

# The Path Forward

## Community Broadband Assessment for Madison County, Virginia

October 2016

# Assessment of Current Broadband

- Community Profile
- Current Reported coverage
- Broadband Demand
- Local Assets
- Review of local policies & fees
- Broadband Needs
- Next Steps

# Before We Begin

## **Positive impacts of broadband on household income:**

- gaining 4 Mbps of broadband increases household income by \$2,100 per year
- re-employment 25 percent faster than traditional searches
- higher employment rates in rural counties

## **Positive impacts of broadband on healthcare**

- enables solutions that help manage chronic diseases, like diabetes and obesity.
- connecting health and broadband sectors is a path to a more connected, healthier locality.

## **Reasons for positive impacts**

- boosts personal productivity,
- enables more flexible work arrangements
- enables home-based businesses as a replacement, or complement to an ordinary job.
- enables people to be more informed,
- better educated and socially and culturally enriched – fueling a faster career path.
- improves access to healthcare



**Sources:** The Appalachian Regional Commission (ARC) Broadband Planning Primer Toolkit  
<https://www.arc.gov/images/programs/telecom/ARCBroadbandPlanningPrimerToolkit.pdf>  
Connect2HealthFCC: <https://www.fcc.gov.edgekey.net/health/maps>

# The Economics of Broadband Deployment?

$$\text{Profit/Sustainability} = \text{Revenue} - \text{CapEx} + \text{OpEx}$$

How do we make the math work for sustainability & future upgrades?

How do we entice the private sector to invest?

INCREASE REVENUES 	LOWER COSTS 
<b>Adoption and Demand</b>	<b>Local Assets/Infrastructure</b> What you have that might be shared
<b>Population Density</b>	<b>Policies &amp; Fees</b> Reduce or eliminate fees for partners Streamline permitting
<b>Community Anchor Institutions</b> Residents, businesses, government facilities, healthcare	<b>Funding Options</b> Public & Private Investments

\*Red indicates variables local governments can affect

Broadband Perspective

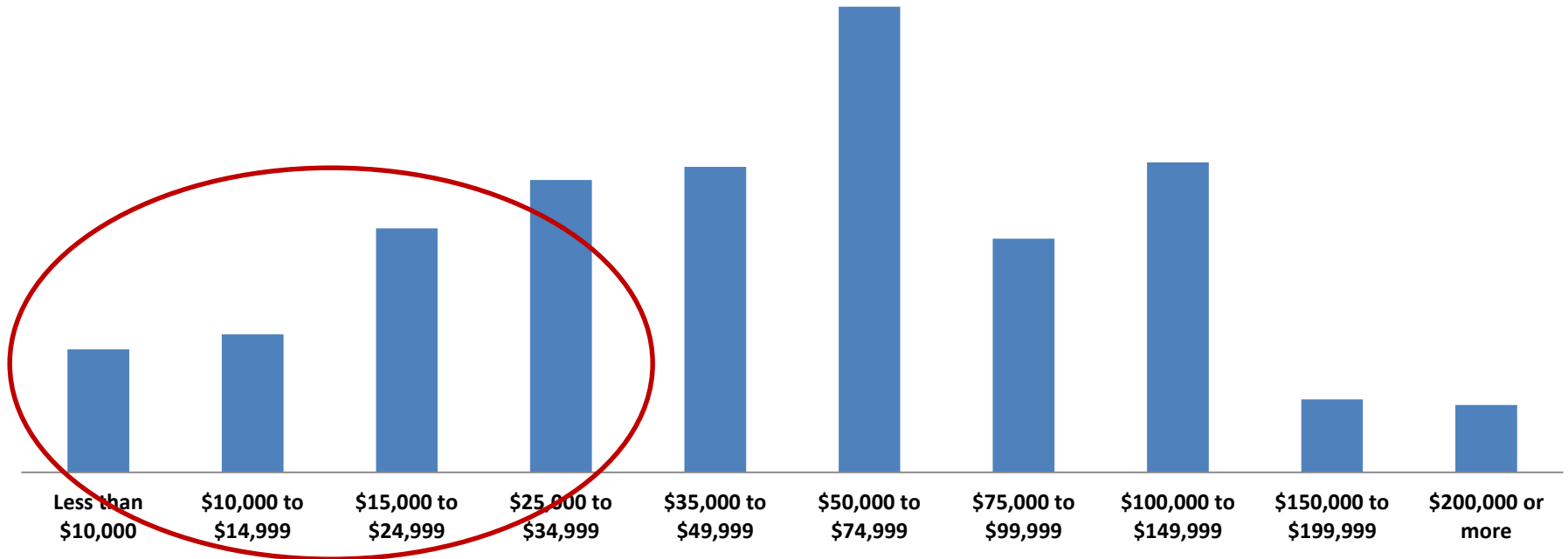
# COMMUNITY PROFILE

SOURCE: [HTTPS://WWW.CENSUS.GOV/ACS/WWW/DATA/DATA-TABLES-AND-TOOLS/DATA-PROFILES/2014/](https://www.census.gov/acs/www/data/data-tables-and-tools/data-profiles/2014/)

# Household Income

Median household income: \$51,641

Total Occupied Households: 5,093



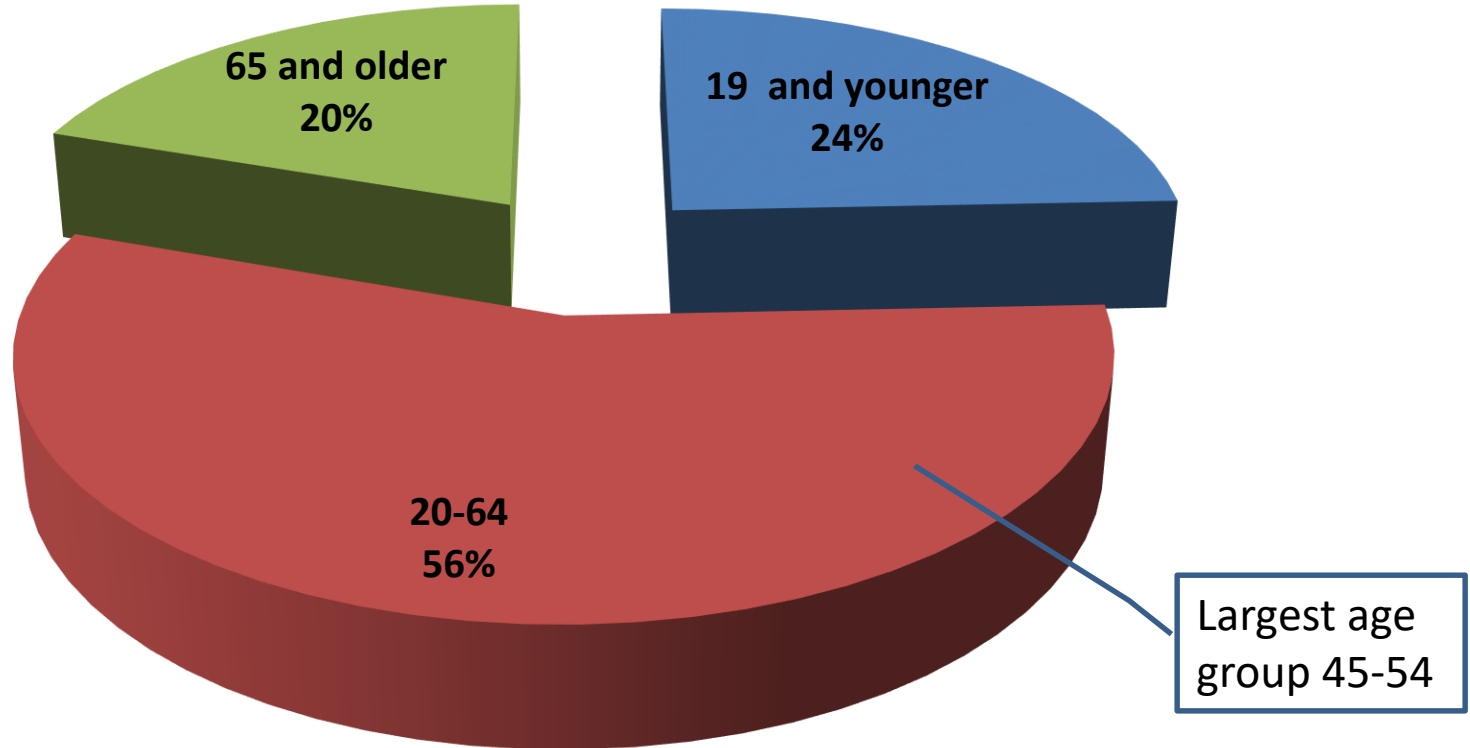
Take away: 35 % may have affordability challenges

# Age and Population Groups

## Madison Population by Age

Median Age: 45.1

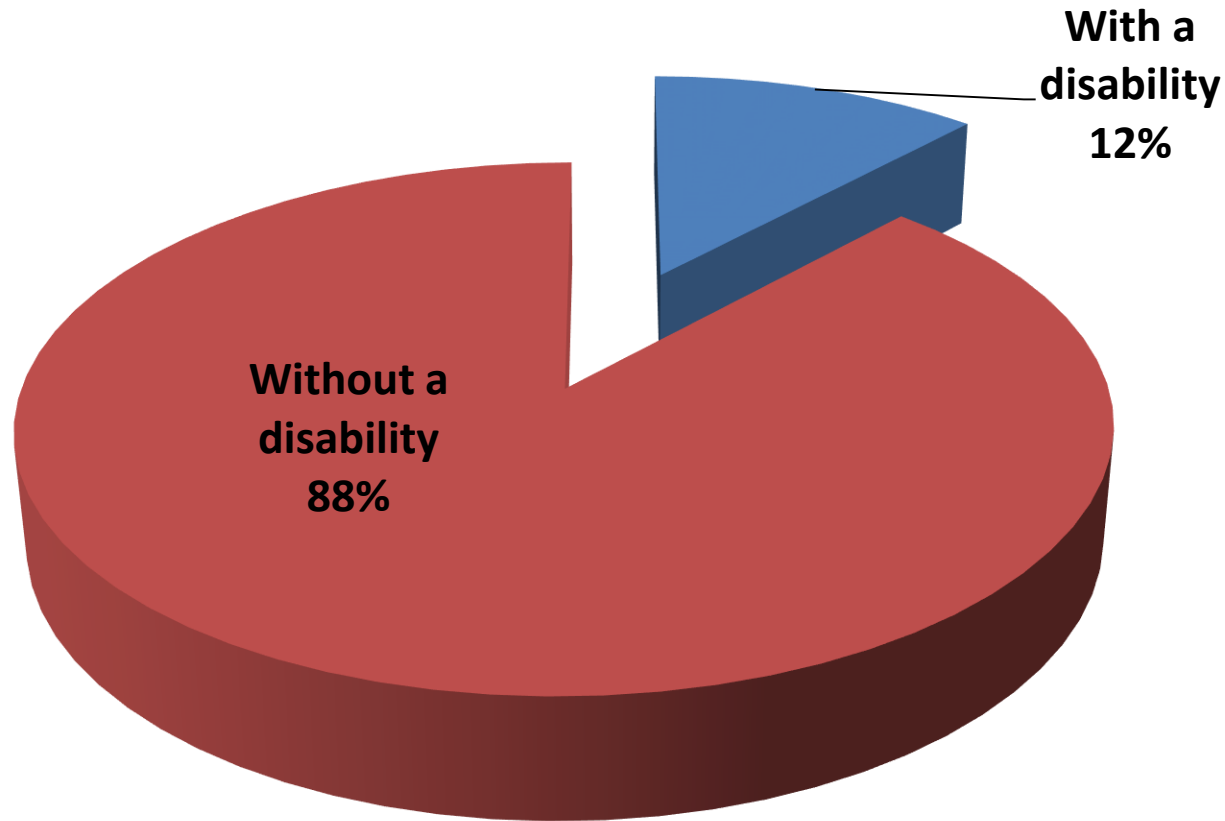
Total Population: 13,208



Take away: Good News – most of the population are considered technology adopters.

