Guilford County Broadband Strategy

Executive Summary

High-speed internet is integral to daily activities, but access to adequate, reliable broadband is not equally distributed across Guilford County

COVID-19 disrupted every aspect of life for residents. As daily activities migrated to a virtual environment, those with inadequate or no access were excluded from essential connections, potentially exacerbating inequities.

Even those with access to internet often experience disruptions or struggle with insufficient bandwidth when multiple household members need to use the internet for different activities including:

Education

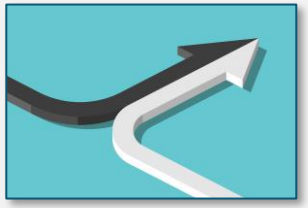
- Remote learning and homework assignments
- Extracurricular programs
- Parent teacher engagement

Healthcare & Emergency services

- Remote patient monitoring
- Virtual appointments
- Interpreter services
- Emergency response operations, e.g., dispatching first responders

Work & workforce development

- Remote work
- Online training
- Online job application and coaching, e.g., Guilford Works mobile resource bus



Economic development

- Enabler for small businesses
- Infrastructure for 'Smart City' efforts, e.g., Greensboro Innovation District

Connectivity, social services & civic engagement

- Connecting with friends / family virtually
- Accessing account info and applying for assistance
- Organizing and participating in virtual events

Investment considerations for not only current needs but also future needs for more connected devices, more data, and faster transmission speeds are important as demand for high-speed internet continues to grow and technology advances.

Stakeholder and public engagement provided color and context to the lived experiences reflected in the research and data analysis

Key themes from Stakeholder Engagement

- Access to **high-speed internet is viewed as an essential service** with education and remote work opportunities as some of the top priorities
- The **majority of the County has some level of access, although not always adequate; there are communities who face barriers** related to geographic and socio-economic disparities
- **For those who struggle with reliable internet access**, there are **barriers to daily activities that increasingly require bandwidth levels that support both video and audio**, such as remote work meetings, remote learning, and virtual doctor's appointments

It is vital. Working from home, online classes, etc. are a part of my daily life. I get poor internet service in my area so it can be pretty frustrating.

Survey respondent

Thank goodness for the internet bill assistance out now cuz [sic] without it my internet would have been the first one cut off. I was on unemployment till September and since then we have struggled so bad. I'm trying to work what I can but I have 2 disabled adults to care for and 2 minor kids.

Survey respondent

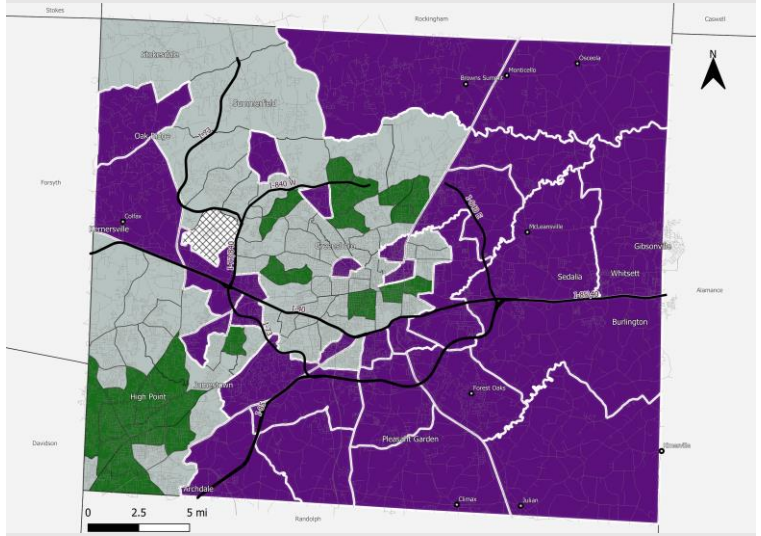
Frustrating that home internet is so slow or goes out frequently. That's ok if it only impacts entertainment, but definitely NOT ok when it comes to remote learning

Survey respondent

A model developed to analyze broadband gaps revealed that 49% of the population have needs related to availability, affordability, or adoption

