Broadband Breakthrough: Kick-off Meeting

January 26, 2023

Welcome

Kelsey Bensch
Heartland Forward

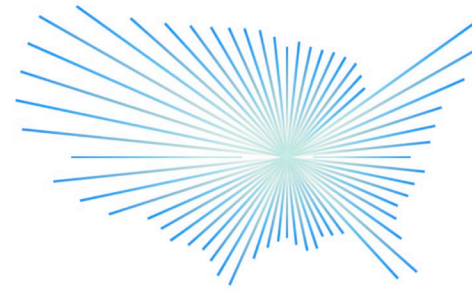**Adrianne Furniss**
*Benton Institute for
Broadband & Society*

BENTON INSTITUTE
for BROADBAND
& SOCIETY

CONNECTING
THE HEARTLAND

UTEXTENSION
INSTITUTE OF AGRICULTURE
THE UNIVERSITY OF TENNESSEE

TN Department of
Economic &
Community Development

Today's Agenda

- 8:30 Welcome
  - Adrianne Furniss, Benton Institute for Broadband & Society

- 8:35   Community introductions, Community Team Leader

- 8:55   Community Breakout Rooms
  - Name, Affiliations, "What is your broadband story?"

- 9:15   Accelerate Overview, Broadband 101, Digital Equity
  - Bill Coleman, Benton Institute/Community Technology Advisors

- 10:20 Community Breakout Sessions
  - Logistics
  - Internal communications
  - Additional stakeholders

- 10:30   Adjourn
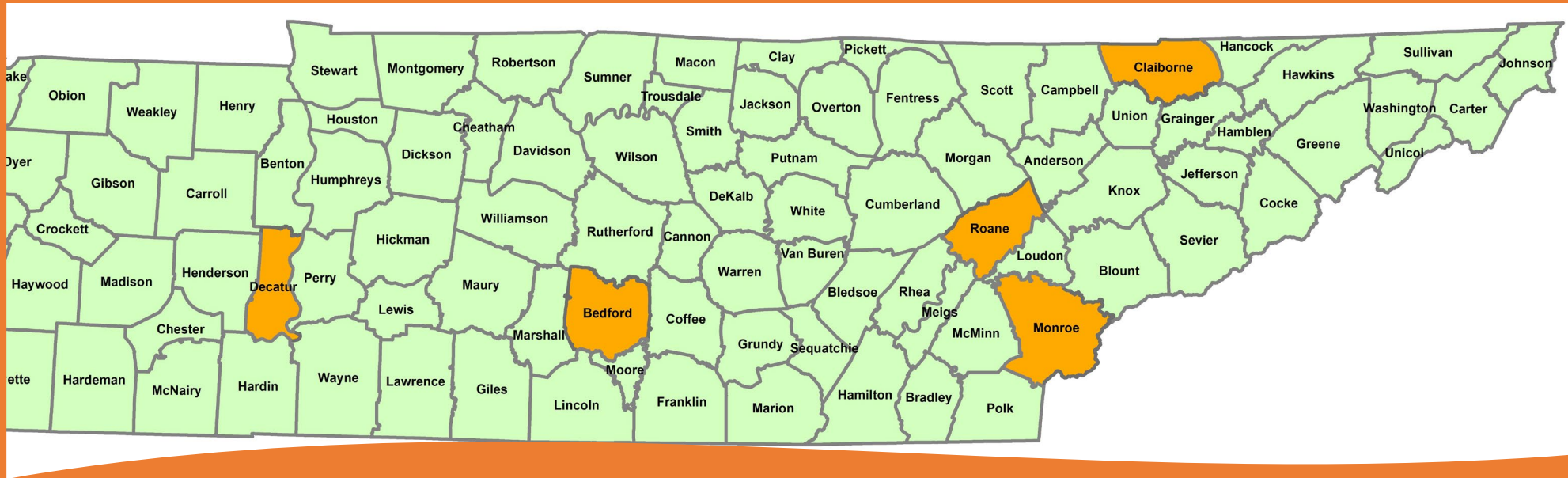
Community Introductions

- Who is on your team?
- Tell us one fun thing about your county community.
- Tell us why you joined the Accelerate Program.

Tennessee Broadband Accelerate

Bedford County

Claiborne County

Decatur County

Monroe County

Roane County

Get to Know Your Team Using Breakout Rooms

- Name
- Community Role & Connections
- What is your own personal "broadband story?"

- Assignment
  - Identify one community-specific need for broadband.

Program Overview

Bill Coleman

Benton Institute/Community Technology Advisors

Determine, pursue and achieve the best possible broadband solution for your community.

Program Purpose

A guided, self-help, four-month broadband planning process empowering community teams meeting weekly and undertaking critical information gathering and strategy development activities.

Approach

Process Phases

Leadership Recruitment and Education

Information Gathering

Vision Development/Consensus Building

Opportunity Analysis

Reporting

Project Development

Leadership Recruitment and Education

Team Membership

- Bigger team is better
- Variety of knowledge and skills
- Community connections
- Core team and affiliates

Team Education

- Shared learning experiences
- Resource materials
  - Webinars – live and archived
  - Web resources
  - Tours
- Active engagement in information gathering phase

Information Gathering

Surveys

- Community use surveys
- Speed test data

Key customer focus groups - optional

- Residents
- Businesses
- Anchor institutions
- Agricultural sector

Community Broadband Summits –Week of June 19

Provider interviews

- Existing providers
- Prospective providers

Maps and GIS Tools

- Tennessee Broadband maps
- Speed test data
- Grant eligibility mapping
- New FCC maps (limited use)

Vision Development & Consensus Building

Take the time for hard conversations!

Understand the ramifications of each word in your vision statement.

Possible trade-offs require consideration

Opportunity Analysis

What are the best opportunities for provider partnerships?

Which funding strategies are most applicable to your community?

Are you prepared to be a good partner?

What is our Plan B?

Report to the Community

Share your vision and strategy early and often to build community consensus.

Identify community objections early.