# Population with Special Broadband Needs

Madison Population Disability Status

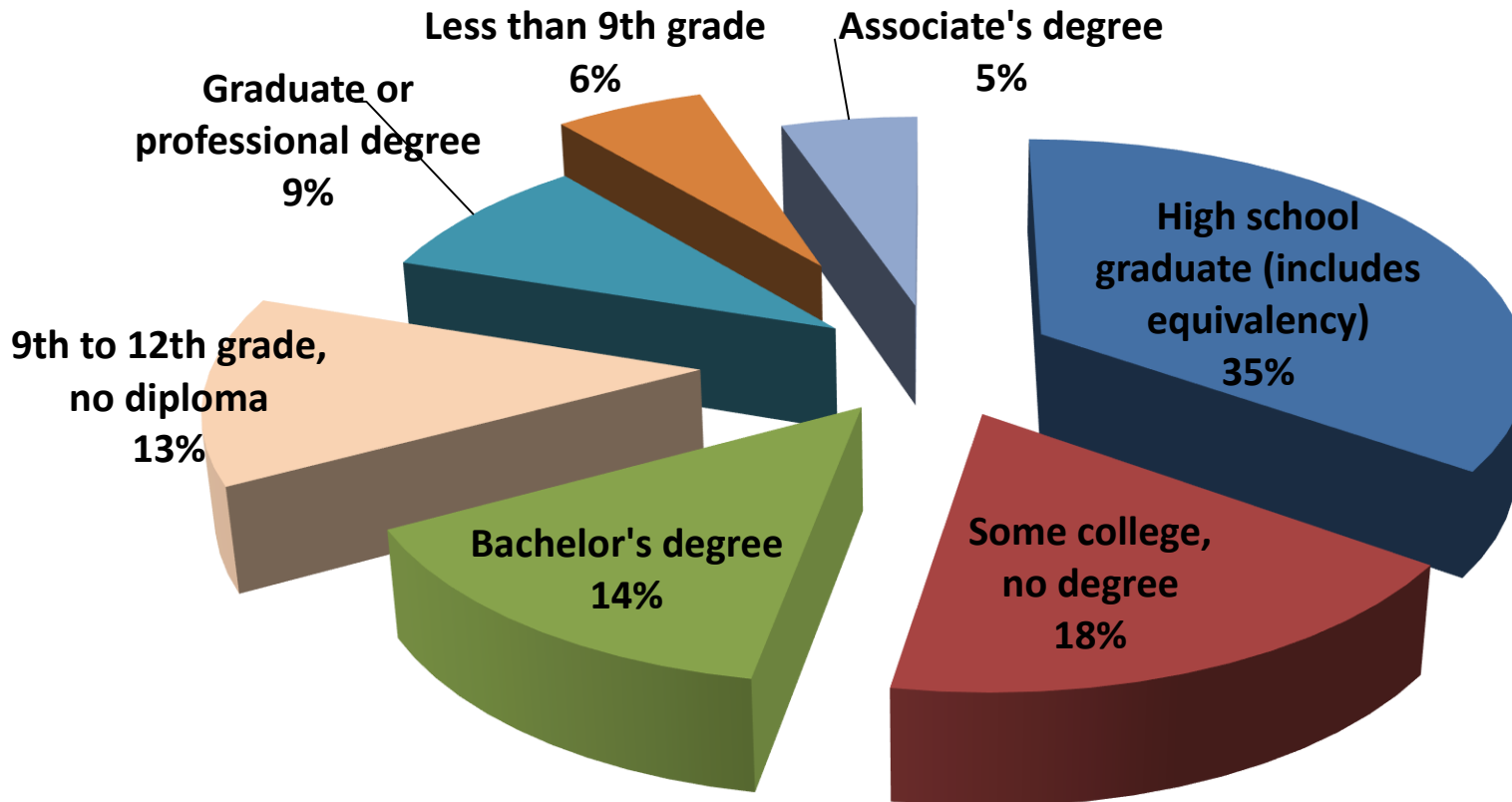


Take away: 12% of population may be slow to adopt technology or need special equipment



# Educational Attainment Profile

Madison Population over 25: 9,347

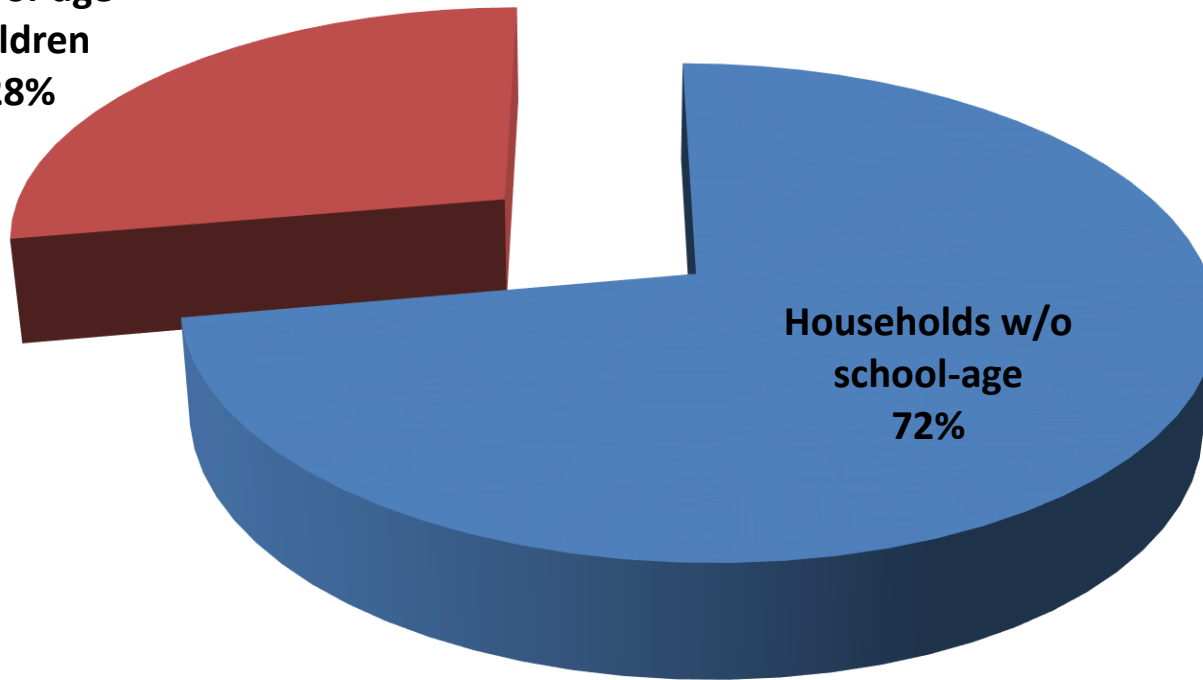


Take away: 19% of population may be low adopters and/or less likely to subscribe to service

# Households with K-12 Students

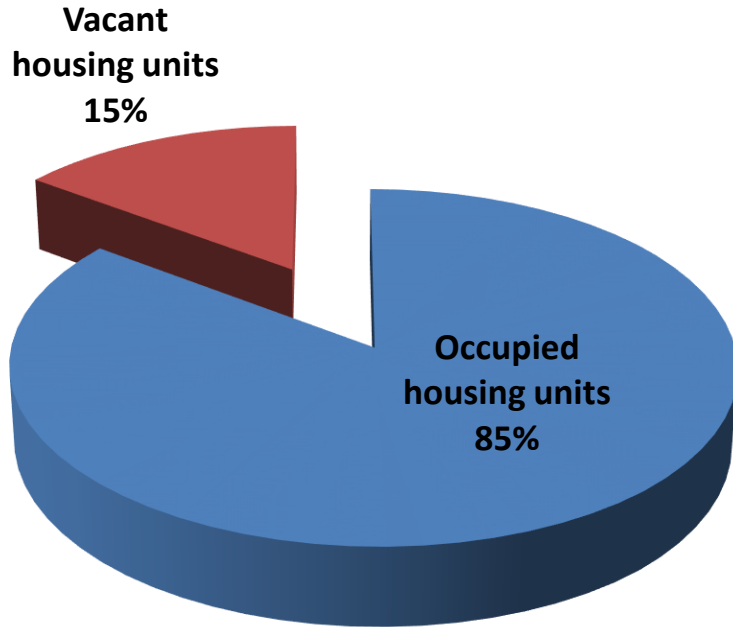
Madison Households with school age children  
Total Family Households: 3,624

Households with  
school-age  
children  
28%



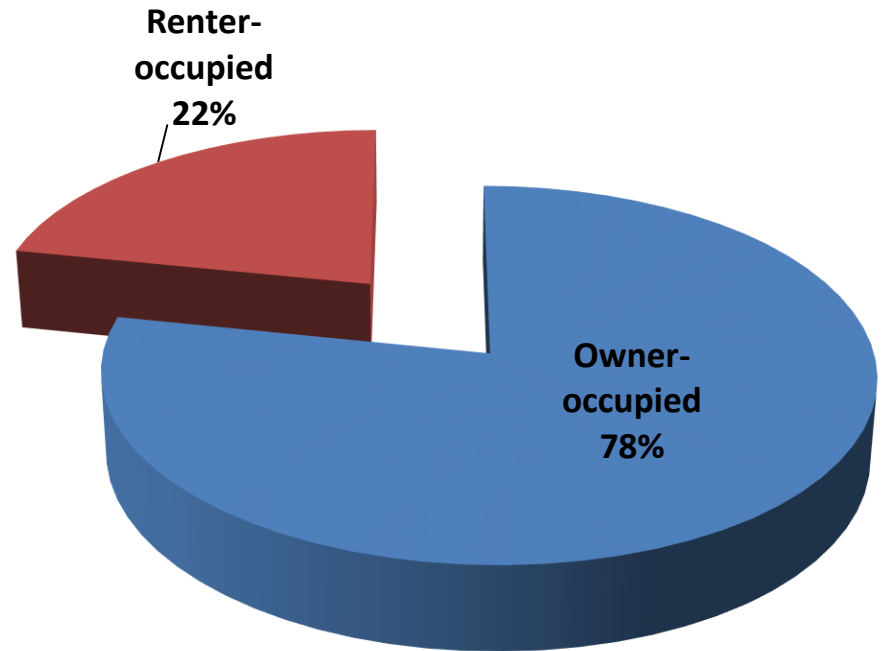
Take away: 28% of population needs broadband at home to support K-12 education

# Housing



## Madison Housing Occupancy

Total housing units: 5,974

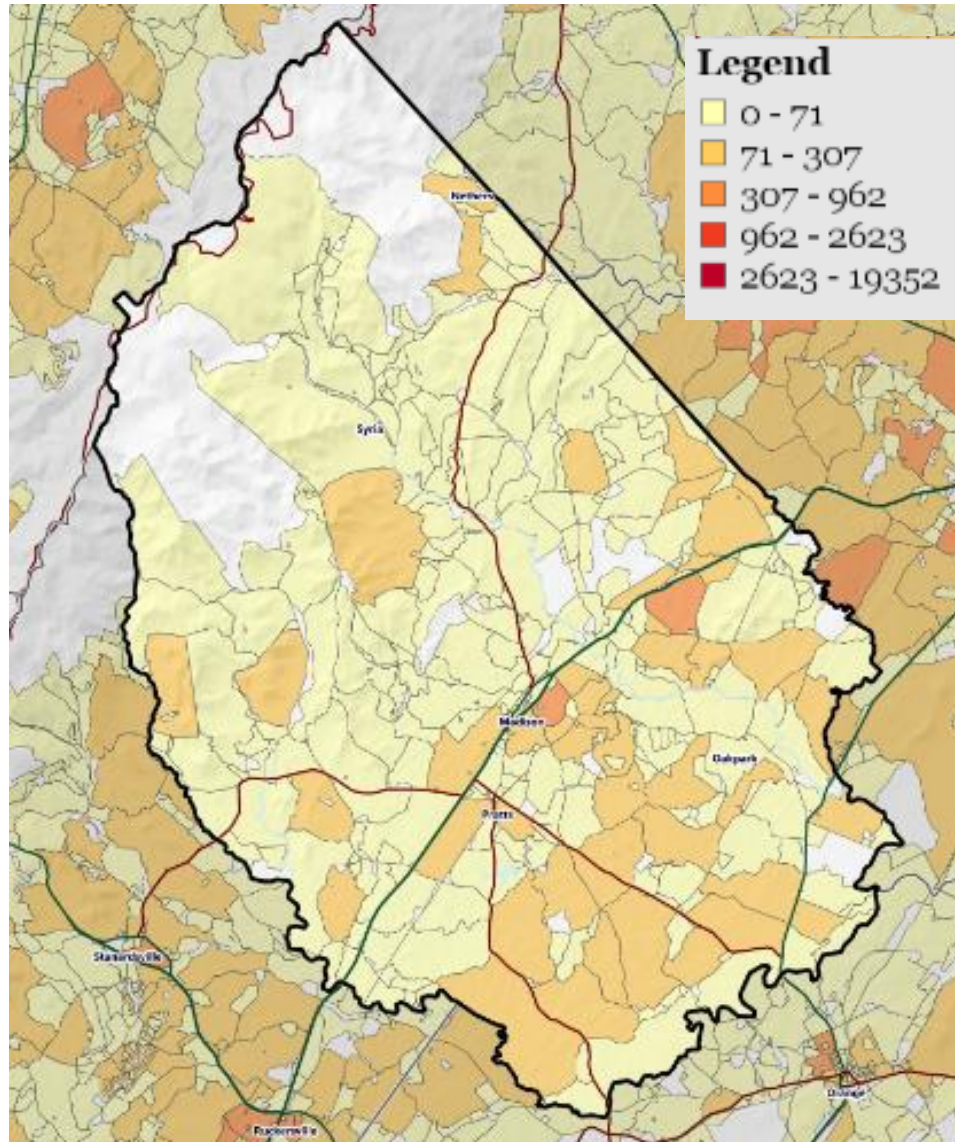


## Madison Housing Tenure:

Occupied housing units 5,093

# Population Density

Low population density west of 29 with a few low-moderate density areas around Banco, Ethan, Haywood.



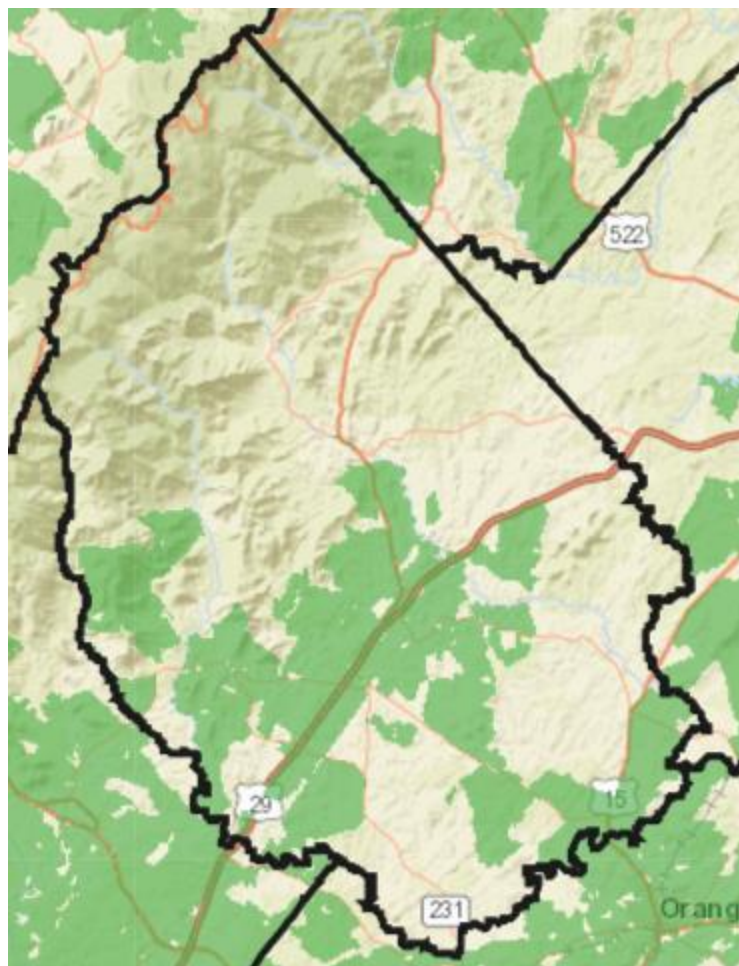
A few pockets of medium-high population density areas around Madison and Brightwood.

