Broadband Challenges and Opportunities in Tennessee

Association of County Mayors Annual Conference
August 31, 2021
Overview

• What they learned
  • IPS can help coordinate and identify high impact presentation opportunities

• What they did
  • 7 planning meetings
  • 1 presentation to Association of County Mayors with Broadband Panel Slides (attached)
  • Survey to ~80 mayors and staff mailed physical copy: https://utk.co1.qualtrics.com/jfe/form/SV_dmSdGp26EcR3kNM
  • 1 debrief and long term planning meeting

• Next meeting October 26th at 2:30 PM
## Panelist and Facilitators

<table>
<thead>
<tr>
<th>Name</th>
<th>Title/Contact Details</th>
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</thead>
<tbody>
<tr>
<td>Dr. Jamie Greig</td>
<td>UT Institute of Agriculture (UTIA)</td>
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<tr>
<td>Crystal Ivey</td>
<td>TN Economic and Community Development</td>
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<td>Dr. Matthew Owen</td>
<td>TN Advisory Comm. on Intergov. Relations (TACIR)</td>
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<td>Deb Socia</td>
<td>President/CEO The Enterprise Center</td>
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<tr>
<td>Mark Smith</td>
<td>Miller &amp; Martin PLLC</td>
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<tr>
<td>Charles &quot;Chip&quot; Spann</td>
<td>Connected Nation (Formerly Connected TN)</td>
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<tr>
<td>Dr. Sreedhar Upendram</td>
<td>UT Institute of Agriculture (UTIA)</td>
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<td>Mike Galey</td>
<td>UT Institute for Public Service Facilitator</td>
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<tr>
<td>Danny Norman</td>
<td>UT Institute for Public Service Facilitator</td>
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Next Steps

• How the results can be packaged
  • Broadband Panel Slides (attached)
  • Survey and Subsequent Support

• Could be more engaged at legislative level as positions allow

• Potential Support Roles
  • Accountability plan for stewarding money. For example, the mayors won’t know how they will be required to show how they picked the provider.
  • Help Mayors plan how to leverage incoming fund opportunities
  • No group specifically to do that: this group? Mtas? CTAS? (reference: Mark Smith)
  • RFP template document could be provided to the mayors
  • Help with speed test
  • Support providers (ISPs) as they gather community support.
Sreedhar Upendram, Ph.D.
Community and Economic Development Specialist
Department of Agricultural and Resource Economics
and
Jamie Greig, Ph.D.
Assistant Professor, Agricultural Leadership, Education and Communication
Topic 1: Digital Divide

• Motivation
• Digital Divide Index
• Broadband and wages
• Broadband challenges in Tennessee
• University of Tennessee Extension Programs
Motivation

• Anecdotal evidence of families spending time in McDonald’s parking lots to access internet, so that children can complete homework

• August 2017 Rural Task Force Town Hall Meeting in Maynardville, TN – opinion poll:
  • Broadband access
  • Opioid issues

• Data on broadband access
FCC vs Microsoft data

FCC indicates broadband is not available to 24.7M people

Microsoft data indicates 162.8M people do not use the internet at broadband speeds

Source: Disconnected, The Federal Reserve Bank of Kansas City
Digital Divide Index

- Digital Divide index ranges from 0 to 100
  - An index of 100 indicates highest digital divide

Source: Purdue 2018 Digital Divide Index
Digital Divide Profile

- Tennessee Digital Divide webpage: https://tiny.utk.edu/tnddi
Digital Divide Index Data and Methods

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Description</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrastructure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NBBND</td>
<td>Percent population with no access to fixed broadband</td>
<td>0.3</td>
</tr>
<tr>
<td>NIA</td>
<td>Percent households with no internet access</td>
<td>0.3</td>
</tr>
<tr>
<td>NCD</td>
<td>Percent households with no computing device</td>
<td>0.3</td>
</tr>
<tr>
<td>DNS</td>
<td>Median advertised fixed download speed</td>
<td>0.05</td>
</tr>
<tr>
<td>UPS</td>
<td>Median advertised fixed upload speed</td>
<td>0.05</td>
</tr>
</tbody>
</table>

