

# What *is* Broadband?

# Broadband Technology Types

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## Multiple technology types, multiple industries

- **Digital Subscriber Line (DSL)**
  - Runs over traditional copper phone lines, speed dependent technology and distance
  - Speeds range from 1.5 Mbps to 80 Mbps
- **Cable Modem (Coax or DOCSIS)**
  - Different DOCSIS version and companies allow for different speed options
  - DOCSIS 3.0: allows for speeds up to 100 Mbps
  - DOCSIS 3.1: allows speeds up to 10 Gig, with typical speed threshold of 1-2 Gbps
- **Fiber-to-the-Home (FTTH, FTTP, “Fiber”)**
  - Phone and cable companies are building FTTH and business solutions allowing speeds up to 10 Gig, with typical speed threshold of 1 Gbps
- **Wireless (mobile)**
  - 4G allows downloads of 5-12 Mbps, but may peak upwards of 50 Mbps
  - 5G – standards being developed but speeds will be comparable to “Fiber”
- **Wireless (fixed)**
  - Offering speeds of 10-50 Mbps depending on application, terrain, etc.
- **Satellite**
  - Speeds up to 25 Mbps, but is typically more expensive, may have data caps, or latency issues

Source: Presentation from providers to NC General Assembly 2017



# Broadband Speeds

Activity	Minimum Speed
<b>General Usage</b>	
General Browsing and Email	1 Mbps
Streaming Online Radio	< 0.5 Mbps
VoIP Calls	< 0.5 Mbps
Student	5 – 25 Mbps
Telecommuting	5 – 25 Mbps
File Downloading	10 Mbps
Social Media	1 Mbps
<b>Watching Video</b>	
Streaming Standard Definition Video	3 – 4 Mbps
Streaming High Definition (HD) Video	5 – 8 Mbps
Streaming Ultra HD 4K Video	25 Mbps
<b>Video Conferencing</b>	
Standard Personal Video Call (e.g., Skype)	1 Mbps
HD Personal Video Call (e.g., Skype)	1.5 Mbps
HD Video Teleconferencing	6 Mbps
<b>Gaming</b>	
Game Console Connecting to the Internet	3 Mbps
Online Multiplayer	4 Mbps

Source: <https://www.fcc.gov/reports-research/guides/broadband-speed-guide>



# Typical Broadband Usage

	<b>Light Use</b> (Basic functions only: email, browsing, basic video, VoIP)	<b>Moderate Use</b> (Basic functions plus <i>one</i> high-demand application: streaming HD video, teleconferencing, online gaming)	<b>High Use</b> (Basic functions plus <i>more than one</i> high-demand application running at the same time)
1 user on 1 device	3-8 Mbps	3-8 Mbps	12-25 Mbps
2 users or devices	3-8 Mbps	12-25 Mbps	12-25+ Mbps
3 users or devices	12-25 Mbps	12-25 Mbps	25+ Mbps
4 users or devices	12- 25 Mbps	12-25 Mbps	25+ Mbps