Availability

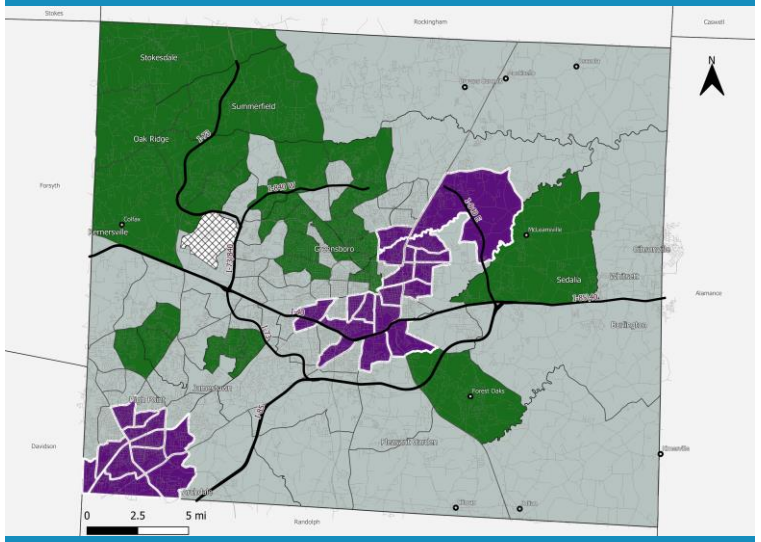
Is broadband available at an adequate speed necessary for work, school, etc.?



30% of the population in Guilford County resides in a census tract with low availability

Affordability

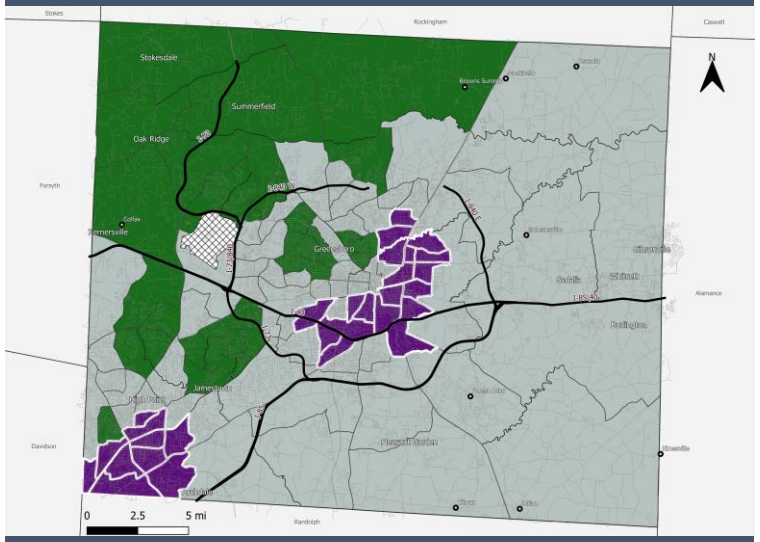
Are the available broadband speeds at an affordable price point?



22% of the population in Guilford County resides in a census tract with low affordability

Adoption

Could households successfully use broadband if available and affordable?



