

# Application to DHCD Submitted through CAMS

Botetourt County

FY 21 Botetourt County/ LUMOS Networks Fiber Expansion

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**Application ID:** 75707272020130157  
**Application Status:** Pending  
**Program Name:** Virginia Telecommunications Initiative 2021  
**Organization Name:** Botetourt County  
**Organization Address:** 57 South Center Drive  
Daleville, VA 24083  
**Profile Manager Name:** Tony Zerrilla  
**Profile Manager Phone:** (540) 928-2102  
**Profile Manager Email:** tzerrilla@botetourtva.gov

**Project Name:** FY 21 Botetourt County/ LUMOS Networks Fiber Expansion  
**Project Contact Name:** Ken McFadyen  
**Project Contact Phone:** (540) 580-1232  
**Project Contact Email:** kmcfadyen@botetourtva.gov  
**Project Location:** 57 South Center Drive  
Fincastle, VA 24090-3001  
**Project Service Area:** Botetourt County

**Total Requested Amount:** \$1,364,337.00

**Required Annual Audit Status:** No Current Audits Found

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## Budget Information:

Cost/Activity Category	DHCD Request	Other Funding	Total
<b>Telecommunications</b>	<b>\$1,364,337.00</b>	<b>\$1,254,000.00</b>	<b>\$2,618,337.00</b>
Construction	\$1,364,337.00	\$1,254,000.00	\$2,618,337.00
<b>Total:</b>	<b>\$1,364,337.00</b>	<b>\$1,254,000.00</b>	<b>\$2,618,337.00</b>

## Budget Narrative:

Botetourt County and Lumos Networks (co-applicants) respectfully request a Virginia Telecommunications Initiative grant of \$1,364,377 to extend broadband service to 548 unserved addressed locations in the county. The project area is located east of Town of Fincastle and west/southwest of the Town of Buchanan and includes the Lithia, Springwood, and Wheatland communities of Botetourt County. Interstate- 81 and Highway 11 traverse the project area on a generally north-south axis. The James River is immediately north of the project area. Currently, private providers deliver fiber, cable and DSL connectivity to areas immediately north, south, and west of the project area but not within the project area. The co-applicants are providing a nearly dollar-for-dollar match of \$1,254,000, for a total project budget of \$2,618,337. The private provider match of \$850,000 is 32% of the total project budget and the locality's match of \$404,000 is 15% of the total project cost. The project includes the construction of fifty-nine (59) miles of fiber conduit and aerial lines to deliver Fiber-to-the-Home and the construction cost per mile is \$44,379, which is a competitive cost to construct a new fiber network based on similar projects with similar topography and physical attributes. This VATI proposal is a resubmission of the 2019 proposal for essentially the same project area. In the current VATI proposal, the provider's cash match has increased by \$143,374 or by 20% and the construction cost has been reduced by \$497,227 or by 16% from the 2019 proposal.

## 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:

The project area has been selected by Botetourt County and Lumos Networks because it includes a significant density of unserved addressed locations and has not received any federal funding assistance thus far to expand broadband connectivity. The Botetourt County Broadband Strategy considers the project area within Phase 2 of the county's broadband expansion strategy. The Strategy website may be found at <https://botetourt.maps.arcgis.com/apps/MapJournal/index.html?appid=490fbb2207774bff84bab2ad45d67640>.

The project area is located east of Town of Fincastle and west/southwest of the Town of Buchanan and includes the Lithia, Springwood, and Wheatland communities of Botetourt County. Interstate- 81 and Highway 11 traverse the project area on a generally north-south axis. Cellular use among travelers on the interstate is shown to reduce

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cellular speeds among residents and businesses in the project area. The James River is immediately north of the project area.

The roads included in the project area are:

1. Davis Run Rd, Mt Joy Rd, Prease Rd, Beaver Dam Rd, Black Magic Farm Rd, Connect Rd stopping at Little Timber Ridge and Springwood Rd.
2. Oak Ridge Rd, Route 11 on the North/west side of I-81 to Arch Mill Rd. This sub-area includes Old Hollow Rd, Wheatland Rd, Loope Ln, Goad Rd.
3. Hardbarger Rd and Lithia Rd to Fringer Trail, to just west of Buchanan town limits to Bobletts Gap Rd. This sub-area includes Back Creek Ln, Mountain Valley Rd, Ellis Run Ln, Goode Ln, Hodges Rd, Delong Ln and Walnut Springs Ln.

Currently, residents and businesses within the project area have only wireless and satellite options to connect to the high-speed internet, which still does not ensure acceptable speeds and is generally far more expensive than Fiber to the Home (FTTH) availability.

In 2017, Botetourt County completed a Broadband Telecommunications Survey. The resulting report identified roughly seventy percent of Botetourt households lacked access to broadband. The project area for this VATI proposal is 100% without access to broadband, which also factored into the decision-making to select this project area for broadband expansion. When asked what they used the internet to accomplish, 53% of residential respondents indicated they use the internet for school or job training; roughly 10% indicated for leisure streaming or gaming. Roughly half of residential respondents indicated that a telework option with fast, reliable service is needed. Please keep in mind the 2017 Survey covered the entirety of Botetourt County, not just the project area.

More recently during August 2020, Botetourt County completed an additional survey specifically among residents and businesses in the project area. Of the 548 addressed locations within the project area, 110 locations (or 20%) responded to the survey. Only 5% of respondents reported having an existing landline internet connection. 100% of respondents indicated they would likely sign up for service if this project is constructed. When asked whether Botetourt County and Lumos Networks should work together and seek VATI funding, no respondent objected, also indicating that a price point between \$50 and \$100 is market competitive. Approximately 50% of respondents need broadband-quality access to the internet from home for employment reasons. Twenty-four of the 110 respondents indicated that a lack of high-speed internet access (broadband) would factor into a decision whether to continue residing in the project area.

Of the 548 addressed locations within the project area, there are approximately thirty businesses, many of which are home-based, and approximately 160 locations include residences with school-age children. The Botetourt County Board of Education has provided a letter of support concerning the critical need for service in the project area to meet educational needs. With the current pandemic and the heightened urgency to provide online learning capability, the applicants believe that this project area is deserving of assistance from the Virginia Telecommunications Initiative and respectfully submit this proposal for funding to the Department of Housing & Community Development.

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).

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## Answer:

There are no existing providers providing broadband connectivity in the project area. Verizon does maintain copper landline service in the project area with the potential for limited DSL service. Shentel provides fiber broadband service to the Town of Buchanan immediately to the north of the project area. Comcast provides DSL and cable internet access to the south and west of the project area.

Utilizing the FCC Broadband map and data information, the project area is depicted as having “0” fixed service providers offering greater than 10/1 mbps with Verizon reporting 5/.77 mbps. A diagram from the Federal Communications Commission (FCC) website is provided in the attachments.

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 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:

Lumos Networks accepted ACAM funding in Botetourt County to build networks to the north of the project area along Timber Ridge Road and to the south of the project area along Brughs Mill Road. The project area is outside of Lumos Networks’s local exchange boundaries and is not covered in the awarded ACAM funding. The project area is currently a Verizon local exchange that was previously available for ACAM. A CAF II auction for the project area attracted no bidders and it is newly-eligible for RDOF. Lumos Networks is not participating in this year’s RDOF Program and no other providers are anticipated to pursue RDOF funding for the project area.

The attachments show the federal-funded areas and the RDOF eligible area. The VATI project area is RDOF-eligible; however, Lumos is not anticipating to pursue RDOF funding this year and no other provider has demonstrated willingness to do so.

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:

The August 2020 residents’ survey showed only 5% of survey respondents having a current landline internet connection and there are no other fixed broadband networks serving the project area.

Federal programs have designated the project area as “underserved” according to the 10/1 mbps service level. Utilizing the FCC Broadband map and data information, the project area is depicted as having “0” fixed service providers offering greater than 10/1 mbps with Verizon reporting 5/.77 mbps. A diagram from the Federal Communications Commission (FCC) website is provided under attachment 3.

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

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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:**

The project area includes 548 serviceable units, which currently lack 10 Megabits per second download and 1 Megabits per second upload speeds. Approximately thirty businesses are located within the project area and at least seven churches and an event center. Hoovers data and business license addresses were used to determine the approximate number of businesses. Botetourt County GIS data identified the seven churches. Botetourt County Public Schools information was utilized to identify the number of homes with school-age children. Approximately 160 locations include residences with school-age children. The FCC's 2019 data reported no providers being able to offer 10/1 mbps service and the highest speeds in the targeted area are 5/.77 mbps.

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:**

N/A

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:**

Service Offering: Consumers will have access to Lumos Networks' complete portfolio of symmetrical fiber broadband product profiles. Residential customers may select the best fit for their unique household requirements for work-at-home, learn-at-home, gaming, streaming, or basic Internet applications. All fiber Internet services allow for unlimited broadband data usage consumption, without throttling or data capping, and there are no contracts or term commitments. Discounts are applicable when fiber broadband is bundled with voice or entertainment services. Fiber broadband speed packages are competitively priced as part of a strong value proposition centered on fast, reliable connections and 24/7 local support. Residential fiber broadband prices range from \$44.95 for symmetrical 200/200 mbps broadband service to \$99.95 for symmetrical 1Gig/1Gig service. Business customers may customize pricing by bundling services and other parameters, and may choose fiber broadband profiles up to 8Gig/8Gig symmetrical. Speeds are based on dedicated bandwidth.

The response to Question #8 describes the technology used for this project. Lumos Networks will utilize part of its

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existing fiber infrastructure to extend its redundant fiber network into the project area. Lumos currently provides service utilizing its partnership with Adtran for its Access Networks equipment. Utilizing ERPS ring topology, the solution provides redundant network paths to the access equipment in the field. Lumos utilizes the Adtran TA5000 access platform that provides a multi-solution platform that includes voice, DSL and GPON. For this solution, we will utilize the GPON cards in the access equipment to service the area. Lumos Networks will build 59 miles of fiber to service all the addresses. From the GPON card, Lumos will build fiber to a local convergence point (LCP) and place our splitters in this cabinet which will service up to 32 customers per splitter. From the LCP cabinet towards the customers, we will build distribution fiber out that will be splice in using multiports. The size of the multiports will vary depending on the expected number of homes in the area ranging from 4 up to 12 ports. From the multiport, Lumos will install a single fiber drop to each customer that will be plugged into the fiber Optical Network Terminal (ONT). Majority of Lumos' ONT are indoor and we have capabilities of offering up to 48 hours of battery backup for residential customers. Using this same format of deployment, Lumos Networks currently offers service to over 100,000 addresses that can receive the fiber services and up to 1 GIG speeds.

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:**

Lumos Networks will utilize part of its existing fiber infrastructure to extend its redundant fiber network to the project area. Lumos currently provides service utilizing its partnership with Adtran for its Access Network equipment. Utilizing ERPS ring topology, the solution provides redundant network paths to the access equipment in the field. Lumos utilizes the Adtran TA5000 access platform that provides a multi-solution platform that includes voice, DSL, and Gigabit Passive Optical Networks (GPON).

For this solution, we will utilize the GPON cards in the access equipment to serve the project area. Lumos Networks will build 59 miles of fiber to serve all the addresses. From the GPON card, Lumos will build fiber to a local convergence point (LCP) and place our splitters in this cabinet which will serve up to 32 customers per splitter. From the LCP cabinet to the customers, we will build distribution fiber out that will be spliced using multiports. The size of the multiports will vary depending on the expected number of homes in the area ranging from 4 up to 12 ports. From the multiport, Lumos will install a single fiber drop to each customer that will be plugged into the fiber Optical Network Terminal (ONT). The majority of Lumos's ONTs are indoor and we have capabilities of offering up to 48 hours of battery backup for residential customers. Using this same format of deployment, Lumos Networks currently offers service to over 100,000 addresses that can receive the fiber services and up to 1 GIG speeds.

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

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– Timeline/Project Management Plan; Attachment 7 – MOU/MOA between Applicant/Co-Applicant.

**Answer:**

The project area has passed initial engineering reviews and financial commitments within Lumos Networks and Botetourt County has provided its letter of funding commitment. Final design is pending funding award. In the Excel attachments, the timeline and project management plan is included that lays out all the major task, staffing, start and completion dates.

The Memorandum of Agreement between Lumos Networks and Botetourt County is drafted and ready for approval pending a favorable VATI decision.

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 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:**

Total Project cost \$2,618,337 (100%)

Lumos Networks \$850,000 (32%)

Botetourt County \$404,000 (15%)

VATI Grant \$1,368,337 (52%)

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

**Answer:**

Lumos Networks will be utilizing part of its existing hardware and fiber infrastructure in Botetourt County to benefit the project area. The core network equipment that provides Layer 3 and 2 processing will be used to support the added customers and bandwidth from this fiber expansion. The resources from the Fincastle Point of Presence (POP) will be extended including part of the Adtran Access equipment and the fiber infrastructure. Fiber will be expanded from Springwood Road area that has built to add capacity for future expansions reducing about 3 miles of fiber builds that would have been needed if this was not already complete.

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

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utilize broadband. Please list any partnering organizations for digital literacy, such as the local library or cooperative extension office.

**Answer:**

Lumos Networks will employ a robust marketing communications program designed to inform, educate, and promote fiber services to potential customers. Various marketing instruments create integrated marketing campaigns that communicate at various touchpoints before, during, and after fiber Internet services become available. Elements integrated marketing campaigns utilize printed and digital assets to drive the greatest opportunity for acceptance, and are supplemented with traditional marketing programs that include press releases, social media marketing, direct mail, broadcast, out of home, and print communication.

## Pre-Construction Neighborhood Activation Activities

- Letters, post cards, street teams and a digital assets communicate multiple times with applicable addresses within a new fiber available service area. The communications educate and inform consumers on the benefits of fiber technology, and transition to promotional offers as we bring the “Network of the Future” to their respective neighborhoods.

## Communication

Primary Purpose – Educate, Inform, and Promote

Initial Correspondence Letter

Makes the introduction of the brand and the project

Door Hanger

Creates awareness of construction activity, and presents an opportunity for gathering email addresses for future marketing communications

Email, landing pages or special areas on website

Digital communications to ensure reach, information, and capture interest

Construction Crew Handout

Create awareness in field, and direct users where to find more information

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## Outbound Campaigns

Calling potential users to inform and promote

Construction Direct Mail

Reminder communication of construction

Press Release & Social Media Marketing

Announce, inform, educate, and promote

## Post-Construction Neighborhood Activation Activities

- After fiber construction is complete in a new neighborhood, communication efforts transition to integrated marketing outreach programs. Similar tactics may be used to attract both consumer and business prospects, and messaging can be tailored to include area specific offers or special promotions. Communications are supported by a comprehensive digital presence and mobile-friendly website that showcases company, product, and technology information.

Communication	Primary Purpose – Acquisition of new customers
Email	Digital communications which can be customized
Direct mail	Creates visual communication
Blog, Testimonial and Social Media Strategy	Blogs or feature stories promote the use of broadband in a digital environment
Street teams	Communication of special offers in specific areas
Outbound Sales	Calling campaigns
Events/Sponsorships/OOH/Broadcast Advertising	Advertising and an array of community and event sponsorships

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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:**

Diego Anderson is Senior Vice President and General Manager for the Lumos Networks and NorthState business units, both divisions of Segra. Originally from South Carolina, Diego earned his B.S. in Electrical Engineering Technology from South Carolina State, a Masters in Administration from Central Michigan University, and a Masters in the Management of Information Technology from University of Virginia, McIntire School of Commerce. He has more than 25 years of telecom experience in various business management and executive leadership roles.

Kristy Stone is Vice President of Care and Service Delivery and leads the teams responsible for customer service and technical support, as well as service delivery for Lumos Networks and NorthState. Originally from North Carolina, Kristy holds B.A. in Accounting and Economics, and a MBA Eq. from Gardner Webb College and ATT University. Kristy has 30 years of telecom experience and various craft and management roles in more than 22 states. She is certified by Satmetrix in Net Promoter Score and is a Six Sigma green belt.

David Smith is Vice President of Technical Operations and Planning for Lumos Networks and NorthState. He leads network and field operations, engineering, outside plant, and project management teams. Originally from Covington, VA, David holds a B.S. in Information Systems Management from Bridgewater College, and a MBA from Averett University. He has more than 12 years of experience in Information Technology and Telecommunications and has held a variety of business management leadership roles.

Rob Cale is Senior Director of Marketing for Lumos Networks and NorthState, leading the marketing communications and customer experience teams. He is originally from Waynesboro, VA, and holds a B.S. in Business Marketing from Radford University. Rob's 30+ years of business experience has included leadership roles within marketing, product management, and branding.

Jack Smith is Director of Product Development and leads product lifecycle management and market analytics teams for Lumos Networks and NorthState. Jack is originally from Columbia, SC and holds a B.A. in Political Science and a M.B.A in Marketing from Wake Forest University. He has 25+ years of leadership experience in product management and marketing.

Heidi Padgett is Director of Sales, Community Services, and leads the organization in supporting new sales opportunities across residential and business segments throughout the Lumos Networks and NorthState service areas. Heidi is originally from Bedford, VA, and has more than 20 years of telecom industry experience in various customer support and sales leadership roles.

Ken McFadyen is Botetourt County's Director of Economic Development and is responsible for general grant administration. Mr. McFadyen has twenty years experience in local government management and economic development, having served as a town manager, assistant county manager, and executive director of a regional economic development authority. In 2018, Mr. McFadyen served as president of the Virginia Economic

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Developers Association (VEDA). The Botetourt County Economic Development Authority will serve as the fiscal agent on behalf of the Botetourt County Board of Supervisors as the grant recipient. Mr. McFadyen will present grant disbursement requests to the EDA and recommend approvals when warranted and coordinate construction progress with Lumos Networks.

Jennifer Eddy is an international award-winning marketing strategist, Forbes contributor, and frequent industry speaker specialized in marketing, growth strategy and reputation management. Eddy has managed reseller channels, product and service campaigns, lead generation initiatives, and brand hierarchies for a long list of globally-recognized brands including 3M, Accenture, Adobe, Asus, Autodesk, BearingPoint, Deloitte, Genpact, Google, IronKey, Oracle, Quest Software, Red Hat, Johns Hopkins, Virginia Tech, and many more. Ms. Eddy will support promotion of the project in coordination with Lumos and with the County from the standpoint of press releases and customer mailings information affected residents and businesses of the project and the details.

## 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:**

The total project budget is \$2,618,337 and comprises \$98,854 (3.7%) for engineering and drafting, \$414,225 (15.8%) for pole application fees and crossings, and \$2,105,258 (80.4%) for actual construction. The project area has been broken out into three, contiguous subregions to manage the respective phases of the design and construction. The additional attachments include Excel spreadsheets that provide an abundance of detail on labor costs (by type, cost and hours), materials needed, specific permit costs, and related details. Each of these spreadsheets include mapping of the construction and specific addressed locations being served. These three subregions are identified according to roads within the subregion: Hardbarger, Oak Ridge, and Wheatland.

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:**

1. Total VATI funding request \$1,368,337
2. Number of serviceable units 548
3. Highest residential speed available in proposed project area 5/0.77 MBPS
  1. State share of total project cost: 52.3%

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2. State share of the cost per unit passed: \$2,496
3. Internet speed: Up to 1000/1000 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:

- a. Botetourt County completed a Telecommunications Survey in 2017 that identified areas within the county of greatest need for connectivity. Generally, the southern area of the county closest to Roanoke has better connectivity but not universal coverage. The northern area of the county has the least connectivity and is the focus of this VATI proposal in relation to other northern areas that have received federal funding or eligibility. In 2018-19, Botetourt County completed a Broadband Expansion Strategy, which identifies the VATI project area included in Phase 2 of the strategy. This VATI proposal seeks to serve 548 of the 1,038 locations including 73 businesses left unserved in this specific subregion of the county. It is important to review the strategy which can only be found online at <https://botetourt.maps.arcgis.com/apps/MapJournal/index.html?appid=490fbb2207774bff84bab2ad45d67640>. The information in the online strategy flows very well and is a wealth of information regarding the needs assessment for greater connectivity in Botetourt and substantiates the decision-making that Lumos and Botetourt County have undertaken to arrive at seeking to secure VATI funding for this specific project area. The online strategy spells out how the county is pursuing projects and priorities to attain universal coverage of broadband to each of the approximately 15,000 residences in the county.
- b. The project area is predominantly a residential area with about 10 businesses located along Hwy 11 and Exit 162 of Interstate-81. An important point to remember is that there are approximately 160 households in the project area that have school-age children who have essentially no high-speed internet connection at this time.
- d. Botetourt County strives to provide digital literacy programs through its libraries. These programs include: In person technology classes with laptop lab; in-person one-on-one tutoring appointments in technology skills with a librarian, including mobile devices; phone help with technology skills; personal online tutorials and resources; and use of public computers, printers, scanners, and copiers with staff ready to assist at any time. Due to the pandemic, many of these programs have shifted virtually. Botetourt County also recognizes the need for digital equity and provides free, 24/7 wi-fi for all residents within the parking lots of Botetourt libraries and schools. The amount of

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users per day has dropped during the pandemic due to many residents buying internet service for their homes for the first time.

## 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
- e. Attachment 17 – XXXXXXXX

### Answer:

The additional attachments include detailed project information beyond the derivation of costs and includes details regarding labor costs (by type, cost and hours), materials needed, specific permit costs, and related details. Each of these spreadsheets include mapping of the construction and specific addressed locations being served. These three subregions are identified according to roads within the subregion: Hardbarger, Oak Ridge, and Wheatland.

