

Application to DHCD Submitted through CAMS

Patrick County

Patrick County Broadband Expansion - Phase 2

Application ID: 75708102020091303
Application Status: In Progress - DHCD
Program Name: Virginia Telecommunications Initiative 2021
Organization Name: Patrick County
Organization Address:
Profile Manager Name: Sandra Puckett
Profile Manager Phone: (276) 694-6094
Profile Manager Email: spuckett@co.patrick.va.us

Project Name: Patrick County Broadband Expansion - Phase 2
Project Contact Name: Bryce Simmons
Project Contact Phone: (276) 694-8367
Project Contact Email: bsimmons@co.patrick.va.us
Project Location: 106 Rucker Street
Stuart, VA 24171-0245
Project Service Area: Patrick County, Stuart Town

Total Requested Amount: \$1,583,492.00

Required Annual Audit Status: Accepted

Application to DHCD Submitted through CAMS

Patrick County

Patrick County Broadband Expansion - Phase 2

Budget Information:

Cost/Activity Category	DHCD Request	Other Funding	Total
Telecommunications	\$1,583,492.00	\$400,000.00	\$1,983,492.00
Construction	\$1,583,492.00	\$400,000.00	\$1,983,492.00
Total:	\$1,583,492.00	\$400,000.00	\$1,983,492.00

Budget Narrative:

Patrick County is requesting \$1,583,492.00 in VATI funds to support a \$1,983,492.00 or 79.8% of the required money to build out Phase 2 of a new wireless project. The Private Partner, RiverStreet Networks (RSN), is supplying 20.2% or \$400,000.00 in matching funds. The cost of this project was derived from outside engineering estimates, vendor quotes, previous purchase orders for similar services and RSN's experiences with similar projects. To capture the expected cost of connecting users a take rate of around 40% was used. This was then split approximately 60/40 between the two radio types based on their ability to provide coverage due to the frequency difference. Therefore the cost to connect 510 customer locations are included in the project cost. This was done in accordance with VATI Guidelines which states that "DHCD will award funding to applicants to provide last-mile services, including middle-mile networks, equipment, or other investments required to deliver last-mile service" and that the definition of "Last Mile" is "components of a network that provide broadband services to end-users premises or devices through an intermediate point of aggregation (e.g. remote terminal, fiber node, wireless tower, or other equivalent access point)." Furthermore, RSN is willing to supply the additional CPE equipment and labor required to connect more than 510 locations if a higher take rate is achieved.

Questions and Responses:

1. Project Description and Need

Describe why and how the project area(s) was selected. Describe the proposed geographic area including specific boundaries of the project area (e.g. street names, local and regional boundaries, etc.). Attach a copy of the map of your project area(s). Label map: Attachment 1 – Project Area Map.

Answer:

In May 2019, the Center for Innovative Technology (CIT) presented findings of a broadband survey to administrative staff of Patrick County. Based on the findings of the survey and reported data from the FCC, staff identified the communities of Patrick Springs, Meadows for Dan, and Woolwine as un-served areas within Patrick County. The County issued a Request for Proposal (RFP) on June 17, 2019 to form a public/private partnership with an internet service provider (ISP) to expand broadband services within the County. A Request for Information (RFI) was received as part of the RFP process to define potential service areas within the referenced communities. From this RFP process RSN and Patrick County entered into an MOU to build out high speed broadband Internet throughout the County. For the 2020 VATI Application, two partnered together to submit a Phase 1 Wireless plan for areas in the RFP Amendment No. 2. As defined in Amendment 2 the following three areas of the County were identified; Patrick Springs, Woolwine, Meadows of Dan. The Patrick Springs service area covers almost five

Application to DHCD Submitted through CAMS

Patrick County

Patrick County Broadband Expansion - Phase 2

square miles with most of the boundary resting on margins of individual parcels of land. The Woolwine service area covers over five square miles, and portions of its boundaries rest on individual parcels of land. The Meadows of Dan service area covers over four square miles, and much of its boundaries rests on individual parcels of land as well as the southern border of Floyd County to the north.

The 2021 VATI Application is for Phase 2 of the Broadband Expansion Project and builds upon the previous request through identified un-served areas as seen in the FCC's "Auction 904 Updated Eligible Areas", published on 06/25/20. Phase 2 proposes to provide a fixed wireless network to areas north and east of Patrick Springs, into what is commonly referred to as the Critz, Fairystone, Elamsville, and Penn's Store communities. Historically, these areas have been the most disadvantaged within Patrick County and have higher concentrations of minority populations. Phase 2 also proposes to provide a fixed wireless network to areas south and east of the Town of Stuart, into areas that are between the Hwy 58 corridor and the VA/NC state line. These communities are commonly referred to as the Moorefield Store, Russell Creek, and Five Forks communities.

2. List existing providers in the proposed project area and the speeds offered. Please do not include satellite. Describe your outreach efforts to identify existing providers and how this information was compiled with source(s).

Answer:

According to the FCC 2019 filings the following companies provide Internet in Patrick County; CenturyLink, Citizens Telephone, Comcast, Charter, Fastlink, Gamewood/RSN. However, the FCC report is known to be flawed so the best source of Internet providers in the County is the recently completed study/survey by CIT. The CIT survey details current internet providers within Patrick County. For most residential customers in the proposed service areas, CenturyLink DSL, where available, and HughesNet Satellite are the only options for fixed internet service. MiNet is the only known customer of the Mid-Atlantic Broadband fiber line that passes through the Patrick Springs service area; MiNet serves the Patrick Henry Community College site in Stuart. The speeds offered within the targeted project areas are below the 25/3 Mbps (Down/Up) FCC standard and is the basis for selection of these areas. No CAF II blocks were funded in Patrick County as evident by the FCC 903 Auction results showing no winning bidders in the County. Outside of the selected project area there are three additional service providers which according to their FCC filings do provide services greater than 10/1. There is a WISP, FastLink Communications, in the Claudville & Cana areas of Patrick County. There is no current plan to serve the Claudville and Ararat areas through this project. Citizens COOP serves Primland Resort in the Vesta area of Patrick County and has selected business accounts in the Town of Stuart. Citizens COOP has indicated that buildout within Floyd County is a priority and that expansion beyond the existing service area in Patrick County is not planned. The school system is currently served by CenturyLink through the E-Rate program. Additionally, CenturyLink shows that they provide greater than 25/3 Mbps services in several of the project areas. However according to the CIT survey over 2,500 locations or 54% of addresses were reported as CAF upgraded areas in the County but 74% of the customers state that their Internet speeds do not meet their needs. According to the CIT survey in 2019, a key take away from their survey is that "even with numerous DSL upgrades, most with DSL connections do not benefit." Additionally the survey continues by stating that current users, "Seek alternative coverage solutions for all obsolete DSL areas" and that approximately "90% of residential subscribers depend upon inadequate, expensive, unreliable and/or obsolete services" with 81% of them using DSL. For your reference, the full CIT survey from May 2019 is supplied as Attachment 17.

3. Describe if any areas near the project have received funding from federal grant programs, including but not limited to Connect America Funds II (CAF II), ACAM, ReConnect, and Community Connect. If there have been federal funds awarded near the project, provide a map verifying the proposed project area does not conflict with these

Application to DHCD Submitted through CAMS

Patrick County

Patrick County Broadband Expansion - Phase 2

areas. Describe if there are Rural Digital Opportunity Fund (RDOF) eligible census blocks located in the proposed project area. Label Map: Attachment 2 – Documentation on Federal Funding Area.

Answer:

The only broadband funding that has been received by Patrick County has been from the ARC for a Broadband Expansion Plan being completed by RSN and last year's VATI funding. It is believed that CenturyLink and others have received CAF funding in the past but there were no CAFII funds awarded for Patrick County. Additionally, Citizens COOP has a small area of the County by the Blue Ridge Parkway that is part of their service footprint and it believed that they get ACAM funding for that area. However, the Phase II project area is well away from the Parkway and Citizens COOP territory. Due to the FCC's quiet period on the RDOF Auction, we must limit our discussion to only publicly provided information from the initial announcement. The initial RDOF auction package shows 17 census block groups in the County. The initial auction figures could provide just over \$20 million in FCC funding for 5,842 homes. Due to the substantial amount of RDOF funding in Patrick County it is virtually impossible to design a wireless and/or fiber broadband network that does not impact several of these RDOF blocks and/or cover existing service areas with 25/3 Mbps. Additionally, we understand the VATI 2021 guidelines when it comes to RDOF funded areas that receive funding from the upcoming auction and we are willing to work with VA DHCD to do whatever is necessary to expand broadband access to the residents and businesses in Patrick County.

4. Overlap: To be eligible for VATI, applicants must demonstrate that the proposed project area(s) is unserved. An unserved area is defined as an area with speeds of 25/3 mbps or less and with less than 10% service overlap within the project area. Describe any anticipated service overlap with current providers within the project area. Provide a detailed explanation as to how you determined the percentage overlap. Label Attachment: Attachment 3 – Documentation Unserved Area VATI Criteria.

Answer:

Phase II project area is along the eastern border of Patrick County where MBC fiber is easily accessible and helps to fill in areas that Phase I can not reach. The tower sites were selected based on accessibility to existing internet service and coverage of unserved customers or homes with less than 25/3 Mbps broadband service. To accomplish both tasks without a 10% overlap of existing service providers with wireless anywhere in the County is impossible. Therefore, RSN had their outside engineering firm design a network based on providing service to homes with less than 25/3 Mbps service and break out any homes that are being reported to the FCC to have greater than 25/3 Mbps service. As noted previously by CIT and using feedback from other sources, the FCC numbers are inflated with respect to homes that have access to adequate Internet, as well as the speeds those customers actually receive. Regardless of the possible erroneous information, our plan is to recognize the FCC numbers and request State funding accordingly. In the Phase II service area there are 2,527 homes and 1,196 of them are underserved. This means that our funding request is not based on 2,527 homes but only the 1,196 underserved homes. Our CPE funding is based on an approximate 40% take ratio from the 1,196 underserved homes. This is a little higher than RSN's normal conservative take ratio of 30% but that slight increase is due to changes in the marketplace based on the "New Normal" caused by the current COVID 19 crisis. The outside engineering firm did extensive propagation mapping as seen in Attachment 5. The detailed propagation study enabled them to determine the exact number of "Qualified Underserved Locations" (QUL) that could be connected to each sector. These results allowed us to determine which sectors might be under utilized by underserved homes and how many total QUL could be served without overloading the system to ensure 25/3 and 50/5 services were available to all customers connected to that sector. According to the engineering findings, all of the tower sectors except for 4 of the 3650 and 1 of the 5Ghz is either maxed out or heavily loaded when supporting just the underserved population in their individual coverage area. These 5 lowest connected sectors are loaded below 25% capacity when hosting just underserved homes.

Application to DHCD Submitted through CAMS

Patrick County

Patrick County Broadband Expansion - Phase 2

Therefore RSN is covering the equipment cost for those underloaded sectors but since they are still marginally serving underserved homes those funds are included in our match. Additionally, RSN will cover the cost of all CPE installation of customers who already have 25/3 services based on speed test results conducted at time of “request for service” being submitted to RSN. The funds for homes with existing service above 25/3 is not included in our match and will be accounted for separately from the funded portion of the project.

5. Total Passings: Provide the number of total serviceable units in the project area. Applicants are encouraged to prioritize areas lacking 10 Megabits per second download and 1 Megabits per second upload speeds, as they will receive priority in application scoring. For projects with more than one service area, each service area must have delineated passing information. Label Attachment: Attachment 4 – Passings Form
 - a. Of the total number of passings, provide the number of residential, business, non-residential, and community anchors in the proposed project area. Describe the methodology used for these projections.
 - b. Provide the number of serviceable units in the project area that have 10/1 mbps or less. Describe the methodology used for these projections.

Answer:

As stated previously there are 2,527 homes passed in the Phase 2 coverage area. Of that number, 1,196 are considered underserved by the FCC. Based on the 2019 CIT Survey the coverage area appears to have the following non-residential locations that are underserved: 5 businesses, 12 home based businesses, 5 Churches. This gives you a total passing of 1,206. Unfortunately, it is difficult to determine how many of the locations have less than 10/1 but a good estimate would be 80% based on the amount of dissatisfied users in the CIT Survey.

6. For wireless projects only: Please explain the ownership of the proposed wireless infrastructure. Please describe if the private co-applicant will own or lease the radio mast, tower, or other vertical structure onto which the wireless infrastructure will be installed.

Answer:

All towers and equipment installed as part of this VATI Grant will be owned, operated, and maintained by RSN. RSN plans on leasing space on one existing SBA tower just off of HWY 58 with MBC fiber terminated inside of the site's compound.

7. Speeds: Describe the internet service offerings, including download and upload speeds, to be provided after completion of the proposed project. Detail whether that speed is based on dedicated or shared bandwidth, and detail the technology that will be used. This description can be illustrated by a map or schematic diagram, as appropriate. List the private co-applicant's tiered price structure for all speed offerings in the proposed project area, including the lowest tiered speed offering at or above 25/3 mbps.

Answer:

Two tiers of service will be offered; up to 25/ 3 Mbps for \$55, up to 50/5 Mbps for \$80. Bandwidth Sharing: As in all broadband technologies, bandwidth is shared at some point from the central server. This fixed wireless point to multi-point network has been designed with best engineering practices for resource sharing that will provide sustainable access for customers even during peak times. The design has been proven via widespread adoption to supply high quality broadband to citizens even at peak times. Customers will be qualified against the designed locations to be sure they are in underserved areas and further, they can realize speeds up to their subscribed tier. This design will integrate with the previous VATI grant to extend service to the eastern and southern sections of

Application to DHCD Submitted through CAMS

Patrick County

Patrick County Broadband Expansion - Phase 2

Patrick County. High speed is also assured by utilizing fiber backhaul where available and gigabit microwave where needed.

8. Network Design: Provide a description of the network system design used to deliver broadband service from the network's primary internet point(s) of presence to end users, including the network components that already exist and the ones that would be added by the proposed project. Provide a detailed explanation of how this information was determined with sources. If using a technology with shared bandwidth, describe how the equipment will handle capacity during peak intervals. For wireless projects, provide a propagation map for the proposed project area with a clearly defined legend for scale of map. Label Map: Attachment 5 – Propagation Map Wireless Project.

Answer:

This fixed wireless network has been designed to meet the VATI goals of supplying up to 25/3 and 50/5 broadband to customers in the area east and south of Patrick Springs. Professional RF software was used that accounts terrain, trees, buildings, propagation at specific frequencies, interference, take rates and shared access. The ability of this "Professional RF" software can be seen in the screenshot supplied in Attachment 5 labeled "Detail View". Backbone capacity will be provided from a fiber route extending from Henry County to "New Tower 11" as annotated on Attachment 15 - Network Overview Map. Existing fiber will feed the "SBA" co-location tower site. Gigabit microwave backhaul will serve the two remaining new tower sites; New Tower 4, New Tower 8. Gigabit microwave has been thoroughly vetted and is feasible using FCC licensed protected paths at either 6, 11 or 18 GHz. Please note that these "New Tower" locations are part of a complete wireless engineering plan that has been commissioned by RSN to cover Patrick County with a minimum of 25/3 service in the future and as funding becomes available. Fixed wireless has the distinct advantage of being more cost effective and faster to deploy than cable-based systems such as coaxial (Cable Modem) or fiber. COVID-19 has focused attention on the imperative to provide non-urban areas with connectivity for telehealth, schooling and remote work.

9. Project Readiness

Describe the current state of project development, including but not limited to: planning, preliminary engineering, identifying easements/permits, status of MOU or MOA, and final design. Prepare a detailed project timeline or construction schedule, identifying specific tasks, staff, contractor(s) responsible, collection of data, etc., and estimated start and completion dates. Applicants must include Memorandums of Understanding (MOUs) or Memorandums of Agreement (MOAs) between applicants (drafts are allowable). Label Attachments: Attachment 6 – Timeline/Project Management Plan; Attachment 7 – MOU/MOA between Applicant/Co-Applicant.

Answer:

The preliminary planning and engineering is totally completed. Once funding is approved, the project is ready to secure permits and lease agreements for the different tower sites. Additionally, the fiber route can be staked out and easements can be secured from VDOT and any of the property owners. Last year, Patrick County issued an RFP to expand Broadband Internet. RiverStreet Networks was awarded that contract which called for both parties to submit \$100,000.00 each. This \$200,000.00 was then used as matching funds towards a 2020 VATI grant. The VATI application was successful and it is providing the necessary funding for Phase I of a wireless broadband deployment. To help extend service beyond Phase I, RSN is providing an additional \$400,000.00 in matching funds for this year's VATI cycle. If awarded this grant would support a Phase II buildout. To formalize the relationship and the understanding of both parties, RSN and Patrick County have a fully executed MOU.

10. Matching funds: Complete the funding sources table indicating the cash match and in-kind resources from the applicant, co-applicant, and any other partners investing in the proposed project (VATI funding cannot exceed 80

Application to DHCD Submitted through CAMS

Patrick County

Patrick County Broadband Expansion - Phase 2

percent of total project cost). In-kind resources include, but are not limited to: grant management, acquisition of rights of way or easements, waiving permit fees, force account labor, etc. Please note the a minimum 20% match is required to be eligible for VATI, the private sector provider must provide 10% of the required match. If the private co-applicant's cash match is below 10% of total project cost, applicants must provide financial details demonstrating appropriate private investment. Label Attachments: Attachment 8 - Funding Sources Table; Attachment 9 – Documentation of Match Funding.

Answer:

RSN is supplying \$400,000.00 of cash in matching funds. Additionally, RSN has committed to installing customer premise equipment required for each “served” location that requests to connect to one of the tower sites. This application is requesting \$1,583,492.00 in State Funding to build out Phase II of a wireless broadband network in Patrick County. The documentation of RSN’s matching funds is covered by their executed Patrick County MOU. RSN has also supplied “Documentation of Matching Funding” to show that the funds have been approved and allocated for this project if grant funding is received. Additional attachments covering the Derivation of Cost, Engineering Estimate, and Supplier Quotes provide a complete listing of all expenses broken down into labor and material categories.

11. Leverage: Describe any leverage being provided by the applicant, co-applicant, and partner(s) in support of the proposed project.

Answer:

Currently RSN is attempting to leverage a partnership with AEP to develop more broadband opportunities in Patrick County. They have had several discussions about use of the existing AEP’s easements and right of ways as well as future opportunities to use AEP fiber for middle mile services. RSN is also looking for a way to leverage their FTTH network in Stokes County, NC into Patrick County. They are hoping that if they can connect the two locations that they can build a more robust and redundant network since they will have connectivity across MBC in VA and NCEMC fiber ring in NC. Local community groups in Patrick County have shown their support in expanding broadband access. The Stuart Rotary Club has raised over \$40,000 to be used for broadband expansion in the County.

12. Marketing: Describe the broadband adoption plan.

a. Explain how you plan to promote customer take rate, including marketing activities, outreach plan, and other actions to reach the identified serviceable units within the project area. Provide the anticipated take rate and describe the basis for the estimate.

b. Describe any digital literacy efforts to ensure residents and businesses in the proposed project area sufficiently utilize broadband. Please list any partnering organizations for digital literacy, such as the local library or cooperative extension office.

Answer:

Based on years of previous wireless deployments by RSN’s GTG and NC Wireless divisions, it is estimated that within the first year you should see a take rate of approximately 10% - 15%. This rate will drop off during the subsequent years and level off somewhere around 30% - 35% for the life of the product. However, there is the possibility of some sort of changes in the market and technology which could cause this take rate to increase or decrease. The recent pandemic has caused such an increase in the need for broadband services across the Commonwealth and the Country. To assist with the acquisition of customers, RSN has an extensive marketing

Application to DHCD Submitted through CAMS

Patrick County

Patrick County Broadband Expansion - Phase 2

campaign consisting of: postcards, banners, door hangers, billboards, radio spots, press releases, neighborhood signs, social media updates. Additionally, RSN uses a “Crowd Fiber” tool that is associated with its join.buildriderstreet.com. Additionally, if the information is being put in by an existing Internet user then we can capture their current bandwidth if they are willing to conduct a speed test that is part of the portal’s questionnaire. Furthermore, RSN will offer a “Cooperative Community Partner Discount” of \$10 to any; Government workers, first responders, medical and dental employees, real estate agents, farmers, etc.. RSN has additional savings to low income individuals and families.

13. Project Management: Identify key individuals who will be responsible for the management of the project and provide a brief description of their role and responsibilities for the project. Present this information in table format. Provide a brief description of the applicant and co-applicant’s history and experience with managing grants and constructing broadband communication facilities. Please attach any letters of support from stakeholders. If applicant is not a locality(s) in which the project will occur, please provide a letter of support from that locality. Attachment 10 – Letters of Support.

Answer:

NAME	TITLE	PROJECT DUTIES
Bryce Simmons	Economic Development Director	County POC and Project leader
Eric Cramer	RSN CEO	Directs all activities of RSN

Application to DHCD Submitted through CAMS

Patrick County

Patrick County Broadband Expansion - Phase 2

Jody Call	RSN CTO	Planning & Operations of Network
Jody Souther	RSN VP of Engineering	Oversees outside plant planning & construction
Kimberley Johnson	RSN CFO	Manages all Accounting & Recording keeping

Application to DHCD Submitted through CAMS

Patrick County

Patrick County Broadband Expansion - Phase 2

Amanda Perry	RSN VP of Sales & Marketing	Oversees CSRs, advertising & marketing operations
Greg Coltrain	RSN VP of Business Development	Liaison with County, stakeholders, and RSN
Josh Strickland	RSN Wireless Ops Mgr	Project Manager

RiverStreet Networks of Virginia is a wholly-owned subsidiary of Wilkes Telephone Membership Corporation (WTMC), a rural ILEC telephone company that provides services to various locations throughout North Carolina and most of the rural areas of Wilkes County, the location of the corporate office. It obtained a \$25M 75% BIP Stimulus grant/loan from the USDA in 2009. WTMC completed an 1100 mile system-wide Fiber-To-The-Home (FTTP) network using an active fiber design for all its exchanges. High-speed Broadband, Voice, and IPTV are available to 9200 subscribers in its Wilkes County service areas. This fiber network serves the four exchanges of Champion, Boomer, Lomax, and Clingman, which is tied together with a 250-mile transport fiber ring with multiple 10G connections. A MetaSwitch Softswitch with VOIP capability is located at the Champion office. IPTV is being routed from neighboring Skyline TMC via a redundant 10G fiber ring. A total of 20Gbps internet access is

Application to DHCD Submitted through CAMS

Patrick County

Patrick County Broadband Expansion - Phase 2

provided, using two different internet service providers (10Gbps from Citizens and 10Gbps from Spirit) via redundant fiber facilities. The broadband traffic is continuously monitoring the actual service levels of every customer, and all connections are upgraded before the 15% over-subscription is reached. The service goal of Wilkes is to maintain an over-subscription level of under 10% on an ongoing basis. This entire project was completed on budget and on time over five years. Additionally, another portion of RiverStreet Networks is TriCounty Telecom (TCT) merged its operation with WTMC's last year. TCT provides Broadband, Voice, and IPTV services over an all-fiber network to about 4,000 customers in parts of Beaufort, Hyde, and Washington Counties in Eastern North Carolina. This FTTH network was built with a \$12M 70%BIP Stimulus grant/loan from the USFA in 2009. Over 500 mile of distribution fiber was built over five years. In 2010 TriCounty received a 14.2 Million (75% Grant/25% Loan) through the Broadband Infrastructure Program (BIP), a program developed by the USDA Rural Utilities Service due to Federal Funded Appropriations via the American Recovery and Reinvestment Act of 2009. This facilitated the construction of more than 355 miles of Fiber Optic Cable to serve rural citizens of Northeastern Beaufort County and a small portion of Washington and Hyde Counties. This project was completed within five years. In 2019 & 2020, RSN received over \$32 Million in CAF II funding and \$48 Million in USDA Loans to expand broadband services in VA and NC.

14. Project Budget and Cost Appropriateness

Budget: Applicants must provide a detailed budget that outlines how the grant funds will be utilized, including an itemization of equipment, construction costs, and a justification of proposed expenses. If designating more than one service area in a single application, each service area must have delineated budget information. For wireless projects, please include delineated budget information by each tower. Expenses should be substantiated by clear cost estimates. Include copies of vendor quotes or documented cost estimates supporting the proposed budget. **Label Attachments:** Attachment 11 – Derivation of Costs; Attachment 12 - Documentation of Supporting Cost Estimates.

Answer:

All costs for this project are based on historical engineering estimates used on previous projects completed by RSN, their subsidiaries, and/or engineering partners as well as quotes provided by suppliers/contractors. A majority of the work will be completed by third party contractors who specialize in the installation of long haul fiber, building of towers, and installation of radio equipment on towers. All Quotes and Estimates that have been provided for this project without redaction. This project's budget is based on a third party's detailed wireless engineering plan based on their decades of professional experience. Attachments covering the Derivation of Cost, Engineering Estimate, and Supplier Quotes provide a complete listing of all expenses broken down into labor and material categories.

15. The cost benefit index is comprised of three factors: (i) state share for the total project cost, (ii) state cost per unit passed, and (iii) the internet speed. From these statistics, individual cost benefit scores are calculated and averaged together to create a point scale for a composite score. Provide the following:

- a. Total VATI funding request
- b. Number of serviceable units
- c. Highest residential speed available in proposed project area

Answer:

Total VATI Funding being requested \$1,583,492.00

Application to DHCD Submitted through CAMS

Patrick County

Patrick County Broadband Expansion - Phase 2

Number of serviceable units with less than 25/3 Mbps is 1,206

Highest residential speed available is 50/5 Mbps

16. Commonwealth Priorities

Additional points will be awarded to proposed projects that reflect Commonwealth priorities. If applicable, describe the following:

- a. How the proposed project fits into a larger plan to achieve universal broadband coverage for the locality. Explain the remaining areas of need in the locality and a brief description of the plan to achieve universal broadband coverage.
- b. Businesses, community anchors, or other passings in the proposed project area that will have a significant impact on the locality or region because of access to broadband.
- c. Unique partnerships involved in the proposed project. Examples include electric utilities, universities, and federal/state agencies.
- d. Digital equity efforts to ensure low to moderate income households in the proposed project area will have affordable access to speeds at or above 25/3 mbps.

Answer:

This is Patrick County's second request for funding to improve broadband service. There are a number of organizations and potential partners that would benefit from the proposed project. An important reason that RiverStreet Networks was selected to partner with Patrick County is due to RSN's current work in Stokes County, North Carolina and CAF funding in Virginia. Patrick County believes that it could be instrumental in improving communications across the state line by filling in the "fiber gap". Patrick County has built upon their current partnership with RSN by commissioning them to complete a Broadband Expansion Plan which has been partially funded by an ARC Area grant. Broadband expansion in the County could benefit the region, including Franklin and Henry Counties in Virginia, and Stokes County in North Carolina. Patrick County currently has a very good relationship with the West Piedmont Planning District Commission (WPPDC) and intends to utilize that organization. The planning district commission has already identified serving the Snow Creek area as a potential partnership between Franklin County and Patrick County. The proposed project will be one of, if not the, largest investments into Patrick County in the past decade.

17. Additional Information

17. Provide any other information that the applicant desires to include. Applicants are limited to four additional attachments.

Label Additional Attachments as:

- a. Attachment 13 – Two most recent Form 477 submitted to the FCC or equivalent
- b. Attachment 14 – XXXXXXXX
- c. Attachment 15 – XXXXXXXX
- d. Attachment 16 – XXXXXXXX

Application to DHCD Submitted through CAMS

Patrick County

Patrick County Broadband Expansion - Phase 2

e. Attachment 17 – XXXXXXXX

Answer:

The following attachments have been added; Attachment 14 - RSN Marketing Information, Attachment 15 - Network Overview Map, Attachment 16 - CIT Maps of Internet Services in Patrick County, Attachment 17 - CIT 2019 Study of Internet Services in Patrick County. The 2019 CIT Internet study is very helpful in understanding the real situation in Patrick County when it comes to their existing service providers and the services that they are offering.

Attachments:

Map(s) of project area, including proposed infrastructure

Attachment1ProjectAreaMap814202084902.pdf

Documentation of Federal Funding (CAF/ACAM/USDA, etc...) in and/or near proposed project area.

Attachment2DocumentationofFederalFundingArea815202033518.pdf

Documentation that proposed project area is unserved based on VATI criteria

Attachment3DocumentationUnderservedAreaVATICriteria815202093344.pdf

Passings Form (Please use template provided)

Attachment4PassingsForm815202043522.pdf

Propagation Map if Wireless Project

Attachment5PropagationMapWirelessProject8172020103854.pdf

Timeline/Project Management Plan

Attachment6TimelineProjectManagementPlan814202022725.pdf

MOU/MOA between applicant/co-applicant (can be in draft form)

Attachment7MOUMOABetweenApplicantCoApplicant8152020105016.pdf

Funding Sources Table

Attachment8FundingSourcesTable815202010717.pdf

Application to DHCD Submitted through CAMS

Patrick County

Patrick County Broadband Expansion - Phase 2

Documentation for match funding

Attachment9DocumentationofMatchingFunding814202085013.pdf

Letters of Support

Attachment10LettersofSupport817202035850.pdf

Derivation of Cost (Project Budget)

Attachment11DerivationofCosts8172020105434.pdf

Documentation supporting project costs (e.g. vendor quotes)

Attachment12DocumentationofSupportingCostEstimates815202010739.pdf

Two most recent Form 477 submitted to FCC

Attachment13TwoMostRecentForm477814202085043.pdf

Optional

Attachment14RSNMarketingInformation815202023937.pdf

Optional

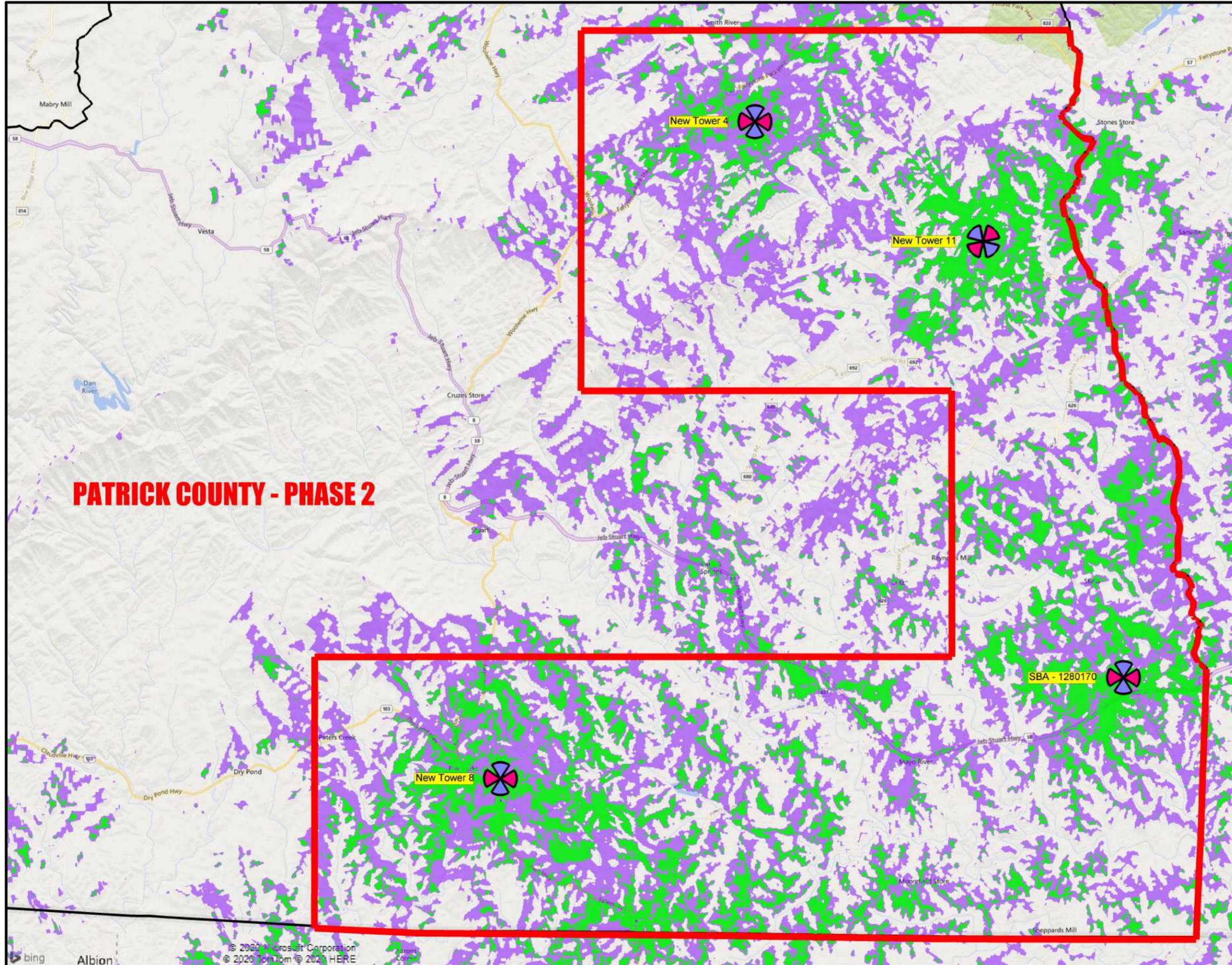
Attachment15NetworkOverviewMap815202023944.pdf

Optional

Attachment16CITMapsofInternetServicesinPatrickCounty8172020102010.pdf

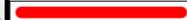
Optional

Attachment17CIT2019StudyofInternetServicesinPatrickCounty815202023958.pdf



PATRICK COUNTY - PHASE 2

EDX® SignalPro®: NC - Wilkes

 Patrick County Phase 2 Boundary

 Patrick County

C/(I+N) at Remote for Best Channel Patrick Ph2 5GHz

 >= 17.0 dB 50/5Mbps

 < 17.0 dB

Display threshold level: -89.0 dBmW
 RX Antenna - Type: USE FILE
 Height: 20.0 ft AGL Gain: 24.00 dBi

C/(I+N) at Remote for Best Channel Patrick Ph2 3650

 >= 10.0 dB 25/3Mbps

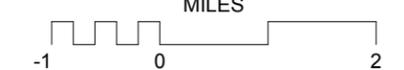
 < 10.0 dB

Display threshold level: -99.7 dBmW
 RX Antenna - Type: USE FILE
 Height: 20.0 ft AGL Gain: 13.00 dBi

Patrick Underserved Areas : locations

 = 1.0

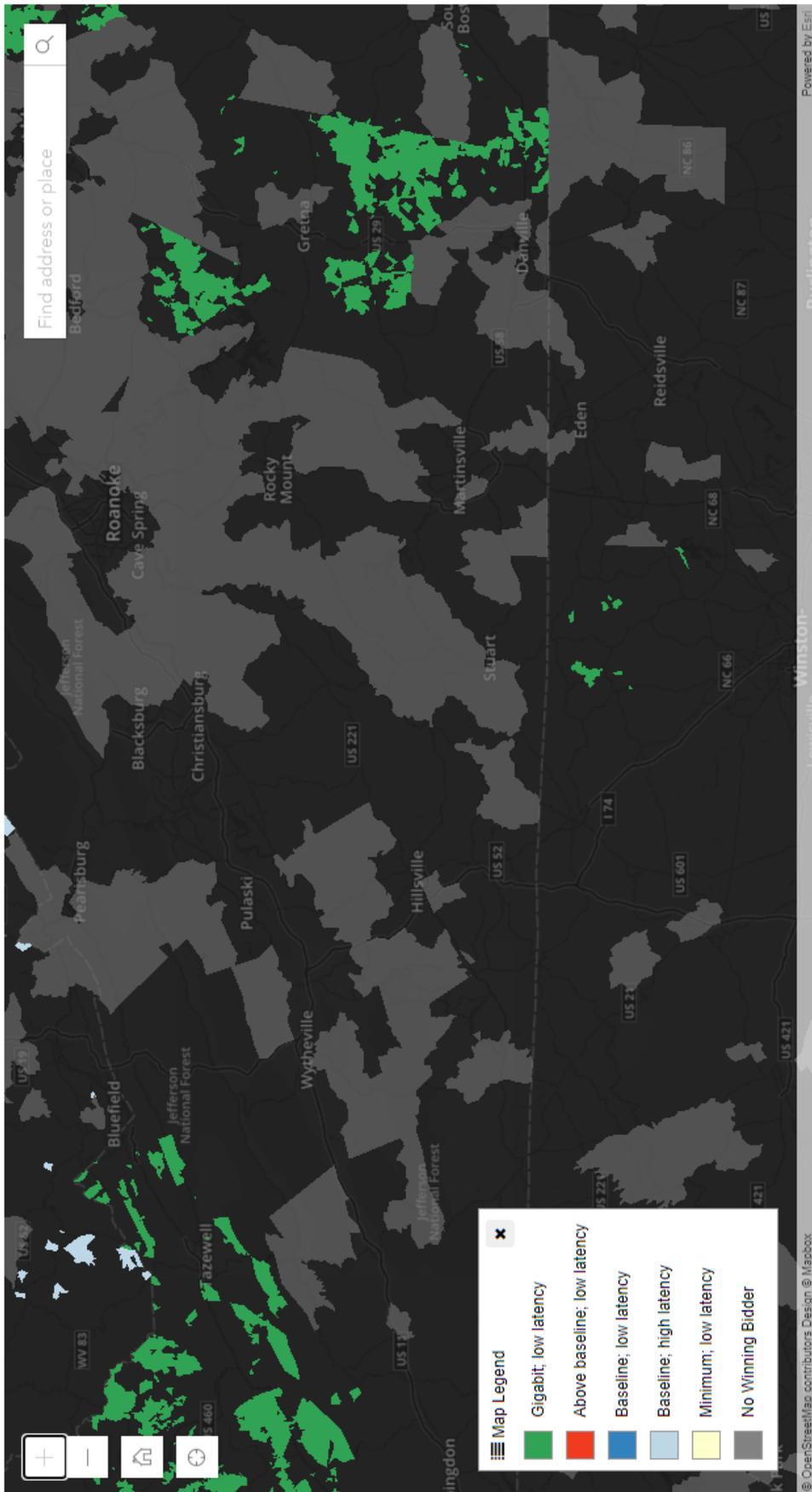
MILES



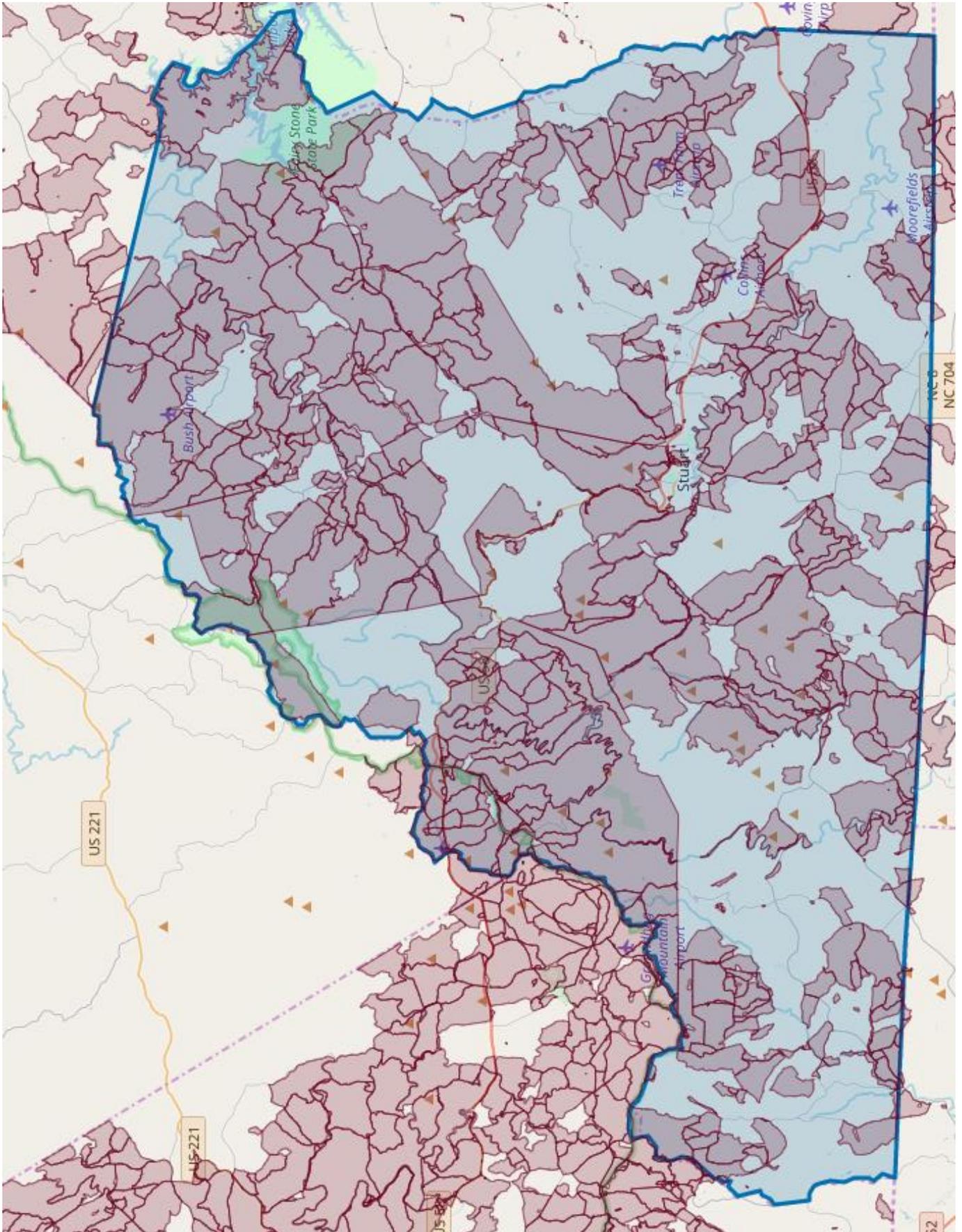


Attachment 2 – Documentation of Federal Funding Area

CAF II Winner Map from FCC Shows no Funding in Patrick County, VA

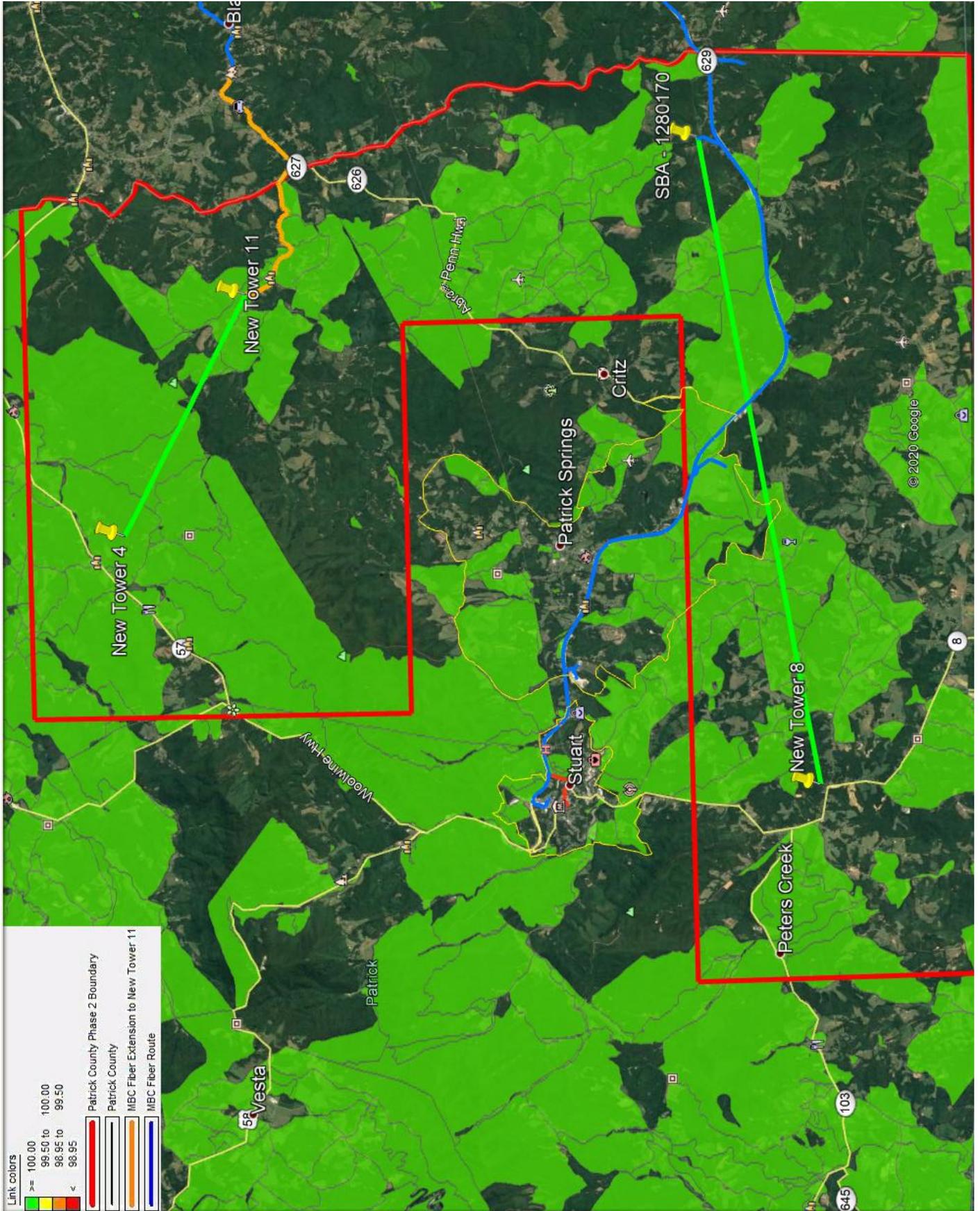


County outlined in Blue and Initial RDOF Census Blocks in Brown



Attachment 3 – Documentation Unserved Area VATI Criteria

Phase II Project Area outlined in Red & FCC Blocks with less than 25/3 Mbps in Green



2021 Virginia Telecommunication Initiative (VATI) Passing Form

Type of Passings	Total Number in Project Area	Number with Speeds at 10/1 or below in Project Area
Residential	2,527	1,196 - 25/3 or less
Businesses (non-home based)	9	5 - 25/3 or less
Businesses (home-based)	30	12 - 25/3 or less
Community Anchors	1	0 - 25/3 or less
Non-residential	5	5 - 25/3 or less
Total Number of Passings	2,572	1,206 (965 est. less than 10/1 service)

*Note: The Total Number of Passings **MUST** be equal to the Residential, Business (non-home based), Non-residential and Community Anchors sum.*

Definitions

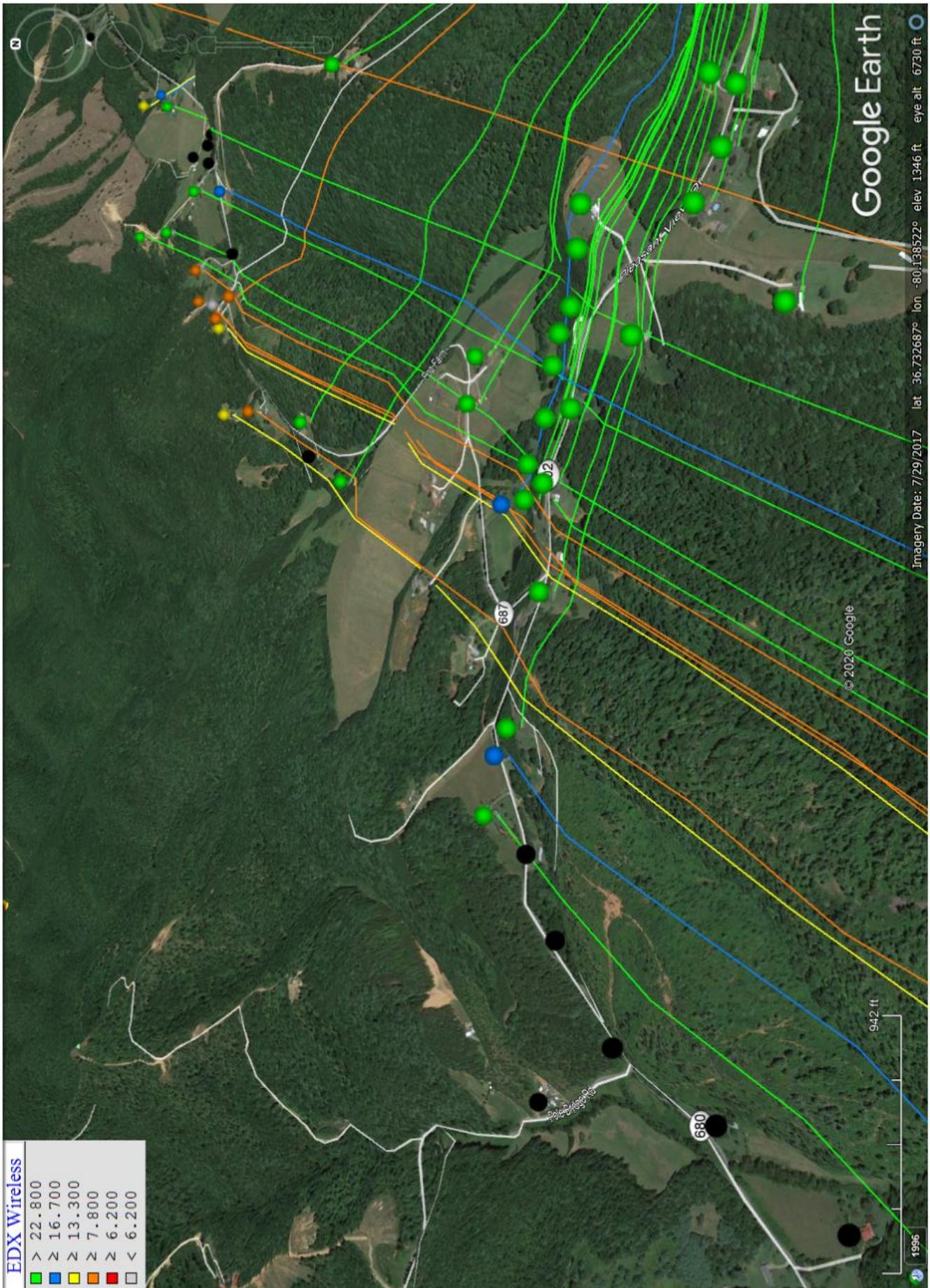
Passing – any structure that can receive service.

Business – An organization or entity that provides goods or services in order to generate profit. Businesses based in residential homes can count if they are a registered business (BPOL, LLC, etc.).

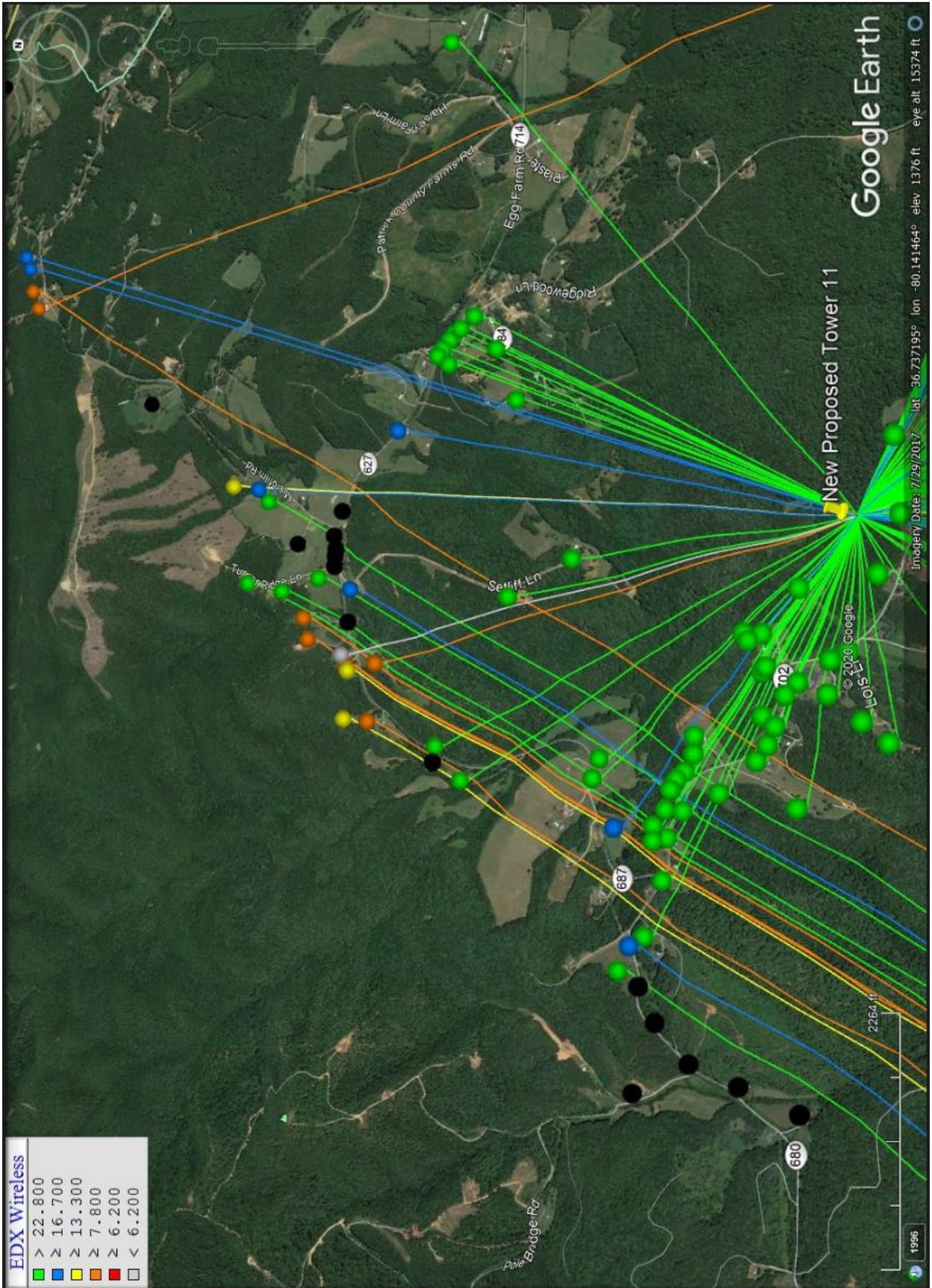
Community Anchor - schools, libraries, medical and health care providers, public safety entities, community colleges and other institutions of higher education, and other community support organizations and agencies that provide outreach, access, equipment, and support services to facilitate greater use of broadband service by vulnerable populations, including low-income, unemployed, and the aged.