Utilize public forums for community outreach

- Regular county board meeting updates
- Host broadband-focused meetings
- Attend and seek input at other community meetings

Present findings and recommendations

Recruit additional champions on an ongoing basis

Project Development

FAST OR SLOW

COMPREHENSIVE OR PIECEMEAL

STRAIGHT-FORWARD OR REQUIRE NEW STRATEGIES AND MULTIPLE ATTEMPTS

Timeline Benders

Provider announcements

Grant cycles/other funding opportunities

Local politics

Staffing resources

Calendar – Wednesday mornings 8:30 – 10:30 CDT

|		
April 26	On-Site Orientation	Successful program implementation – highlight ag engagement in process, partners, etc. Significant focus on community survey/speed test
May 3	**Cohort**	**Program Overview Broadband 101 – Broadband Digital Equity**
May 10	Cohort	Broadband Surveys, Speed Test
May 17	Cohort	Broadband Mapping,
May 24	Cohort	Setting the Vision/Goals/Desired Outcomes
May 31	Cohort	Coalition Building/ Communicating the Vision
June 7	Cohort	Fiber Optic Overview, including middle mile/open access considerations
June 14	Cohort	Wireless Overview
June 19-23	Onsite Community Visits	Local Broadband Summits, focus groups, community meetings, provider meetings, press conferences, community tours,
June 28	Cohort	Federal & State Financing
July 5	Cohort	Feasibility Studies
July 12	Cohort	Ownership and Partnership Models
July 19	Cohort	Other financing approaches - Local Financing Powers, investment capital, other?
July 24-August 4	Individual Community Meetings	Community Planning
August 9	Cohort	Community Presentations

Broadband 101
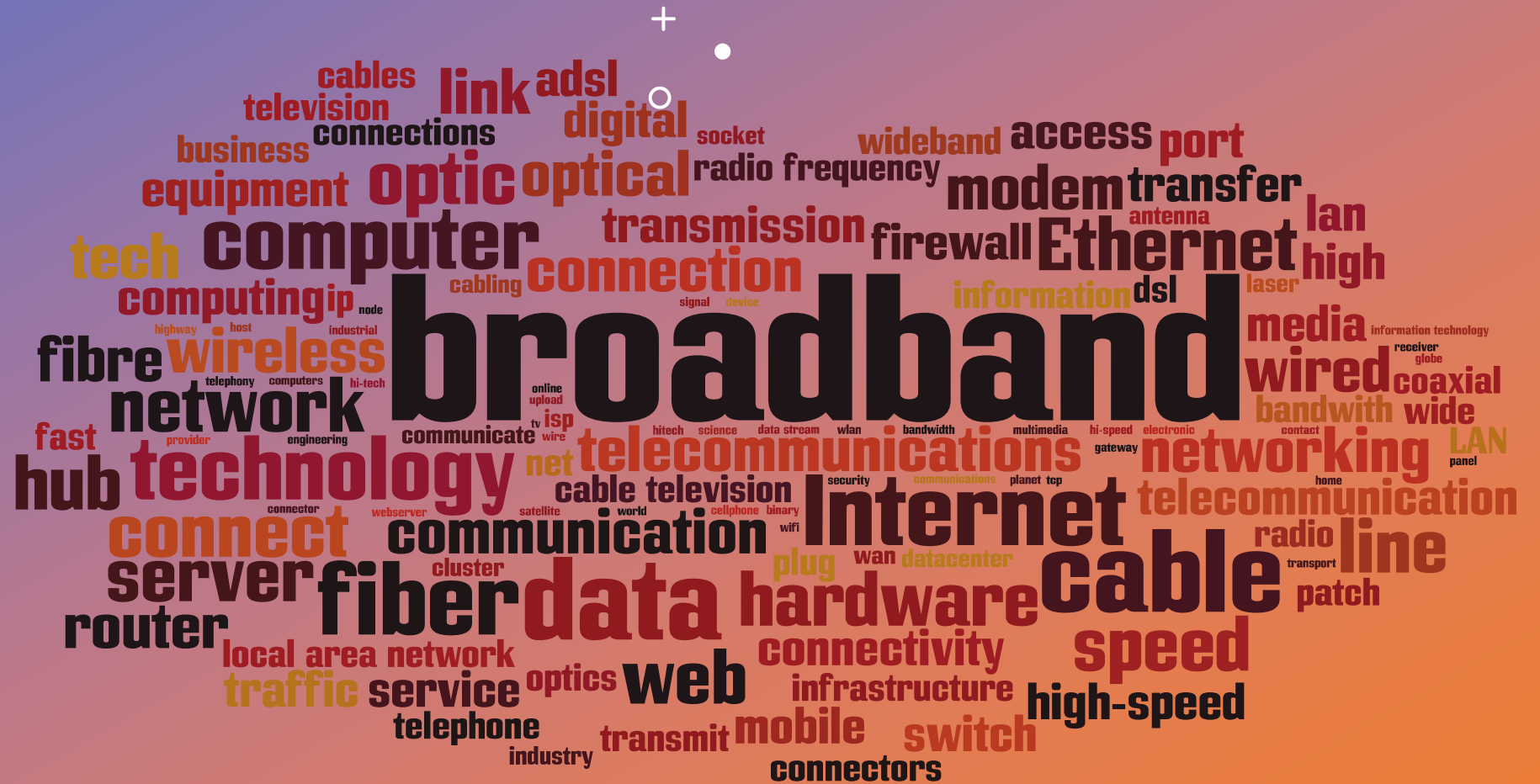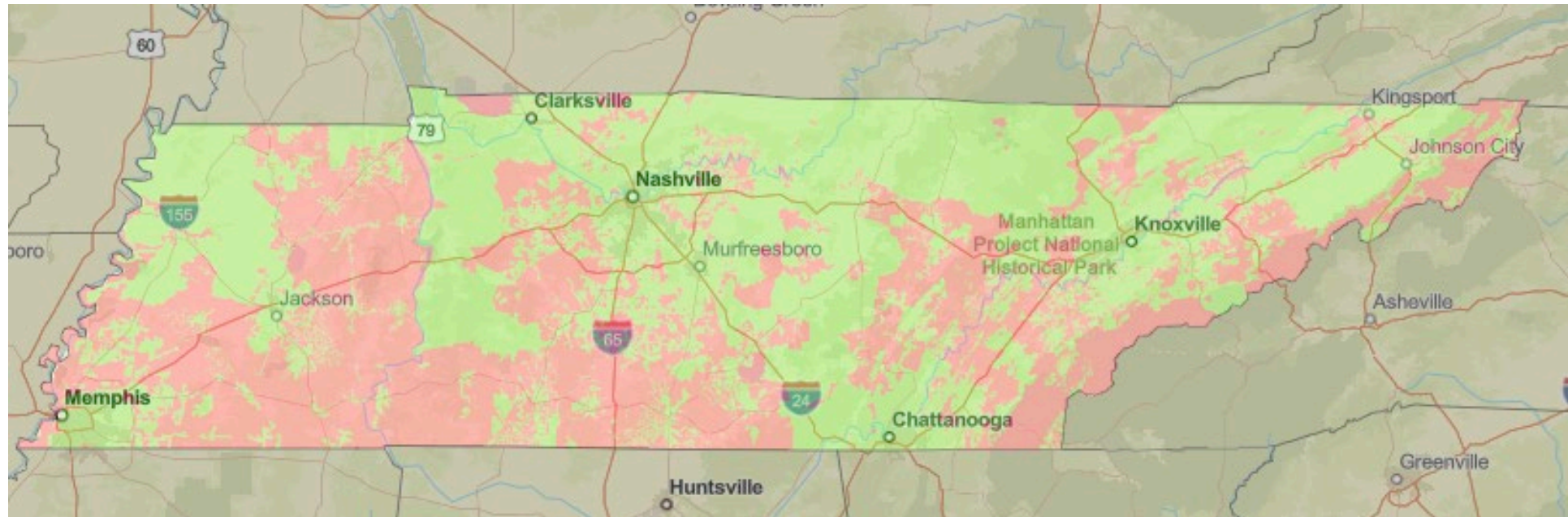
Assessing Broadband Technologies
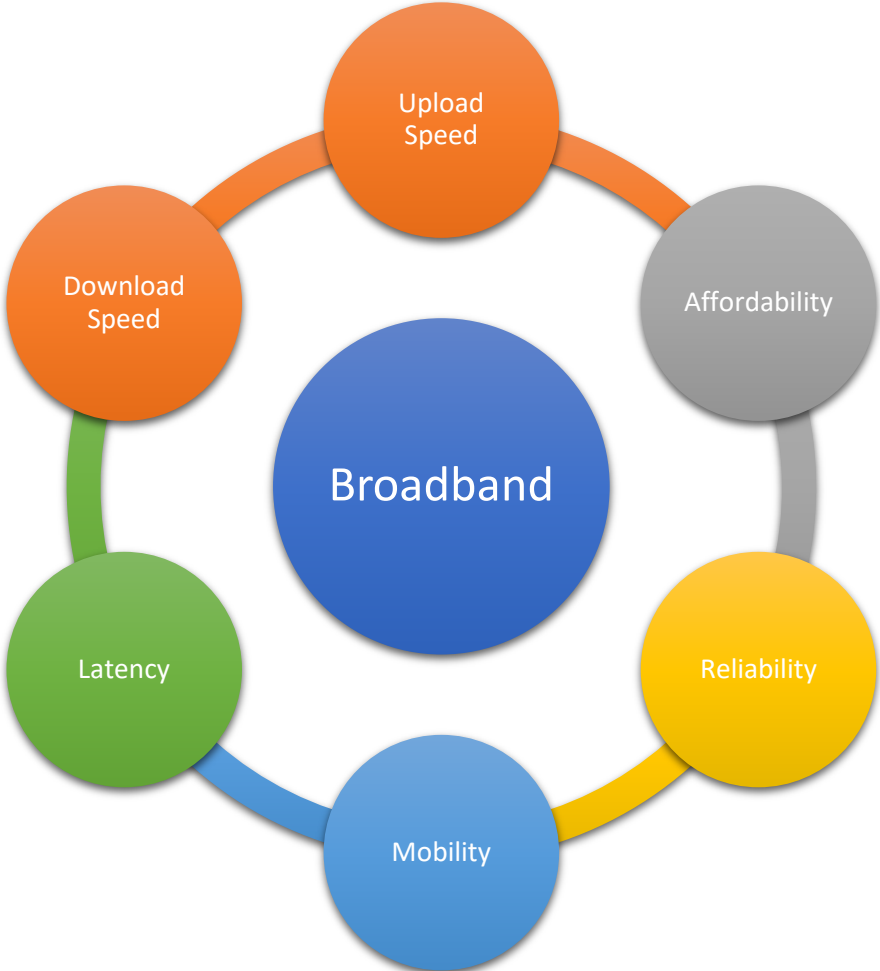
Rural Challenges