Botetourt County and Lumos Networks appreciates the opportunity to submit this VATI proposal. The project is ready to go to construction with a favorable funding decision from Governor Northam and the Department of Housing & Community Development. We understand the complexity of the decision-making that must occur in making these grant funding decisions and stand ready to provide any additional information that is needed to allow for this project to advance.

Thank you for your time and consideration.

### Attachments:

Map(s) of project area, including proposed infrastructure

BotetourtVATIProjectAreaMap817202050613.pdf

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

BotetourtVATIMapFederalFundingAreas817202044722.pdf

Documentation that proposed project area is unserved based on VATI criteria

BotetourtVATIProjectAreaUnserved817202051718.pdf

# Application to DHCD Submitted through CAMS

Botetourt County

FY 21 Botetourt County/ LUMOS Networks Fiber Expansion

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Passings Form (Please use template provided)

BotetourtVATIPassingForm817202055255.pdf

Timeline/Project Management Plan

BotetourtVATITimelineProjectManagement817202054518.pdf

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

LUMOSBotetourt2020DraftLocalAgreement817202042723.pdf

Funding Sources Table

BotetourtVATIFundingSourcesTable817202033055817202052117.pdf

Documentation for match funding

BotetourtVATIMatchFundingDocumentation817202052440.pdf

Letters of Support

BotetourtBdofEducVATIGrantSupport817202042155.pdf

Derivation of Cost (Project Budget)

BotetourtVATIDerivationofCostProjectBudget817202052857.pdf

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

BotetourtVATICostSupportingDetail817202053437.pdf

Two most recent Form 477 submitted to FCC

FCC477LumosNetworks817202033150.pdf

Optional

VATIGRANTOAKRIDGERDCost817202034253.xlsx

Optional

VATIGRANTHARDBARGERLITHIACost817202034304.xlsx

# Application to DHCD Submitted through CAMS

Botetourt County

FY 21 Botetourt County/ LUMOS Networks Fiber Expansion

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Optional

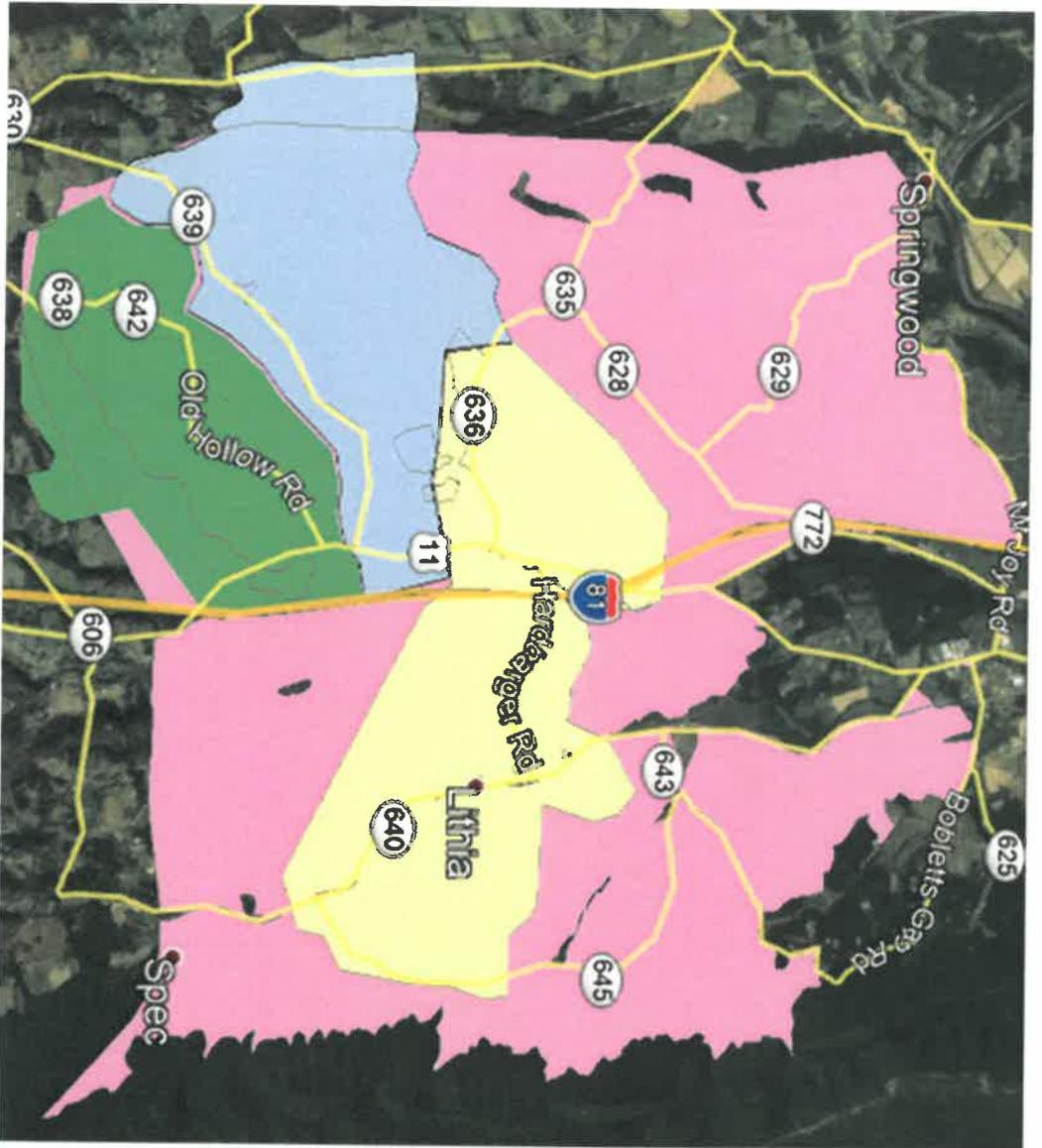
VATIGRANTWHEATLANDRDCost817202034312.xlsx

Optional

2017BotetourtTelecommunicationsSurveyDigital817202034321.pdf

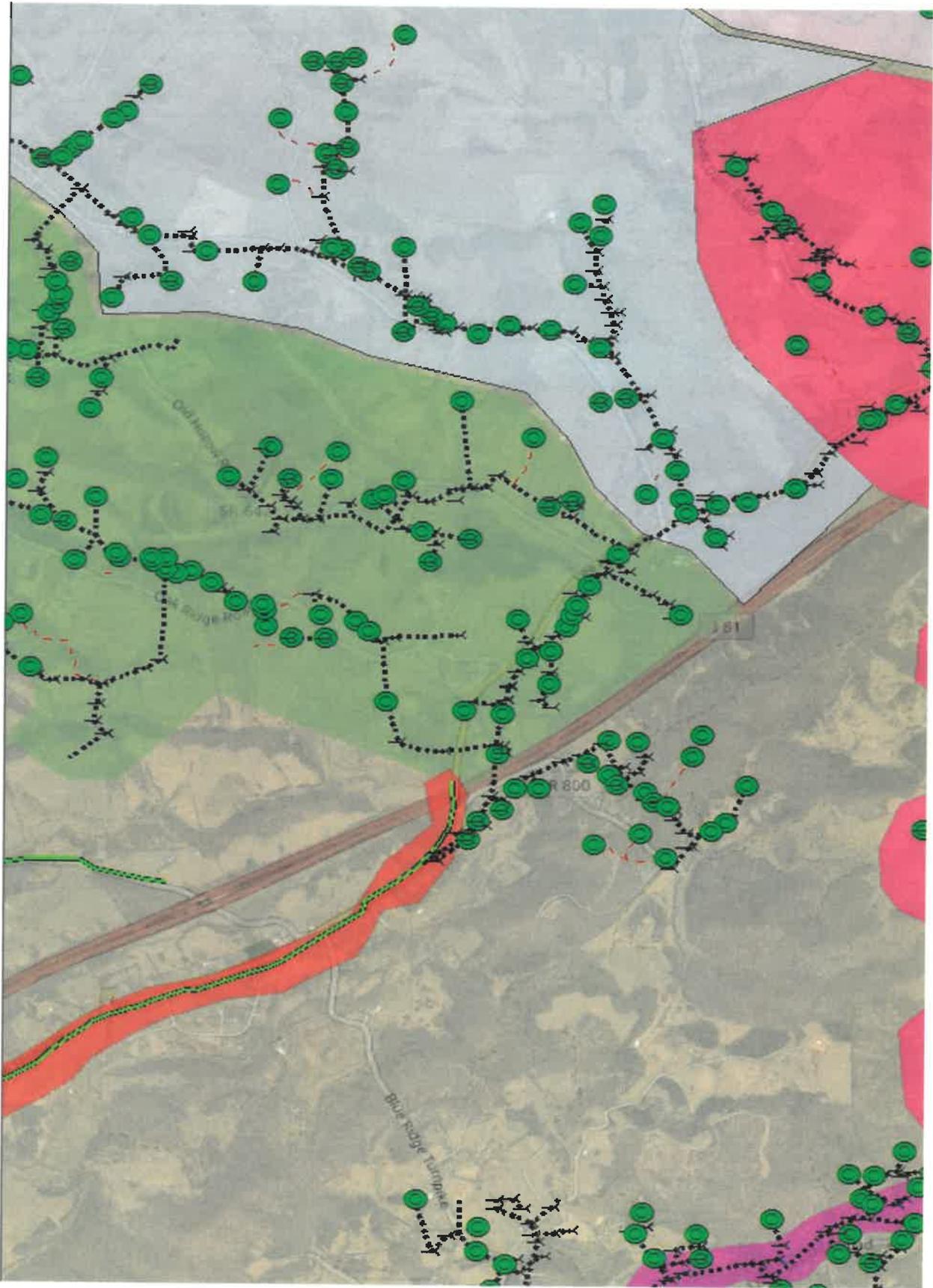
**FY 21 Botetourt County/ LUMOS Networks Fiber Expansion  
DHCD CAMS Application # 75707272020130157**

**Attachment: Map of project area, including proposed infrastructure**

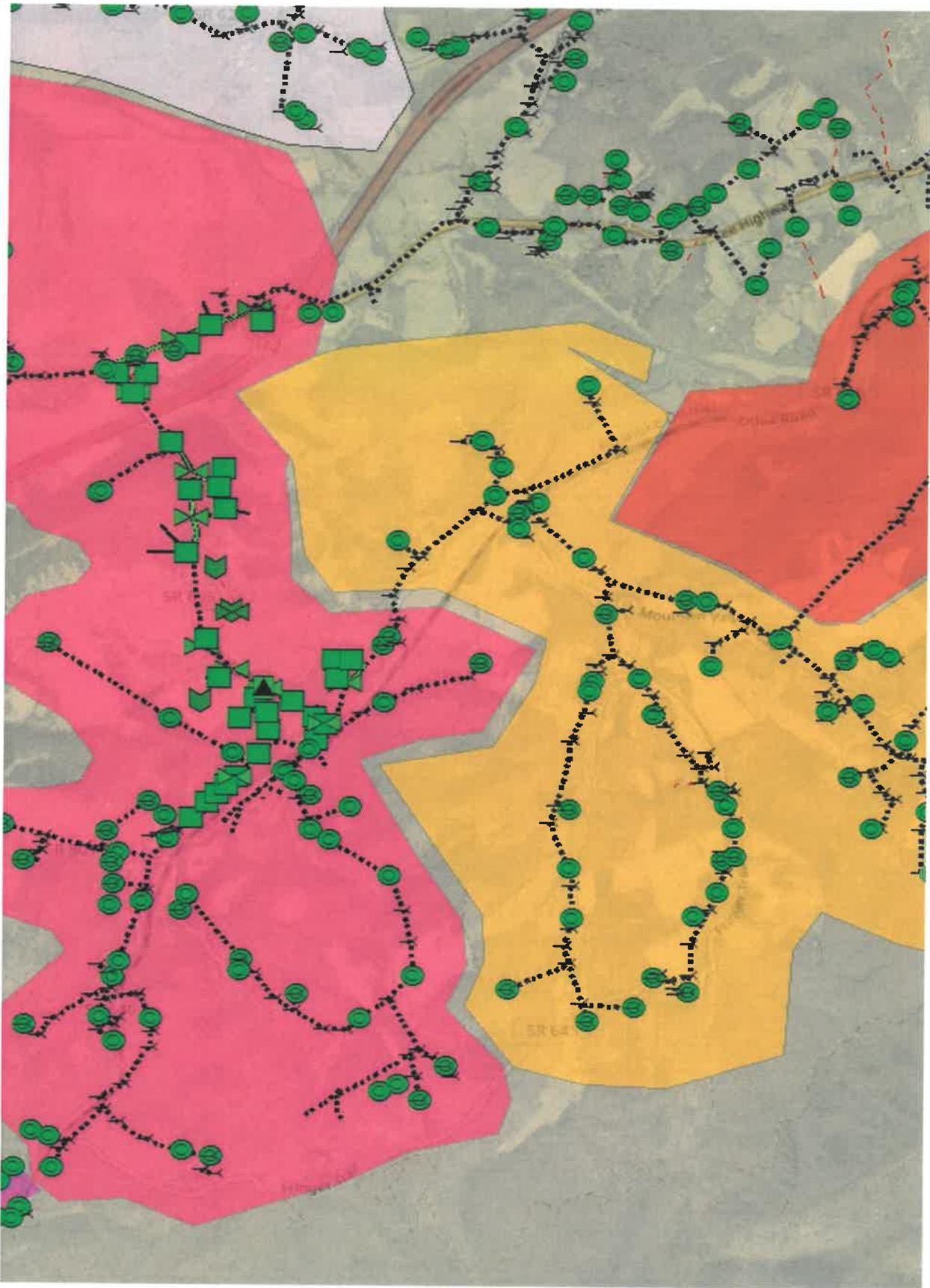


## Legend

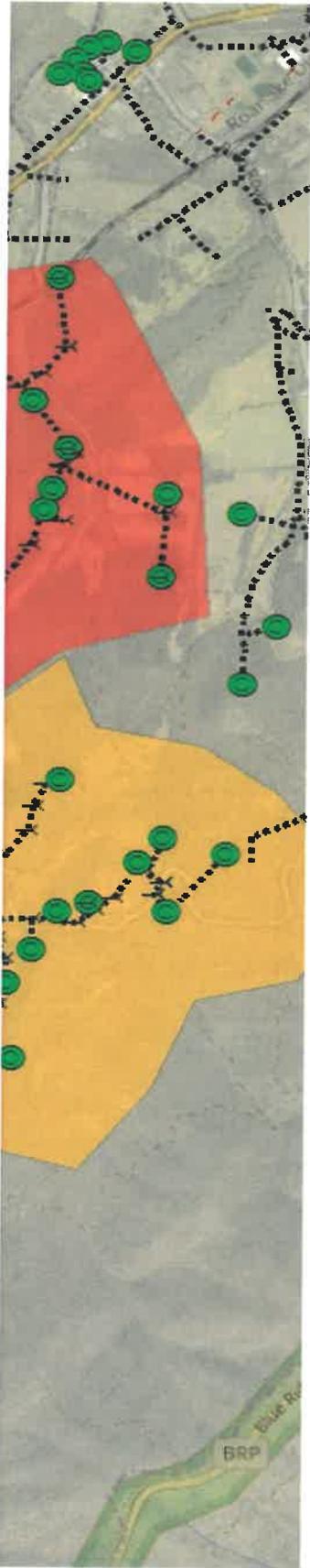
- Purple = RDOF
- Yellow = VATI Hardbarger
- Blue = VATI Wheatland
- Green = VATI Oak Ridge