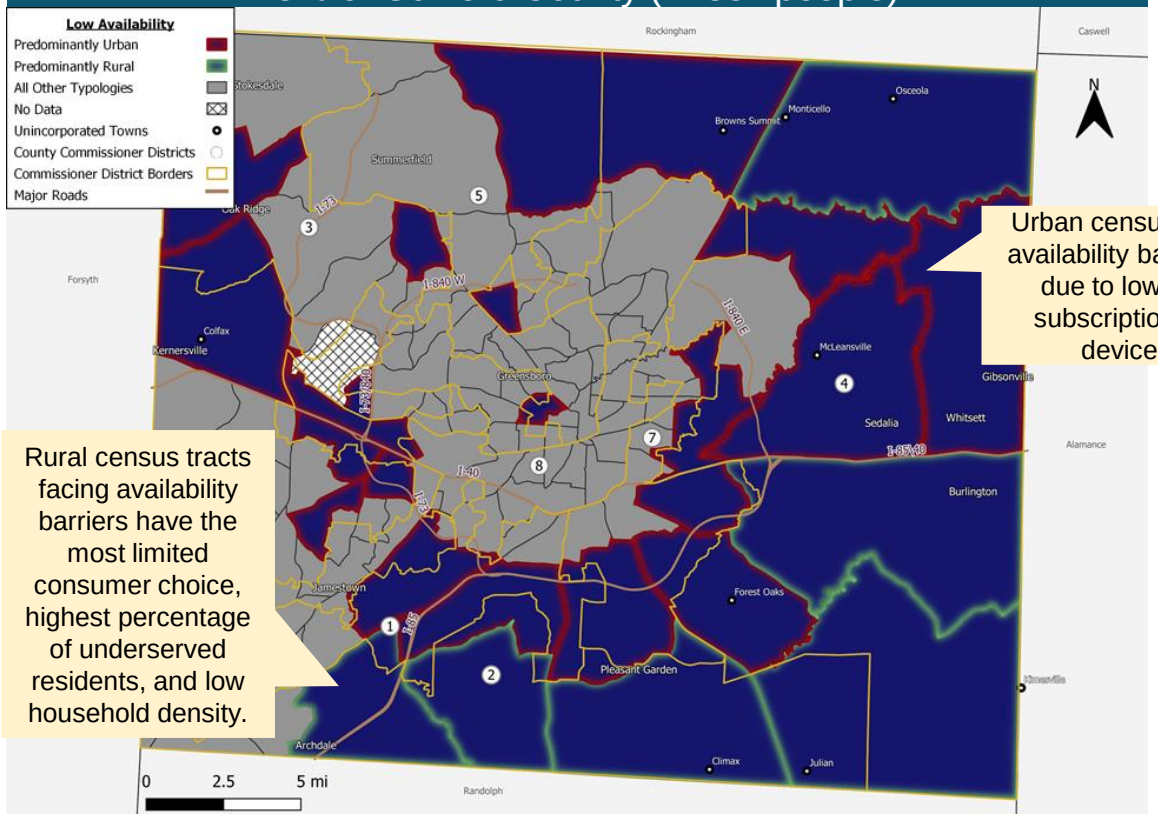
21% of the population in Guilford County resides in a census tract with low adoption

Key: = Low scoring census tracts (<25th lowest percentile) = Medium scoring census tracts (25th–75th percentile) = High scoring census tracts (> 75th percentile) = major road

Analysis highlighted the need to deploy targeted solutions to address the various broadband-related needs across the County with context-aware investments.

Most of the population in an area of significant need* face technical and geographic barriers in rural areas, or socio-economic barriers in urban areas