- Low population density
- Costs vary by soils and geography
- Competitive and complicated grant processes
- Incumbent provider resistance
- Poor broadband maps
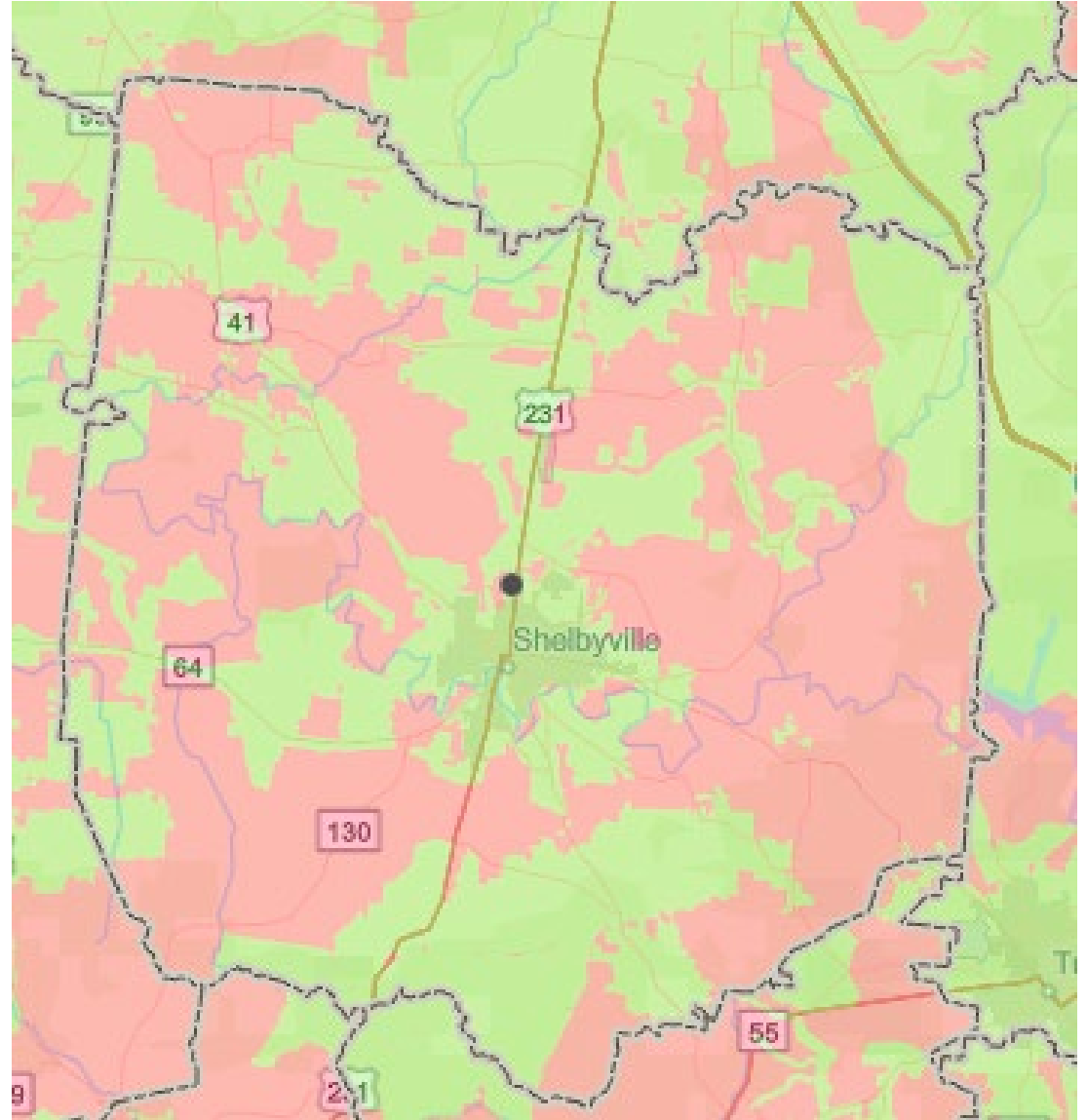- Digital equity considerations