The infrastructure score/adoption score is calculated based on the following equation:

\[
INFA = NBBND \times 0.3 + NIA \times 0.3 + NCD \times 0.3 - DNS \times 0.05 - UPS \times 0.05
\]

<table>
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<tr>
<th>Variable Name</th>
<th>Description</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Socio-economic</td>
<td></td>
<td></td>
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<tr>
<td>AGE65</td>
<td>Percent of population aged 65 and older</td>
<td>0.25</td>
</tr>
<tr>
<td>POV</td>
<td>Percent of population aged 25 and older with less than high school</td>
<td>0.25</td>
</tr>
<tr>
<td>LTHS</td>
<td>Individuals in poverty</td>
<td>0.25</td>
</tr>
<tr>
<td>DIS</td>
<td>Percent of population with a disability</td>
<td>0.25</td>
</tr>
</tbody>
</table>

The socio-economic score (SE) is calculated based on the following equation:

\[
SE = AGE65 \times 0.25 + POV \times 0.25 + LTHS \times 0.25 + DIS \times 0.25
\]
Library mobile internet hotspot program

• Patrons can check out internet hotspots for 2-3 days free-of-charge
• Compliance with library policy and University of Tennessee Information Technology policy.
• Fill out a short survey on usage, experience and willingness to pay for internet
Library hotspot lending program

• Local public libraries administer the program in collaboration with University of Tennessee Extension

• Internet speed tests – University of Tennessee Extension and librarians
Educational Attainment

- Some school: 10%
- High School/GED: 89%
- College/Associate's Degree: 42%
- Bachelor's Degree: 4%
- Graduate/Professional degree: 13%

Income

- Less than $25K: 80%
- $25K-$50K: 30%
- $50K-$75K: 5%
- $75K-$100K: 2%
- >$100K: 4%
- Prefer not to answer: 52%
In the News

UT Extension Receives Grant to Help Digitally Disconnected Communities

9/12/2010  Tina M. Johnson

University of Tennessee Extension has received a grant to bring mobile hot spots to the most distressed and digitally disconnected communities in Tennessee. Collaborators pictured above are, from left, Sewell Upchurch, UT Extension, Lois Rosenblatt, director of Hancock County Public Library, Pam Lane, assistant director of Hancock County Public Library, Gina Hunter, network services consultant, Dale T., and Jacob Boone, UT Extension director in Hancock County. Photo courtesy Hancock County Public Library. Download Image.
Summary of Library Hotspot Lending Program

• Helped 109 families with children to access internet for school work
• Helped 395 adults in rural communities to access internet
• High interest and demand for internet in rural communities in TN – waitlist of 30+
• Over 90% of users highly satisfied and 84% likely to recommend to family/friends
• Findings from this study - leverage funding with State and Federal agencies
• Opportunities to partner with other libraries, school districts, state parks and healthcare providers
Challenges

• Barriers to broadband expansion: Tennessee is among 18 states in the U.S. that have barriers in developing municipally owned broadband networks

• Population density:
  • Tennessee: 161.3 people per square mile.
  • Metropolitan counties: 252.3 people per square mile
  • Micropolitan counties: 89.5 people per square mile
  • Non-core counties: 44.9 people per square mile.

• Right-of-way or easements: Slow and laborious

• Topography: Presence of hills, valleys and tree coverage

• Low Adoption and use in rural Tennessee: reliable signal and affordability
Digital Inclusion

Community Economic Development

Access & Affordability

Adoption & Use
Baseline Digital Skills like productivity software pay 17% higher wages than nondigital middle-skill jobs.

Advanced Digital Skills such as experience with Information Technology (IT) and Customer Relationship Management (CRM) software, place individuals in the top quarter of all earners.

Nondigital Middle-Skill $15/hour
Baseline Digital Skills $20/hour
Advanced Digital Skills >$28/hour

Source: Burning Glass Technologies
Pikeville Downtown Wifi Program

Pikeville secured an Appalachian Regional Commission’s Downtown Wi-Fi Grant - $75,000

• Offers free internet to residents and visitors for 1 year
• Surveys – business owners, Farmers’ market vendors, local government offices and visitors
Pilot program had 162 rural households provided with internet access in Hancock, Bledsoe and Wayne counties, by partnering with public libraries. Mobile hotspots were checked out more than 13 times per month, on average.