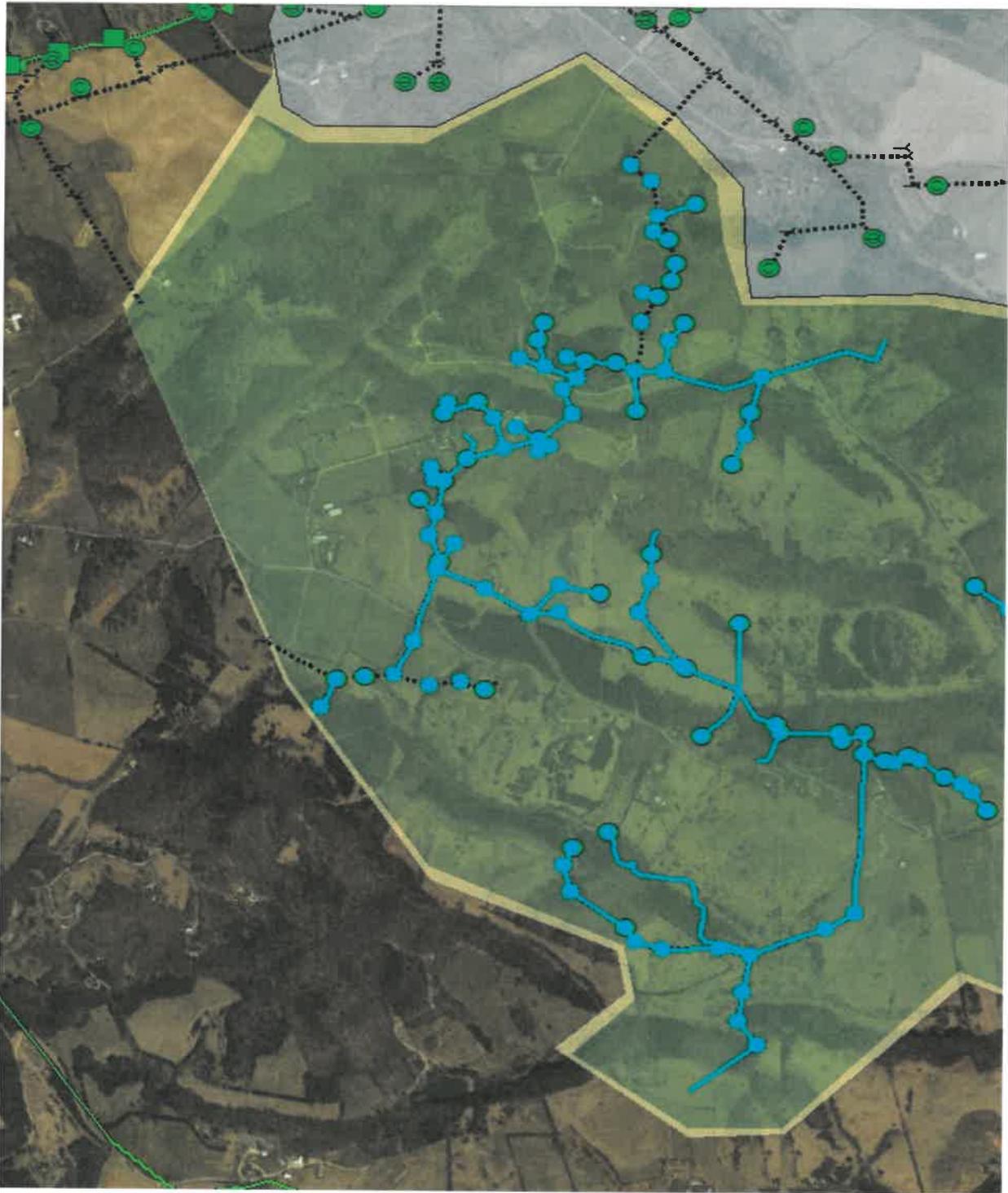
Hardbarger



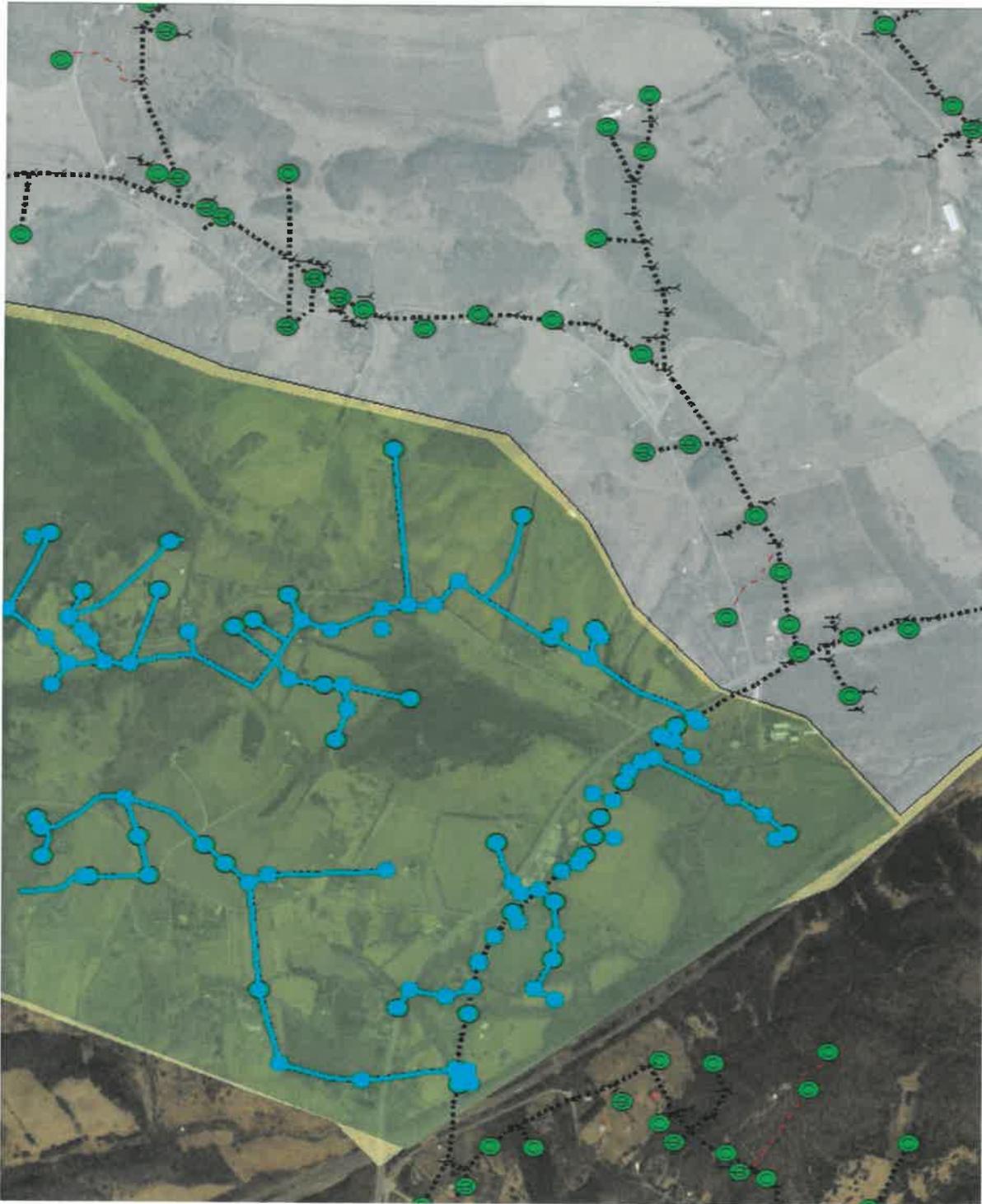
Hardbarger



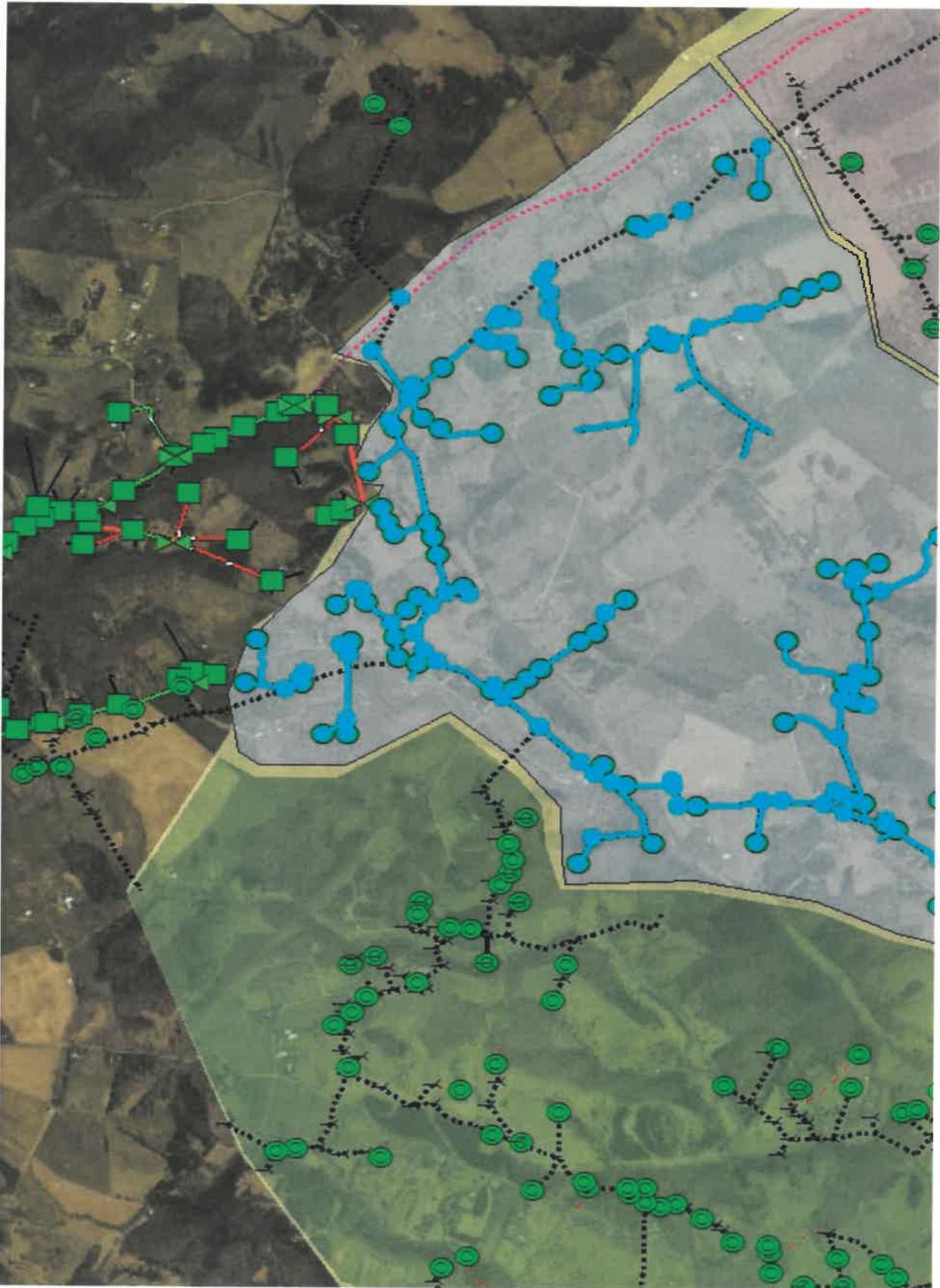
# Oak Ridge



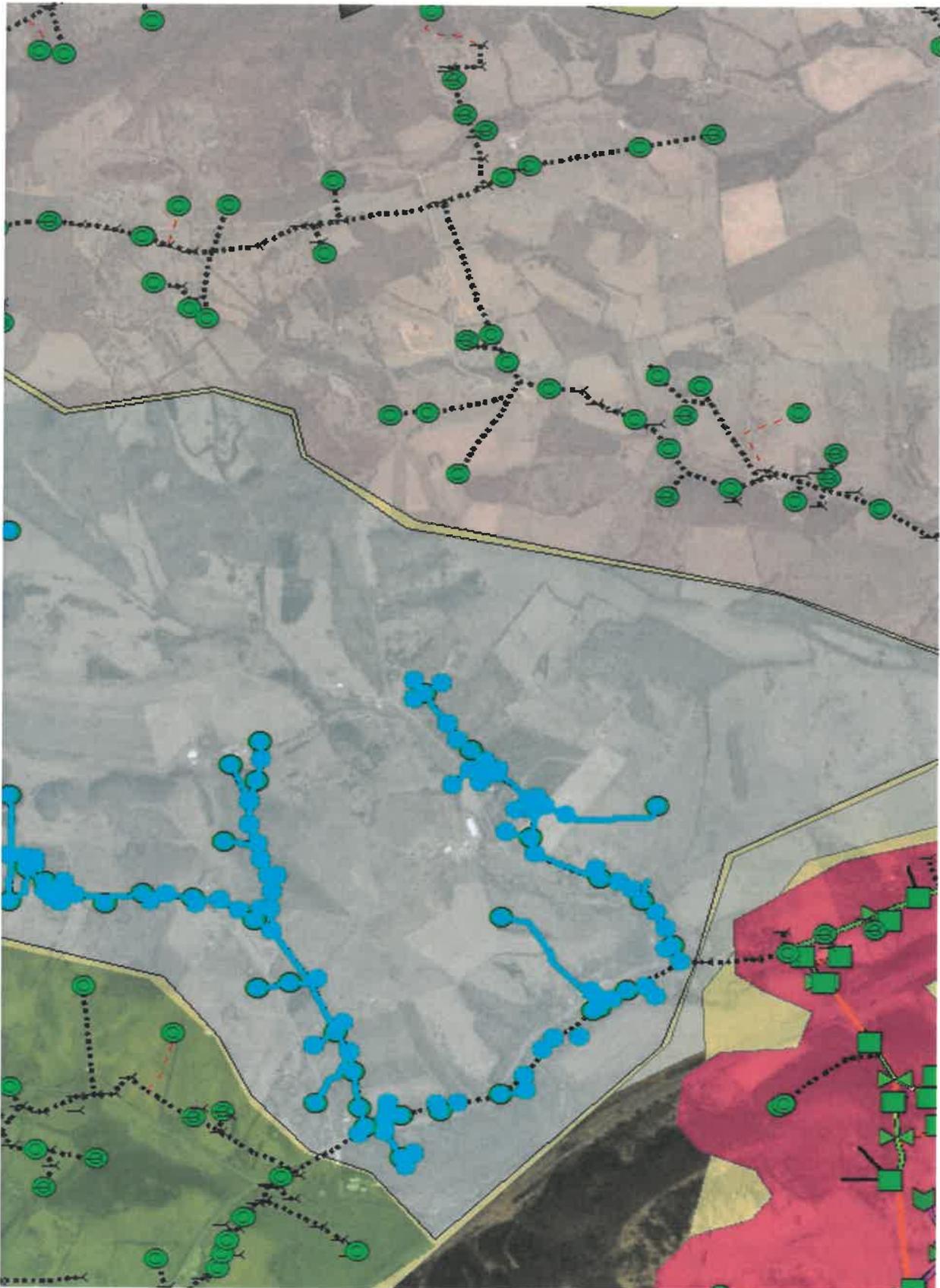
# Oak Ridge



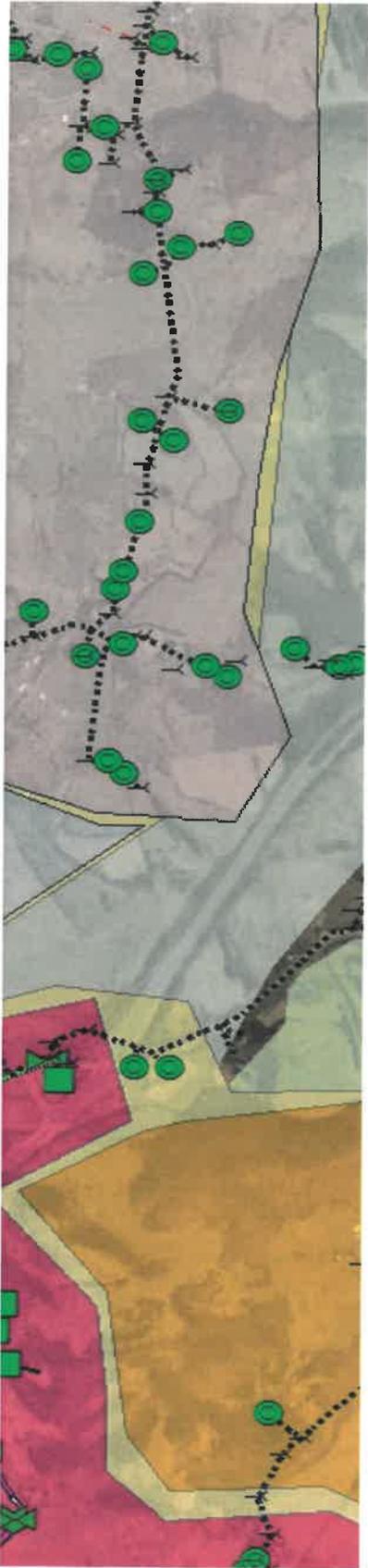
# Wheatland



# Wheatland



Wheatland



## **Attachment 2**

**FY 21 Botetourt County/ LUMOS Networks Fiber Expansion**

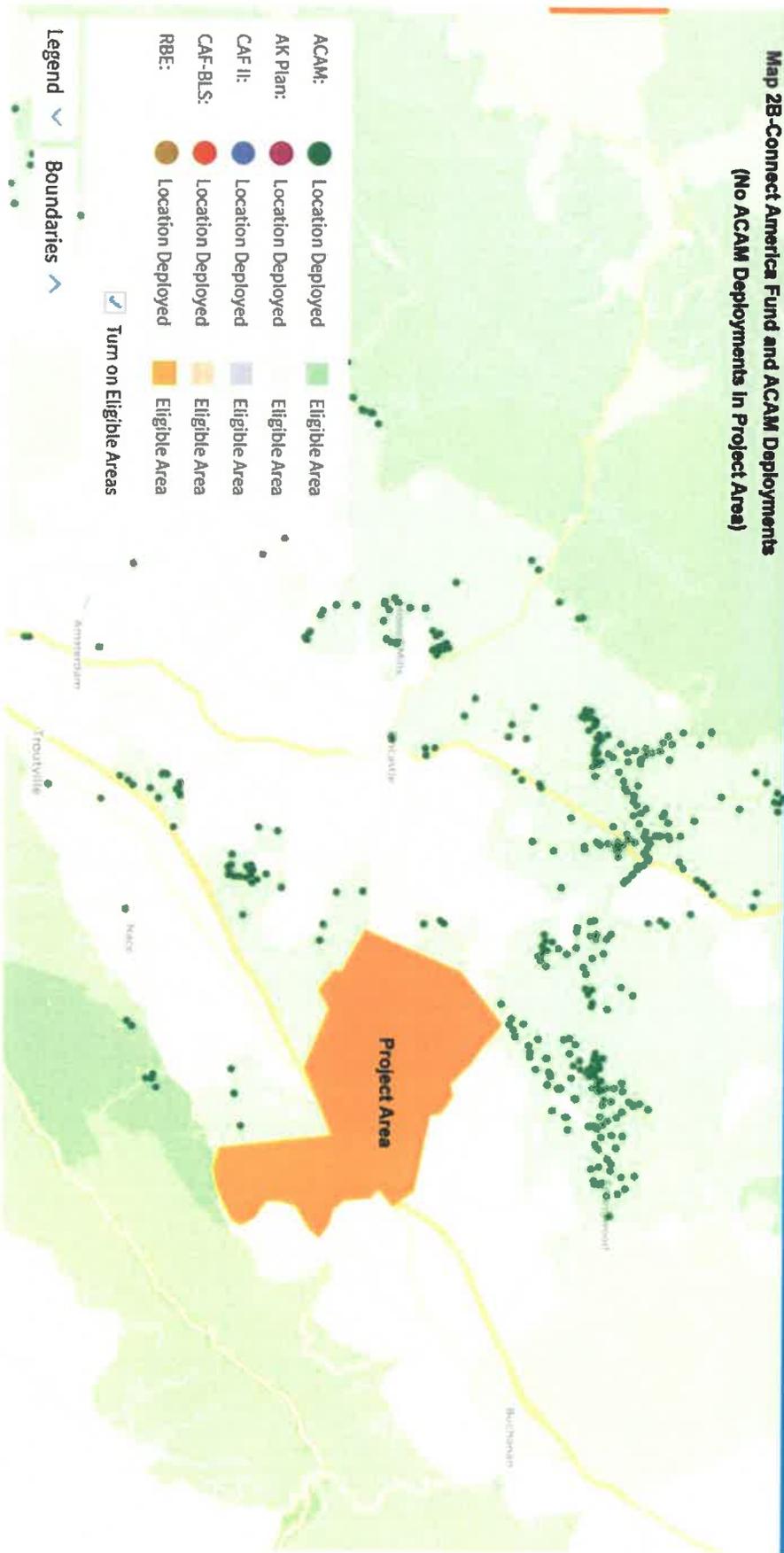
**DHCD CAMS Application # 75707272020130157**

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

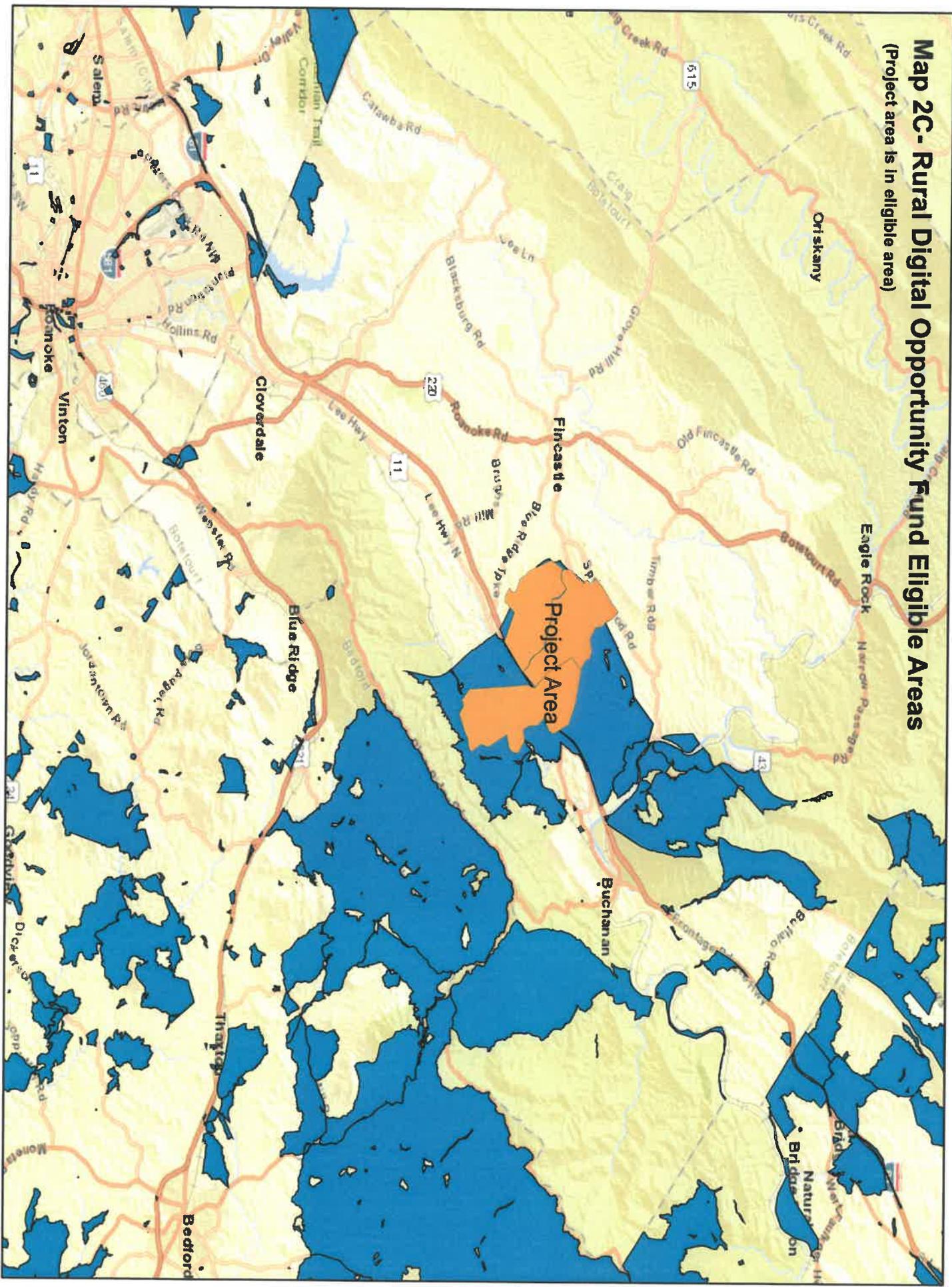


# Connect America Fund Broadband Map

Map 2B-Connect America Fund and ACAM Deployments  
(No ACAM Deployments in Project Area)



# Map 2C - Rural Digital Opportunity Fund Eligible Areas (Project area is in eligible area)



**FY 21 Botetourt County/ LUMOS Networks Fiber Expansion**  
**DHCD CAMS Application # 75707272020130157**

**Attachment: Documentation that proposed project area is unserved  
based on VATI criteria**



Coordinates ▾

37.48258:



All Providers Reporting Service



Census block ID: 510230402003076

Number of Fixed Residential Broadband Providers



Broadband

Technology ADSL, Cable, Fiber, Fixed Wireless, Other

Speed ≥ 10/1 Mbps

Date June 2019 fastest quarter release

Provider	Tech	Down	Up
Viasat Inc.	Satellite	35	3
Hughes Network Systems, LLC	Satellite	25	3
Verizon Communications Inc.	ADSL	5	0.768

## 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
<b>Residential</b>	511	511
<b>Businesses (non-home based)</b>	~10	~10
<b>Businesses (home-based)</b>	~20	~20
<b>Community Anchors</b>	0	0
<b>Non-residential</b>	7	7
<b>Total Number of Passings</b>	548	548

*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 6**

**FY 21 Botetourt County/ LUMOS Networks Fiber Expansion**

**DHCD CAMS Application # 75707272020130157**

**Timeline/Project Management Plan**



**Attachment 7**

**FY 21 Botetourt County/ LUMOS Networks Fiber Expansion**

**DHCD CAMS Application # 75707272020130157**

**MOU/MOA between applicant/co-applicant (Draft)**

**ECONOMIC DEVELOPMENT GRANT AGREEMENT (Draft)**

THIS AGREEMENT ("Agreement") is entered as of this \_\_\_\_ day of \_\_\_\_\_, 2021, by and between BOTETOURT COUNTY, VIRGINIA, a political subdivision of the Commonwealth of Virginia (the "County"), the ECONOMIC DEVELOPMENT AUTHORITY OF BOTETOURT COUNTY, VIRGINIA, a political subdivision of the Commonwealth of Virginia (the "Authority"), and the LUMOS Telephone Incorporated, a telecommunication provider ("Lumos"), each a "Party" and collectively the "Parties." For their Agreement, the Parties state:

**Recitals:**

WHEREAS, the County is a political subdivision of the Commonwealth of Virginia, authorized to provide funds to the Authority under Sections 15.2-953 and 15.2-1205 of the Code of Virginia, 1950, as amended, for the purposes of the Authority; and

WHEREAS, the Authority is a political subdivision of the Commonwealth of Virginia, authorized to make grants for the purposes of promoting industry, developing trade, and inducing manufacturing, industrial, governmental, nonprofit and commercial enterprises and institutions to locate, remain, or expand facilities in the Commonwealth, under Section 15.2-4905 of the Code of Virginia, 1950, as amended; and

WHEREAS, LUMOS is a telecommunications provider, authorized by the Utility Consumer Services Cooperative Act, Sections 56-231.15 et seq., of the Code of Virginia, 1950, as amended, to provide telecommunications services; and

WHEREAS, LUMOS anticipates making an investment of not less than \$850,000 in cash and in-kind services to the project; and

WHEREAS, the County, in collaboration with LUMOS, submitted an application for grant funding to the Virginia Department of Housing and Community Development (DHCD) Virginia Telecommunications Initiative (VATI), to fund a telecommunications extension project to certain unserved and underserved areas of Botetourt County, Virginia, for the purposes of economic development and expansion of the County's tax base; and

WHEREAS, DHCD has awarded to Botetourt County a VATI Grant in the amount of \$ \_\_\_\_\_, to be used for the Project; and

WHEREAS, the County wishes to make certain funds available to the Authority, and the Authority wishes to make a grant to LUMOS, for the purposes of incentivizing LUMOS to expand its facilities in Botetourt County, increase jobs and employment, and otherwise expand the tax base of the County, including \$400,000 in local grants and acting as a conduit for \$ \_\_\_\_\_ in VATI Grant funds; and

WHEREAS, the stimulation of additional tax revenue and economic activity to be generated by the Project, new jobs, and retention of existing jobs, constitutes a valid public purpose for the expenditure of public funds and is the animating purpose for this Grant.