Source: <https://www.fcc.gov/research-reports/guides/household-broadband-guide>

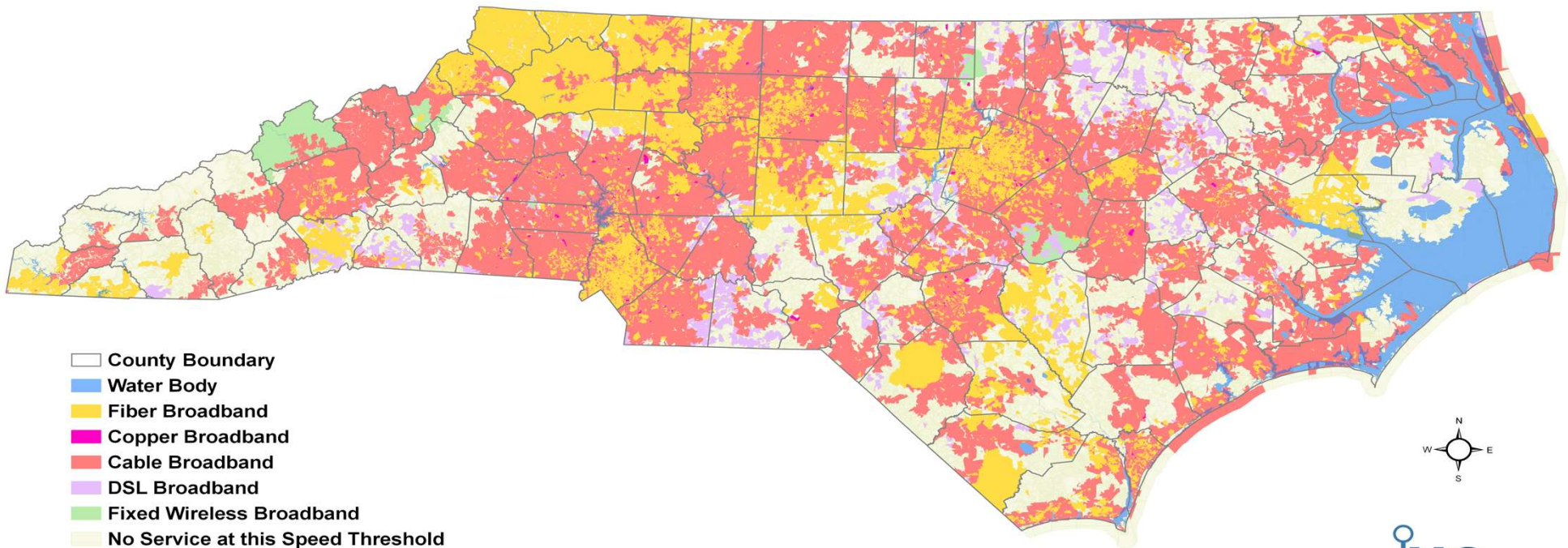


# North Carolina Broadband Service Inventory

## Advertised Speeds of at Least 25 Mbps Download and 3 Mbps Upload

Data derived from U.S. Federal Communications Commission Form 477 Data Release Dec. 2017.

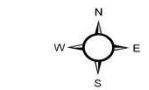
Note: A provider that reports deployment of a particular technology and bandwidth in a census block may not necessarily offer that service everywhere in the block.