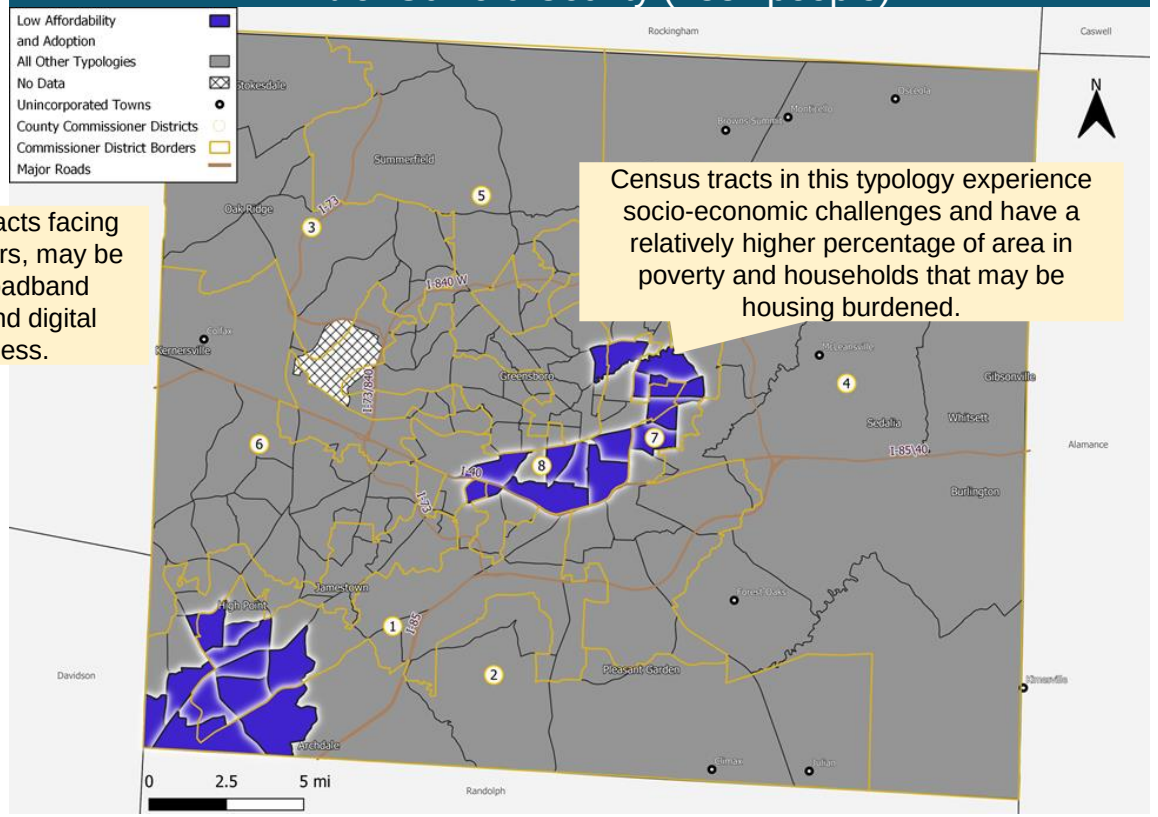
Census Tracts with Low Availability Only**
25% of Guilford County (~133k people)



Urban census tracts facing availability barriers, may be due to low broadband subscription and digital device access.

Rural census tracts facing availability barriers have the most limited consumer choice, highest percentage of underserved residents, and low household density.

Census Tracts with Low Affordability and Low Adoption
17% of Guilford County (~88k people)



Census tracts in this typology experience socio-economic challenges and have a relatively higher percentage of area in poverty and households that may be housing burdened.

Analyzing common attributes in census tract typologies with significant need* has allowed stakeholders in Guilford to develop targeted solutions to address broadband availability, affordability, and adoption barriers.

- A Census tract was defined as having significant need if its broadband index score fell below the 25th percentile in a given category (e.g., availability, affordability, adoption).

** Census tracts that only have high need related to availability are included in this map and statistic.

Gaps and needs analysis revealed that strategic approaches must target a variety of different factors that contribute to digital inequity

Legislation & Policy	Restrictive state laws on municipal broadband significantly restrict public ability to invest in broadband infrastructure. The County and municipal governments can build on the state's Dig Once policy for broadband and consider other policy changes to improve coordination and efficiency of construction processes.
Market Structure	A lack of market competition among ISPs has led to less consumer choice in terms of number of provider options. 25% of residents only have 1 provider choice offering a minimum of 25/3 Mbps.* An estimated 29% of County residents do not have access to high-speed broadband connections (100/100 Mbps) necessary to meet essential needs (e.g., remote learning, telework, telehealth services)
Infrastructure	Rural, unincorporated areas in the eastern part of the County have limited access to high-speed access technologies. Urban areas in High Point and Greensboro face the greatest barriers related broadband adoption and access to digital devices.
Socio-economic Factors & Needs	Disparities in broadband access and adoption are greatest in areas identified as facing barriers based on income level, educational attainment, and race. Digital literacy levels and access needs vary by factors related to household composition such as the presence of elderly individuals and students.

*Source: FCC Form 477 Fixed Deployment data. This data likely overestimates speeds offered and service coverage to residents in Guilford County. Fixed providers file lists of census blocks in which they can or do offer service to at least one location, so may not accurately reflect what service provider and speed options are available to the entire census block. Excludes satellite.