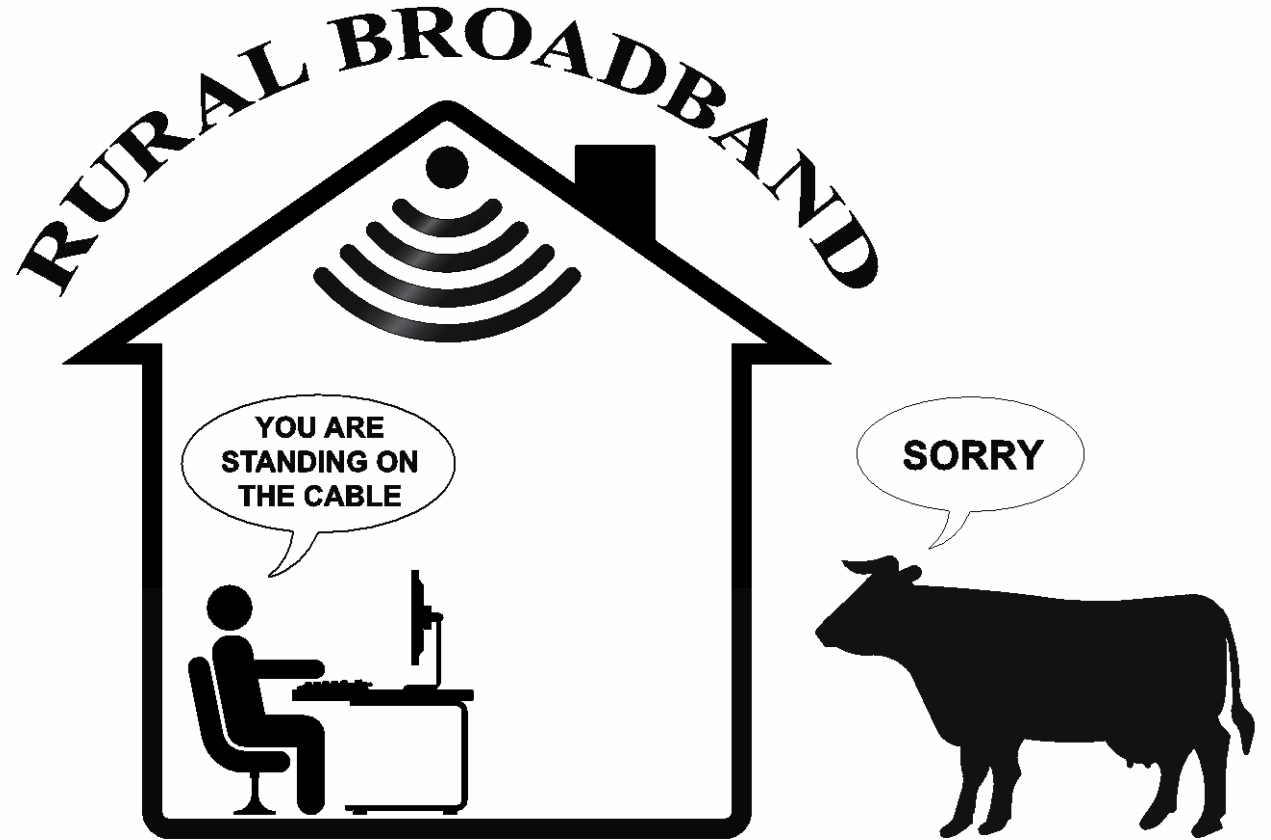
Tennessee
Broadband Maps
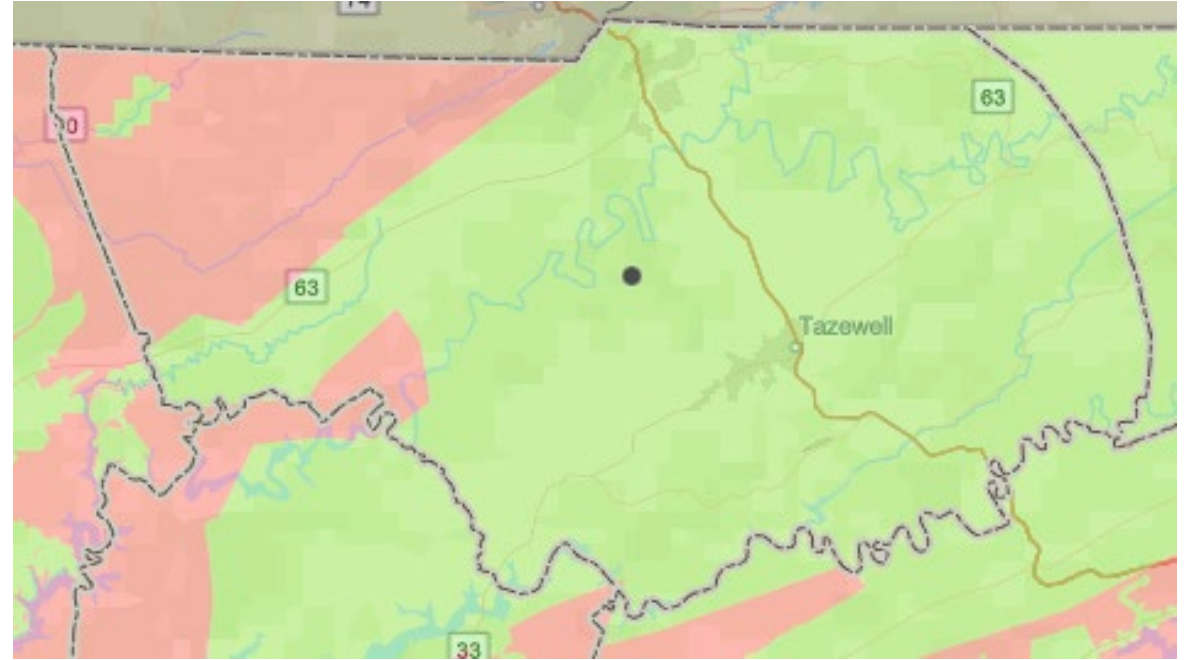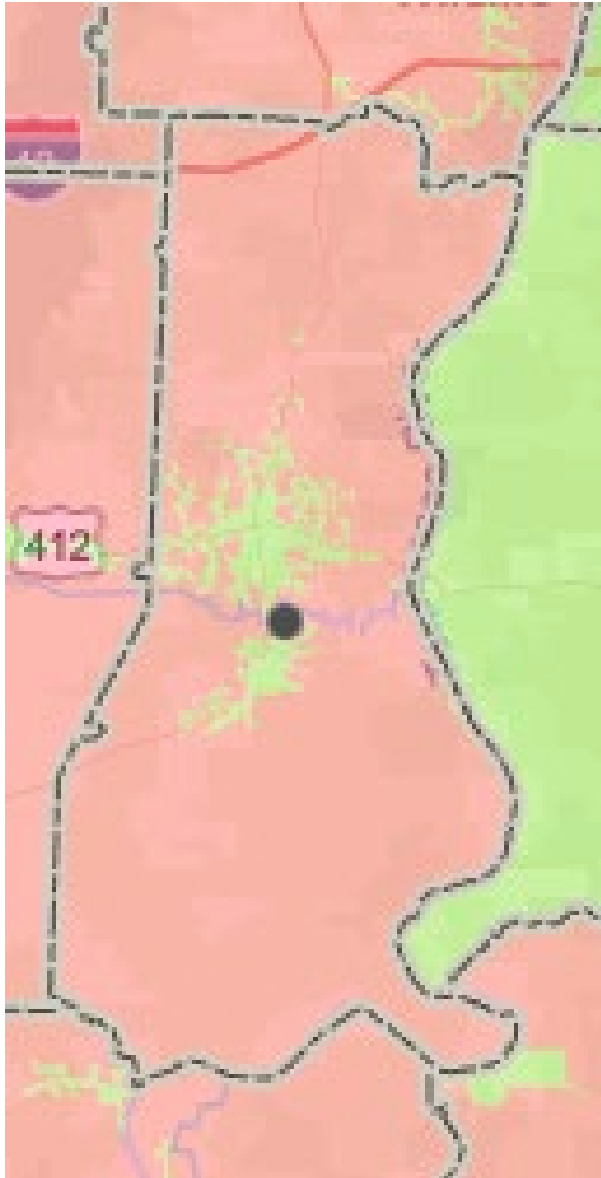### (Areas with less than 100 Mbps/20 Mbps)
