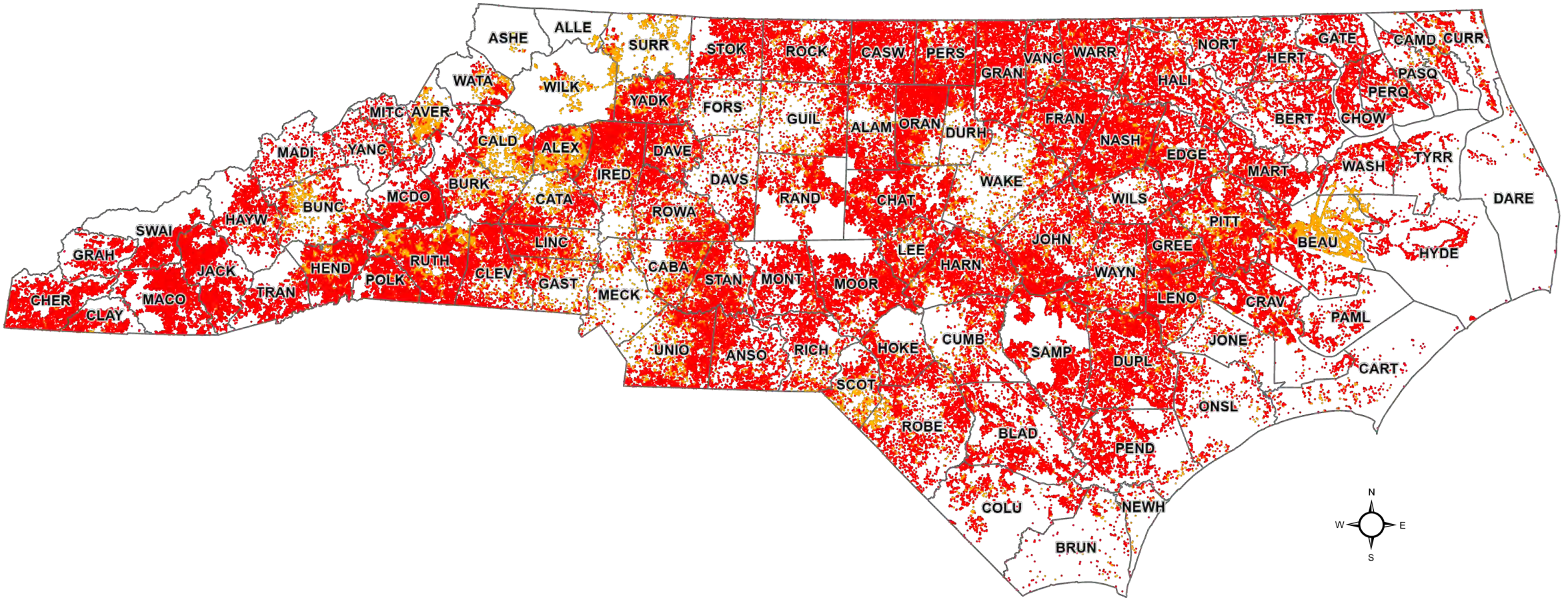
NC Broadband Profile

Evolving Identification of Unserved Locations

New FCC Broadband Data Collection Serviceable Location Fabric – December 2022



- **Unserved Broadband Serviceable Location (Less Than 25mb/s Download and 3mb/s Upload) - 12/31/22**
  --374,412 Unserved BSLs
- **Underserved Broadband Serviceable Location (Less Than 100mb/s Download and 20mb/s Upload) - 12/31/22**
  --127,956 Underserved BSLs

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Statewide Framework Datasets Use Case

Broadband Availability Map Example

- NC Division of Broadband & Digital Equity leverages orthoimagery, addresses, building footprints, and parcels
- Validates location data used by the FCC
- Maps broadband availability data
- Targets grant funding to expand broadband service across the state