Guilford County should act holistically and multilaterally to address digital inequity and increase broadband critical for education, work, EMS, etc.

POTENTIAL PARTNERS

- Regional & Municipal Governments
- North Carolina Broadband Infrastructure Office
- Guilford County Libraries and Schools
- Community Anchor Institutions
- Local, State and/or National Nonprofits
- Internet Service Providers
- Private Institutions & Corporations

OVERARCHING STRATEGIES

- Dedicate a centralized broadband resource to lead efforts
- Incentivize ISP expansion to increase consumer choice
- Launch pilot programs and iterate on successful program designs
- Collaborate with other local governments on advocacy efforts
- Explore developing public-provided middle-mile fiber [depending on advocacy success]

SUPPORT

TARGETED STRATEGIES

AVAILABILITY STRATEGIES

- Middle Mile Fiber
- Last mile connection: Fiber to the premises
- Last mile connection: Extend urban 5G mesh network
- Last mile connection: Pole replacements

AFFORDABILITY & ADOPTION STRATEGIES

- Expand on Digital Navigators Programs
- Leverage Libraries / Schools as digital inclusion nodes
- Offer Device Refurbishment and Donation Hub
- "Gap" grants and "one stop" application assistance

Special Considerations: Public Safety

- Evaluate resiliency of public safety mobile network

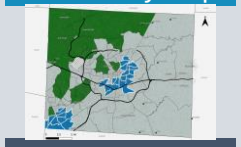
Special Considerations: Public Housing

- Last mile connection: Fiber / 5G mesh to public housing
- Free / Discounted internet for public housing authorities

IMPROVE DIGITAL EQUITY

Availability Gaps

Affordability Gaps



Adoption Gaps

Funding Options include:

- **General Fund and Reserves**
- **Federal and State Grants**
- **Tax Revenue** (e.g., general taxes, etc.)
- **Bond Financing**
- **Available Federal Loans**
- **Matching Funds from Public-Private Partnerships**
- **Nonprofit or Philanthropic Funding**

ADDRESSING BROADBAND GAPS IMPROVES ACCESSIBILITY TO MANY DAILY ACTIVITIES AND CRITICAL SERVICES

Education
Close the homework gap and improve learning for untraditional students

Work & Workforce Development
Build a resilient, skilled, and flexible workforce

Health
Bolster the reach of the Cone Health and others with telemedicine

Emergency Services
Ensure access to rapid emergency response

Social Services
Enhance the provision of government services with future-proof technologies

Connectivity & Civic Engagement
Equip public with internet so they can participate in engagement efforts

Economic Development
Accelerate job growth and attract new business

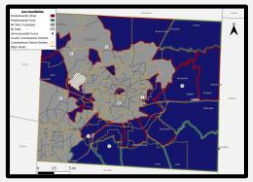
The following strategic moves are recommended to target the factors that contribute to digital inequity and increase accessibility county-wide

Overarching Strategy	Intended Impact	
1. Dedicate a centralized broadband resource to lead and coordinate efforts	• Centralize oversight for strategy execution • Provide hub for partnerships, data-sharing, communication, and community engagement	Legislation & Policy; Market Structure; Infrastructure; Socio-economic
2. Encourage ISP expansion to improve internet access	• Reduce barriers to broadband infrastructure buildout in areas that lack adequate internet access • Increase consumer choice, market competition, and network resilience	Market Structure; Infrastructure
3. Launch pilot programs and iterate on successful program designs	• Validate gaps and needs • Provide proof-of-concepts for future grant applications that can be replicated elsewhere	Market Structure; Infrastructure; Socio-economic
4. Collaborate with other local governments on advocacy efforts	• Collective action to provide greater flexibility for local governments in meeting constituents' connectivity needs	Legislation & Policy
5. Explore developing public-provided, open access middle-mile fiber infrastructure [dependent on advocacy success]	• Provides an avenue to jump-start public and private investment to parts of the county where ISP investment has fallen short	Infrastructure; Socio-economic

These overarching strategies are complemented by a suite of geographically-targeted recommendations to address location-specific broadband gaps and needs as identified through the broadband index model.