Non-Residential Passing – places of worship, federal, state, or local facilities or other potential customers that are neither a residence, business or a community anchor as defined above.

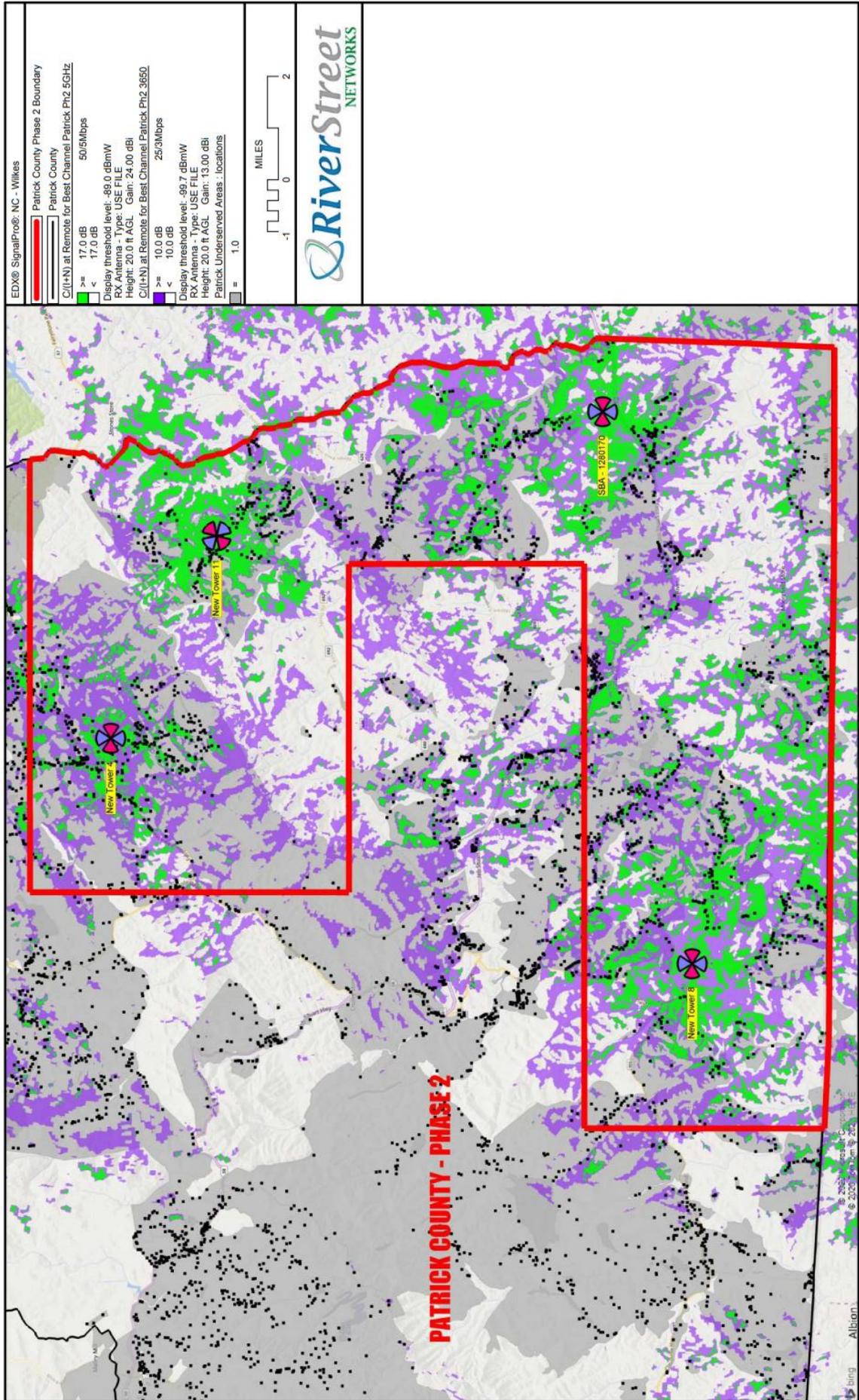
Attachment 5 – Propagation Map Wireless Project (Detailed View)



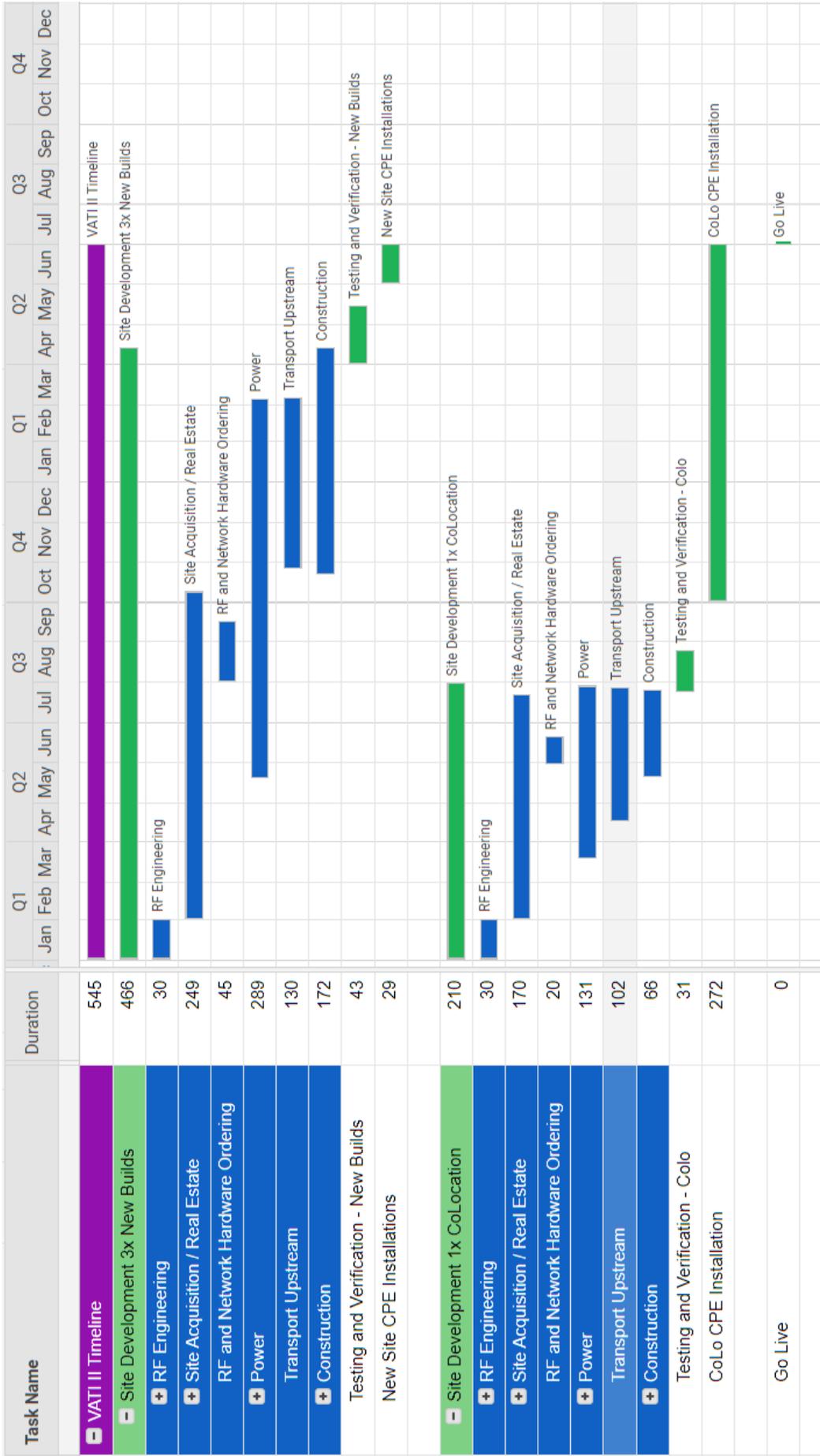
Attachment 5 – Propagation Map Wireless Project (Detailed View)



Attachment 5 – Propagation Map Wireless Project (Overview)



Attachment 6 – Timeline Project Management Plan



MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (MOU), hereinafter referred to as the Memorandum, entered into on , by and between Wilkes Telephone Membership Corporation and RiverStreet Communications of Virginia residing at 1400 River St, Wilkesboro, North Carolina 28697, hereinafter referred to as the "First Party," and Government of Patrick County, Virginia residing at 106 Rucker Street, Stuart, VA 24171 hereinafter referred to as the "Second Party," and collectively known as the "Parties" for the purpose of establishing and achieving various goals and objective relating to the partnership .

WHEREAS, the aforementioned Parties desire to enter into the herein described agreement in which they shall work together to accomplish the goals and objectives set forth;

AND WHEREAS, the Parties are desirous to enter an understanding, thus setting out all necessary working arrangements that both Parties agree shall be necessary to complete this partnership;

MISSION

The aforementioned partnership has been established with the following intended mission in mind:

To serve the unserved areas of Patrick County, Virginia with Broadband. Unserved areas are defined as having broadband speeds of 10 Mbps download and 1 Mbps upload or less.

PURPOSE AND SCOPE

The Parties intend for this Memorandum of Understanding to provide the cornerstone and structure for any and all possibly impending binding contract which may be related to the partnership.

OBJECTIVES

The Parties shall endeavor to work together to develop and establish policies and procedures that will promote and sustain a market for Rural Fixed Wireless Broadband availability or other economically feasible broadband option and intend to maintain a product and/or services that meets or exceeds all business and industry standards.

RESPONSIBILITIES AND OBLIGATIONS OF THE PARTIES

It is the desire and the wish of the aforementioned Parties to this MOU Agreement that this document should not and thus shall not establish nor create any form or manner of a formal agreement or indenture, but rather an agreement between the Parties to work together in such a manner that would promote a genuine atmosphere of collaboration and alliance in the support of an effective and efficient partnership and leadership meant to maintain, safeguard and sustain sound and optimal managerial, financial and administrative commitment with regards to all matters related to the partnership through means of the following individual services .

SERVICES COOPERATION

Wilkes Telephone Membership Corporation and RiverStreet Communications of Virginia in cooperation with the Government of Patrick County, Virginia agrees to provide the following services, which include, but are not limited to:

Fixed Wireless Broadband Internet.

Phase 1 (beginning 2020, upon availability of funds): Contribution of \$100,000 by RiverStreet Networks and contribution of \$100,000 by Patrick County to be used as matching funds for a FY2020 VATI Grant through DHCD. DHCD funding shall not exceed 80% of the project costs. A maximum grant request of \$1,000,000 will be made by Patrick County in accordance with grant funding eligibility requirements.

Phase 2 (beginning 2021): Contribution of up to \$400,000 by RiverStreet Networks if Patrick County is successful in obtaining Phase 1 funding. Contribution by Patrick County will be dependent upon allocation by the Board of Supervisors, the Patrick County Economic Development Authority, and/or the Patrick County Tourism Advisory Council. Patrick County will evaluate and pursue additional broadband funding sources including, but no limited to, the TRRC, USDA, DHCD, FCC, and ARC.

TIMELINE

The above outlined scope and objective shall be contingent on the Parties obtaining the necessary funds required for the partnership as described within any grant or business loan application, if any. Responsibilities under this Memorandum of Understanding may coincide with the grant period.

TERMS OF UNDERSTANDING

The term of this Memorandum of Understanding shall be for a period of 2 years from the aforementioned effective date and maybe extended upon written mutual agreement of both Parties.

AMENDMENT OR CANCELLATION OF THIS MEMORANDUM

This Memorandum of Understanding may be amended or modified at any time in writing by mutual consent of both parties.

In addition, the Memorandum of Understanding may be cancelled by either party with 120 days advance written notice, with the exception where cause for cancellation may include, but is not limited to, a material and significant breach of any of the provisions contained herein, when it may be cancelled upon delivery of written notice to the other party.

GENERAL PROVISIONS

The Parties acknowledge and understand that they must be able to fulfill their responsibilities under this Memorandum of Understanding in accordance with the provisions of the law and regulations that govern their activities. Nothing in the Memorandum is intended to negate or otherwise render ineffective any such provisions or operating procedures. The parties assume full responsibility for their performance under the terms of this Memorandum.

If at any time either party is unable to perform their duties or responsibilities under this Memorandum of Understanding consistent with such party's statutory and regulatory mandates, the affected party shall immediately provide written notice to the other party to establish a date for resolution of the matter.

LIMITATION OF LIABILITY

No rights or limitation of rights shall arise or be assumed between the Parties as a result of the terms of this Memorandum of Understanding.

ARBITRATION/MEDIATION DISPUTE RESOLUTION

The Parties to this Memorandum of Understanding agree that should any dispute arise through any aspect of this relationship, including, but not limited to, any matters, disputes or claims, the parties shall confer in good faith to promptly resolve any dispute. In the event that the parties are unable to resolve the issue or dispute between them, then the matter shall be mediated and/or arbitrated in an attempt to resolve any and all issues between the parties.

The parties agree that any claim or dispute that arises from for through this agreement, the relationship or obligations contemplated or outlined within this agreement, if not resolved through mediation, shall then go to and be resolved through final and binding arbitration. Any decision reached by the Arbitrator shall be final and binding and, if required, may be entered as a judgment in any court having jurisdiction.

In the event that any court having jurisdiction should determine that any portion of this Agreement to be invalid or unenforceable, only that portion shall be deemed invalid and not effective, while the balance of this Agreement shall remain in full effect and enforceable. This Agreement shall be interpreted and governed by and in accordance with the Federal Arbitration Act 9 U.S.C. §1-16.

NOTICE

Any notice or communication required or permitted under this Memorandum shall be sufficiently given if delivered in person or by certified mail, return receipt requested, to the address set forth in the opening paragraph or to such address as one may have furnished to the other in writing.

GOVERNING LAW

This Memorandum of Understanding shall be governed by and construed in accordance with the laws of the State of Virginia.

SEVERABILITY CLAUSE

In the event that any provision of this Memorandum of Understanding shall be deemed to be severable or invalid, and if any term, condition, phrase or portion of this Memorandum shall be determined to be unlawful or otherwise unenforceable, the remainder of the Memorandum shall remain in full force and effect, so long as the clause severed does not affect the intent of the parties. If a court should find that any provision of this Memorandum to be invalid or unenforceable, but that by limiting said provision it would become valid and enforceable, then said provision shall be deemed to be written, construed and enforced as so limited.

ASSIGNMENT

Neither party to this Memorandum of Understanding may assign or transfer the responsibilities or agreement made herein without the prior written consent of the non-assigning party, which approval shall not be unreasonably withheld.

ENTIRE UNDERSTANDING

The herein contained Memorandum of Understanding constitutes the entire understanding of the Parties pertaining to all matters contemplated hereunder at this time. The Parties signing this MOU desire or intend that any implementing contract, license, or other agreement entered into between the Parties subsequent hereto shall supersede and preempt any conflicting provision of this Memorandum of Understanding whether written or oral.

MOU SUMMARIZATION

FURTHERMORE, the Parties to this MOU have mutually acknowledged and agreed to the following:

- The Parties to this MOU shall work together in a cooperative and coordinated effort, and in such a manner and fashion to bring about the achievement and fulfillment of the goals and objectives of this partnership.
- It is not the intent of this MOU to restrict the Parties to this Agreement from their involvement or participation with any other public or private individuals, agencies or organizations.
- The Parties to this MOU shall mutually contribute and take part in any and all phases of the planning and development of this partnership, to the fullest extent possible.
- It is not the intent or purpose of this MOU to create any rights, benefits and/or trust responsibilities by or between the parties.
- The MOU shall in no way hold or obligate either Party to supply or transfer funds to maintain and/or sustain the partnership.
- Should there be any need or cause for the reimbursement or the contribution of any funds to or in support of the partnership, it shall then be controlled in accordance with Virginia governing laws, regulations and/or procedures.
- In the event that contributed funds should become necessary, any such endeavor shall be outlined in a separate and mutually agreed upon written agreement by the Parties or representatives of the Parties in accordance with current governing laws and regulations, and in no way does this MOU provide such right or authority.

- The Parties to this MOU have the right to individually or jointly terminate their participation in this Agreement provided that advanced written notice is delivered to the other party.
- Upon the signing of this MOU by both Parties, this Agreement shall be in full force and effect.

AUTHORIZATION AND EXECUTION

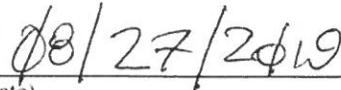
The signing of this Memorandum of Understanding does not constitute a formal undertaking, and as such it simply intends that the signatories shall strive to reach, to the best of their abilities, the goals and objectives stated in this MOU.

This Agreement shall be signed by Wilkes Telephone Membership Corporation and RiverStreet Communications of Virginia and Government of Patrick County, Virginia and shall be effective as of the date first written above.



(First Party Signature)

Wilkes Telephone Membership Corporation and RiverStreet Communications of Virginia

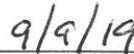


(Date)



(Second Party Signature)

Government of Patrick County, Virginia



(Date)

VATI FUNDING SOURCES TABLE

Please fill in the chart below with a description of the project funding source (local, federal, state, private, other), the amount from that source, the percentage of total project funding that source represents, and a description of the current status of the funds (pending, secured, etc.).

Source	Amount	%	Status
REQUESTED VATI	\$ 1,583,492.00	79.8	Pending
RIVERSTREET	\$ 400,000.00	20.2	APPROVED
	\$		
	\$		
	\$		
	\$		
	\$		
TOTAL	\$ 1,983,492.00	1000 %	

Gregory S. Coltrain
RiverStreet Networks
1400 River Street, Wilkesboro NC 28697

October 13, 2020

Virginia DHCD
600 E Main Street, Suite 300
Richmond, VA 23219

Re: Patrick County Phase II Wireless Project

Dear Dr. Tamarah Holmes:

RiverStreet Networks is excited with the opportunity to submit a proposal to expand broadband services throughout Patrick County. Our existing operations of RiverStreet Wireless of Virginia, Inc. and our years of experience in building and maintaining both Fixed Wireless and Fiber-to-the-Home networks will make for a quick-to-market solution for an entire County so desperately in need of broadband.

Our confidence in providing exceptional products and service is supported by our commitment to match the grant funds for Phase II with \$400,000. These Funds have been approved and allocated.

Please accept this correspondence as our notification to match the funding.

Sincerely,



Gregory S. Coltrain
VP of Business Development



PATRICK COUNTY VIRGINIA

(Name) Laura Clark

(Company/Title) President, Rotary Club of Stuart, VA

(Address) PO Box 562

Stuart, VA 24171

August 17, 2020

Virginia Department of Housing and
Community Development (DHCD)
600 E Main Street, Suite 300
Richmond, VA 23219

RE: Letter of Support for 2021 VATI Application for Patrick County

Dear DHCD Review Staff,

Patrick County is in need of broadband expansion just to provide basic safety, health, and education to its citizens. The Coronavirus pandemic has only highlighted the need for expanded broadband service within our communities and the lack of reliable internet connection continues to stifle investment in our commercial centers. These concerns need to be addressed and I approve of Patrick County's decision to partner with an Internet Service Provider (ISP) for broadband expansion.

I am writing in support of RiverStreet Networks and their proposal for wireless broadband service in Patrick County. As a community, we recognize the importance of broadband to better serve all citizens. Additionally, such improvements will increase educational opportunities and economic growth in Patrick County. The proposed investment in broadband infrastructure, utilizing VATI funds with matching resources provided by the County and RSN, will greatly improve the opportunities only faster broadband can return. Please consider the application and know the community supports these efforts.

Sincerely,

Laura M. Clark

(sign)



PATRICK COUNTY VIRGINIA

(Name) Ann Joseph-Jones
(Company/Title) Narroflex Inc - President
(Address) 201 S. Main St.
Stuart VA, 24171

August 12, 2020

Virginia Department of Housing and
Community Development (DHCD)
600 E Main Street, Suite 300
Richmond, VA 23219

RE: Letter of Support for 2021 VATI Application for Patrick County

Dear DHCD Review Staff,

Patrick County is in need of broadband expansion just to provide basic safety, health, and education to its citizens. The Coronavirus pandemic has only highlighted the need for expanded broadband service within our communities and the lack of reliable internet connection continues to stifle investment in our commercial centers. These concerns need to be addressed and I approve of Patrick County's decision to partner with an Internet Service Provider (ISP) for broadband expansion.

I am writing in support of RiverStreet Networks and their proposal for wireless broadband service in Patrick County. As a community, we recognize the importance of broadband to better serve all citizens. Additionally, such improvements will increase educational opportunities and economic growth in Patrick County. The proposed investment in broadband infrastructure, utilizing VATI funds with matching resources provided by the County and RSN, will greatly improve the opportunities only faster broadband can return. Please consider the application and know the community supports these efforts.

Sincerely,


_____(sign)



PATRICK COUNTY

VIRGINIA

(Name) Angie Brown
(Company/Title) Patrick Henry Community College
(Address) PO Box 1421
Stuart, VA 24171

August 12, 2020

Virginia Department of Housing and
Community Development (DHCD)
600 E Main Street, Suite 300
Richmond, VA 23219

RE: Letter of Support for 2021 VATI Application for Patrick County

Dear DHCD Review Staff,

Patrick County is in need of broadband expansion just to provide basic safety, health, and education to its citizens. The Coronavirus pandemic has only highlighted the need for expanded broadband service within our communities and the lack of reliable internet connection continues to stifle investment in our commercial centers. These concerns need to be addressed and I approve of Patrick County's decision to partner with an Internet Service Provider (ISP) for broadband expansion.

I am writing in support of RiverStreet Networks and their proposal for wireless broadband service in Patrick County. As a community, we recognize the importance of broadband to better serve all citizens. Additionally, such improvements will increase educational opportunities and economic growth in Patrick County. The proposed investment in broadband infrastructure, utilizing VATI funds with matching resources provided by the County and RSN, will greatly improve the opportunities only faster broadband can return. Please consider the application and know the community supports these efforts.

Sincerely,


_____(sign)



PATRICK COUNTY VIRGINIA

(Name) Anna Lester
(Company/Title) Emerald Investors
(Address) PO Box 31
Stuart, VA 24171

August 12, 2020

Virginia Department of Housing and
Community Development (DHCD)
600 E Main Street, Suite 300
Richmond, VA 23219

RE: Letter of Support for 2021 VATI Application for Patrick County

Dear DHCD Review Staff,

Patrick County is in need of broadband expansion just to provide basic safety, health, and education to its citizens. The Coronavirus pandemic has only highlighted the need for expanded broadband service within our communities and the lack of reliable internet connection continues to stifle investment in our commercial centers. These concerns need to be addressed and I approve of Patrick County's decision to partner with an Internet Service Provider (ISP) for broadband expansion.

I am writing in support of RiverStreet Networks and their proposal for wireless broadband service in Patrick County. As a community, we recognize the importance of broadband to better serve all citizens. Additionally, such improvements will increase educational opportunities and economic growth in Patrick County. The proposed investment in broadband infrastructure, utilizing VATI funds with matching resources provided by the County and RSN, will greatly improve the opportunities only faster broadband can return. Please consider the application and know the community supports these efforts.

Sincerely,

Anna Lester (sign)



PATRICK COUNTY VIRGINIA

(Name) Anna Lester
(Company/Title) Clark Gas & Oil
(Address) PO Box 31, 685 Commerce St.
Stuart, VA 24171

August 12, 2020

Virginia Department of Housing and
Community Development (DHCD)
600 E Main Street, Suite 300
Richmond, VA 23219

RE: Letter of Support for 2021 VATI Application for Patrick County

Dear DHCD Review Staff,

Patrick County is in need of broadband expansion just to provide basic safety, health, and education to its citizens. The Coronavirus pandemic has only highlighted the need for expanded broadband service within our communities and the lack of reliable internet connection continues to stifle investment in our commercial centers. These concerns need to be addressed and I approve of Patrick County's decision to partner with an Internet Service Provider (ISP) for broadband expansion.

I am writing in support of RiverStreet Networks and their proposal for wireless broadband service in Patrick County. As a community, we recognize the importance of broadband to better serve all citizens. Additionally, such improvements will increase educational opportunities and economic growth in Patrick County. The proposed investment in broadband infrastructure, utilizing VATI funds with matching resources provided by the County and RSN, will greatly improve the opportunities only faster broadband can return. Please consider the application and know the community supports these efforts.

Sincerely,

Anna Lester (sign)



PATRICK COUNTY VIRGINIA

(Name) W. Brad Davis
(Company/Title) Airwavz Solutions / CEO
(Address) 486 Bel Air Rd
Meadows of Dan, VA 24120

August 17, 2020

Virginia Department of Housing and
Community Development (DHCD)
600 E Main Street, Suite 300
Richmond, VA 23219

RE: Letter of Support for 2021 VATI Application for Patrick County

Dear DHCD Review Staff,

Patrick County is in need of broadband expansion just to provide basic safety, health, and education to its citizens. The Coronavirus pandemic has only highlighted the need for expanded broadband service within our communities and the lack of reliable internet connection continues to stifle investment in our commercial centers. These concerns need to be addressed and I approve of Patrick County's decision to partner with an Internet Service Provider (ISP) for broadband expansion.

I am writing in support of RiverStreet Networks and their proposal for wireless broadband service in Patrick County. As a community, we recognize the importance of broadband to better serve all citizens. Additionally, such improvements will increase educational opportunities and economic growth in Patrick County. The proposed investment in broadband infrastructure, utilizing VATI funds with matching resources provided by the County and RSN, will greatly improve the opportunities only faster broadband can return. Please consider the application and know the community supports these efforts.

Sincerely,

W. Brad Davis (sign)



PATRICK COUNTY

VIRGINIA

(Name) CHRISTOPHER BYERS
(Company/Title) BYERS LANDSCAPING LLC
(Address) 3418 CLARK HOUSE FARM RD
STUART, VA 24171

August 12, 2020

Virginia Department of Housing and
Community Development (DHCD)
600 E Main Street, Suite 300
Richmond, VA 23219

RE: Letter of Support for 2021 VATI Application for Patrick County

Dear DHCD Review Staff,

Patrick County is in need of broadband expansion just to provide basic safety, health, and education to its citizens. The Coronavirus pandemic has only highlighted the need for expanded broadband service within our communities and the lack of reliable internet connection continues to stifle investment in our commercial centers. These concerns need to be addressed and I approve of Patrick County's decision to partner with an Internet Service Provider (ISP) for broadband expansion.

I am writing in support of RiverStreet Networks and their proposal for wireless broadband service in Patrick County. As a community, we recognize the importance of broadband to better serve all citizens. Additionally, such improvements will increase educational opportunities and economic growth in Patrick County. The proposed investment in broadband infrastructure, utilizing VATI funds with matching resources provided by the County and RSN, will greatly improve the opportunities only faster broadband can return. Please consider the application and know the community supports these efforts.

Sincerely,

CHRISTOPHER BYERS (sign)



PATRICK COUNTY VIRGINIA

(Name) C. Dean Gilbert
(Company/Title) Patrick County Public Schools
(Address) P.O. Box 346, 104 Rocker St.
Stuart, VA 24171

August 12, 2020

Virginia Department of Housing and
Community Development (DHCD)
600 E Main Street, Suite 300
Richmond, VA 23219

RE: Letter of Support for 2021 VATI Application for Patrick County

Dear DHCD Review Staff,

Patrick County is in need of broadband expansion just to provide basic safety, health, and education to its citizens. The Coronavirus pandemic has only highlighted the need for expanded broadband service within our communities and the lack of reliable internet connection continues to stifle investment in our commercial centers. These concerns need to be addressed and I approve of Patrick County's decision to partner with an Internet Service Provider (ISP) for broadband expansion.

I am writing in support of RiverStreet Networks and their proposal for wireless broadband service in Patrick County. As a community, we recognize the importance of broadband to better serve all citizens. Additionally, such improvements will increase educational opportunities and economic growth in Patrick County. The proposed investment in broadband infrastructure, utilizing VATI funds with matching resources provided by the County and RSN, will greatly improve the opportunities only faster broadband can return. Please consider the application and know the community supports these efforts.

Sincerely,

C. Dean Gilbert (sign)



PATRICK COUNTY

VIRGINIA

(Name) Deborah H. Nowlin
(Company/Title) Patrick County Family Practice
(Address) 18877 Jeb Stuart Highway
Stuart, VA 24171

August 12, 2020

Virginia Department of Housing and
Community Development (DHCD)
600 E Main Street, Suite 300
Richmond, VA 23219

RE: Letter of Support for 2021 VATI Application for Patrick County

Dear DHCD Review Staff,

Patrick County is in need of broadband expansion just to provide basic safety, health, and education to its citizens. The Coronavirus pandemic has only highlighted the need for expanded broadband service within our communities and the lack of reliable internet connection continues to stifle investment in our commercial centers. These concerns need to be addressed and I approve of Patrick County's decision to partner with an Internet Service Provider (ISP) for broadband expansion.

I am writing in support of RiverStreet Networks and their proposal for wireless broadband service in Patrick County. As a community, we recognize the importance of broadband to better serve all citizens. Additionally, such improvements will increase educational opportunities and economic growth in Patrick County. The proposed investment in broadband infrastructure, utilizing VATI funds with matching resources provided by the County and RSN, will greatly improve the opportunities only faster broadband can return. Please consider the application and know the community supports these efforts.

Sincerely,

Deborah Nowlin

(sign)



PATRICK COUNTY

VIRGINIA

(Name) Debra S. Shelor

(Company/Title) _____

(Address) 3859 Jeb Stuart Hwy
Meadows of Dan, VA 24120

August 12, 2020

Virginia Department of Housing and
Community Development (DHCD)
600 E Main Street, Suite 300
Richmond, VA 23219

RE: Letter of Support for 2021 VATI Application for Patrick County

Dear DHCD Review Staff,

Patrick County is in need of broadband expansion just to provide basic safety, health, and education to its citizens. The Coronavirus pandemic has only highlighted the need for expanded broadband service within our communities and the lack of reliable internet connection continues to stifle investment in our commercial centers. These concerns need to be addressed and I approve of Patrick County's decision to partner with an Internet Service Provider (ISP) for broadband expansion.

I am writing in support of RiverStreet Networks and their proposal for wireless broadband service in Patrick County. As a community, we recognize the importance of broadband to better serve all citizens. Additionally, such improvements will increase educational opportunities and economic growth in Patrick County. The proposed investment in broadband infrastructure, utilizing VATI funds with matching resources provided by the County and RSN, will greatly improve the opportunities only faster broadband can return. Please consider the application and know the community supports these efforts.

Sincerely,

Debra S. Shelor (sign)



Patrick Community Media, Inc
DBA WHEO
3824 Wayside Road
Stuart, VA 24171
276-694-3114
wheo1270am@gmail.com

August 12, 2020

Virginia Department of Housing and Community Development (DHCD)
600 E Main Street, Suite 300
Richmond, VA 23219

RE: Letter of Support for 2021 VATI Application for Patrick County

Dear DHCD Review Staff,

Patrick County is in need of broadband expansion just to provide basic safety, health, and education to its citizens. The Coronavirus pandemic has only highlighted the need for expanded broadband service within our communities and the lack of reliable internet connection continues to stifle investment in our commercial centers. These concerns need to be addressed and I approve of Patrick County's decision to partner with an Internet Service Provider (ISP) for broadband expansion.

I am writing in support of RiverStreet Networks and their proposal for wireless broadband service in Patrick County. As a community, we recognize the importance of broadband to better serve all citizens. Additionally, such improvements will increase educational opportunities and economic growth in Patrick County. The proposed investment in broadband infrastructure, utilizing VATI funds with matching resources provided by the County and RSN, will greatly improve the opportunities only faster broadband can return. Please consider the application and know the community supports these efforts.

Sincerely,

A handwritten signature in black ink that reads "Denise".

Denise L. Stirewalt
General Manager



PATRICK COUNTY

VIRGINIA

(Name) Edd Martin

(Company/Title) Blue Ridge Mountain Real Estate

(Address) 18376 Jeb Stuart Highway
Stuart, VA 24171

August 12, 2020

Virginia Department of Housing and
Community Development (DHCD)
600 E Main Street, Suite 300
Richmond, VA 23219

RE: Letter of Support for 2021 VATI Application for Patrick County

Dear DHCD Review Staff,

Patrick County is in need of broadband expansion just to provide basic safety, health, and education to its citizens. The Coronavirus pandemic has only highlighted the need for expanded broadband service within our communities and the lack of reliable internet connection continues to stifle investment in our commercial centers. These concerns need to be addressed and I approve of Patrick County's decision to partner with an Internet Service Provider (ISP) for broadband expansion.

I am writing in support of RiverStreet Networks and their proposal for wireless broadband service in Patrick County. As a community, we recognize the importance of broadband to better serve all citizens. Additionally, such improvements will increase educational opportunities and economic growth in Patrick County. The proposed investment in broadband infrastructure, utilizing VATI funds with matching resources provided by the County and RSN, will greatly improve the opportunities only faster broadband can return. Please consider the application and know the community supports these efforts.

Sincerely,

Edd Martin (sign)



PATRICK COUNTY

VIRGINIA

(Name) James Werth, Jr., PhD, ABPP
(Company/Title) Tri-Area Community Health
(Address) 14168 Danville Pike
Laurel Fork, VA 24352

August 12, 2020

Virginia Department of Housing and
Community Development (DHCD)
600 E Main Street, Suite 300
Richmond, VA 23219

RE: Letter of Support for 2021 VATI Application for Patrick County

Dear DHCD Review Staff,

Patrick County is in need of broadband expansion just to provide basic safety, health, and education to its citizens. The Coronavirus pandemic has only highlighted the need for expanded broadband service within our communities and the lack of reliable internet connection continues to stifle investment in our commercial centers. These concerns need to be addressed and I approve of Patrick County's decision to partner with an Internet Service Provider (ISP) for broadband expansion.

I am writing in support of RiverStreet Networks and their proposal for wireless broadband service in Patrick County. As a community, we recognize the importance of broadband to better serve all citizens. Additionally, such improvements will increase educational opportunities and economic growth in Patrick County. The proposed investment in broadband infrastructure, utilizing VATI funds with matching resources provided by the County and RSN, will greatly improve the opportunities only faster broadband can return. Please consider the application and know the community supports these efforts.

Sincerely,

James Werth, Jr. (sign)



PATRICK COUNTY VIRGINIA

(Name) Jerry Hopkins
(Company/Title) Hopkins LLC-Managing Member
(Address) P.O. Box 103
Woolwine, VA 24185

August 12, 2020

Virginia Department of Housing and
Community Development (DHCD)
600 E Main Street, Suite 300
Richmond, VA 23219

RE: Letter of Support for 2021 VATI Application for Patrick County

Dear DHCD Review Staff,

Patrick County is in need of broadband expansion just to provide basic safety, health, and education to its citizens. The Coronavirus pandemic has only highlighted the need for expanded broadband service within our communities and the lack of reliable internet connection continues to stifle investment in our commercial centers. These concerns need to be addressed and I approve of Patrick County's decision to partner with an Internet Service Provider (ISP) for broadband expansion.

I am writing in support of RiverStreet Networks and their proposal for wireless broadband service in Patrick County. As a community, we recognize the importance of broadband to better serve all citizens. Additionally, such improvements will increase educational opportunities and economic growth in Patrick County. The proposed investment in broadband infrastructure, utilizing VATI funds with matching resources provided by the County and RSN, will greatly improve the opportunities only faster broadband can return. Please consider the application and know the community supports these efforts.

Sincerely,


_____ (sign)



PATRICK COUNTY VIRGINIA

(Name) _____ Juanita Forbes Morris
(Company/Title) _____ Morris Realty Co.
(Address) _____ 122 Sunset Drive
_____ Stuart, VA 24171

August 12, 2020

Virginia Department of Housing and
Community Development (DHCD)
600 E Main Street, Suite 300
Richmond, VA 23219

RE: Letter of Support for 2021 VATI Application for Patrick County

Dear DHCD Review Staff,

Patrick County is in need of broadband expansion just to provide basic safety, health, and education to its citizens. The Coronavirus pandemic has only highlighted the need for expanded broadband service within our communities and the lack of reliable internet connection continues to stifle investment in our commercial centers. These concerns need to be addressed and I approve of Patrick County's decision to partner with an Internet Service Provider (ISP) for broadband expansion.

I am writing in support of RiverStreet Networks and their proposal for wireless broadband service in Patrick County. As a community, we recognize the importance of broadband to better serve all citizens. Additionally, such improvements will increase educational opportunities and economic growth in Patrick County. The proposed investment in broadband infrastructure, utilizing VATI funds with matching resources provided by the County and RSN, will greatly improve the opportunities only faster broadband can return. Please consider the application and know the community supports these efforts.

Sincerely,


_____ (sign)

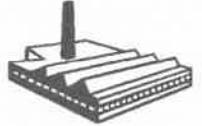


CLARK BROTHERS COMPANY INC.

(276) 694-7158
FAX (276) 694-3963
P.O. BOX 267
STUART, VIRGINIA 24171



Residential and Commercial
Builders
Since 1885



August 17, 2020

Virginia Department of Housing and
Community Development (DHCD)
600 E Main Street, Suite 300
Richmond, VA 23219

RE: Letter of Support for 2021 VATI Application for Patrick County

Dear DHCD Review Staff, Patrick County is in need of broadband expansion just to provide basic safety, health, and education to its citizens. The Coronavirus pandemic has only highlighted the need for expanded broadband service within our communities and the lack of reliable internet connection continues to stifle investment in our commercial centers. These concerns need to be addressed and I approve of Patrick County's decision to partner with an Internet Service Provider (ISP) for broadband expansion.

I am writing in support of RiverStreet Networks and their proposal for wireless broadband service in Patrick County. As a community, we recognize the importance of broadband to better serve all citizens. Additionally, such improvements will increase educational opportunities and economic growth in Patrick County. The proposed investment in broadband infrastructure, utilizing VATI funds with matching resources provided by the County and RSN, will greatly improve the opportunities only faster broadband can return. Please consider the application and know the community supports these efforts.

Sincerely,

Laura M. Clark

Laura M. Clark
Secretary/Treasurer
Clark Brothers Company, Inc.





PATRICK COUNTY

VIRGINIA

(Name) Patricia H Hall
(Company/Title) Blue Ridge Bank/Br Manager
(Address) 48 Animal Clinic Rd
Stuart, VA 24171

August 12, 2020

Virginia Department of Housing and
Community Development (DHCD)
600 E Main Street, Suite 300
Richmond, VA 23219

RE: Letter of Support for 2021 VATI Application for Patrick County

Dear DHCD Review Staff,

Patrick County is in need of broadband expansion just to provide basic safety, health, and education to its citizens. The Coronavirus pandemic has only highlighted the need for expanded broadband service within our communities and the lack of reliable internet connection continues to stifle investment in our commercial centers. These concerns need to be addressed and I approve of Patrick County's decision to partner with an Internet Service Provider (ISP) for broadband expansion.

I am writing in support of RiverStreet Networks and their proposal for wireless broadband service in Patrick County. As a community, we recognize the importance of broadband to better serve all citizens. Additionally, such improvements will increase educational opportunities and economic growth in Patrick County. The proposed investment in broadband infrastructure, utilizing VATI funds with matching resources provided by the County and RSN, will greatly improve the opportunities only faster broadband can return. Please consider the application and know the community supports these efforts.

Sincerely,

Patricia H. Hall (sign)



PATRICK COUNTY

VIRGINIA

(Name) Rebecca Adcock
(Company/Title) Vice Mayor~ Town of Stuart
(Address) PO BOX 1359
Stuart VA

August 12, 2020

Virginia Department of Housing and
Community Development (DHCD)
600 E Main Street, Suite 300
Richmond, VA 23219

RE: Letter of Support for 2021 VATI Application for Patrick County

Dear DHCD Review Staff,

Patrick County is in need of broadband expansion just to provide basic safety, health, and education to its citizens. The Coronavirus pandemic has only highlighted the need for expanded broadband service within our communities and the lack of reliable internet connection continues to stifle investment in our commercial centers. These concerns need to be addressed and I approve of Patrick County's decision to partner with an Internet Service Provider (ISP) for broadband expansion.

I am writing in support of RiverStreet Networks and their proposal for wireless broadband service in Patrick County. As a community, we recognize the importance of broadband to better serve all citizens. Additionally, such improvements will increase educational opportunities and economic growth in Patrick County. The proposed investment in broadband infrastructure, utilizing VATI funds with matching resources provided by the County and RSN, will greatly improve the opportunities only faster broadband can return. Please consider the application and know the community supports these efforts.

Sincerely,

Rebecca Adcock (sign)



PATRICK COUNTY VIRGINIA

(Name) Tammy Durham
(Company/Title) Patrick County Eye Associates
(Address) 797 Woodland Dr
Stuart VA 24171

August 12, 2020

Virginia Department of Housing and
Community Development (DHCD)
600 E Main Street, Suite 300
Richmond, VA 23219

RE: Letter of Support for 2021 VATI Application for Patrick County

Dear DHCD Review Staff,

Patrick County is in need of broadband expansion just to provide basic safety, health, and education to its citizens. The Coronavirus pandemic has only highlighted the need for expanded broadband service within our communities and the lack of reliable internet connection continues to stifle investment in our commercial centers. These concerns need to be addressed and I approve of Patrick County's decision to partner with an Internet Service Provider (ISP) for broadband expansion.

I am writing in support of RiverStreet Networks and their proposal for wireless broadband service in Patrick County. As a community, we recognize the importance of broadband to better serve all citizens. Additionally, such improvements will increase educational opportunities and economic growth in Patrick County. The proposed investment in broadband infrastructure, utilizing VATI funds with matching resources provided by the County and RSN, will greatly improve the opportunities only faster broadband can return. Please consider the application and know the community supports these efforts.

Sincerely,

Tammy Durham (sign)

August 12, 2020

Virginia Department of Housing and
Community Development (DHCD)
600 E Main Street, Suite 300
Richmond, VA 23219

RE: Letter of Support for 2021 VATI Application for Patrick County

Dear DHCD Review Staff,

I am writing in support of RiverStreet Networks and their proposal for wireless broadband service in Patrick County.

Businesses such as ours recognize that modern communication is essential for the development of our rural community. As we seek to locate and relocate people to our area, we have to disclose to buyers the standards of living in comparison to where they are coming from. Many discouragements lead to a "no sale" of property listings. We can only hope for the level of services that they have taken for granted elsewhere.

The sole land line communication service provider for our county is CenturyLink but their system is dismal and outdated for most of our rural area. Firstly, repairs are not made in a timely manner. Secondly, they provide DSL internet at unacceptable speeds of 1.5 Mbps and will not accept new customer applications. Competitive, workable and affordable alternatives are not easily available.

As septuagenarians, my wife Hilda and I are on the short track, so to speak. We are not asking so much for ourselves but for our community. We recognize the importance of broadband to better serve all citizens. We have worked with our local broadband committee to bring about the progress that has been made.

We approve of Patrick County's decision to partner with RiverStreet Networks (RSN) as an Internet Service Provider for broadband expansion. We applauded the successful efforts by them to obtain the initial VATI project funding even though that phase will not reach our area. Additional funding is needed for our rural county that has limited resources.

Our area is not densely populated. That fact contributes to its attractiveness. However that lack of density also renders unfeasible community facilities such as central water systems and cable communication. We are lucky to have electric service. Wireless broadband is much anticipated.

The proposed investment in broadband infrastructure, utilizing VATI funds with matching resources provided by the County and RSN, will greatly improve the opportunities only faster broadband can return. Please consider the application and know that the community supports these efforts.

Sincerely,



Charles P. Vivier,

Patrick County Broadband Committee; Broker (retired), Carrolland Realty Inc.

2831 Pilot View Road, Hillsville, Virginia 24343



PATRICK COUNTY

VIRGINIA

Sandra P. Belcher
Director of Tourism and Marketing
106 Rucker Street,
Stuart, Virginia 24171

August 14, 2020

Virginia Department of Housing and
Community Development (DHCD)
600 E Main Street, Suite 300
Richmond, VA 23219

RE: Letter of Support for 2021 VATI Application for Patrick County

Dear DHCD Review Staff,

Patrick County is in need of broadband expansion just to provide basic safety, health, and education to its citizens. The Coronavirus pandemic has only highlighted the need for expanded broadband service within our communities and the lack of reliable internet connection continues to stifle investment in our commercial centers. These concerns need to be addressed and I approve of Patrick County's decision to partner with an Internet Service Provider (ISP) for broadband expansion.

I am writing in support of RiverStreet Networks and their proposal for wireless broadband service in Patrick County. As a community, we recognize the importance of broadband to better serve all citizens. Additionally, such improvements will increase educational opportunities and economic growth in Patrick County. The proposed investment in broadband infrastructure, utilizing VATI funds with matching resources provided by the County and RSN, will greatly improve the opportunities only faster broadband can return. Please consider the application and know the community supports these efforts.

Sincerely,



PATRICK COUNTY

VIRGINIA

Rickie E. Fulcher

Patrick Co. Supervisor (Peters Creek)

590 American Legion Road

Stuart, VA 24171

August 23, 2019

Virginia Department of Housing and
Community Development (DHCD)
600 E Main Street, Suite 300
Richmond, VA 23219

RE: Letter of Support for 2020 VATI Application for Patrick County

Dear Virginian and DHCD Staff,

Patrick County is in need of broadband expansion just to provide basic safety, health, and education services. Lack of reliable internet connection continues to stifle investment in our community and underserve residential demand. I approve of Patrick County's decision to partner with an Internet Service Provider (ISP) for broadband expansion.

I am writing in support of RiverStreet Communications of Virginia, Inc/RiverStreet Networks and their proposal for wireless broadband service in Patrick County. As a community, we recognize the importance of broadband to better serve all citizens. Additionally, such improvements will increase educational opportunities and economic growth in the County. The proposed investment in broadband infrastructure, utilizing VATI funds with matching County and RSN funds, would greatly improve the opportunities only faster broadband can return. Please consider the County's application for funding as we are in support of their efforts.

Sincerely,

A handwritten signature in black ink, appearing to read "R. E. Fulcher", positioned above a horizontal line.



PATRICK COUNTY

VIRGINIA

(Name) Sandra P. Belcher

(Company/Title) Director of Tourism & Marketing

(Address) 106 Rucker Street
Sturat, VA 24171

August 23, 2019

Virginia Department of Housing and
Community Development (DHCD)
600 E Main Street, Suite 300
Richmond, VA 23219

RE: Letter of Support for 2020 VATI Application for Patrick County

Dear Virginian and DHCD Staff,

Patrick County is in need of broadband expansion just to provide basic safety, health, and education services. Lack of reliable internet connection continues to stifle investment in our community and underserve residential demand. I approve of Patrick County's decision to partner with an Internet Service Provider (ISP) for broadband expansion.

I am writing in support of RiverStreet Communications of Virginia, Inc/RiverStreet Networks and their proposal for wireless broadband service in Patrick County. As a community, we recognize the importance of broadband to better serve all citizens. Additionally, such improvements will increase educational opportunities and economic growth in the County. The proposed investment in broadband infrastructure, utilizing VATI funds with matching County and RSN funds, would greatly improve the opportunities only faster broadband can return. Please consider the County's application for funding as we are in support of their efforts.

Sincerely,

 _____ (sign)



PATRICK COUNTY

VIRGINIA

(Name) Stephanie Brinegar Vipperman
(Company/Title) Commonwealth's Attorney of Patrick Co
(Address) P. O. Box 268
Stuart, VA 24171

August 23, 2019

Virginia Department of Housing and
Community Development (DHCD)
600 E Main Street, Suite 300
Richmond, VA 23219

RE: Letter of Support for 2020 VATI Application for Patrick County

Dear Virginian and DHCD Staff,

Patrick County is in need of broadband expansion just to provide basic safety, health, and education services. Lack of reliable internet connection continues to stifle investment in our community and underserve residential demand. I approve of Patrick County's decision to partner with an Internet Service Provider (ISP) for broadband expansion.

I am writing in support of RiverStreet Communications of Virginia, Inc/RiverStreet Networks and their proposal for wireless broadband service in Patrick County. As a community, we recognize the importance of broadband to better serve all citizens. Additionally, such improvements will increase educational opportunities and economic growth in the County. The proposed investment in broadband infrastructure, utilizing VATI funds with matching County and RSN funds, would greatly improve the opportunities only faster broadband can return. Please consider the County's application for funding as we are in support of their efforts.

Sincerely,

Stephanie Brinegar Vipperman (sign)



PATRICK COUNTY VIRGINIA

(Name) Steve Allen
(Company/Title) Emergency Management
(Address) PO Box 466
Stuart, VA 24171

August 23, 2019

Virginia Department of Housing and
Community Development (DHCD)
600 E Main Street, Suite 300
Richmond, VA 23219

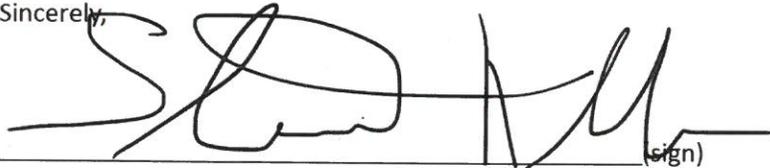
RE: Letter of Support for 2020 VATI Application for Patrick County

Dear Virginian and DHCD Staff,

Patrick County is in need of broadband expansion just to provide basic safety, health, and education services. Lack of reliable internet connection continues to stifle investment in our community and underserve residential demand. I approve of Patrick County's decision to partner with an Internet Service Provider (ISP) for broadband expansion.

I am writing in support of RiverStreet Communications of Virginia, Inc/RiverStreet Networks and their proposal for wireless broadband service in Patrick County. As a community, we recognize the importance of broadband to better serve all citizens. Additionally, such improvements will increase educational opportunities and economic growth in the County. The proposed investment in broadband infrastructure, utilizing VATI funds with matching County and RSN funds, would greatly improve the opportunities only faster broadband can return. Please consider the County's application for funding as we are in support of their efforts.

Sincerely,



(sign)



West Piedmont Planning District Commission

P.O. Box 5268
Martinsville, VA 24115-5268
Phone: (276) 638-3987
Fax: (276) 638-8137
e-mail: staff@wppdc.org

Serving Franklin, Henry, Patrick, and Pittsylvania Counties - Cities of Danville and Martinsville - Town of Rocky Mount - Since 1970

August 23, 2019

Mr. Tom Rose, County Administrator
Patrick County
P. O. Box 466
Stuart, VA 24171

Dear Tom,

On behalf of the West Piedmont Planning District Commission, the Board of Commissioners would like to offer support for Patrick County's application to the Department of Housing and Community Development's Virginia Telecommunications Initiative (VATI). We understand this funding in the amount of \$1 million will assist with fixed wireless service in the communities of Patrick Springs, Meadows of Dan, and Woolwine. Further, we acknowledge that this is Phase I of a multi-phased process to improve the capacity in both unserved and underserved areas, utilizing a public-private partnership.

We recognize that the County is partnering with RiverStreet Networks to expand accessibility to broadband services in these first targeted areas and highly commend these efforts. We wish you every success in this initiative to enhance quality of life and advance economic vitality in these rural communities.