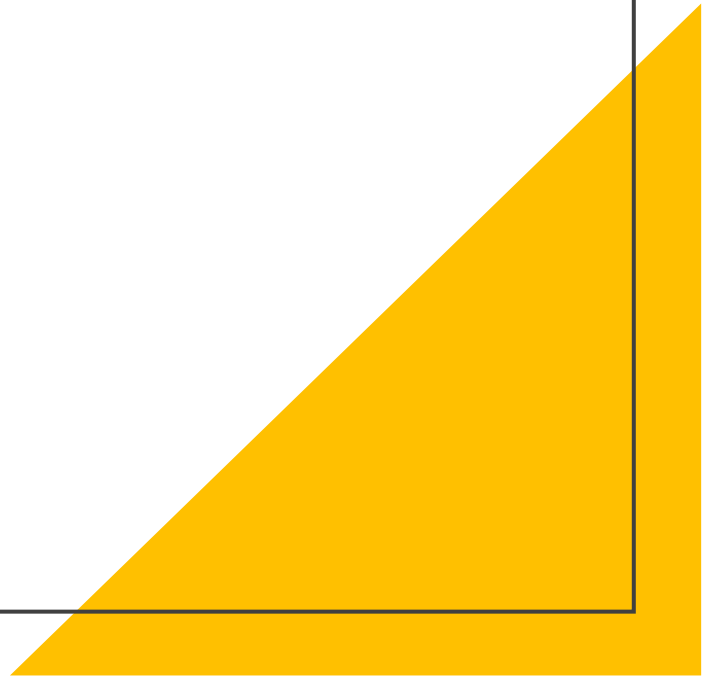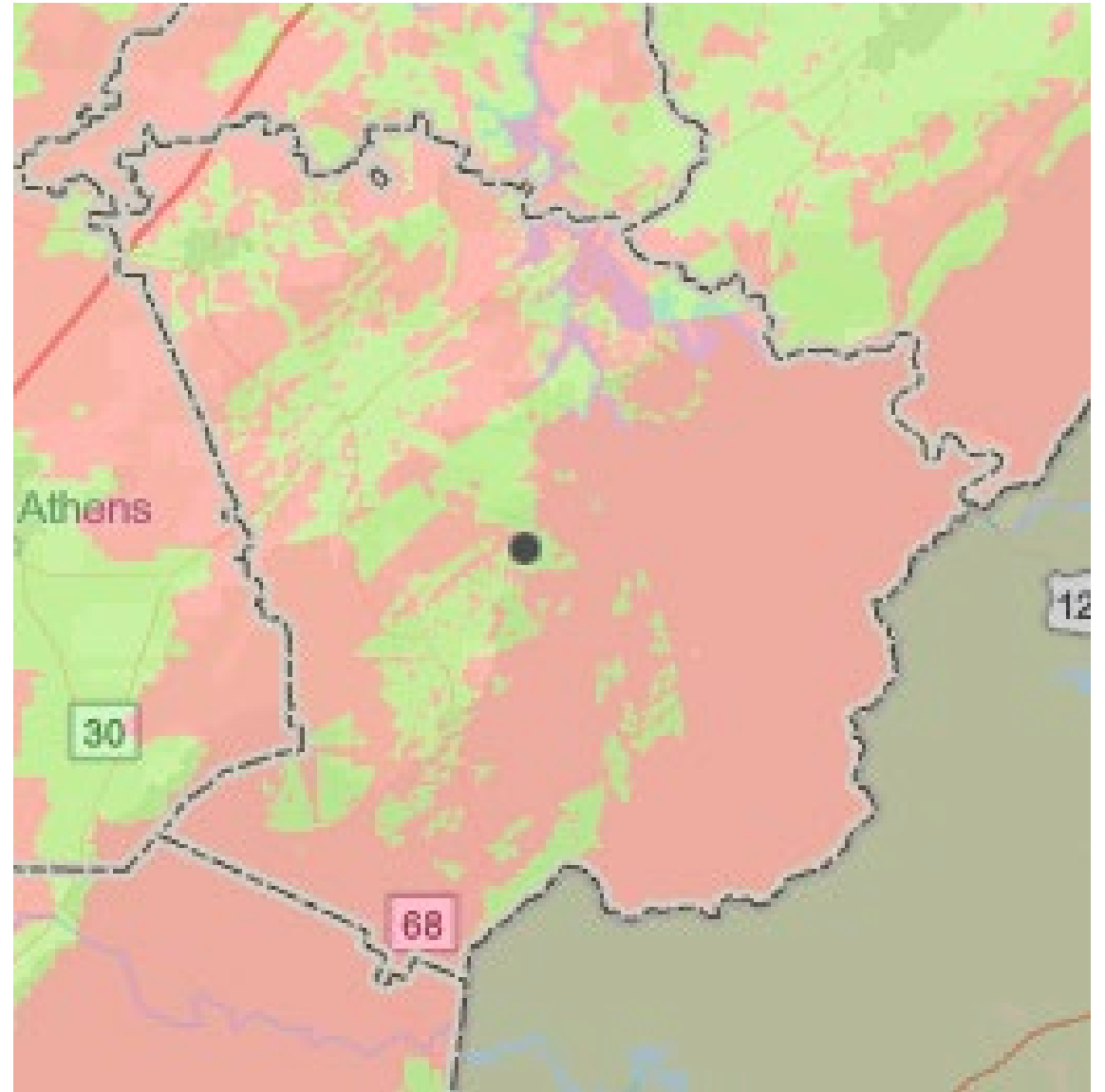
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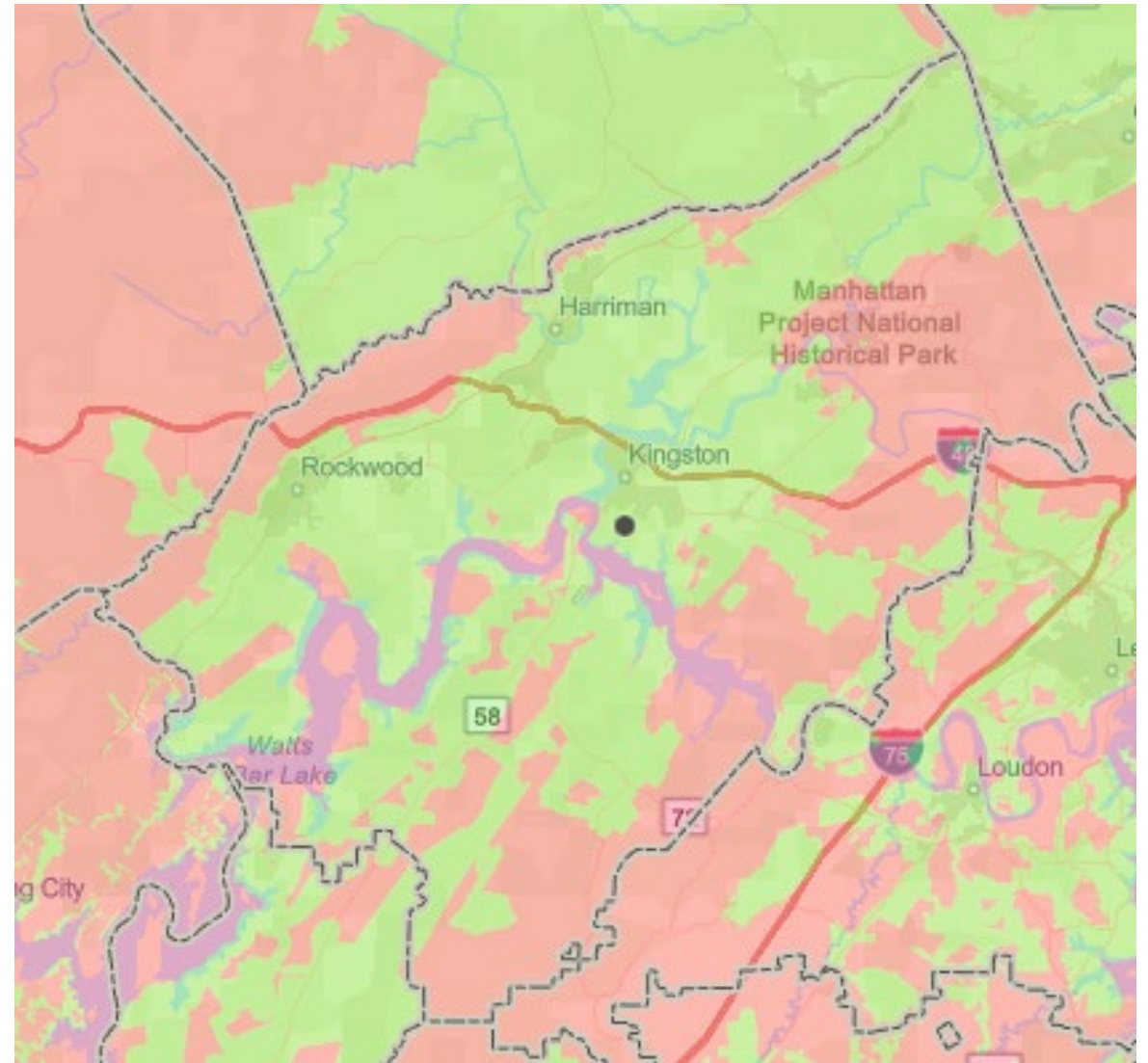
Government Goals and Standards