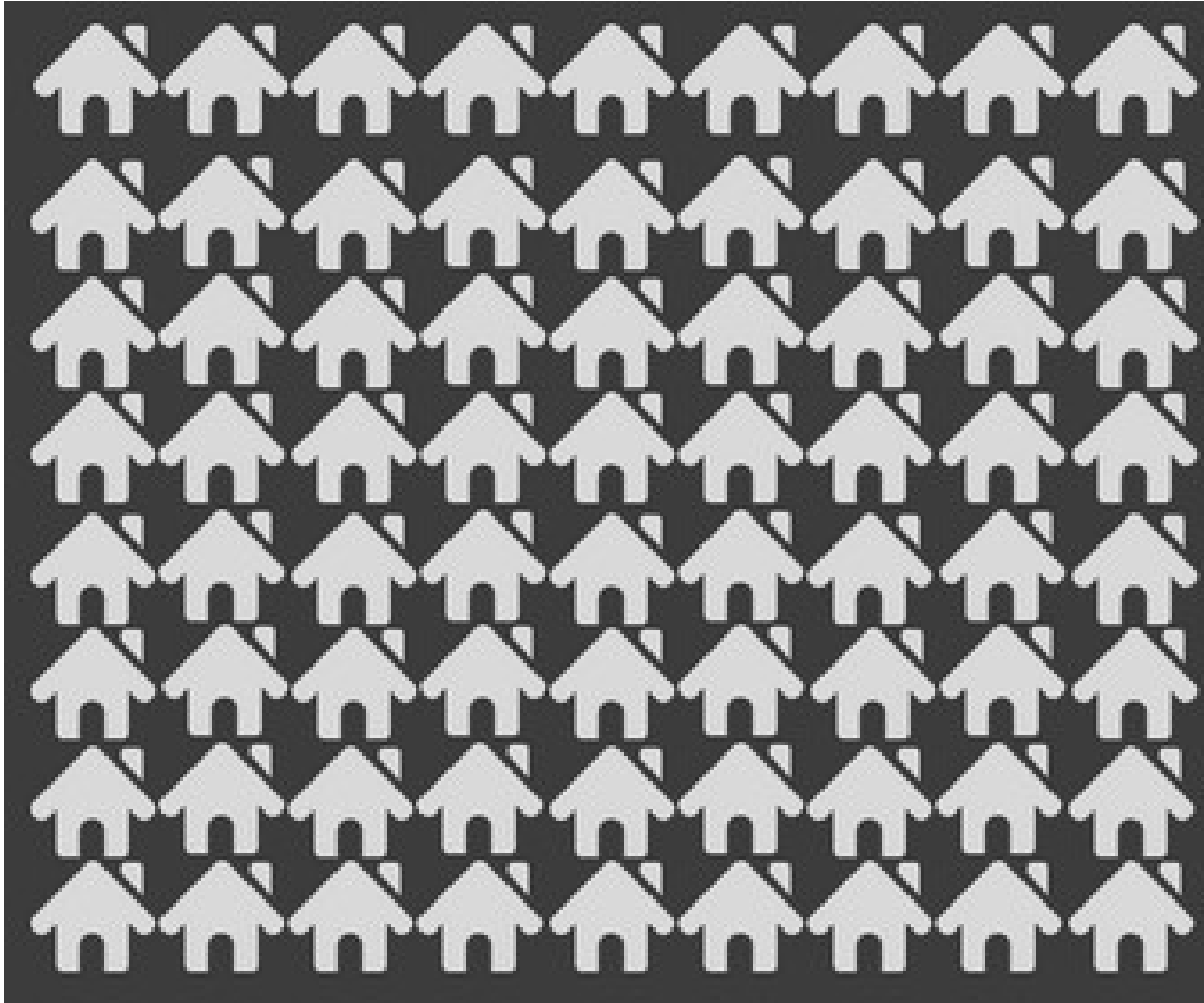


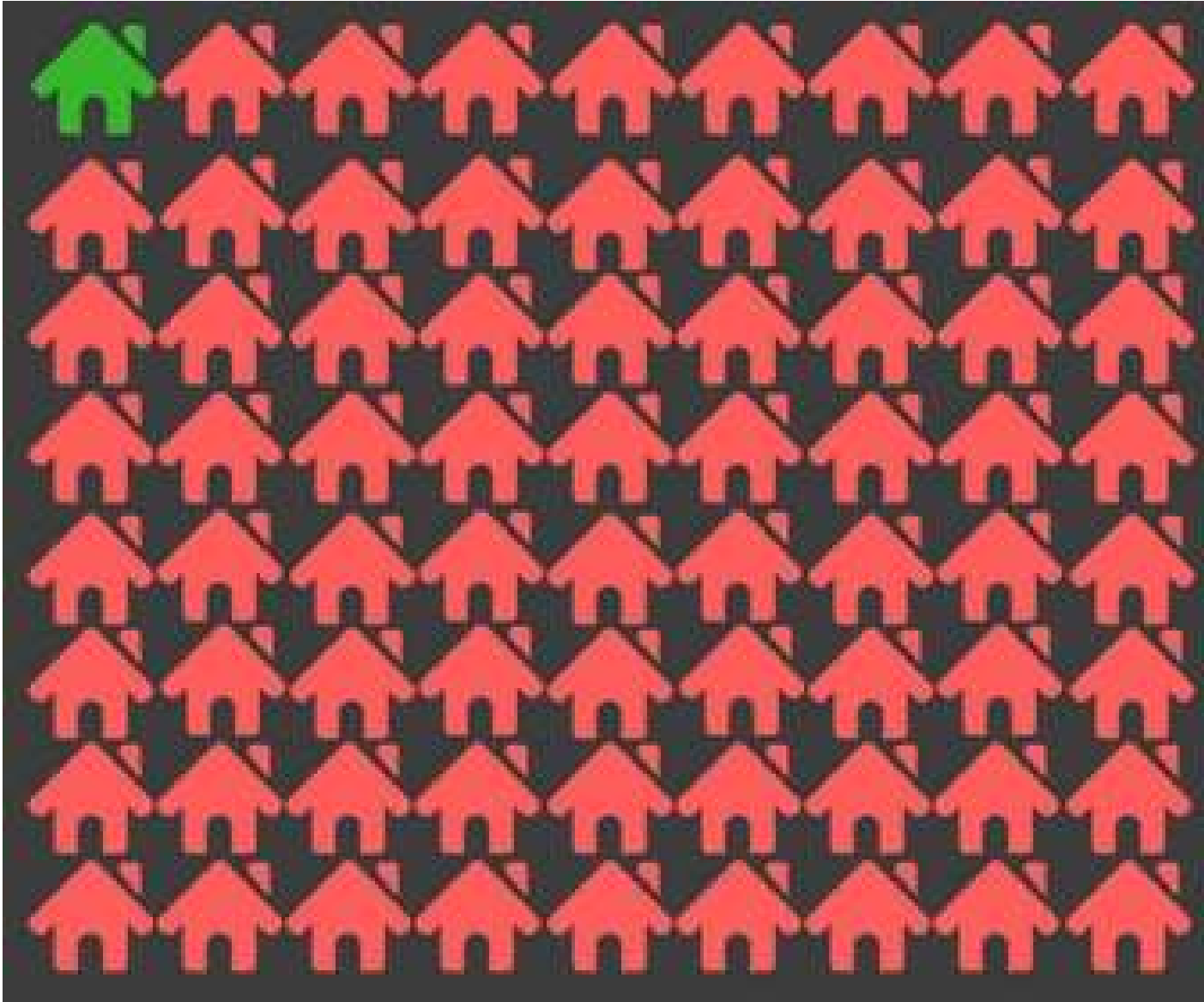
- County Boundary
- Water Body
- Fiber Broadband
- Copper Broadband
- Cable Broadband
- DSL Broadband
- Fixed Wireless Broadband
- No Service at this Speed Threshold