**Witnesseth**

NOW THEREFORE, in consideration of the foregoing premises, the mutual benefits, promises, and undertakings of the parties to this Agreement as set forth below, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties covenant and agree as follows:

**I. Definitions & Incorporations by Reference.**

For the purposes of this Agreement, the following terms shall have the following definitions, unless the context or manifest purpose of this Agreement indicate otherwise:

*Capital Investment* means a capital expenditure by LUMOS as set forth in the Grant Agreement. The total expected Capital Investment is not less than \$2,618,337 and approximately \$20,000 in fees (to be waived by the County as part of the Grant).

*Performance Date* means [DATE from VATI contract].

*Project* means that project contemplated by the Grant Agreement and substantially as set forth in the Grant Application.

*Targets* means the LUMOS's obligation pursuant to this Agreement to make Capital Investments at the Facility of at least \$2,618,337 as of the Performance Date. The Company shall also, as of the Performance Date, provided documentation of (1) the number of takes and the take rate; and (2) the speeds achieved by the Project.

This Agreement incorporates by reference the following documents, which may be referred to as follows:

*Grant Application* means the *Application to DHCD Submitted through CAMS*, Application ID 75707272020130157, dated August 17, 2020, and all exhibits thereto.

*Grant Agreement* between the Virginia Department of Housing and Community Development and the County, dated \_\_\_\_\_, \_\_\_\_\_, for the Project.

**II. Targets.**

LUMOS will construct and operate the Project in the County and make a Capital Investment of not less than \$2,618,337 as of the Performance Date. In its application for the VATI Grant, the County represented, based upon LUMOS's representation to it, that this would result in 548 passes of unserved addresses, with an estimated take rate of 60%, or 329 addresses. LUMOS must diligently use its best efforts for community outreach and marketing the services. The County and the Authority will use their best efforts, consistent with all provisions of law, to assist LUMOS in meeting these goals. The Parties understand, however, that the number of customers who choose to subscribe is beyond the Parties' control and is expressly not an item of consideration for this Grant.

**III. Grant.**

The County will provide the funds to the Authority for the purpose of making the Grant as set forth herein. LUMOS will use the Grant proceeds as reimbursement of expenses related to construction of the Project, which expenses may include permit fees charged by the County and

paid by the Company for the Project. The total amount of the Grant, including both state funds and local match, shall be \$ \_\_\_\_\_, broken down as follows:

Pass-through VATI Grant from DHCD:	\$ _____
EDA Economic Development Grant:	\$400,000
County Fee Waivers:	\$20,000

Grants shall be made not more frequently than monthly upon LUMOS's submission to the Authority and the County of detailed invoices verifying expenditure of funds and delivery of goods, services, or construction work in furtherance of the Project. For each invoice, the Authority will issue a grant payment of 90% of the face amount of each invoice, until it has reached the maximum cash match of \$ \_\_\_\_\_, less 10% (\$ \_\_\_\_\_). If LUMOS meets its Targets on or before the Performance Date, the Authority will disburse a final payment of \$ \_\_\_\_\_.

In the event the above grants are not made due to an event of non-appropriation or otherwise, the Company's obligations for performance under this Agreement shall be void and of no force and effect.

#### **IV. Reporting.**

LUMOS shall provide, at its own expense, detailed verification reasonably satisfactory to the County and the Authority of its progress on the Targets in aid of the County's reporting requirements to DHCD. Such progress reports will be provided monthly upon request. For the purposes of verifying the accuracy of reports, and for no other purpose, the Company hereby waives its protections under Section 58.1-3 of the Code of Virginia, 1950, as amended, and authorizes the Commissioner of the Revenue for Botetourt County, Virginia, to provide verification to the County and the Authority from his records; provided, however, that such disclosure shall not waive the protections of § 58.1-3 as to any other person, nor authorize the County or the Authority to disclose such information to any other person other than DHCD. Further, LUMOS grants the County and the Authority the right to inspect any site at which work on the Project is or has been carried on during the term of this Agreement in order to verify work for which an invoice has been submitted.

DHCD, in furtherance of the VATI Grant, will conduct an Intermediate and Final Compliance Review. The LUMOS must make all records available upon DHCD's request. LUMOS shall retain financial records, supporting documents, statistical records, and all other records pertinent to the VATI Grant for a period of no less than five years from the date of submission of the final expenditure report. When applicable, all contractors and the County shall comply with the Virginia Public Procurement Act (§ 2.2-4300 et seq. of the Code of Virginia, 1950, as amended). DHCD also anticipates receiving the following reports from the County and LUMOS:

- a. Monthly progress reports, to be submitted not later than the 15<sup>th</sup> day of each month. The reports must document VATI Grant and non-Grant funds obligated and expended to date and the actions taken on key deliverables, including but not limited to construction status, numbers of passings of serviceable units, and number of subscribers.

- b. Final project progress report, to be submitted not later than \_\_\_\_\_ [should match Performance Date + 15 days], detailing total VATI Grant and non-Grant funds expended and the actions taken on key deliverables.
- c. Post-closeout report on subscribers at six (6) months and one (1) year from the Performance date.

LUMOS will assist the County with providing the detailed verification information required by DHCD and uploading this information into CAMS.

LUMOS and County staff should meet on a regular basis, not less frequently than monthly, in order to discuss progress on the Project and ensure positive communications. The meeting may be carried out by telephone or canceled if no significant matters are necessary for discussion in a particular month.

**V. Notices.**

Any notices required or permitted to be given under this Agreement shall be given in writing, and shall be deemed to be received upon receipt or refusal after mailing of same in the United States by First-Class U.S. Mail, certified, postage prepaid, or by customary commercial overnight courier (refusal shall mean return of certified mail or overnight courier package not accepted by addressee):

If to LUMOS, to:

LUMOS NETWORKS  
 1 Lumos Plaza  
 Waynesboro, Va 22980  
 Attn: Diego Anderson, SVP/GM

With a copy to:

Lumos Networks  
 1900 Roanoke Road  
 Daleville, VA 24083  
 Attn: David Smith, VP Technical OPS  
 With a copy to:

If to the Authority, to:

ECONOMIC DEVELOPMENT  
 AUTHORITY OF BOTETOURT COUNTY,  
 VIRGINIA  
 One West Main Street, #1  
 Fincastle, Virginia 24090  
 Attn: John Kilby, Chair

AUTHORITY COUNSEL  
 Spilman, Thomas & Battle, PLLC  
 310 First Street, Suite 1100 (ZIP 24011)  
 P.O. Box 90  
 Roanoke, Virginia, 24002-0090  
 Attn: F.B. Webster Day, Esq.

If to the County, to:

BOTETOURT COUNTY, VIRGINIA  
 One West Main Street, #1  
 Fincastle, Virginia 24090  
 Attn: Gary P. Larrowe, County Administrator

With a copy to:

COUNTY ATTORNEY  
 Gynn, Waddell, Carroll & Lockaby, P.C.  
 415 South College Ave.  
 Salem, Virginia 24153  
 Attn: Michael W.S. Lockaby, Esq.

The addresses set forth in this section only may be amended by sending written notice to all other parties of a change of address, without need of signed amendment to this Agreement.

## **VI. Miscellaneous.**

*Indemnity.* The Company agrees to indemnify and hold harmless the Authority, the County, and their officers, directors, and employees free and harmless for and from any and all claims, causes of action, damages or any liability of any type, including reasonable attorney's fees, on account of any claims by or any injury or damage to any persons or property growing out of or directly or indirectly resulting or arising in any way out of any actions, omissions or activities of the Company or its agents, employees or representatives arising out of or connected in any way to any of the matters involved in this Agreement or its performance.

*Integration.* This Agreement, including the exhibits hereto, constitutes the full and complete agreement of the Parties respecting its subject matter, and any prior or contemporaneous agreements or understandings, written or oral, are hereby merged into and superseded by the provisions of this Agreement. This Agreement may only be amended or supplemented by a subsequent writing of equal dignity except where expressly set forth herein. This Agreement may not be assigned by a Party without the prior written consent of the other Parties.

*No covenants of officials.* No covenant, agreement or obligation contained in this Agreement shall be deemed to be a covenant, agreement or obligation of any present or future director, officer, employee or agent of the Authority or the County in his or her individual capacity, and neither County officials nor the directors of the Authority nor any officer, employee or agent thereof executing this Agreement or any related instrument shall be liable personally on this Agreement or such instrument or be subject to any personal liability or accountability by reason of the execution and delivery thereof. No director, officer, employee or agent of the Authority or the County shall incur any personal liability with respect to any other action taken by him or her pursuant to this Agreement or the Industrial Development and Revenue Bond Act or any of the transactions contemplated hereby or thereby, provided he acts in good faith.

*Not a pledge of full faith and credit.* Any obligation of the County to pay, set aside, or otherwise appropriate funds for performance of this Agreement shall be construed to be subject to appropriation, and shall not be construed to be in derogation of Article VII § 10 of the Virginia Constitution. THE OBLIGATIONS OF THE AUTHORITY UNDER THIS AGREEMENT, AND THE OBLIGATIONS OF THE COUNTY RELATING TO PASSING THROUGH VATI GRANT FUNDS, ARE NOT GENERAL OBLIGATIONS OF THE AUTHORITY OR COUNTY BUT ARE LIMITED OBLIGATIONS PAYABLE SOLELY FROM THE REVENUES AND RECEIPTS DERIVED BY THE AUTHORITY FROM THE COUNTY PURSUANT TO THIS AGREEMENT OR FROM THE COMMONWEALTH UNDER THE VATI GRANT. THE OBLIGATIONS OF THE AUTHORITY AND THE COUNTY HEREUNDER SHALL NOT BE DEEMED TO CONSTITUTE A DEBT OR A PLEDGE OF THE FAITH AND CREDIT OF THE COMMONWEALTH OF VIRGINIA OR ANY POLITICAL SUBDIVISION THEREOF, INCLUDING THE AUTHORITY AND THE COUNTY.

*Rule of construction for dates.* If any action is required to be performed, or if any notice, consent or other communication is given, on a day that is a Saturday or Sunday or a legal holiday in the Commonwealth of Virginia, such performance shall be deemed to be required, and such notice, consent or other communication shall be deemed to be given, on the first business day following such Saturday, Sunday or legal holiday. Unless otherwise specified herein, all references in this Agreement to a “day” or “days” shall refer to calendar days and not business days.

*Choice of law.* This Agreement shall be construed according to the laws of the Commonwealth of Virginia without regard to its principles of conflicts of laws. The Parties consent to exclusive venue and jurisdiction in the Circuit Court or General District Court, as appropriate, of Botetourt County, Virginia.

*Attorneys’ fees.* The Parties agree that, except as specifically provided in this Agreement, if any Party pursues legal action to enforce the terms of this Agreement, the American Rule shall apply and each Party shall bear its own attorneys’ fees and expert costs and no fee shifting shall occur.

*Drafter & Severability.* This Agreement has been jointly drafted by the Parties, and is to be construed as jointly drafted and not be construed against any of the Parties as the drafter. This Agreement is severable, and if any provision is found to be invalid by any court of competent jurisdiction, the remainder shall survive. The section and paragraph headings in this Agreement are for convenience of reference only and do not modify or restrict any provisions hereof and shall not be used to construe any provisions of this Agreement except to clarify the intent of a section.

*Covenant of Authority.* All Parties warrant that the signatories below have full authority, and have undertaken such legal actions as may be necessary to ensure such authority, to bind the entities of which they are representatives to the full extent permitted by law. Company agrees that, during the term of this Agreement, it shall not allow its corporate existence to lapse or its certificate of authority in the Commonwealth of Virginia to be revoked or cancelled at any time. This Agreement may be executed by facsimile, electronic or original signature of the parties and in counterparts which, assuming no modification or alteration, shall constitute an original and when taken together, shall constitute one and the same instrument. All Parties further warrant that they have full legal authority to carry out the actions contemplated by this Agreement, and that they are aware of no litigation pending or threatened that would draw such authority into question,

*Time of the Essence.* Time is of the essence of all obligations set forth herein for which a time is stated.

*Waiver.* The failure of any Party to this Agreement to insist upon strict compliance with any term herein shall not be construed to be a waiver of that requirement.

*Assignment of Agreement.* Any obligation under this Agreement may only be assigned to a third party with the prior written consent of all Parties.

*Counterparts.* This Agreement may be executed in one or more counterparts, each of which shall be construed to be an original and production of all of which shall not be necessary to prove the contents of this Agreement.

IN WITNESS WHEREOF, see the following signatures, of even date herewith:

**BOTETOURT COUNTY, VIRGINIA:**

---

Gary P. Larrowe  
County Administrator

Approved as to legal form:

---

Michael W.S. Lockaby  
County Attorney

**ECONOMIC DEVELOPMENT AUTHORITY OF BOTETOURT COUNTY,  
VIRGINIA**

---

John Kilby  
Chair of the Board of Directors

**LUMOS NETWORKS,**

---

Diego Anderson, SVP/GM

**FY 21 Botetourt County/ LUMOS Networks Fiber Expansion**

**APPLICATION # 75707272020130157**

**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	\$ 1,364,337	52.1%	Pending
PRIVATE (LUMOS NETWORKS)	\$ 850,000	32.5%	SECURED
LOCAL (BOTETOURT COUNTY)	\$ 404,000	15.4%	SECURED
	\$		
	\$		
	\$		
	\$		
<b>TOTAL</b>	<b>\$ 2,618,337</b>	<b>100.0 %</b>	

**Attachment 9**

**FY 21 Botetourt County/ LUMOS Networks Fiber Expansion**

**DHCD CAMS Application # 75707272020130157**

**Documentation for match funding**



August 17, 2020

Dr. Tamarah Holmes  
Associate Director Policy and Strategic Development Virginia Department of Housing and  
Community Development  
Main Street Center 600 East Main Street, Suite 300  
Richmond, Virginia 23219

**Re: Botetourt County funding and partnership support for LUMOS' Virginia 2020  
Telecommunications Initiative proposal**

Dear Dr. Holmes:

Lumos Networks has been an integral part of our communities for more than 120 years, including being the first provider within our service areas to offer voice services, DSL internet, and fiber-to-the-premise broadband services. We are excited and supportive of this continued partnership with Botetourt County for the DHCD broadband expansion fund.

This project will result in Lumos Networks extending our fiber network by an additional 59 miles and covering 548 new serviceable addresses. The total estimated cost of this project is \$2,618,337, including the grant contribution of \$1,368,337. Lumos Networks will be contributing \$850,000 and Botetourt County will contribute \$404,000, resulting in a combined contribution of \$1,254,000 for the project balance.

Lumos Networks is committed to the overall broadband expansion project and completing the construction in order to offer reliable, high-speed Fiber Internet service to these potential customers. The dedicated team at Lumos Networks has been working diligently to prepare for this project and taking the appropriate steps to make this a successful deployment.

If you have any questions or comments, please reach out to me directly at 540-946-8687 or [andersond@lumosnet.com](mailto:andersond@lumosnet.com).

Sincerely,

A handwritten signature in black ink, appearing to read "Diego B. Anderson". The signature is fluid and cursive, with a long horizontal stroke at the end.

Diego B. Anderson  
Senior Vice-President and General Manager  
Lumos Networks

COUNTY ADMINISTRATION  
botetourtva.gov

57 S. Center Drive, Suite 200  
Daleville, VA 24083

P: (540) 928-2006  
F: (540) 473-8225



57 South Center Drive  
Daleville, Virginia 24083  
August 17, 2020

Dr. Tamarah Holmes  
Associate Director Policy and Strategic Development Virginia Department of Housing and  
Community Development  
Main Street Center 600 East Main Street, Suite 300  
Richmond, Virginia 23219

Re: Botetourt County funding and partnership support for LUMOS' Virginia 2020  
Telecommunications Initiative proposal

Dear Dr. Holmes:

Botetourt County is excited to support the LUMOS partnership proposal for DHCD broadband expansion funding.

The total LUMOS proposal equals \$2,618,337 and the combined contributions from LUMOS and Botetourt is 48% of the total cost of the project. The Botetourt contribution is \$404,000 and the LUMOS contribution is \$850,000 for a total local contribution of \$1,254,000.

Botetourt County has determined that fiber to the home is the way to "future proof" Botetourt and LUMOS plans to deploy 59 miles of fiber in a priority area as identified in the Botetourt broadband deployment strategy.

We were exceptionally thankful for the grant dollars during the first round of funding that has allowed CBEC to start deploying fiber to the home in area 1 of the Botetourt broadband deployment strategy.

If you have questions or concerns, please contact me directly at 540-797-7623 or [glarowe@BotetourtVA.gov](mailto:glarowe@BotetourtVA.gov). We look forward to a very positive outcome of this round of funding to get yet another "broadband hole" filled for the citizens of Botetourt County.

COUNTY ADMINISTRATION  
botetourtva.gov

57 S. Center Drive, Suite 200  
Daleville, VA 24083

P: (540) 928-2006  
F: (540) 473-8225



Sincerely,

A handwritten signature in black ink that reads 'Gary Larrowe'.

Gary Larrowe  
County Administrator  
Botetourt County, Virginia

CC: Botetourt Board of Supervisors  
Diego Anderson - LUMOS  
Rob Cale - LUMOS  
David Smith - LUMOS  
Ken McFadyen, Director of Economic Development

□

**Attachment 10**

**FY 21 Botetourt County/ LUMOS Networks Fiber Expansion**

**DHCD CAMS Application # 75707272020130157**

**Letter of Support**

MICHELLE A. CROOK, Chair, Buchanan District

MATTHEW J. EAST, Blue Ridge District

TIM DAVIDICK, Valley District



ANNA L. WEDDLE, Vice-Chair, Amsterdam District

DANA McCALEB, Fincastle District

## Botetourt County Public Schools

August 16, 2020

Botetourt County Broadband Commission  
Botetourt County  
57 S. Center Drive, Suite 200  
Daleville, VA 24083

Dear Botetourt County Broadband Commission:

Thank you for your ongoing commitment for Broadband expansion in Botetourt County. I am specifically writing to support the Commission's application for a Virginia Telecommunications Initiative ("VATI") grant to build Fiber-To-The-Home in part of the magisterial district that I represent.

As the Chair of the Botetourt County Public School Board, there has never been a more critical time to apply for this grant. This grant application process is a necessary step in helping this area of Botetourt County prepare for the potential long-term effects of the COVID-19 health pandemic or for a future adverse scenario that we cannot imagine. We must position ourselves for broadband solutions for educational purposes going forward and this grant would be a tremendous victory for this cause.

Since Governor Northam closed schools on March 13, 2020, I have had numerous parents in the grant application area communicate with me expressing concerns and seeking advice on how they can help their child participate in remote learning. These parents are truly disadvantaged when compared to parents in other parts of the Commonwealth of Virginia. Their conversations with me were not centered on entertainment purposes such as Netflix (we can only dream of that). Their request is for access to broadband internet services so that students can have access to academic materials and video conferencing with teachers without driving a minimum of 15 minutes to a local library or school with an open hot spot. Parents in the application grant area are financially disadvantaged because they have had to increase cellular data plan packages at very expensive rates, purchase hot spot cellular signal boosters, and even purchase "MiFi" or satellite equipment for the first time for the sole purpose of educating their child.