Generally low-moderate density east of 29.

FCC Provider Reported Data

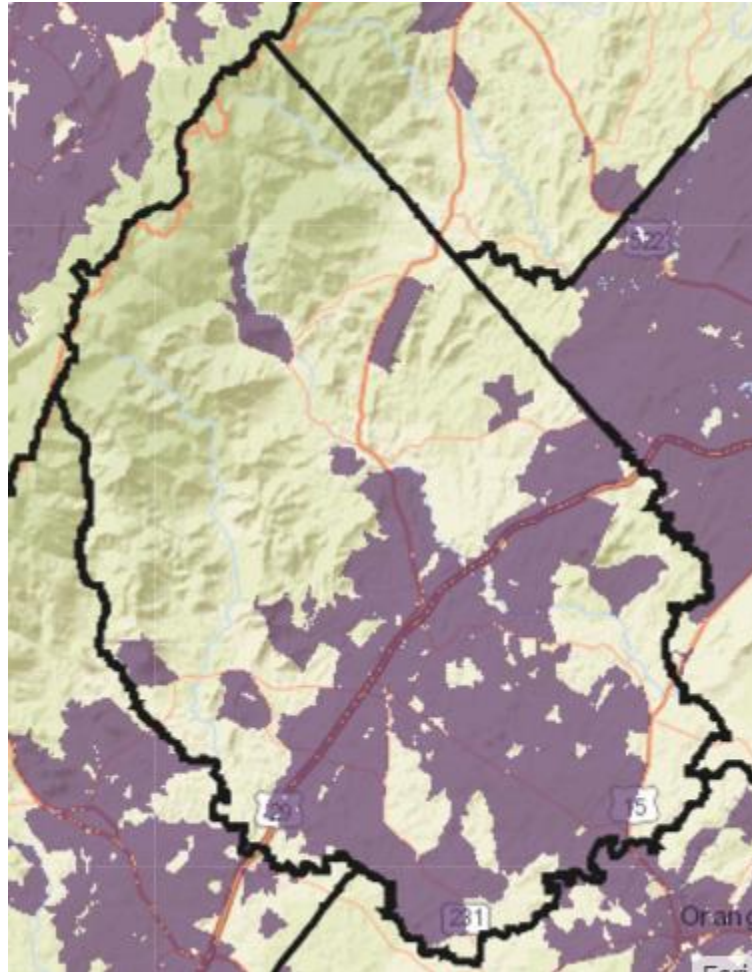
# **REPORTED CURRENT COVERAGE**

# DSL Coverage

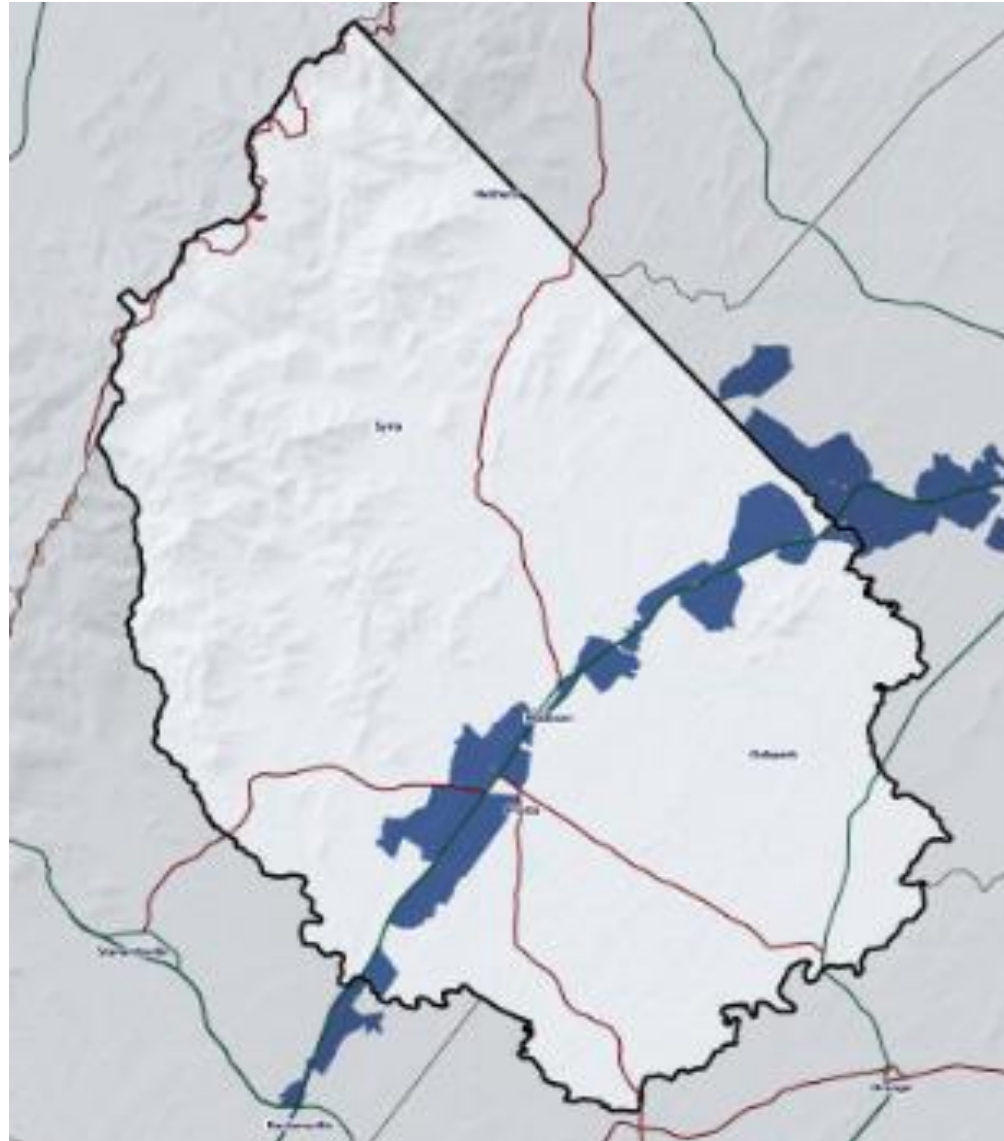




# Cable Coverage



# Reported Fiber Services NOT Commercial Fiber Routes






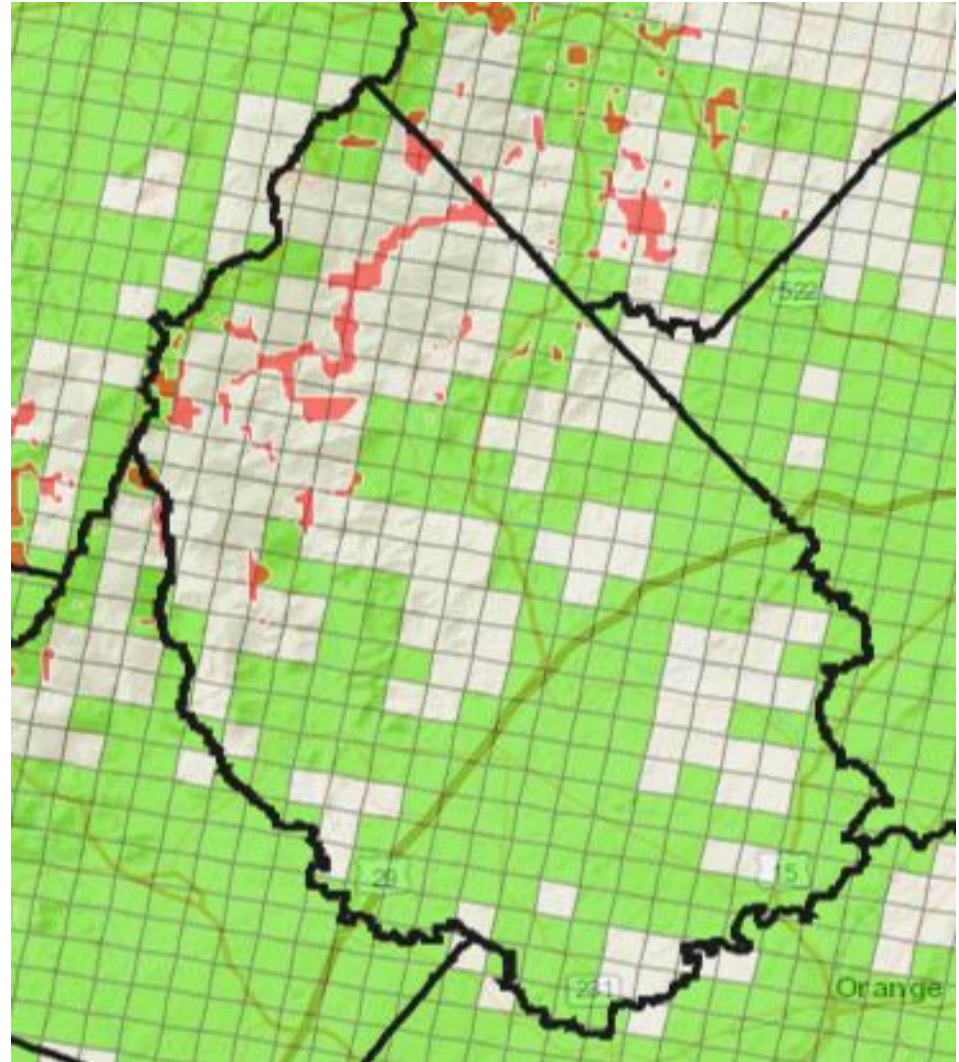


# Public Safety

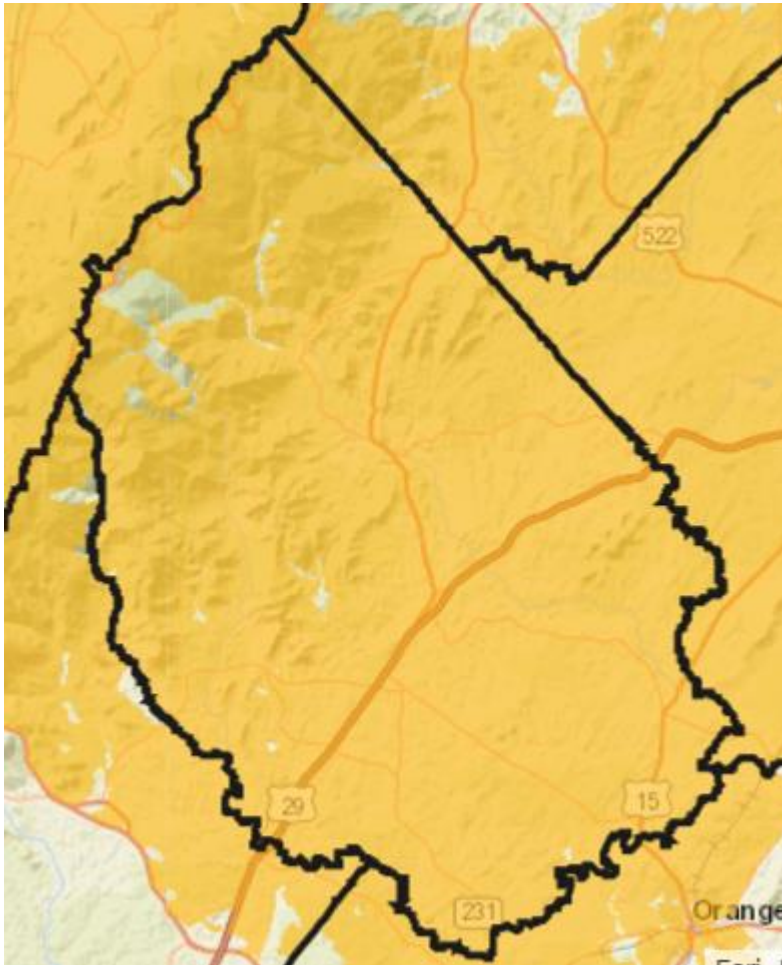
## FirstNet & No-LTE

**FirstNet 1x1 mile grids.**

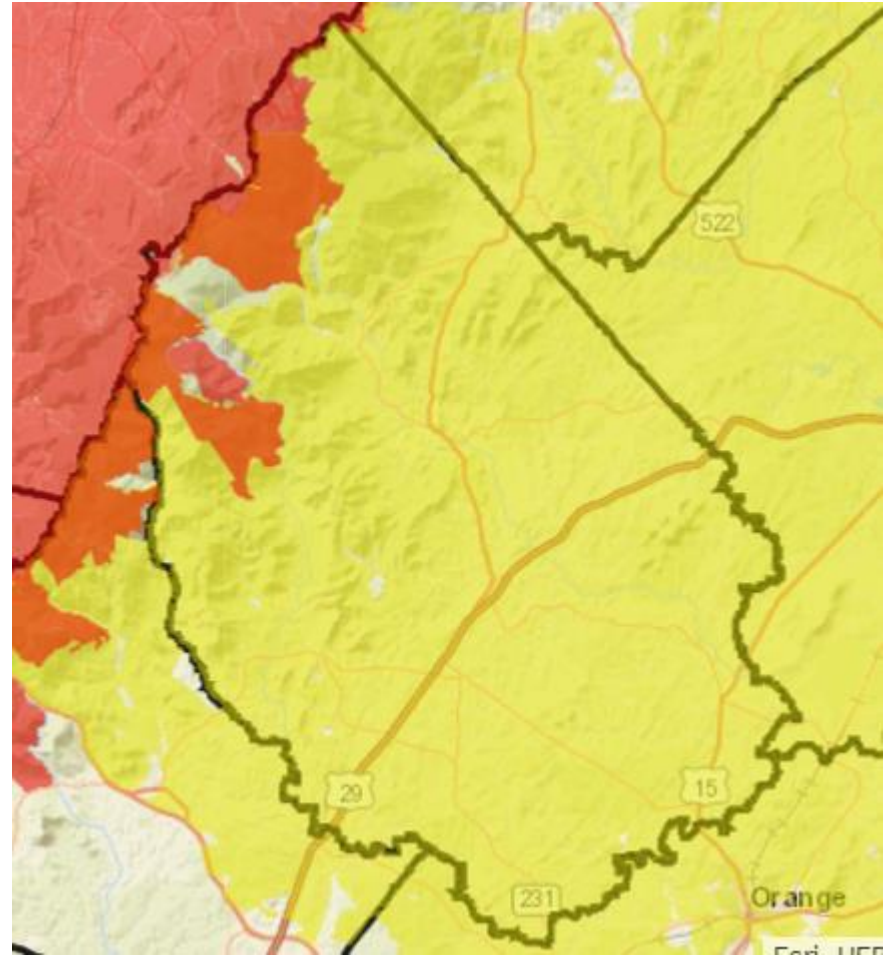
-  Proposed terrestrial coverage
-  Proposed non-terrestrial coverage
-  No LTE Coverage