Targeted strategies are recommended to address geographic-specific challenges related to broadband availability, affordability, and adoption

Low Availability and the Low Affordability & Low Adoption typologies comprise 42% of the County's population and the majority of areas facing digital inequity. Targeted strategies aimed at addressing needs should track to overall county goals



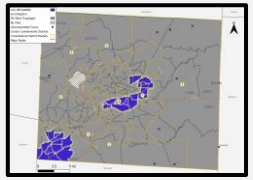
Low Availability

Greensboro's fringe, Pleasant Garden, Whitsett, Brown's Summit, Julian

Characteristics: Low housing density. Less consumer choice and a higher population of residents age 65+ in rural areas. Limited access to fiber in urban areas.

- 1.1 Last Mile: Pole Replacements
- 1.2 Middle mile: Fiber network into urban areas
- 1.3 Last mile: Fiber to the premise in unserved urban areas
- 1.4 Last mile: Urban 5G mesh network
- 1.5 Middle Mile: Fiber network into rural areas
- 1.6 Last Mile: Fiber to the premise in unserved rural areas
- 1.7 Evaluate resiliency of public safety services reliant on mobile broadband

Infrastructure-related strategies are recommendations based on the gaps assessment and will need to be validated by engineers



Low Affordability & Low Adoption

Central and south High Point and south and east Greensboro

Characteristics: Primarily in urban areas facing socio-economic barriers with special consideration for public housing authorities

- 2.1 Partner with Kramden Institute for digital device refurbishing / donations
- 2.2 "Gap" grant program and "one stop" application assistance
- 2.3 Digital Navigators
- 2.4 Digital Inclusion Nodes
- 3.1 Free / Discounted internet for public housing authorities (PHAs)
- 3.1a 5G campus network for PHAs
- 3.1b Fiber internet access for PHAs*

*3.1a and 3.1b targeted recommendations pertain to options for accomplishing recommendation 3.1

Potential KPIs

The state has set forward several goals to address the digital divide. While Guilford County already has achieved or is close to some of the state goals**, county stakeholders should consider measuring progress towards the following:

85% Raising the percentage of households with high-speed internet subscriptions from ~76%† to 85% by 2025

95% Raising the percentage of households with a connected computing device from 88%† to 95% by 2025

85% Percentage of eligible households enrolled in Affordable Connectivity Program (ACP) and successfully receiving service (currently ~31%‡) by 2025

Note: The task force can develop additional KPIs for projects as part of strategy implementation