Sincerely,

David R. Hoback
Executive Director

cc: Bryce Simmons, Patrick County



P.O. Box 9
Laurel Fork, VA 24352
Phone (276) 398-2292
Fax (276) 398-3331

August 26, 2019

Bryce M. Simmons, PE
Economic Development Director
Rucker Street
Stuart, VA

Dear Mr. Simmons,

I am pleased to hear that Patrick County is partnering with RiverStreet Networks to pursue broadband funding for Patrick County. Access to highspeed Internet is vitally important to the economic growth and development of Southwest Virginia. As you know, companies will not locate to communities that are unable to utilize technology to its fullest extent possible. Further, lack of access to highspeed Internet impacts the health and welfare of community members.

I have worked in healthcare for the past 39 years in Southwest / Southside Virginia in the management of federally-funded Community Health Centers. The need for access to highspeed Internet has increased over time as technology has advanced and the demands on the various systems have expanded.

Tri-Area Community Health has three clinics and serves Carroll, Floyd, Franklin, and Patrick Counties. Just two years ago, we had 10 Mbps at our Laurel Fork site, 6 Mbps at our Floyd site, 3 Mbps at the Ferrum site, and 3 Mbps at our Corporate Office in Laurel Fork. This was insufficient to meet our needs, given our electronic health records system and practice management system, our efforts to use telehealth equipment with UVA and internally, our use of email and related systems, and use the Internet for staff and patient education. Fortunately, there have been some significant changes in our service area over the past two years. The broadband speed at Laurel Fork has increased to 50 Mbps, Floyd is up to 20 Mbps, Ferrum also is up to 20 Mbps, and the Corporate Office now is 20 Mbps. This is the type of speed that we believe would be necessary, at a minimum, in Patrick County to enhance healthcare access.

We believe that telehealth will be an increasingly important aspect of healthcare in the future, and will need faster connections as the technology continues to improve. For example, UVA provides access to 24 separate specialties for our low-income and uninsured families. This has helped reduce the transportation barrier for many of our patients. UVA has tracked the miles saved through the use of telemedicine consults and noted over 1.5 million miles that were saved by patients using telemedicine/telehealth technologies. Local rescue squads and EMTs now have units that can quickly administer life-saving drugs for stroke patients that can significantly improve their recovery time and quality of life. All residents could benefit from access to these telehealth services if highspeed is available throughout Patrick County.

Another health-related way that access to highspeed Internet can impact people's lives is through remote patient monitoring. For example, Tri-Area has been recognized for our Diabetes Quality Improvement Program, where we collaborate with an endocrinologist from UVA to follow uncontrolled diabetic patients in an intense six-month self-management process for their diabetes. The home monitoring of these patients is through the use of an electronic meter that measures the patient's blood glucose level throughout the day. The dietary intake and physical activity of the patient are monitored, as well as other medical factors. It graphs the data and sends it to a secure cloud that can be accessed by the endocrinologist, the patient, the Tri-Area providers, and members of the patient's care team. On average the patients that have completed this six-month program have lowered their HbA1c by 2.2 points (from a HbA1c of 9.9 in starting the program to a HbA1c of 7.7 on completion of the program).

The meter we use for the Diabetes Program was not the one the endocrinologist wanted to use. His preference was for a "real-time" monitor that would send the data to the secure cloud instantly. However, because many patients do not have access to highspeed Internet in their homes, we had to select another meter. This one sends a low-frequency signal to the patient's smartphone and when they reach a cell tower while traveling with their phone, it uploads the data to the cloud. It is not real-time, but it is the best we can do given the limited service in our area. Once Patrick County residents have access to highspeed Internet, they can benefit from state-of-the-art home monitoring programs and connect with medical providers from their homes.

Although my focus is on healthcare, I will note that highspeed Internet is crucial for schools and students throughout the educational system. In order for students to be competitive in the local job market and for jobs outside the area or for higher education, they must be able to access and utilize the internet in their homes.

I wish you much success in your attempts to improve broadband access in Patrick County. Please feel free to call on me if I can be of assistance. I fully support your efforts.

Sincerely,

A handwritten signature in blue ink that reads "Howard Chapman, Jr." with a stylized flourish at the end.

Howard Chapman, Jr.
Director of Programs and Development

RE: Letter in support of broadband

From: Steve Helms <shelms@primland.com>
Sent: Wed, Aug 28, 2019 at 5:18 pm
To: s-berry
Cc: Bryce Simmons, Phyllis Nester

Steve and Bryce,

Please consider this my letter of support. Let me know if you need it in a different format.

To Whom it may concern,

I write on behalf of Primland in support of Patrick County and RiverStreet Networks endeavors to provide Broadband access to the Citizens of Patrick County. We strongly support this grant application and the focus on providing Broad Band to our customers, employees and all citizens of Patrick County. Through this letter, we acknowledge that Patrick County is in desperate need of broadband improvements for tourism, economic development, county citizens quality of life, education, and employee recruitment and retention

Sincerely,

STEVE HELMS

Vice President
T 276.222.3814 F 276.222.3816

PRIMLAND

2000 Busted Rock Road
Meadows of Dan, VA 24120
T 276.222.3800

From: s-berry [mailto:smerry1@centurylink.net]
Sent: Wednesday, August 21, 2019 9:38 AM
To: Steve Helms <shelms@primland.com>
Cc: Bryce Simmons <bsimmons@co.patrick.va.us>
Subject: Letter in support of broadband

The supervisors approved a partnership with RiverStreet Networks to apply for grants and to make county-wide broadband improvements. Bryce, Director of Economic Development, is hard at work with RiverStreet on a grant application which is due September 3. He has requested some letters (e-mails) to attach to the application which detail how badly potential customers need broadband. I am sure availability of good broadband service in our area would help Primland with employee recruitment and retention and would be a positive for tourism in general. If you could take time to send him your thoughts that would be very helpful.

Thanks for your support.

Steve Terry

Broadband

From: Henry Mathieu <hmathieu1@aol.com>
Sent: Wed, Aug 21, 2019 at 1:34 pm
To: bsimmons@co.patrick.va.us
Cc: smterry1@centurylink.net

Bryce,

Steve Terry indicated that you need some information from residents here in Patrick County regarding the importance of broadband. It has been very disturbing that our phone and Internet service has been so bad. Just now we can not receive calls on our phone and it will not be fixed till Friday the 23rd. Last week we were completely without phone service for four days. We are up in age, 89 and 90, and need to have contact with friends and family members. It will soon be time to sell our home and there is no one that wants a home without dependable phone and Internet. They may have children that are in school and use it every day or more importantly work from home and need to be in touch with associates. In all of our years we have never had this poor of communications. We have lived at this location for over 27 years and it has never been as bad as it has been for the last several years. Communications with the outside world has never been more important then it is at this time for everyone. It is urgent that improvements be made now. Our hope is that we can enjoy a improved system before we are called home.

Sincerely,

Henry & Marie Mathieu

CDBG Derivation of Cost

Attachment 11 - Derivation of Cost

Product	Total	VATI	Non-VATI	Source of Estimate	Date
3650 Equipment per Tower site (4 sites)	\$ 160,257	\$ 120,192	\$ 40,065	Vendor Quote	8/13/2020
5Ghz Equipment per Tower site (4 sites)	\$ 108,485	\$ 101,401	\$ 7,084	Vendor Quote	8/13/2020
Radio Access Network Total (4 sites)	\$ 86,000	\$ 86,000	\$ -	Engineering Estimate	8/12/2020
Tower Collocation fees (1 site)	\$ 24,400	\$ 24,400	\$ -	Engineering Estimate PO to Vendor	8/12/2020 04/29/2020
Tower Build (3 sites)	\$ 878,675	\$ 878,675	\$ -	Engineering Estimate PO to Vendor	8/12/2020 04/01/2020
Backhaul existing (1site)	\$ 10,500	\$ 10,500	\$ -	Engineering Estimate	8/12/2020
Backhaul Microwave (2 sites)	\$ 52,800	\$ 52,800	\$ -	Engineering Estimate	8/12/2020
Backhaul with Fiber build of 5.25 Miles (1 site)	\$ 193,500	\$ 114,750	\$ 78,750	Engineering Estimate	8/12/2020
Fixed Wireless Eng. & Project Mgmt (4 sites)	\$ 260,000	\$ 194,774	\$ 65,226	Engineering Estimate	8/12/2020
5Ghz CPE & Installation cost (195 locations) CPE Equipment \$305 + Labor \$120	\$ 82,875	\$ -	\$ 82,875	Vendor Quote RSN Experience	8/13/2020 & 8/14/2020
3650 CPE & Installation cost (315 locations) CPE Equipment \$280 + Labor \$120	\$ 126,000	\$ -	\$ 126,000	Vendor Quote RSN Experience	8/13/2020 & 8/14/2020
TOTALS	\$ 1,983,492	\$ 1,583,492	\$ 400,000	\$ 1,983,492	

Engineering Estimate 08/12/2020



PATRICK COUNTY - PHASE 2

	SBA 1280170	New Proposed Tower 8	New Proposed Tower 11	New Proposed Tower 4
	# Sectors: 4	# Sectors: 4	# Sectors: 4	# Sectors: 4
	# Sub-Total	# Sub-Total	# Sub-Total	# Sub-Total
3650 Deployment CapEx				
Description	#	Sub-Total	#	Sub-Total
LTE Base Station Radio	4	\$20,500.00	4	\$20,500.00
LTE Radio SW license key, 4x4 MIMO	4	\$5,100.00	4	\$5,100.00
LTE Radio SW license key Carrier Aggregation	4	\$5,100.00	4	\$5,100.00
LTE Radio SW license key MU-MIMO	4	\$5,100.00	4	\$5,100.00
GPS Antenna	4	\$800.00	4	\$800.00
GPS cable	4	\$200.00	4	\$200.00
Antenna 65° 4x4 MIMO Panel 3GHz w/0 EDT	4	\$2,200.00	4	\$2,200.00
Coax Jumper 36" PPC NM connectors	16	\$1,000.00	16	\$1,000.00
Ground lead for ODU	4	\$100.00	4	\$100.00
Antenna Mount	4	\$600.00	4	\$600.00
CAT5E Outdoor Armored DB cable	880	\$630.00	880	\$630.00
DC power cable DB rated 5x16 ga. .366 dia.	880	\$630.00	880	\$630.00
Hoisting grip for small cable .350-.440 dia.	8	\$200.00	8	\$200.00
Shackle 5/16 galv. Screw Pin	8	\$100.00	8	\$100.00
Angle adaptor for snap-ins (10 pk)	8	\$400.00	8	\$400.00
Angle adaptor SS (10 pk) 3/8" tapped holes	1	\$100.00	1	\$100.00
Snap-in for 1/2 cable (10 pk)	3	\$150.00	3	\$150.00
Snap-in for 7/8 cable (10 pk)	7	\$280.00	7	\$280.00
Ground kit for CAT5 armored	8	\$200.00	8	\$200.00
Lot Ties and Sealant	4	\$100.00	4	\$100.00
CAT5 Surge Protector, Gigabit Outdoor	4	\$800.00	4	\$800.00
48VDC Defender Surge Protector	4	\$800.00	4	\$800.00
Ground lead for Surge Protector	8	\$100.00	8	\$100.00
Radio Software installation	4	\$400.00	4	\$400.00
Radio test & turn up	4	\$400.00	4	\$400.00
Radio Commissioning	4	\$600.00	4	\$600.00
Hardened switch 120V	1	\$700.00	1	\$700.00
Outdoor Cabinet with 48VDC Distribution & Battery Backup	1	\$10,200.00	1	\$10,200.00
Equipment Installation on Tower	1	\$3,600.00	1	\$3,600.00
Travel and Living Expense	1	\$4,800.00	1	\$800.00
Spares Kit	1	INCLUDED	1	INCLUDED
RADIO ACCESS NETWORK TOTAL		\$65,590.00		\$61,890.00
Description	#	Sub-Total	#	Sub-Total
NMS Module Software	1	INCLUDED	1	INCLUDED
CPE Module SW	1	INCLUDED	1	INCLUDED
CPE SW license key (per CPE device)	78	\$280.00	100	\$360.00
EPC SW license key (per CPE device)	78	\$1,880.00	100	\$2,400.00
Server	1	INCLUDED	1	INCLUDED
Set up & Training	1	INCLUDED	1	INCLUDED
Travel and Living Expense	1	INCLUDED	1	INCLUDED
CORE NETWORK TOTAL		\$2,170.00		\$2,760.00
Description	#	Sub-Total	#	Sub-Total
190' TOWER	1	COLLOCATION	1	\$70,000.00
FOUNDATION, ACCESS ROAD, TOWER STACKING	1		1	\$117,000.00
CIVIL CONSTRUCTION	1	\$7,500.00	1	\$61,725.00
SITE ACQUISITION, REGULATORY & ZONING/PERMITTING	1	\$9,500.00	1	\$50,000.00
CO-LOCATION FEE AND APPLICATION	1	\$4,000.00		
STRUCTURAL ANALYSIS	1	\$4,000.00		
TOWER TOTAL		\$25,000.00		\$289,725.00
Description	#	Sub-Total	#	Sub-Total
Electronics: Microwave or Lightwave	1	\$8,000.00	1	\$20,000.00
Installation: MW on Tower or Fiber	1	\$2,500.00	1	\$3,600.00
Travel and Living Expense	1		1	\$185,500.00
Spares Kit	1		1	INCLUDED
FCC Licensing	1	\$10,500.00	1	\$2,000.00
BACKHAUL NETWORK TOTAL		\$10,500.00		\$26,400.00
Description	#	Sub-Total	#	Sub-Total
LTE Category 12+ Outdoor Subscriber CPE Device	78	\$18,960.00	100	\$24,300.00
LTE SIM card for CPE Device	78	\$550.00	100	\$700.00
CPE TOTAL		\$19,510.00		\$25,000.00
Description	#	Sub-Total	#	Sub-Total
Fixed Wireless Engr. and Project Management.	1	\$17,700.00	1	\$61,300.00
3650 DEPLOYMENT COST PER SITE		\$135,470		\$469,375

3650 PHASE 2 = \$1,715,545

Assumptions
 *Radio access, core installation and commissioning included
 *Labor and materials for Subscriber CPE installation not included
 *DHCP and RADIUS AAA servers are not included in the estimate
 *Median vendor budgetary costs considered

	SBA 1280170	New Proposed Tower 8	New Proposed Tower 11	New Proposed Tower 4
	# Sectors: 4	# Sectors: 4	# Sectors: 4	# Sectors: 4
	# Sub-Total	# Sub-Total	# Sub-Total	# Sub-Total
5GHz Deployment CapEx				
Description	#	Sub-Total	#	Sub-Total
5GHz Base Station Radio	4	\$22,600.00	4	\$22,600.00
PoE Gigabit Injector	4	\$1,520.00	4	\$1,520.00
Ground kit LPU	4	\$1,340.00	4	\$1,340.00
GPS Sync	1	\$660.00	1	\$660.00
CAT5E Outdoor Armored DB cable	880	\$630.00	880	\$630.00
Radio Software installation	4	\$400.00	4	\$400.00
Radio test & turn up	4	\$400.00	4	\$400.00
Radio Commissioning	4	\$600.00	4	\$600.00
Equipment Installation on Tower	1	\$850.00	1	\$850.00
Spares Kit	1	INCLUDED	1	INCLUDED
RADIO ACCESS NETWORK TOTAL		\$29,000.00		\$29,000.00
Description	#	Sub-Total	#	Sub-Total
5GHz Subscriber CPE Device and Antenna	93	\$26,040.00	131	\$36,680.00
CPE TOTAL		\$26,040.00		\$36,680.00
Description	#	Sub-Total	#	Sub-Total
Fixed Wireless Engr. and Project Management.	1	\$8,300.00	1	\$9,600.00
5GHz DEPLOYMENT COST PER SITE		\$63,340		\$72,660

5GHz PHASE 2 = \$275,580

Total: 3650 + 5GHz Costs \$198,810 \$544,955 \$705,685 \$541,675

Actual Cost can be found on Vendor Quote Sheets Attachment 12

TOTAL PHASE 2 = \$1,991,125



DoubleRadius, Inc.
 2022 Van Buren Ave
 Indian Trail NC
 28079
 US

Quote

#291992

8/13/2020

Bill To

Wilkes Telephone Membership
 1400 River Street
 Wilkesboro NC 28697
 United States

Ship To

SCS Broadband
 605 Thomas Nelson Hwy
 Arrington VA 22949
 United States

TOTAL

\$40,064.32

Expires: 9/12/2020

Expires
 9/12/2020

Memo
 20-RSWVA-102 - DNW VA
 grant

Shipping Method
 UPS® Ground

Sales Rep
 Jeff Holdenrid

Quantity	Item	Notes	Rate	Amount
4	735470US-L-2 Telrad CMP.XT-BS-3.4-3.7 (LTE)		\$5,018.00	\$20,072.00
4	715773 Telrad LTE COMPACT SW License - 4 x 4 SW License for Compact LTE 10MHz or 20MHz LTE SW activation License for Compact LTE 4Tx/4Rx (Required with LTE Compact)		\$2,925.00	\$11,700.00
4	700275 Telrad BreezeGPS		\$195.00	\$780.00
4	723231 Telrad GPS-CHAIN-CBL-5m - BreezeCOMPACT GPS chaining cable, 5 meters length including connectors on both ends.		\$26.00	\$104.00
4	AW3023-T0 Alpha Wireless 3.3-3.8GHz, 65deg, 18dBi, 4x4 MIMO antenna		\$622.80	\$2,491.20
16	P2RFC-2731-72-36 RFS N MALE TO N MALE; LCF12-50J; PIM TESTED Length 36		\$51.84	\$829.44
4	N000082L116A Cambium PTP 820 GROUND CABLE FOR IDU and ODU		\$12.00	\$48.00
1	BBDGE 1000' SUPERIOR ESSEX Armored Category 5e UV Sunlight and rodent resistant. 24AWG Black polyethylene outer jacket, solid bare copper cable. 1000ft MOQ		\$598.00	\$598.00
4	WC-TD-PWR2X16-300FT Cable: Compact 300FT Power Cable 2x16AWG With Connectors		\$306.00	\$1,224.00
8	main Butterfly Angle Adapter Snap In 10 Pack		\$45.00	\$360.00
3	main ANDREW "SNAPSTAK" Snap-in hangers for 1/2" corrugated cable. 10 Pack		\$22.00	\$66.00



291992



DoubleRadius, Inc.
2022 Van Buren Ave
Indian Trail NC
28079
US

Quote
#291992
8/13/2020

Quantity	Item	Notes	Rate	Amount
26	7 main COMMSCOPE SnapStak Snap-in hangers for 7/8 in corrugated cable. 10 pack		\$30.00	\$210.00
27	8 01010419001 Cambium Coaxial Cable Grounding Kits for 1/4" and 3/8" Cable		\$19.66	\$157.28
29	8 ALPU-Fit Engineered with ease of installation in mind, Transtector's ALPU-F140 is designed to support GbE, PoE +, PoE ++ (100 W) applications. Protection Modes include L-L, L-G and S-G with an enclosure rating of IP65.		\$76.50	\$612.00
0	4 1101-1110 The DC Defender provides robust 5kA lightning current withstand for sensitive 48Vdc powered equipment. The unit features silicon avalanche diode technology (SASD) to provide the optimum low voltage protection for DC power plant, tower top radios, low noise amplifiers (LNA) and tower mounted amplifiers (TMA) applications.		\$179.10	\$716.40
1	8 N000082L116A Cambium PTP 820 GROUND CABLE FOR IDU and ODU		\$12.00	\$96.00
	1 UPS® Ground		\$0.00	\$0.00
			Subtotal	\$40,064.32
			Tax (%)	\$0.00
			Total	\$40,064.32



291992



DoubleRadius, Inc.
 2022 Van Buren Ave
 Indian Trail NC
 28079
 US

Quote

#291993

8/13/2020

Bill To

Tyler Bryant
 NC Wireless
 1985 Tate Blvd SE
 #43
 Hickory NC 28602
 United States

Ship To

Josh Strickland
 NC Wireless (Wilkes
 Communications)
 1985 Tate Blvd SE
 #43
 Hickory NC 28602
 United States

TOTAL

\$28,334.00

Expires: 9/12/2020

Expires
 9/12/2020

Memo

Shipping Method
 UPS 2nd Day Air®

Sales Rep
 Jeff Holdenrid

Quantity	Item	Notes	Rate	Amount
4	C050045A102A Cambium 5 GHz PMP 450m Integrated Access Point, 90 Degree (FCC)		\$5,879.20	\$23,516.80
5	C000065L002C Cambium PTP 650 AC+DC Enhanced Power Injector Old Part Number : C000065L002B		\$304.00	\$1,216.00
5	N000065L003A Cambium US Line Cord Fig 8		\$16.00	\$64.00
6	C000065L007B Cambium PTP 650/670 LPU and Grounding Kit (1 kit per ODU)		\$320.00	\$1,280.00
7	C000000L066B Cambium: cnPulse Sync Generator with CambiumSYNC		\$223.20	\$446.40
8	BBDGE 1000' SUPERIOR ESSEX Armored Category 5e UV Sunlight and rodent resistant. 24AWG Black polyethylene outer jacket, solid bare copper cable. 1000ft MOQ		\$598.00	\$598.00
	NOTE Below is the CPE CPE must be ordered in QTY of 4 because of assembly			
08	C050045B022A Cambium 5 GHz 450b - High Gain - FCC - Radio Only - SPARE		\$271.20	\$1,084.80
08	N000900L001C Cambium PoE Gigabit DC Injector, 15W Output at 30V, Energy Level 6 Supply		\$12.00	\$48.00
08	N000900L031A Cambium: CABLE, UL POWER SUPPLY CORD SET, 720mm, US		\$4.00	\$16.00
08	N050045D002A Cambium: 5 GHz 4 Pack High-Gain Antenna Assembly, IP55		\$64.00	\$64.00
1	UPS 2nd Day Air®		\$0.00	\$0.00





DoubleRadius, Inc.
2022 Van Buren Ave
Indian Trail NC
28079
US

Quote

#291993

8/13/2020

Subtotal	\$28,334.00
Tax (%)	\$0.00
Total	\$28,334.00



291993



DoubleRadius, Inc.
 2022 Van Buren Ave
 Indian Trail NC
 28079
 US

Quote

#292073

8/14/2020

Bill To

Tyler Bryant
 NC Wireless
 1985 Tate Blvd SE
 #43
 Hickory NC 28602
 United States

Ship To

Josh Strickland
 NC Wireless (Wilkes
 Communications)
 1985 Tate Blvd SE
 #43
 Hickory NC 28602
 United States

TOTAL

\$278.00

Expires: 9/13/2020

Expires
 9/13/2020

Memo

Shipping Method
 UPS 2nd Day Air®

Sales Rep
 Jeff Holdenrid

Quantity	Item	Notes	Rate	Amount
1	735300 Telrad: Single Mode Category 12 LTE Outdoor CPE, covering Band 42 (3.4-3.6GHz) and Band 43 (3.6-3.8 GHz), 1xData POE port with integrated 13dBi directional Antenna.		\$242.00	\$242.00
	Import Tariff 2019			\$27.00
1	SM2000US Telrad LTE SIM card - This PN includes 1 unit but the MOQ=250 and MPQ=250		\$9.00	\$9.00
1	UPS 2nd Day Air®		\$0.00	\$0.00
			Subtotal	\$278.00
			Tax (%)	\$0.00
			Total	\$278.00



292073



Purchase Order	
Purchase Order No.	PO-1018
Date	04/01/2020
Vendor ID	VEND-1021

Vendor

FLEX DEPLOYMENT SOLUTIONS
11124 KINGSTON PIKE, STE 119-2:
Knoxville, TN 37934

Bill To

Wilkes Telephone Memb Corp
Attn: Melanie Lovette
1400 River Street
Wilkesboro, NC 28697

Ship To

RiverStreet Wireless Of North
Carolina, Inc.
Attn: Kimberley Johnson

Shipping Method		Payment Terms		Ordered By			Reference	
		Net 30		JODY SOUTHER			20-RSWNC-104	
Wilkes Item Number	Description	Req. Date	U/M	Qty Ordered	Unit Price	Ext. Price		
Vendor Item Number	Additional Item Notes	FOB						
	A/E DESIGN WALK			1	\$550.00	\$550.00		
	FULL CONSTRUCTION DRAWING			1	\$3,500.00	\$3,500.00		
	BUILDING PERMIT			1	\$550.00	\$550.00		
	PUBLIC HEARING			1	\$2,750.00	\$2,750.00		
	PRELIM NEPA			1	\$400.00	\$400.00		
	SITE SURVEY WITH LEGAL DESCRIPTIONS			1	\$0.00	\$0.00		
	LEASE AGREEMENT			1	\$1,950.00	\$1,950.00		
	PHASE 1 ESA			1	\$1,500.00	\$1,500.00		
	FULL NEPA PACKAGE			1	\$5,500.00	\$5,500.00		
	E911 COORDINATION			1	\$600.00	\$600.00		
	GEOTECH (SST)			1	\$4,500.00	\$4,500.00		
	TBD PROJECT MANAGEMENT, \$125/HR			1	\$0.00	\$0.00		
	UTILITY DESIGN COORDINATION			1	\$1,200.00	\$1,200.00		
	Title Order			1	\$553.88	\$553.88		
	Construction Mamagment			1	\$8,000.00	\$8,000.00		
	Building Permit			1	\$550.00	\$550.00		
	AM Study			1	\$400.00	\$400.00		
	Jurisdiction Passthru Plus 10%			1	\$0.00	\$0.00		

Special Terms and Conditions

Whitt site, 20-RSWNC-104 WTCM PO #152443

Subtotal	\$32,503.88
Freight	\$0.00
Tax	\$0.00
Order Total	\$32,503.88

Signature of Authorized Representative

Accepted by Seller



Purchase Order	
Purchase Order No.	PO-1032
Date	04/29/2020
Vendor ID	VEND-1227

Vendor

Flex Deployment Solutions
11124 Kingston Pike
Knoxville, TN 37934

Bill To

Gamewood Technology Group, Inc.
165 Deer Run Road
Danville, VA 24540
(434)792-2253

Ship To

Gamewood Technology Group, Inc.
Attn: Kimberley Johnson

Shipping Method		Payment Terms		Ordered By			Reference	
		Net 30		JOSHUA T STRICKLAND			20-RSWVA-102	
Wilkes Item Number	Description	Req. Date	U/M	Qty Ordered	Unit Price	Ext. Price		
Vendor Item Number	Additional Item Notes	FOB						
	ZONING ANALYSIS			1	\$500.00	\$500.00		
	A/E DESIGN WALK			1	\$550.00	\$550.00		
	NTP COORDINATION WITH TOWER COMPANY			1	\$350.00	\$350.00		
	FULL CONSTRUCTION DRAWINGS			1	\$3,500.00	\$3,500.00		
	UTILITY DESN COORDINATION			1	\$1,200.00	\$1,200.00		
	ADMINISTRATIVE ZONING			1	\$1,500.00	\$1,500.00		
	STRUCTUAL GUYED			1	\$2,150.00	\$2,150.00		
	TOWER MAPPING			1	\$3,150.00	\$3,150.00		
	FOUNDATION MAPPING			1	\$5,000.00	\$5,000.00		
	OPTIONAL							
	GEOTECH (GUYED)			1	\$6,500.00	\$6,500.00		
	OPTIONAL							

Special Terms and Conditions

This is for site acquisition consulting for tower collocation in Dinwiddie County VA (A&D Grant)
20-RSWVA-102

Subtotal	\$24,400.00
Freight	\$0.00
Tax	\$0.00
Order Total	\$24,400.00

Signature of Authorized Representative

Accepted by Seller

(RETAIN FOR YOUR RECORDS)
Form 477 Filing Summary

FRN: 0028007763 | Data as of: Jun 30, 2019 | Operations: Non-ILEC | Submission Status: Original - Submitted | Last Updated: Sep 4, 2019 08:11:33

Filer Identification

Section	Question	Response
Filer Information	Company Name	Gamewood Technology Group, Inc. dba RiverStreet Networks
	Holding Company Name	Wilkes Telephone Membership Corporation
	SAC ID	
	499 ID	830377
Data Contact Information	Data Contact Name	Tim Tribble
	Data Contact Phone Number	(336) 973-6164
	Data Contact E-mail	timtribble@myriverstreet.net
Emergency Operations Contact Information	Emergency Operations Name	Jody R Call
	Emergency Operations Phone Number	(336) 973-6164
	Emergency Operations E-mail	timtribble@myriverstreet.net
Certifying Official Contact Information	Certifying Official Name	Eric S Cramer
	Certifying Official Phone Number	(336) 973-6112
	Certifying Official E-mail	ericcramer@myriverstreet.net

Data Submitted

Form Section	File Name	Date & Time	Number of Rows
Fixed Broadband Deployment	KQVA FBBD.csv	Aug 27, 2019 06:41:08	146
	ADSL FBBD.csv	Aug 27, 2019 06:40:44	6
	GAMEWOOD FBBD.csv	Aug 27, 2019 06:39:10	192
Fixed Broadband Subscription	KQVA FBBS.csv	Aug 27, 2019 06:45:32	35
	GAMEWOOD FBBS.csv	Aug 27, 2019 06:45:00	171
	ADSL FBBS.csv	Aug 27, 2019 06:44:34	6
Fixed Voice Subscription	GAMEWOOD VOIP.csv	Aug 27, 2019 06:48:19	9

Census Block Counts by State, DBA Name and Technology

State	DBA Name	Technology	Blocks
-------	----------	------------	--------

Fixed Broadband Deployment

State	DBA Name	Technology	Blocks
North Carolina	KQVA.net	Terrestrial Fixed Wireless	2
Virginia	Gamewood	Asymmetric xDSL	6
		Optical Carrier/Fiber to the End User	171
		Terrestrial Fixed Wireless	21
	KQVA.net	Terrestrial Fixed Wireless	143
Wisconsin	KQVA.net	Terrestrial Fixed Wireless	1
Total			344

Fixed Broadband Subscription

Fixed Broadband Subscriptions by State, Technology and End-user Type

State	Technology	Census Tracts	Subscriptions		
			Consumer	Business / Govt	Total
North Carolina	Terrestrial Fixed Wireless	3	5	0	5
Virginia	Asymmetric xDSL	6	6	0	6
	Optical Carrier/Fiber to the End User	159	220	195	415
	Terrestrial Fixed Wireless	43	286	27	313
Wisconsin	Terrestrial Fixed Wireless	1	1	0	1
Total		212	518	222	740

Fixed Broadband Subscriptions by Bandwidths and End-user Type

Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business / Govt	Total
0.500	0.200	10	0	10
0.500	0.250	1	0	1
0.750	0.250	1	0	1
0.750	0.375	4	0	4
0.750	0.750	25	1	26
1.000	0.500	30	0	30
1.500	0.500	5	2	7
1.500	0.750	1	4	5
1.500	1.500	6	0	6
2.000	1.000	145	8	153
2.500	2.500	0	2	2
3.000	0.750	2	1	3
3.000	1.500	9	2	11
3.000	3.000	34	2	36

Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business / Govt	Total
5.000	5.000	0	4	4
6.000	4.000	17	10	27
6.000	6.000	42	9	51
6.500	3.500	0	1	1
8.000	1.000	0	1	1
8.000	4.000	0	1	1
10.000	5.000	0	11	11
10.000	10.000	0	10	10
12.000	4.000	0	3	3
12.000	6.000	0	2	2
14.000	7.000	0	1	1
16.000	2.000	0	1	1
16.000	4.000	0	3	3
16.000	8.000	0	3	3
18.000	5.000	0	2	2
18.000	9.000	0	19	19
20.000	4.000	1	5	6
20.000	10.000	0	5	5
20.000	20.000	0	5	5
25.000	12.000	26	2	28
25.000	25.000	25	25	50
25.000	100.000	0	2	2
30.000	15.000	0	2	2
30.000	30.000	0	1	1
50.000	10.000	0	7	7
50.000	25.000	19	21	40
50.000	50.000	28	5	33
75.000	15.000	0	4	4
75.000	25.000	12	7	19
75.000	30.000	0	1	1
75.000	50.000	0	1	1
75.000	75.000	24	1	25
100.000	25.000	26	7	33

Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business / Govt	Total
100.000	50.000	0	8	8
100.000	100.000	18	1	19
125.000	125.000	2	0	2
150.000	25.000	0	4	4
150.000	50.000	0	1	1
150.000	150.000	5	2	7
200.000	200.000	0	1	1
200.000	400.000	0	1	1
Total		518	222	740

Fixed Broadband Subscriptions by Technology, Bandwidths and End-user Type

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business / Govt	Total
Asymmetric xDSL	0.500	0.250	1	0	1
	0.750	0.250	1	0	1
	0.750	0.375	4	0	4
Optical Carrier/Fiber to the End User	1.500	0.500	5	2	7
	1.500	0.750	1	4	5
	2.500	2.500	0	2	2
	3.000	0.750	2	1	3
	3.000	1.500	9	2	11
	5.000	5.000	0	4	4
	6.000	4.000	17	10	27
	6.500	3.500	0	1	1
	8.000	1.000	0	1	1
	8.000	4.000	0	1	1
	10.000	5.000	0	11	11
	10.000	10.000	0	7	7
	12.000	4.000	0	3	3
	12.000	6.000	0	2	2
	14.000	7.000	0	1	1
	16.000	2.000	0	1	1
16.000	4.000	0	3	3	
16.000	8.000	0	3	3	

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business / Govt	Total
	18.000	5.000	0	2	2
	18.000	9.000	0	18	18
	20.000	4.000	1	5	6
	20.000	10.000	0	5	5
	20.000	20.000	0	5	5
	25.000	12.000	26	2	28
	25.000	25.000	25	22	47
	25.000	100.000	0	2	2
	30.000	15.000	0	2	2
	30.000	30.000	0	1	1
	50.000	10.000	0	7	7
	50.000	25.000	19	21	40
	50.000	50.000	28	5	33
	75.000	15.000	0	4	4
	75.000	25.000	12	7	19
	75.000	30.000	0	1	1
	75.000	50.000	0	1	1
	75.000	75.000	24	1	25
	100.000	25.000	26	7	33
	100.000	50.000	0	8	8
	100.000	100.000	18	1	19
	125.000	125.000	2	0	2
	150.000	25.000	0	4	4
	150.000	50.000	0	1	1
	150.000	150.000	5	2	7
	200.000	200.000	0	1	1
	200.000	400.000	0	1	1
Terrestrial Fixed Wireless	0.500	0.200	10	0	10
	0.750	0.750	25	1	26
	1.000	0.500	30	0	30
	1.500	1.500	6	0	6
	2.000	1.000	145	8	153

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Business /		Total
			Consumer	Govt	
	3.000	3.000	34	2	36
	6.000	6.000	42	9	51
	10.000	10.000	0	3	3
	18.000	9.000	0	1	1
	25.000	25.000	0	3	3
Total			518	222	740

Fixed Voice Subscription

VGE Lines and VoIP Subscriptions by State and End-user Type

State	Total VGE Lines	Consumer VGE Lines	Total VoIP Subscriptions	Consumer VoIP Subscriptions
North Carolina	0	0	1	0
Virginia	0	0	106	80
Total	0	0	107	80

Fixed Voice Subscription (iVoIP)

Over-the-top VoIP Subscriptions by State and End-user Type

State	Total	Consumer	Business / Govt
North Carolina	1	0	1
Virginia	106	80	26
Total	107	80	27

All other VoIP Subscriptions by State, End-user Type, Bundle and Last-mile Medium

State	Total	by End-user Type		by Bundle		by Last-mile Medium			
		Consumer	Business / Government	Sold w/ Internet	Sold w/o Internet	FTTP	Coax	Fixed Wireless	Copper
North Carolina	0	0	0	0	0	0	0	0	0
Virginia	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0

(RETAIN FOR YOUR RECORDS)
Form 477 Filing Summary

FRN: 0003718426 | Data as of: Jun 30, 2019 | Operations: ILEC | Submission Status: Revised - Submitted | Last Updated: Nov 14, 2019 07:57:20

Filer Identification

Section	Question	Response
Filer Information	Company Name	WILKES TELEPHONE MEMBERSHIP CORP
	Holding Company Name	Wilkes Telephone Membership Corporation
	SAC ID	230510
	499 ID	803832
Data Contact Information	Data Contact Name	Tim Tribble
	Data Contact Phone Number	(336) 973-6164
	Data Contact E-mail	timtribble@myriverstreet.net
Emergency Operations Contact Information	Emergency Operations Name	Jody R Call
	Emergency Operations Phone Number	(336) 973-6186
	Emergency Operations E-mail	jodycall@myriverstreet.net
Certifying Official Contact Information	Certifying Official Name	Eric S Cramer
	Certifying Official Phone Number	(336) 973-6112
	Certifying Official E-mail	ericcramer@myriverstreet.net

Data Submitted

Form Section	File Name	Date & Time	Number of Rows
Fixed Broadband Deployment	WTMC FBBD Rev 11-13-2019.csv	Nov 14, 2019 07:53:50	1910
Fixed Broadband Subscription	WTMC FBBS Rev 11.1.2019.csv	Nov 14, 2019 07:52:23	73
Fixed Voice Subscription	WTMC FVS.csv	Nov 14, 2019 07:52:23	26

Fixed Broadband Deployment

Census Block Counts by State, DBA Name and Technology

State	DBA Name	Technology	Blocks
North Carolina	Wilkes Communications Inc.	Asymmetric xDSL	6
		Optical Carrier/Fiber to the End User	1904
Total			1910

Fixed Broadband Subscription

Fixed Broadband Subscriptions by State, Technology and End-user Type

State	Technology	Census Tracts	Subscriptions		
			Consumer	Business / Govt	Total

State	Technology	Census Tracts	Subscriptions		
			Consumer	Business / Govt	Total
North Carolina	Asymmetric xDSL	1	17	0	17
	Optical Carrier/Fiber to the End User	72	6016	319	6335
Total		73	6033	319	6352

Fixed Broadband Subscriptions by Bandwidths and End-user Type

Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business / Govt	Total
6.000	0.512	17	0	17
10.000	1.000	2124	67	2191
12.000	2.000	2	0	2
25.000	3.000	3069	176	3245
35.000	5.000	1	0	1
50.000	10.000	735	62	797
100.000	10.000	79	12	91
250.000	25.000	5	2	7
1000.000	100.000	1	0	1
Total		6033	319	6352

Fixed Broadband Subscriptions by Technology, Bandwidths and End-user Type

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business / Govt	Total
Asymmetric xDSL	6.000	0.512	17	0	17
	10.000	1.000	2124	67	2191
Optical Carrier/Fiber to the End User	12.000	2.000	2	0	2
	25.000	3.000	3069	176	3245
	35.000	5.000	1	0	1
	50.000	10.000	735	62	797
	100.000	10.000	79	12	91
	250.000	25.000	5	2	7
	1000.000	100.000	1	0	1
Total			6033	319	6352

Fixed Voice Subscription

VGE Lines and VoIP Subscriptions by State and End-user Type

State	Total VGE Lines	Consumer VGE Lines	Total VoIP Subscriptions	Consumer VoIP Subscriptions
North Carolina	8614	7884	50	0
Total	8614	7884	50	0

VGE Lines Provided to Unaffiliated Providers by State

**Fixed Voice
Subscription
(VGE Lines)**

State	Wholesale	UNE-L
North Carolina	0	0
Total	0	0

VGE Lines Provided to End Users by State, Bundle and Product Type

State	Total	by Bundle		by Product Type			
		Sold w/ Internet	Sold w/o Internet	Consumer		Bus-Govt	
				& No PIC	& PIC	& No PIC	& PIC
North Carolina	8614	6557	2057	1156	6728	223	507
Total	8614	6557	2057	1156	6728	223	507

VGE Lines Provided to End Users by State, Ownership and Last-mile Medium

State	Total	by Ownership			by Last-mile Medium			
		Owned	UNE-L	Resale	FTTP	Coax	Fixed Wireless	Copper
North Carolina	8614	8614	0	0	8589	0	0	25
Total	8614	8614	0	0	8589	0	0	25

**Fixed Voice
Subscription
(iVoIP)**

Over-the-top VoIP Subscriptions by State and End-user Type

State	Total	Consumer	Business / Govt
North Carolina	0	0	0
Total	0	0	0

All other VoIP Subscriptions by State, End-user Type, Bundle and Last-mile Medium

State	Total	by End-user Type		by Bundle		by Last-mile Medium			
		Consumer	Business / Government	Sold w/ Internet	Sold w/o Internet	FTTP	Coax	Fixed Wireless	Copper
North Carolina	50	0	50	50	0	50	0	0	0
Total	50	0	50	50	0	50	0	0	0



**(RETAIN FOR YOUR RECORDS)
Form 477 Filing Summary**

FRN: 0028007763 | Data as of: Dec 31, 2019 | Operations: Non-ILEC | Submission Status: Revised - Submitted | Last Updated: Mar 2, 2020 09:57:55

Filer Identification

Section	Question	Response
Filer Information	Company Name	Gamewood Technology Group, Inc.
	Holding Company Name	Wilkes Telephone Membership Corporation
	SAC ID	
	499 ID	830377
Data Contact Information	Data Contact Name	Tim Tribble
	Data Contact Phone Number	(336) 973-6164
Emergency Operations Contact Information	Data Contact E-mail	ttribble@myriverstreet.net
	Emergency Operations Name	Jody R. Call
	Emergency Operations Phone Number	(336) 973-6186
	Emergency Operations E-mail	jodycall@myriverstreet.net
Certifying Official Contact Information	Certifying Official Name	Eric S Cramer
	Certifying Official Phone Number	(336) 973-6112
	Certifying Official E-mail	ericcramer@myriverstreet.net

Data Submitted

Form Section	File Name	Date & Time	Number of Rows
Fixed Broadband Deployment	GTG FCC 477 03022020 Wireless FBBD.csv	Mar 2, 2020 09:56:12	135
	GTG FCC 477 03022020 DSL FBBD.csv	Mar 2, 2020 09:54:50	4
	GTG FCC 477 03022020 Fiber FBBD.csv	Mar 2, 2020 09:54:50	171
Fixed Broadband Subscription	GTG FCC 477 03022020 DSL FBBS.csv	Mar 2, 2020 09:54:50	2
	GTG FCC 477 03022020 Wireless FBBS.csv	Mar 2, 2020 09:54:50	34
Fixed Voice Subscription	GTG FCC 477 03022020 Fiber FBBS.csv	Mar 2, 2020 09:54:50	173
	GTG FCC 477 03022020 VOIP.csv	Mar 2, 2020 09:54:50	10

Fixed Broadband Deployment

Census Block Counts by State, DBA Name and Technology

State	DBA Name	Technology	Blocks
Virginia	RiverStreet Wireless of VA	Terrestrial Fixed Wireless	135
	RS Comm VA	Asymmetric xDSL	4
Optical Carrier/Fiber to the End User			171
Total			310

Fixed Broadband Subscription

Fixed Broadband Subscriptions by State, Technology and End-user Type

State	Technology	Census Tracts	Subscriptions		
			Consumer	Business / Govt	Total
Virginia	Asymmetric xDSL	2	4	0	4
	Optical Carrier/Fiber to the End User	173	235	190	425
	Terrestrial Fixed Wireless	34	258	25	283
Total		209	497	215	712

Fixed Broadband Subscriptions by Bandwidths and End-user Type

Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business / Govt	Total
1.000	0.500	19	0	19
1.500	0.500	3	3	6
1.500	0.750	3	6	9
2.000	0.750	128	8	136
2.000	1.000	6	2	8
2.000	2.000	1	4	5
2.500	2.500	0	2	2
3.000	0.750	2	0	2
3.000	1.500	7	4	11
3.000	3.000	31	3	34
4.000	4.000	0	3	3
5.000	0.750	4	0	4
5.000	5.000	0	2	2
6.000	4.000	15	7	22
6.000	6.000	37	8	45
6.500	3.000	0	1	1
8.000	1.000	0	1	1
8.000	4.000	0	1	1
10.000	5.000	1	8	9
10.000	10.000	0	8	8
12.000	4.000	0	1	1
12.000	6.000	0	3	3
12.000	12.000	0	1	1
15.000	25.000	0	1	1
16.000	2.000	0	1	1
16.000	4.000	1	1	2

16,000	8,000		0	1	1	1
18,000	5,000		1	0	0	1
18,000	9,000		3	7	7	10
20,000	4,000		0	4	4	4
20,000	10,000		0	5	5	5
20,000	20,000		1	4	4	5
25,000	4,000		1	0	0	1
25,000	12,000		14	1	1	15
25,000	25,000		34	15	15	49
30,000	15,000		0	3	3	3
30,000	30,000		0	1	1	1
40,000	40,000		0	1	1	1
50,000	10,000		0	10	10	10
50,000	25,000		7	21	21	28
50,000	50,000		47	15	15	62
75,000	15,000		1	0	0	1
75,000	25,000		3	6	6	9
75,000	30,000		0	3	3	3
75,000	50,000		0	2	2	2
75,000	75,000		30	0	0	30
100,000	25,000		18	5	5	23
100,000	50,000		0	3	3	3
100,000	100,000		31	5	5	36
125,000	125,000		2	0	0	2
150,000	25,000		1	3	3	4
150,000	50,000		0	1	1	1
150,000	150,000		4	2	2	6
200,000	200,000		0	1	1	1
200,000	400,000		0	1	1	1
250,000	25,000		0	1	1	1
250,000	250,000		3	14	14	17
500,000	500,000		0	1	1	1
Total			497	215	215	712

Fixed Broadband Subscriptions by Technology, Bandwidths and End-user Type

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business / Govt	Total
			497	215	712

Technology	Mbps)	Mbps)	Consumer	Govt	Total
Asymmetric xDSL	5,000	0,750	4	0	4
	1,500	0,500	3	3	6
Optical Carrier/Fiber to the End User	1,500	0,750	3	6	9
	2,000	2,000	1	4	5
	2,500	2,500	0	2	2
	3,000	0,750	2	0	2
	3,000	1,500	7	4	11
	3,000	3,000	2	0	2
	4,000	4,000	0	3	3
	5,000	5,000	0	2	2
	6,000	4,000	15	7	22
	6,500	3,000	0	1	1
	8,000	1,000	0	1	1
	8,000	4,000	0	1	1
	10,000	5,000	1	8	9
	10,000	10,000	0	8	8
	12,000	4,000	0	1	1
	12,000	6,000	0	3	3
	12,000	12,000	0	1	1
15,000	25,000	0	1	1	
16,000	2,000	0	1	1	
16,000	4,000	1	1	2	
16,000	8,000	0	1	1	
18,000	5,000	1	0	1	
18,000	9,000	3	7	10	
20,000	4,000	0	4	4	
20,000	10,000	0	5	5	
20,000	20,000	0	2	2	
25,000	4,000	1	0	1	
25,000	12,000	14	1	15	
25,000	25,000	34	15	49	
30,000	15,000	0	3	3	
30,000	30,000	0	1	1	
50,000	10,000	0	10	10	
50,000	25,000	7	21	28	

Technology	Mbps)	Mbps)	Consumer	Govt	Total
	50,000		47	14	61
	75,000		1	0	1
	75,000		3	6	9
	75,000		0	3	3
	75,000		0	2	2
	75,000		30	0	30
	100,000		18	5	23
	100,000		0	3	3
	100,000		31	5	36
	125,000		2	0	2
	150,000		1	3	4
	150,000		0	1	1
	150,000		4	2	6
	200,000		0	1	1
	200,000		0	1	1
	250,000		0	1	1
	250,000		3	14	17
	500,000		0	1	1
	0.500		38	0	38
	1,000		19	0	19
	2,000		128	8	136
	2,000		6	2	8
	3,000		29	3	32
	6,000		37	8	45
	20,000		1	2	3
	40,000		0	1	1
	50,000		0	1	1
Total			487	215	712
Terrestrial Fixed Wireless					

**Fixed Voice
Subscription**

VGE Lines and VoIP Subscriptions by State and End-user Type

State	Total VGE Lines	Consumer VGE Lines	Total VoIP Subscriptions	Consumer VoIP Subscriptions
Virginia	0	0	118	74
Total	0	0	118	74



**(RETAIN FOR YOUR RECORDS)
Form 477 Filing Summary**

FRN: 0003718426

Data as of: Dec 31, 2019

Operations: ILEC

Submission Status: Revised - Submitted

Last Updated: Mar 1, 2020 15:04:01

Filer Identification

Section	Question	Response
Filer Information	Company Name	Wilkes Telephone Membership Corporation
	Holding Company Name	Wilkes Telephone Membership Corporation
	SAC ID	230510
Data Contact Information	499 ID	803832
	Data Contact Name	Tim Tribble
	Data Contact Phone Number	(336) 973-6164
	Data Contact E-mail	timtribble@myriverstreet.net
Emergency Operations Contact Information	Emergency Operations Name	Jody R Call
	Emergency Operations Phone Number	(336) 973-6164
	Emergency Operations E-mail	jodycall@myriverstreet.net
Certifying Official Contact Information	Certifying Official Name	Eric S Cramer
	Certifying Official Phone Number	(336) 973-6112
	Certifying Official E-mail	ericcramer@myriverstreet.net

Data Submitted

Form Section	File Name	Date & Time	Number of Rows
Fixed Broadband Deployment	WTMC FBBD.csv	Mar 1, 2020 14:51:39	1913
Fixed Broadband Subscription	WTMC FBBS.csv	Mar 1, 2020 14:51:39	96
Fixed Voice Subscription	WTMC FVS.csv	Mar 1, 2020 14:52:50	21

Fixed Broadband Deployment

Census Block Counts by State, DBA Name and Technology

State	DBA Name	Technology	Blocks
North Carolina	Wilkes Communications Inc.	Asymmetric xDSL	6
		Optical Carrier/Fiber to the End User	1907
Total			1913

Fixed Broadband Subscription

Fixed Broadband Subscriptions by State, Technology and End-user Type

State	Technology	Census Tracts	Consumer	Business / Govt	Total
North Carolina					

State	Technology	Census Tracts	Consumer	Business / Govt	Total
	Optical Carrier/Fiber to the End User	95	6182	324	6506
Total		96	6198	324	6522

Fixed Broadband Subscriptions by Bandwidths and End-user Type

Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business / Govt	Total
6.000	0.512	16	0	16
10.000	1.000	1715	52	1767
12.000	2.000	2	0	2
25.000	3.000	2666	185	2851
35.000	5.000	1	0	1
50.000	10.000	572	57	629
100.000	10.000	57	18	75
100.000	100.000	1090	8	1098
250.000	25.000	8	2	10
250.000	250.000	66	1	67
500.000	50.000	1	0	1
1000.000	100.000	3	0	3
1000.000	1000.000	1	1	2
Total		6198	324	6522

Fixed Broadband Subscriptions by Technology, Bandwidths and End-user Type

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business / Govt	Total
Asymmetric xDSL	6.000	0.512	16	0	16
	10.000	1.000	1715	52	1767
	12.000	2.000	2	0	2
	25.000	3.000	2666	185	2851
	35.000	5.000	1	0	1
	50.000	10.000	572	57	629
	100.000	10.000	57	18	75
	100.000	100.000	1090	8	1098
	250.000	25.000	8	2	10
	250.000	250.000	66	1	67
Optical Carrier/Fiber to the End User	500.000	50.000	1	0	1
	1000.000	100.000	3	0	3
	1000.000	1000.000	1	1	2
	Total		6198	324	6522

Fixed Voice Subscription

VGE Lines and VoIP Subscriptions by State and End-user Type

State	Total VGE Lines	Consumer VGE Lines	Total VoIP Subscriptions	Consumer VoIP Subscriptions
North Carolina	7396	6673	56	0
Total	7396	6673	56	0

Fixed Voice Subscription (VGE Lines)

VGE Lines Provided to Unaffiliated Providers by State

State	Wholesale	UNE-L
North Carolina	0	0
Total	0	0

VGE Lines Provided to End Users by State, Bundle and Product Type

State	Total	by Bundle			by Product Type		
		Sold w/ Internet	Sold w/o Internet	Consumer & No PIC	Consumer & No PIC	Bus-Govt & No PIC	& PIC
North Carolina	7396	6057	1339	753	5920	213	510
Total	7396	6057	1339	753	5920	213	510

VGE Lines Provided to End Users by State, Ownership and Last-mile Medium

State	Total	by Ownership			by Last-mile Medium		
		Owned	Resale	FTTP	Coax	Fixed Wireless	Copper
North Carolina	7396	7396	0	0	7374	0	22
Total	7396	7396	0	0	7374	0	22

Fixed Voice Subscription (iVoIP)

Over-the-top VoIP Subscriptions by State and End-user Type

State	Total	Consumer	Business / Govt
North Carolina	0	0	0
Total	0	0	0

All other VoIP Subscriptions by State, End-user Type, Bundle and Last-mile Medium

State	Total	by End-user Type			by Bundle			by Last-mile Medium		
		Consumer	Business / Government	Total	Sold w/ Internet	Sold w/o Internet	FTTP	Coax	Fixed Wireless	Copper
North Carolina	56	0	56	56	0	56	0	0	0	0
Total	56	0	56	56	0	56	0	0	0	0



MARKETING FOR SUCCESS

RIVERSTREET NETWORKS

PUBLIC PRIVATE PARTNERSHIPS - MARKETING

DIRECT MAIL - POSTCARD

DOOR HANGERS



**FULL
STREAM
AHEAD**

**RiverStreet
NETWORKS**



**FIBER
is here.**

**RiverStreet
NETWORKS**

**YOUR NEIGHBORHOOD IS NEXT IN LINE FOR
FIBER.**

RiverStreet Networks is building a fiber network in your area. Experience amazing, reliable technology that will change your life.