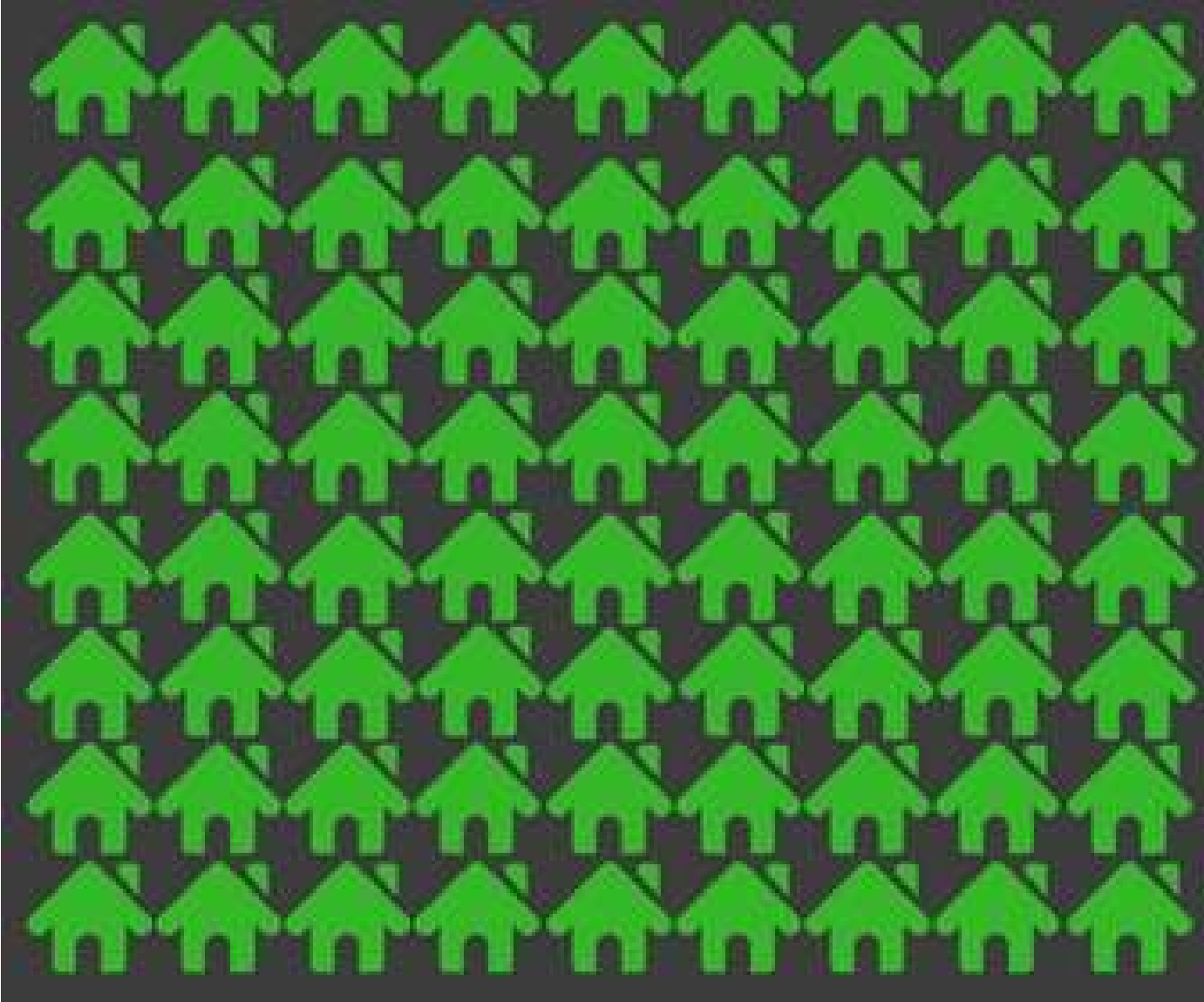
In areas where multiple service options are available this map shows the coverage layers in the order presented above.