It is incumbent upon me in my position to beg for the VATI grant committee to strongly consider Botetourt County's application. I am willing to speak to the grant committee or do any necessary follow up communication. Please let me know how I can help.

Sincerely,

A handwritten signature in black ink that reads "Michelle Austin Crook". The signature is written in a cursive style.

Michelle Austin Crook  
Botetourt Count Public School Board Chair

**Attachment 11**

**FY 21 Botetourt County/ LUMOS Networks Fiber Expansion**

**DHCD CAMS Application # 75707272020130157**

**Derivation of Cost (Project Budget)**

CDBG Derivation of Cost

Product	Total	VATI	Non-VATI	Source of Estimate	Date
<b>Construction</b>					
Engineering	\$ 75,814	\$ -	\$ 75,814	Lumos Networks Project Work Book	8/17/2020
Drafting	\$ 23,040	\$ -	\$ 23,040	Lumos Networks Project Work Book	8/17/2020
Pole Application Fees	\$ 141,625	\$ 141,625	\$ -	Lumos Networks Project Work Book	8/17/2020
Pole Make Ready	\$ 226,600	\$ -	\$ 226,600	Lumos Networks Project Work Book	8/17/2020
Rail Road Crossing	\$ 36,000	\$ -	\$ 36,000	Lumos Networks Project Work Book	8/17/2020
Interstate Crossing	\$ 10,000	\$ -	\$ 10,000	Lumos Networks Project Work Book	8/17/2020
Traffic Control	\$ 38,634		\$ 38,634	Lumos Networks Project Work Book	8/17/2020
Line Construction	\$ 1,579,562	\$ 1,045,586	\$ 533,976	Lumos Networks Project Work Book	8/17/2020
Fiber Splicing	\$ 177,126	\$ 177,126	\$ -	Lumos Networks Project Work Book	8/17/2020
LCP Equipment	\$ 27,993		\$ 27,993	Lumos Networks Project Work Book	8/17/2020
Feeder Fiber Build	\$ 281,943	\$ -	\$ 281,943	Lumos Networks Project Work Book	8/17/2020
<b>TOTAL</b>	<b>\$ 2,618,337</b>	<b>\$ 1,364,337</b>	<b>\$ 1,254,000</b>	<b>Lumos Networks Project Work Book</b>	<b>8/17/2020</b>

**FY 21 Botetourt County/ LUMOS Networks Fiber Expansion  
DHCD CAMS Application # 75707272020130157**

**Attachment:**

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

Please see optional attachments of Excel spreadsheets that provide  
details supporting project costs



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Form 477 Filing Summary

FRN: 0003775244 | Data as of: Dec 31, 2019 | Operations: ILEC | Submission Status: Original - Submitted | Last Updated: Feb 28, 2020 17:13:56

**Filer Identification**

Section	Question	Response
Filer Information	Company Name	Lumos Telephone of Botetourt Inc.
	Holding Company Name	Lumos Networks Corp.
	SAC ID	190226, 190249
	499 ID	807075, 807819
Data Contact Information	Data Contact Name	Jen Marshall
	Data Contact Phone Number	(540) 865-6805
	Data Contact E-mail	jen.marshall@segra.com
Emergency Operations Contact Information	Emergency Operations Name	Networks Operations Center
	Emergency Operations Phone Number	(855) 465-8667
	Emergency Operations E-mail	HELP@LUMOS.NET
Certifying Official Contact Information	Certifying Official Name	Mary McDermott
	Certifying Official Phone Number	(540) 946-8677
	Certifying Official E-mail	mary.mcdermott@segra.com

**Data Submitted**

Form Section	File Name	Date & Time	Number of Rows
Fixed Broadband Deployment	FCC_TL_Broadband_Deployment3.csv	Feb 26, 2020 23:11:36	2984
Fixed Broadband Subscription	FCC_TL_Broadband_Subscription2.csv	Feb 26, 2020 15:29:27	444
Fixed Voice Subscription	FCC_TL_Voice_Telephone_Subscription2.csv	Feb 26, 2020 14:22:16	40

**Fixed Broadband Deployment**

**Census Block Counts by State, DBA Name and Technology**

State	DBA Name	Technology	Blocks
Virginia	Lumos Networks Inc	Asymmetric xDSL	1223
		Optical Carrier/Fiber to the End User	1443
		Symmetric xDSL	1
		VDSL	317
<b>Total</b>			<b>2984</b>

**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	168	5126	538	5664
	Optical Carrier/Fiber to the End User	270	8494	568	9062
	Other Copper Wireline	5	0	5	5
	Symmetric xDSL	1	0	1	1
<b>Total</b>		<b>444</b>	<b>13620</b>	<b>1112</b>	<b>14732</b>

**Fixed Broadband Subscriptions by Bandwidths and End-user Type**

Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business / Govt	Total
0.256	0.128	52	0	52
0.384	0.384	0	1	1
1.000	1.000	0	6	6
1.500	0.512	4	0	4
1.500	1.500	0	5	5
3.000	0.768	119	202	321
6.000	1.000	4271	223	4494
10.000	10.000	0	5	5
15.000	4.000	40	0	40
15.000	8.000	0	20	20
20.000	4.000	2	0	2
20.000	5.000	22	0	22
20.000	10.000	0	4	4
20.000	20.000	0	10	10
25.000	4.000	37	0	37
25.000	5.000	4774	42	4816
25.000	10.000	0	174	174
25.000	25.000	0	44	44
35.000	15.000	0	4	4
50.000	10.000	235	28	263
50.000	20.000	594	91	685
50.000	50.000	0	18	18
75.000	20.000	1861	59	1920

Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business / Govt	Total
75.000	75.000	0	15	15
100.000	10.000	24	17	41
100.000	20.000	64	0	64
100.000	40.000	91	25	116
100.000	100.000	0	6	6
150.000	40.000	740	0	740
150.000	150.000	0	17	17
200.000	200.000	0	4	4
300.000	300.000	0	1	1
500.000	500.000	0	1	1
1000.000	250.000	690	41	731
1000.000	1000.000	0	47	47
2000.000	2000.000	0	2	2
<b>Total</b>		<b>13620</b>	<b>1112</b>	<b>14732</b>

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

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business / Govt	Total
<b>Asymmetric xDSL</b>	0.256	0.128	52	0	52
	1.500	0.512	4	0	4
	3.000	0.768	119	202	321
	6.000	1.000	4271	223	4494
	15.000	4.000	40	0	40
	15.000	8.000	0	20	20
	20.000	5.000	22	0	22
	20.000	10.000	0	4	4
	25.000	5.000	287	42	329
	50.000	10.000	235	28	263
	50.000	20.000	8	2	10
	100.000	10.000	24	17	41
	100.000	20.000	64	0	64
	<b>Optical Carrier/Fiber to the End User</b>	1.000	1.000	0	6
10.000		10.000	0	5	5
20.000		4.000	2	0	2

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business / Govt	Total
	20.000	20.000	0	10	10
	25.000	4.000	37	0	37
	25.000	5.000	4487	0	4487
	25.000	10.000	0	174	174
	25.000	25.000	0	44	44
	35.000	15.000	0	4	4
	50.000	20.000	586	89	675
	50.000	50.000	0	18	18
	75.000	20.000	1861	59	1920
	75.000	75.000	0	15	15
	100.000	40.000	91	25	116
	100.000	100.000	0	6	6
	150.000	40.000	740	0	740
	150.000	150.000	0	17	17
	200.000	200.000	0	4	4
	300.000	300.000	0	1	1
	500.000	500.000	0	1	1
	1000.000	250.000	690	41	731
	1000.000	1000.000	0	47	47
	2000.000	2000.000	0	2	2
Other Copper Wireline	1.500	1.500	0	5	5
Symmetric xDSL	0.384	0.384	0	1	1
<b>Total</b>			<b>13620</b>	<b>1112</b>	<b>14732</b>

### 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	17620	10403	0	0
<b>Total</b>	<b>17620</b>	<b>10403</b>	<b>0</b>	<b>0</b>

### Fixed Voice Subscription (VGE Lines)

#### VGE Lines Provided to Unaffiliated Providers by State

State	Wholesale	UNE-L

State	Wholesale	UNE-L
Virginia	0	0
<b>Total</b>	<b>0</b>	<b>0</b>

**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
Virginia	17620	3566	14054	4884	5519	4181	3036
<b>Total</b>	<b>17620</b>	<b>3566</b>	<b>14054</b>	<b>4884</b>	<b>5519</b>	<b>4181</b>	<b>3036</b>

**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
Virginia	17620	17620	0	0	5113	0	0	12507
<b>Total</b>	<b>17620</b>	<b>17620</b>	<b>0</b>	<b>0</b>	<b>5113</b>	<b>0</b>	<b>0</b>	<b>12507</b>





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Form 477 Filing Summary

FRN: 0003775244 | Data as of: Jun 30, 2019 | Operations: ILEC | Submission Status: Original - Submitted | Last Updated: Aug 30, 2019 09:50:39

**Filer Identification**

Section	Question	Response
<b>Filer Information</b>	Company Name	Lumos Telephone of Botetourt Inc.
	Holding Company Name	Lumos Networks Corp. dba Segra
	SAC ID	190226, 190249
	499 ID	807075, 807819
<b>Data Contact Information</b>	Data Contact Name	Jen Marshall
	Data Contact Phone Number	(540) 946-6805
	Data Contact E-mail	jen.marshall@segra.com
<b>Emergency Operations Contact Information</b>	Emergency Operations Name	Networks Operations Center
	Emergency Operations Phone Number	(877) 411-6930
	Emergency Operations E-mail	HELP@LUMOS.NET
<b>Certifying Official Contact Information</b>	Certifying Official Name	Mary McDermott
	Certifying Official Phone Number	(540) 946-8677
	Certifying Official E-mail	mary.mcdermott@segra.com

**Data Submitted**

Form Section	File Name	Date & Time	Number of Rows
Fixed Broadband Deployment	FCC_TL_Broadband_Deployment 2.csv	Aug 21, 2019 16:15:04	3048
Fixed Broadband Subscription	FCC_TL_Broadband_Subscription 2.csv	Aug 21, 2019 17:04:09	449
Fixed Voice Subscription	FCC_TL_Voice_Telephone_Subscription 2.csv	Aug 22, 2019 12:15:47	40

**Fixed Broadband Deployment**

**Census Block Counts by State, DBA Name and Technology**

State	DBA Name	Technology	Blocks
Virginia	Lumos Networks Inc	Asymmetric xDSL	1283
		Optical Carrier/Fiber to the End User	1436
		Symmetric xDSL	1
		VDSL	328
<b>Total</b>			<b>3048</b>

**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	173	5427	569	5996
	Optical Carrier/Fiber to the End User	269	8541	600	9141
	Other Copper Wireline	6	0	8	8
	Symmetric xDSL	1	0	1	1
<b>Total</b>		<b>449</b>	<b>13968</b>	<b>1178</b>	<b>15146</b>

**Fixed Broadband Subscriptions by Bandwidths and End-user Type**

Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business / Govt	Total
0.256	0.128	56	0	56
0.384	0.384	0	1	1
1.000	1.000	0	56	56
1.500	0.512	4	0	4
1.500	1.500	0	8	8
3.000	0.768	136	224	360
6.000	1.000	4484	232	4716
10.000	10.000	0	5	5
15.000	4.000	45	0	45
15.000	8.000	0	25	25
20.000	4.000	2	0	2
20.000	5.000	30	0	30
20.000	10.000	0	6	6
20.000	20.000	0	14	14
25.000	4.000	37	0	37
25.000	5.000	5220	40	5260
25.000	10.000	0	176	176
25.000	25.000	0	31	31
35.000	15.000	0	4	4
50.000	10.000	281	28	309
50.000	20.000	700	93	793
50.000	50.000	0	17	17
75.000	20.000	1419	49	1468

Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business / Govt	Total
75.000	75.000	0	16	16
100.000	10.000	27	12	39
100.000	20.000	61	0	61
100.000	40.000	132	27	159
100.000	100.000	0	5	5
150.000	40.000	672	0	672
150.000	150.000	0	16	16
200.000	200.000	0	4	4
300.000	300.000	0	1	1
500.000	500.000	0	1	1
1000.000	250.000	662	42	704
1000.000	1000.000	0	45	45
<b>Total</b>		<b>13968</b>	<b>1178</b>	<b>15146</b>

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

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business / Govt	Total
<b>Asymmetric xDSL</b>	0.256	0.128	56	0	56
	1.500	0.512	4	0	4
	3.000	0.768	136	224	360
	6.000	1.000	4484	232	4716
	15.000	4.000	45	0	45
	15.000	8.000	0	25	25
	20.000	5.000	30	0	30
	20.000	10.000	0	6	6
	25.000	5.000	293	40	333
	50.000	10.000	281	28	309
	50.000	20.000	10	2	12
	100.000	10.000	27	12	39
	100.000	20.000	61	0	61
	<b>Optical Carrier/Fiber to the End User</b>	1.000	1.000	0	56
10.000		10.000	0	5	5
20.000		4.000	2	0	2
20.000		20.000	0	14	14

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business / Govt	Total
	25.000	4.000	37	0	37
	25.000	5.000	4927	0	4927
	25.000	10.000	0	176	176
	25.000	25.000	0	31	31
	35.000	15.000	0	4	4
	50.000	20.000	690	91	781
	50.000	50.000	0	17	17
	75.000	20.000	1419	49	1468
	75.000	75.000	0	16	16
	100.000	40.000	132	27	159
	100.000	100.000	0	5	5
	150.000	40.000	672	0	672
	150.000	150.000	0	16	16
	200.000	200.000	0	4	4
	300.000	300.000	0	1	1
	500.000	500.000	0	1	1
	1000.000	250.000	662	42	704
	1000.000	1000.000	0	45	45
<b>Other Copper Wireline</b>	1.500	1.500	0	8	8
<b>Symmetric xDSL</b>	0.384	0.384	0	1	1
<b>Total</b>			<b>13968</b>	<b>1178</b>	<b>15146</b>

### 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	18291	10869	0	0
<b>Total</b>	<b>18291</b>	<b>10869</b>	<b>0</b>	<b>0</b>

### Fixed Voice Subscription (VGE Lines)

#### VGE Lines Provided to Unaffiliated Providers by State

State	Wholesale	UNE-L
Virginia	0	0
<b>Total</b>	<b>0</b>	<b>0</b>

#### 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
Virginia	18291	3840	14451	5052	5817	4256	3166
<b>Total</b>	<b>18291</b>	<b>3840</b>	<b>14451</b>	<b>5052</b>	<b>5817</b>	<b>4256</b>	<b>3166</b>

**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
Virginia	18291	18291	0	0	5081	0	0	13210
<b>Total</b>	<b>18291</b>	<b>18291</b>	<b>0</b>	<b>0</b>	<b>5081</b>	<b>0</b>	<b>0</b>	<b>13210</b>



**EDDY**

COMMUNICATIONS CORPORATION

*2017 Botetourt County  
Telecommunications  
Survey*

*Research conducted and analyzed  
by Eddy Communications  
Corporation*

Jennifer Eddy 611 S. Jefferson St. Suite G.  
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DSBSD Certification # 715305 [j.eddy@eddycommunications.com](mailto:j.eddy@eddycommunications.com)

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# EXECUTIVE SUMMARY

Eddy Communications was hired by Botetourt County Economic Development, through the Roanoke Valley Broadband Authority, to survey local business owners/ executives and household decision makers about broadband and cellular service needs in the county. County leadership wanted to learn about current internet and mobile phone usage, emerging market needs, the purchaser decision making process and value drivers, existing service options and overall market satisfaction levels related to both provider and service options.

Eddy Communications reached out to all businesses and households in the community via a variety of channels and methods including:

- Direct mail notifications - Sealed letter invitations and postcard reminders were sent to each business and household address
- Local media announcements- news coverage in the Roanoke Times and posted to botetourtva.gov garnered an estimated 6,000+ views
- Digital advertising — geo-fenced and micro-targeted to reach only Botetourt County residents and business executives
- Local library promotions — checkout counters and table displays at four local branch locations
- Local member-based organizations announcements — including a valuable partnership with the Botetourt Chamber of Commerce
- Randomized telemarketing to business main lines to ensure the right points of contact were made aware of the opportunities. The survey used multiple choice, ranking, and open-ended questions to capture respondent data, opinions, and insights. Both the residential survey and the business survey each received a 14 percent total market response rate and garnered participation from a wide variety of demographic and psychographic subgroups.

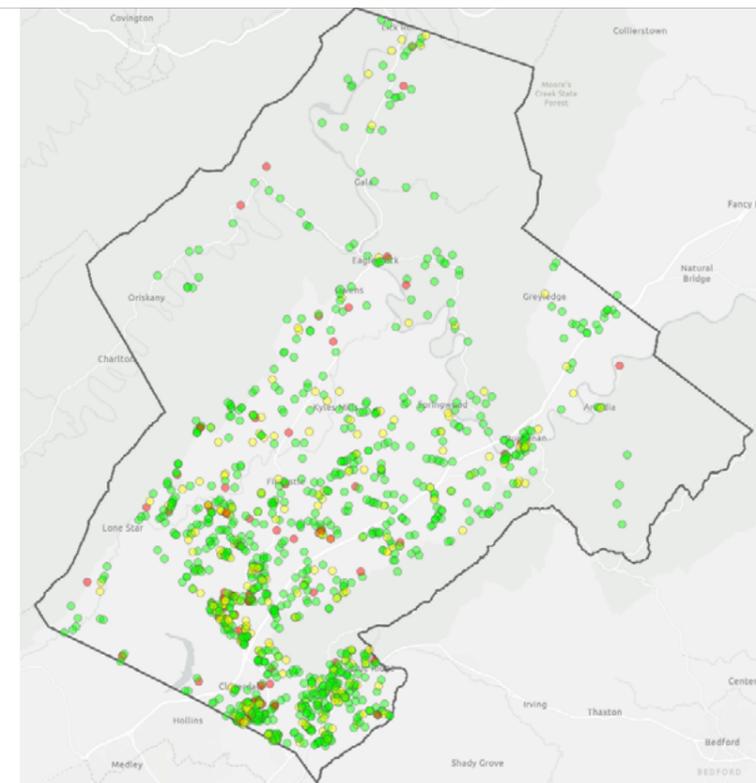
The survey used multiple choice, ranking, and open-ended questions to capture respondent data, opinions, and insights. Both the residential survey and the business survey each received a 14 percent total market response rate (10 to 15 percent is standard for online surveys) and garnered participation from a wide variety of demographic and psychographic subgroups. The two representative data sets provide a statistically significant result with a 95 percent confidence level and a 10pt margin of error.

In the end, both surveys reflected an overwhelming community concern that more needed to be done to address telecommunication needs in the County. The majority of both business and residential respondents reported that faster, high-quality internet connections and more reliable cell phone service coverage were needed, desirable, and important to keep the region competitive.

Respondents, expressed frustration with the quality and/ or price of available internet and mobile service options regardless of their location within Botetourt County or of which current service provider they currently utilize. It is worth noting however, that commercial survey participants who spent the most on monthly internet access or secured the highest speed connections through commercial-grade hookups were, perhaps not surprisingly, significantly more satisfied with existing service options than those who relied on lower priced "oversubscription" or "best effort" service models.

Importantly, across all survey subgroups, respondents expressed their strong and consistent belief that more high-speed internet service options would bring more value to the community and would likely positively affect home property values.

*BOTH SURVEYS REFLECTED AN OVERWHELMING COMMUNITY CONCERN THAT MORE NEEDED TO BE DONE TO ADDRESS TELECOMMUNICATION NEEDS IN THE COUNTY.*



When given the option of choosing the best descriptive word between "convenience," "luxury," "necessity," or "other," 84 percent of residential survey respondents and 91 percent of business respondents said they considered reliable broadband access a "necessity." When asked the same question, and given the same response options, related to reliable cell phone service, 86 percent of residents and 87 percent of business respondents selected "necessity." Many more of the respondents who chose "other" in both questions on both surveys used their open field space to indicate that they felt strongly that broadband internet access was a necessity.

Perhaps accordingly, both business and residential respondents demonstrated a desire for local government action. A clear majority of both business' respondents and residential survey participants indicated that they agreed with the statement, "bringing high-speed internet should be a priority for local government representatives in the next two years."

These surveys did not ask any questions about which type of actions participants would like to see the local government take.

The following report will detail the purpose of the survey, methodology deployed, questions asked, and responses received, as well as document the professional research team's recommendations regarding appropriate next steps.

In addition, Eddy Communications, in partnership with the Roanoke Valley Broadband Authority, has created two interactive GIS maps to allow all interested parties to visualize, filter, and explore the data from both surveys on their own. Each interested stakeholder is encouraged to spend time considering all of this information in context and to draw their own conclusions about what the necessary and appropriate next steps might be for this community.

INTERACTIVE RESIDENTIAL BROADBAND SURVEY

<https://www.webgis.net/va/botetourt/res.php>

INTERACTIVE BUSINESS BROADBAND SURVEY MAP

<https://www.webgis.net/va/botetourt/bus.php>

## PURPOSE

Over the last two years, highly publicized telecommunications infrastructure investments in Botetourt County's neighboring communities (Roanoke County, the City of Salem and the City of Roanoke) have raised regional awareness of broadband and its effect on regional economic viability.