HIGH SPEED INTERNET
Up to 1 Gig (1,000 Mbps)

SECURITY
Peace of mind you can trust

VOICE
Crystal clear & reliable

**RESERVE
YOUR
SPOT
TODAY!**



**RiverStreet
NETWORKS**
844.238.0131 | rsinfo@rsnet.org
myriverstreet.net

**ALMOST
THERE...**

**We installed the fiber connection
outside your home today!**

There's just one more step left – installation inside. Contact us today to schedule an appointment for a RiverStreet technician to install the fiber connection inside your home. This includes switching all services from your current copper connection and ensuring the WiFi network is up and running.

But wait!

Don't forget to secure your home with the best security system in town. Call us for a free quote on a complete security solution with monitoring plans as little as \$20/mo.

**SOMETHING TO
CELEBRATE!**

In honor of our new office opening in Danbury, we are offering our Stokes customers a FREE Roku TV when you connect your home by bundling our internet TV and phone services! Bundle internet or TV with phone, and receive a free Roku stick!



FREE ROKU DEVICES WITH BUNDLE!

myriverstreet.net | 844.238.0131

*Offer only available to Stokes customers who sign up for internet TV and phone services. Offer ends 12/31/16. See website for details.

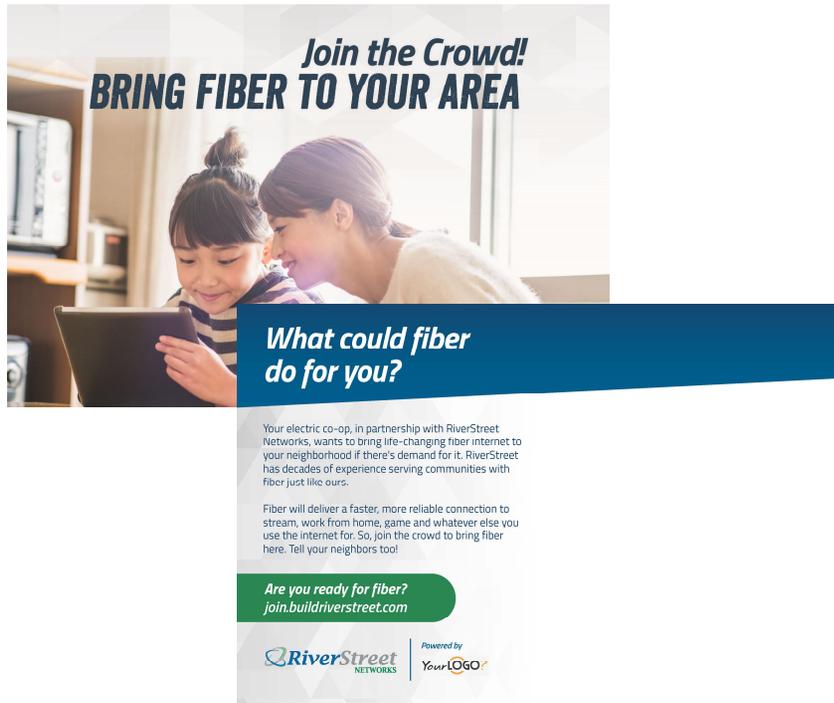
**RiverStreet
NETWORKS**
105 Sheep Rock Rd Danbury, NC 27016

**RiverStreet
NETWORKS**
844.238.0131 | myriverstreet.net ©2016 RSN

RIVERSTREET NETWORKS

PUBLIC PRIVATE PARTNERSHIP- MARKETING

POST CARD MAILING



Join the Crowd!
BRING FIBER TO YOUR AREA

What could fiber do for you?

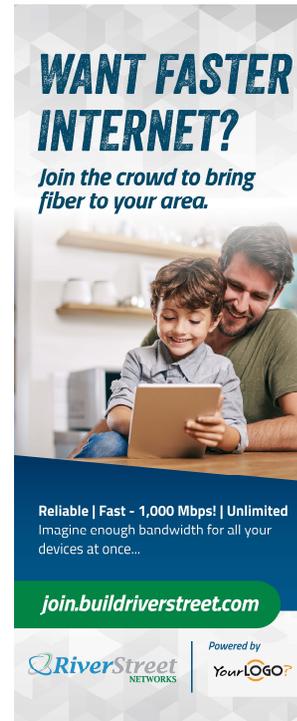
Your electric co-op, in partnership with RiverStreet Networks, wants to bring life-changing fiber internet to your neighborhood if there's demand for it. RiverStreet has decades of experience serving communities with fiber just like ours.

Fiber will deliver a faster, more reliable connection to stream, work from home, game and whatever else you use the internet for. So, join the crowd to bring fiber here. Tell your neighbors too!

Are you ready for fiber?
join.buildriverstreet.com

RiverStreet NETWORKS Powered by **YourLOGO?**

VERTICAL BANNER



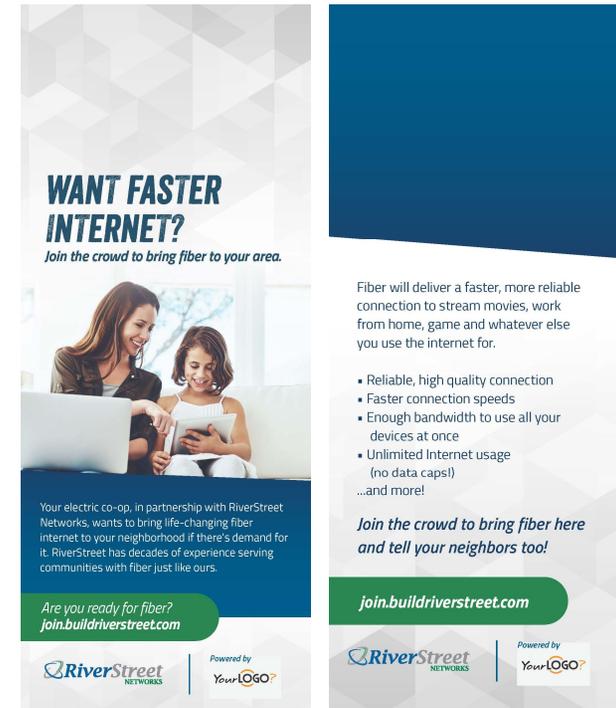
WANT FASTER INTERNET?
Join the crowd to bring fiber to your area.

Reliable | Fast - 1,000 Mbps! | Unlimited
Imagine enough bandwidth for all your devices at once...

join.buildriverstreet.com

RiverStreet NETWORKS Powered by **YourLOGO?**

DOOR HANGERS



WANT FASTER INTERNET?
Join the crowd to bring fiber to your area.

Fiber will deliver a faster, more reliable connection to stream movies, work from home, game and whatever else you use the internet for.

- Reliable, high quality connection
- Faster connection speeds
- Enough bandwidth to use all your devices at once
- Unlimited Internet usage (no data caps!) ...and more!

Join the crowd to bring fiber here and tell your neighbors too!

join.buildriverstreet.com

RiverStreet NETWORKS Powered by **YourLOGO?**

RIVERSTREET NETWORKS

PUBLIC PRIVATE PARTNERSHIPS - MARKETING

BILLBOARDS



RADIO

Make memories with RiverStreet Networks and enjoy a free month with new internet or upgrade!

Because t'is the season to stream holiday favorites with family and friends! And you'll just have a better experience with RiverStreet Networks.

A free month of internet from RiverStreet Networks. With fiber optic technology everyone gets up to 1 gig.

Offer ends 12/31/2018. Call RiverStreet Networks now at 844-238-0131 or visit online at myriverstreet.net.

RIVERSTREET NETWORKS

PUBLIC PRIVATE PARTNERSHIPS - UPDATED INTERNET PRICING



RiverStreet NETWORKS
A Division of Public Private Partnerships, Inc.

RESIDENTIAL PRICING

Reliable. Safe. Fast. High-speed Internet.

CHOOSE A PLAN THAT'S RIGHT FOR YOUR FAMILY

Streaming movies to downloading music—no matter how you stay connected, we have the perfect High Speed Internet package for you. Bundles include unlimited data, local phone features, and unlimited long distance. Start saving more when you bundle Internet and Phone Service with RiverStreet Networks. Choose a plan that best fits your family needs and we'll take care of the rest.

\$75	\$90	\$120
Per Month	Per Month	Per Month
Phone Service Included	Phone Service Included	Phone Service Included
25M/5M	50M/10M	100M/10M
<ul style="list-style-type: none"> ✓ Unlimited Data ✓ 15GB Email with storage ✓ 24/7 Tech Support ✓ 4 Email Accounts 	<ul style="list-style-type: none"> ✓ Unlimited Data ✓ 15GB Email with storage ✓ 24/7 Tech Support ✓ 4 Email Accounts 	<ul style="list-style-type: none"> ✓ Unlimited Data ✓ 15GB Email with storage ✓ 24/7 Tech Support ✓ 4 Email Accounts

844.238.0131 | myriverstreet.net



OPTI-FI

RESIDENTIAL PRICING

Keeping you connected

OPTI-FI YOUR HOME WITH A PLAN THAT'S RIGHT FOR YOUR FAMILY

OPTI-FI has a multitude of benefits that are tailored to fit every families needs. From streaming movies to live video chatting—no matter how you stay connected, we have the perfect High Speed Internet plan for you. With our advanced fiber optic network there's nothing off limits.

\$75	\$100	\$200
Per Month	Per Month	Per Month
100M/100M	250M/250M	1GIG/1GIG
<ul style="list-style-type: none"> ✓ Unlimited Data ✓ Free WIFI ✓ Free Phone Service ✓ 24/7 Tech Support 	<ul style="list-style-type: none"> ✓ Unlimited Data ✓ Free WIFI ✓ Free Phone Service ✓ 24/7 Tech Support 	<ul style="list-style-type: none"> ✓ Unlimited Data ✓ Free WIFI ✓ Free Phone Service ✓ 24/7 Tech Support

RiverStreet NETWORKS | Powered by **YourLOGO?**

RIVERSTREET NETWORKS

PUBLIC PRIVATE PARTNERSHIPS - INTERNET PRICING

FIBER BASELINE PRICING

100M / 100M - \$75+\$5 = \$80

Less Cooperative Discount

\$70.00

Less \$9.25 Low Income Lifeline discount

\$60.75

WIRELESS BASELINE PRICING

Up To 25M / 3M - \$50+\$5 = \$55

Less Cooperative Discount

\$45.00

Less \$9.25 Low Income Lifeline discount

\$35.75

The image displays three pricing cards for RiverStreet Networks. Each card is white with a blue border and a blue bar at the bottom. The cards are arranged in a row, with the middle card slightly offset to the right. The background is a light gray with a geometric pattern.

Service	Price (Per Month)	Features
100M/100M	\$75	Unlimited Data, Free WiFi, Free Phone Service, 24/7 Tech Support
250M/250M	\$100	Unlimited Data, Free WiFi, Free Phone Service, 24/7 Tech Support
1GIG/1GIG	\$200	Unlimited Data, Free WiFi, Free Phone Service, 24/7 Tech Support

RIVERSTREET NETWORKS

PUBLIC PRIVATE PARTNERSHIPS - INTERNET PRICING

FIBER BASELINE PRICING

100M / 100M - \$75+\$5 = \$80

Less Cooperative Discount

\$70.00

Less \$9.25 Low Income Lifeline discount

\$60.75

WIRELESS BASELINE PRICING

Up To 25M / 3M - \$50+\$5 = \$55

Less Cooperative Discount

\$45.00

Less \$9.25 Low Income Lifeline discount

\$35.75

WIRELESS TIER II PRICING

Up to 50M / 3M- \$70+\$5 = \$80

Less Cooperative Discount

\$70

Less \$9.25 Low Income Lifeline Discount

\$60.75

\$75 Per Month	\$100 Per Month	\$200 Per Month
100M/100M	250M/250M	1GIG/1GIG
✓ Unlimited Data	✓ Unlimited Data	✓ Unlimited Data
✓ Free WiFi	✓ Free WiFi	✓ Free WiFi
✓ Free Phone Service	✓ Free Phone Service	✓ Free Phone Service
✓ 24/7 Tech Support	✓ 24/7 Tech Support	✓ 24/7 Tech Support

AVERAGE COST OF 25/3 SERVICE BY POPULATION DENSITY

Decile	Max Population Density	Mean Lowest Price	Median Lowest Price
1	147,807	\$50.07	\$49.99
2	3,713.81	\$51.78	\$49.99
3	1,658.13	\$53.56	\$49.99
4	649.62	\$54.38	\$49.99
5	274.90	\$56.44	\$50.00
6	129.81	\$58.14	\$59.95
7	74.09	\$59.06	\$60.00
8	44.41	\$60.26	\$63.99
9	24.70	\$61.53	\$60.95
10	9.22	\$68.69	\$64.95

SOURCE: BROADBAND
NOW

RIVERSTREET NETWORKS

PUBLIC PRIVATE PARTNERSHIPS - BUNDLE PRICING

Voice Data Plans – Residential Bundle Pricing

Plan	Internet	Voice	SLC	Total
25/3	\$45.00	\$30.00	\$6.50	\$81.50
50/10	\$60.00	\$30.00	\$6.50	\$96.50
100/10	\$90.00	\$30.00	\$6.50	\$126.50
250/25	\$150.00	\$30.00	\$6.50	\$186.50

Data Only Plans – Residential (includes unlimited voice, features, wireless routing, tech support)

Plan	Internet	Voice	Reg Fee	Total
100/100	\$75.00	\$0.00	\$5.00	\$80.00
250/250	\$100.00	\$0.00	\$5.00	\$105.00
1000/1000	\$200.00	\$0.00	\$5.00	\$205.00

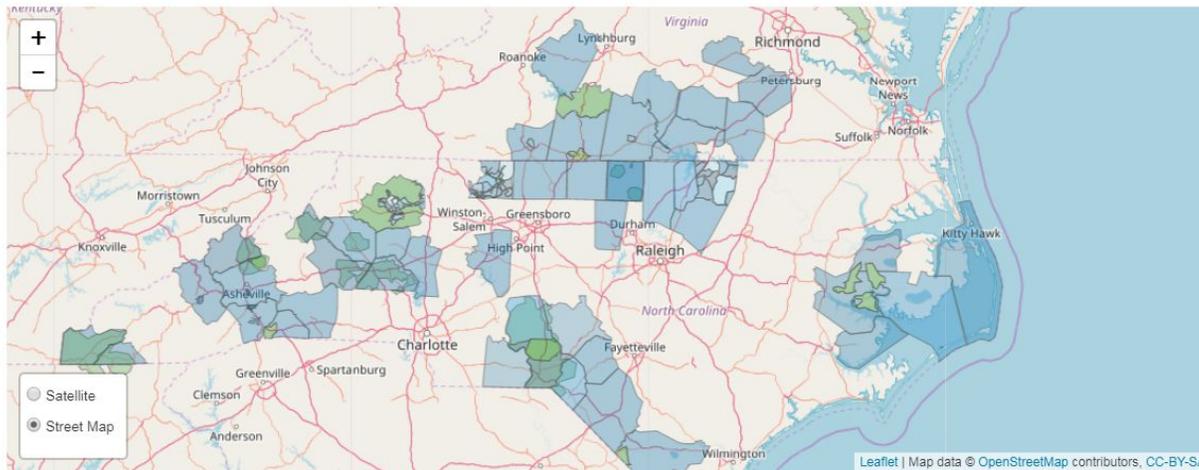
Plan	"Co-op" Discount	Disc Rate	Lifeline Discount*	Lowest Possible
100/100	-\$10.00	\$70.00	-\$9.25	\$60.75
250/250	-\$10.00	\$95.00	-\$9.25	\$85.75
1000/1000	-\$40.00	\$165.00	-\$9.25	\$155.75



Help extend fiber to your neighborhood!

Register your address, and we'll let you know if you can receive service. Become a supporter and spread the word!

Service Areas



Areas In Service

Areas where service is currently available.

ACTIVITY DASHBOARD



Eric

Dashboard

Map

Tasks

Addresses

Contacts

Sales

Products

Zones

Documents

Engagement

Users

Settings

Integrations

Support

Updates

7

0 this month

0 this year

Create new update

Emails

4,447

132 opened this month

224 opened last month

Create new email

Direct Mail

0

0 sent this month

0 sent last month

Create new mail

Leads

2,813

140 this month

190 last month

Contacts

2,251

25 this month

45 last month

Orders

1,311

26 this month

41 last month

Key Trends



Lead-to-Order Conversion Rate

19%

Month to date

▼ -18%

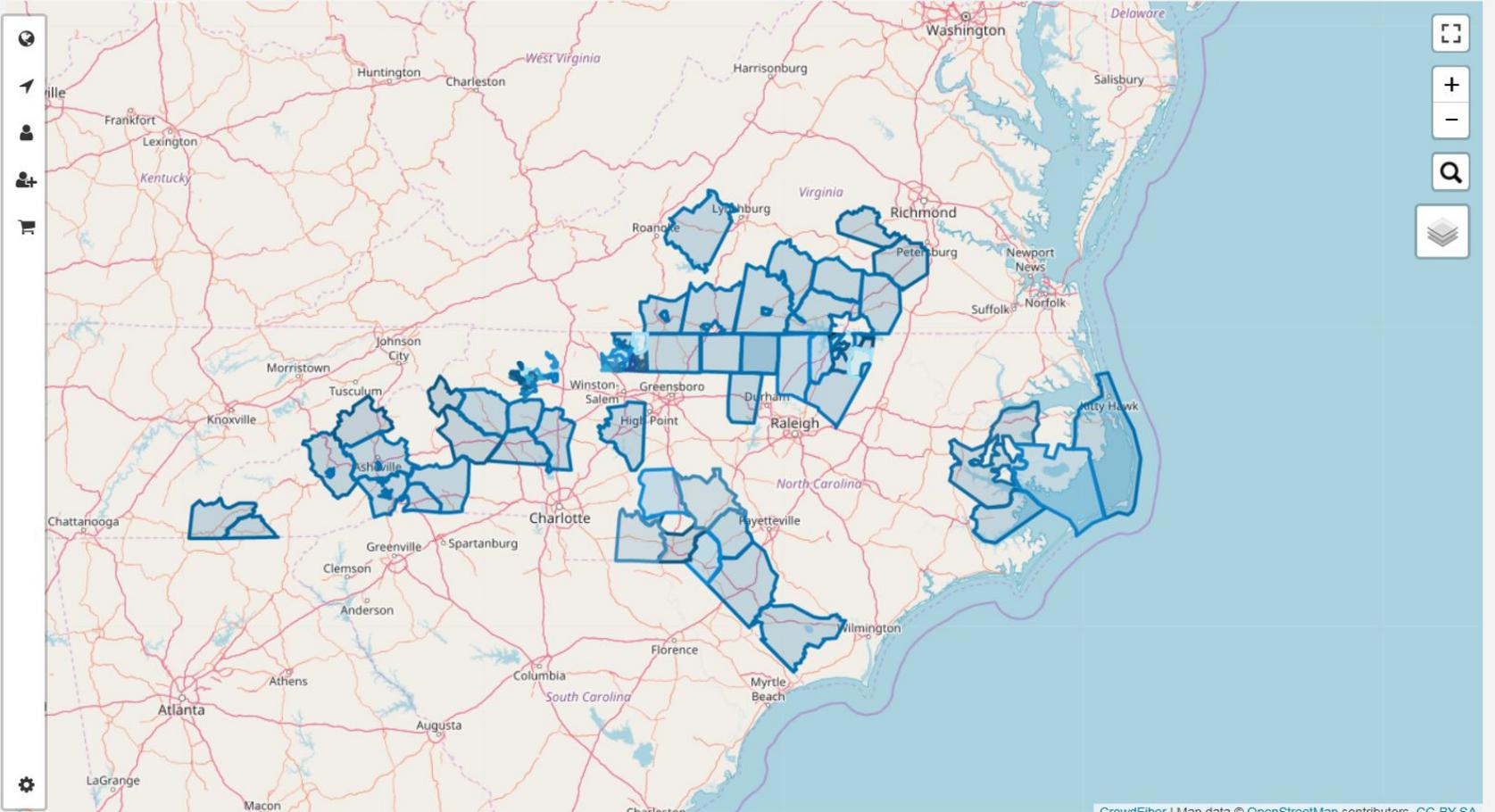
Compared to this time last month



PRE-REGISTRATION AREAS

Eric

- Dashboard
- Map**
- Tasks
- Addresses
- Contacts
- Sales
- Products
- Zones
- Documents
- Engagement
- Users
- Support



CUSTOMER PRE-REGISTRATION MAPPING

The screenshot displays a web application interface for "CUSTOMER PRE-REGISTRATION MAPPING". The browser address bar shows the URL: https://join.buildriverstreet.com/campaigns/riverstreet-networks-campaign/site_admin/map.

Interface Elements:

- Search Bar:** "Search for something..."
- Navigation Links:** Home Page, View my open tickets, Support, What's New, Sign out
- Sidebar Menu:**
 - Eric (Account Menu)
 - Admin Home
 - Map** (Selected)
 - Tasks
 - Addresses
 - Contacts
 - Orders
 - Products
 - Zones
 - Documents
 - Engagement
 - Users
 - Settings

Map Content:

- Green Dots:** Represent pre-registered customers, clustered in the central and eastern parts of the map.
- Orange Triangles:** Represent other points of interest, scattered across the map.
- Geographic Labels:** Asheville Regional Airport, Six Oaks Airport, Green River Gameland, Hendersonville, Transylvania County Airport, Fairview Airport, Wheat Field, Fox Haven Plantation STOLport.
- Highways:** US 74, US 126, US 176, US 64, US 74A.
- Map Controls:** Zoom in (+), Zoom out (-), Search (M), Layers (Layers icon), Full Screen (F), Help (Help icon).

System Information:

- OS: Windows 10
- Browser: Google Chrome
- Time: 9:58 AM 12/2/2018
- Copyright: Crowdfunder.com data © OpenStreetMap contributors. CC-BY-SA

CUSTOMER SERVICE AND SUPPORT

RIVERSTREET NETWORKS

PUBLIC PRIVATE PARTNERSHIPS - CUSTOMER SUPPORT

CUSTOMER SERVICE

- Average time to answer a call
34 seconds
- Average call duration 3.30
minutes

TECHNICAL SUPPORT

- Average After Hours Tech
Support call 10.10 mins
- Average RiverStreet Network
Support call time is 3.9 mins
- 76% first call trouble
resolution
- 24% escalated to our Tier II
or truck Roll
- Outages and duration > .40%
- 99.6% up-time

RIVERSTREET NETWORKS

PUBLIC PRIVATE PARTNERSHIPS - DISPATCH SUPPORT CALLS

RESIDENTIAL TROUBLE TICKETS

- Overall average duration from call to completion - 22 hours
- Time to clear a trouble of ticket - 1.25 hours
- Repeat troubles on Copper - 9.3%
- Repeat troubles on Fiber - 3.7%

RIVERSTREET NETWORKS

PUBLIC PRIVATE PARTNERSHIPS - NET PROMOTER SCORE

% RATED EXCELLENT

- Customer Service - 97%
- Install & Repair - 100%
- Tech Support - 96%

LIKELIHOOD TO RECOMMEND

- Customer Service - 88%
- Install & Repair - 90%
- Tech Support - 88%

RIVERSTREET NETWORKS

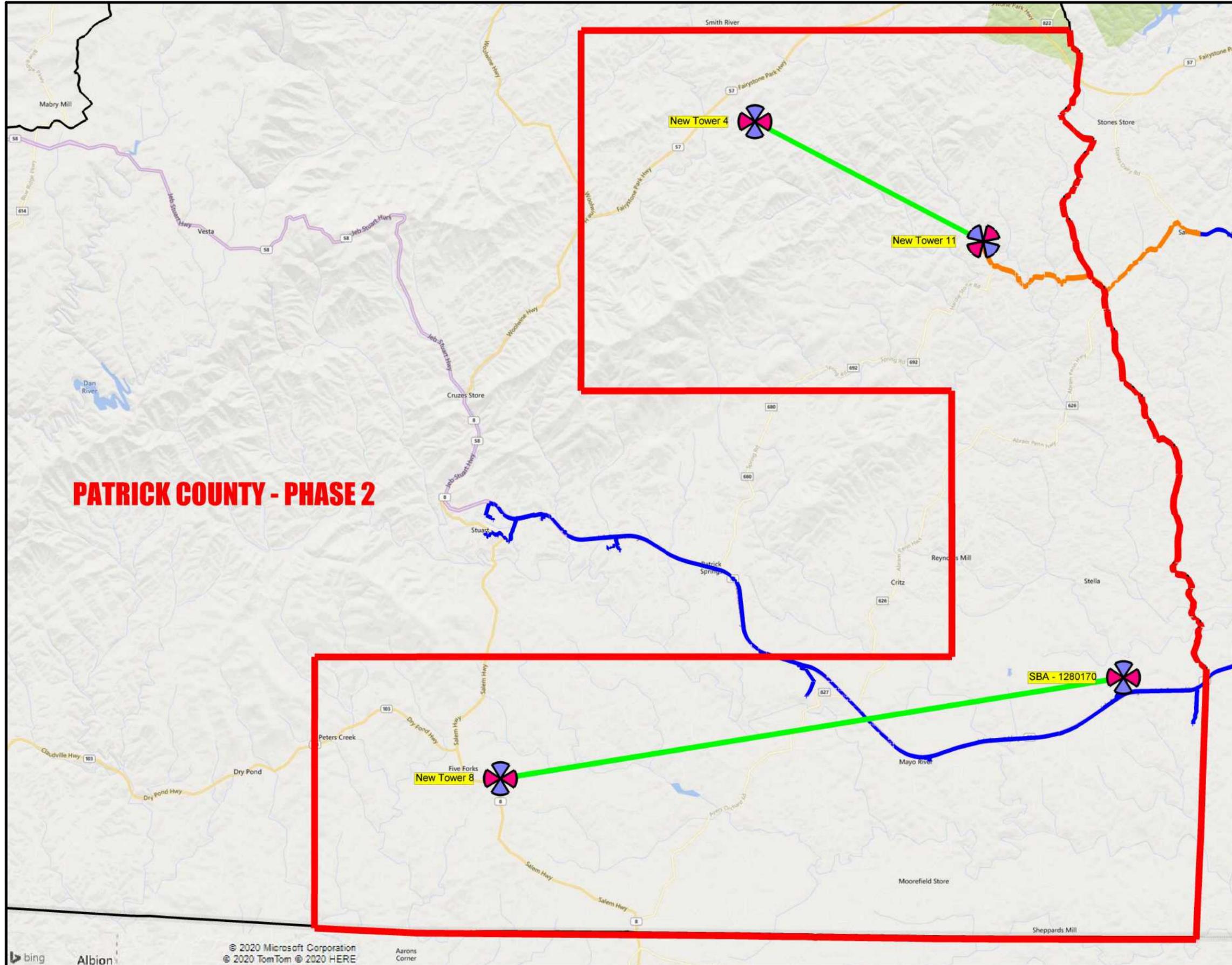
PUBLIC PRIVATE PARTNERSHIPS - KEY METRICS ON FIBER

BROADBAND CHURN RATE - .50%

GROSS WRITE OFFS - .21%

NET WRITE OFFS - .06%

ARPA - RESIDENTIAL \$103.54 / BUSINESS - \$241.61

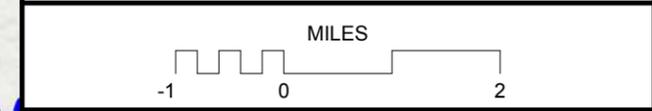


EDX® SignalPro®: NC - Wilkes

Link colors

Green	>= 100.00
Yellow	99.50 to 100.00
Orange	98.95 to 99.50
Red	< 98.95

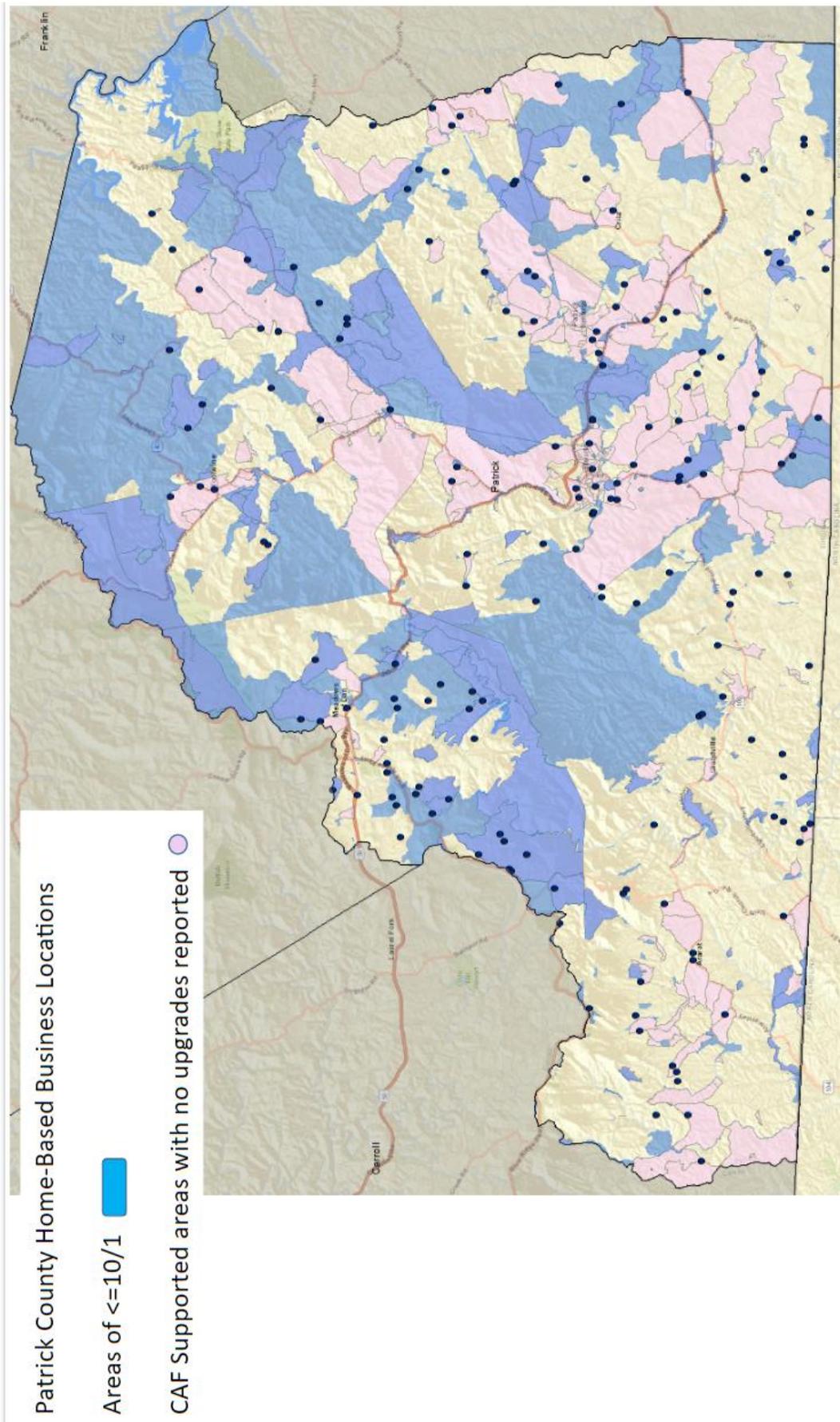
- Patrick County Phase 2 Boundary
- Patrick County
- MBC Fiber Extension to New Tower 11
- MBC Fiber Route



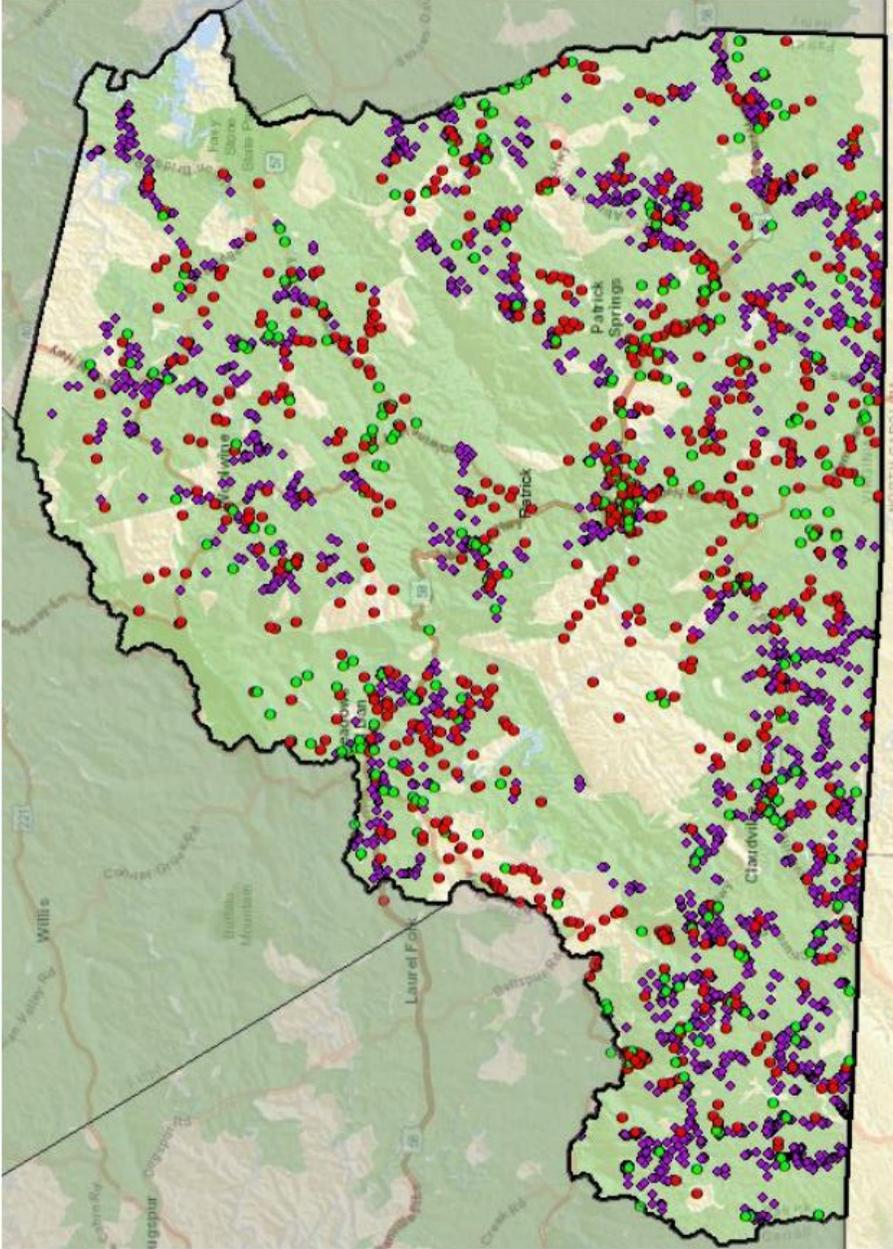
PATRICK COUNTY - PHASE 2

Attachment 16 – CIT Maps

Less Than 10/1 & CAF Areas not Upgraded



Patrick County DSL upgrades v. Internet Service Ratings



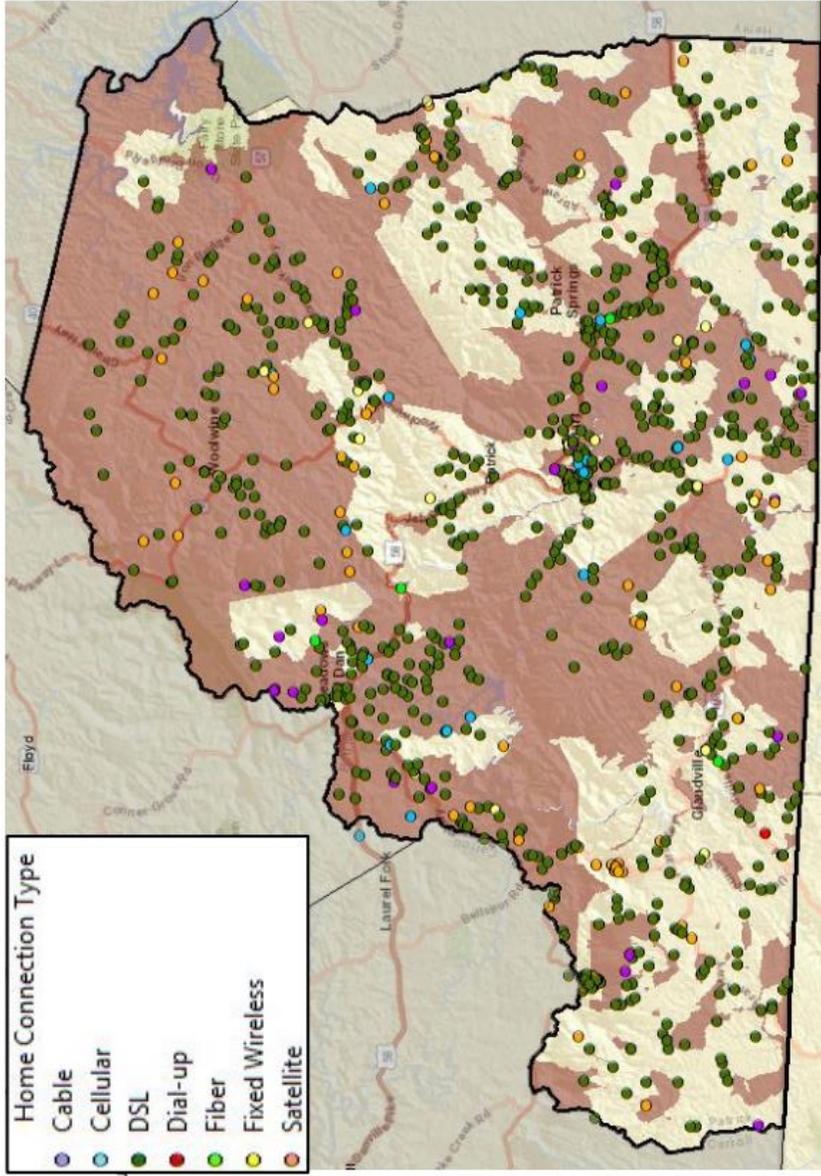
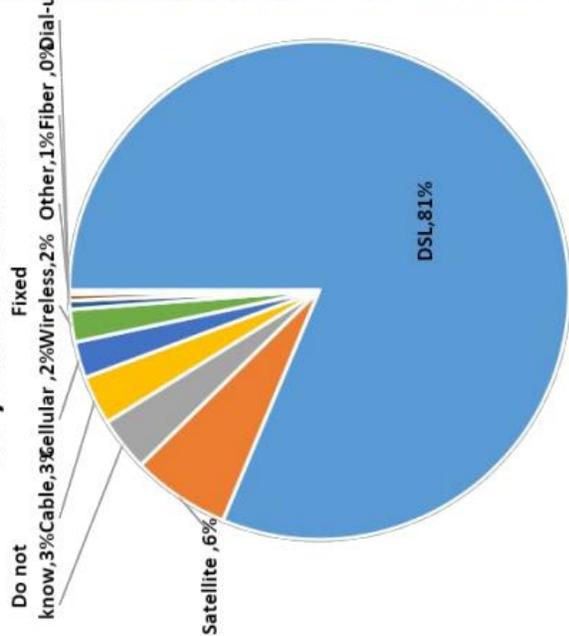
Patrick County CAFII Upgrades

Over 2500 (54% of address points) reported CAFII upgrades in Patrick County yet 74% report service does not meet their needs.

Take away: even with numerous DSL upgrades, most with DSL connections do not benefit. Seek alternative coverage solutions for all obsolete DSL areas. Ensure residents in CAF upgrade areas are aware of potentially better service offerings.

- ◆ CAFII Upgrades
- Does not meet my needs
- Meets my needs
- DSL Service Territory

What kind of Internet connection do you have at home?



Take Away: ~90% of residential subscribers depend upon inadequate, expensive, unreliable and/or obsolete services; **81% DSL, 6% Satellite, 2% Cellular. Education issue: 3% Do not know.**

Patrick County Virginia

Community Broadband Survey Update

May, 2019

Prepared by The Center for Innovative Technology

Powered by Patrick County Virginia



Topics

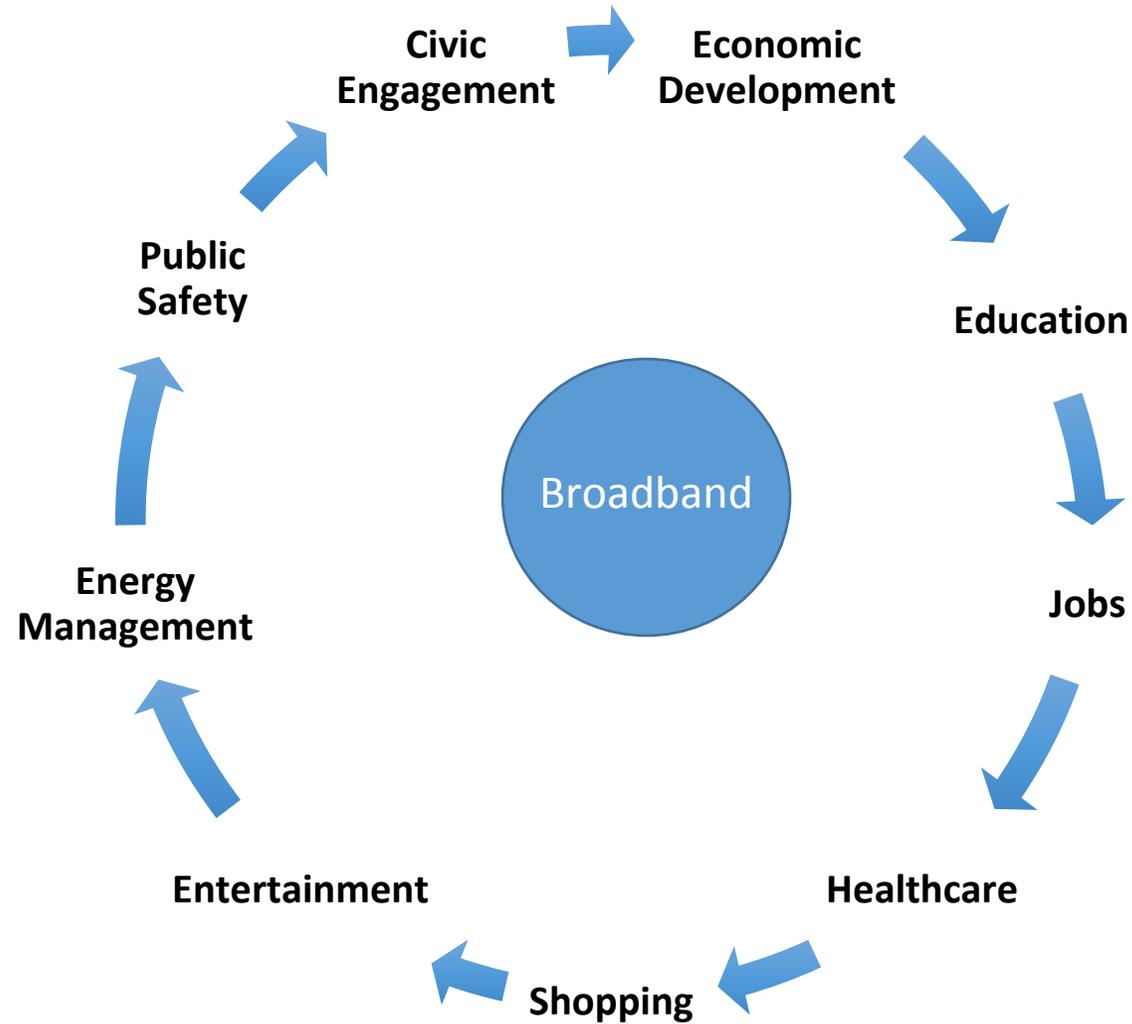
- Community Demographic Profile
- Current Reported Coverage
- Broadband Demand
- Local Assets
- Review of local policies & fees
- Broadband Needs
- Next Steps

Before We Begin

Broadband...

- boosts personal productivity
- facilitates more flexible work arrangements – Telework, Telecommute
- enables a home-based business as a replacement, or compliment, to a primary job
- assists people in becoming more informed
- provides education, social, and cultural opportunities
- can increase household income by \$1,850 (some say more!) per year
- reemployment approximately 25% faster than traditional searches
- higher employment rates in rural counties
- improves access to healthcare
- advance solutions that help manage chronic diseases, like diabetes and obesity
- connecting health and broadband sectors is a path to a more connected, healthier community
- can increase home value.
- can help grow population by attracting or retain millennials.

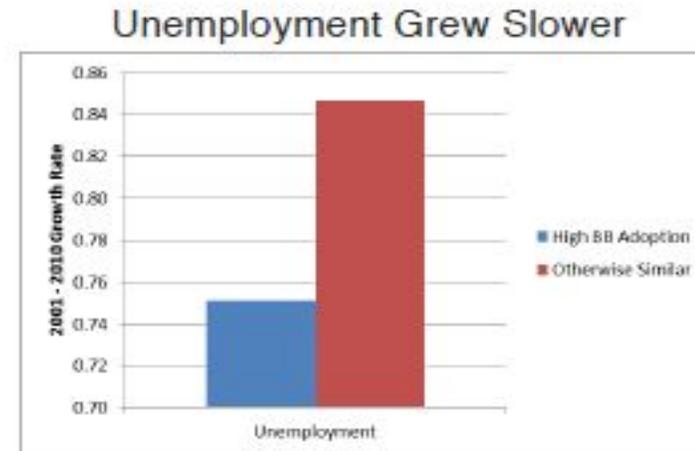
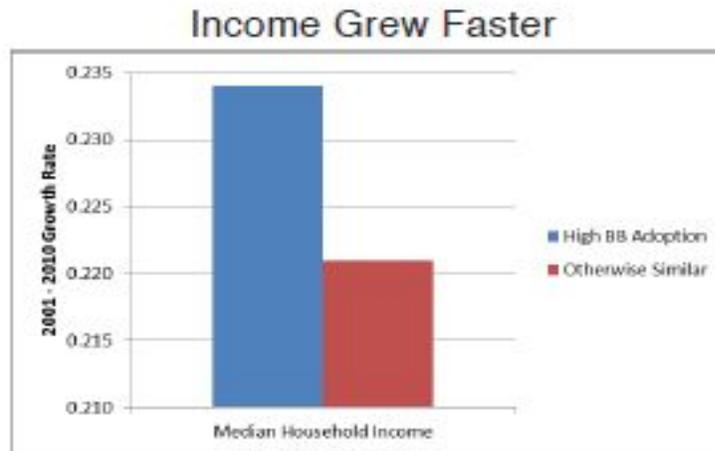
Why Does Broadband Matter?



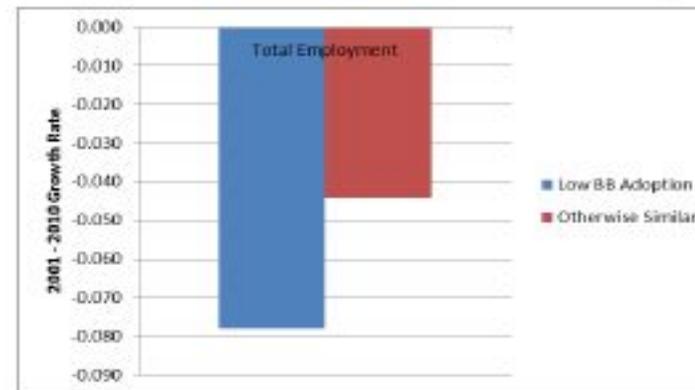
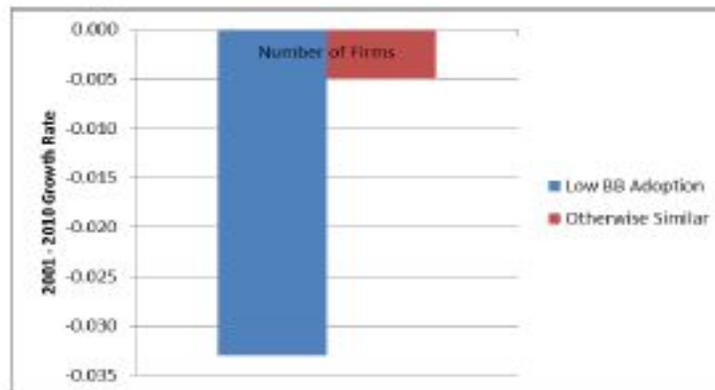
Why Does Broadband Adoption Matter?

In rural counties, between 2001 and 2010...

Where broadband adoption was high, (60%+)...



Where broadband adoption was low, (<40%)...

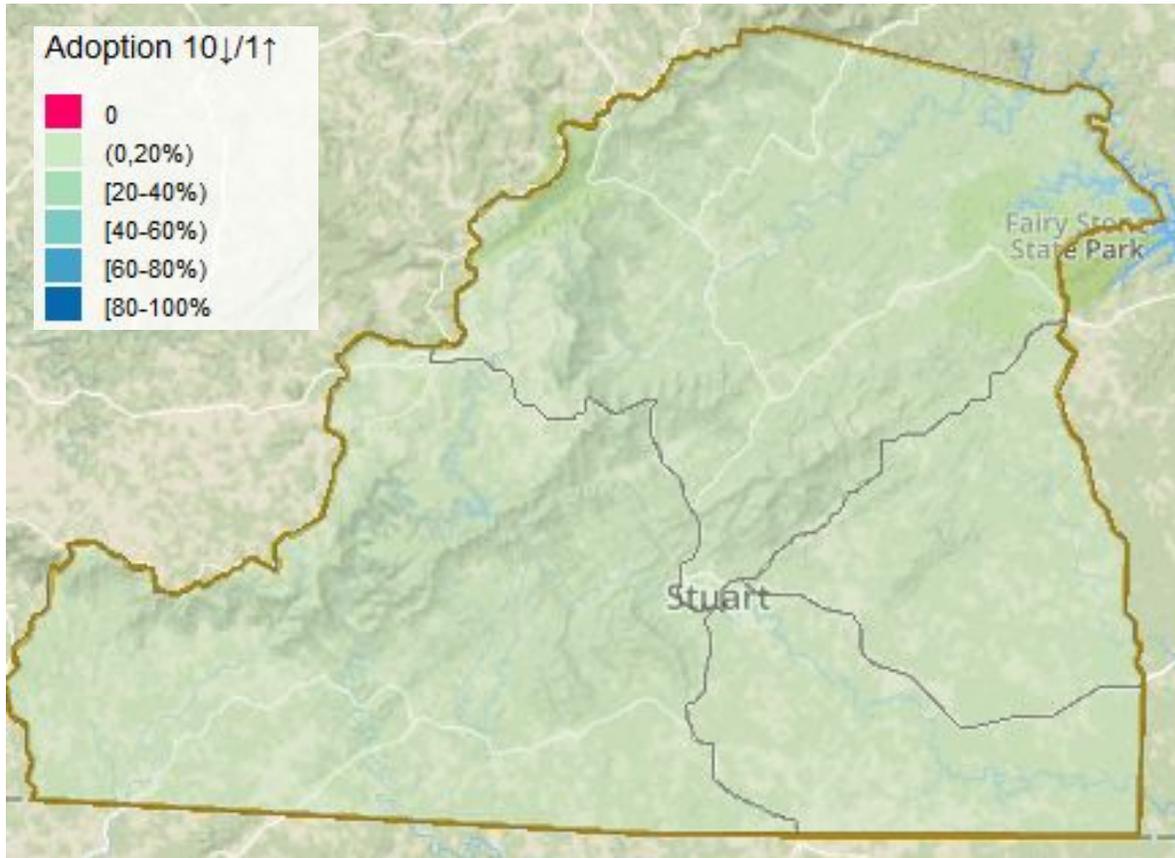


Lost More Businesses

Lost More Jobs

Whitacre, Gallardo, and Stover. 2014a. *Telecommunications Policy*

Patrick County Adoption Rate



Internet Adoption: ~60%

*Adoption rate is the number of residential fixed connections to the Internet per 1000 households. Sources differ on this metric, some say as much as 80%, others as low as 20-40%. Given the DSL coverage, estimated 60% to be safe.

Patrick County Health Behavior Estimates		National Estimates
Obesity	31%	27.80%
Diabetes	13%	9.90%

Source: <https://www.fcc.gov/reports-research/maps/connect2health/data.html>

Take away: Data from the Purdue Center for Regional Development suggests that if a rural area has widely available and adopted broadband, it can start to successfully attract or retain millennials.