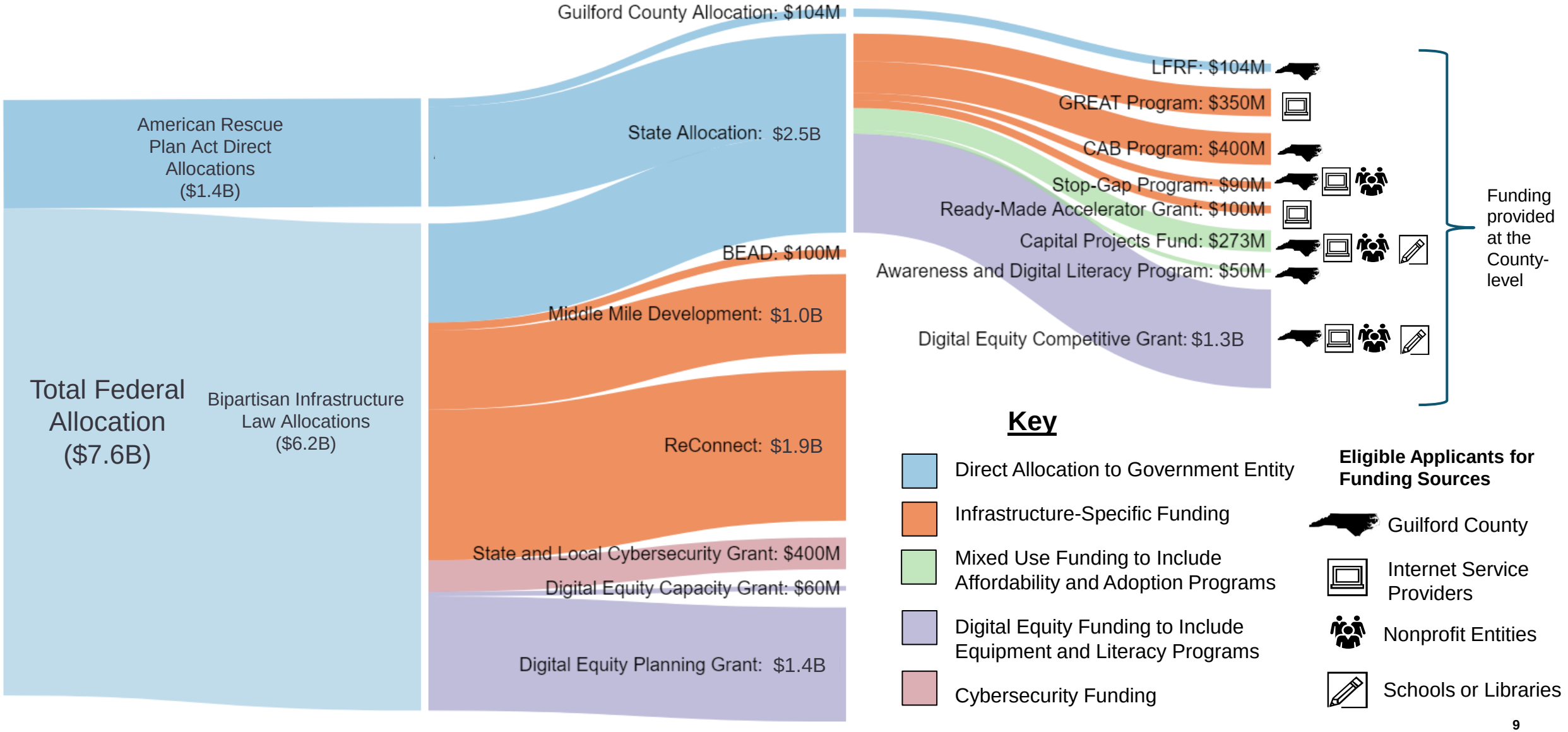
**See p.20

†Source: ACS 5-yr 2019 data

‡Estimated using Emergency Broadband Benefit enrollment data from Nov. 2021 and estimate of eligible population based on Medicaid enrollment divided by average household size

Federal Funding Breakdown

Between state investments and direct allocations, there is roughly **$7.6B** available from ARPA and BIL for broadband projects. All dollar amounts are represented at the full allocation amount unless specified.



Key

- Direct Allocation to Government Entity
- Infrastructure-Specific Funding
- Mixed Use Funding to Include Affordability and Adoption Programs
- Digital Equity Funding to Include Equipment and Literacy Programs
- Cybersecurity Funding