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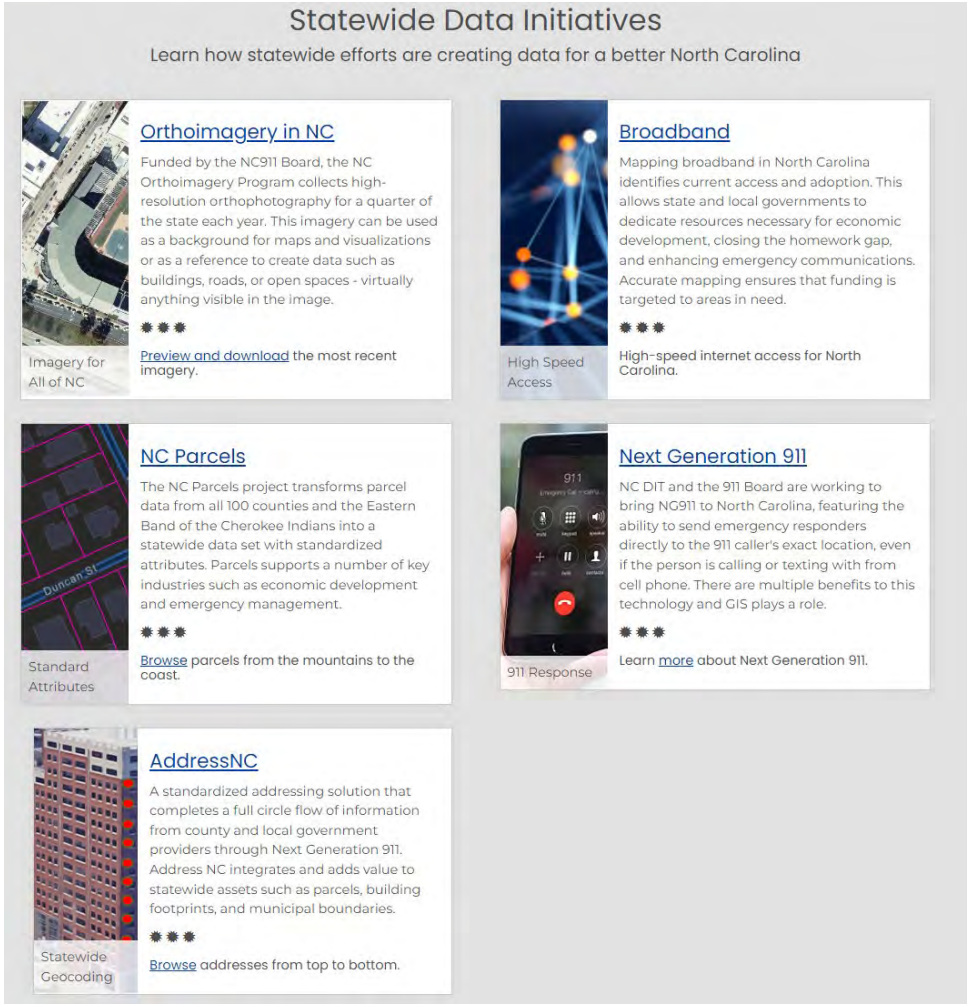
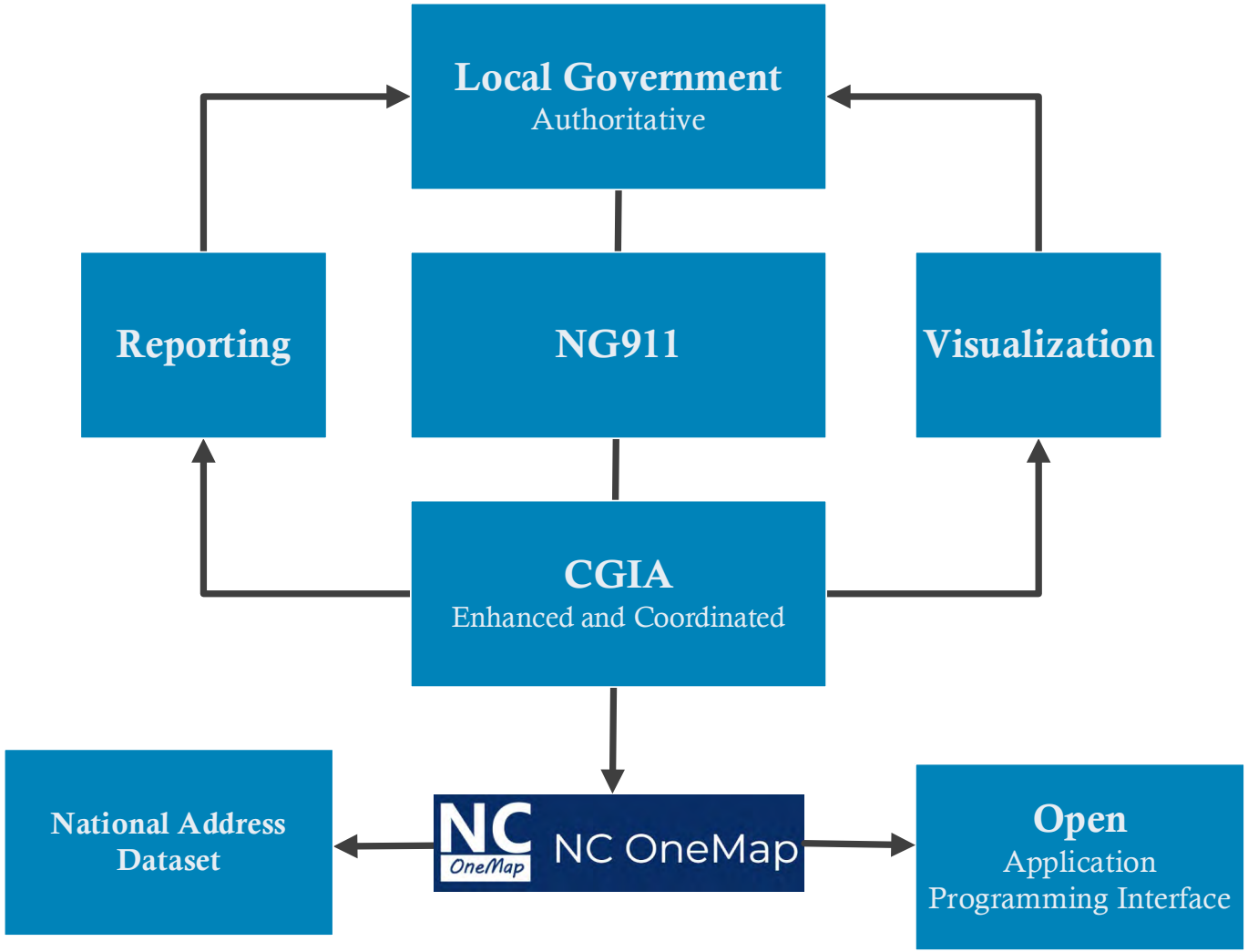
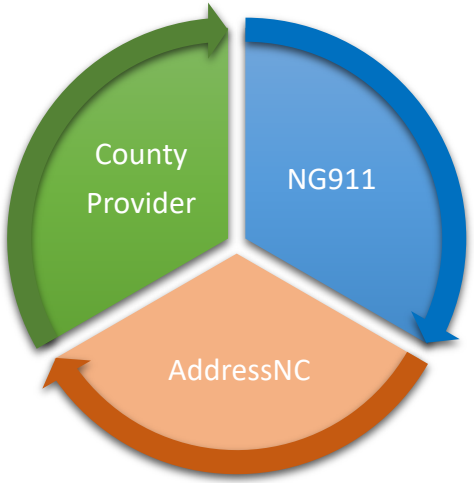
NC OneMap