# Fixed Wireless Coverage

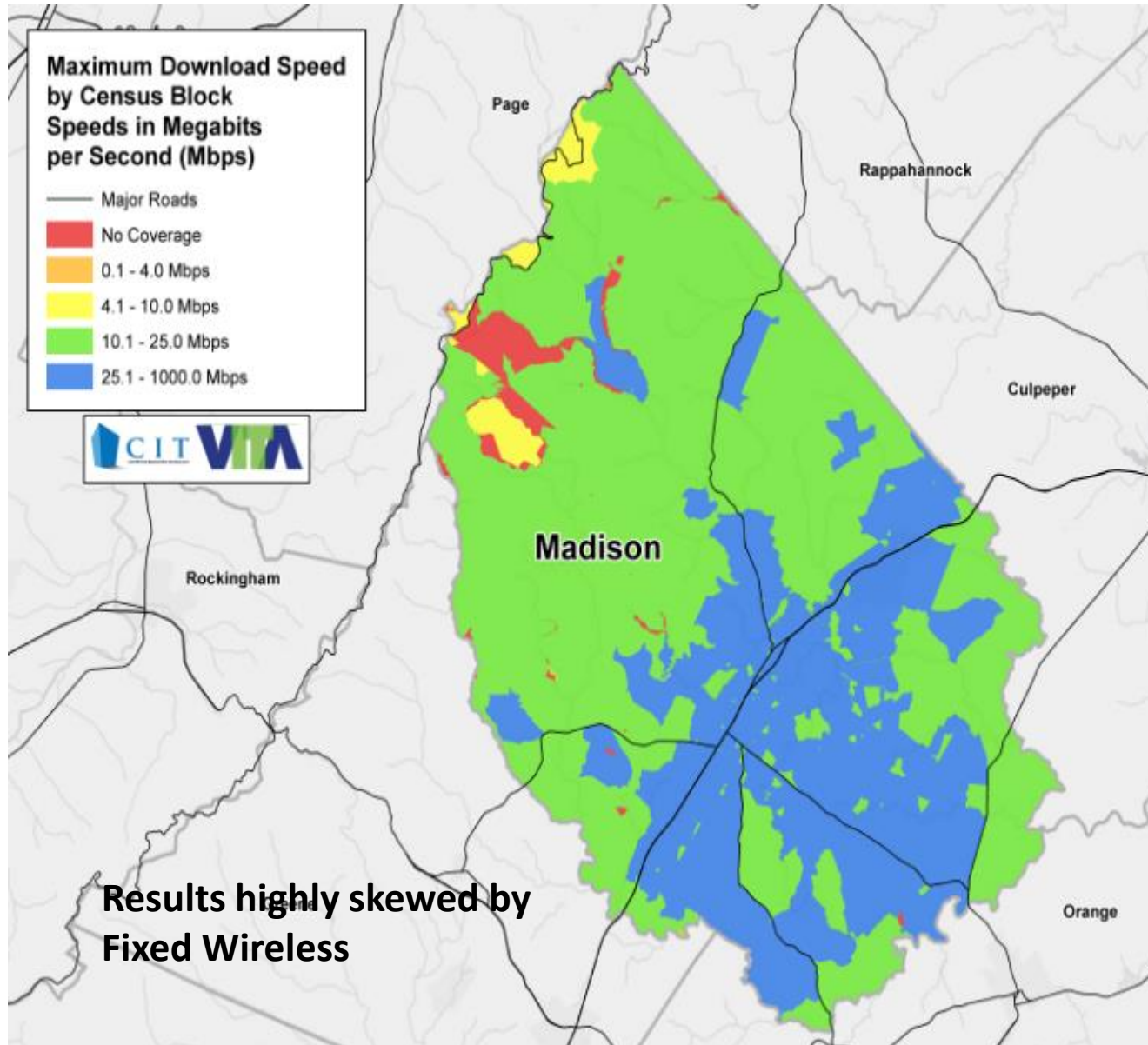


All Fixed Wireless



Virginia Broadband in bright yellow  
HighSpeedLink in red

# FCC Coverage Statistics



## Madison Consumer Fixed BB Stats

- 98% households have access at 4 Mbps or greater.
- 98% households have access at 10 Mbps or greater
- 98% households have access at 25Mbps or greater

Source: FCC 477 data

**Results highly skewed by  
Fixed Wireless**



# Comparison Data Impact on Funding

**Source:** FCC Connect2Health

Data is extracted from the December 2014 dataset of the FCC's Form 477 program , for Internet at speeds of 25 megabits per second (mbps) download and 3 mbps upload or higher

## **Madison County, VA Statistics:**

### **Broadband Access**

Number of Providers : 7  
Fixed Broadband : 99%  
Fixed Download : 99%  
Fixed Upload : 100%  
Most Common Download : 100 - 1,000 mbps  
Most Common Upload : 25 - 50 mbps

## **Fairfax County, VA Statistics:**

### **Broadband Access**

Number of Providers : 18  
Fixed Broadband : 98.1%  
Fixed Download : 98.1%  
Fixed Upload : 100%  
Most Common Download : 100 - 1,000 mbps  
Most Common Upload : 100 - 1,000 mbps

**Fixed Wireless skewing these results**

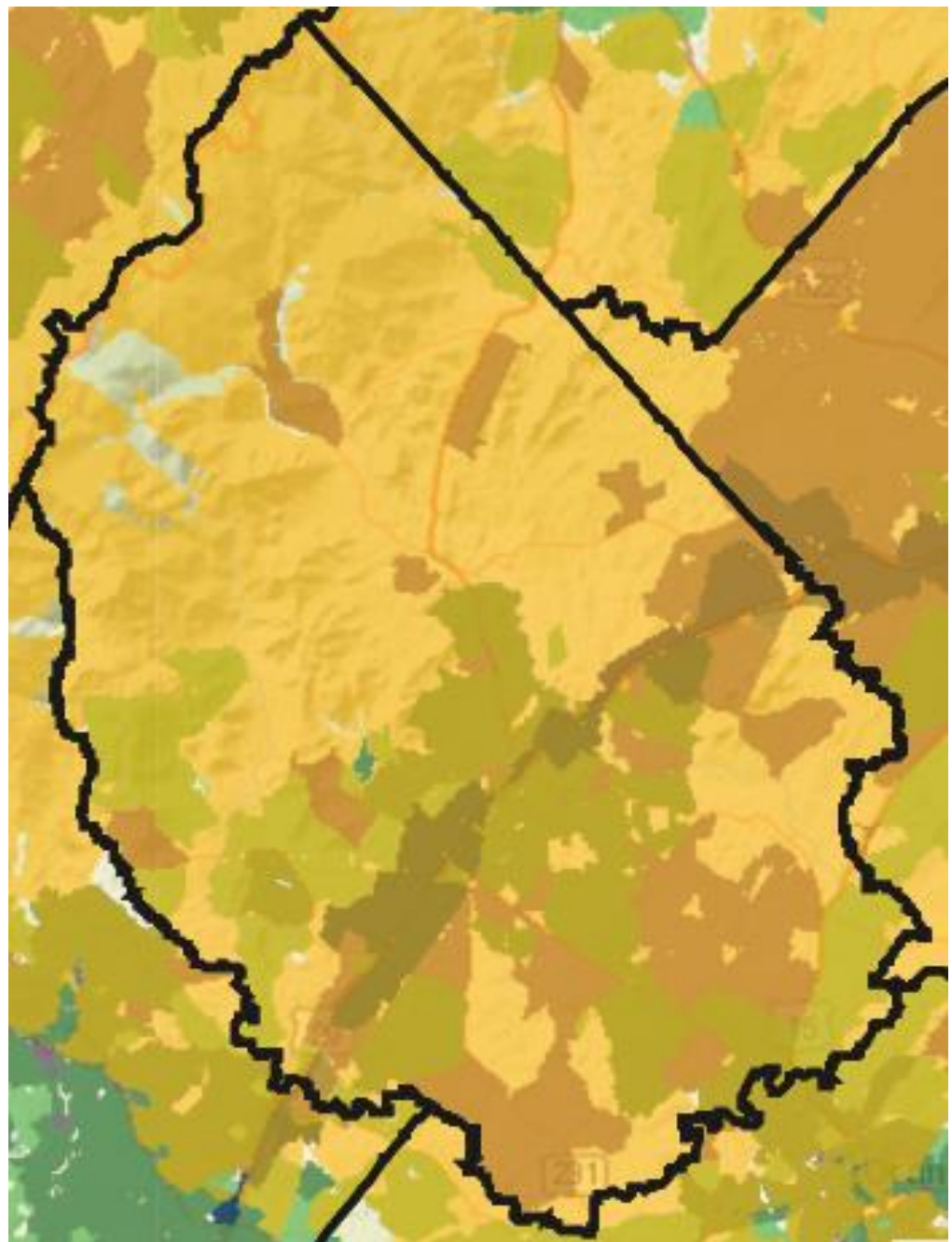
## Madison Coverage with All Service Types Overlaid

All Service types: Cable, DSL, Fiber and Fixed Wireless, Satellite

### Madison County Providers offering 4X1 or greater:

- COMCAST CABLE COMMUNICATIONS, LLC
- dishNET Satellite Broadband, L.L.C.
- HNS License Sub, LLC (Hughes Net)
- ViaSat, Inc. d/b/a Exede Internet
- Virginia Broadband, LLC
- HighSpeedLink aka: Rural Broadband Network Services LLC