Local officials in Botetourt County received an increasing number of citizen inquiries related to limited broadband access and mobile phone reception in the county. Around the same time, in the spring of 2017, the Botetourt County Chamber of Commerce conducted a small scale local business survey and determined that internet access and affordability was a significant concern to local business owners. They approached Botetourt County leaders and asked them to investigate the issue further. (not exactly but the chamber probably won't object to this connection)

In response, the Botetourt County Department of Economic Development partnered with the Roanoke Valley Broadband Authority to commission two surveys and one comprehensive report to provide local leaders a clearer picture of citizen and stakeholder needs, options, and opinions. They wanted all citizens and business owners to be provided an equal opportunity to share their opinions, use cases, and desires related to the telecommunications future of the county so that they could be sure that they were hearing from a representative sample of the community and not just the loudest or most organized opinion group.

The goal was to gather quantifiable qualitative data that could help local leaders assess community opinions and feedback related to telecommunication infrastructure. Botetourt County leadership wanted to use this information to determine what role, if any, Botetourt County government should play in addressing the telecommunications concerns that had been raised to date.

## METHODOLOGY

### PROCUREMENT AND VENDOR SELECTION

After putting the project out to full and open competitive procurement according to Virginia Public Procurement Act, the Roanoke Valley Broadband Authority selected and hired Eddy Communications, a full-service marketing and growth strategy consulting firm with experience serving both telecommunications and economic development clients around the state. The firm, headquartered in Roanoke, VA, was tasked with planning, managing, and analyzing the two surveys, creating a comprehensive written report, and developing two interactive maps to help stakeholders visualize the data collected.

### SURVEY QUESTIONS

Eddy Communications' team of researchers prepared two distinct surveys (one each for business owners/executives and Botetourt County residences). Both surveys included a series of multiple choice, ranking, and open response questions as well as an optional speed test assessment.

The two surveys asked for information about internet and mobile phone usage, telecommunications purchasing decisions and value drivers, telecommunications infrastructure perceptions in the community, common technology applications and use cases, current service satisfaction levels, and the survey respondent's beliefs about local government's role in addressing any related concerns.

Additionally, an optional speed test directed respondents to visit speedtest.net from their most commonly used internet-accessible device (on their business or home network) to test internet speeds in real-time. While the technical reliability of speed tests generally is still open for professional debate, by asking all respondents to use the same speed testing system in the same way the researchers sought to:

- Benchmark local speeds against national and peer group averages
- Validate the self-reported data provided elsewhere in the survey responses
- Map coverage in Botetourt with quantitative data to help identify areas that might be notably well-served, under-served, or effectively managed by existing private sector providers

## PARTICIPANT RECRUITMENT METHODS

To ensure every County stakeholder had an equal opportunity to participate, the survey was promoted through a wide variety of online and offline methods including:

- Direct mail invitations to take the survey were sent to every home and business
- Each home and business received a direct mail letter as well as a reminder postcard one to two weeks later
- Information about the survey was posted to the County's website and social media accounts (multiple posts over a four-week period)
- Publicized via local media: news coverage in the The Fincastle Herald, The Roanoke Times, and in the Botetourt Chamber newsletter
- Promoted with geo-fenced digital advertisements to anyone accessing the internet from anywhere in the County
- Announced at Botetourt Chamber of Commerce

events and in reminder posts on Botetourt Chamber social media accounts

Additionally, nearly 400 Botetourt County businesses were called (at random) in the final week of data collection. Each were reminded to take the survey before the deadline and offered assistance if needed. If no one answered when researchers called, voicemail reminders were left whenever the option was presented.

## PARTICIPANT RESPONSE STYLES

All respondents had the option to take the survey:

- Online via a desktop computer, laptop, tablet, or smartphone by visiting <http://bit.ly/2AUTphS>
- Over the phone with the assistance of a trained data collector between the hours of 9 a.m. and 2 p.m., Monday through Friday at 540-404-8152
- In person, via a printed survey available from any one of the four local Botetourt County library locations\*

All surveys received, including partially completed questionnaires, were included in the final analysis.

In the end, while the online data collection method was by far the most popular choice, all three data collection methods — online (~75%), over the phone (~20%), and paper based via the libraries (~5%) — were effectively leveraged by various Botetourt County citizens and business stakeholders.

*\*Note: When respondents chose the paper-based library option, they could complete their survey on premise and then submit it to any librarian, or they could choose to take their printed questionnaire with them when they left the library and complete it at another time. If they chose the latter option, they could submit it at any one of the library locations or by mailing back to Eddy Communication's offices before the deadline.*

THE SURVEYS  
WERE PROMOTED  
THROUGH A  
WIDE VARIETY  
OF ONLINE AND  
OFFLINE METHODS  
INCLUDING  
DIRECT MAIL,  
LOCAL MEDIA,  
AND COMMUNITY  
ANNOUNCEMENTS.

117 LOCAL  
BUSINESS  
EXECUTIVES  
PARTICIPATED  
DURING THE  
FOUR-WEEK  
SURVEY PERIOD.

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BUSINESS SURVEY  
RESULTS

# BUSINESS RESPONDENT PROFILE

The Botetourt County Business Telecommunications survey was promoted to ~800 local businesses for a period of four weeks (from November 24th to December 22nd, 2017). Researchers received 117 total responses during that time.

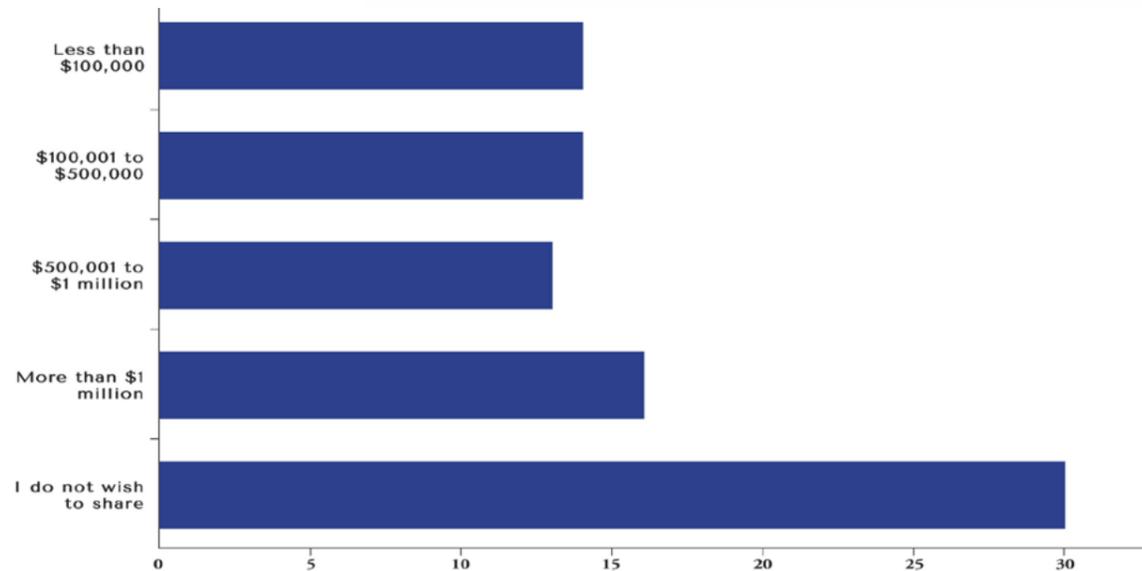
This 14 percent response rate included:

- A wide spread of reported time running a business in the County:
  - 78 businesses (75.73 percent of respondents) reported having been in operation in Botetourt County for more than 10 years
  - 11 businesses (10.68%) reported having been in business in Botetourt County for five to 10 years
- 10 businesses (9.71%) reported having been in business one to five years
- Four businesses (3.88%) reported having been in business less than one year
- Typical Botetourt County businesses profiles:
  - 89 percent of business survey respondents reported operating only one business in the county
  - 56.9 percent of businesses represented an employee base of five or fewer employees
  - 25 percent of businesses represented an organization of six to 20 employees
  - 12.07 percent of business respondents represented an organization of 21 to 50 employees
  - 6.03 percent represented organizations of more than 50 employees
- A majority of technology decision maker respondents
  - Seventy-five (75.24%) of respondents identified as

the person responsible for managing technology expenditures for the business

- Mostly discrete participants
- Most businesses preferred not to share their annual sales range (34.48%)
  - The remaining 65.52 percent of business respondents were diverse in their reported revenue ranges
  - 18 percent (18.39%) had sales more than \$1,000,000
  - 15 percent of respondents represented organizations that achieve between \$500,000 and \$1,000,000 in annual revenues
  - The remaining 32 percent of organizations represented either \$100,000 to \$500,000 or less than \$100,000 annually (16.07 percent each)

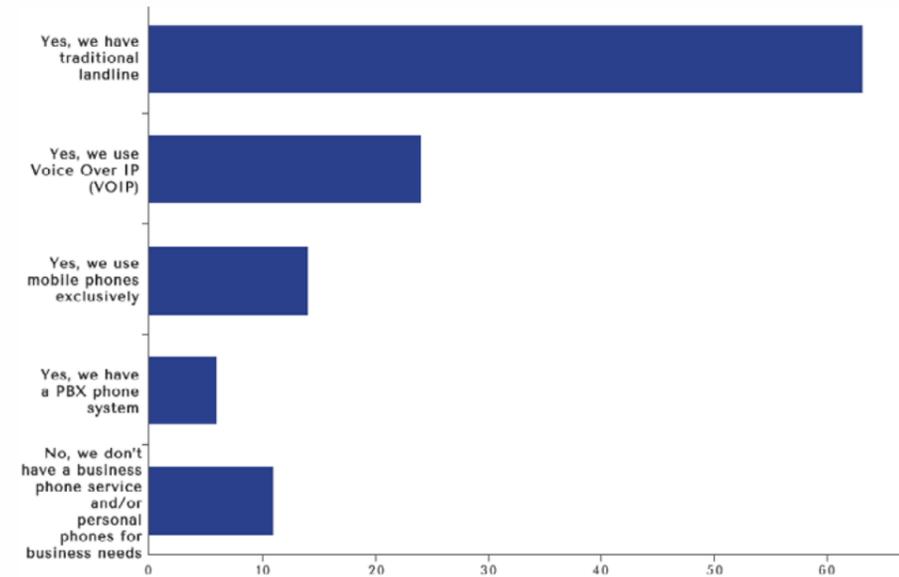
## ARE YOU WILLING TO SHARE THE TOTAL ANNUAL SALES RANGE FOR YOUR BUSINESS?



## CELLULAR/MOBILE PHONE SERVICE

More than ninety percent (90.67%) of respondents utilized a dedicated phone service for their business. Fifty-three percent (53%) used a land line, twenty percent (20.34%) used a Voice over Internet Protocol (VOIP) service, nearly twelve percent (11.86%) used mobile phones exclusively, and another five percent (5.08%) used a PBX phone system. Nine percent (9.32%) of business respondents did not have a dedicated business phone line and/or used personal phones for business needs. Most respondents (85%) had been a customer of their current telephone service provider for more than five years. Eleven percent (11.67%) had been a customer for one to five years and three percent (3.33%) for less than one year.

## DO YOU HAVE DEDICATED PHONE SERVICES FOR YOUR BUSINESS? (Please check all that apply)



### EXISTING PROVIDERS

Lumos and Verizon were the most widely used telephone service providers in Botetourt County with more than 86 percent of respondents reporting themselves as customers of one of these two firms. Still, respondents identified a total of six business telephone service providers in the area, including:

COMPANY	PERCENT OF RESPONDENTS SERVED
Lumos	50%
Verizon	36.67%
Comcast	5%
Sprint	5%
Shentel	1.6%
Twilio	1.6%

VOIP SERVICES INCLUDE
Lumos
Twilio

### SERVICE RANGES AND LOCATIONS

More than forty-two percent (42.62%) of business survey respondents in Botetourt paid \$200 or less for their phone service last month. Another twenty-four (24.59%) of responding businesses paid between \$201 and \$500 per month, thirteen percent (13.11%) paid \$501 to \$1000, and thirteen percent (13.11%) paid more than \$1000.

The majority of Botetourt business respondents reported being satisfied with their phone service. One-fifth of business respondents (21.51%) rated their phone service as "Excellent." Thirty-six (36.07%) of respondents rated their service as "satisfactory," while twenty-four percent (24.59%) rated their service as "acceptable," and eighteen percent (18.03%) reported that their service "need[ed] improvement" or was "unavailable."

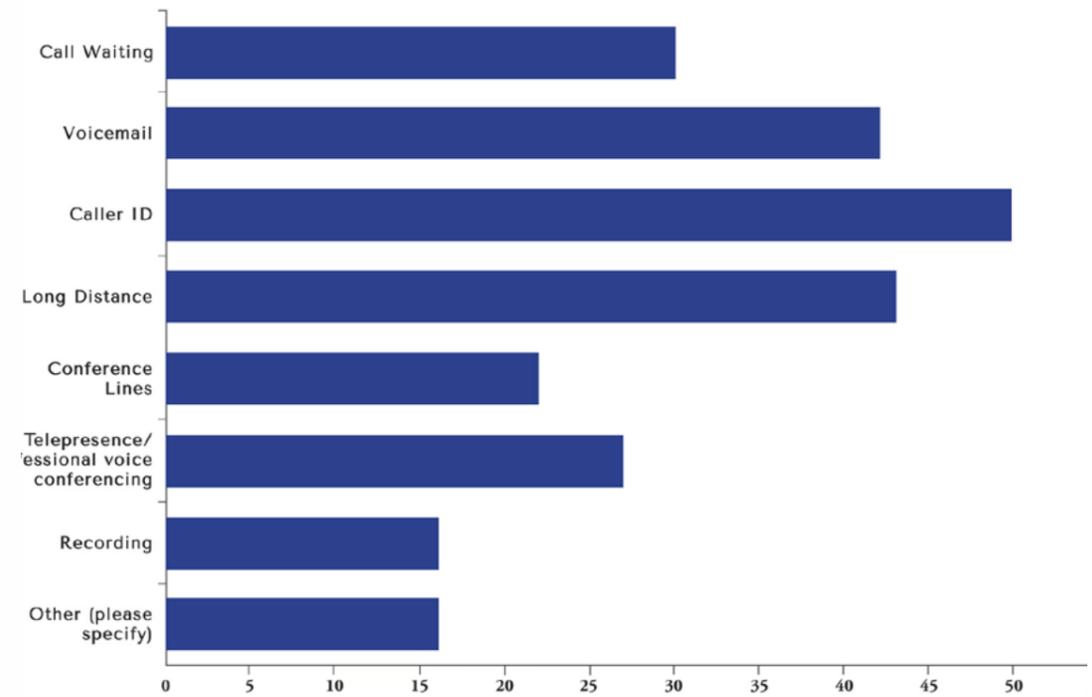
Mobile phone reception proved to be more divided.

The majority of Botetourt business respondents rated mobile phone reception at their place of work positively. More than sixty-two percent (62.37%) of respondents rated their mobile phone reception at work "excellent" or "satisfactory." Twelve percent (12.87) of respondents rated reception as "acceptable." The remaining twenty-four percent (24.75%) of respondents rated it as "needs improvement" or "not available."

### RESPONDENT USAGE

Botetourt respondents expressed interest in additional services not offered by their current vendor, such as caller ID, long distance, voicemail, call waiting, and telepresence/professional video conferencing.

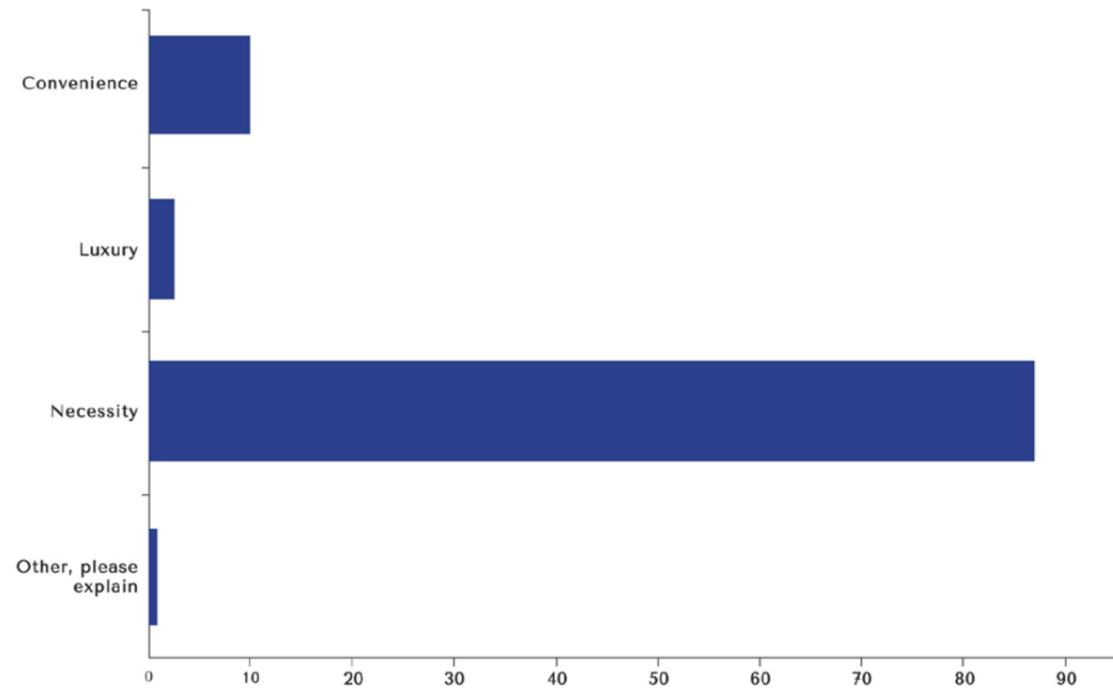
WHAT PHONE SERVICES MIGHT YOU BE INTERESTED IN IF A NEW PROVIDER OFFERED THEM?



## RESPONDENT VIEWS ON MOBILE PHONE SERVICE

Respondents were asked, "Do you consider reliable mobile phone reception a convenience, luxury, necessity or other?" Eighty-seven percent (87%) of Botetourt County business respondents selected "Necessity," ten percent (10%) considered it a "convenience," and two percent (2%) considered it a "luxury."

DO YOU CONSIDER RELIABLE MOBILE PHONE RECEPTION A...



Botetourt business respondents explained their responses:

- "Need a cell tower, without a cell tower we won't get any wireless service. like living in a third world country out here"
- "Good Cell Phone Service & Reception"
- "Less expensive than our [land] lines with better quality."

*"[WE} NEED A CELL TOWER, WITHOUT A CELL TOWER [IT'S] LIKE LIVING IN A THIRD WORLD COUNTRY."*

87 PERCENT OF  
BOTETOURT  
RESIDENTS  
CONSIDER RELIABLE  
MOBILE PHONE  
RECEPTION A  
"NECESSITY."

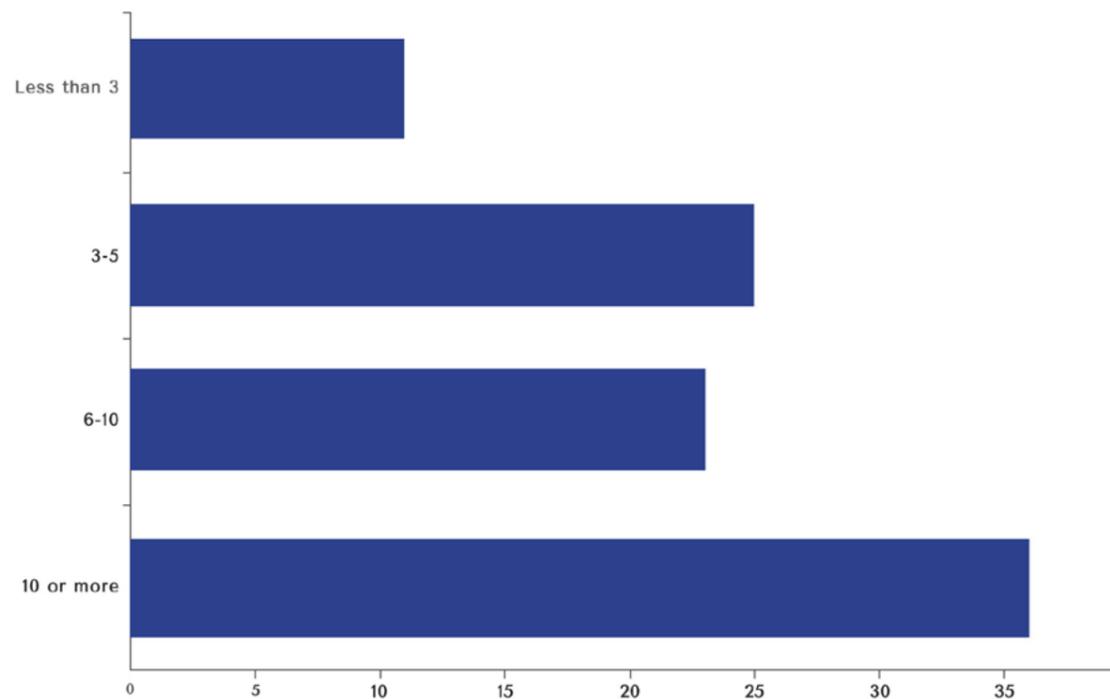
## INTERNET SERVICE

The vast majority of Botetourt respondents subscribed to internet access for their business (94.06%). Thirty-seven percent (37.89%) of businesses had 10 or more devices accessing the internet, and twenty-six percent (26.32%) had three to five devices connected. Twenty-four percent (24.21%) of businesses had 6-10 devices online, and just under twelve percent (11.58%) had less than three connected devices. Forty-three percent (43.16%) of respondents reported experiencing slower internet speeds when multiple people at their business were online at the same time. Another twenty-one percent (21.05%) were not sure if internet speeds were affected.