Take away: Patrick County health indicators exceed national estimates. Connecting healthcare and broadband sectors and increasing adoption rates is a path to a more connected, healthier community.

The Economics of Broadband

Provider Perspective

$$[Revenues > (CapEx + OpEx)] = Sustainability$$

It doesn't matter if it is the private or public sector building and/or deploying services, the math has to work; revenue has to offset – be greater than - capital and operating expenses in order to sustain the network and create profit for upgrades, maintenance etc.

The Economics of Broadband

Locality Perspective

Localities can improve the investment opportunity for broadband expansion by helping to balance the sustainability equation. Recall:

$$[Revenues > (CapEx + OpEx)] = Sustainability$$

Increase Revenues ↑	LOWER COSTS ↓
Adoption and Demand	Local Assets/Infrastructure
Population Density	Policies & Fees
Community Anchor Institutions*	Partner for Funding Opportunities

*Revenues from a few of the biggest customers in a community (anchors/carrots) can make or break a business plan.

The Economics of Broadband

Local Perspective

According to a study by [Ohio State University Swank Program](#), “Estimates of the average annual benefits received by US broadband subscribers range from \$1,500 (Greenstein and McDevitt, 2012) to \$2,200 (Nevo et al., 2016) per household.

Using the mean from the Swank study; \$1,850, and broadband defined as: **minimum speeds of 25 Mbps download/3 Mbps upload** we can *estimate* economic benefits and losses expected from broadband availability in Patrick County:

Estimate of **County Households without BB** (connections < 25/3) = 5427

Estimate of County Households with broadband (25/3 and above) = 4656

Potential annual economic benefits (or losses) according to the Swank Study could range from:

- Without Broadband $5427 \times \$1,850 = \mathbf{\$10,039,950}$ **economic loss** - due to not having broadband connected homes.
- With Broadband : $4656 \times \$1,850 = \mathbf{\$8,613,600}$ **economic gain** – due to a broadband connected homes.
- The economic gain if all occupied households in Patrick County had broadband service: $10,083 \times \$1,850 = \mathbf{\$14,269,050}$

[FTTH Council released a study](#) showing access to ***fiber-delivered*** Internet boosts home values by up to 3.1 percent.

Median household value (census 2017) for Patrick County Virginia: $\$116,000 \times .031X = \mathbf{\$3,596}$ increase

Community Profile

Sources: <https://www.census.gov/acs/www/data/data-tables-and-tools/data-profiles/2017/>

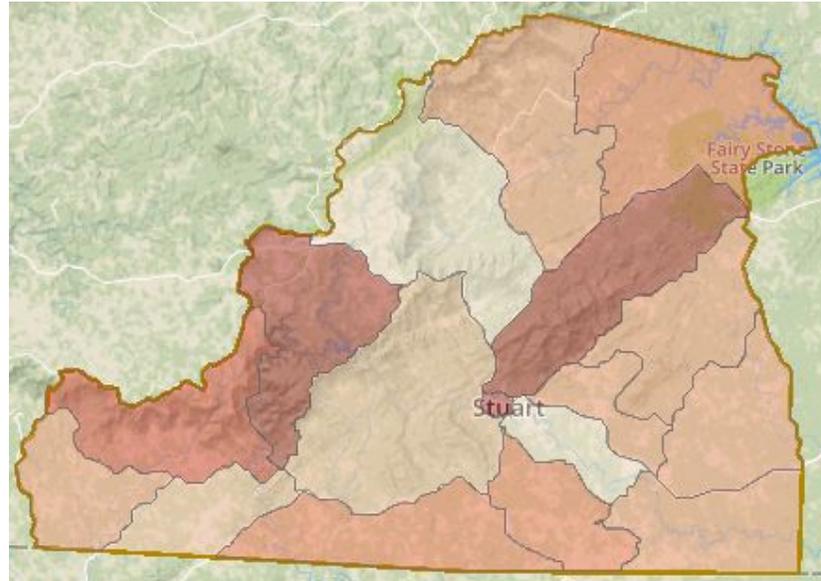
<https://www.fcc.gov.edgekey.net/health/maps>

<https://www.census.gov>

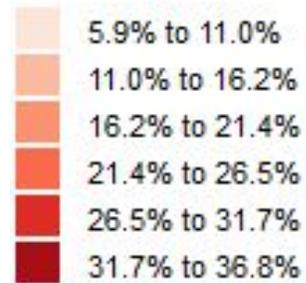
Broadband Perspective

Patrick County Household Income

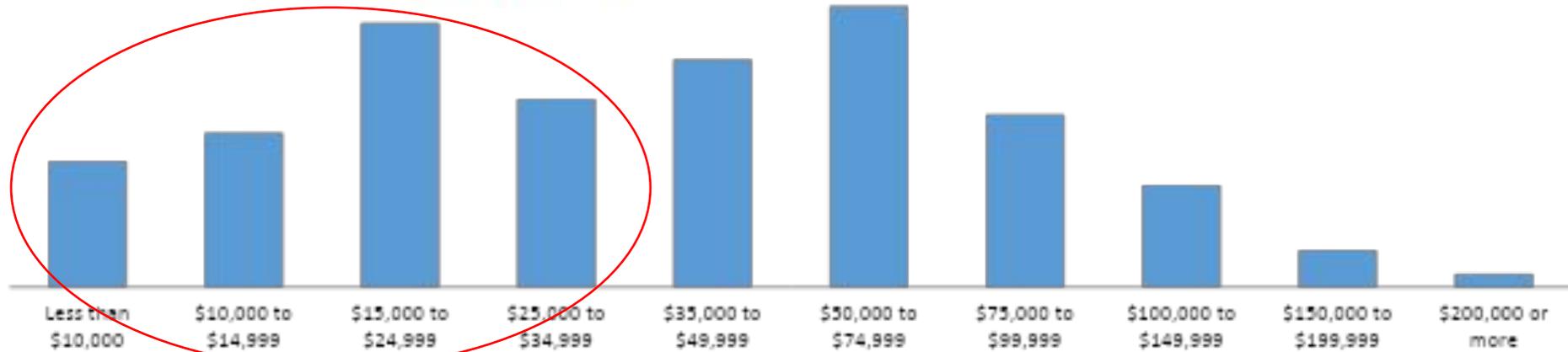
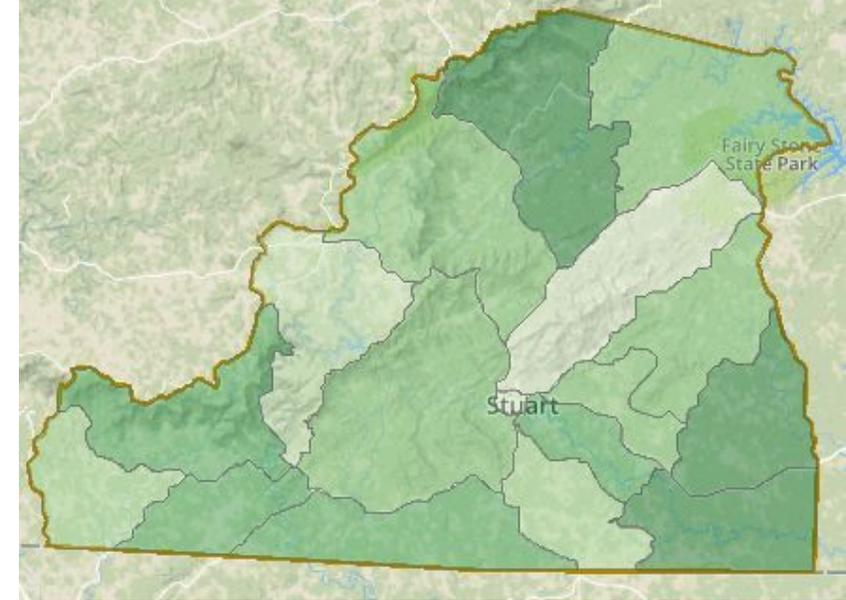
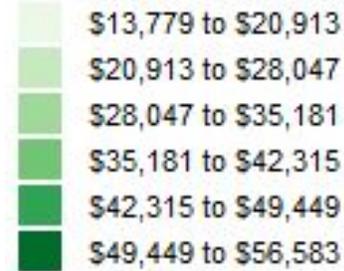
Total Households: 7,713
 Median Household Income: \$37,757



In Poverty



Median Income

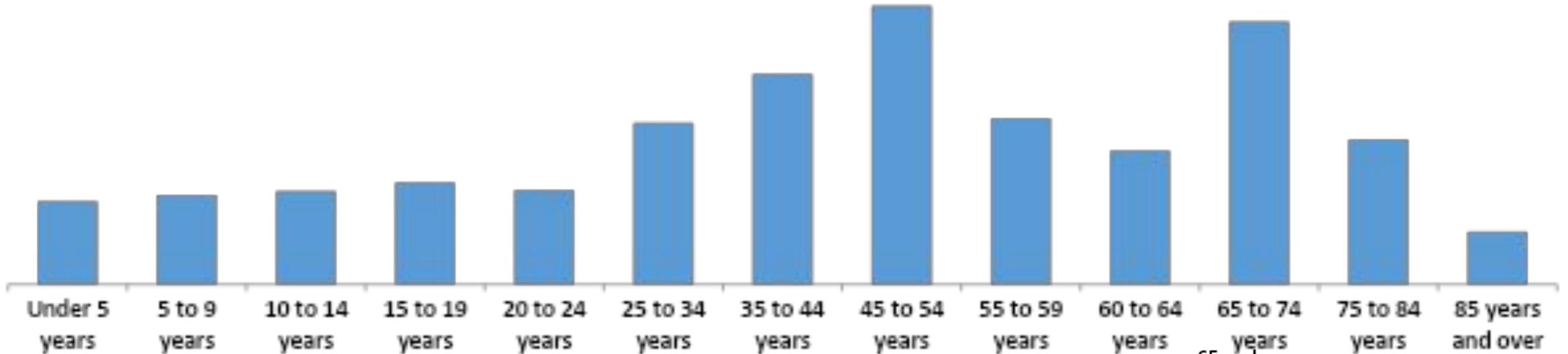


Take away: Adoption issue - Over 46% (< \$35K) may be slow to adopt new services or have affordability challenges.

Patrick Age and Population

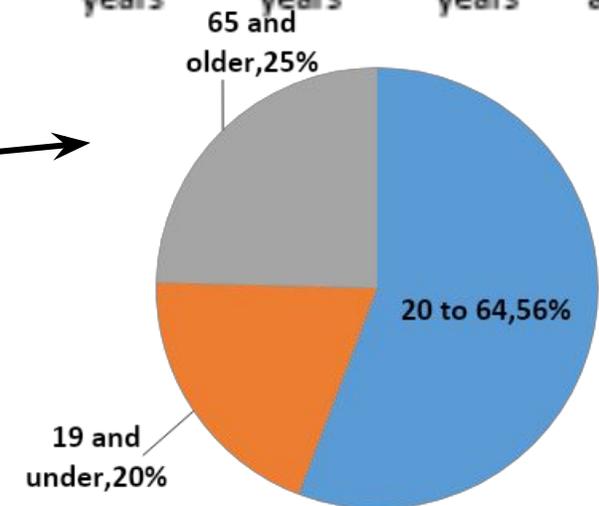
Total Population: 17,958

Median Age: 49.2

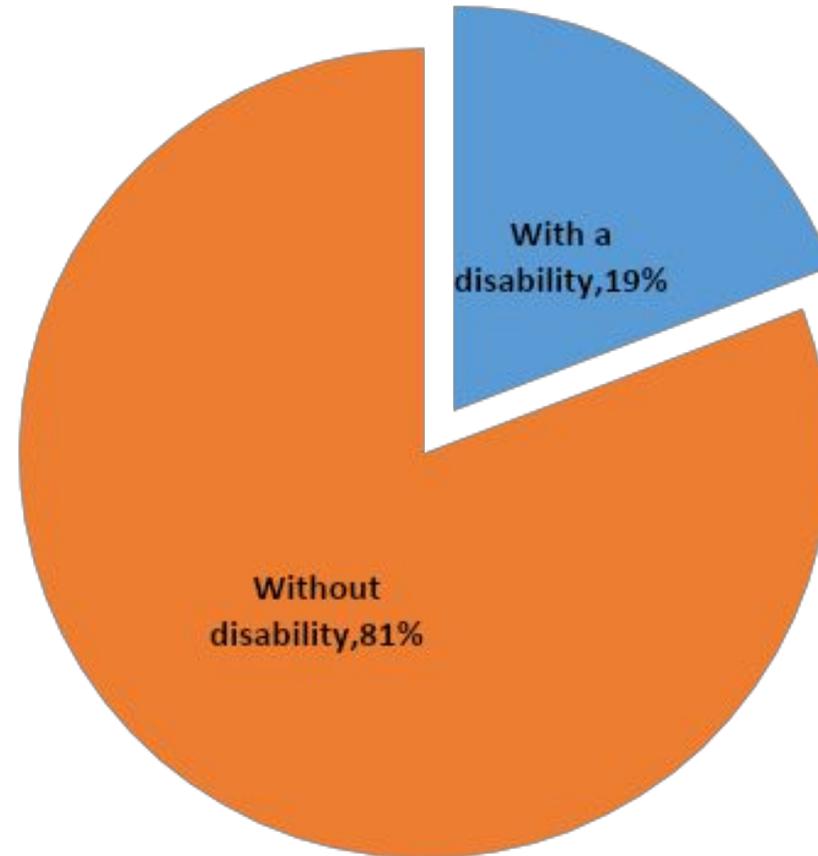


Take away:

- Adoption Issue - 24% may be slow to adopt.
- Majority of population – 81% - considered technology adopters.
- Largest population group; 45-54 – prime workforce age.

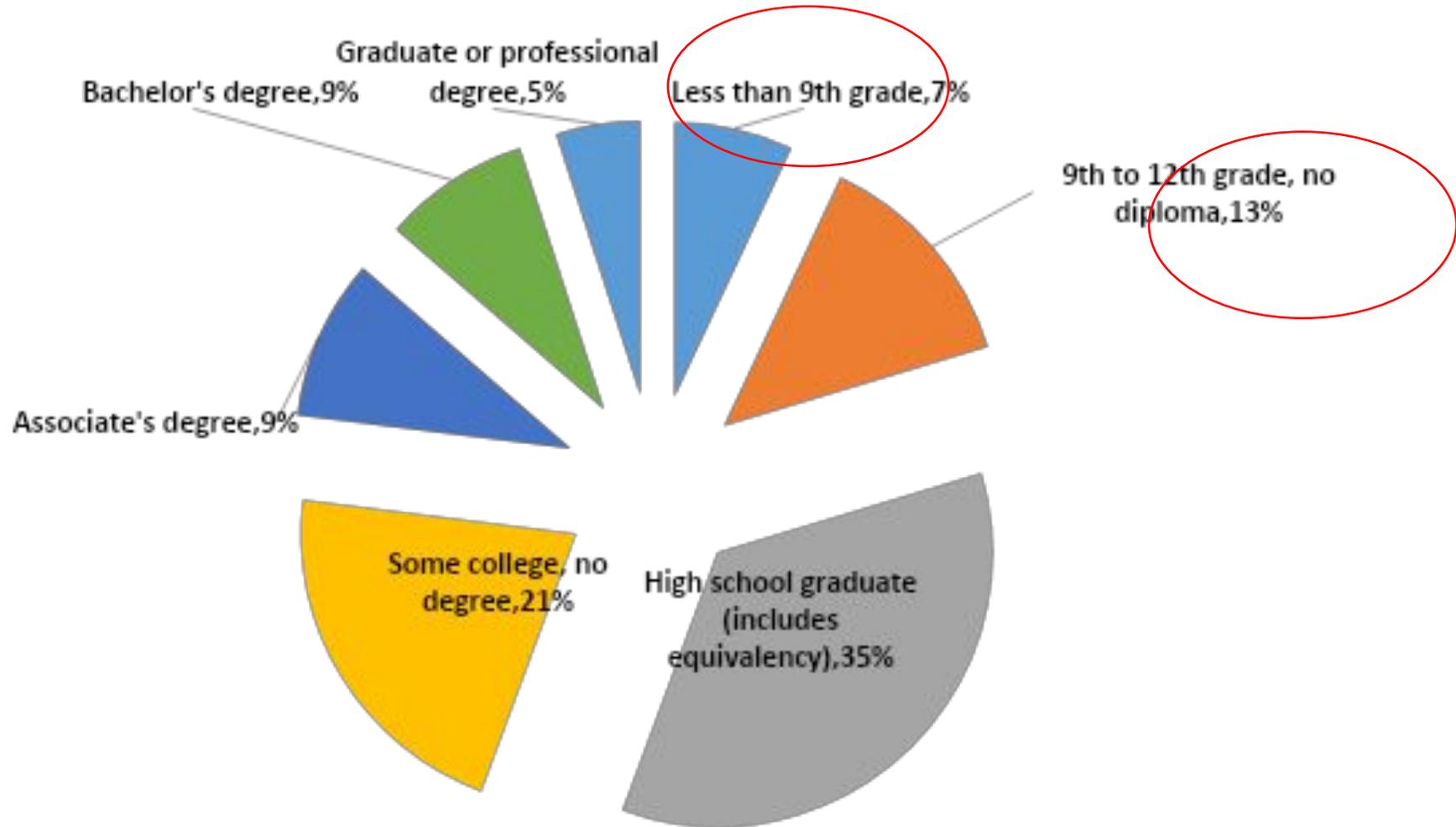


Patrick Population with Special Broadband Needs



Take away: Adoption Issue -19% may be slow to adopt or need special equipment

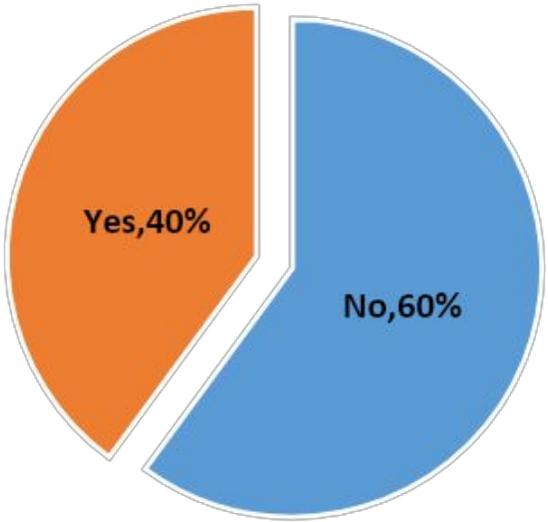
Patrick Educational Attainment



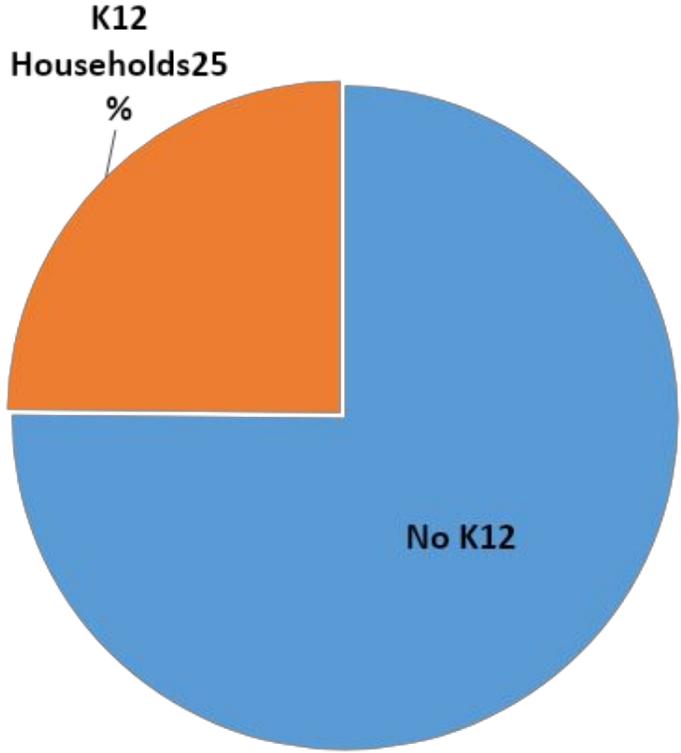
Take away: Adoption Issue - 20% of the population may be slow to adopt and/or less likely to subscribe to new services.

Patrick Households with K-12 Children

Are there any children in K-12 living at this home address, including home schooled?



From Survey

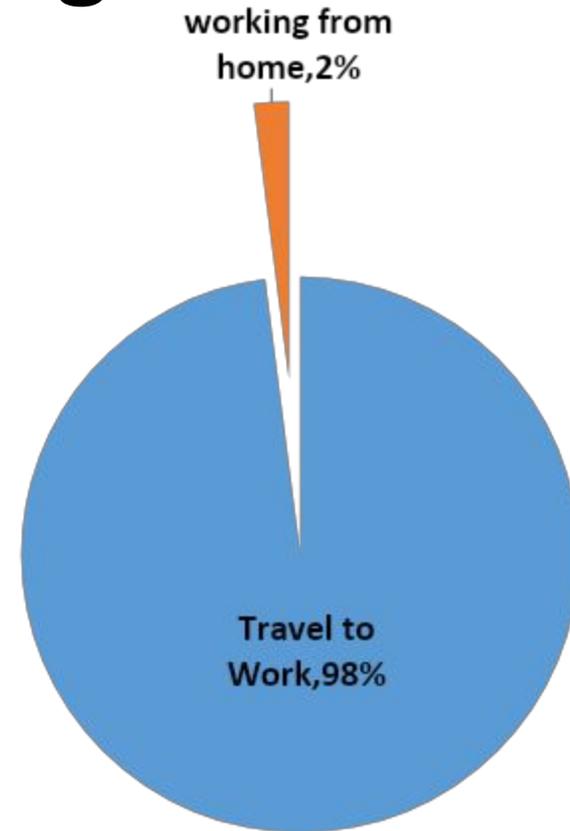


Take Away: According to Census, 25% of households need broadband at home to support K-12 education.

Patrick Residents Working from Home

Take away: According to Census, 2% of workforce work from home, 98% commute in some way.

~28% commute outside the county for work.



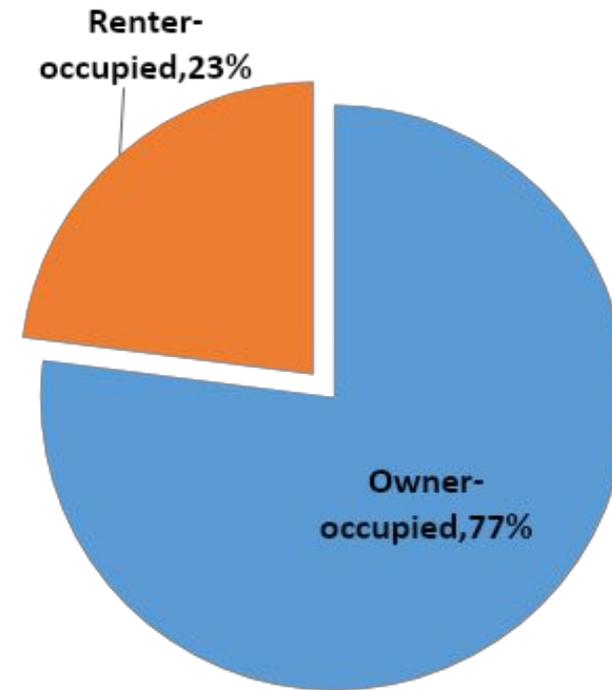
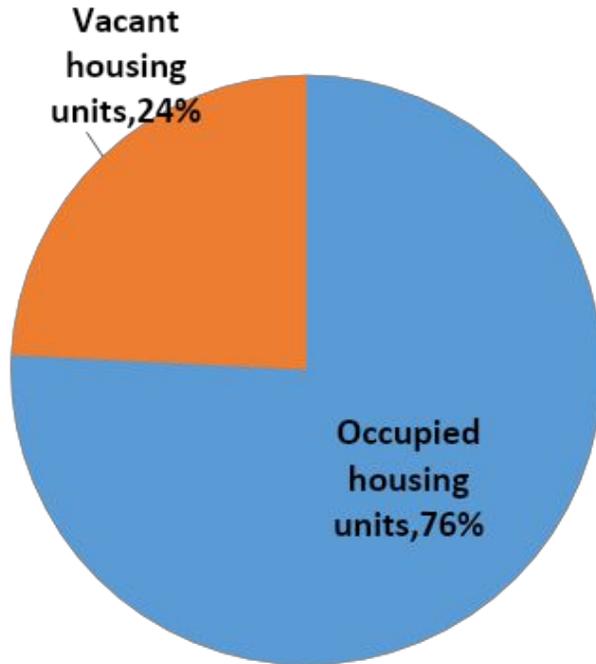
Revenue and economic development opportunities lost to neighboring localities when working outside county of residence.

Working from home keeps dollars circulating in the local economy.

Patrick Housing

Total Households: 10,176

Occupied Household: 7,713



Take away: 24% of housing units are vacant or represent seasonal/weekend homes.

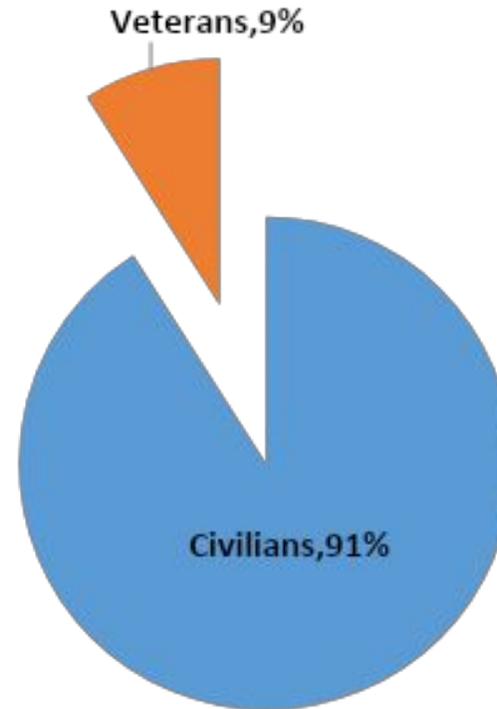
*a vacant unit may be one which is entirely occupied by persons who have a usual residence elsewhere.

Source: <https://www.census.gov/housing/hvs/definitions.pdf>

Patrick Veteran Population

Total Population: 14,726

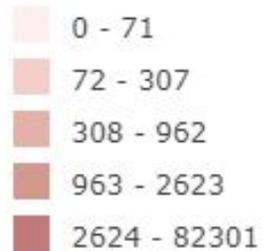
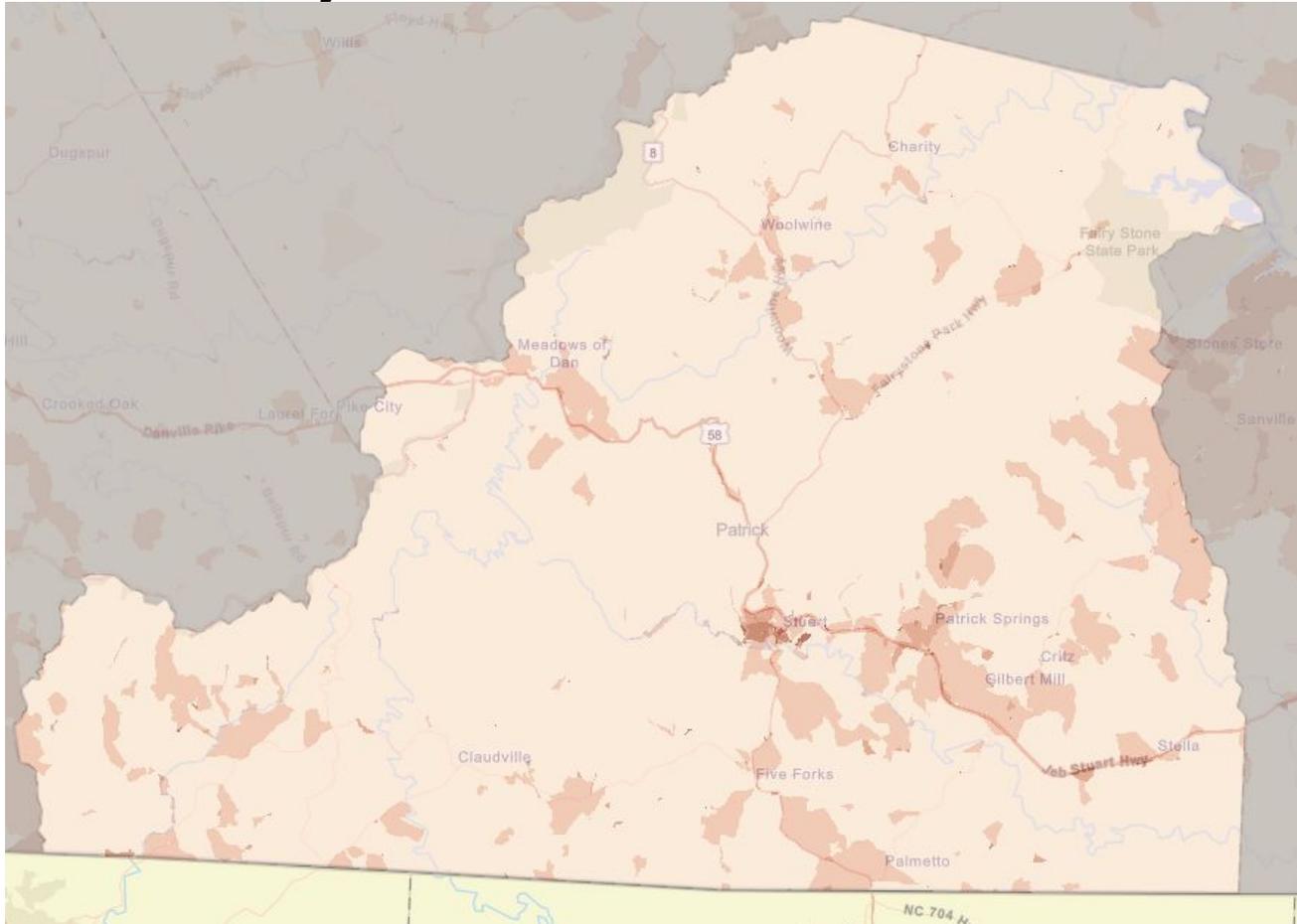
Veteran Population: 1,330



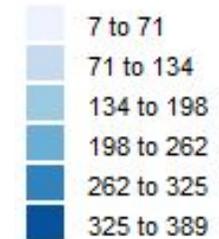
Take away: Veterans living in rural areas are among the largest population of Americans who struggle to receive accessible and affordable healthcare. While broadband-enabled telehealth services and applications can improve veterans' access to health care, lack of connectivity is a significant barrier to telehealth adoption.

Patrick Population Density

Population density is low across the county, with concentrations of low-moderate density along routes 5, especially near Stuart



Household Density



Reported Current Coverage

FCC Provider Reported Data

Seriously

Important note about FCC reported coverage

All facilities-based broadband providers* **are required** to file data with the FCC twice a year (Form 477) on where they offer Internet access service at speeds exceeding 200 kbps in at least one direction.

Fixed providers file lists of census blocks in which they **can or do offer service** to at least one location, ...

Mobile providers file maps of their coverage areas for each broadband technology (e.g., EV-DO, HSPA, LTE).

Block-Level Deployment and Competition

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

Accordingly, a list of providers deployed in a census block does not necessarily reflect the number of choices available to any particular household or business location in that block, and the number of such providers in the census block does not purport to measure competition.

Source: Source: <https://www.fcc.gov/general/broadband-deployment-data-fcc-form-477>

***A Facilities-based Broadband Provider** is an entity that provides broadband services over facilities it owns, provisions and/or equips.

Take away – FCC coverage maps are overstated !

Patrick County Broadband Providers that Report to the FCC

CenturyLink DSL
Charter Cable Modem
Citizens DSL
Citizens Fiber
Comcast Cable Modem
Fastlink Fixed Wireless
Gamewood DSL

DSL Coverage

CenturyLink
Gamewood (Salem Church Rd,
Census Block 511410303021052)

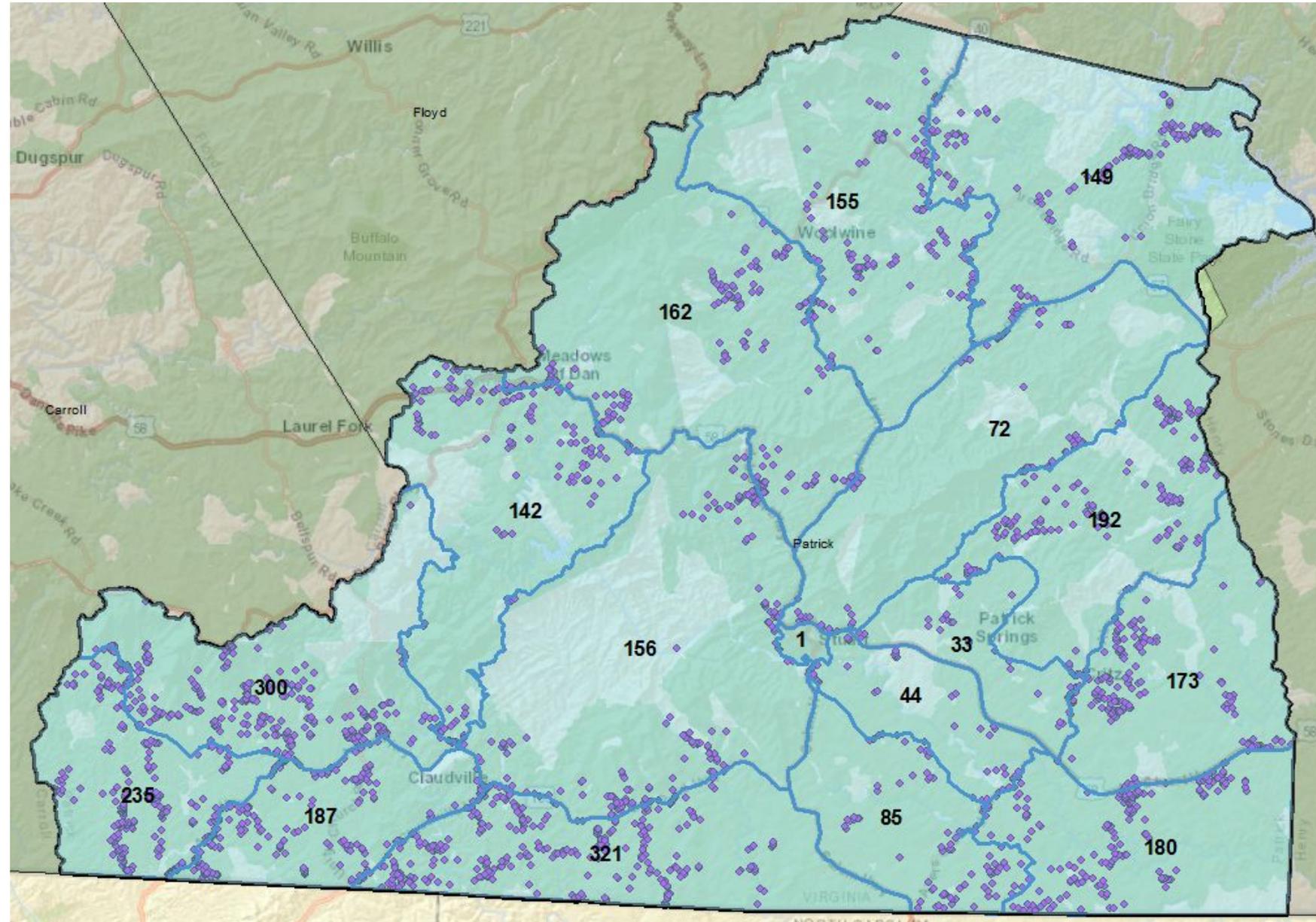


CAF upgrade locations and counts by CBG

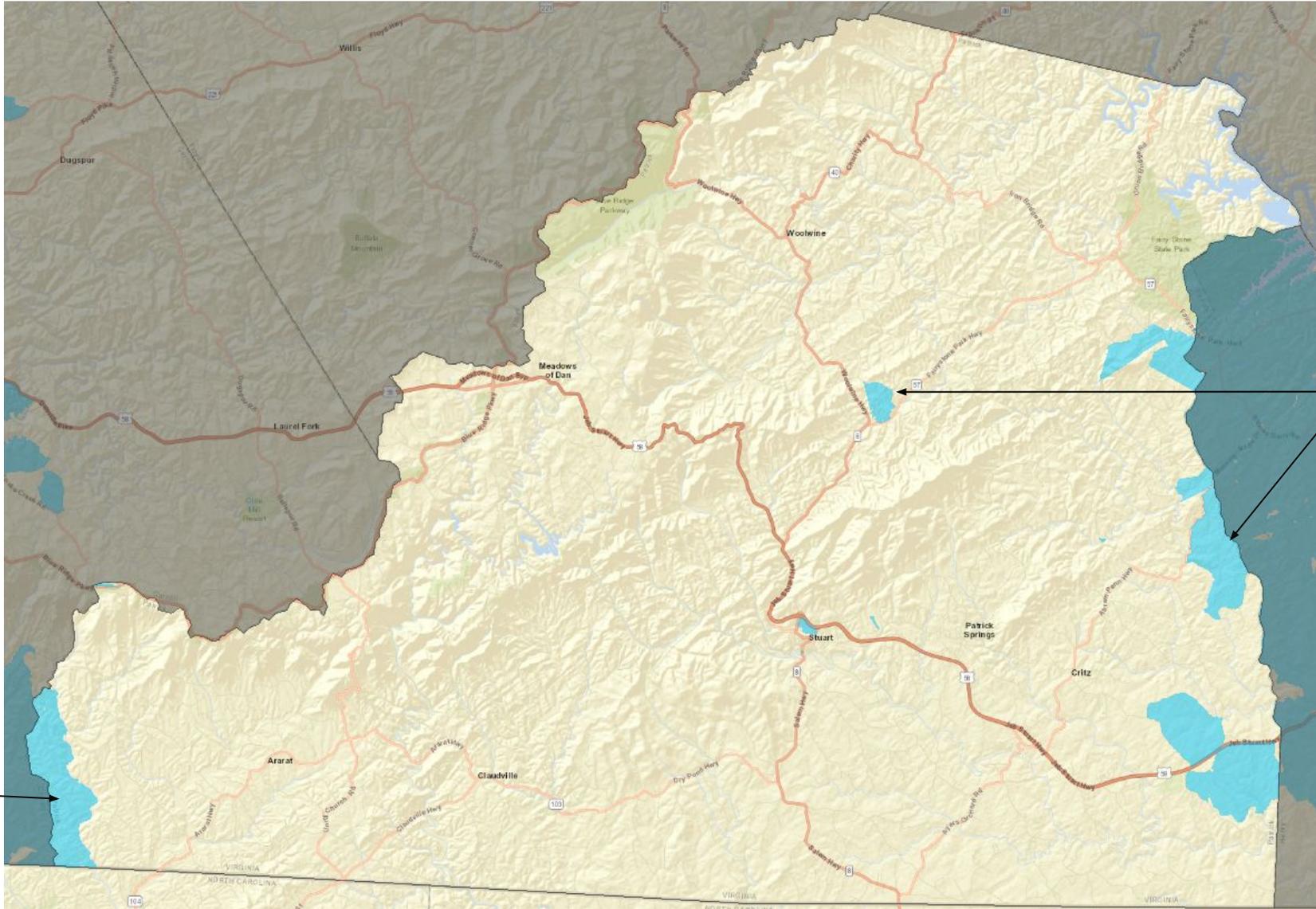
Over 2,500 (2,587) CAFII upgrades reported in Patrick County

~20% of Patrick County address points have been reported as upgraded

Patrick CAFII upgrades



Cable Coverage



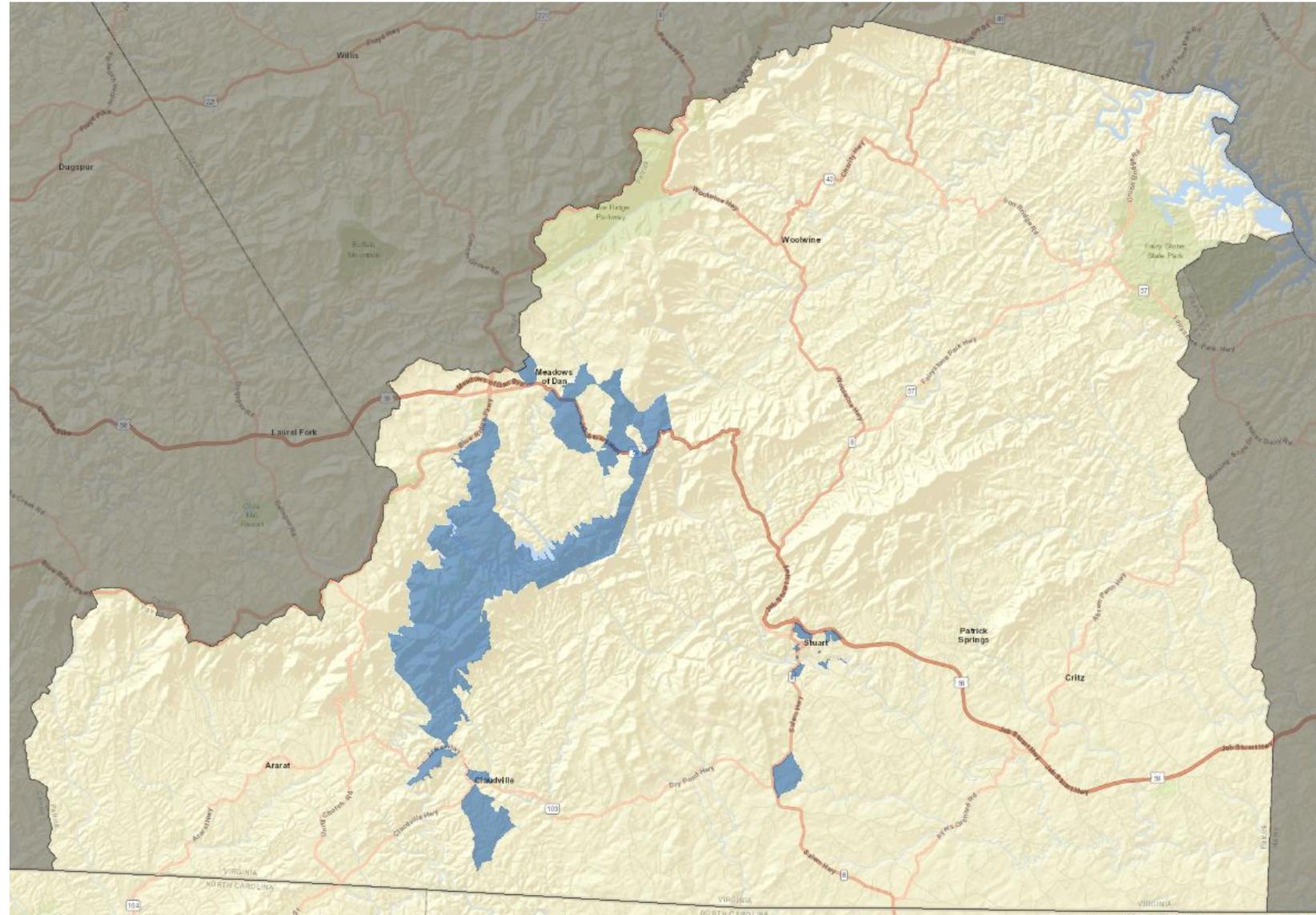
Charter

Comcast – confirmed by Terry Ellis no service in Patrick County

Fiber Service

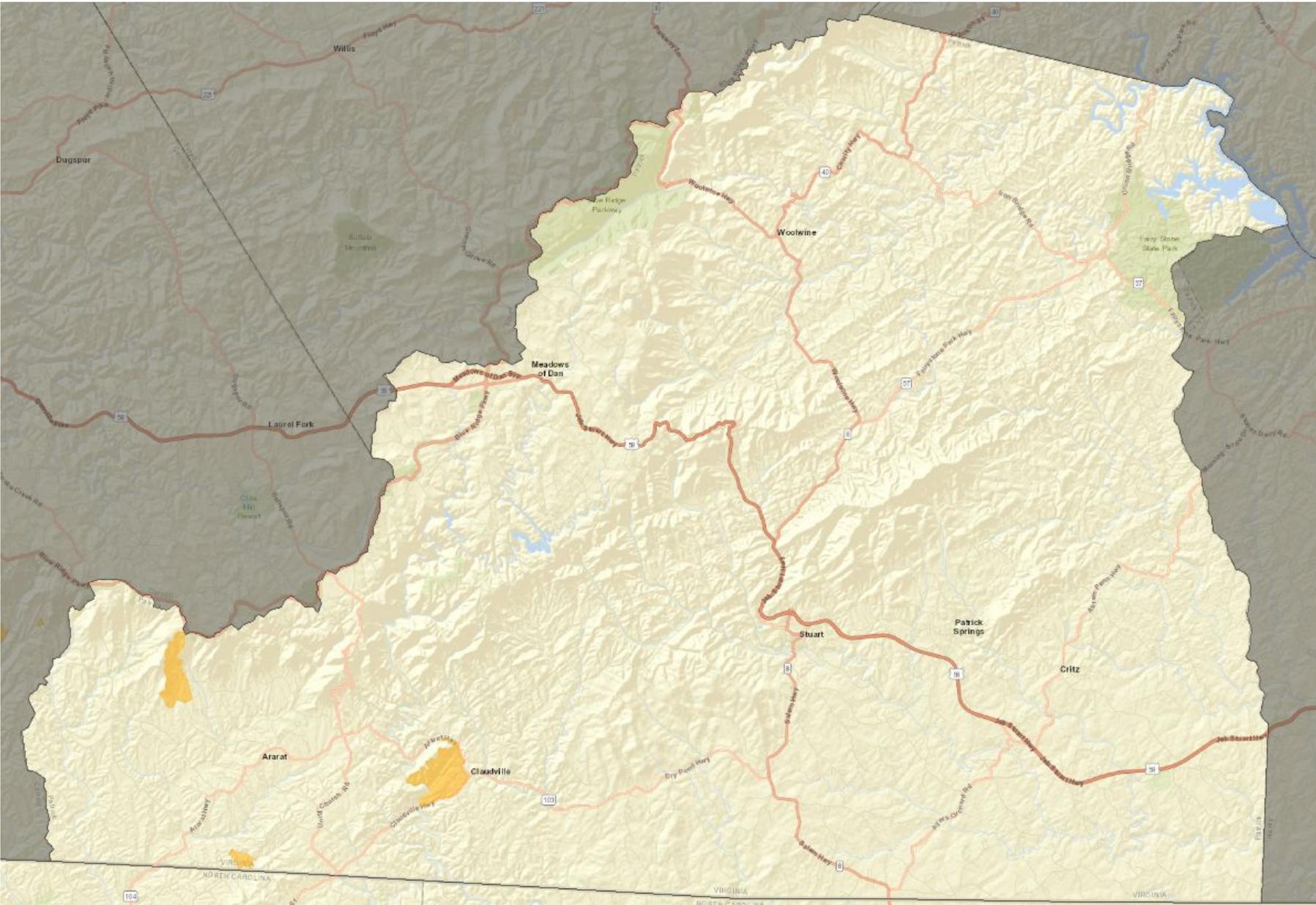
Not commercial fiber routes

Citizens



Fixed Wireless Service

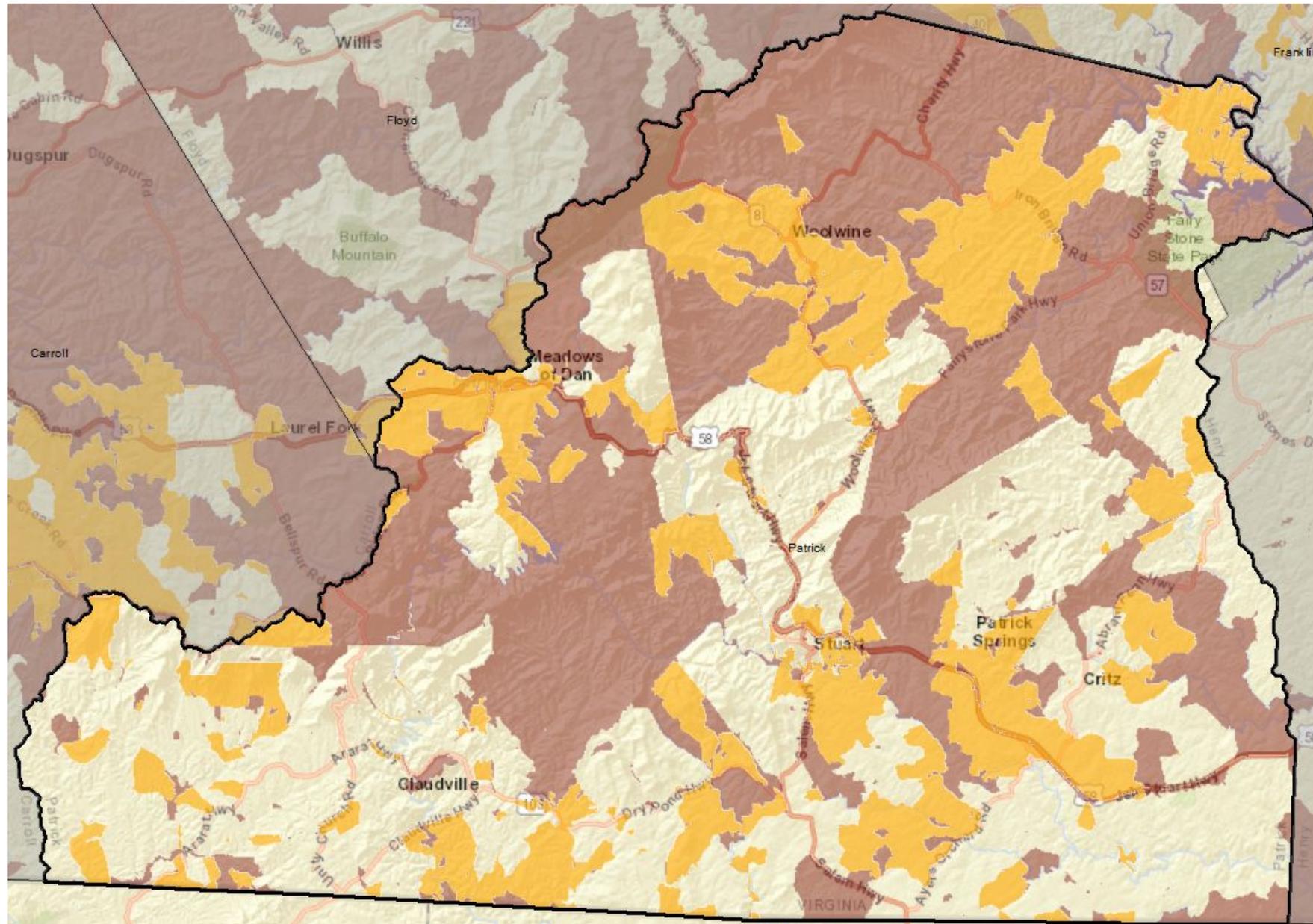
Fastlink



UnServed is defined as blocks that report broadband coverage with speeds **less than or equal to 10 Mbps download by 1 Mbps upload**. Source FCC 477 (6/2017)

UnderServed is defined as blocks that report broadband coverage with speeds **greater than 10 Mbps download by 1 Mbps upload and less than 25 Mbps download by 3 Mbps upload**. Source FCC 477 (6/2017)

- Broadband Coverage
- Broadband/UnServed
 - UnServed
 - Broadband/UnderServed
 - UnderServed