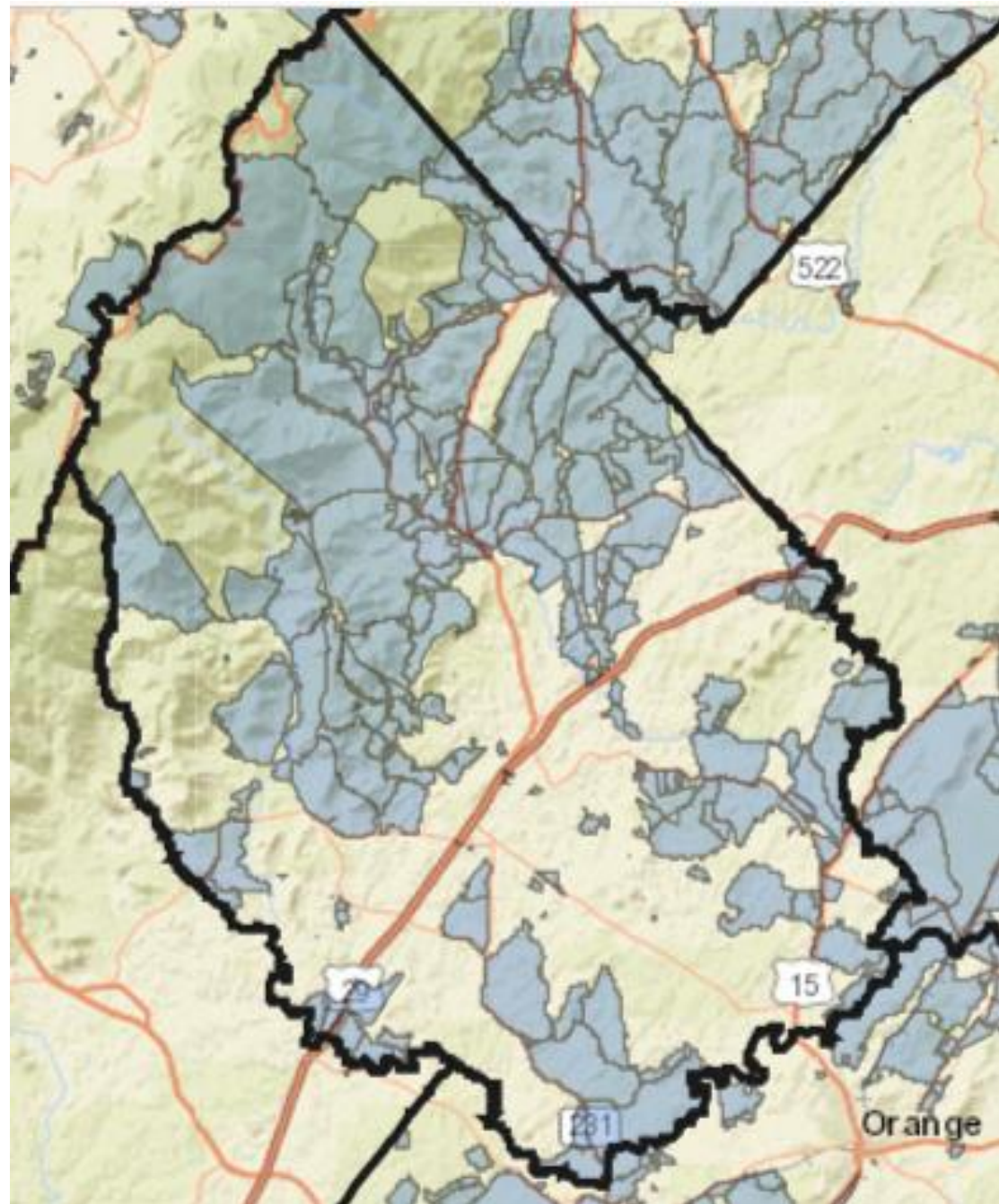
Source: FCC 477 from Dec 2015



# CAFII Eligible Blocks (Preliminary)

## ***Potential Funding Available***

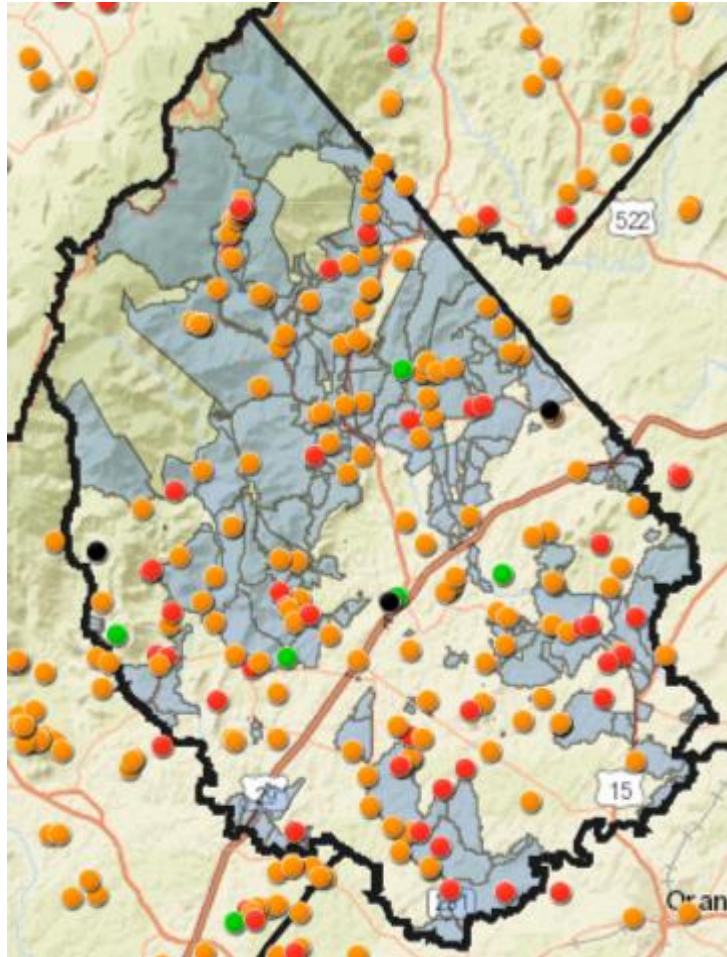
\$765,500.86 annually,  
~\$4.6M over 6 years



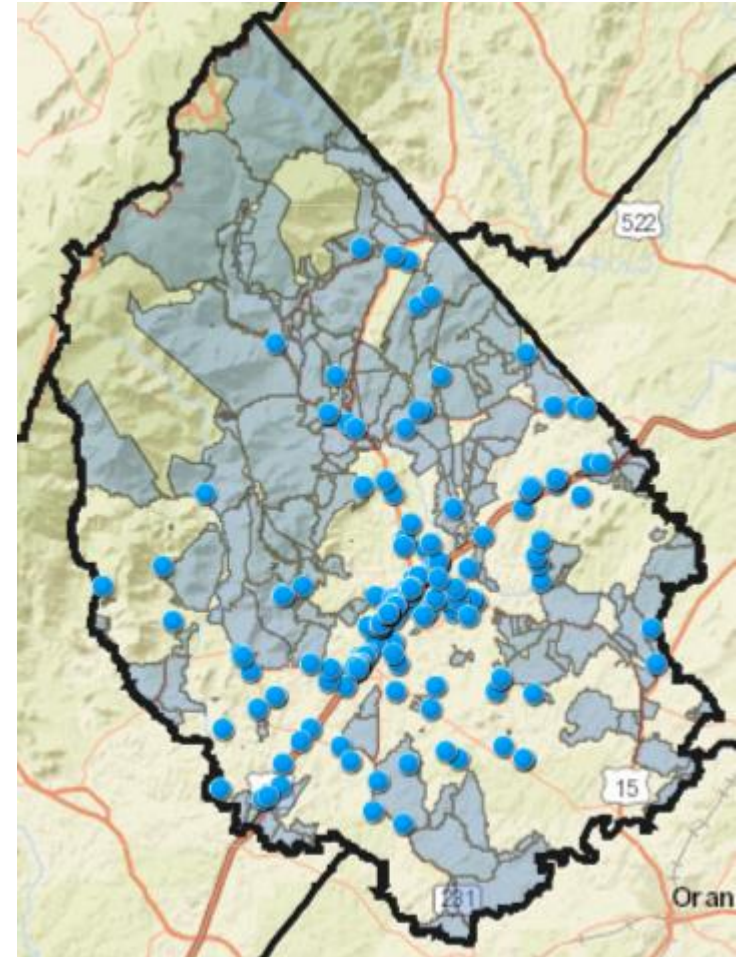


# CAFI & Demand

- Banco,
- Syria,
- Haywood,
- Brightwood
- Etlan,
- Hood,
- Leon
- Graves Mill
- Rochelle,
- Aroda,
- Locus Dale
- Oakpark



RUOnline Demand



Business Locations

Now and Into the Future

# **BROADBAND DEMAND**

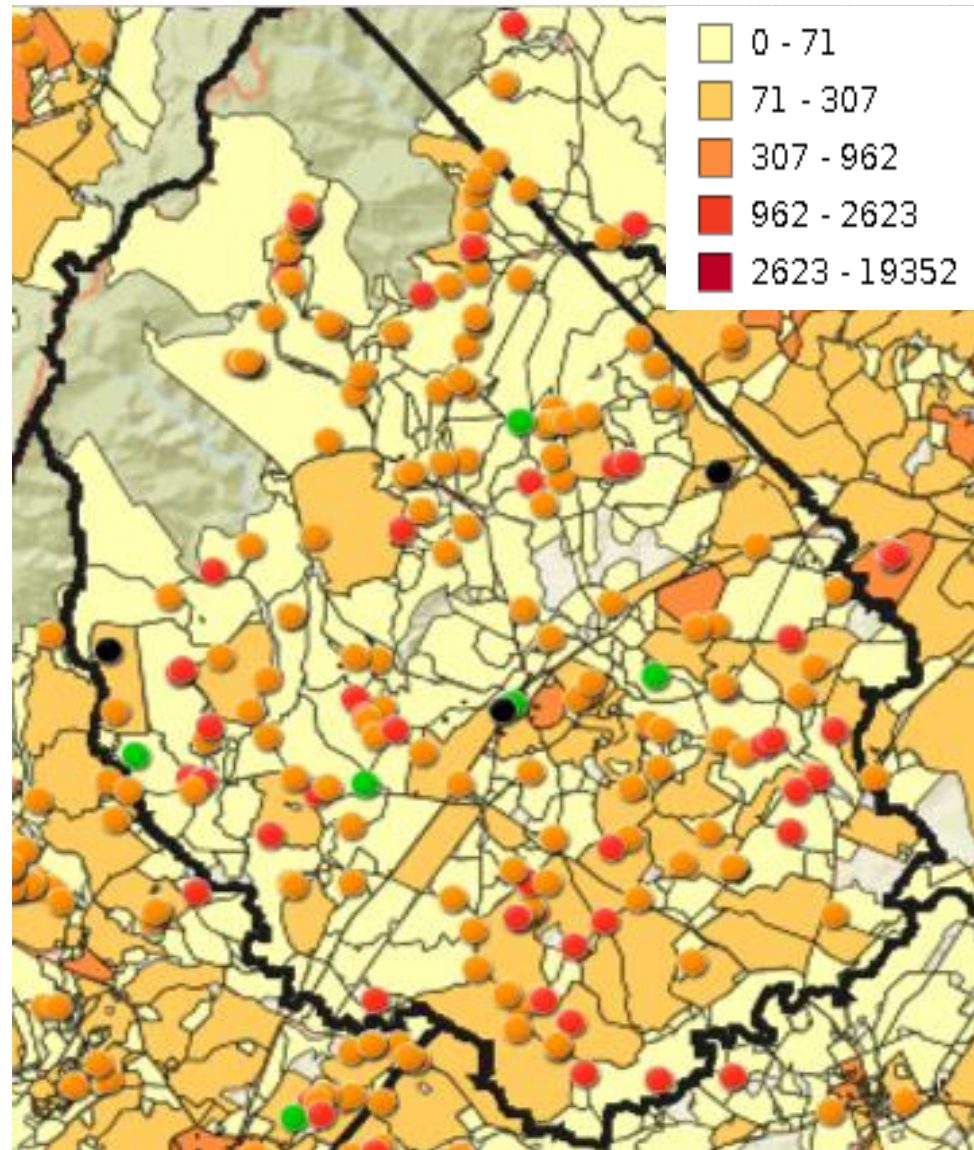


# RUOnline Madison County?

Does this address currently  
subscribe to Internet service?

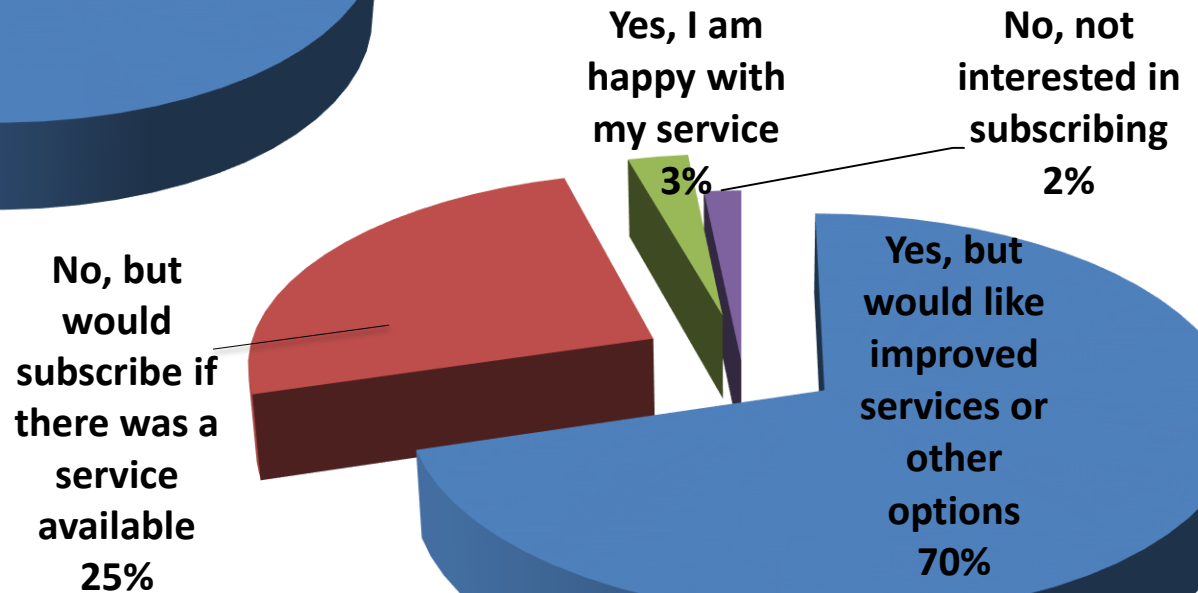
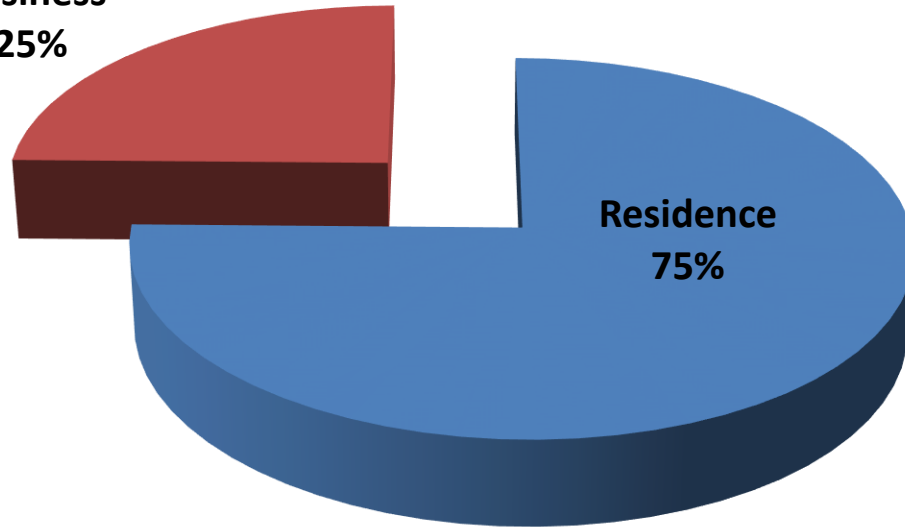
182 valid responses  
95% +/- 7.13