*43.16 PERCENT OF  
RESPONDENTS REPORTED  
EXPERIENCING SLOWER  
INTERNET SPEEDS WHEN  
MULTIPLE PEOPLE AT THEIR  
BUSINESS WERE ONLINE AT  
THE SAME TIME.*

### HOW MANY DIFFERENT DEVICES IN YOUR FACILITIES ACCESS THE INTERNET?

(Please consider every person's phone(s), computer(s), tablet(s), appliance(s), smartwatch(es), exercise equipment, security systems, health monitoring device(s), thermostat(s), and similar)?



## EXISTING SERVICE PROVIDERS

Lumos, Comcast, and Verizon were the most used commercial internet service providers in Botetourt County. More than 69 percent of respondents reported themselves as customers of one these top three providers. In total, respondents identified 12 internet service providers as listed to the right.

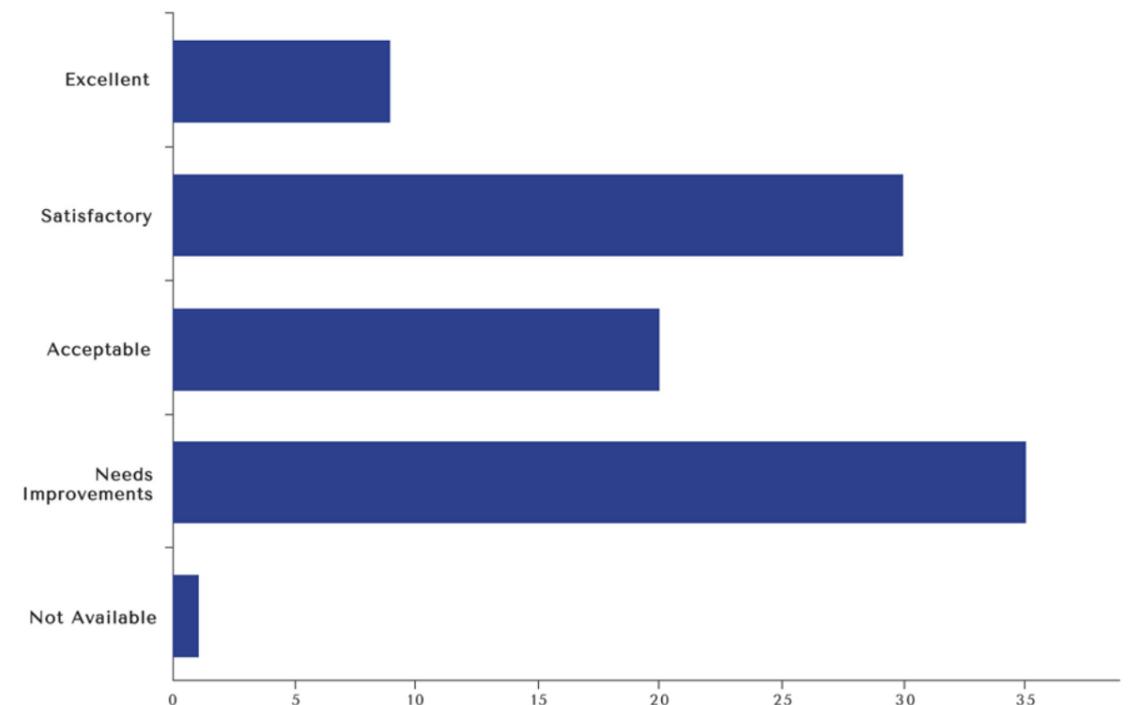
Most respondents (38.82%) said that they had been a customer of their current internet service provider for more than 10 years. Twenty-five percent (25.88%) had been a customer for two to five years and twenty-four percent (24.71%) for six to 10 years. The remaining ten percent (10.59%) had been with their current internet service provider for less than two years. Of users subscribed to internet service to support their business, more than thirty-six percent (36.84%) rated their service options as "needs improvement." Thirty-one percent (31.58%) said it was "satisfactory," and twenty-one percent (21.05%) reported the internet service options "acceptable." Less than 10 percent believed the internet service options were "excellent."

More than seventy-three percent (73.77%) of respondents indicated that there was only one other internet service option to choose from at their location. Sixty-three percent (63.44%) of respondents' internet service was

COMPANY	PERCENT OF RESPONDENTS SERVED
Lumos	44.05%
Verizon	9.52%
Comcast	15.48%
Verizon Wireless	8.33%
Verizon DSL	4.76%
Shentel	5.9%
Cox	3.57%
AT&T	2.38%
Direct TV	1.19%
Hughesnet	1.19%
Windstream	1.19%
Level 3	1.19%

bundled with another service such as phone (80.36%), cable TV (14.29%), satellite TV (1.79%), or security (1.79%).

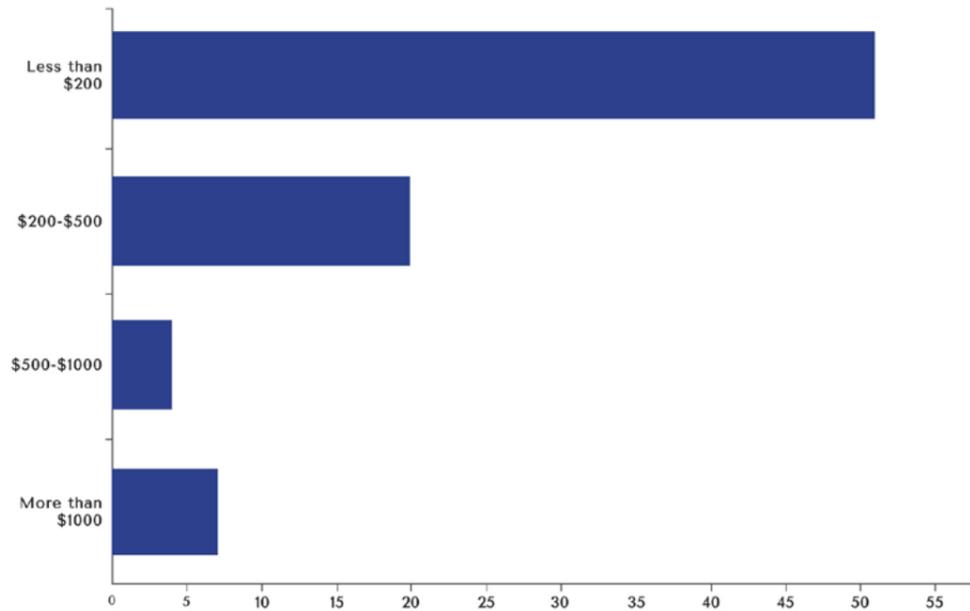
### HOW WOULD YOU DESCRIBE THE AVAILABLE INTERNET SERVICE OPTIONS FOR YOUR WORK?



*SERVICE RANGES AND LOCATIONS*

More than sixty-two percent (62.20%) of business respondents paid less than \$200 per month for internet service. Twenty-four percent (24.39%) paid between \$200 and \$500 per month, 8.54 percent paid more than \$1000 per month, and less than five percent paid between \$500 and \$1000 per month for internet service.

HOW MUCH DID YOU PAY FOR ALL OF YOUR INTERNET SERVICE LAST MONTH?



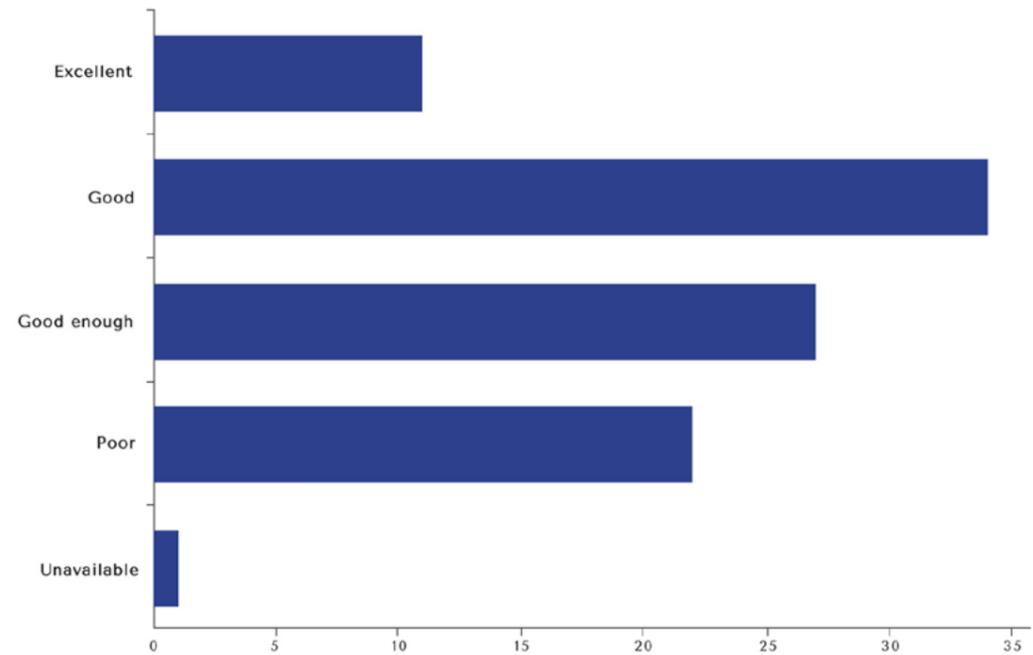
Of users currently subscribed to internet services, more than thirty-five percent (35.79%) rated their service options as "good." Twenty-eight percent (28.42%) said it is "good enough," and twenty-three percent (23.16%) said the internet service options were "poor." Less than 12 percent believed the internet service options were "excellent."

Business respondents identified "speed" as the top factor they would change about their internet access with thirty-two percent (32.33%). "Price" (21.05%) and "reliability" (15.04%) rounded out the top three factors business internet customers would change about their current service. Other changes identified included "choice of providers," "diverse paths for

redundancy and reliability," and "ability to connect to service while traveling on business." Nine percent (9.02%) of respondents would not make any changes or improvements.

Respondents identified activities they would like to be able to do but could not because of the limitations of their current connection quality or speed. While thirty-seven percent (37.32%) of respondents reported their current connection specifications met their needs, nearly 15 percent (14.79%) reported a desire to transmit large data files. Nearly twelve percent (11.97%) would like to be able to video conference, and more than ten percent (10.56%) would like to be able to work from home.

HOW WOULD YOU RATE YOUR INTERNET SERVICE AT YOUR BUSINESS?

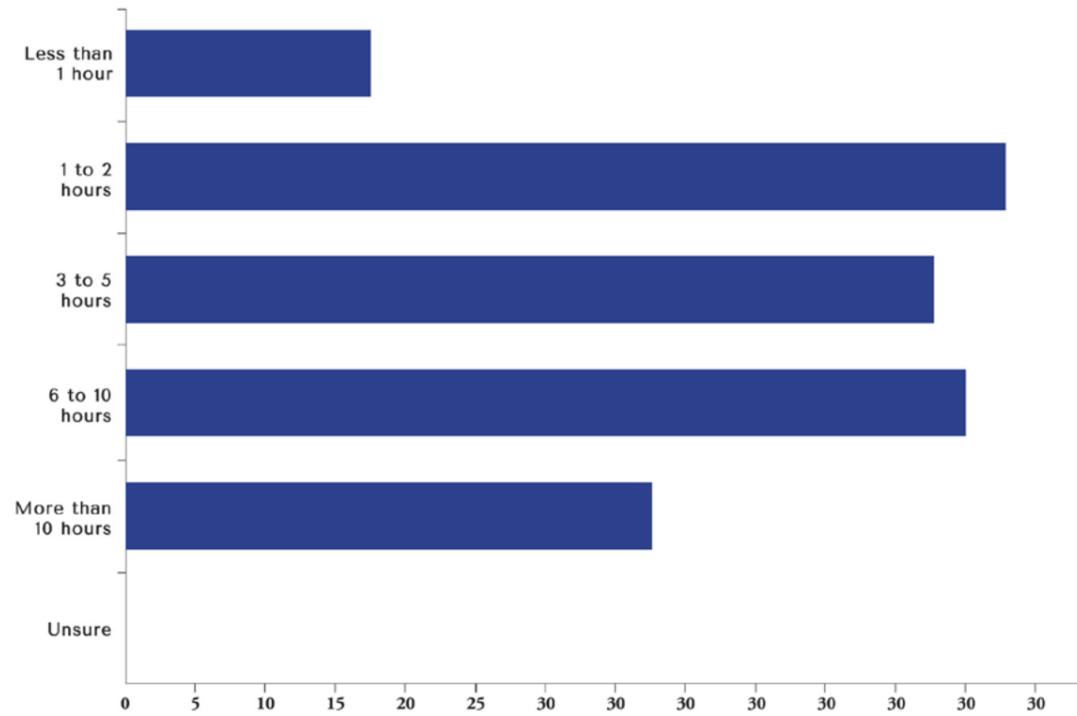


*RESPONDENT USAGE*

Botetourt businesses are dependent on their internet connection. Most respondents indicated members of their business used the internet for more than 10 hours a day (41.05%). Results stepped down from there with twenty-seven percent (27.37%) answering six to 10 hours daily, and thirteen percent (13.68%) reporting usage of three to five hours daily. Responses were broader when asked, "On average, including work and home, how much time do you personally spend online each day?"

*32.33 PERCENT OF RESPONDENTS IDENTIFIED "SPEED" AS THE TOP FACTOR THEY WOULD CHANGE ABOUT THEIR INTERNET ACCESS. 21.05 PERCENT IDENTIFIED "PRICE," AND 15.04 PERCENT IDENTIFIED "RELIABILITY."*

ON AVERAGE, INCLUDING WORK AND HOME, HOW MUCH TIME DO YOU PERSONALLY SPEND ONLINE EACH DAY?



Twenty-six percent (26.6%) of respondents indicated that they spend one to two hours online each day. Twenty-five percent (25.53%) indicated they spend six to 10 hours a day. Twenty-four percent (24.47%) of respondents said they spend three to five hours a day online.

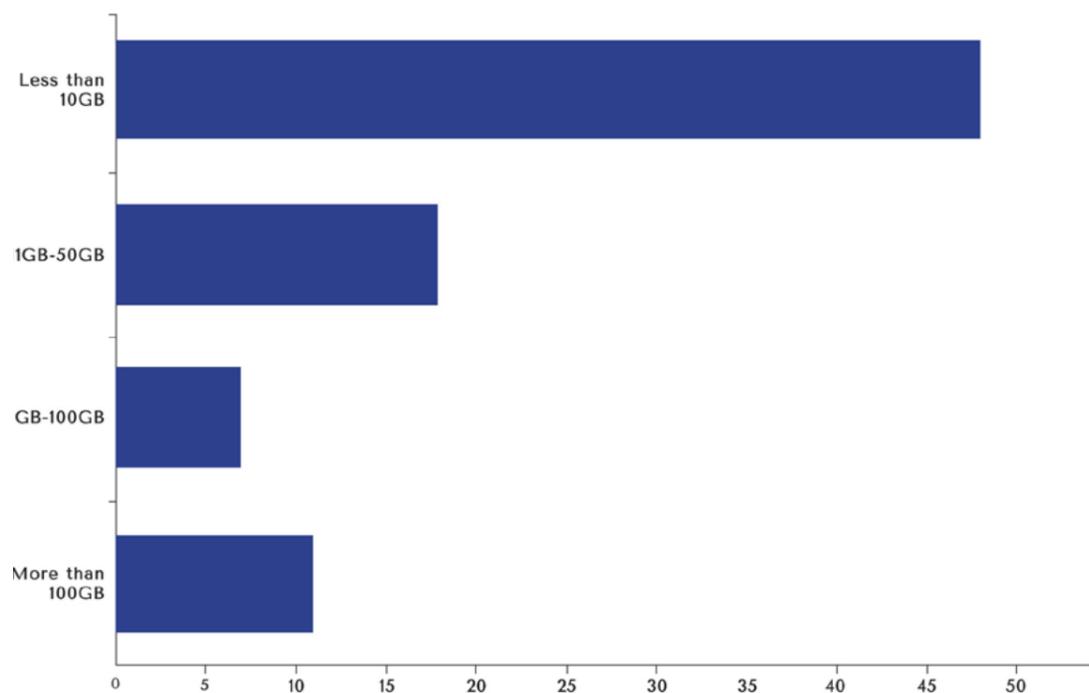
Respondents reported utilizing the internet for a variety of reasons. "Work" was the top activity choice for nearly nineteen percent (18.9%) of respondents; the next top five activities were "email and texting" (18.26%), "research" (13.38%), "gather financial information/make transactions" (12.95%), "watch videos/listen to music" (9.98%), and "voice/video communication." (8.49%)

Nearly seventy percent (69.23%) of business respondents managed a Facebook page, and 78 percent managed a website. Nearly twenty-three percent (22.92%) of respondents said employees used a virtual private network (VPN) to remotely connect to their employer's internal network from home.

More than forty-two percent (42.86%) of business respondents' employees utilized more than 10 GB of cloud storage. Fifty-seven percent (57.14%) of respondents used less than 10 GB.

ACTIVITIES	RESPONDENTS
Work	18.9%
Email and texting	18.26%
Research	13.38%
Gathering financial information / make transactions	12.95%
Watch videos/ listen to music	9.98%
Voice/ video communications	8.49%
Selling	8.07%
Cloud based software	7.65%
Other	2.34%
Hotel guest usage	
Social Media	
Ebay	
Transmission of health care information	
Estimating program	
Email, remote office communications	
Payroll, renew licenses	
Auditorium sound system	
Online registration, point of sale, donations, payments, billing and invoicing	

WHAT IS THE TOTAL USAGE OF CLOUD STORAGE MADE BY EMPLOYEES?

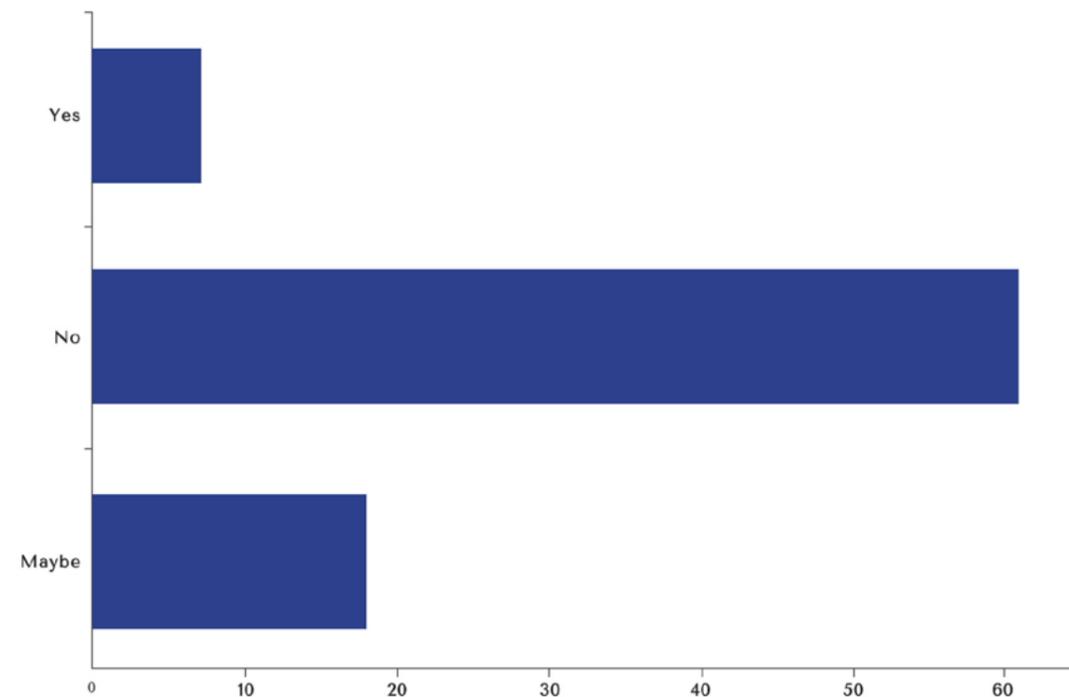


APPROXIMATELY FORTY-TWO PERCENT (42.86%) OF BUSINESS RESPONDENTS' SAID THAT THEIR EMPLOYEES UTILIZED MORE THAN 10GB OF CLOUD STORAGE.

FIFTY-SEVEN PERCENT (57.14%) OF RESPONDENTS REPORTED USING LESS THAN 10GB OF CLOUD STORAGE.