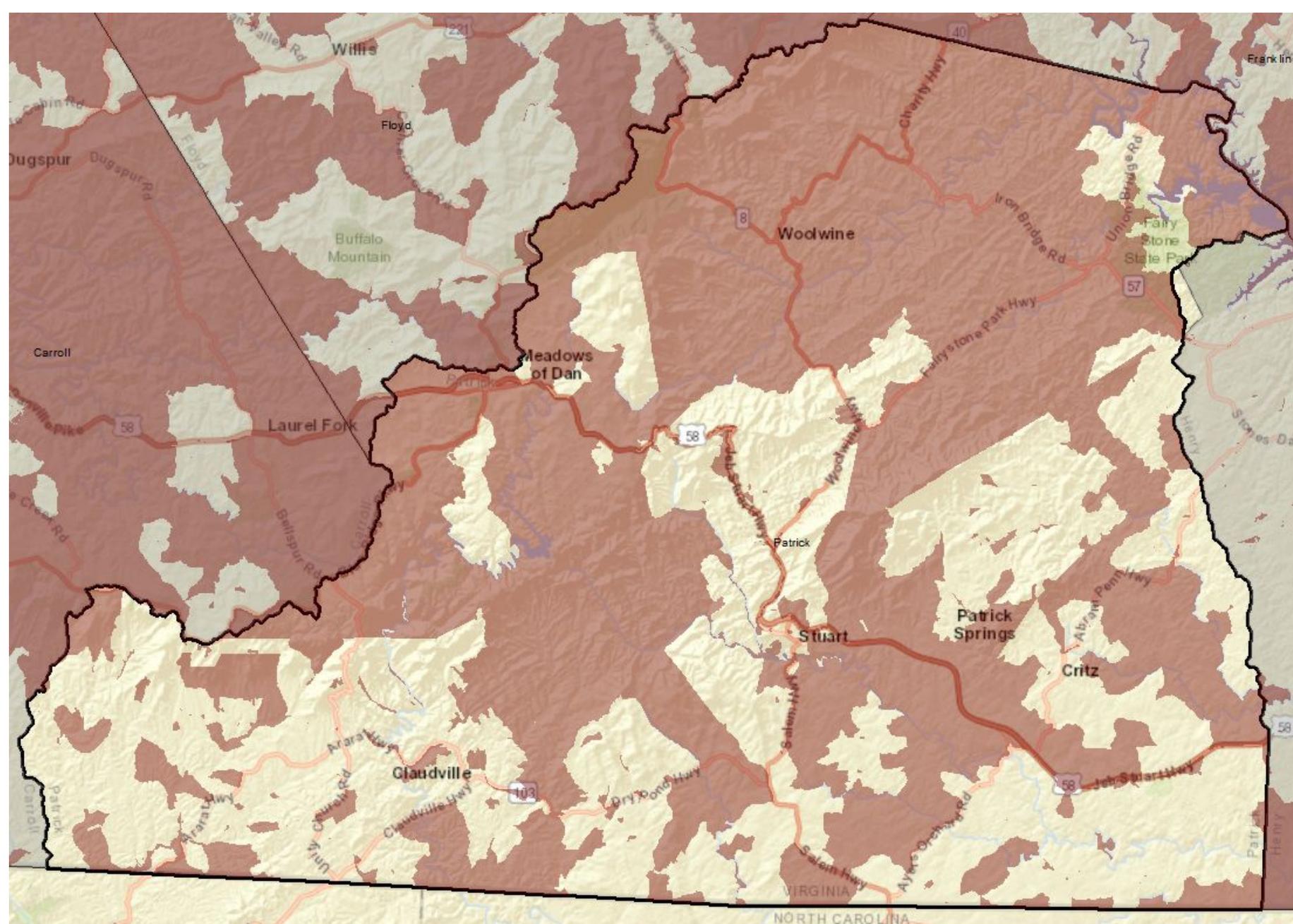
NOTE: These definitions apply to all other slides depicting un/unServed areas

Patrick County Unserviced

Unserviced is defined as blocks that report coverage with **speeds less than 25 Mbps download by 3 Mbps upload.** Source FCC 477 (6/2017)

Unserviced

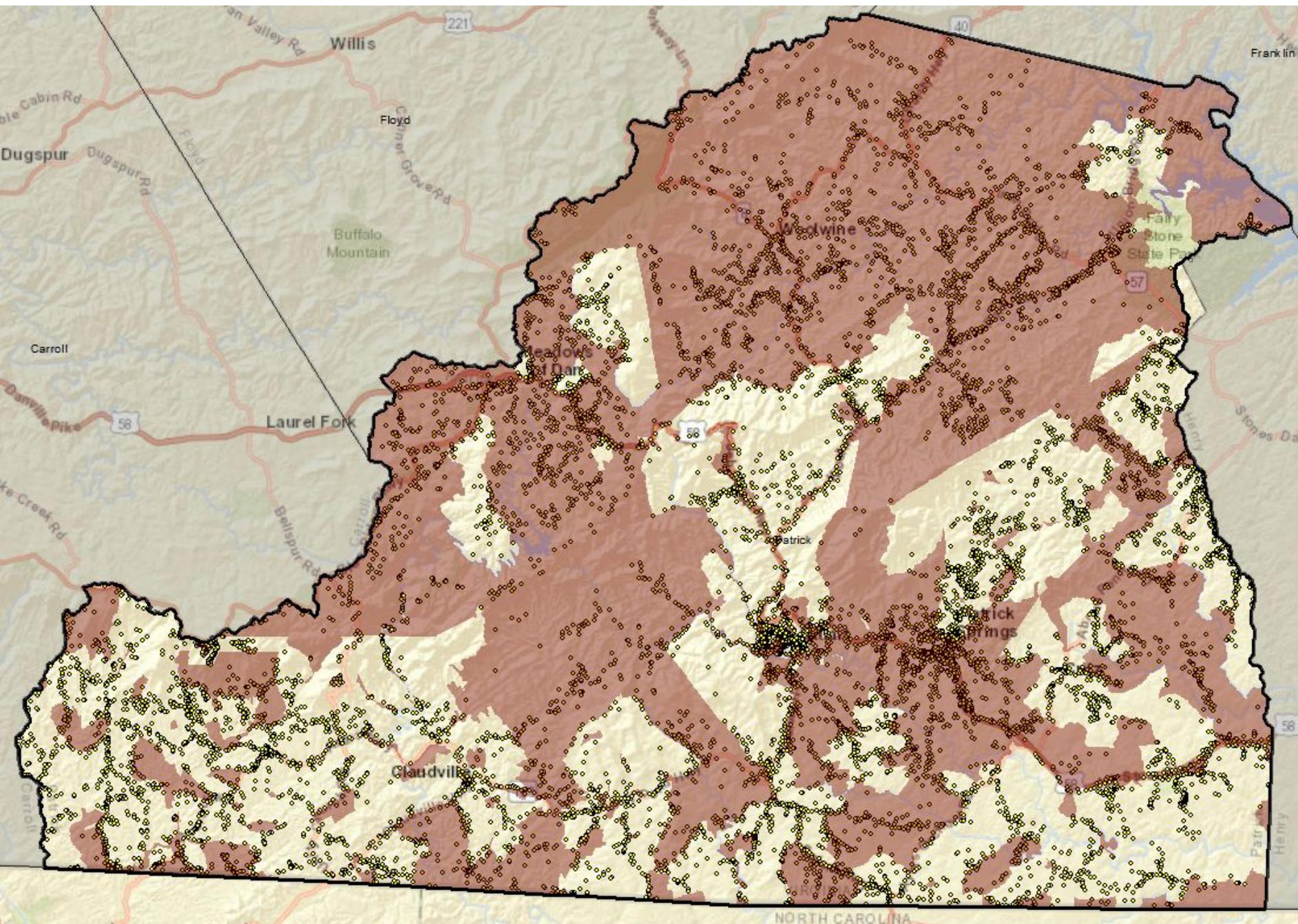
NOTE: This definition applies to all other slides depicting unserved areas



54% of Patrick County's address points fall in unserved areas

● Address Points

■ Unserved



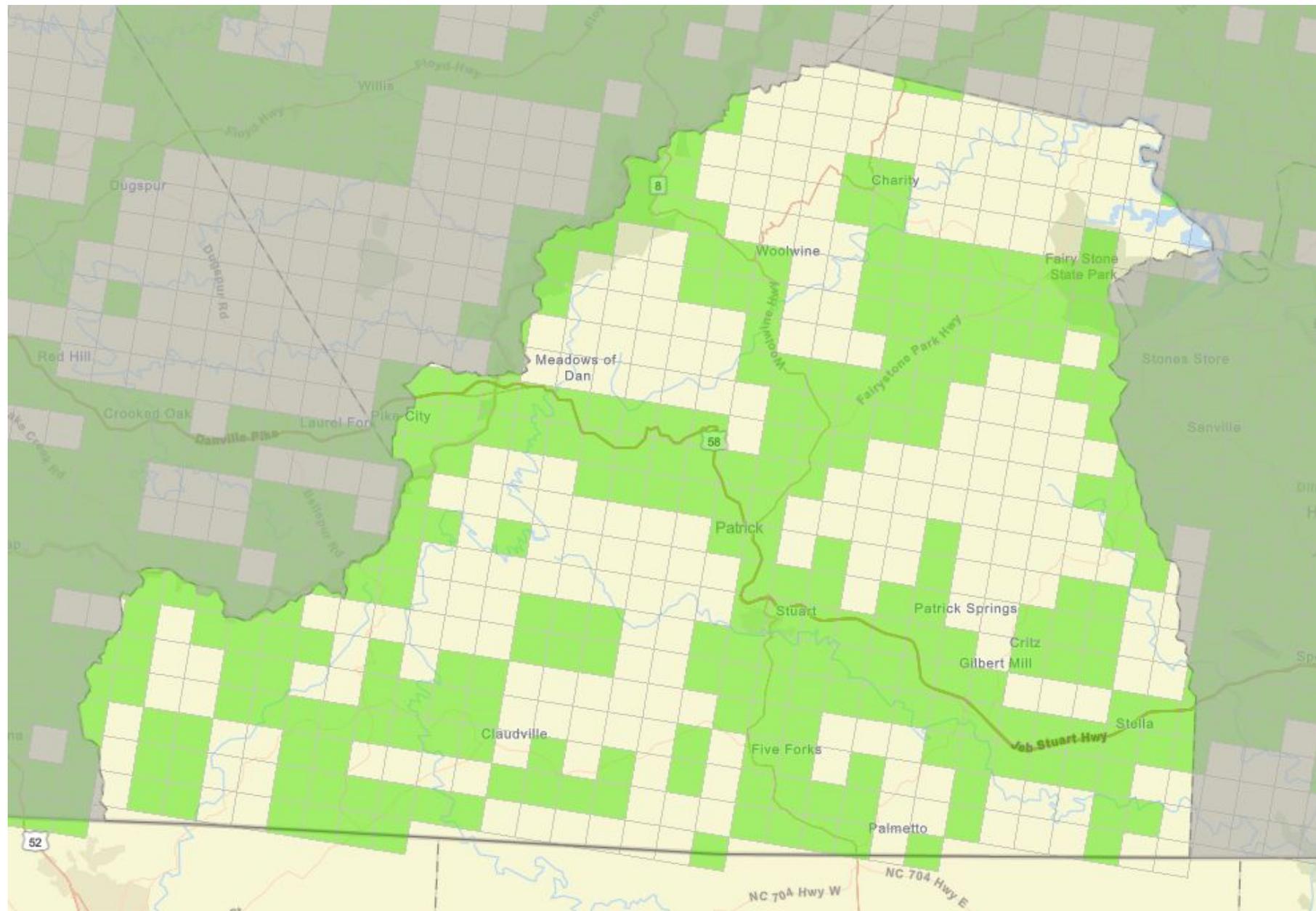
Public Safety

FirstNet 1x1 mile grids.

 Proposed terrestrial coverage

 Proposed non-terrestrial coverage

*VDEM coordinating FirstNet activities



Broadband Demand

Now and Into the Future

Patrick County Survey Results

Patrick County Broadband Survey Summary

1396 Residential Responses

- **~18% of occupied households responded.**
- **89%** of residential respondents subscribe to the Internet at home.
- The primary reasons cited for no home Internet was “Internet service not available, Internet service not reliable.”
- **~90%** of residential subscribers depend upon inadequate, expensive, unreliable and/or obsolete services; **81% DSL, 6% Satellite, 2% Cellular**
- **74%** of respondents say their home internet does not meet their needs – slow and unreliable connections cited as main reasons.
- **94%** of respondents said they would commit to a new contract if an affordable, faster option became available.
- Most (**50%**) willing to pay between \$50-\$100 per month for a faster Internet option.
- **51%** of respondents depend on landline, 46% depend on cellular service for their home phone.
- **52%** of respondents say their home phone service is consistently reliable.
- **40%** of respondents have K12 students at home.
- **4%** of K12 households report no access to the Internet after school.
- **3%** of K12 households depend on the library for after school access
- **14%** of respondents report operating home-based businesses.
- **~28%** commute outside the county for work.

Occupied housing units 7713 (2017 Census)

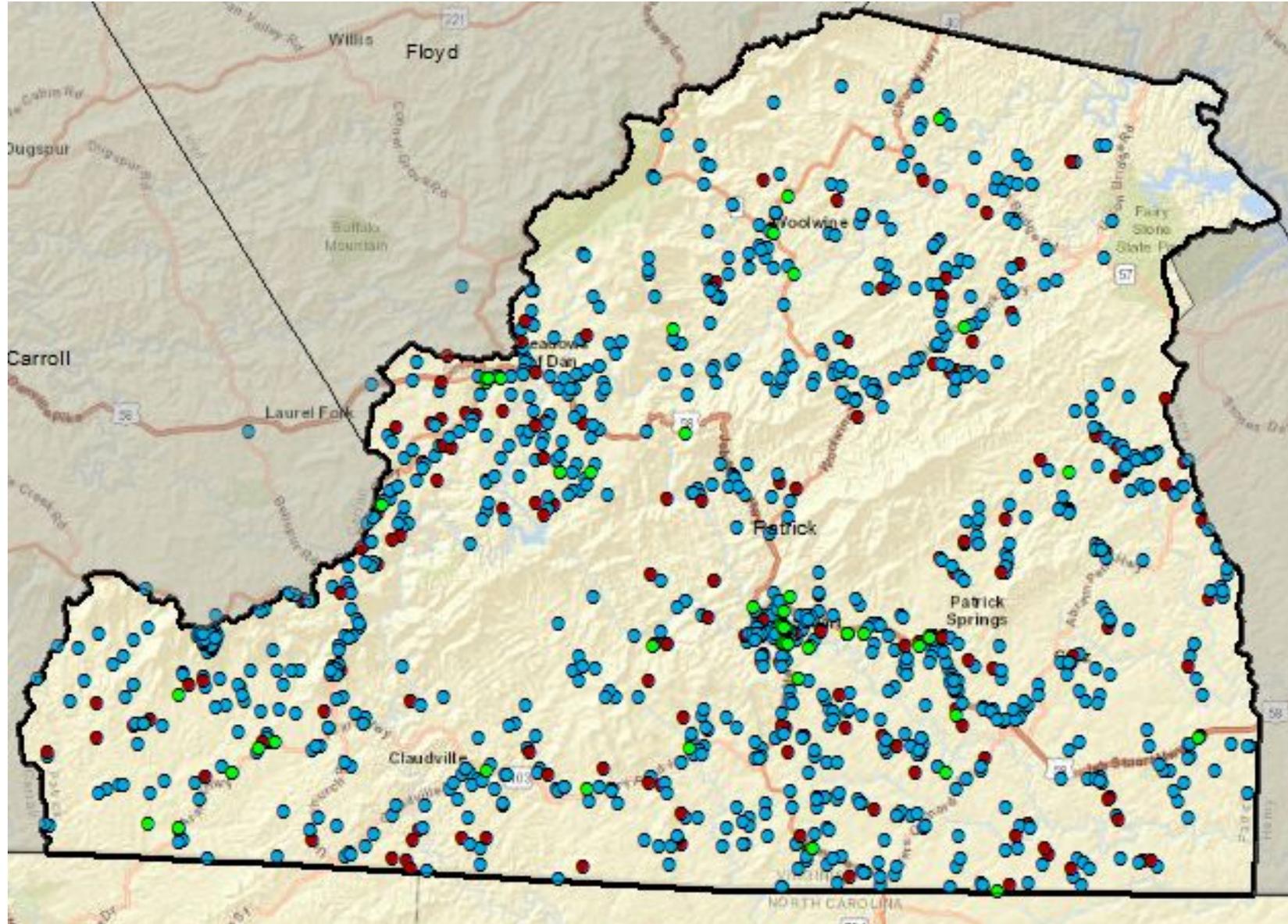
Based on 7713 occupied housing units, these 1396 unique residential responses represent Patrick County households with:

99 % (+/- 3%) accuracy

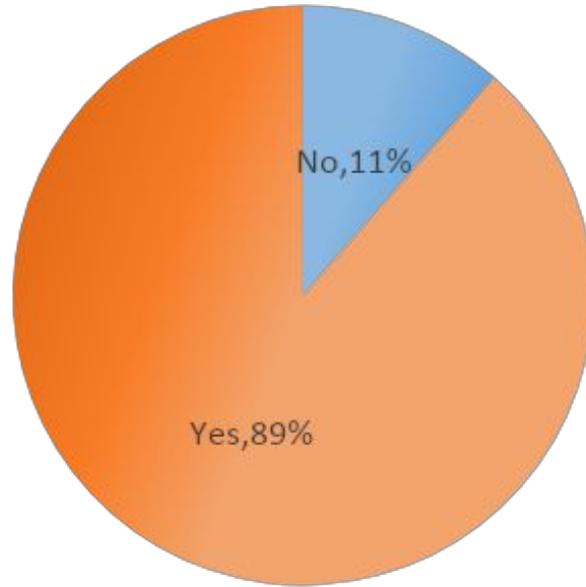
- Traditional Business
- Residential Responses
- Home-based business

Patrick County Survey Response Locations

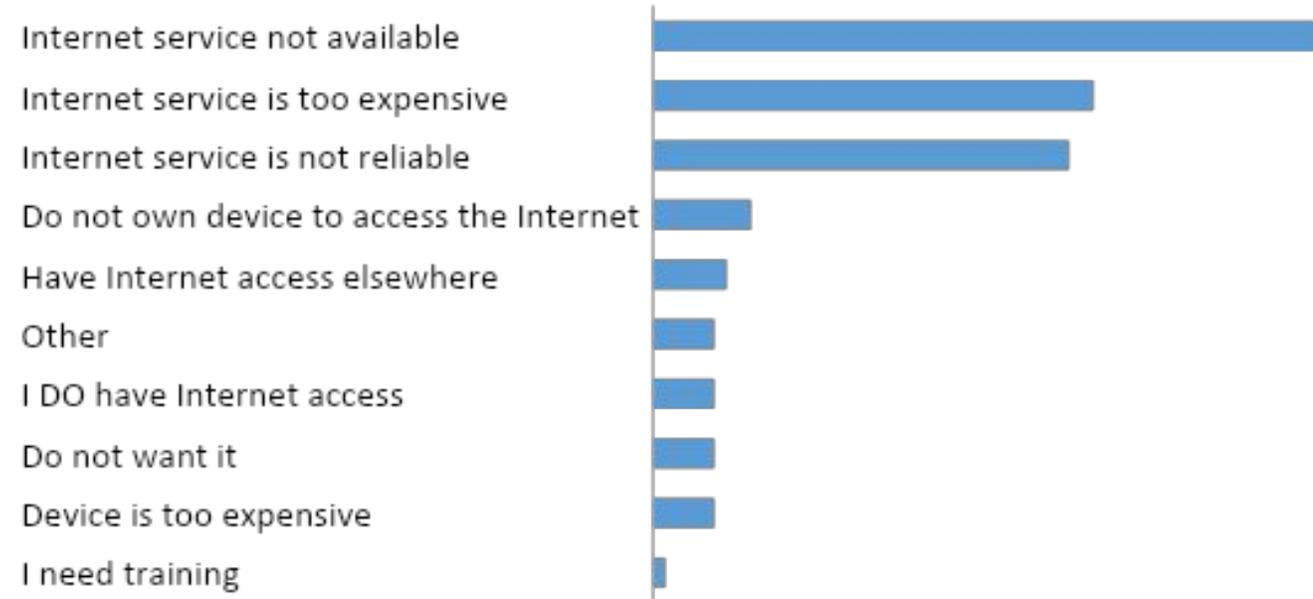
Location	# of Responses
Stuart	638
Meadows of Dan	211
Patrick Springs	140
Ararat	102
Claudville	77
Woolwine	69
Hillsville	67
Spencer	35
Critz	26
Bassett	13
Ferrum	10
Cana	3
Willis	1
Vesta	1
Lawsonville	1
Fancy Gap	1
Laurel Fork	1



Do you subscribe to the Internet at home?

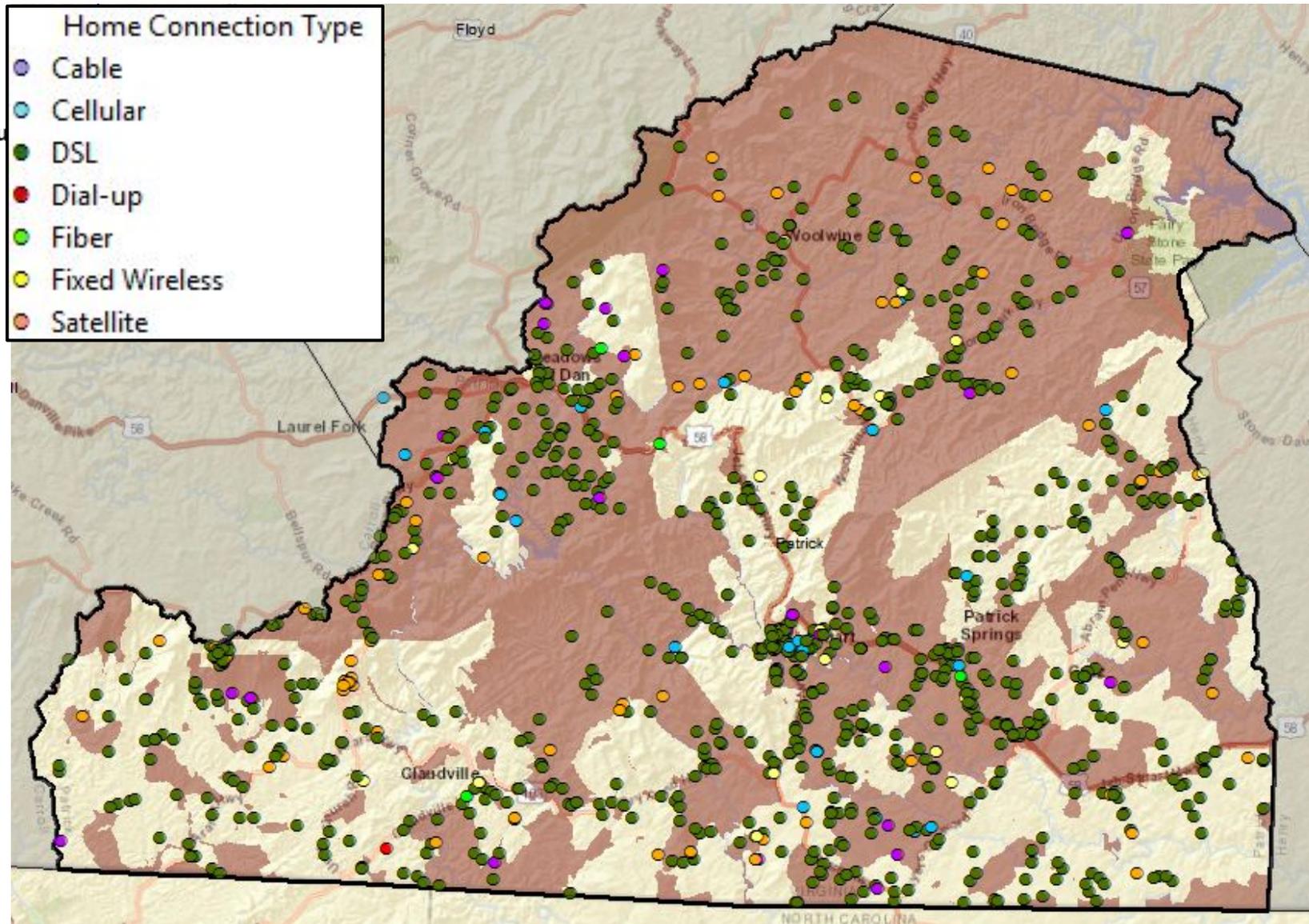
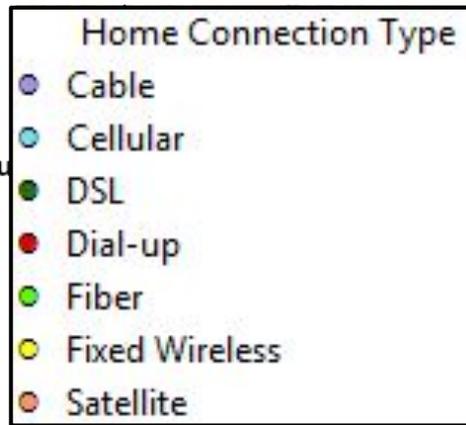
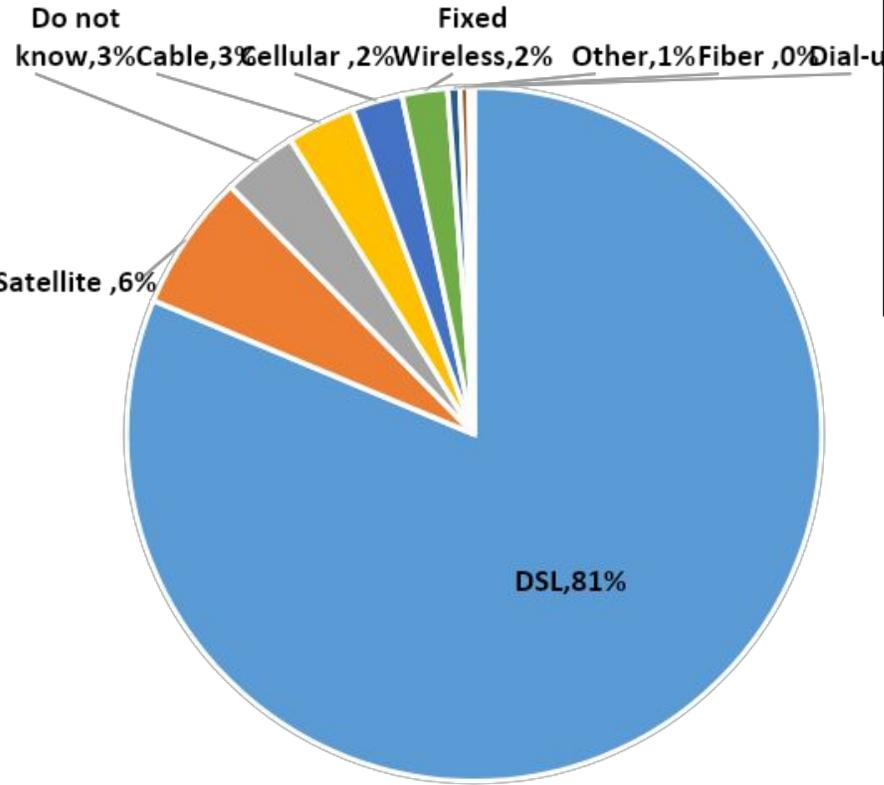


What is the main reason you do not have Internet access?



Take away: Adoption and affordability Issues; 5% do not own a device to access the Internet. 3% Device is too expensive. 1% need training. 23% Internet service is too expensive.

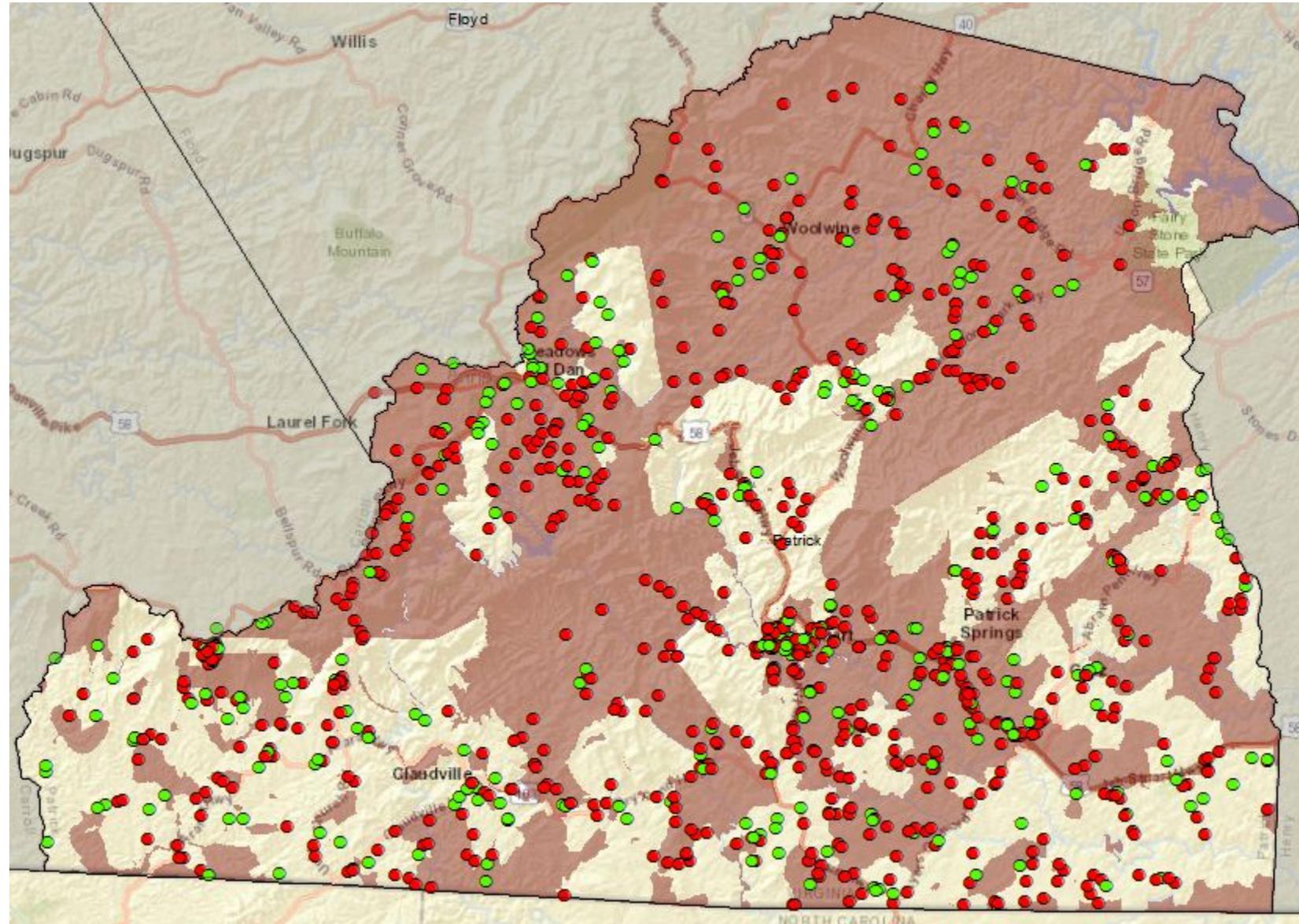
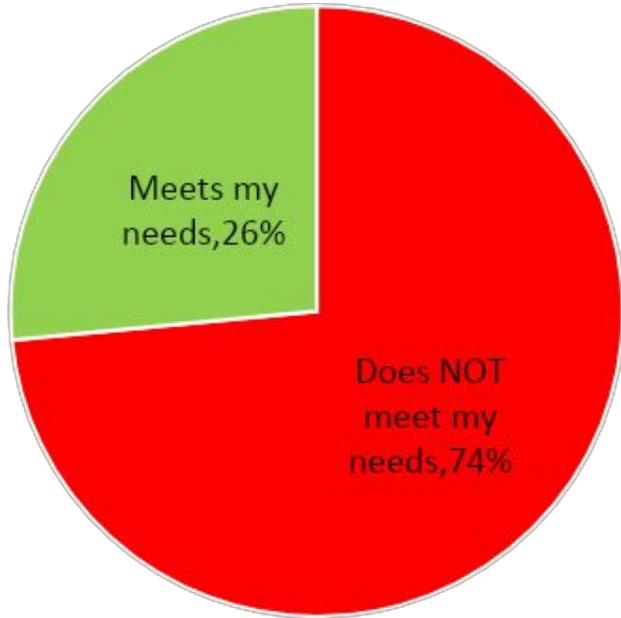
What kind of Internet connection do you have at home?



Take Away: ~90% of residential subscribers depend upon inadequate, expensive, unreliable and/or obsolete services; **81% DSL, 6% Satellite, 2% Cellular.** Education issue: **3% Do not know.**

Patrick County Residential Internet Ratings Locations

Please rate your home Internet service

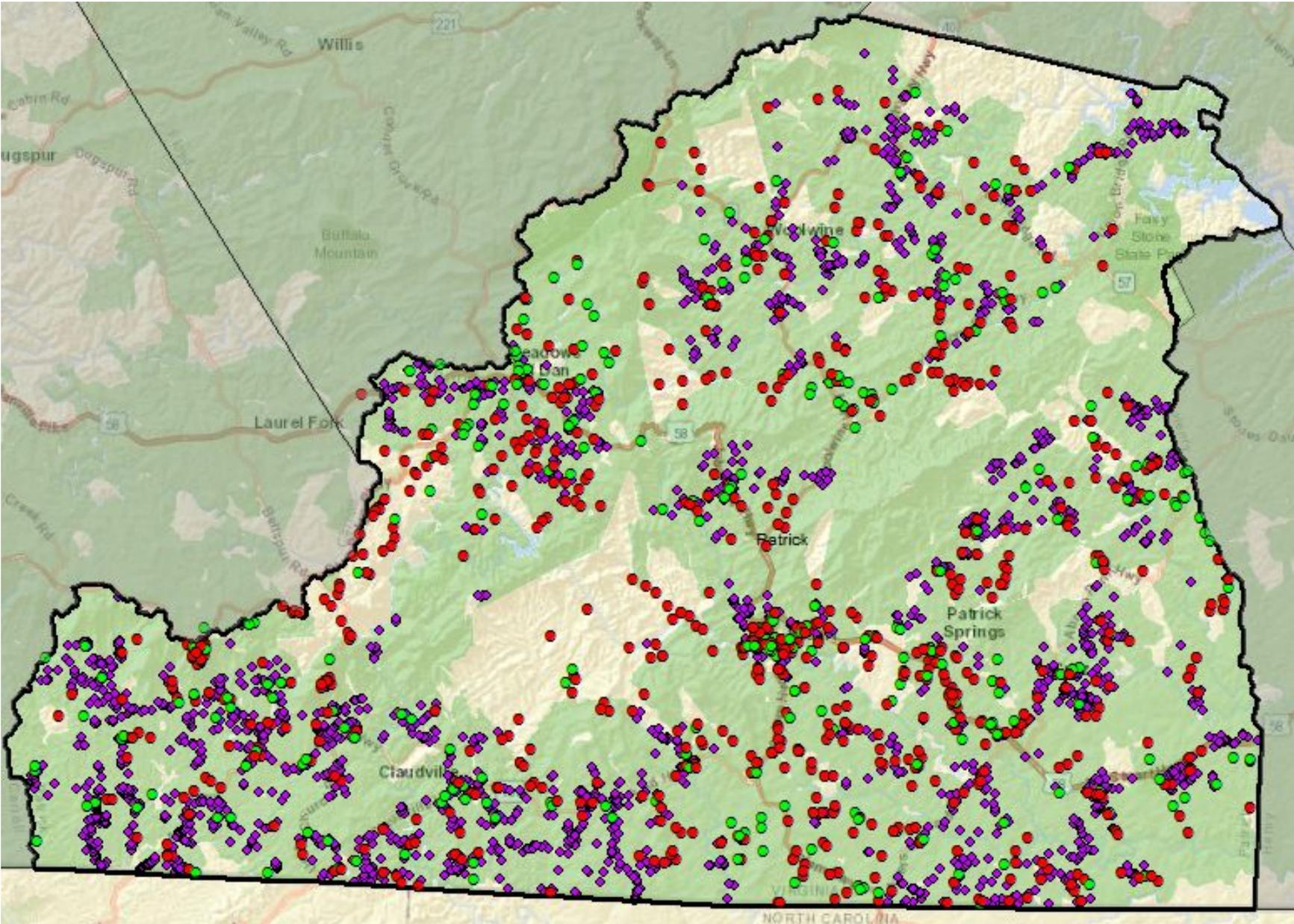


Patrick County CAFII Upgrades

Over 2500 (54% of address points) reported CAFII upgrades in Patrick County yet 74% report service does not meet their needs.

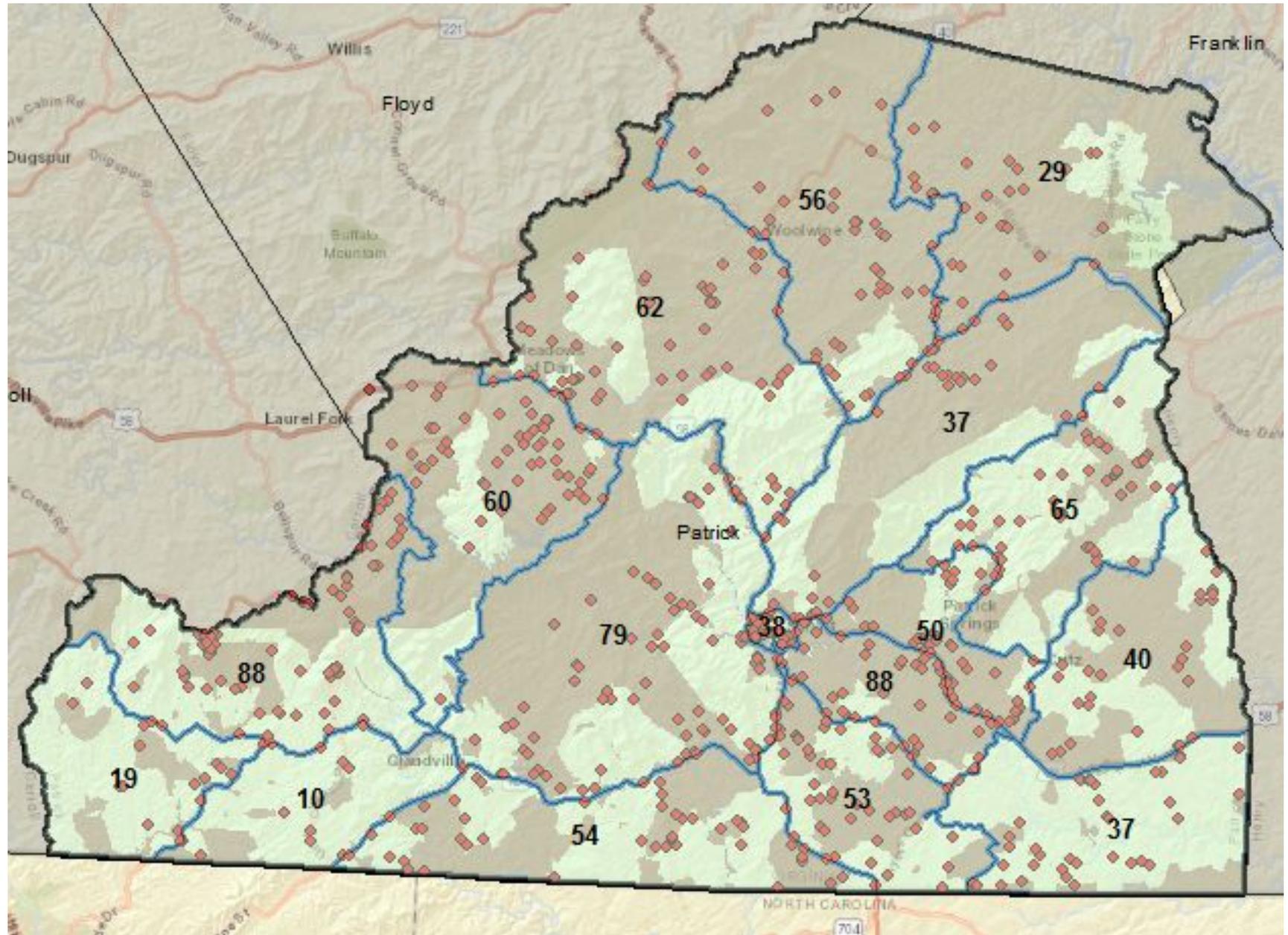
Take away: even with numerous DSL upgrades, most with DSL connections do not benefit. Seek alternative coverage solutions for all obsolete DSL areas. Ensure residents in CAF upgrade areas are aware of potentially better service offerings.

- ◆ CAFII Upgrades
- Does not meet my needs
- Meets my needs
- DSL Service Territory



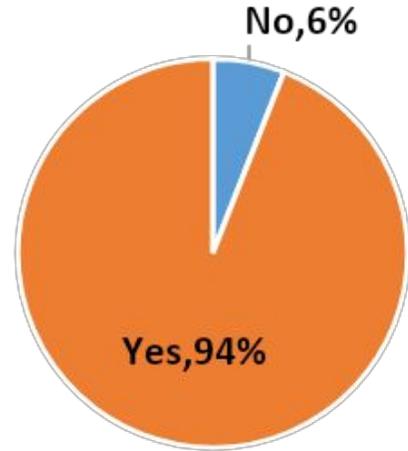
Patrick County Residential Service & Rating Counts per CBH

Does not meet my needs by CBG ●

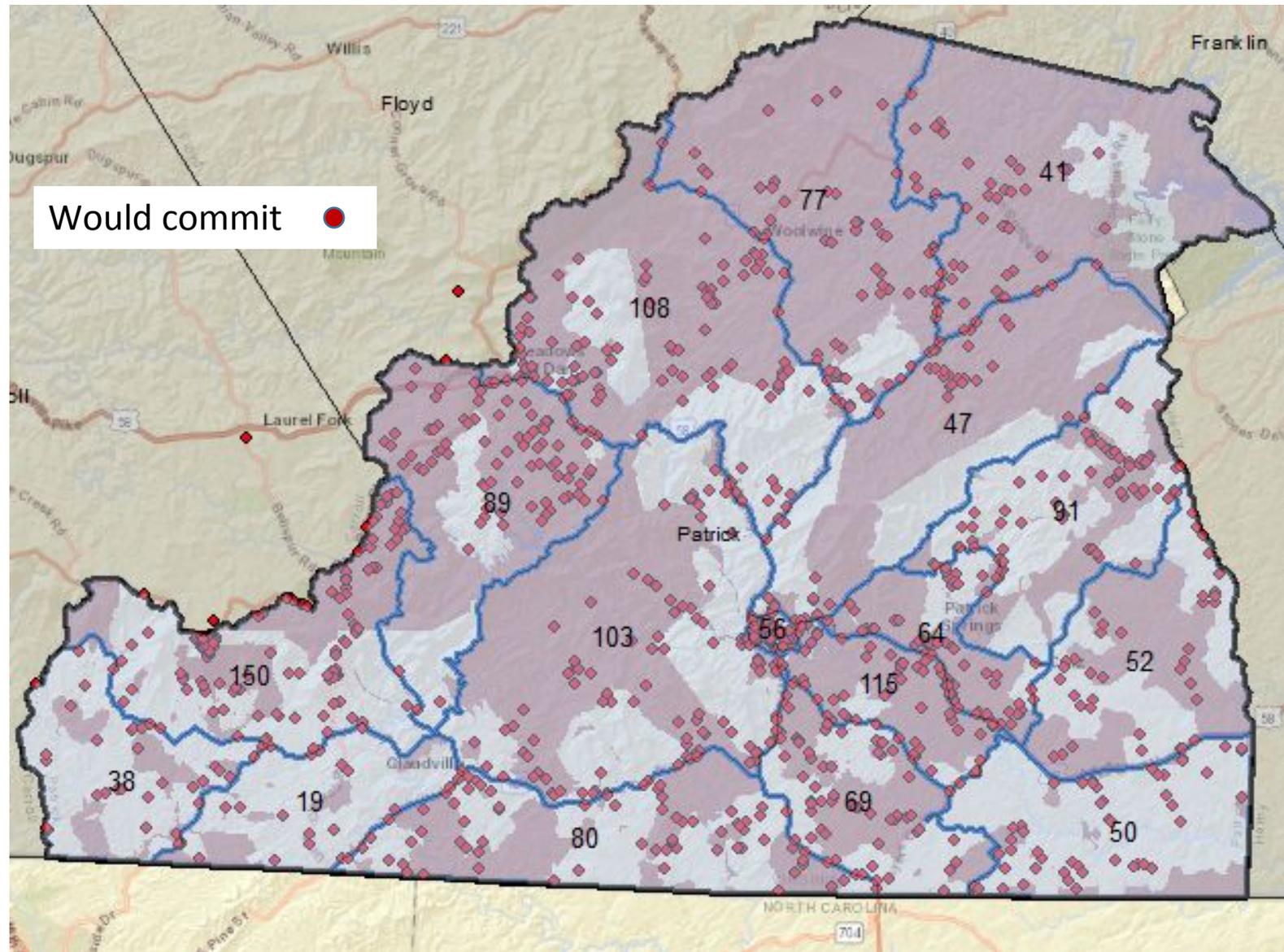
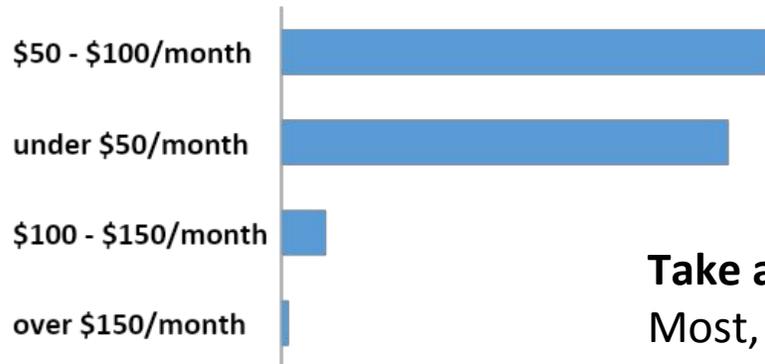


Residential Counts by CBG:

If an affordable, faster Internet option were offered to your household, would you be willing to commit to a year-long contract to take that service?



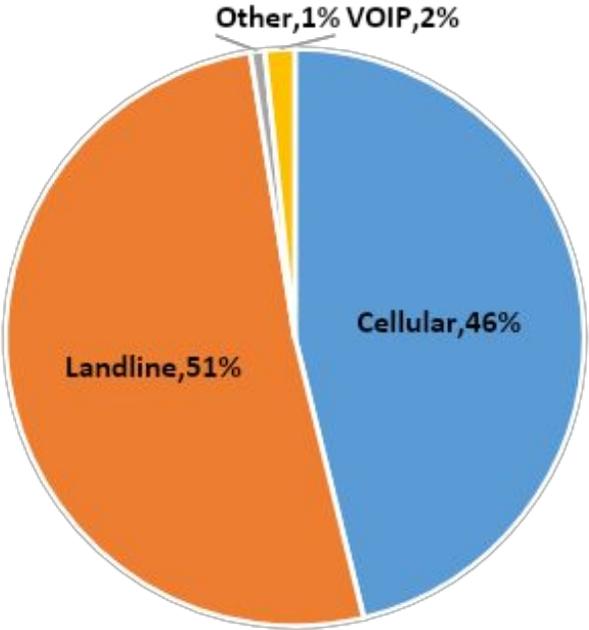
How much would you be willing to spend for faster Internet service?



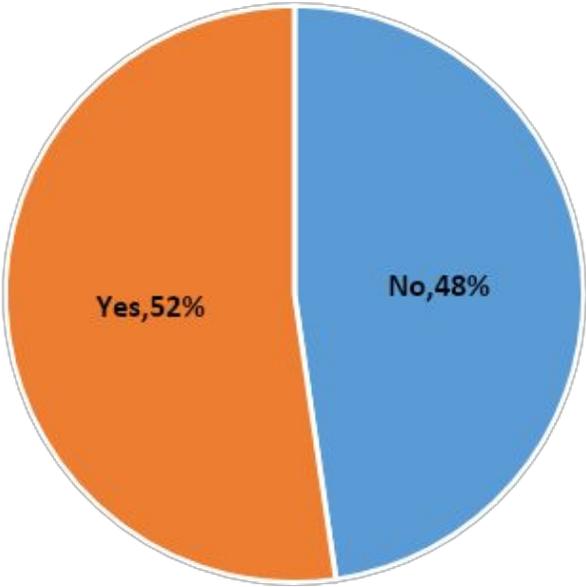
Take away: Almost all (94%) respondents would commit to a new, affordable, faster service. Most, 50% willing to pay between \$50.-\$100/month for a better service.

Patrick County Phone Service

What kind of phone service do you rely on most at home?

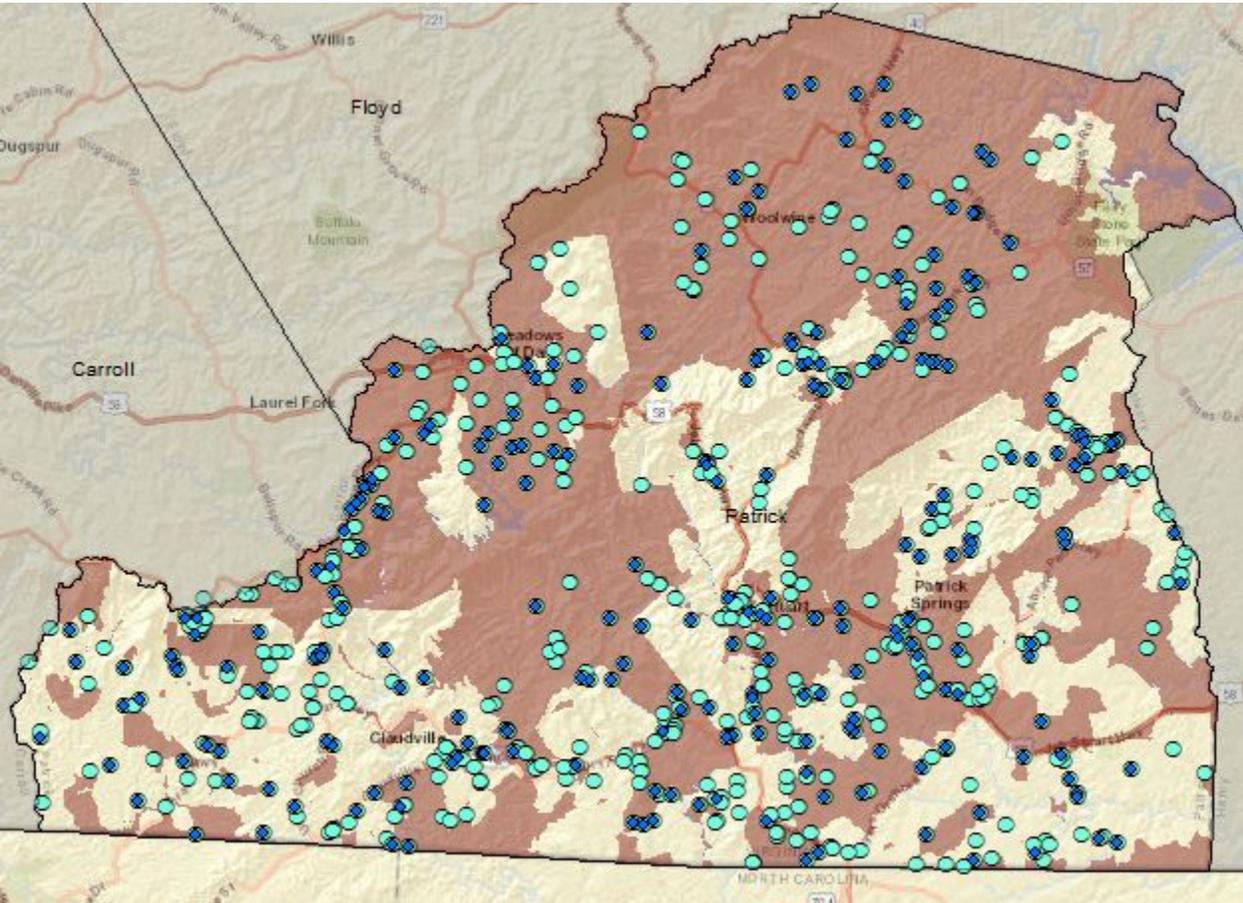


Is your home phone service consistently reliable?