0 25 50 100  
Miles

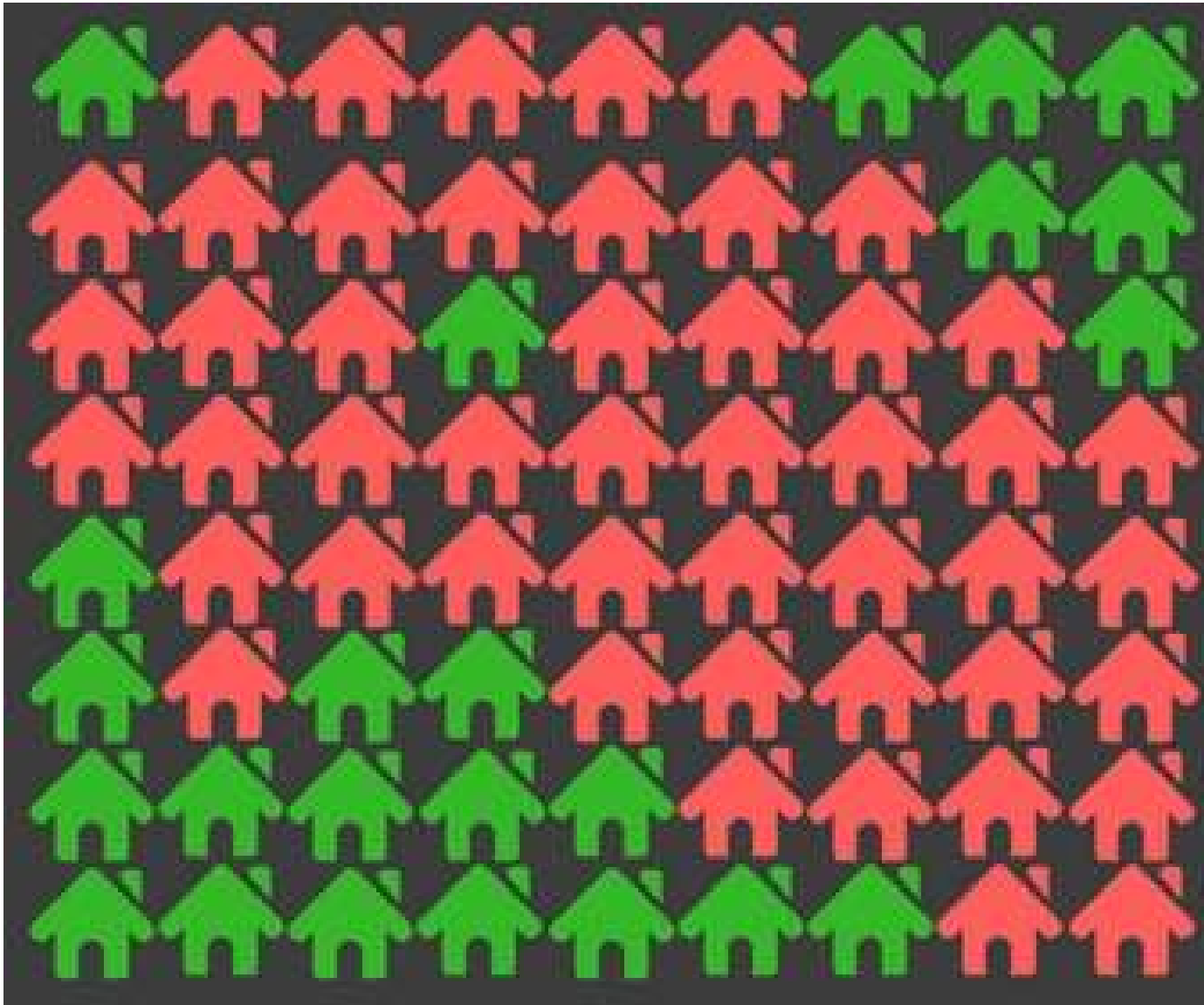










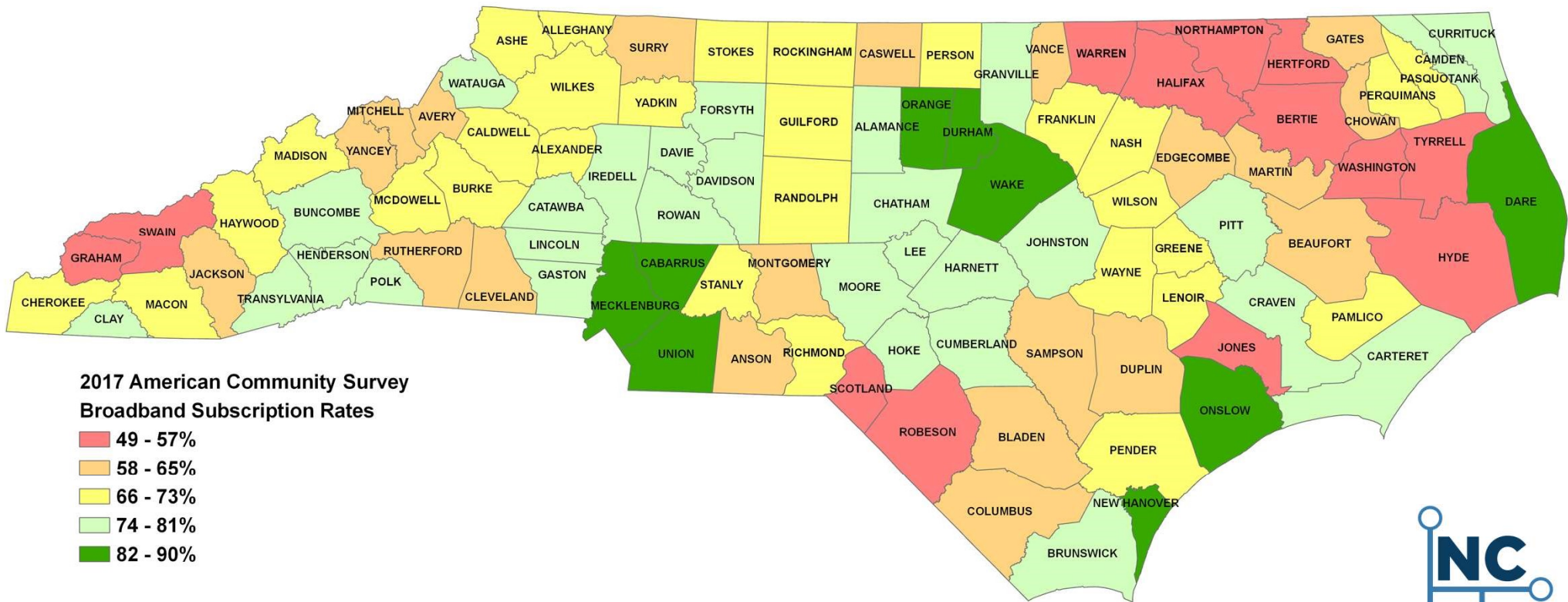


# Common Barriers to Broadband Deployment

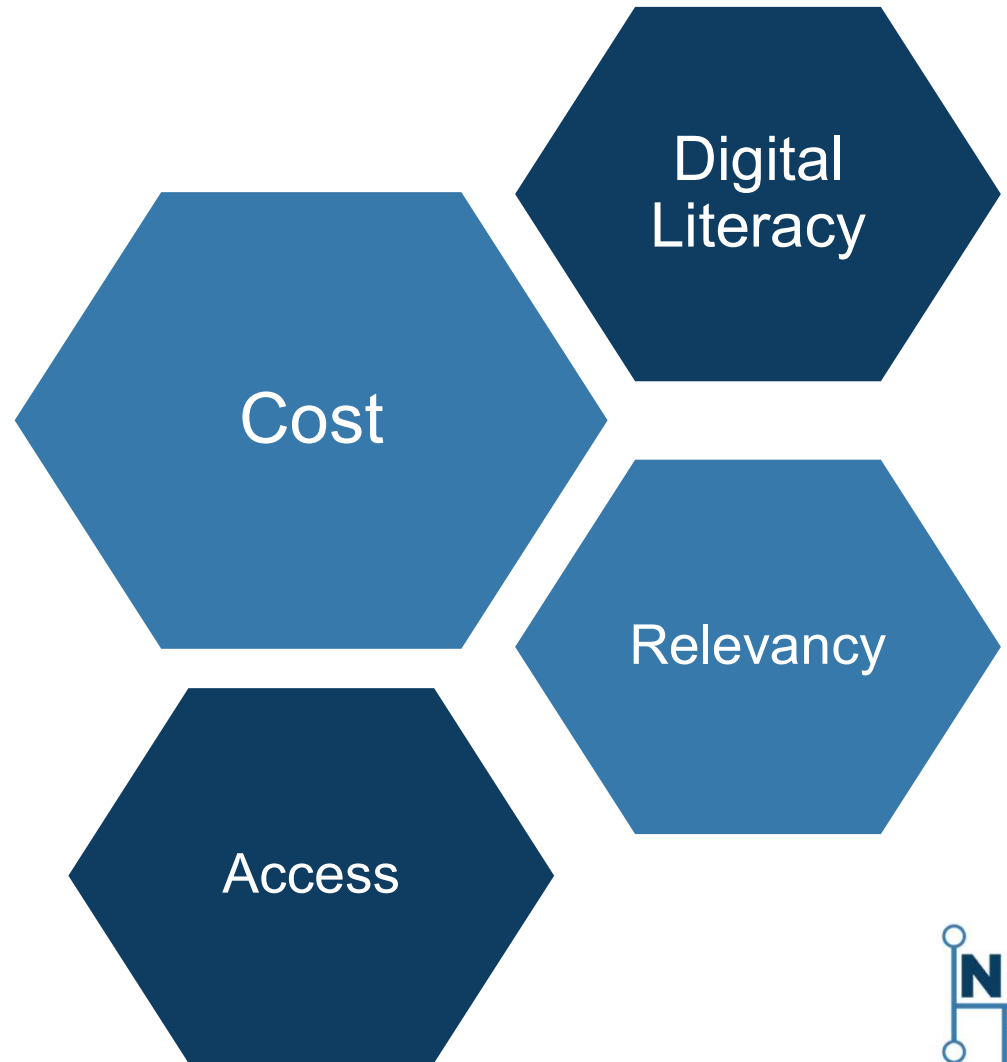
Capital  
Expenditures  
(CAPX)

Population  
Density

# 2017 County Broadband Adoption Rates



# Common Barriers to Broadband Adoption



**State of North Carolina**

—

**Broadband  
Infrastructure Office**



## Vision

Every North Carolinian  
should be able to  
access affordable high-  
speed internet  
anywhere, at any time.