https://www.nconemap.gov/pages/addresses



- ✓ a collaboration with stakeholders from local public safety answering points (PSAPs), local government, counties, federal, and state agencies
- ✓ the most reliable and trusted statewide comprehensive source for precise physical situs
- ✓ an open data platform of nearly 6 million locations streamed through (www.nconemap.gov)
- ✓ Demonstrated integration with large statewide programs
- ✓ A single source unified geocoding platform





✓Sustainable

✓Trusted

✓Reliable

Building Footprints

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Why Are Building Footprints a GICC Priority?

Building Footprints : GICC Priority and Benefits

Stakeholders

- Emergency Management
  - N.C. Floodplain Mapping Program
  - Office of Recovery and Resiliency
- Board of Elections
- Broadband Office
- Department of Transportation
- Municipal Governments
- County Governments

Benefits

- More accurate risk assessment
- Enhanced emergency response
- Recovery assistance and resiliency planning
- Broadband expansion
- Election confidence and voter information

Orthoimagery Value Added Derived Products

Building Footprints Example

- NC GICC Working Group for Building Footprints
- Business Plan to annually update buildings from NC Orthoimagery projects
- Artificial Intelligence – Machine Learning in AWS Cloud Environment for automated extraction of building footprints from imagery products

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The Road Ahead

Implement statewide high-resolution hydrography

Solve infrastructure data accessibility

Impact statewide policymaking where geospatial is key

Explore AI tools and techniques to further enhance GIS efforts

Contribute to the future NSDI ecosystem

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