- Yes, but would like improved services or other options
- No, but I would subscribe if there was a service available
- Yes, I am happy with my service
- No, I am not interested in subscribing to an Internet service



# RUOnline Madison?

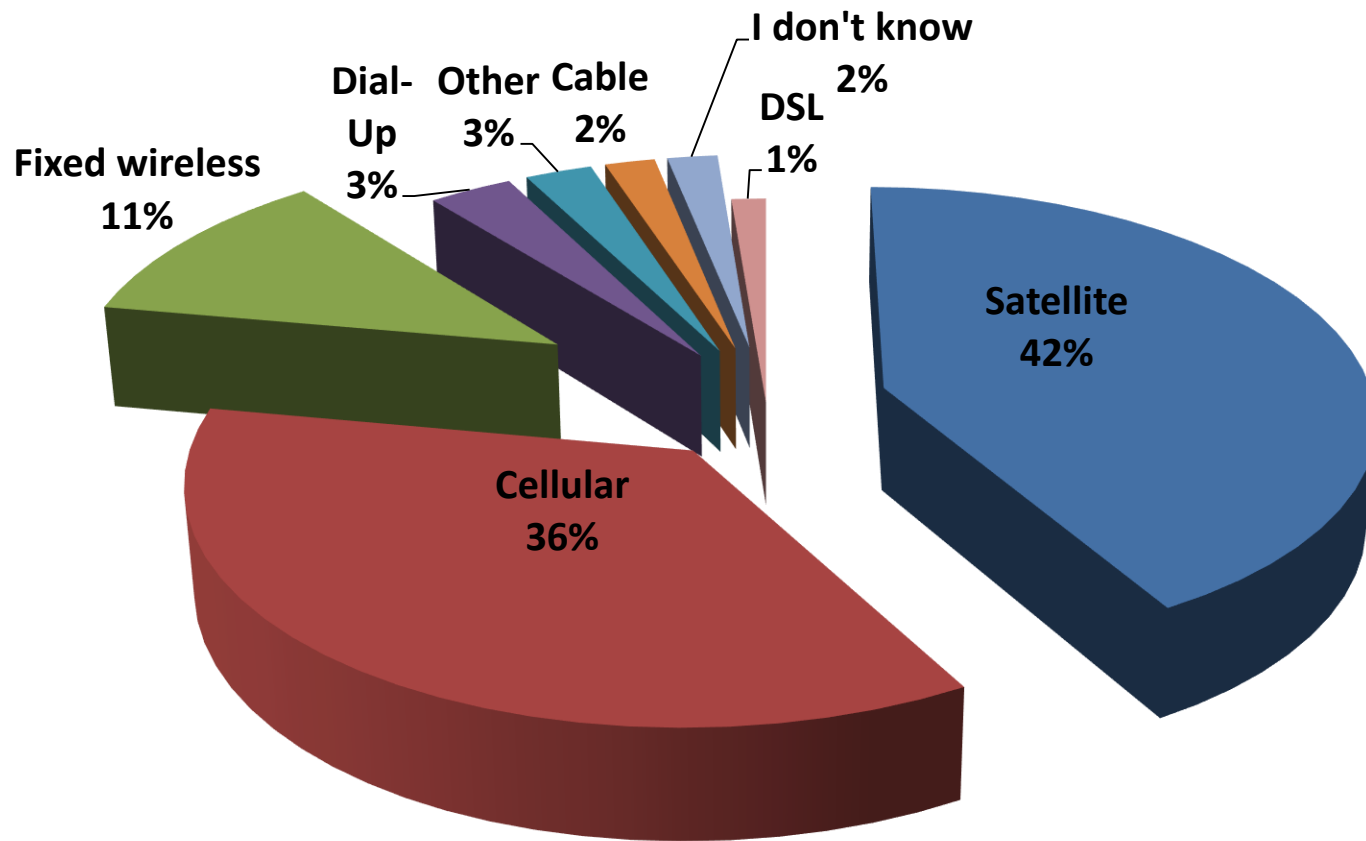
Residence  
with a home  
based  
business  
25%



**Take Away:** 25% have NO access  
25% of respondents have home based business

# RUOnline Madison?

Technology Breakdown

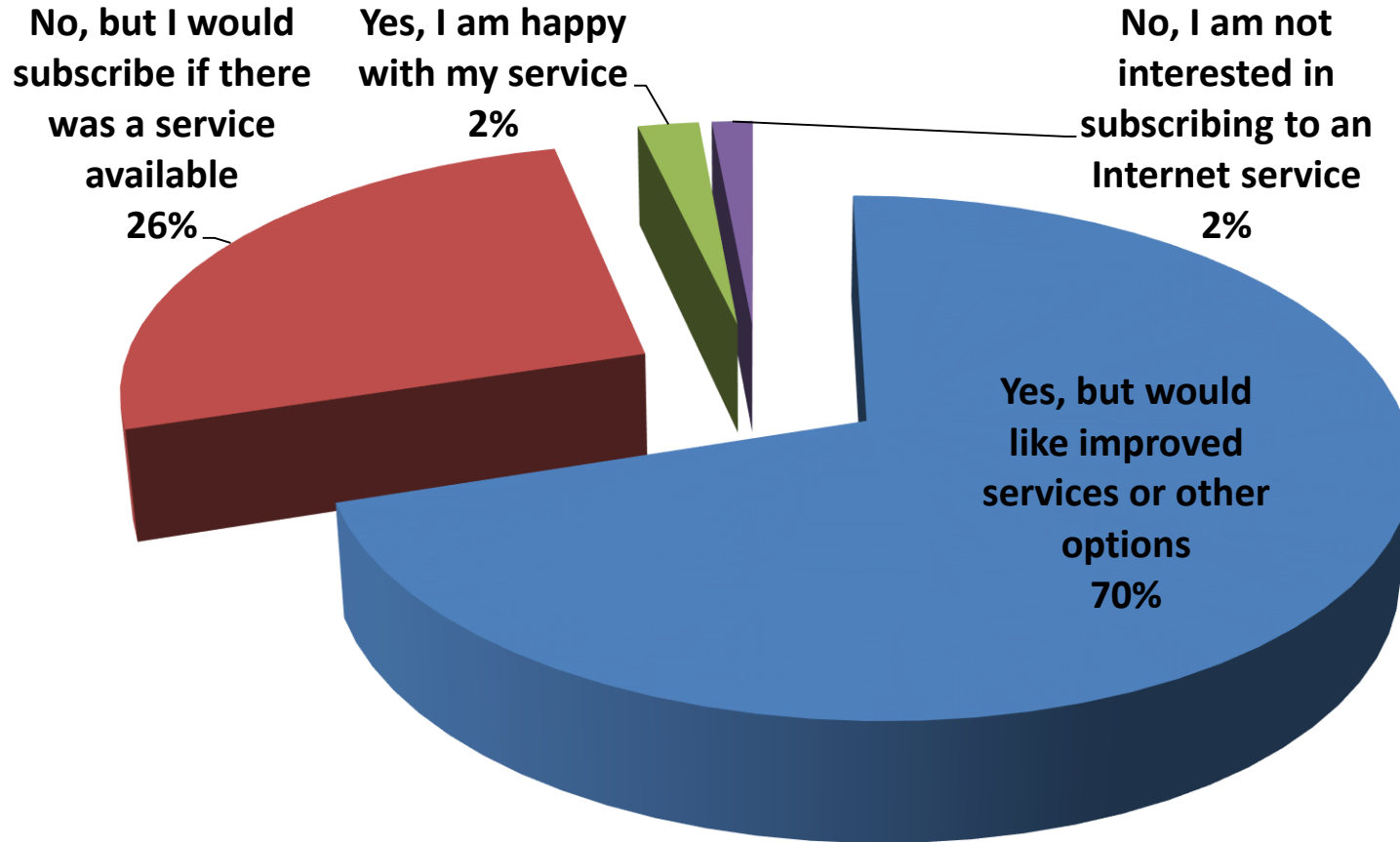


**Take Away:** 78% of respondents depend on Satellite or Cellular

# Madison Residential Demand

Does this address currently subscribe to internet service?

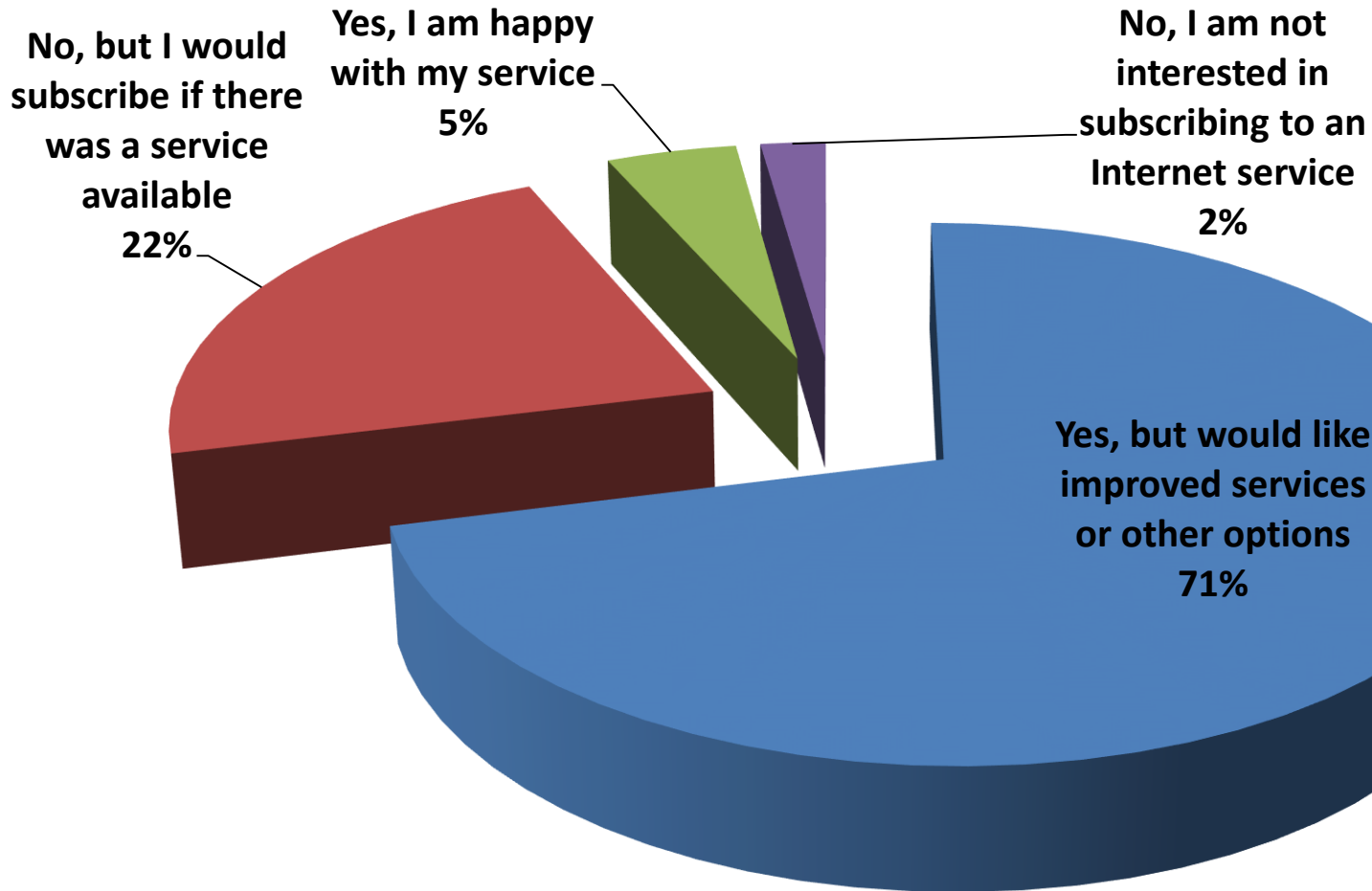
137 residential responses



**Take Away:** 26% of resident respondents have NO access,  
70% want improved or other services

# Business Demand

Does this address currently subscribe to internet service?  
45 business responses