- FCC standard
  - Less than 25 Mbps/3 Mbps is unserved
- Illinois Broadband Goals
  - 25 Mbps/3 Mbps by 2024
  - 100 Mbps/20 Mbps by 2028

The Wireless Marketplace

- Fiber-fed fixed wireless can readily deliver 100 Mbps/50 Mbps and higher
- Providers promising Gigabit
- With cellular, it all depends!
- Low earth orbit (LEO) is a huge advancement

The Wired Marketplace

- 1 Gbps/1 Gbps (1000 Mbps) services widely available via fiber optic providers; 10 Gbps now available
- 1 Gbps/50 Mbps services widely available via cable companies
  - Cable companies increasingly shifting to FTTH
- Antiquated copper "twisted pair" DSL likely to have less than 25 Mbps/3 Mbps
  - ATT has suspended sales of new DSL services in both urban and rural areas

Fiber to the Premise/Home/x/

Advantages

- Almost unlimited capacity
- Symmetrical service
- Best reliability
- Low cost to maintain
- Long life
- "Future-proof"
- Fiber carries wireless most of the way

Disadvantages

- Relatively expensive to build
- Takes time to build

DSL Service over Copper Lines

Advantages

- Telephone network is in place almost everywhere
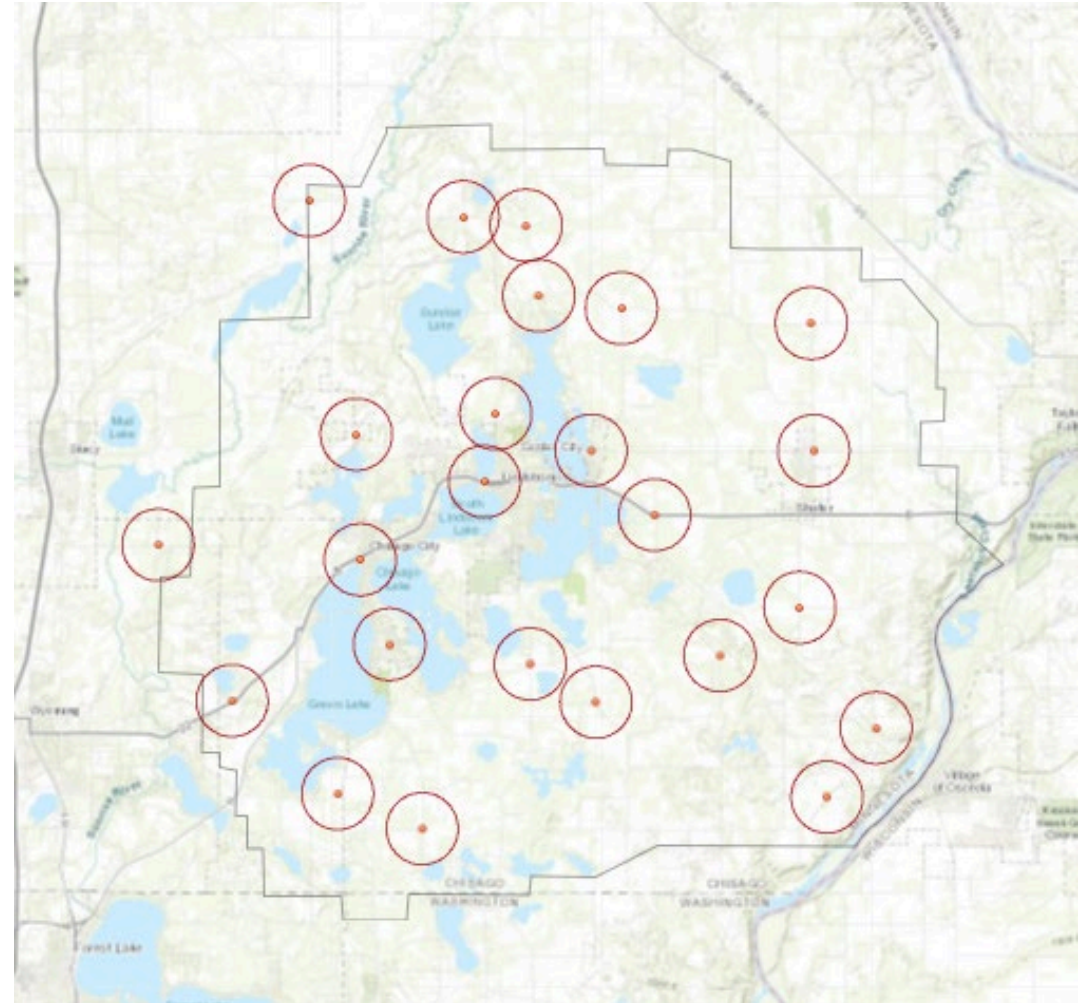- Performance can be enhanced by running fiber optic lines deeper into the network (Fiber to the Node)
- Service can be inexpensive

Disadvantages

- Most copper networks are quite old and poorly maintained
- DSL is extremely distance limited
  - 50 Mbps within 1,000 ft of electronics
  - 25 Mbps within 3,000 ft of electronics
  - 10 Mbps at 10,000 ft of electronics

Cable Networks

Advantages

- Use of fiber to nodes serving 100 – 250 homes
- Download capacity of 1 Gbps
- Widely available
- Profitability has enabled regular upgrades using DOCSIS 3.1
- Promise of future 10 Gb symmetrical service over fiber/coaxial
- Some "cable" companies now deploying FTTX

Disadvantages

- Industry traditionally committed to coaxial cable last mile
- Non-Symmetrical
  - Upload speed on Gbps service limited to 50 Mbps
  - Upload speed generally limited to 10-20% of download speed
- Companies generally unwilling to invest in rural countryside without significant subsidy

Cellular Services

Advantages

- Mobile service
- Fully implemented 4G service
- Service is available in most locations
- Average Ookla speeds as of 12/22
- By provider
  - T-Mobile 151 Mbps/12 Mbps
  - Verizon 69 Mbps/9 Mbps
  - ATT 66 Mbps/8 Mbps
- 5G Technologies
  - Verizon MM wave
    - Gigabit over short distance
  - T-Mobile mid-band
    - Longer distance <100 Mb/20 Mb

Disadvantages

- Service not available in all locations
- Relatively expensive
- Data limits/slow-downs

Fixed Wireless

Advantages

- Fiber-fed towers can deliver 100 Mbps/50 Mbps and more
- Improved reliability
- Quick to deploy
- Inexpensive to deploy

Disadvantages

- Ubiquitous coverage is difficult
- Usually requires line of sight
- Trees eat wireless signals
- Equipment must be regularly refreshed and maintained
- Higher installation and operating costs for providers
- Signals weaken with distance

Traditional Geo-Stationary Satellite

Advantages

- Available everywhere
- Speeds improved to 25 /3 Mbps

Disadvantages

- High price
- Low bandwidth caps
- Relatively low speeds
- High latency/delays
- Weather impacts service quality

StarLink
Low Earth Orbit Satellite (LEO)

Advantages

- LEO means latency is diminished
  - Promised to fall to 20 ms
- 50 – 250 Mbps bandwidth
  - 100 – 200 Mbps expected
- Available everywhere

Disadvantages

- Waiting list
- Sign-up cost
  - Residential -$599
  - Business - $2500
- Subscription
  - Residential - $110
  - Business - $500
- Clear view of sky
- Service has declined with added users

Possible Tennessee Outcomes For Your Community

A fully implementable project(s) with identified broadband provider partner(s) and likely financing plan

A conceptual plan with prospective partners and/or financing plan

A need for a broadband feasibility study to include detailed network design, business pro forma and financing plan

A decision to do nothing

Digital Equity

Also Needs Community Attention!

Two Key Definitions

1. Digital Equity: the condition in which individuals and communities have the information technology capacity that is needed for full participation in the society and economy of the United States.

2. Digital Inclusion: the activities that are necessary to ensure that all individuals in the United States have access to, and the use of, affordable information and communication technologies.

Above definitions developed by NDIA and [first published by Benton](#) in 2016!