Eligible Applicants for Funding Sources

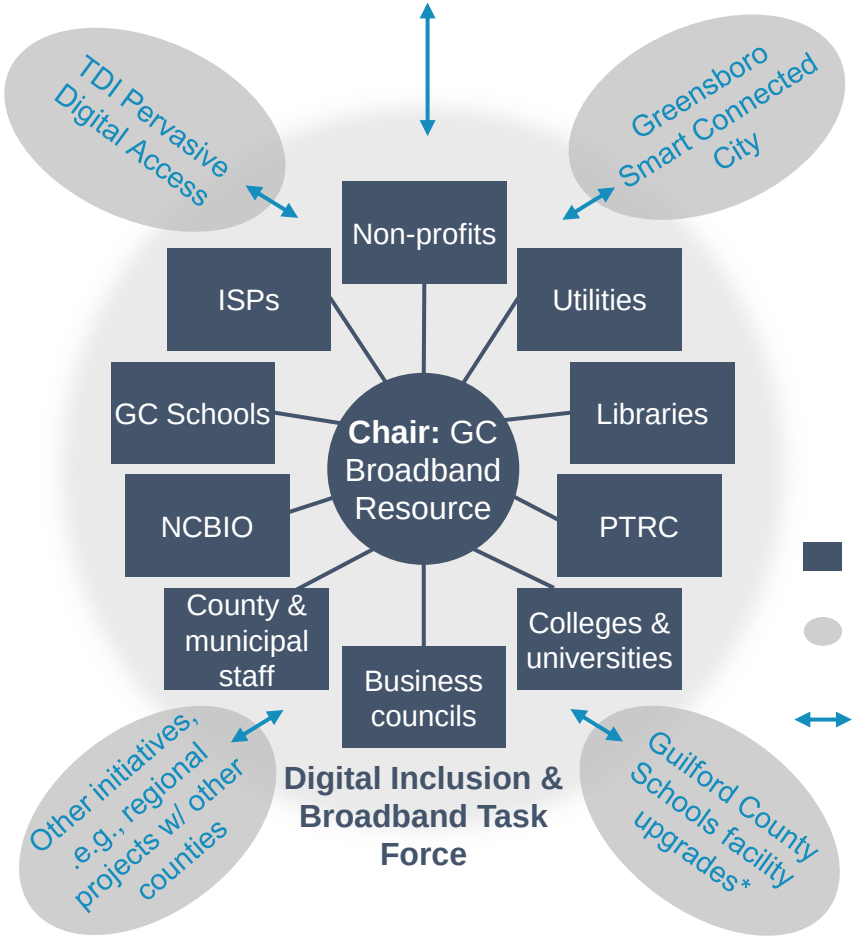
- Guilford County
- Internet Service Providers
- Nonprofit Entities
- Schools or Libraries

Action plan and recommended steps for overarching strategies

Overarching strategies *(Note: subject to Board approval*)*	Months 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26+
1) *Dedicate a centralized broadband resource to lead efforts* 1a. Identify available resource or hire new dedicated FTE(s) 1b. Transition resource to lead Broadband Taskforce and oversee strategy implementation 1c. Resource serves as central hub for strategy implementation 1d. Evaluate additional broadband resources necessary to support implementation	1a. Hire																									
		1b. Onboard and Transition																								

Guilford County's efforts to adopt and execute on the Broadband Strategy will be advised by the Digital Inclusion & Broadband Task Force

Decision-making authorities, e.g., City councils, Board of Commissioners, State representatives, School/college boards



Key

- Task Force members
- Selective example of broadband-relevant initiatives
- Information flow

Digital Inclusion & Broadband Task Force

Purpose:

- Advises and provides guidance to decision-makers,
- Promotes knowledge-sharing, and
- Coordinates efforts for implementing different elements of the Broadband Strategy and additional broadband initiatives that may be external to the strategy

Roles:

- Chaired by dedicated Guilford County broadband resource who acts as the main liaison with other initiatives, administrates, and performs other coordinating requirements including with broader region
- Individual members may become functional leads depending on strategic objective, e.g., technical vs education or training focused-projects

Key responsibilities:

- Sharing priorities and perspectives from respective organizations,
- Sharing data and knowledge exchange,
- Championing broadband investment,
- Gaining buy-in from key stakeholders,
- Elevating important and time sensitive information to decision-making authorities

Note: Additional details on the Task Force can be found on p. 84-85

*Pending school bond referendum

Action Plan Detail: Checklist for Strategy Implementation

Guilford County can take immediate action to begin implementation of Overarching and Targeted Strategies in the following ways

Strategy Support

- ❑ Determine resource allocation and/or hire for dedicated FTE(s) to oversee strategy execution and lead Task Force
- ❑ Stand up Digital Inclusion & Broadband Task Force

Strategy Evaluation

- ❑ Begin initial introductions and conversations with ISPs and nonprofits on partnerships
- ❑ Begin conversations with municipalities and other partners on potential project service areas
- ❑ Evaluate and select preferred Targeted Strategies to implement as pilot programs

Funding

- ❑ Identify currently available funding sources that the County would like to pursue for each chosen strategy
- ❑ Begin gathering information on potential service areas using the GREAT Grant requirements as a model