**Take Away:** 22% of business respondents have NO access  
77% of business respondents want improved or other services

Vertical Assets, Fiber, Conduit and Community Anchors

# **LOCAL ASSETS**

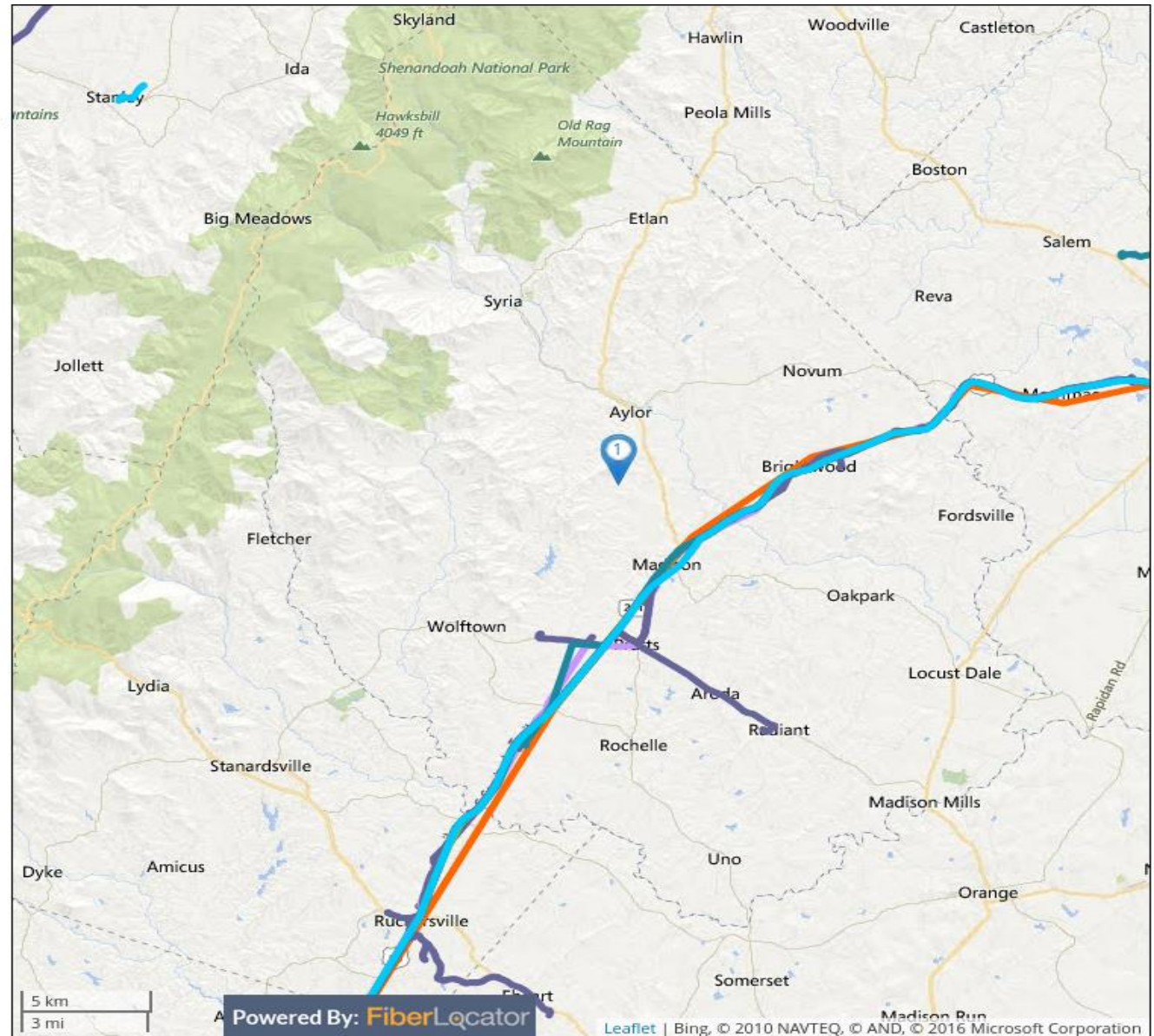


# Commercial Fiber Routes





Madison Co Commercial Fiber

- Madison
- Metro Networks
  - Fiberlight
  - LIT Networks
  - Level3 Metro
  - Lighttower
  - Lighttower Leased
  - Lumos
  - Mid-Atlantic Broadband
  - Shentel
  - Sunesys
  - Uniti Fiber
  - Windstream
  - XO Communications
  - Zayo Metro
  - Zayo Planned Routes

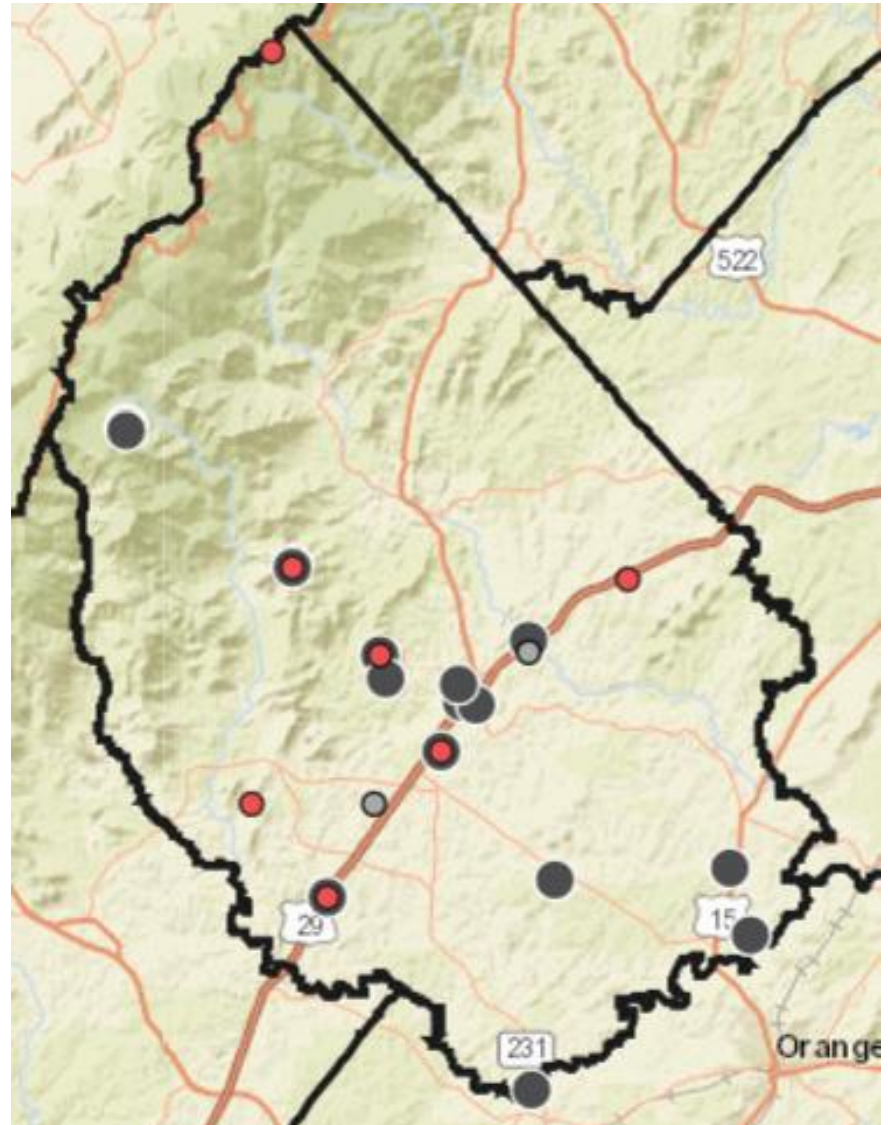


# Vertical Assets

  Red and Grey circles represent Madison identified assets





 Black circles from FCC

Get number of vertical assets? Is VaBB on any county towers

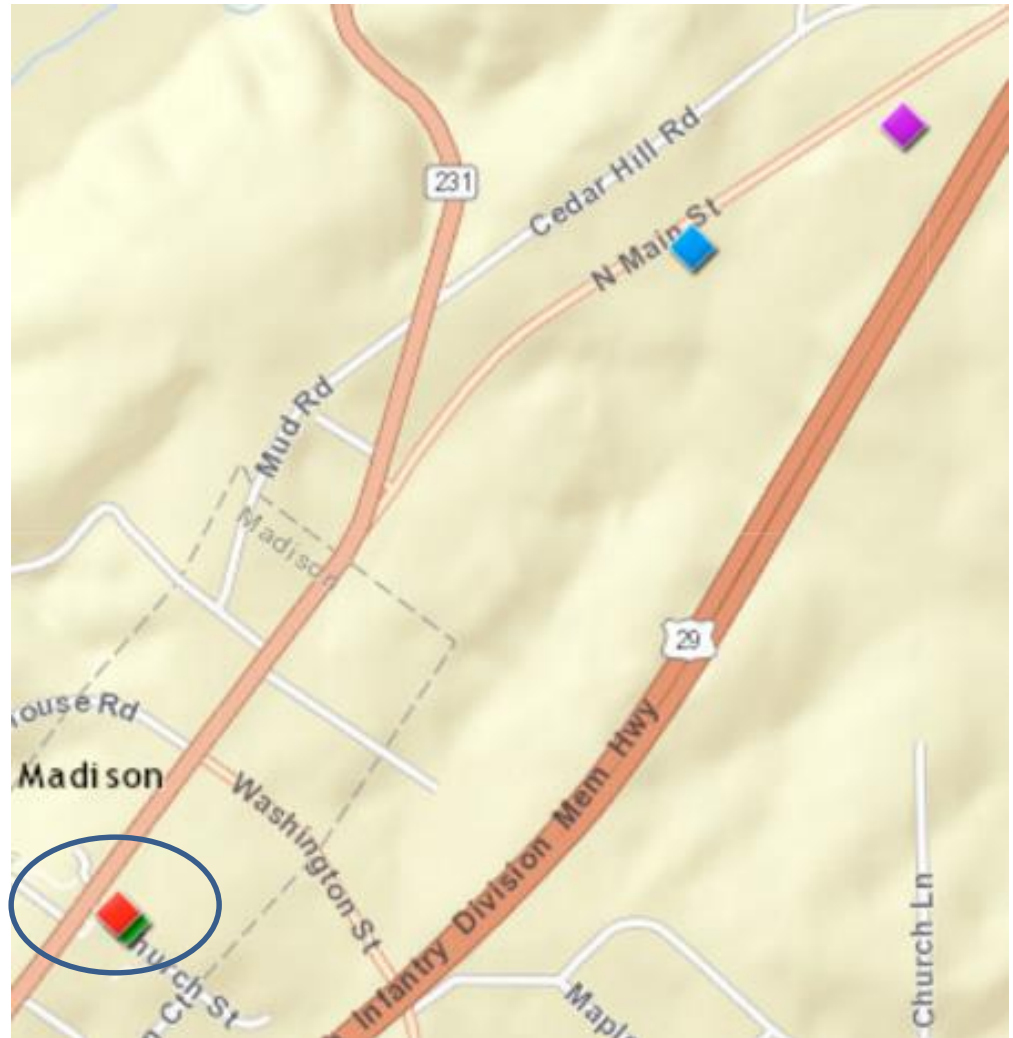




# County Public Safety

-  E-911 Coordinator
-  Madison Emergency Medical Services
-  Madison Sheriff's Office
-  Madison Volunteer Fire Company

E-911 and Sheriff's office co-located →



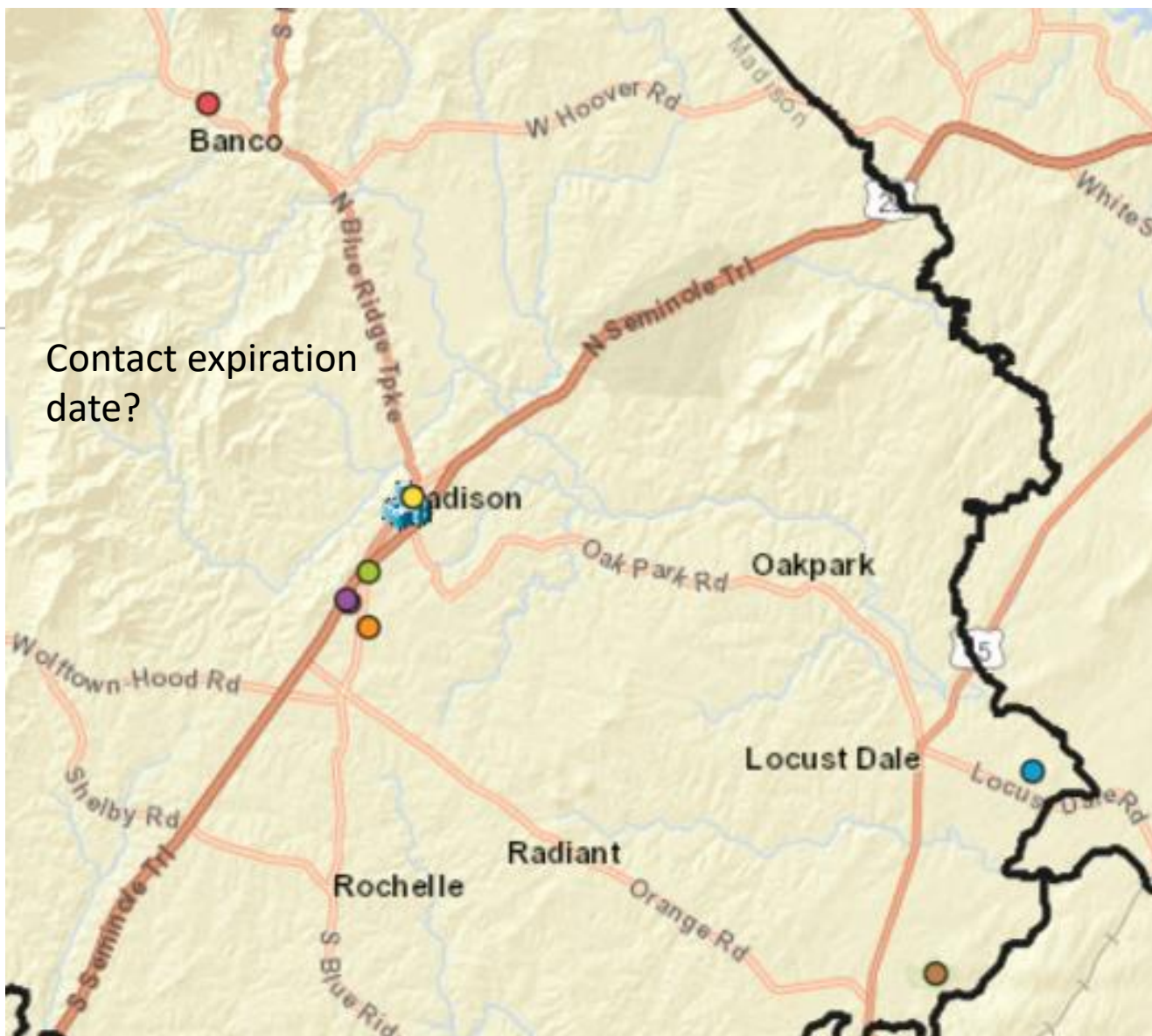
# Schools and Library

## Public Library

402 N Main St,  
Madison, VA 22727

## Schools

- CRIGLERSVILLE  
ELEMENTARY  
SCHOOL
- HARTLAND  
INSTITUTE  
MADISON  
ELEMENTARY  
SCHOOL
- MADISON HIGH  
SCHOOL
- MADISON PRIMARY  
SCHOOL
- WAVERLY YOWELL  
SCHOOL
- WILLIAM H WETSEL  
MIDDLE SCHOOL
- WOODBERRY  
FOREST SCHOOL
- Other