Digital Equity

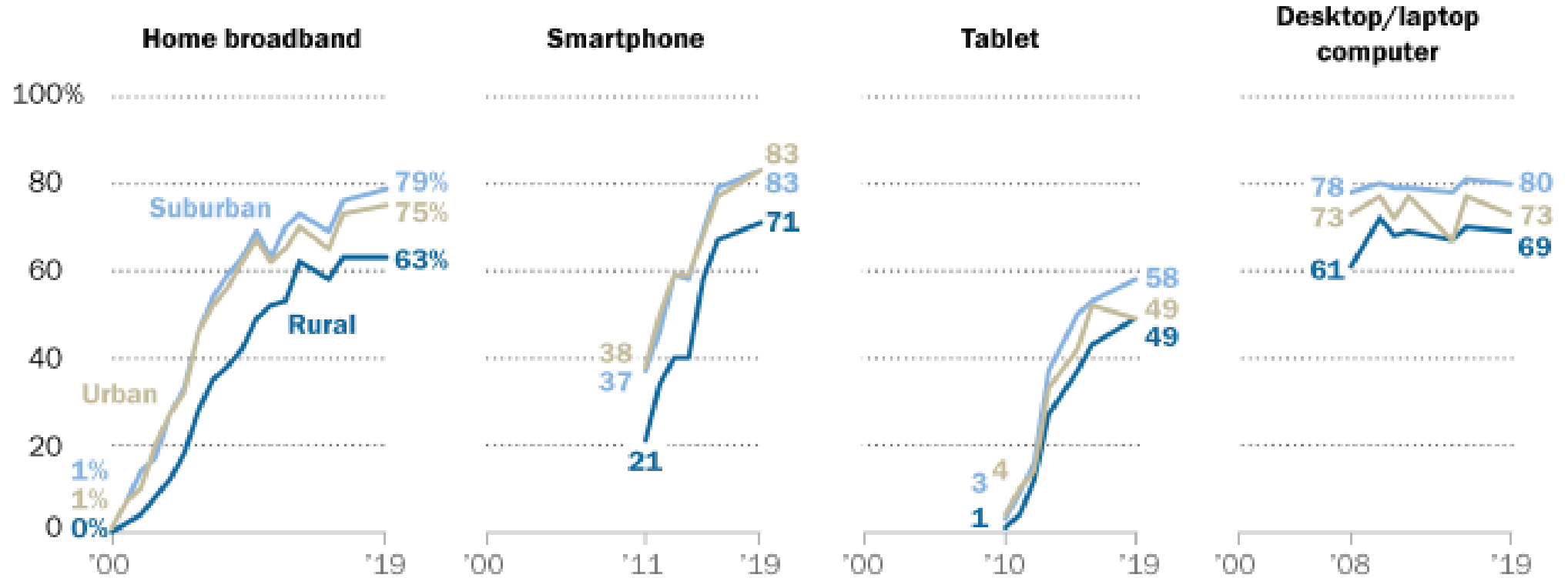| Access	Adoption	Use
Is broadband infrastructure available and adequate?	Are people subscribing to and able to use broadband?	How are institutions, organizations, and businesses utilizing broadband within the community?

Our Nation's Pervasive Digital Divide

- While 98.9% of urban areas have access to basic broadband speed at 25/3 Mbps, only 85.4% of rural areas have access to 25/3 Mbps.
    - That leaves at least 9 million rural Americans without a means to connect to the national economy.[1]

- Less than **half** of the households on rural Tribal lands have access

- Communities of color and low-income Americans are far more likely not to use broadband than are whites and individuals and families with higher incomes

1 Federal Communications Commission, "Compare Broadband Availability in Different Areas" (information request platform), June 2020, https://broadbandmap.fcc.gov/#/area-comparison?ve rsion=jun2020&tech=acfw&speed=100_10&searchtype=county, (100/10 Mbps, excluding satellite and other).

Rural Americans have consistently lower levels of broadband adoption

% of U.S. adults who say they have ...

| Home broadband | Smartphone | Tablet | Desktop/laptop computer |

Home broadband:
- Suburban **79%**
- Urban **75%**
- Rural **63%**
- 1%
- 1%
- 0%

Smartphone:
- 83
- 83
- 71
- 38
- 37
- 21

Tablet:
- 58
- 49
- 49
- 3 4
- 1

Desktop/laptop computer:
- 78 → 80
- 73 → 73
- 69
- 61

Y-axis: 100%, 80, 60, 40, 20, 0

X-axis (Home broadband): '00 — '19
X-axis (Smartphone): '00 — '11 — '19
X-axis (Tablet): '00 — '10 — '19
X-axis (Desktop/laptop computer): '00 — '08 — '19

Subscription and Equipment Costs Outpace What Is Affordable for families

- U.S. broadband price is 3rd highest in the world.
- Studies show that $10/month is the most low-income Americans can afford to pay for broadband.
- 37% of non-broadband users cite the cost of a computer as one of the reasons they do not have broadband at home.
- One-third say they lack the skills they need to successfully navigate digital devices.

Robert Rodriguez/CNET

The broadband gap's dirty secret: Redlining still exists in digital form

Communities that couldn't get mortgage loans in the 1940s are the same areas without fast home internet service today. There's no easy fix.

Adoption Pathway Victories

Formed an Adoption Team/Subcommittee	Convened and Collaborated with Adoption-Oriented Stakeholders	Distributed Computers and Devices	Worked with Broadband Providers to Promote Use of Their Discount Programs
Work to increase enrollment in the Affordable Connectivity Program (ACP)	Investigated and Promoted Alternative Internet Solutions for Apartment Buildings and MDUs	Deployed or Facilitated the Deployment of Public Access Wi-Fi, Including a LIFT Zone	Promoted Existing Training Programs and Learner Resources
	Created Training Programs and Training Resources	Focused on Inclusive Language Environments	Implemented Any Programs Focused on Older Adults

The ACP is a
$30
monthly benefit
for internet service

Benefit goes directly to ISPs, who pass on discount to reduce household service bill

Extras
$75 on tribal lands
$100 for a device

Qualification
Income less than 200% poverty line
Participation in assistance program

Rules
One ACP per household
One member must qualify

Background
Formerly the EBB
$14B appropriation

Below 200% of the Federal Poverty Line

Household Size	48 Contiguous States, D.C., and Territories	Alaska	Hawaii
1	$27,180	$33,980	$31,260
2	$36,620	$45,780	$42,120
3	$46,060	$57,580	$52,980
4	$55,500	$69,380	$63,840
5	$64,940	$81,180	$74,700
6	$74,380	$92,980	$85,560
+1	+$9,440	+$11,800	+$10,860

Participation in an assistance program

- Lifeline
- Supplemental Nutrition Assistance Program (SNAP)
- Supplemental Security Income (SSI)
- Nutrition Program for Women, Infants, and Children (WIC)
- Federal Public Housing Assistance (FPHA)
- Medicaid
- Certain tribal programs
- Free and Reduced Lunch
- Pell Grant
- ISP low-cost plan