# The Broadband Infrastructure Office



The background features a light gray network of lines and nodes. Various icons are scattered throughout, including a satellite dish, a downward arrow in a triangle, a square with a downward arrow, a binary code '100010100', and a rightward arrow. The text is centered over this background.

# CONNECTING NORTH CAROLINA

*State Broadband Plan*

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



# Executive Order 91

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- Issued in March 2019 by Governor Cooper
- Establishes a Task Force on connecting North Carolina, promoting expansion of access to high-speed Internet and removing barriers to broadband infrastructure installation
- Task Force of Cabinet agencies
- Update 2016 State Broadband Plan and prioritize recommendations
- Statewide Dig Once policy



# Executive Order 91

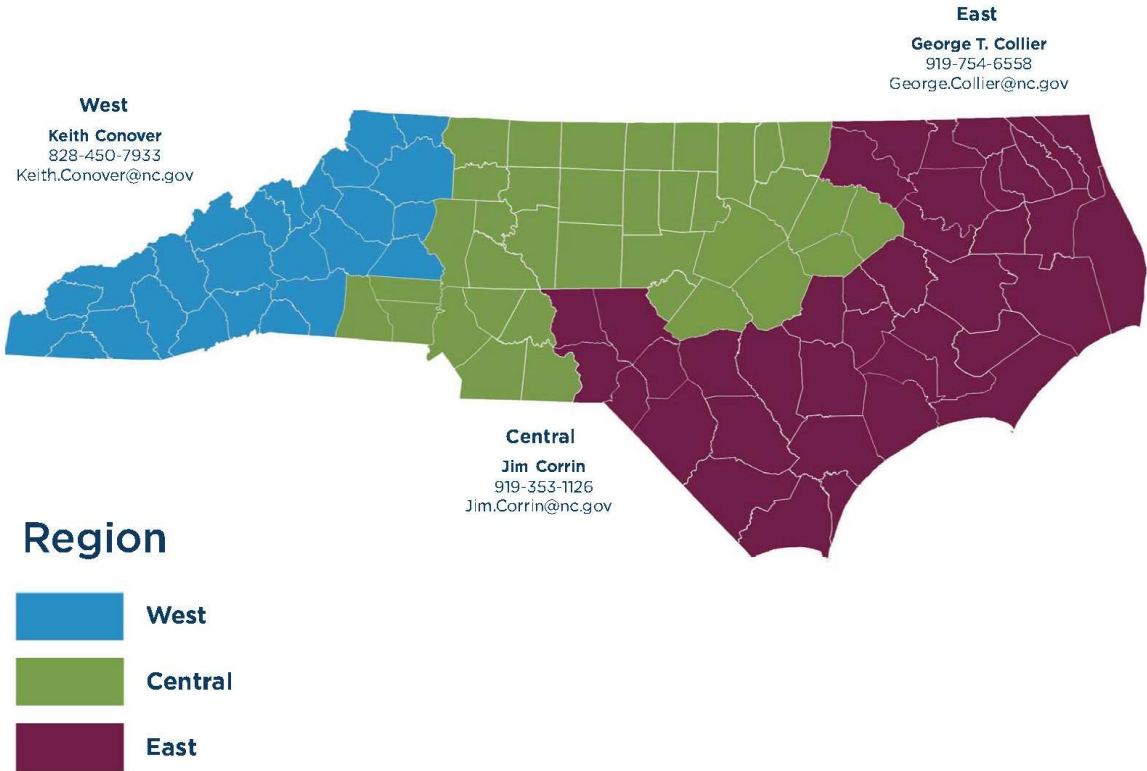
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- NC Dept of Information Technology
- NC Dept of Health & Human Services
- NC Dept of Commerce
- NC Dept of Administration
- NC Dept of Public Safety
- NC Dept of Transportation
- NC Dept of Natural & Cultural Resources
- NC Office of State Budget & Management



# Community: Technical Assistance Team

## Technical Assistance Regions



BIO's Technical Assistance Team provides communities with an in-person, on-the-ground expert to provide guidance and help.