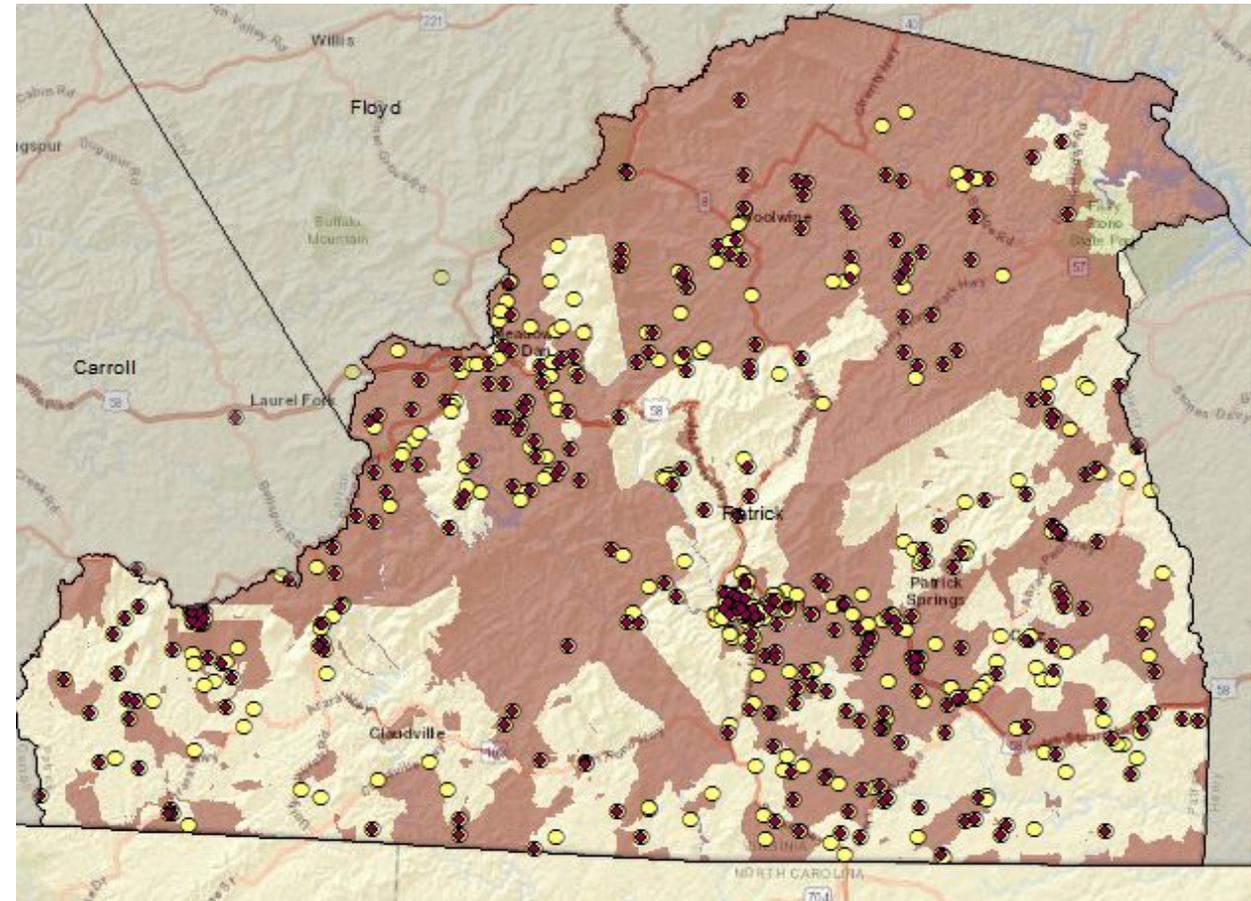


Take away: Most households using landline phone and most report reliable service. DSL is usually bundled with phone service. Voice services are more robust and not distance limited like DSL. Residential cellular service reports are high as is reliability, seek expanded cellular services.

Residential Landline Phone Service Reported Locations



Residential Cellular Phone Service Reported Locations

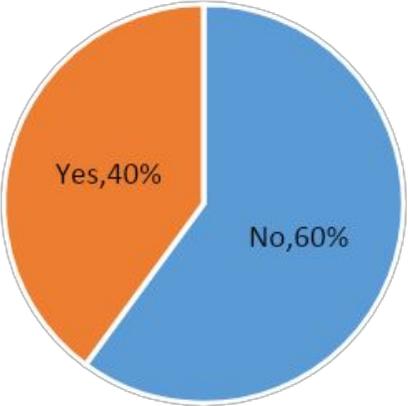


Landline phone service reported ●
Unreliable landline phone service reported ●

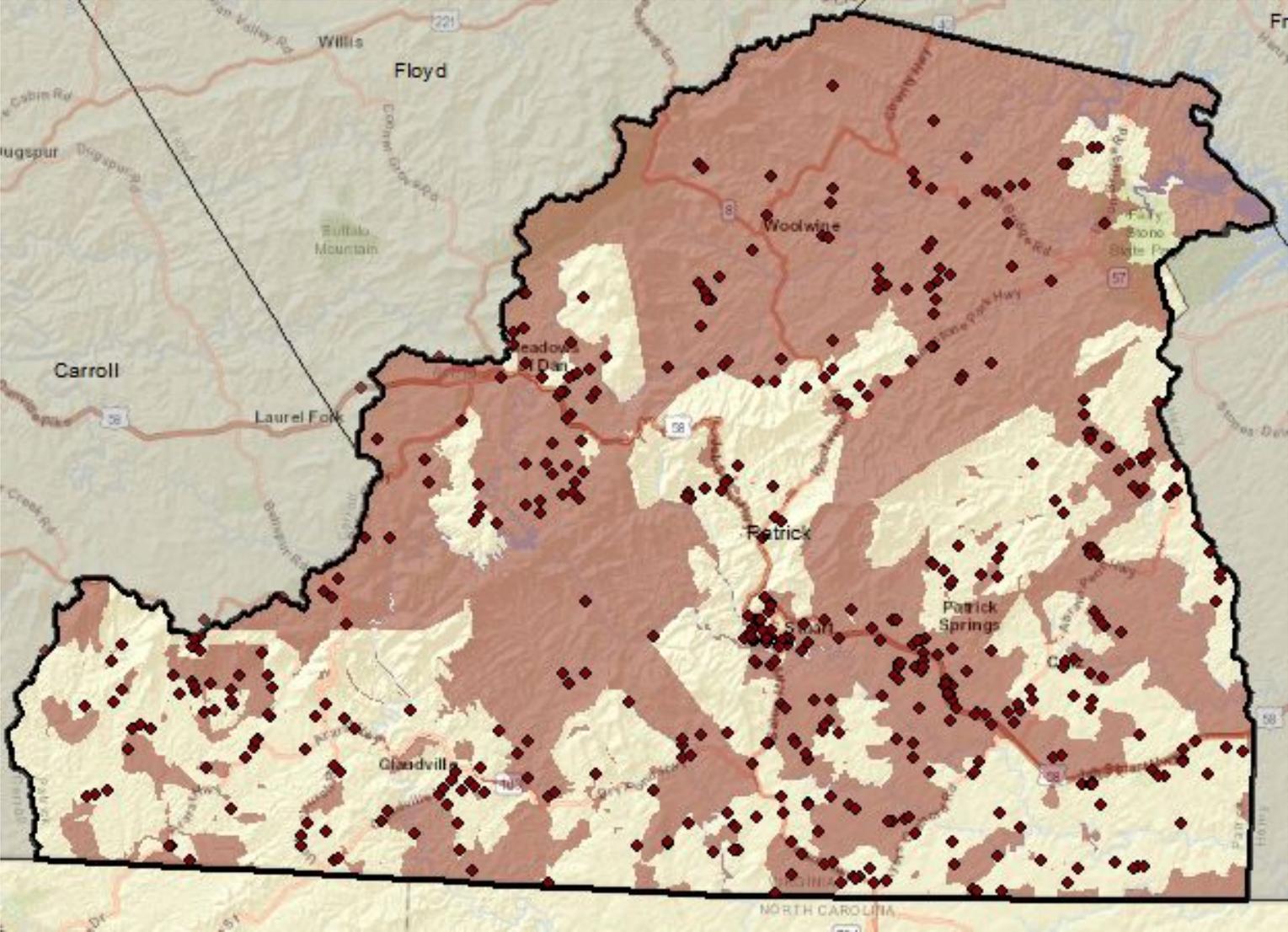
Cellular phone service reported ●
Unreliable cellular phone service reported ●

Patrick County K12 Household Locations

Are there any children in K-12 living at this home address, including home schooled?



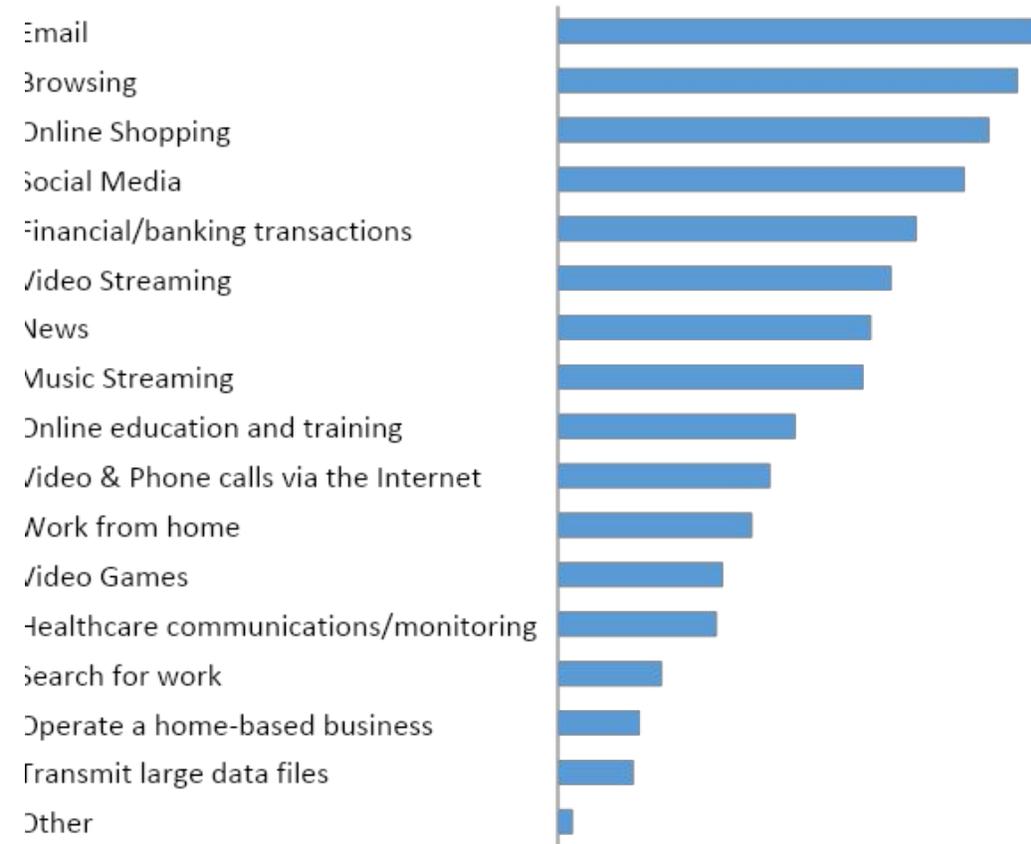
Take away: A significant percentage of households report K12 students. Most in unserved areas. 4% report **NO** access to the Internet after school. 3% depend on the library for after school access.



K12 households need Internet connections that can support media rich online educational activities.

What do you use your home Internet for?

About 88% replied.

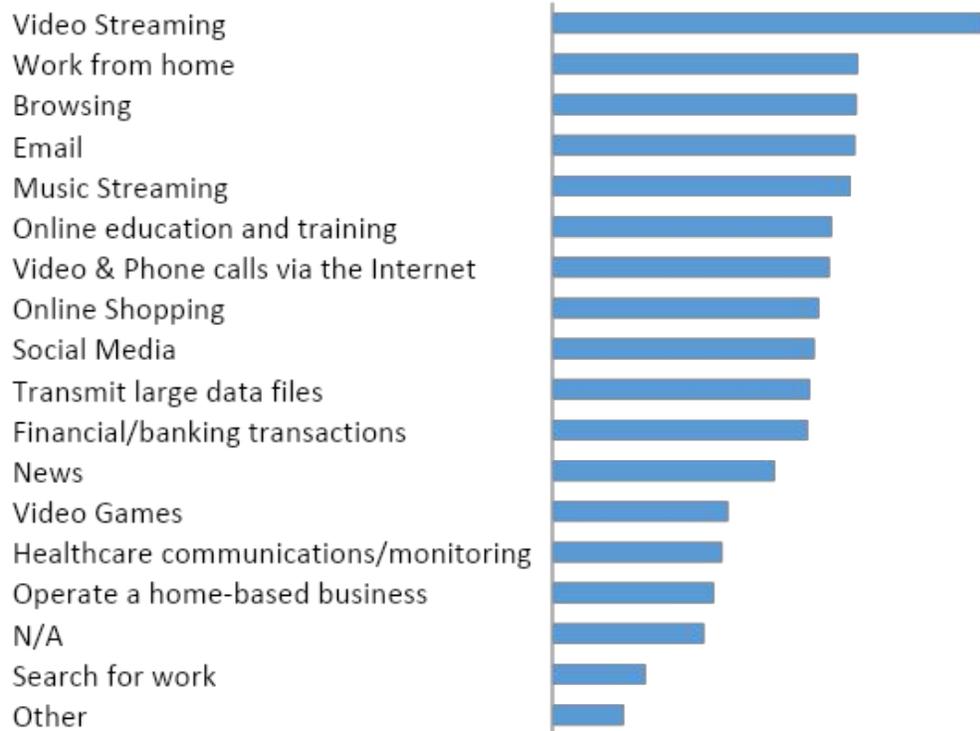


What do you use the Internet for?	# of responses	% of 1229 Responses
Other	35	2.85
Transmit large data files	179	14.56
Operate a home-based business	194	15.79
Search for work	246	20.02
Healthcare communications/monitoring	376	30.59
Video Games	391	31.81
Work from home	460	37.43
Video & Phone calls via the Internet	503	40.93
Online education and training	563	45.81
Music Streaming	724	58.91
News	742	60.37
Video Streaming	790	64.28
Financial/banking transactions	850	69.16
Social Media	964	78.44
Online Shopping	1022	83.16
Browsing	1090	88.69
Email	1137	92.51

Take Away: Low bandwidth consumer online activities dominate. Consistent with slow, unreliable Internet service. ~40% of respondents report they work from home, ~16% responded that they operate a home-based business. “Other” responses included; home security (systems and cameras), smart home.

Working from home and keeps dollars circulating in the local economy.

What would you like to be able to do online that you can't with your current home connection (or lack thereof?)



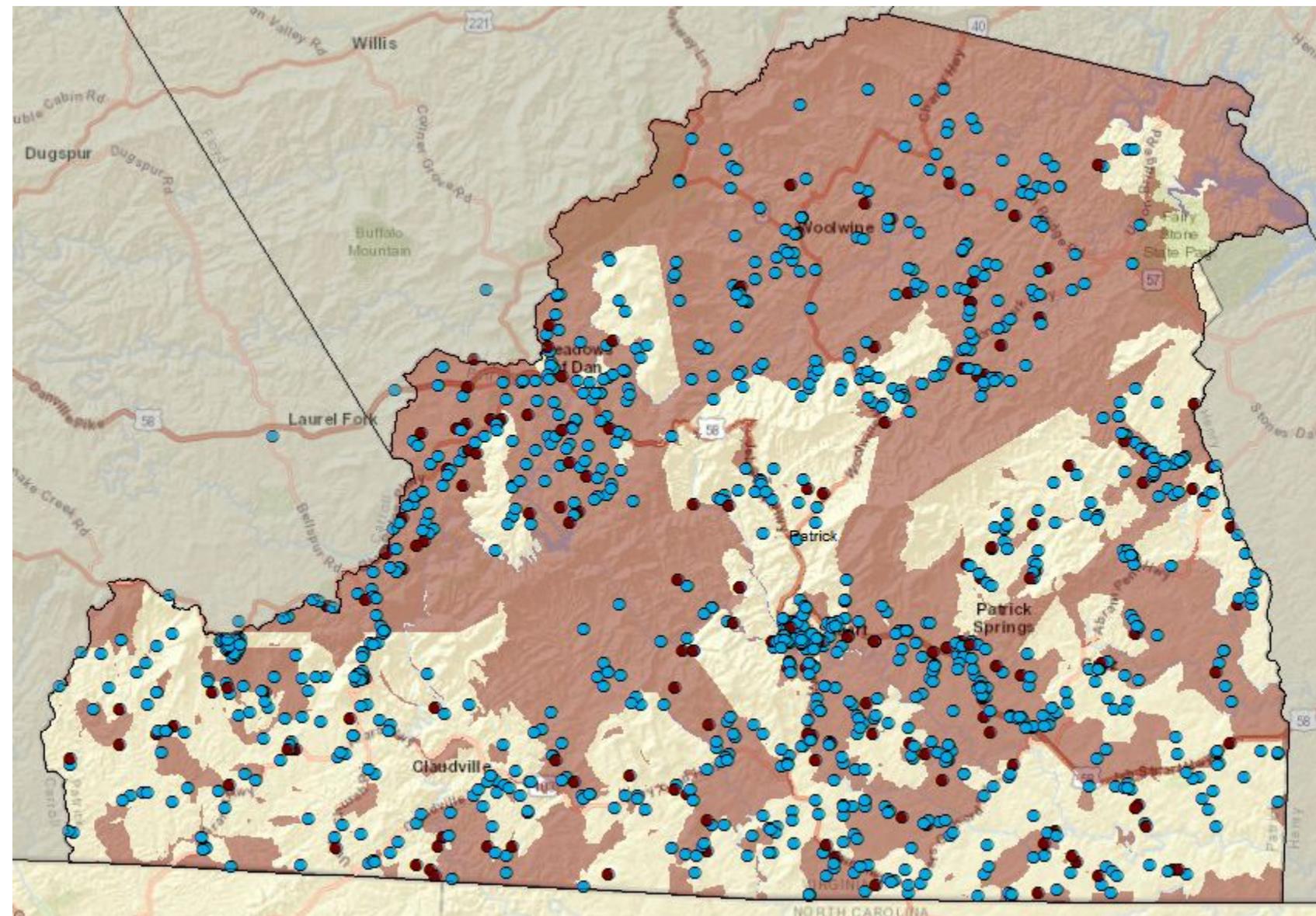
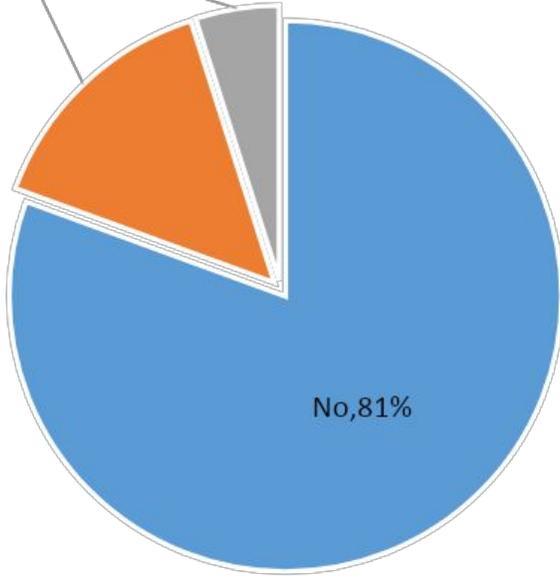
What would you like to be able to do online that you can't with your current connection (or lack thereof?)	# of Responses	% of 1189 Responses
Other	95	7.99
Search for work	124	10.43
N/A	202	16.99
Operate a home-based business	215	18.08
Healthcare communications/monitoring	226	19.01
Video Games	234	19.68
News	296	24.89
Financial/banking transactions	340	28.60
Transmit large data files	343	28.85
Social Media	349	29.35
Online Shopping	355	29.86
Video & Phone calls via the Internet	369	31.03
Online education and training	372	31.29
Music Streaming	397	33.39
Email	403	33.89
Browsing	405	34.06
Work from home	407	34.23
Video Streaming	574	48.28

Take away: Respondents ***not*** identifying they want the ability to use higher bandwidth, ***producer*** applications and services. Suggests an adoption and usage issue. ~34% responded they would work from home and ~18% would operate a home-based business if they had a better connection. “Other” responses included; use multiple devices, use applications that require more upload capacity (***producer activities***), back up devices, expand locally hosted services, teach online courses, use SmartTV,

***Working from home and keeps dollars circulating in the local economy.
Home-based businesses keeps dollars circulating in the local economy.***

Do you own a business within the same county or city as your home address?

Yes, I own a home-based business, 15%
Yes, I own an additional storefront business, 5%



***Home-based businesses keeps dollars circulating in the local economy
Household connections should not constrain business activities.***

Patrick County Broadband Survey Update

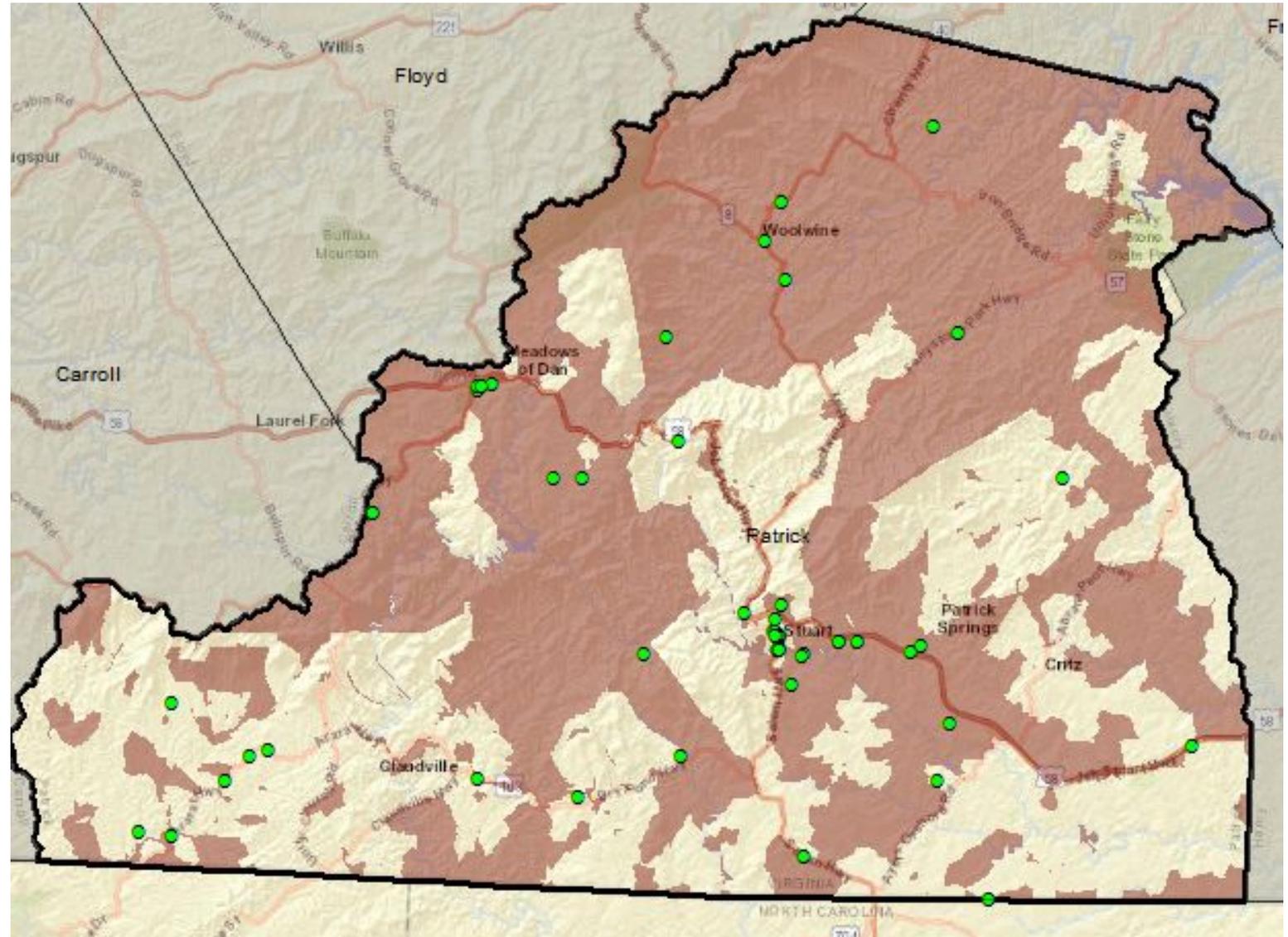
63 Traditional Storefront Business Responses

- **5%** of all respondents report owning a traditional storefront business, **14%** report home-based business in Patrick County.
- **96%** of business respondents subscribe to the Internet.
- The primary reasons cited for no business Internet was “Internet service not available, Internet service not reliable.”
- **90%** of businesses depend upon inadequate, expensive, unreliable and/or obsolete services; **85%** DSL, **3%** Satellite, **2%** T1.
- **Almost all business respondents** report the Internet is important to their business operations.
- **67%** businesses report their Internet service does not meet their needs – slow, and unreliable connections cited as main reasons.
- **98%** of businesses said they would commit to a new contract if an affordable, faster option became available.
- Most (**53%**) would be willing to spend between \$50-\$100 for faster Internet Service.
- **81%** of businesses depend on landline for their phone service, 13% cellular, 6% VOIP.
- 68% report their business phone service is consistently reliable.

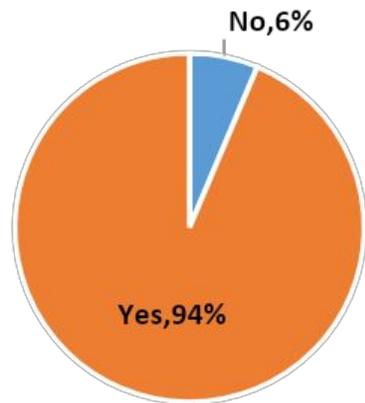
Based on 101 known traditional storefront businesses, these 63 business responses represent Patrick County businesses with: **95% (+/- 7%)** accuracy.

Patrick County Traditional Storefront Business Response locations

Business Location	# of responses
Stuart	40
Meadows of Dan	9
Ararat	6
Woolwine	3
Claudville	1
Spencer	1
Hillsville	1
Ferrum	1
Patrick Springs	1

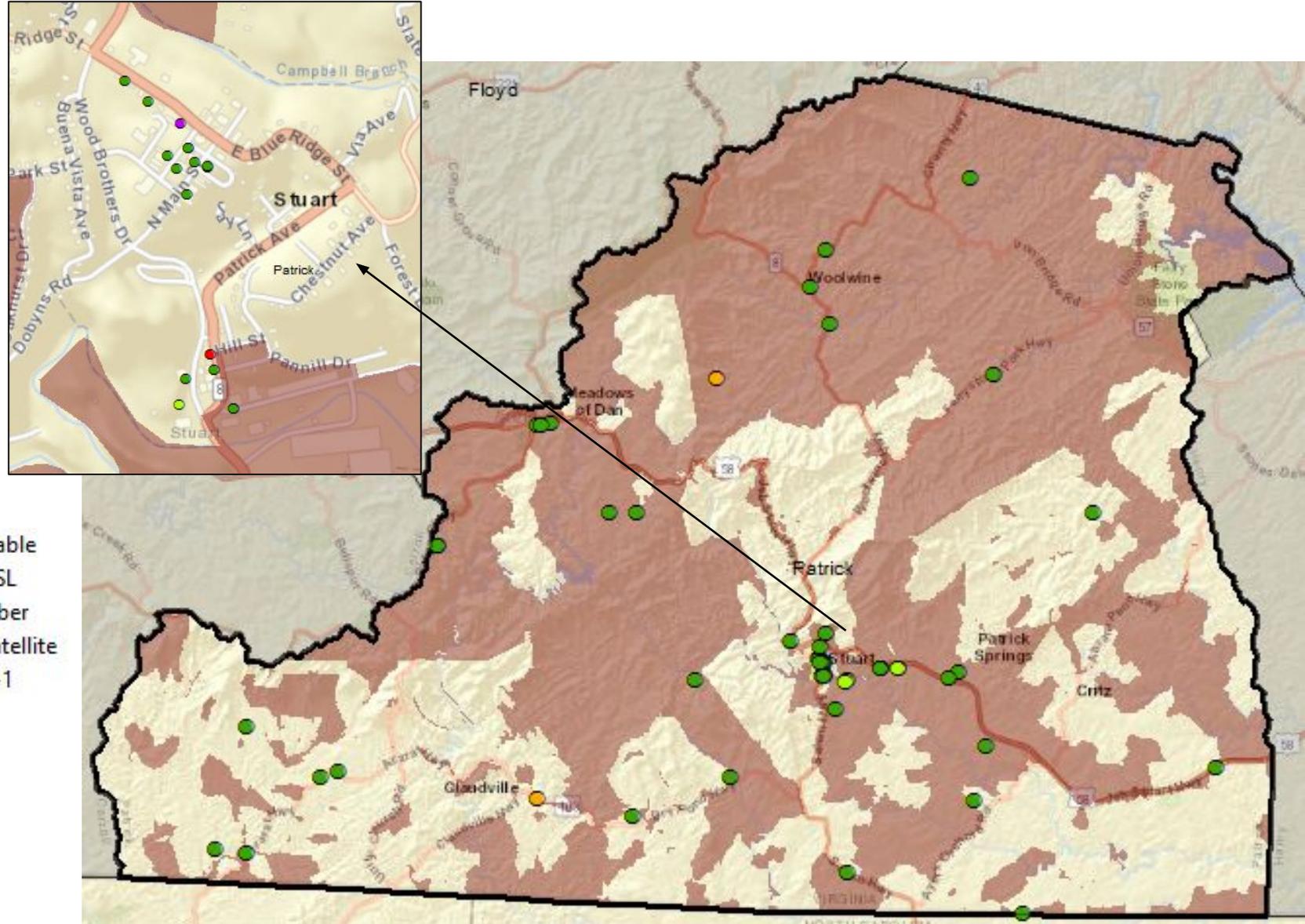
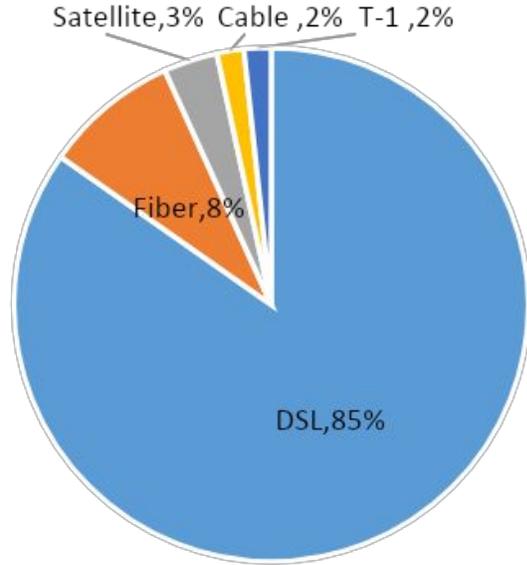


Does this business subscribe to the Internet?



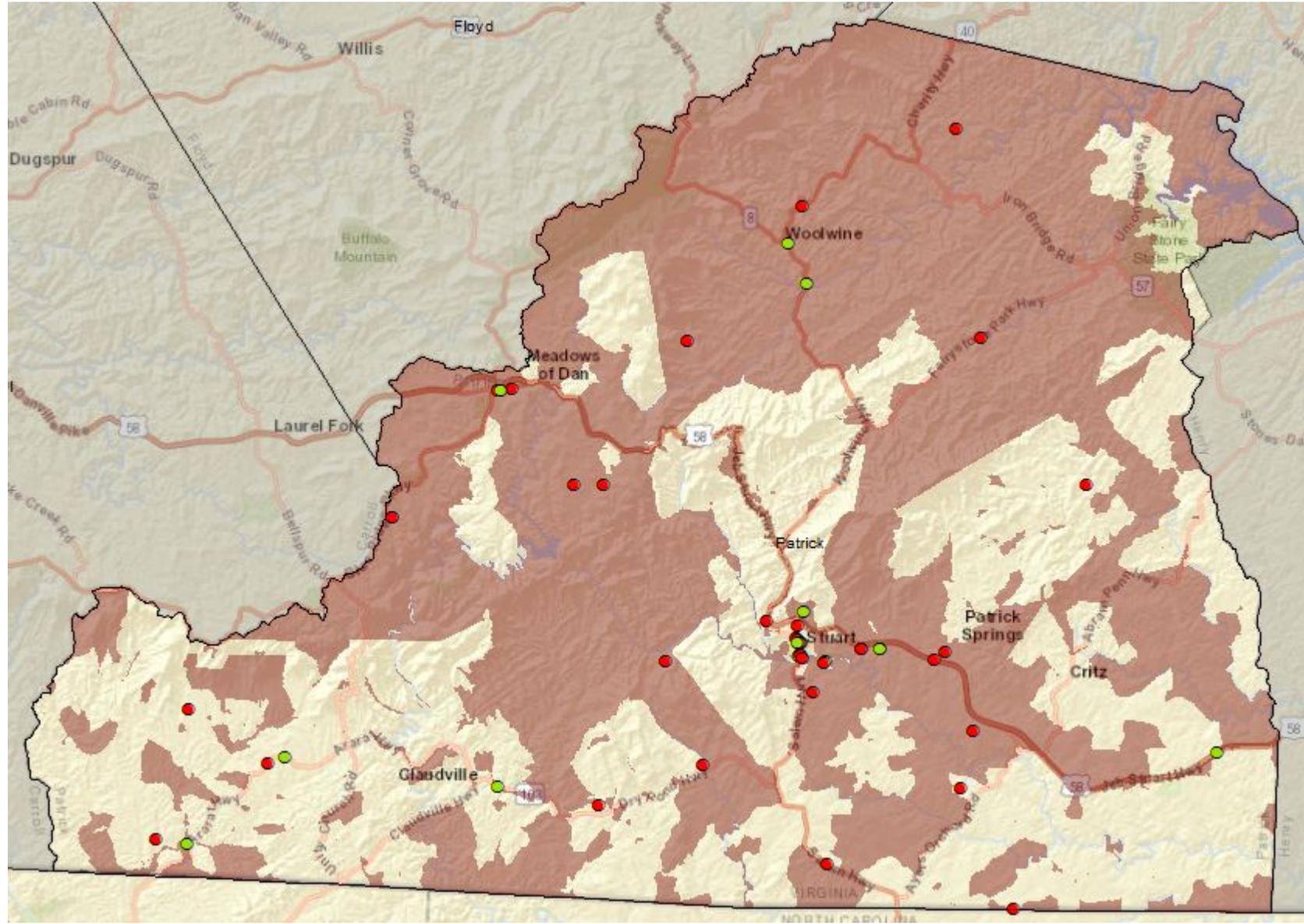
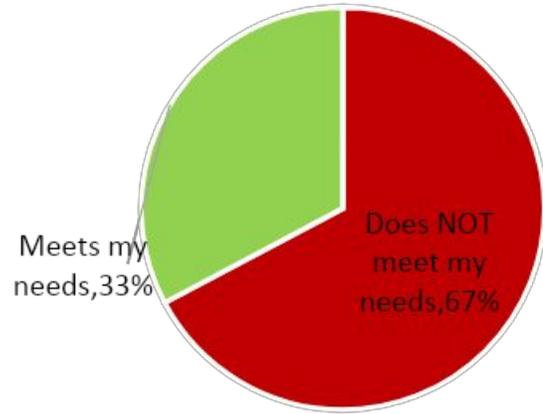
Take away: Reasons cited for no Internet were; unreliable service or no service available.

Business Connection Types



Take away: Most businesses served by DSL. One report of T1, very old, expensive slow technology.

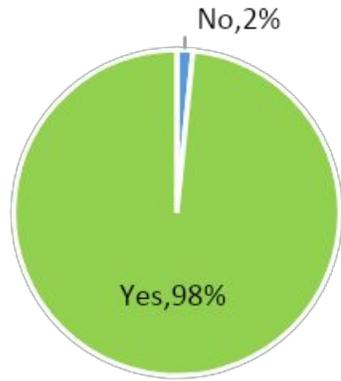
Please rate your business Internet service



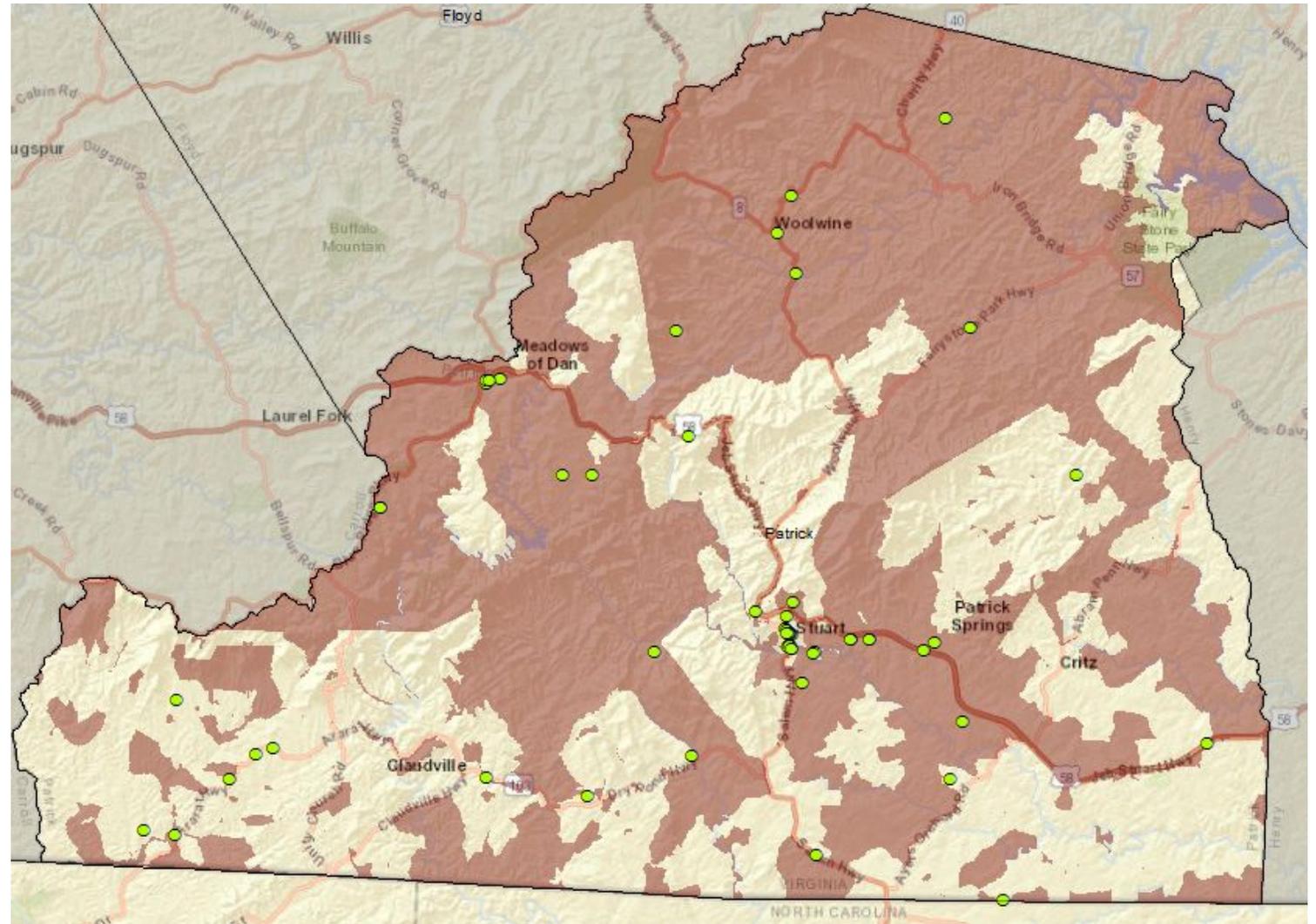
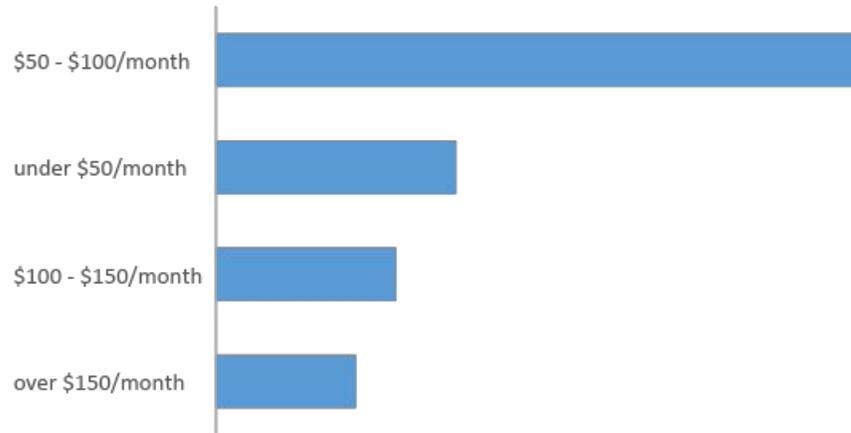
Take away; most report their Internet service does not meet their business needs. DSL was cited most often as service that did and did not meet business needs.

Businesses, home-based or store front must not be constrained by bandwidth!

If an affordable, faster Internet option were offered to your business, would you be willing to commit to a year-long contract?



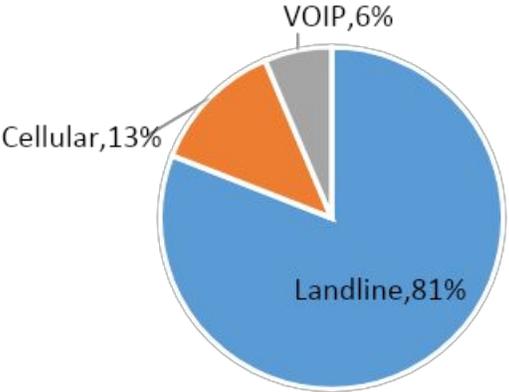
How much would you be willing to spend for faster Internet service for your business?



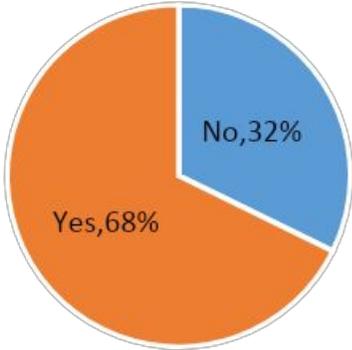
Take away: Nearly all (98%) of businesses said they would commit to a new contract if an affordable, faster option became available. 54% are willing to pay between \$50-\$100 per month for a faster Internet option.

Patrick County Business Phone Service

What kind of phone service does your business rely on most?



Is your business phone service consistently reliable?



Take away: Most businesses rely on landline phone services. DSL is usually bundled with phone service. Voice services are more robust and not distance limited like DSL. Reported cellular usage is low, seek expanded cellular services. Businesses depend on reliable phone services.

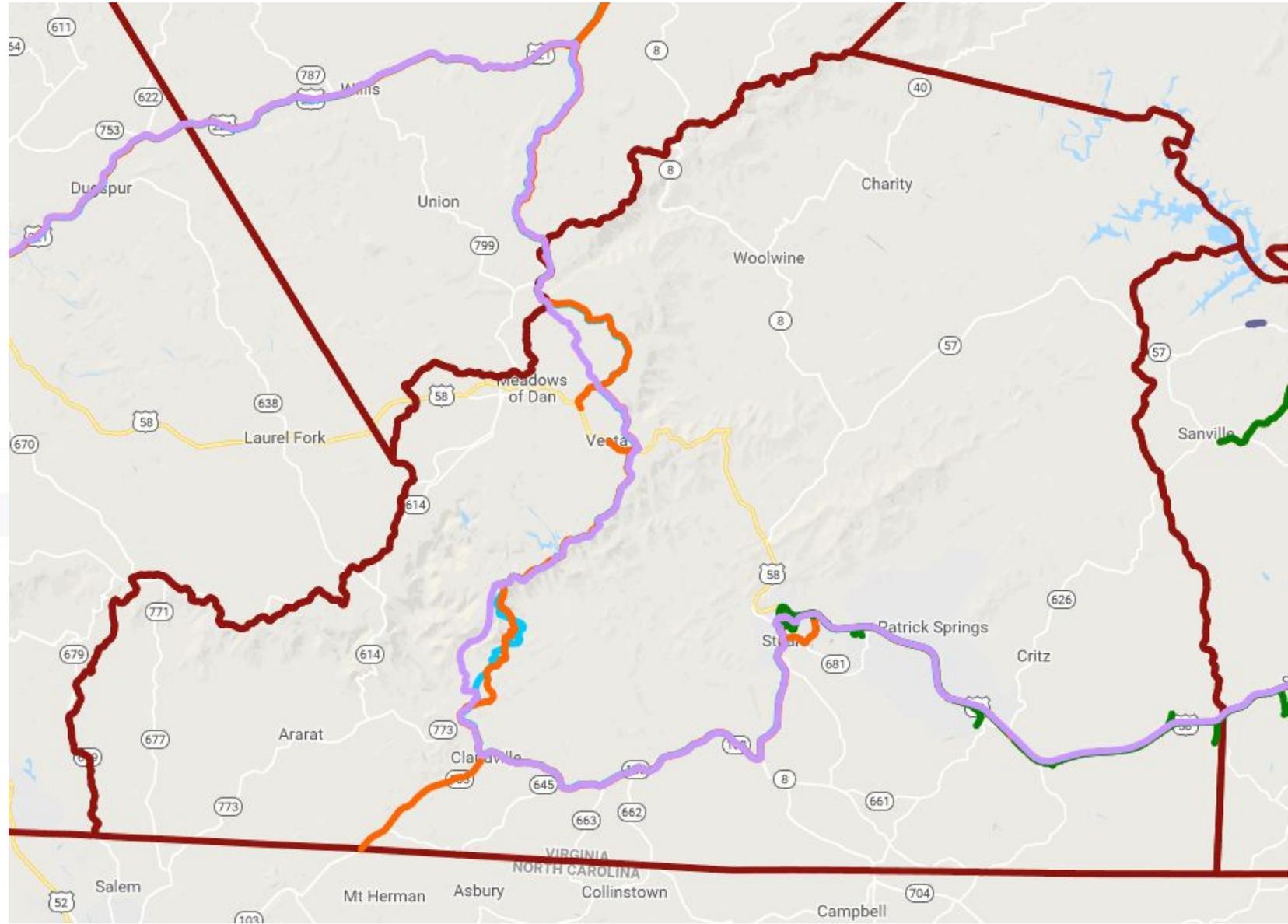
Local Assets

Vertical Assets, Fiber, Conduit and Community Anchors

Patrick County Commercial Fiber Routes

Metro Networks are generally used for local connectivity. Using multi-mode fiber which allows for more splice points and easier to tap into. Many routes overlap.

-  LIT Networks
-  Mid-Atlantic Broadband
-  Segra
-  Windstream

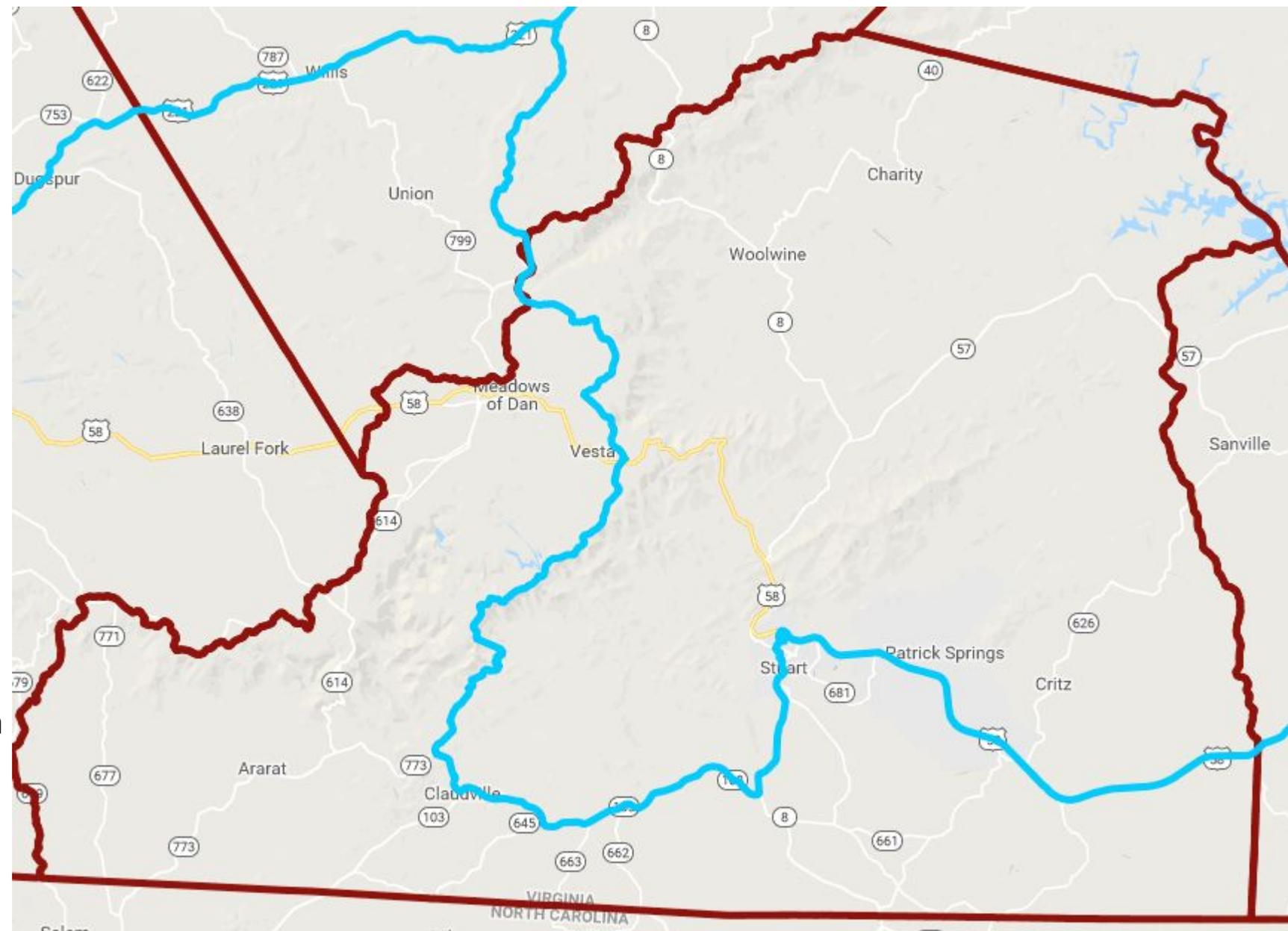


Windstream and LIT Networks basically overlap. Segra is the result of a merger of Lumos and Sprint. Shentel has an affiliate with Sprint.

Patrick County Commercial Fiber Routes

Long haul fiber is used for longer point to point connectivity using single mode fiber technology – big capacity/ bandwidth. Single mode uses fewer splice points and is harder to tap into.

The long-haul fiber in Patrick County is a proprietary arrangement between two providers. There is no access to the fiber for use with other customers.



Lit Buildings show which carriers have a fiber presence or have optical switches connected to a fiber loop within a locality.

Patrick County Lit Buildings



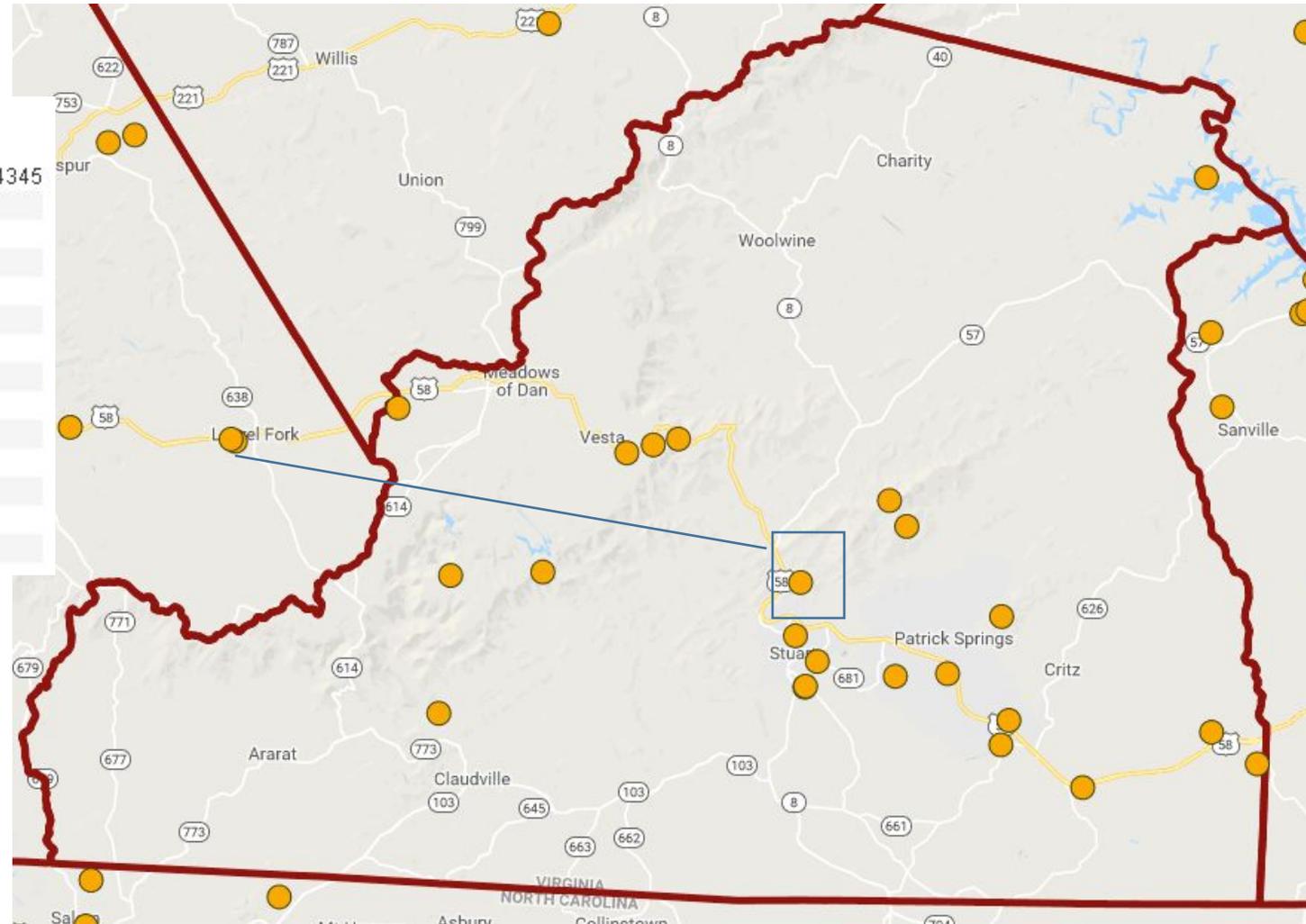
- A point of presence, POP, is a physical location from which network services are provided and enables access from one place to the rest of the Internet. These places are of potential value to future broadband partners.