Phase II Program:
- Hancock – 2 hotspots
- Morgan – 2 hotspots
- Cannon – 2 hotspots
- Grundy – 2 hotspots
- Bradley – 11 hotspots
- Polk – 2 hotspots
- Wayne – 2 hotspots
One UT Grant: Digital Literacy

Year 1: 34 Counties
   Eastern Region: 14
   Central Region: 5
   Western Region: 15

Year 2: 34 Counties
   Eastern Region: 10
   Central Region: 14
   Western Region: 10

- Develop digital literacy skills in 68 counties in Tennessee
- Train the trainer approach – librarians, Extension agents, K-12 teachers
- K-12 students and 4-H participants
4-H Tech Change Makers Project

• **Training 4-H Adults and Youth** in capacity development

• Provided digital literacy training at 3 national workshops

• Published a guide book and lesson plans

• 10 Counties in Tennessee
References

• Digital Divide Index – Purdue University
• Broadband Now – Internet access in Tennessee
• Community Networks
• Disconnected – The Federal Reserve Bank of Kansas City
• https://georgia4h.org/programs/focus-areas/agriculture-stem/science-technology-engineering-math/digital-ambassadors/
Questions?

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Topic 2: Broadband 101

Types of home Internet access
- Dial up
- Satellite
- DSL
- Cable
- Fiber

Types of networks
- Privately owned
- Public-Private Partnership
- Open Access Networks
- Municipal Broadband
Dial Up and Satellite
Digital Subscriber Line DSL
Cable
Fiber
Types of Networks

- I-Net: Institutional Network
- P3: Public Private Partnership
- Incremental
- Dark Fiber
- Open Access
- City Wide Retail
- Incumbent/Private Providers
Taking Steps

Dig Once Policy  Climb Once Policy  Permitting
Resources

• Institute for Local Self Reliance: Community Broadband Networks
• Benton Institute for Broadband and Society
• National Telecommunications and Information Administration
• Coalition for Local Internet Choice
• National Digital Inclusion Association
• Broadband Communities Magazine
• Next Century Cities
Contact Information

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Topic 3: Restrictions on Providers
Primary Restrictions on Broadband Providers in Tennessee

These restrictions apply only to municipal utilities and electric cooperatives:

1. Cannot provide broadband outside of their electric service areas, under state law.

2. Cannot use their other funds or assets to subsidize their broadband operations, under both state law and TVA power contracts.

Some exceptions exist; see red text on next slide for examples.
Primary Restrictions on Broadband Providers in Tennessee (continued)

These restrictions apply only to municipal utilities and electric cooperatives:

1. Cannot provide broadband outside of their electric service areas, under state law.
   — Exception made for an electric cooperative that merges with or acquires another entity providing broadband in areas adjacent to or concurrent with that cooperative’s electric territory.

2. Cannot use their other funds or assets to subsidize their broadband operations, under both state law and TVA power contracts.
   — Can lend funds from their other operations to their broadband operations, provided conditions are met.
More on the Territorial Restriction

Things to keep in mind:

- Several bills in recent legislative sessions would have eliminated or eased the existing territorial restriction.
- None of them have passed.
- TACIR’s 2021 broadband report recommends that the General Assembly consider eliminating or easing the restriction if protections are included for electric ratepayers.
- Even if the restriction is lifted, there is no guarantee that municipal utilities or electric cooperatives will be able or willing to expand their broadband service in all cases.
Other Alternatives to Explore

- Are there existing private-sector providers that serve parts of your area or that serve neighboring communities?

- Would a partnership between several providers be an option for serving your community?

- What role can you play in helping providers obtain grants or other subsidies to help them expand coverage to your community?
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Crystal Ivey
Tennessee Department of Economic and Community Development
Broadband Director
Topic 4: Federal and State Funding
“I am committed to ensuring connectivity in every corner of our state as broadband impacts our goals for health care, education, economic development and beyond.”

- Governor Lee
Progress

• Since 2018, ECD has awarded $120M in state and CARES Act funding to make broadband service available to 140,000 Tennesseans in 64 counties.