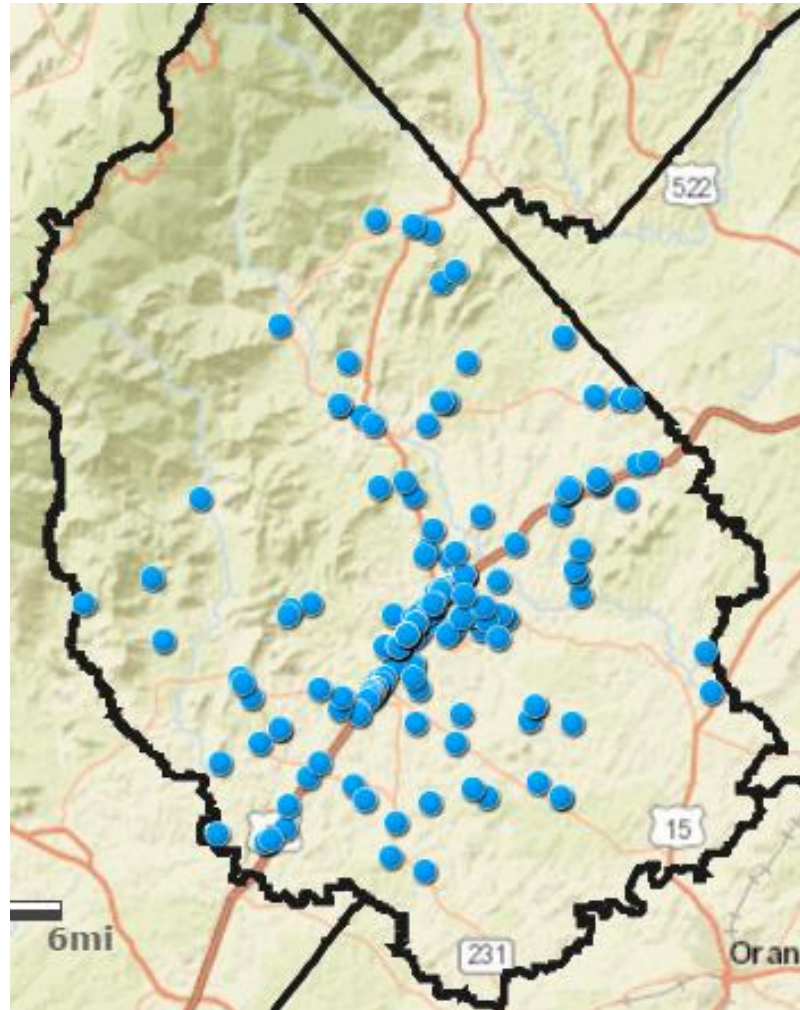


# County Government Buildings



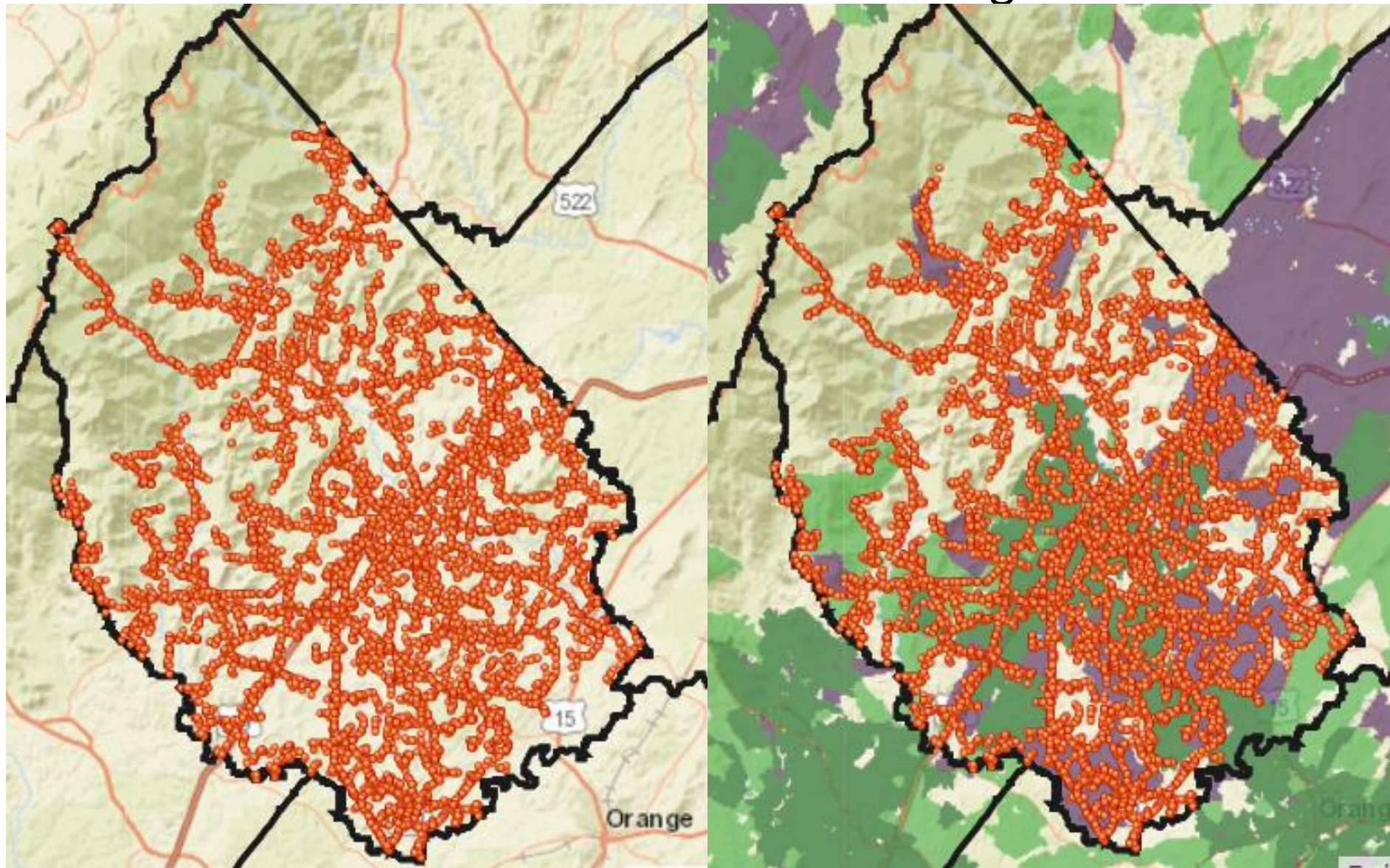


# Business Locations



201 Business Locations

# Rappahannock Electric Co-Op Pole Locations and Wireline Service Coverage



Affect the Broadband Economics

# **REVIEW OF LOCAL POLICIES & FEES**



# Review of Local Policies & Fees

Make sure your policy and procedure house is in order

- Review comprehensive plans, community zoning regulations and process, policies, fees, etc. must be broadband “friendly”.
- PPEA allows for a preliminary/interim contract with Provider to develop a engineered network design & project plan. Followed by a comprehensive contract for the deployment. This allows the greatest flexibility in phasing deployments and allows the local government to invest when and where they deem most appropriate for the community.

# Review of Local Policies (Cont'd)

## Review Recommended Policies for Telecom Deployment

### Policy Assessment guidelines, info & worksheet:

- <https://www.wired.virginia.gov/sites/default/files/Telecom%20Deployment%20Policy%20Recs.pdf>
- 
- [https://www.wired.virginia.gov/sites/default/files/Policy%20Assessment%20Tool%20Guide\\_0.pdf](https://www.wired.virginia.gov/sites/default/files/Policy%20Assessment%20Tool%20Guide_0.pdf)
- 
- <https://www.wired.virginia.gov/sites/default/files/Policy-Assessment-Tool.xlsx>

### Google Fiber Checklist:

- <https://fiber.storage.googleapis.com/legal/googlefibercitychecklist2-24-14.pdf>

***Remember: to make it “cheap, quick & easy”***



# Madison County Local Policies

*The following policies may not represent a comprehensive list of potential local Internet related policies. All local Internet related policies should be reviewed with potential partners and adjusted as necessary to explore incentives and identify barriers to broadband expansion*

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Source: [www.municode.com](http://www.municode.com) - No entries in Municode Library

Source: CIT's Integrated Broadband Planning and Analysis Toolbox Policy Tool

- Colocation Sec. 14-13-6.E. Each freestanding facility up to 120 feet shall accommodate no less than three (3) users. Facilities between 121 and 150 feet shall have no fewer than four (4) users. Facilities over 151 feet shall have no fewer than six (6) users.
- Inventory Existing Sites Madison County Zoning Ordinance: Section 14-13
- Antenna Height Restrictions Sec. 14-13.6.C. Facilities shall not exceed 199 feet except in R-1, R-2, and R-3 zoning districts where the maximum height is 125 feet
- Evidence for New Tower Required Sec. 14-13-10.B5. Applicants must submit a report and supporting technical data demonstrating that all potentially usable existing structures are unsuitable for the proposed antenna.

Assessment Based

# **COMMUNITY BROADBAND NEEDS**

# Needs Identified

- **Technology Adoption**
  - Digital Literacy
    - 20% of population are seniors and 12% of population have a disability
    - **OPTION: Implement and Promote library computer classes with seniors/groups**
  - Affordability
    - 35% of population may have affordability challenges
    - **OPTION: Consider a computer refurb/donation program such as Virginia Star - a state-wide Student Training and Refurbishment program; <http://vastar.org/>**
- **Demand - RUOnlineVa**
  - Residential
    - 70% state they need more than they have today
      - 78% of all respondents rely upon cellular or satellite
    - 25% have NO access at all
    - **OPTION: Expand access and capacity**
  - Businesses
    - 70% state they need more than they have today
    - 25% (of all respondents) have home based businesses
    - 22% have NO access
    - **OPTION: Expand access and capacity**
- **Emergency Service Facilities and County Buildings**
  - Those currently connected by wireless point-to-point as well as Instructional Bldg #1 &2, Old Criglersville School and those off Shelby Road.

# Needs Identified (Cont'd)

## ✓ Schools

### – USAC (e-Rate) / NCES

- Public schools purchase: 510 Mbps fiber \$3875 per month ( Comcast 10 Mbps, Lumos 500 Mbps)
- Cost per Mb: ~\$7.60
- 252.34 Mbps per student/teacher – **Well above the national recommendation of 100Mb per 1000 Students + staff**

## • Libraries

### – USAC, Library of Virginia speed test and survey

- Purchasing 75 Mbps (cable), \$164.90 per month = \$2.2 per Mb (Median for rural libraries \$21.62 per Mb) – **Below national recommendation of 100 Mbps for those libraries serving communities of 50,000 or less** (Madison estimated total pop 13,208)
- **OPTION: Expand access and capacity to library**
- ✓ Public computers and workforce development available
- **No computer literacy/training classes offered**
- **OPTION: Implement computer literacy and training classes – LVa is a resource!**

- **PPEA** -our process is based on a locality adopting the PPEA. If Madison gets to the point of RFP and has not adopted the PPEA they will lose a lot of flexibility and the alternative approach typically results in far fewer (usually very limited) responses.

- **OPTION: Consider adopting PPEA; <http://www.dgs.virginia.gov/PPEA.aspx>**



# Potential Funding



<https://www.wired.virginia.gov/broadband/resources>

Look Under Funding Options





E-Rate – already participating: February 3 - May 26 (Schools) or July 21 (Libraries and Consortia)

Lifeline Support <http://www.lifelinesupport.org/ls/changes-to-lifeline.aspx> - New as of Dec 2, discounts for Internet service; Participating companies in Virginia: <http://www.lifelinesupport.org/ls/companies/CompanyListing.aspx?state=VA&stateName=Virginia> - Open all year

USDA Distance Learning and Telemedicine Program (DLT)  
[http://www.rurdev.usda.gov/UTP\\_DLT.html](http://www.rurdev.usda.gov/UTP_DLT.html) The application window is announced annually

USDA Telecommunications Infrastructure Loans & Loan Guarantees  
<http://www.rd.usda.gov/programs-services/farm-bill-broadband-loans-loan-guarantees> **NOTE:**  
These loans are for local incumbent providers. Open annually around April

USDA Distance Learning and Telemedicine Program (DLT)  
[http://www.rurdev.usda.gov/UTP\\_DLT.html](http://www.rurdev.usda.gov/UTP_DLT.html) - The application window is announced annually

The Vibrant Community Initiative (VCI) <http://www.dhcd.virginia.gov/index.php/community-partnerships-dhcd/vibrant-community-initiative.html> Pre-Application Due: 14-Oct-16 Full Application Due: TBD (tentatively February 2017)

Virginia Telecommunication Initiative <http://www.dhcd.virginia.gov/> - depends on further funding. TBA

# Next Steps

- Identify and Prioritize Goals Based on Needs
  - Assessment findings need to be conveyed to the BoS.
  - Committee passes their recommendations to BoS, or leaves the decisions to the BoS accepts.
- Determine the role the local government will assume in achieving the goals
  - Review CIT Partnership Models Handout
  - Decision need to be adopted by the COUNTY - county procurement needs to put out the RFP
- CIT will draft Requirements Document for potential RFP
  - CIT will formally document chosen goals, role, assets to be shared, local considerations etc. to include in RFP
- Seek private partner(s)
  - CIT will provide a custom RFP based on goals and roles etc.

# Questions? Comments?



## Contact Information

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