Take away: Very few but important lit buildings. MBC has a POP in Stuart. Citizen's also has two POPs in Patrick County.

Patrick County Cell Towers

Cell Towers

Address	Bus Park Rd, Stuart, VA, 24171-4345
Owner	Verizon
Manager	
Site ID	
Site Name	Stuart 2 VA
Asset Desc	Monopole
Asset Type	Monopole
Elev AMSL (ft)	719.3
Height AGL (ft)	59.4
ASR Number	
FAA Study Num	
Constructed Date	
Latitude	36.6624
Longitude	-80.2658



Patrick County Vertical Assets

Patrick_FiberLocator_Towers

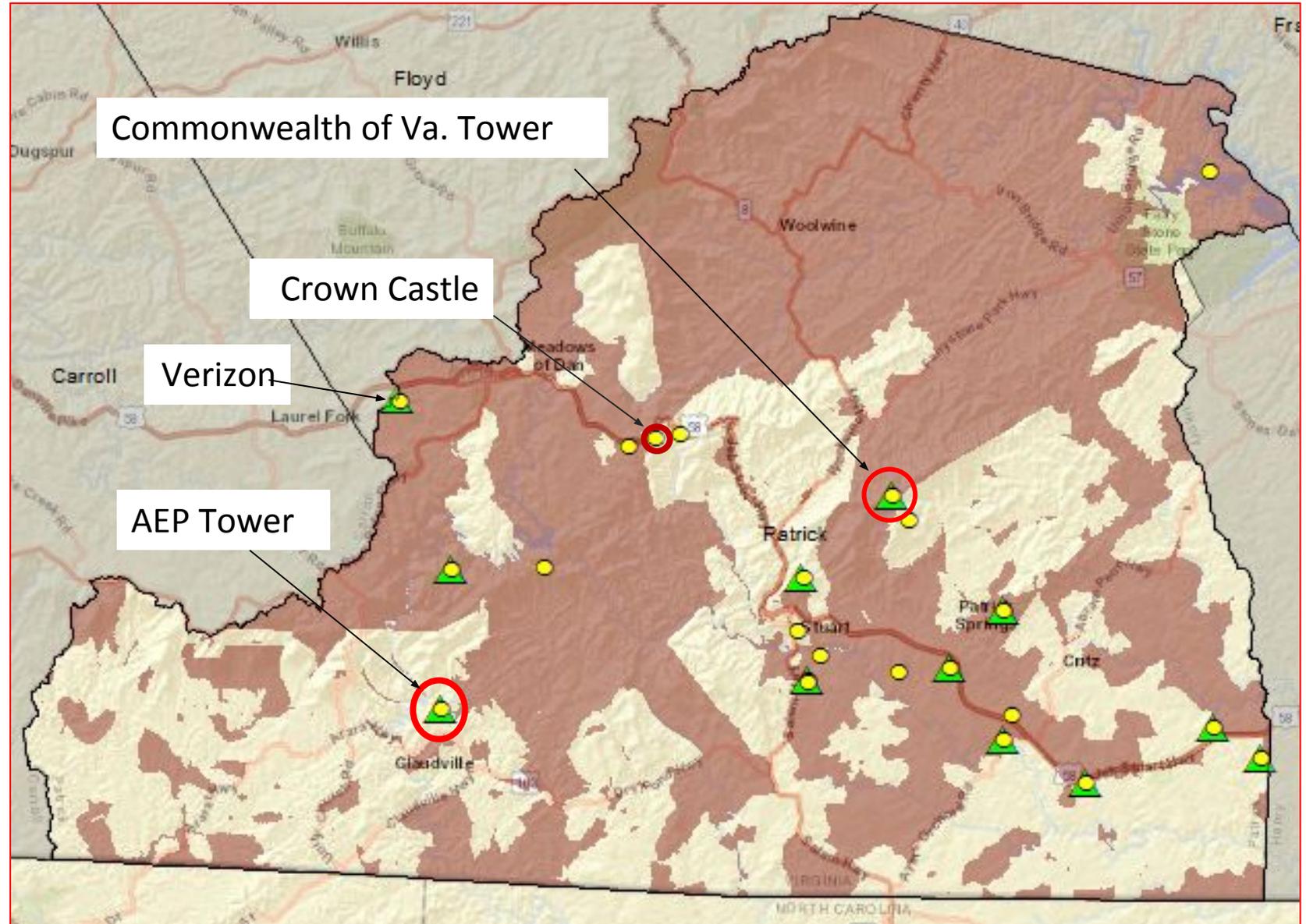


Patrick_Vertial_Assets_FCC



Take away: Two towers of interest; AEP and Commonwealth of Va. If space is available and engineered for more equipment, the CWVa tower may be used by a broadband or cellular provider to serve unserved area surrounding.

Crown Castle is also available.



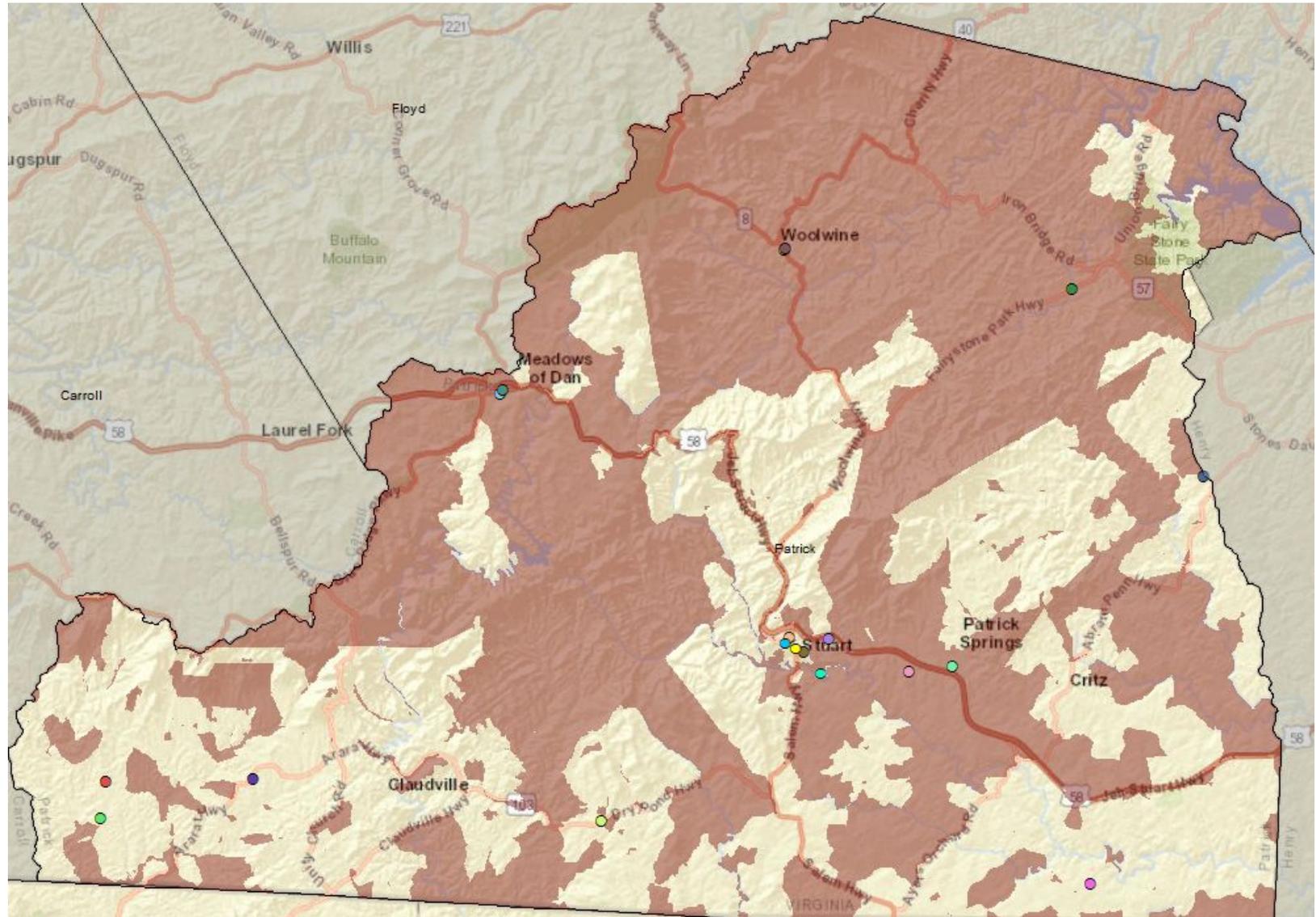
Patrick County Public Safety

- ARARAT RESCUE
- CCDF VOLUNTEER FIRE AND RESCUE
- COMPANY 22 - ARARAT FD SUBSTA
- COMPANY 25 - MEADOWS OF DAN FD
- COMPANY 26 - STUART FD
- FAIRSTONE VOL FIRE DEPARTMENT
- JEB STUART RESCUE SQUAD
- MOOREFIELD STORE FIRE DEPT
- PATRICK HENRY FIRE DEPT
- PATRICK SPRINGS FIRE DEPARTMENT
- SMITH RIVER RESCUE STATION 4
- STATION 5 - VESTA RESCUE
- STATION 6 -
- STATION 7 - BLUE RIDGE RESCUE
- Town of Stuart Fire Department
- WOOLWINE FIRE DEPT

Sheriff Facilities:

- COMMERCE
- ORCHARD
- WEST BLUE RIDGE

Take away: Commerce St. Sheriff facility and multiple Public Safety facilities in unserved location. Some existing towers could help with



Patrick County Government Facilities

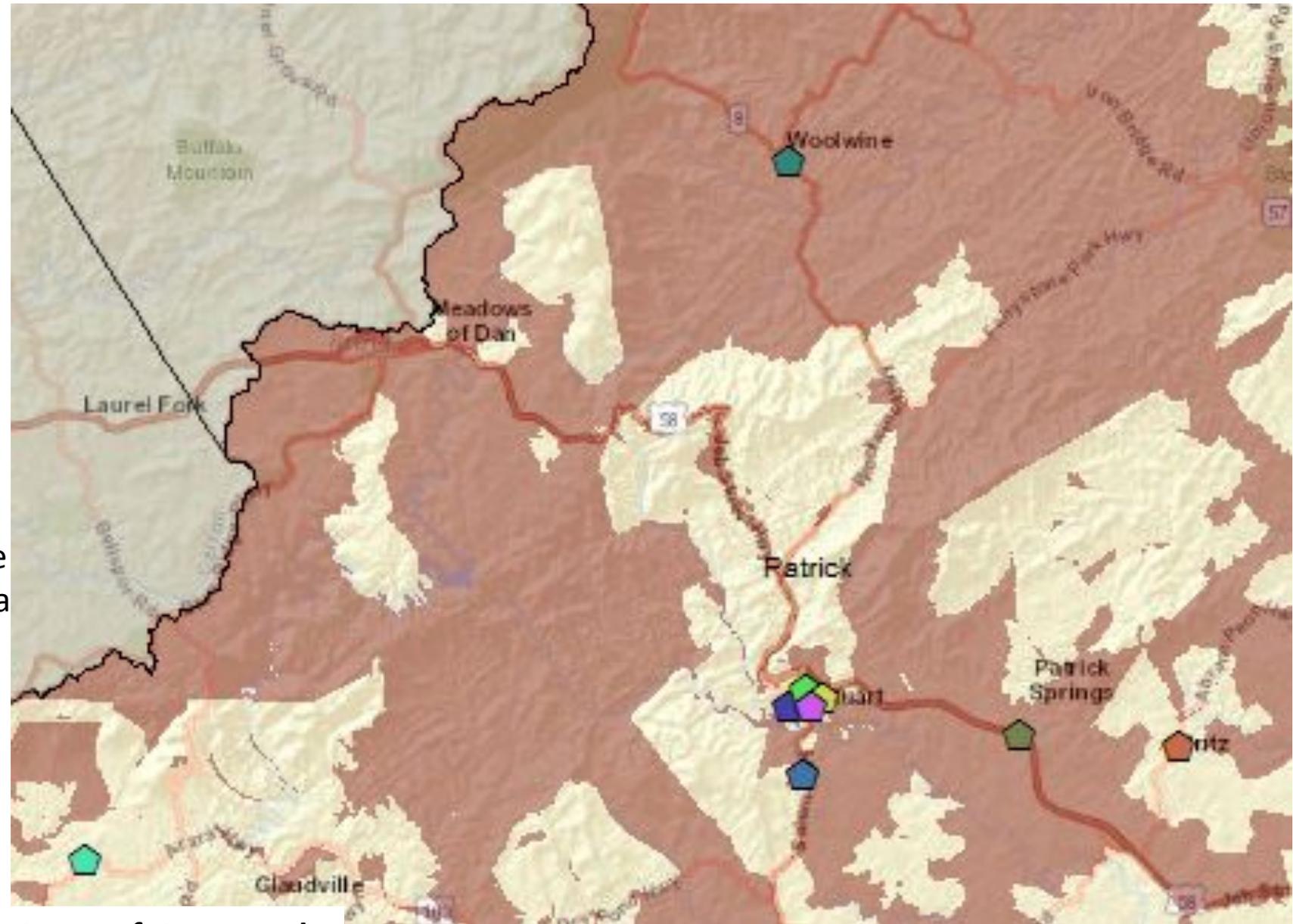
- Animal Pound
- Clerk of Circuit Court
- Clerks Office
- Commonwealth Attorney
- Court Svcs
- Courthouse Security Desk
- DSS - 2nd line
- EMS Training Center
- GDC Storeroom
- Maintenance Shop
- Public Safety Facilities
- Transfer Station
- Workforce-Adult Ed



Take away: Most Government facilities located in town of Stuart, County Jail, Maintenance Shop and Transfer Station in Unserved areas. With the exception of the “Public Safety Facilities” the county spends ~12K on Internet connections. Consider self-provisioned fiber, leased from schools(?)

Patrick County Educational Facilities

- BLUE RIDGE ELEMENTARY SCHOOL
- EMS Training Center
- HARDIN REYNOLDS SCHOOL
- PATRICK COUNTY HIGH SCHOOL
- PCPS Technology Bldg
- Patrick Co. Workforce - Adult Education
- Patrick Henry Community College
- Patrick Springs Primary
- STUART ELEMENTARY SCHOOL
- WOOLWINE ELEMENTARY SCHOOL



Take Away: While schools may have the capacity they need, the surrounding area may not:

Multiple schools in unserved areas:
Woolwine Elementary,
Patrick Springs Primary,
Stuart Elementary

School district reports connection will not serve future needs

Patrick County School District

✔ Above 100 kbps min.

✔ Meeting 100% fiber goal

Wi-Fi funding at risk

✔ Internet Access Affordability

✔ Upgraded broadband in 2017

 2.1 Mbps
PER STUDENT

 ALL SCHOOLS
ARE ON FIBER

 \$178,000
CAT 2 \$ REMAIN

 \$1.18/Mbps
MONTHLY IA COST

 INCREASED
BANDWIDTH

🎓 2434 Students 🏫 7 Schools 📍 7 Campuses 🏠 Rural Locale

Purpose	Bandwidth	Connection Type	Connections	Monthly Recurring Cost/Connection	Non-Recurring Cost	Service Provider	Contract End Date
Internet	5 Gbps	Lit Fiber	1	\$5,900	\$0	CenturyLink	06/30/2020
Transport (WAN)	500 Mbps	Lit Fiber	1	\$1,350	\$0	CenturyLink	06/30/2020
Transport (WAN)	500 Mbps	Lit Fiber	1	\$1,350	\$0	CenturyLink	06/30/2020
Transport (WAN)	2 Gbps	Lit Fiber	1	\$2,300	\$0	CenturyLink	06/30/2020
Transport (WAN)	500 Mbps	Lit Fiber	1	\$1,350	\$0	CenturyLink	06/30/2020
Transport (WAN)	500 Mbps	Lit Fiber	1	\$1,350	\$0	CenturyLink	06/30/2020
Transport (WAN)	500 Mbps	Lit Fiber	1	\$1,350	\$0	CenturyLink	06/30/2020
Transport (WAN)	500 Mbps	Lit Fiber	1	\$1,350	\$0	CenturyLink	06/30/2020
Transport (WAN)	500 Mbps	Lit Fiber	1	\$1,350	\$0	CenturyLink	06/30/2020
Transport (WAN)	10 Gbps	Lit Fiber	1	\$4,750	\$0	CenturyLink	06/30/2020
Backbone				\$0 / \$0		Shared Network Infrastructure	

Total Internet Access Bandwidth: 5 Gbps
Total Internet Access Monthly Cost: \$5,900
Total WAN Monthly Cost: \$16,500

Take away: Patrick Co. School district spends~200K annual for WAN. Consider self-provisioning fiber via Erate, include extra strands for leasing to local government, others.

Patrick County Library

Patrick County Library is part of the Blue Ridge Regional Library system. Served by CenturyLink/Martinsville IT via fiber metro Ethernet connection. Connection considered to serve future needs. Unsure if library can acquire Internet access separately from the regional system.

No detailed connectivity data provided.

The FCC and the American Library Associations recommend a 100 Mbps connection for libraries serving communities of 50,000 or less. Patrick County 2017 population estimate: 17,958

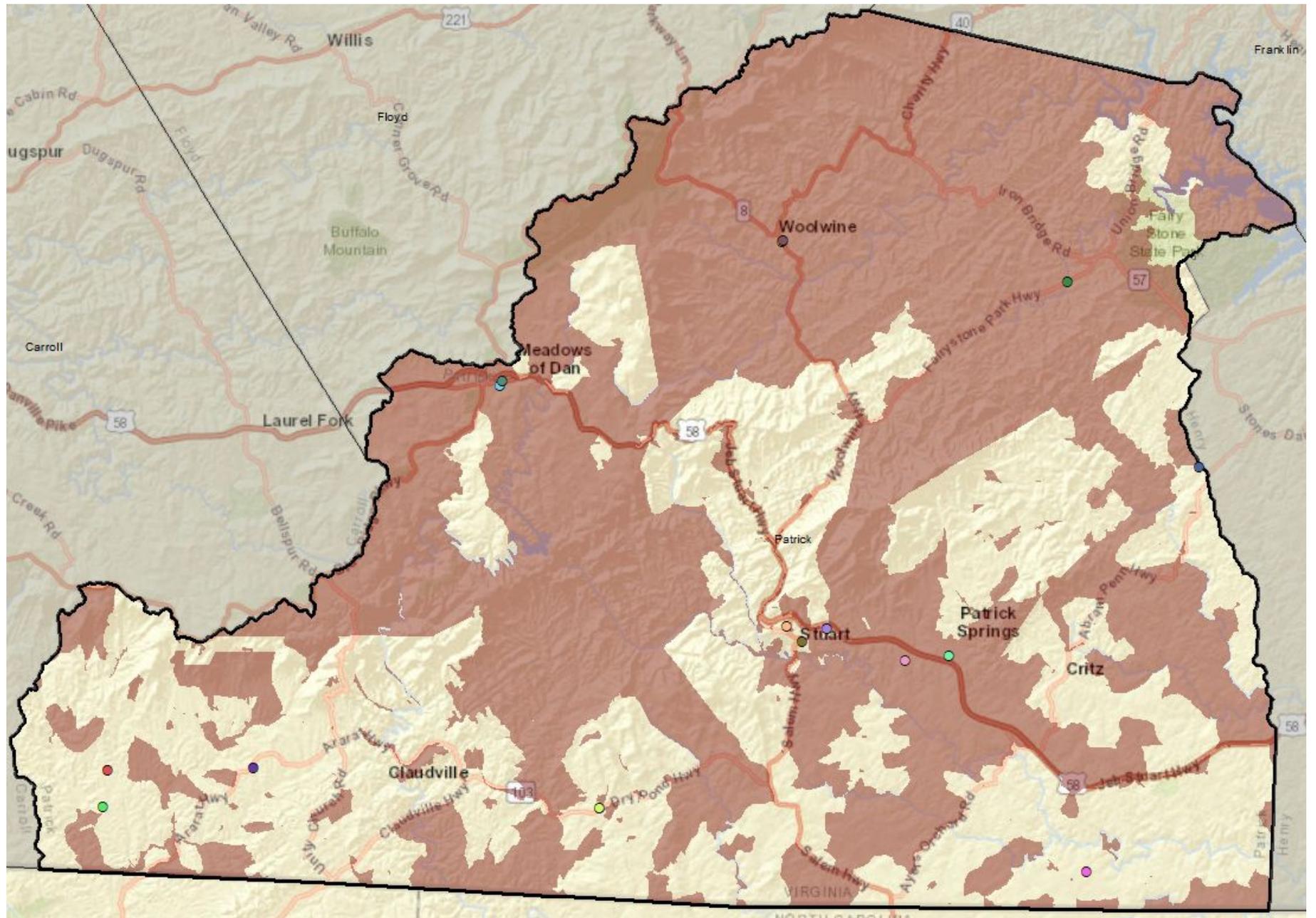
- ✓ Library does offer computer classes and
- ✓ Public computers are available.

Take away: Ensure library capacity meets national standards. Recall 3% of K12 depend on the Library for after school access to the Internet. One branch to serve the entire county – bookmobile not included. Consulting with Library of Virginia about grants to add/increase adoption programs such as workforce development and digital literacy training.



Patrick County Public Safety

- ARARAT RESCUE
- CCDF VOLUNTEER FIRE AND RESCUE
- COMPANY 22 - ARARAT FD SUBSTA
- COMPANY 25 - MEADOWS OF DAN FD
- COMPANY 26 - STUART FD
- FAIRSTONE VOL FIRE DEPARTMENT
- JEB STUART RESCUE SQUAD
- MOOREFIELD STORE FIRE DEPT
- PATRICK HENRY FIRE DEPT
- PATRICK SPRINGS FIRE DEPARTMENT
- SMITH RIVER RESCUE STATION 4
- STATION 5 - VESTA RESCUE
- STATION 6 -
- STATION 7 - BLUE RIDGE RESCUE
- Town of Stuart Fire Department
- WOOLWINE FIRE DEPT



Take Away: Many facilities in unserved areas; Woodwine, Fairstone Vol Fire Dept, Moorefield Store Fire Dept, Jeb Stuart Rescue Squad

Review of Local Policies & Fees

Affect the Broadband Economics

Make sure your policies and procedures are “Broadband Friendly”

Review comprehensive plans, community zoning regulations and process, policies, fees, etc. must **encourage and enable broadband investment**.

Review local franchise agreements for **setback or long-drop** policy. Long-drop policy information should be proactively conveyed to all new homebuilders, and real estate developers.

Adopt Dig Once: Dig Once means less construction disruption, and lower costs for private providers—who may simply decide not to deploy in an area where the economics don’t work.

Google Fiber Checklist:

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

Remember to make it “cheap, quick & easy”

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

Patrick County has not adopted the PPEA procurement process.

The primary reason for using PPEA procurement rather than a traditional RFP is that the bulk of any broadband project is going to be defined as “engineering” or “construction” under the Public Procurement Act. Engineering needs to be done by competitive negotiation; construction can only be procured by competitive sealed bidding. You can do a design/build contract, but that’s a pain as well and still leaves you with an operating phase that you don’t have covered. So you wind up doing at least two and probably three separate procurements and contracts: (1) RFP for engineering services to design; (2) IFB for construction services; (3) an RFP for operational services. As an administrative matter, a PPEA is usually faster, more flexible, and no more expensive; (4) the PPEA is the most provider friendly procurement type for responding to local broadband expansion requests.

COMMUNITY BROADBAND NEEDS

Assessment Based

Patrick County Needs Identified

Technology Adoption and Usage

- 9% of population are veterans
- 24% of population are seniors,
- 20% of population have educational deficiencies,
- 19% of population have a disability,
- 46% of population have incomes <\$35K
- 5% do now not own a device to access the Internet.
- 3% report device is too expensive.
- 1% need training.
- 23% Internet service is too expensive

These populations may be slow to adopt or less likely to subscribe to new services. The lack of digital literacy and the ability to pay for services are significant barriers to broadband expansion. The lack of connectivity is a significant barrier to telehealth and online educational opportunities. Connecting healthcare, education and broadband sectors is a path to a more connected, healthier, more educated community.

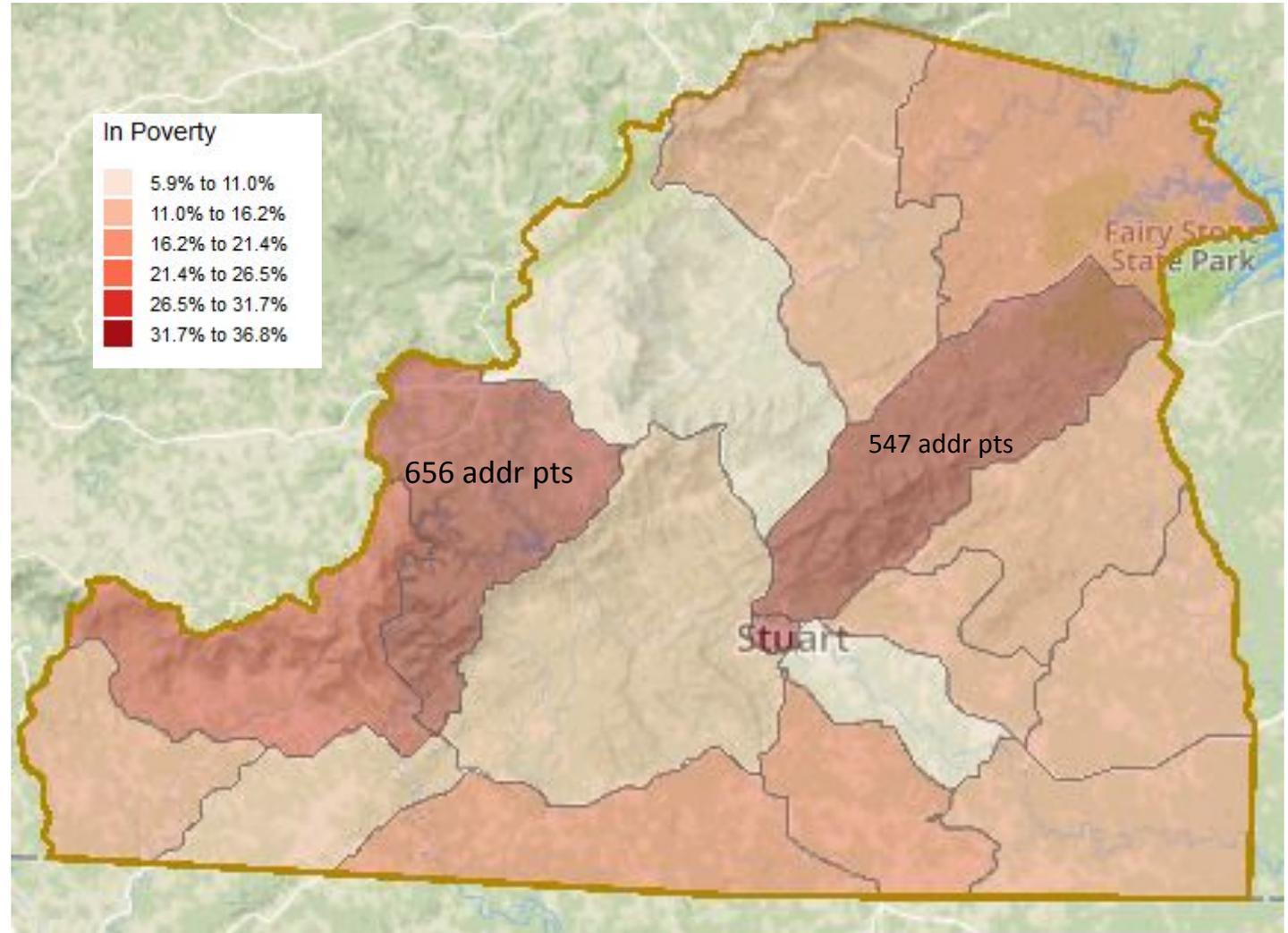
Recommendation: Prioritize adoption and usage solutions:

- Promote digital literacy, computer classes and training.
- Consider a computer refurb/donation program such as Virginia Star - a state-wide Student Training and Refurbishment program; <http://vastar.org/>
- Cont'd on next slide

Needs Identified (Cont'd)

Technology Adoption and Usage

Recommendation: County needs to focus adoption and usage efforts in high poverty areas. Consider offering computer and digital literacy classes within high poverty areas.



Needs Identified (cont'd)

Demand

Residential

- ~90% of residential subscribers depend upon inadequate, expensive, unreliable and/or obsolete services; **81% DSL, 6% Satellite, 2% Cellular**
- **11%** report NO Internet access at all – availability, reliability and expense cited for reasons for no Internet.
- Adoption and affordability Issues; 5% do now not own a device to access the Internet. 3% report device is too expensive. 1% needs training. 23% Internet service is too expensive.
- 74% report their Internet services does not meet their needs. Even with numerous DSL upgrades, most with DSL connections will not benefit.
- 94% respondents would commit to a new, affordable, faster service. Most, 50% willing to pay between \$50.-\$100/month for a better service.
- 40% report K12 students, most in unserved areas. 4% report **NO** access to the Internet after school. 3% depend on the library for after school access.
- 14% report operating home-based businesses, most in unserved areas, scattered all over the county.
- 34% of respondents report they would work from home if they had better access
- 18% of respondents report they would operate a home-based business if they had better access.
- 51% depend on landline phone services.

Recommendations: Expand access and capacity to residents in known unserved areas.

- Short term, ensure residents in CAF upgrade areas are aware of potentially better service offerings. Eventually all DSL will be phased out. CenturyLink and Verizon have stated they will not upgrade, support or maintain DSL (or landline services) in the coming years. Seek expanded cellular services.
- Long term: Seek alternative broadband solutions for all DSL areas.

Needs Identified (cont'd)

Demand

Business

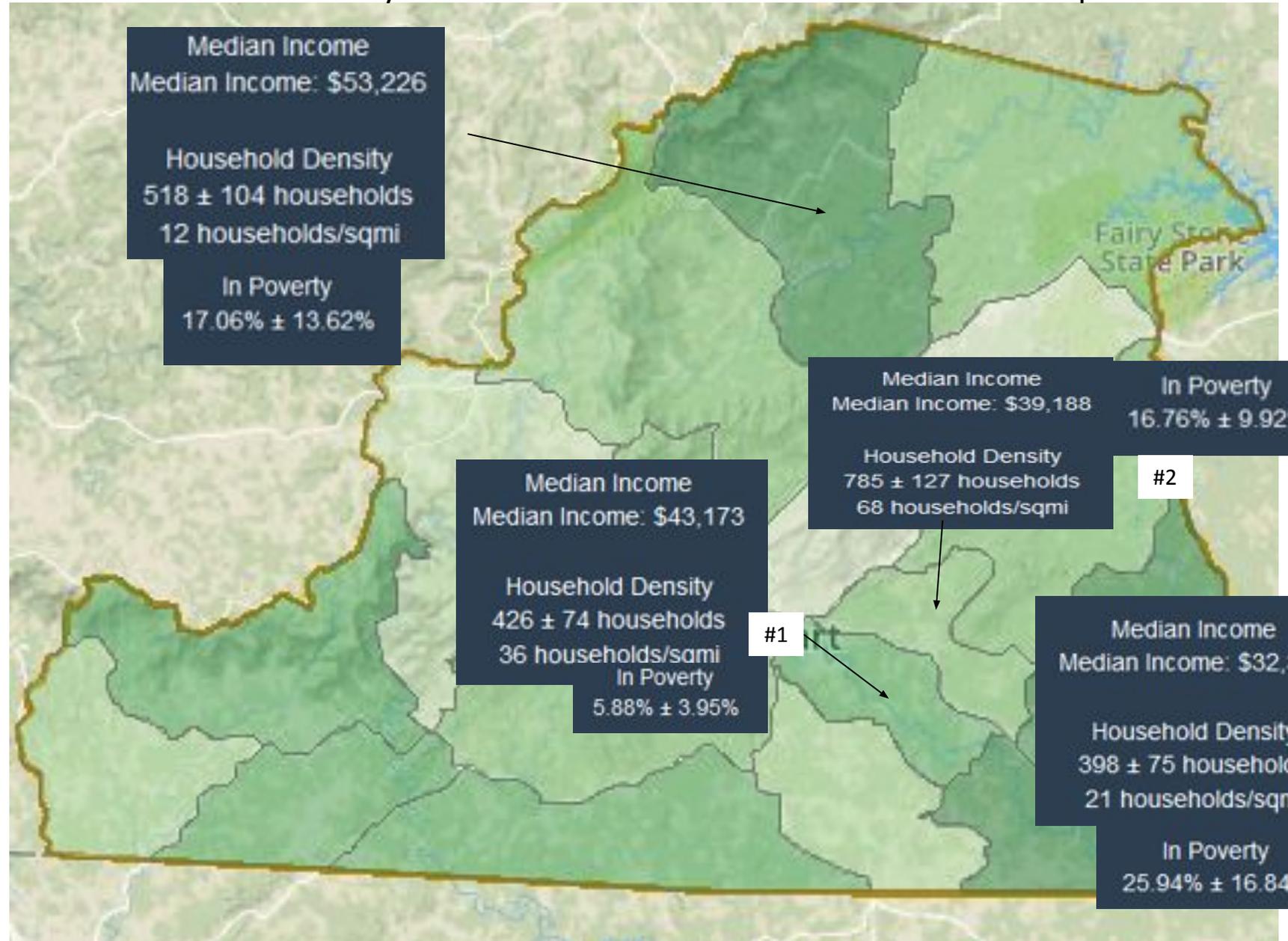
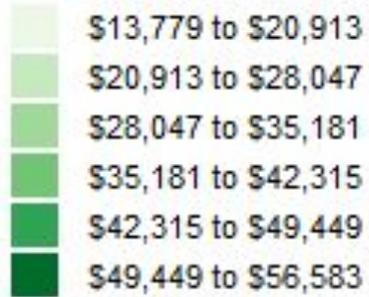
- 5% of respondents report owning a traditional business in Patrick County. Many in unserved areas.
- 14% of respondents report operating a home-based business, most in unserved areas.
- 85% of traditional businesses report DSL Internet Service.
- Most (65%) traditional businesses report their Internet service does not meet their needs.
- 98% of businesses said they would commit to a new contract if an affordable, faster option became available. 54% are willing to pay between \$50-\$100 per month for a faster Internet option.
- 81% depend on landline phone services.

Recommendations: Expand access and capacity to businesses in known unserved areas.

- Short term, ensure businesses in CAF upgrade areas are aware of potentially better service offerings. Eventually all DSL will be phased out. CenturyLink and Verizon have stated they will not upgrade, support or maintain DSL (or landline services) in the coming years. Seek expanded cellular services.
- Long term: Seek alternative broadband solutions for all DSL areas.

Patrick County Prioritization Considerations for Broadband Expansion

Median Income



Recommendation: Prioritized expansion based income, household density and poverty levels. Suggestions for prioritizations identified.

Obvious areas of need not selected due to low household density and/or poverty levels.

Needs Cont'd

Local Government Facilities

- Animal Pound
- Clerk of Circuit Court
- Clerks Office
- Commonwealth Attorney
- Court Svcs
- Courthouse Security Desk
- DSS - 2nd line
- EMS Training Center
- GDC Storeroom
- Maintenance Shop
- Public Safety Facilities
- Transfer Station
- Workforce-Adult Ed



Recommendations: Most facilities have DSL connections that are reported will not serve future needs. With the exception of the “Public Safety Facilities” the county spends ~12K annually on Internet connections. All localities need county owned fiber, consider working with School District to self-provisioned fiber, lease extra strands to connect local government facilities. Use local government facilities as anchors for a new provider. Establish a County broadband budget for ‘match’ funds for grants and other needs.

Needs Cont'd Local Government

Patrick_FiberLocator_Towers

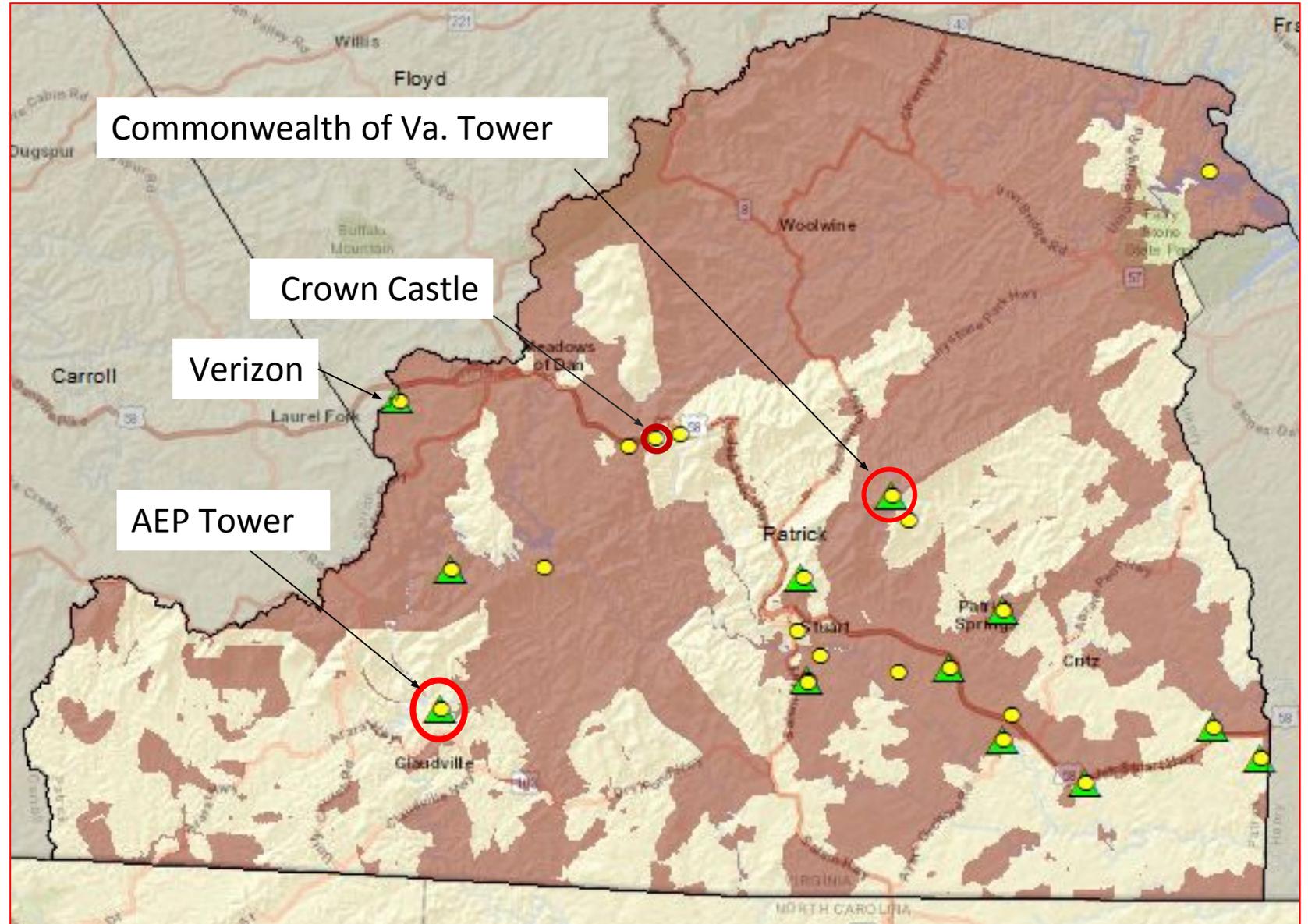


Patrick Vertical_Assets_FCC



Recommendation Two towers of interest; AEP and Commonwealth of Va. If space is available and engineered for more equipment, the CWVa tower may be accessible by a broadband provider to serve unserved area surrounding.

Crown Castle Tower also potential for use by fixed wireless or cellular provider.



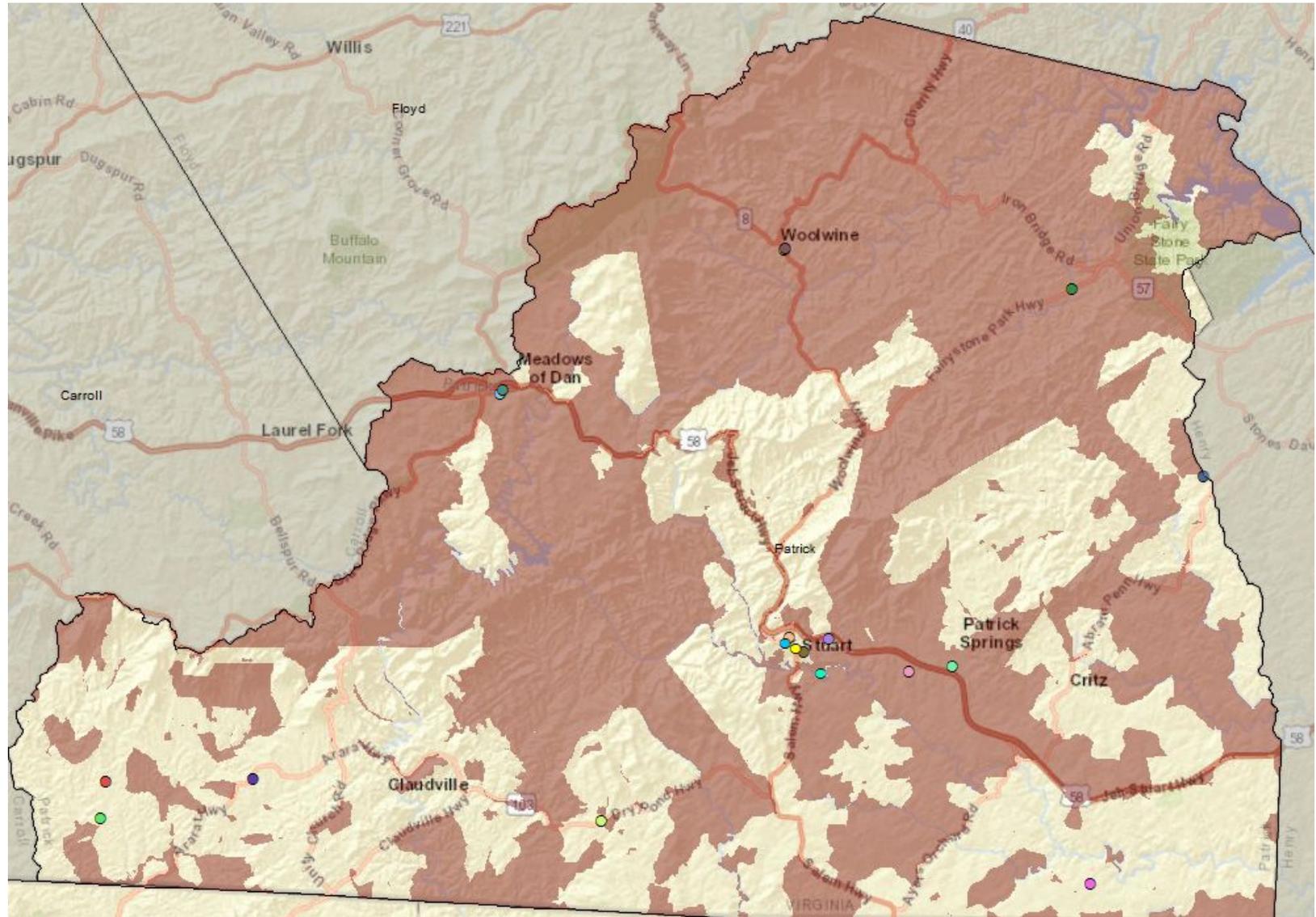
Needs Identified Cont'd

Public Safety: No connectivity data provided by county for Fire/Rescue stations

- ARARAT RESCUE
 - CCDF VOLUNTEER FIRE AND RESCUE
 - COMPANY 22 - ARARAT FD SUBSTA
 - COMPANY 25 - MEADOWS OF DAN FD
 - COMPANY 26 - STUART FD
 - FAIRSTONE VOL FIRE DEPARTMENT
 - JEB STUART RESCUE SQUAD
 - MOOREFIELD STORE FIRE DEPT
 - PATRICK HENRY FIRE DEPT
 - PATRICK SPRINGS FIRE DEPARTMENT
 - SMITH RIVER RESCUE STATION 4
 - STATION 5 - VESTA RESCUE
 - STATION 6 -
 - STATION 7 - BLUE RIDGE RESCUE
 - Town of Stuart Fire Department
 - WOOLWINE FIRE DEPT
-
- COMMERCE
 - ORCHARD
 - WEST BLUE RIDGE

Sheriff Facilities:

Woolwine, Smith River Rescue, Fairystone Vol Fire, Meadows of Dan Fire, Vesta Rescue, Patrick Springs Fire, Jeb Stuart Rescue in unserved areas.



Recommendation: Consider using Fire/Rescue stations in unserved areas as anchors for new provider. Consider these sites for potential placement of fixed wireless broadband equipment.

Need Identified (Cont'd)

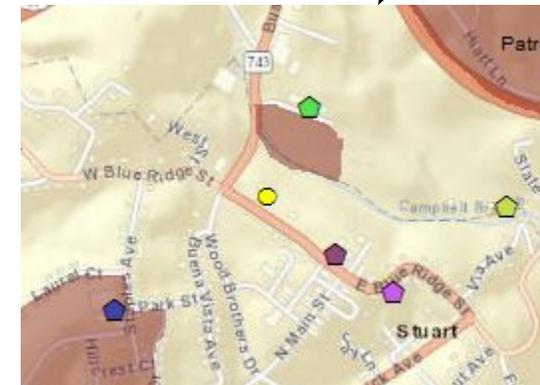
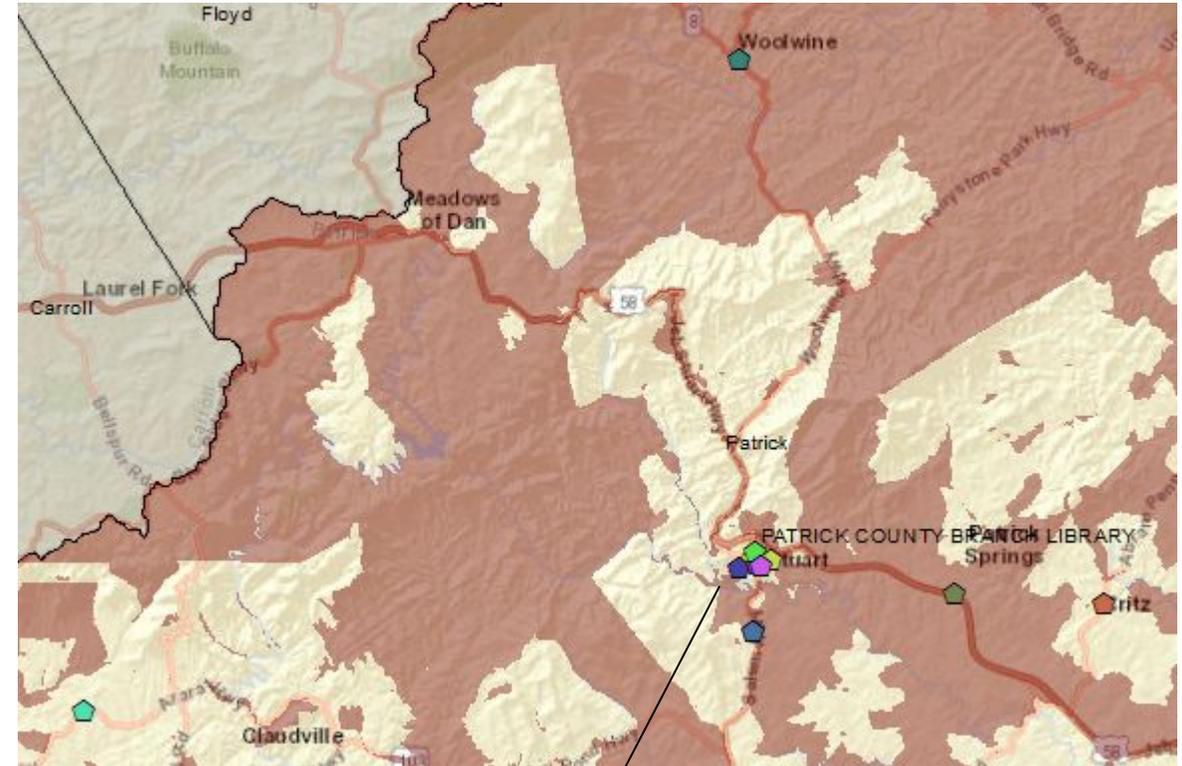
Patrick Co. Schools:

Connected by CenturyLink fiber. School district spends ~200K annually for WAN. **School district reports connections will not serve future needs**

All Counties need locally owned fiber assets. The School District should consider self-provisioning fiber via Erate, add extra strands for leasing to local government and others.

Library: **No detailed data provided.**

One branch library for the entire county. Library does teach computer classes and does have publicly available computers. Ensure library capacity meets national standards. Recall 3% of K12 depend on the Library for after school access to the Internet. One branch to serve the entire county – bookmobile not included. Consult with Library of Virginia about grants to add/increase adoption programs such as workforce development and digital literacy training. Consider offering computer and digital literacy classes within high poverty areas.



NEXT STEPS

The Path Forward



Potential Funding



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

Look under Funding Options for a comprehensive list of funding sources.



Virginia Funding Opportunities			
Source	Opportunity	Eligible Applicant	Application Timeline
Department of Housing and Community Development (DHCD)	Community Development Block Grant Planning Grant http://www.dhcd.virginia.gov/index.php/community-partnerships-dhcd/79-community-development-block-grant-cdbg-planning-grant.html	Units of local government in non-entitlement localities.	January - September
Department of Housing and Community Development (DHCD)	Virginia Telecommunication Initiative (VATI) http://www.dhcd.virginia.gov/index.php/business-va-assistance/telecommunications/254-virginia-telecommunication-planning-initiative-vatpi.html	A unit of government (Towns, Cities, Counties, EDA/IDA, Broadband/Wireless Authorities, Planning District Commissions, etc.) with a private sector provider(s) as a co-applicant.	Fall
Virginia Tobacco Indemnification and Community Revitalization Commission	TRRC Revolving Loan Fund https://www.revitalizeva.org/grant-loan-program/loan-programs/	Public or incorporated non-profit private organizations located in and/or providing economic revitalization programs, services, or facilities in the tobacco region.	Announced annually
Virginia Tobacco Indemnification and Community Revitalization Commission	Economic Development Grant Program https://www.revitalizeva.org/grant-loan-program/grant-programs/southwest-and-southside-economic-development-grant-program/	Public or incorporated non-profit private organizations located in and/or providing economic revitalization programs, services, or facilities in the tobacco region.	Announced annually
Virginia Resources Authority (VRA)	Virginia Pooled Financing Program http://www.virginiaresources.org/page/virginia-pooled-financing-program/	Local governments	Fall and Spring
Virginia Department of Agriculture and Consumer Services	Agriculture and Forestry Development Fund http://www.vdacs.virginia.gov/agriculture-afid-facility-grants.shtml	Political subdivision or alliance of subdivisions. Broadband project are eligible.	Applications are accepted on a continuing basis

Next Steps: County Decisions

- Determine what role to assume in advancing County broadband goals
 - County role needs to be adopted by the County BoS
- Identify and prioritize goals, based on needs
 - Assessment findings need to be conveyed to the BoS
 - Broadband Management Team passes its recommendations to BoS for approval
- Determine incentives to offer
 - Policy Team passes its recommendations to BoS for approval

Next Steps: RFP & Partnership

- CIT will prepare the Requirements Document and Draft RFP
 - CIT will formally document County Decisions regarding role, goals, assets to be shared, and incentives to include in RFP
- County chooses private partner(s)
 - The County will publish the RFP, evaluate responses, and choose (an) ISP partner(s)



— Chuck Kirby —

**VICE PRESIDENT, BROADBAND
PROGRAMS**

Chuck.Kirby@cit.org
540-309-4313

— Jean Plymale —

BROADBAND PROJECT MANAGER

Jean.Plymale@cit.org
540-250-2751

— Caroline Luxhoj —

**BROADBAND PROGRAM
ADMINISTRATOR**

Caroline.Luxhoj@cit.org
804-513-1825