• Participating broadband providers have included for-profit, non-profit cooperatives and municipal entities deploying technology including fiber-to-the-premise, hybrid fiber/coax cable, and fixed wireless.
Broadband Grant Projects

Marion County

Lincoln County

Robertson County

Hawkins County
Federal Funding

• Appalachian Regional Commission
  • POWER Due Date – not yet announced

• Economic Development Administration (EDA) Public Works and Economic Adjustment Assistance Program
  • Due Date – Rolling

• USDA ReConnect – Round 3
  • Due Date not yet announced
  • FOIA expected in August

• TVA Connected Communities Pilot
  • Due Date September 30
Infrastructure Package

• US Senate has passed infrastructure package, awaiting vote in US House of Representatives

• Current language includes $65 billion for broadband

• Roughly $40 billion will be appropriated to states
  • $100 million minimum per state
  • Remainder distributed by formula and new FCC maps, which are not yet available

• Timeline not yet known
American Rescue Plan

- On August 4, 2021, the FSAG approved $500 million of Tennessee’s ARP FRF for broadband projects.
  - $400 million for infrastructure in unserved areas
  - $100 million for programs to encourage adoption and usage of broadband
- ARP expenses deadline – December 2026
- Awaiting Final Rule from US Treasury to determine specific requirements around eligible uses.
## American Rescue Plan

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Program</th>
<th>Description</th>
<th>Funding</th>
<th>Match</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility</td>
<td>ARP FRF Phase 1</td>
<td>Broadband deployment in unserved areas</td>
<td>$400M</td>
<td>70/30 but can vary based on community needs</td>
</tr>
</tbody>
</table>

  - Two Parts:
    - Distressed County Connectivity Fund targeted to projects providing ubiquitous broadband service to remaining unserved distressed, at-risk counties
    - Broadband Local Match Fund targeted to projects located in political subdivisions supporting project with local ARP funds.

<table>
<thead>
<tr>
<th>Adoption</th>
<th>Residential service subsidy</th>
<th>Temporary subsidy to qualifying households to cover expense of 100mb/100mb broadband service</th>
<th>$50M</th>
<th>80/20</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Community Connectivity</td>
<td>Provide connectivity to community anchor institutions. Support digital literacy programs. Examples may include schools, libraries, public safety buildings, public housing authorities, state offices, or state parks.</td>
<td>$44M</td>
<td>80/20</td>
</tr>
<tr>
<td></td>
<td>Downtown Wi-Fi</td>
<td>Connecting downtown business districts with free public wi-fi</td>
<td>$2M</td>
<td>80/20</td>
</tr>
</tbody>
</table>

| Admin          | 1%-3%                      | Contracted services for mapping, project certification, technical assistance, grants administration and internal program management | $5-15M  | ~$100-140M     |

**Subtotal** $96M ~$20M

**Subtotal** $400M $80-120M

**TOTAL** $500M ~$100-140M
Adoption

• **61.5%** of households with access to broadband have adopted the service according to the US Census Bureau.

• Broadband access without adoption accomplishes little. Communities must be fully equipped to maximize its benefits.

• Affordability, lack of device or other equipment, and digital literacy impact adoption.
FCC EBB

• FCC Emergency Broadband Benefit Program

• Subsidy up to $50 per month and a one-time discount of up to $100 for a computer for qualifying households

• Currently a temporary program, though the Senate has included plans to make permanent in infrastructure package. For now, expect to be available through Fall 2021.

• TACIR produced FCC EBB one-pager with more info.
Mapping

- Per TACIR recommendation, ECD will create detailed broadband map for informing funding decisions and acting as constituent and community planning resource
- ECD’s mapping vendor is Connected Nation
- Timeline
  - June 2021 – Begin
  - Jan 2022 – Draft map available for public input
  - Summer 2022 – Final map available
Next Steps

• Meet with local providers & utilities as soon as possible
• Discuss broadband problem areas or issues within your community
• Encourage providers to submit an application for state’s ARP program – offer to support their required match

• Note - Communities may be required by US Treasury to conduct RFPs to identify provider partner
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Thank you from UT Institute for Public Service

UT IPS would like to thank the Association of County Mayors, Counties, TN Dept of Economic and Community Development, UT Dept of Agriculture and The Enterprise Center for their contributions to this presentation.