# Broadband Planning, First Steps....

## What Are Your Goals?

## What Connectivity Challenges are you working to solve?

- Connectivity to Govt-Facilities (county, towns)
- “Smart City” Applications
- Public Safety
- Schools & Libraries
- Healthcare Facilities
- Downtown Wi-Fi
- Economic Development sites
- Large or Small Businesses
- Agriculture/Connectivity to Farms
- Residential Unserved/Underserved
- Homework Gap
- Adoption/Digital Equity



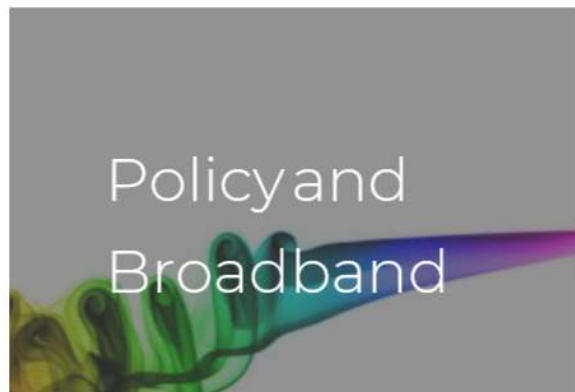
State Broadband Plan ▾

[The Playbook](#)

Blogs & Stories

Technical Assistance

FirstNetNC



# The Homework Gap in North Carolina

## THE HOMEWORK GAP IN NORTH CAROLINA

A Pilot Study of K-12 Households



**NC DIT**  
Broadband Infrastructure Office

NORTH CAROLINA  
DEPARTMENT OF  
INFORMATION  
TECHNOLOGY

THE WILLIAM & JPA  
**FRIDAY INSTITUTE**  
FOR EDUCATIONAL INNOVATION

- Leverage Existing Models
- Think Topically
- Think Holistically
- Think Strategically
- Be Creative
- Partner with Your State Broadband Office and Federal BroadbandUSA Team



# Addressing the Homework Gap through Libraries

## New Grant

- \$250,000 from Institute of Museum & Library Services
- Awarded to BIO/DIT + State Library
- 2 year grant

## Homework Gap

- Grant will fund pilot to test holistic model of closing homework gap through local libraries
- Will produce Toolkit with best practices for addressing homework gap through libraries

## Details

- Creates new position: Digital Inclusion Librarian
- Provides hotspots, digital literacy training for participants
- Partner with one library system in Y1, expand to (up to) 3 others in Y2



# GREAT Grant Program

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## GREAT Awards – May 2019

**21 Awards in 19 Counties, \$9.85m, plus private sector match**

Bertie	Roanoke Connect Holdings
Bladen	Star Telephone Membership Corp
Caswell	Open Broadband, LLC
Chowan	JCMM Ventures
Clay	Frontier Communications
Columbus	Atlantic Membership Telephone Corp
Gates	Roanoke Connect Holdings
Greene	CenturyLink/Carolina Telephone & Telegraph and Nfinity Link Communications Inc.
Halifax	Olsen enterprises dba Cloudwyze
Hertford	Roanoke Connect Holdings
Jackson	Sky-Fi Inc.
Jones	Eastern Carolina Broadband
Lenoir	CenturyLink/Carolina Telephone & Telegraph and Eastern Carolina Broadband
Macon	Morris Broadband/Shivers Communications Corp
McDowell	Morris Broadband/Shivers Communications Corp
Northampton	Roanoke Connect Holdings
Person	North Carolina Wireless
Swain	Sky Wave, Inc.
Vance	Open Broadband, LLC





# First Responder Emerging Technologies Program

- Focuses on the impact to the first responder disciplines because of up-and-coming hardware and software changes.
- Adopting new technologies can impact operational, financial, or policy considerations for the agency
- These changes have recently been accelerated by the Nationwide Public Safety Broadband Network (NPSBN), also known as the FirstNet Network.
- Program Staff are former and current first responders also having experience in the emergency management field



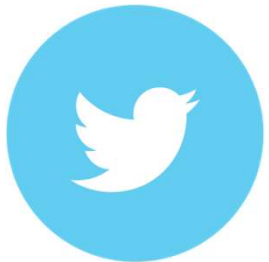
# How do we help?

- Providing adjunct technology exploration support
- Collaborating with subject matter experts (first responder and industry)
- Addressing cybersecurity issues, connectivity needs, interoperability with existing and emerging systems, and other challenging/threatening topics
- Collaboration across state agencies and departments

Red Grasso, Director/FirstNet SPOC; Charles Laird, Program Specialist  
[firsttech@nc.gov](mailto:firsttech@nc.gov)



# Let's Connect!



**@NCDIT**  
**@BroadbandIO**  
**@ncicenter**



**NCDIT**



**@NCDIT**



**NC Department  
of Information  
Technology**



**NC DIT**

**it.nc.gov**