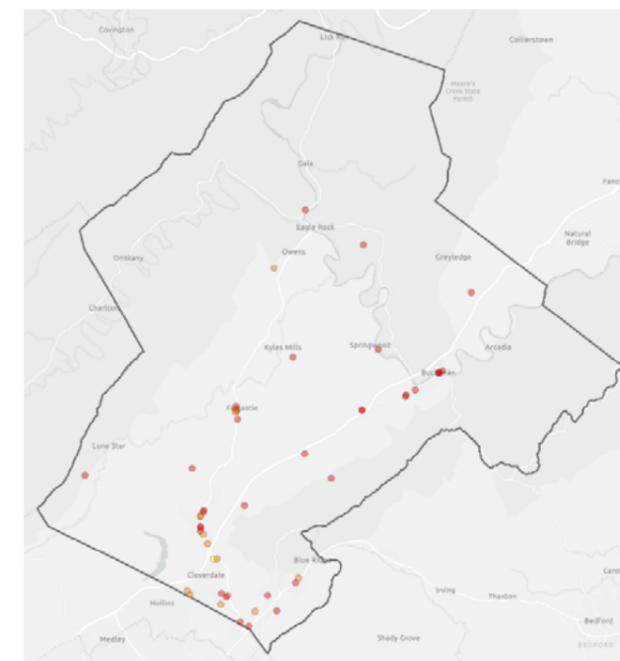
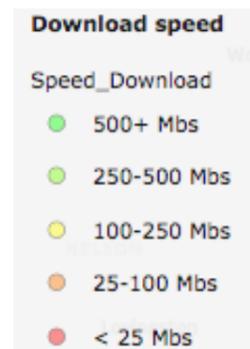
When asked "Would you hire more employees if you could secure reliable, faster internet service," eight percent (8.14%) of business respondents answered "Yes," seventy percent (70.93%) answered "No," and twenty percent (20.93%) answered "Maybe."

WOULD YOU HAVE MORE EMPLOYEES IF YOU COULD SECURE RELIABLE, FASTER INTERNET SERVICE?

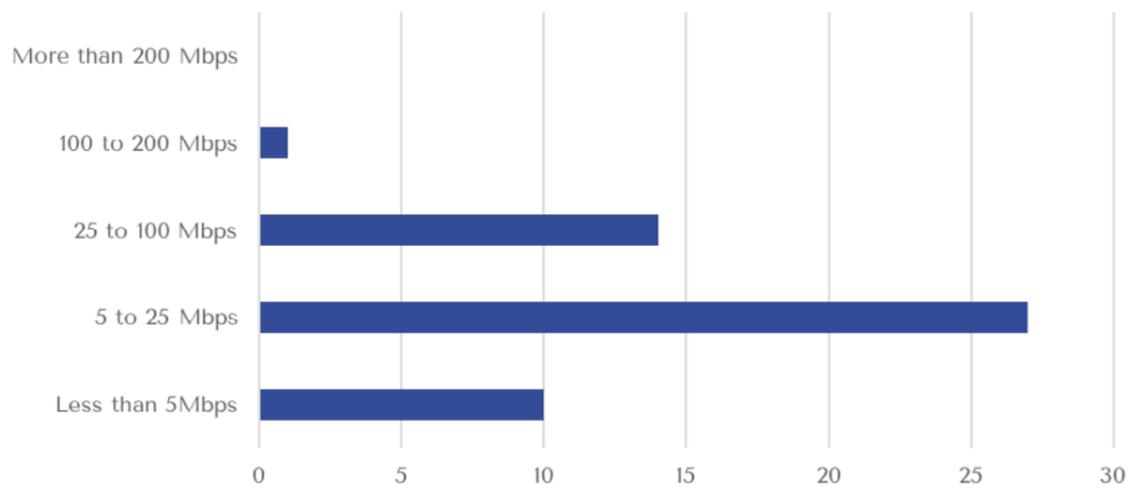


SPEED TEST RESULTS

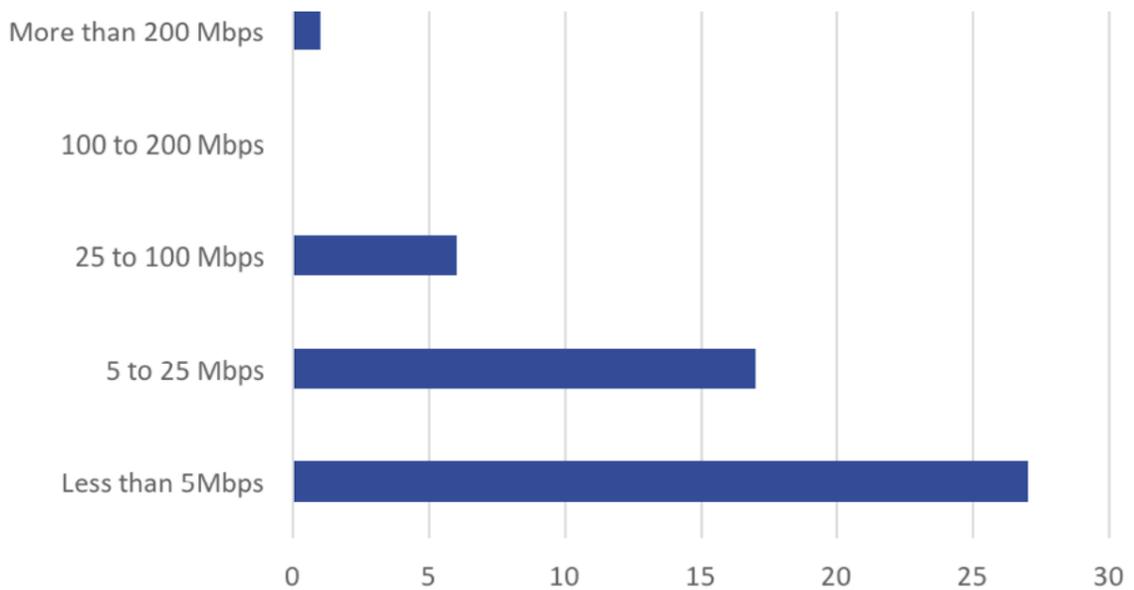
More than 50 Botetourt businesses provided answers to the optional speed assessment portion of the survey. The most common download speeds were five to 25 Mbps (51.92%). The most common upload speeds were less than five Mbps (52.94%).



TEST SPEEDS (DOWNLOAD)



TEST SPEEDS (UPLOAD)

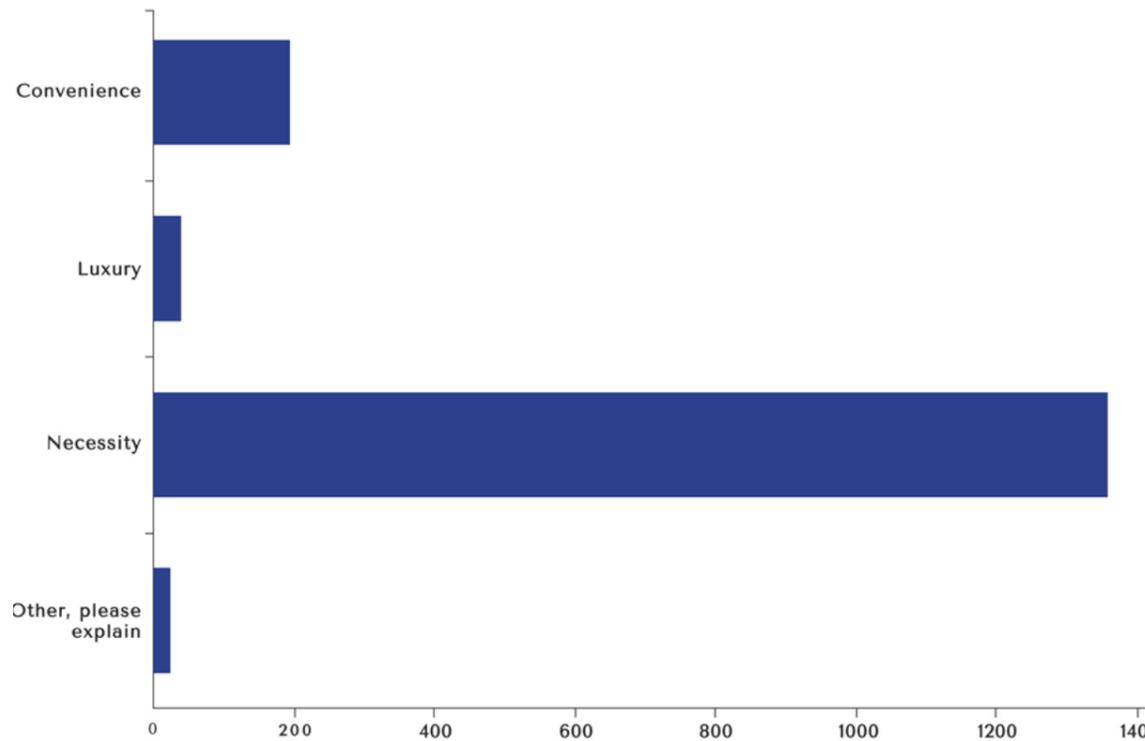


NO SPEEDS  
WERE  
SYMMETRICAL.

*BUSINESS RESPONDENT PERSPECTIVES ON INTERNET SERVICE*

Ninety-one percent (91.09%) of business respondents considered reliable internet a "necessity." Nearly six percent (5.94%) of Botetourt business respondents believed internet to be a "convenience." Less than 1%, just one person out of 101 that answered the question, felt that reliable internet was a "luxury"

DO YOU CONSIDER RELIABLE INTERNET A...



*NOT CONNECTED*

Of the six percent of business respondents that did not subscribe to internet services, one quarter (25%) reported that their decision was due to expense. Another quarter (25%) reported that they did not subscribe because options were limited at their location. Another sixteen percent (16.67%) reported that there were no service options available.

WHY DO YOU NOT HAVE INTERNET ACCESS?



83 PERCENT OF BUSINESS RESPONDENTS WHO DO NOT CURRENTLY HAVE SERVICE INDICATED THAT THEY WERE EITHER "LIKELY" OR "VERY LIKELY" TO BEGIN USING THE INTERNET FOR THEIR BUSINESS IN THE NEXT THREE YEARS.

“THE SERVICE AT THE TOP OF THE MOUNTAIN (AROUND FINCASTLE LIBRARY) IS FINE, BUT DOWN HERE IN THE VALLEY, THERE IS JUST NOTHING. THIS SHOULD HAVE BEEN A PRIORITY FOR THE LAST 20 YEARS.”

“FOR OUR COMPANY INTERNET IS 100 PERCENT ESSENTIAL. WE RUN A NATIONAL OPERATION AND 24/7 CALL CENTER OUT OF OUR OFFICE AND WE CANNOT WORK WITHOUT INTERNET. IF IT WERE TO GO DOWN, EVERYONE WOULD BE SENT HOME TO WORK REMOTELY. CURRENT INTERNET SERVICE IS GENERALLY GOOD.”

“IN MY OPINION OUR FUTURE IS MORE IMPORTANT THAN ANY OTHER CONSIDERATION. IN ORDER FOR YOUNG PEOPLE TO PROSPER AND HAVE THE ABILITY TO STAY AND FIND GAINFUL EMPLOYMENT BOTETOURT NEEDS CUTTING EDGE TECHNOLOGY AVAILABLE TO ALL OF THE COUNTY.”

“THEY NEED BETTER INTERNET & CELL PHONE SERVICE ASAP. UNABLE TO RUN A COMPANY WITH THE WAY THINGS ARE CURRENTLY. THINGS IN BOTETOURT NEED TO GET BETTER.”

“EXPAND FIBER OPTIC TO BOTH "SIDES" OF BOTETOURT. WE ON THE "ROUTE 11 SIDE" ARE MISSING OUT!!!”

“IF BROADBAND SERVICE WAS AVAILABLE AT OUR LOCATION WE WOULD SIGNUP [SIC] IMMEDIATELY.”

“OUTRAGEOUS PRICES FOR THE POOR SERVICE WE ARE GETTING.”

“CELL SERVICE AT BANK OF BOTETOURT IN TROUTVILLE IS HORRIFIC. THE PROBLEM STARTED IN LATE SUMMER 2017. WE REPORTED IT TO VERIZON BUT THEY PROVIDED NO REMEDY FOR THE PROBLEM. THEY SUGGESTED TO USE WIRELESS CALLING. WE DID THAT BUT IT DOES NOT HELP. OUR MOBILE PHONES WILL RING BUT THE PERSON ON THE OTHER END ONLY HEARS EVERY OTHER WORD. BOTETOURT COUNTY'S CELL SERVICE NEAR TRINITY RD IN TROUTVILLE (WHETHER ON US 11, I-81 OR 220) HAS REGRESSED BACK TO THE 1990S. PLEASE HELP IMPROVE MOBILE AND INTERNET SERVICE IN BOTETOURT. IF WE WANT TO BECOME A 'DESTINATION' FOR BUSINESSES AND FAMILIES, INTERNET AND CELL SERVICE IS A NECESSITY. IT NEEDS TO BE RELIABLE AND AFFORDABLE. RIGHT NOW, IT IS NEITHER.”

“IN OUR LINE OF WORK, OFFICER SAFETY IS CRITICAL. I AM CONCERNED FOR THE CELL PHONE COVERAGE WHEN MY STAFF ARE IN REMOTE AREAS OF BOTETOURT COUNTY. WE DON'T HAVE HAND HELD RADIOS AND RELY ON CELL PHONE SERVICE WHEN VISITING PROBATIONER'S HOMES.”

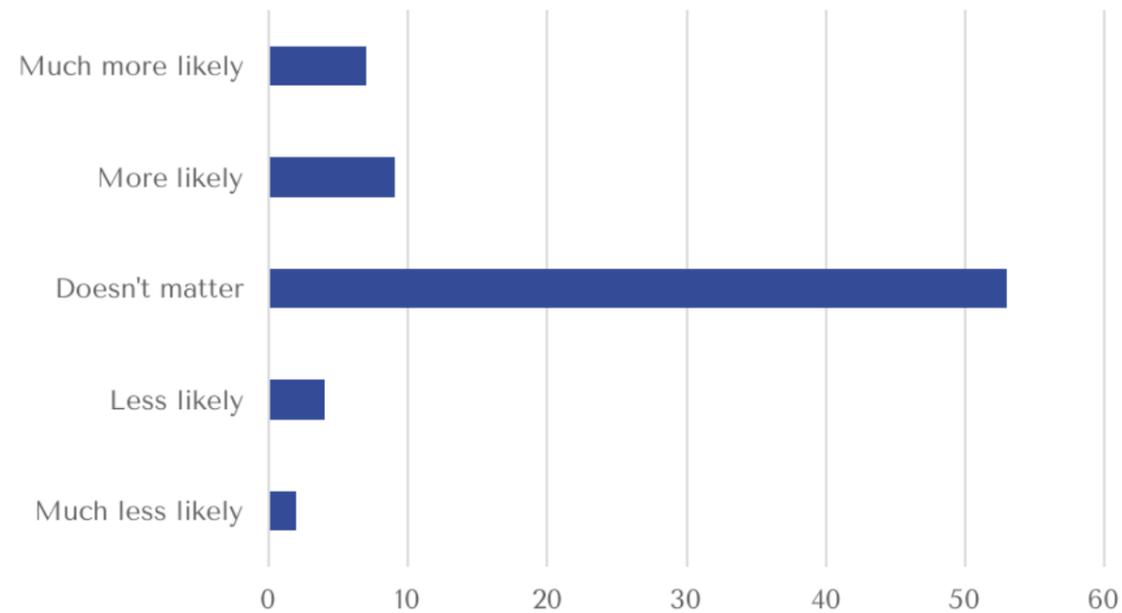
## COUNTY ROLE

Botetourt County does not currently provide any publicly funded internet or telephone services to the businesses of Botetourt County. The County holds a seat on the Roanoke Valley Broadband Authority board of directors which has built a municipal broadband

network throughout its other member communities, but to date, Botetourt has not invested in the full capital expenditure required to extend the regional network into Botetourt.

The following questions were designed to indirectly measure the community's interest in this type of network investment in years to come.

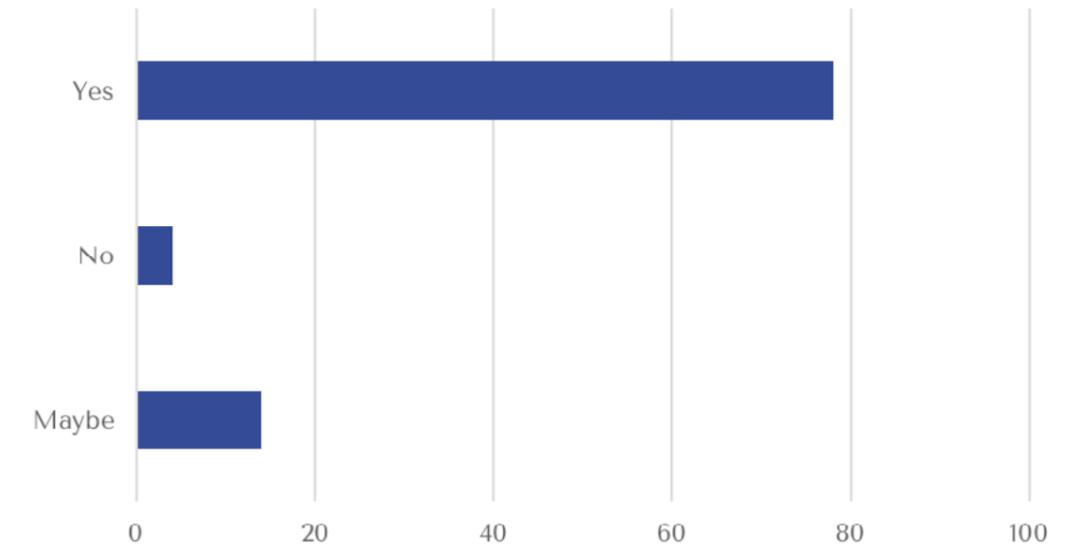
EVERYTHING ELSE BEING EQUAL, WOULD THE FACT THAT THE NETWORK WAS OWNED BY A PUBLIC UTILITY MAKE YOU MORE OR LESS LIKELY TO BUY SERVICES FROM IT?



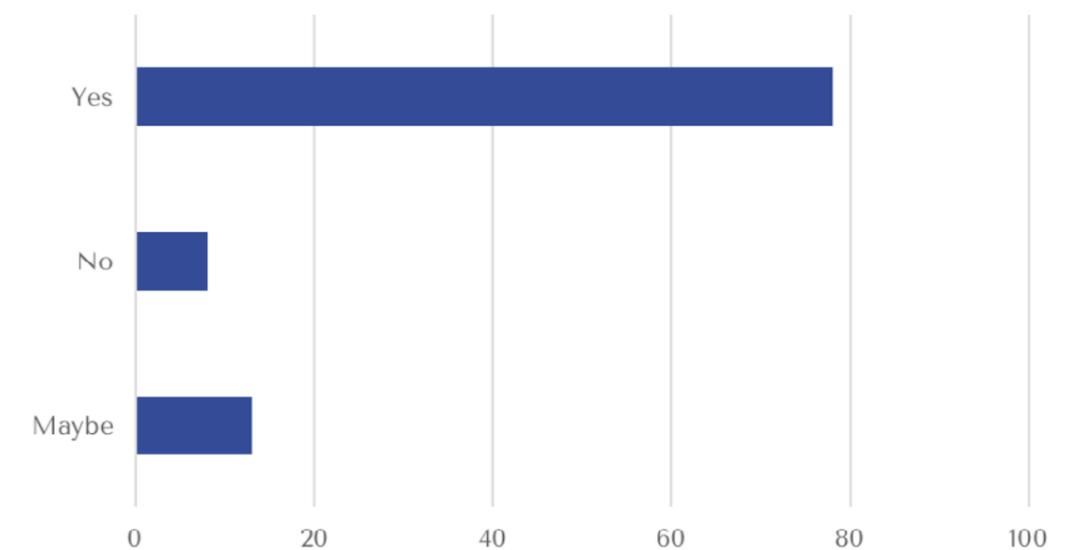
All else being equal, the majority of Botetourt businesses (70.83%) said it "Doesn't matter" if the network is owned by a public utility. Another twenty percent (20%) of businesses reported being "More likely" or "Much more likely" to purchase services from a public utility.

Finally, and as an indication of the engagement of Botetourt County business respondents, more than seventy-two percent (72.94%) of respondents expressed interest in being updated on the aggregate results of this survey and any related follow-on initiatives.

DO YOU BELIEVE BOTETOURT COUNTY OFFICIALS SHOULD MAKE IMPROVING BROADBAND COVERAGE A PRIORITY ISSUE OVER THE NEXT TWO YEARS?



DO YOU BELIEVE BOTETOURT COUNTY OFFICIALS SHOULD MAKE IMPROVING CELL PHONE SERVICE COVERAGE A PRIORITY ISSUE OVER THE NEXT TWO YEARS?



# BUSINESS SURVEY RESEARCH SUMMARY

With more than fourteen percent (14%) of Botetourt businesses participating, the Botetourt Telecommunications Survey of 2017 has revealed an increasing interest and need for affordable high-speed internet access, and options throughout the community.

Businesses of all sizes report using the internet for a wide variety of critical daily work functions such as payroll and financial management, research, and communications. On average, respondents reported that they use anywhere from three to 10 devices or more that are simultaneously connected to the internet in their facilities.

While multiple commercial internet and mobile phone service providers are available in the area, local businesses have expressed frustration with the quality and/or price of the available options.

Most conclusively, respondents have used their free form comments to express a clear belief in the value that high-speed internet would or could bring to the Botetourt business community. A clear majority indicated that they felt it should be a priority issue for local government to prioritize in the next two years.

Similarly, respondents indicated that they are placing an increasing importance on mobile phone reception and the mobile internet access these connected devices provide.

41.52 percent of respondents said they use Voice over Internet Protocol (VOIP), mobile phones, or personal use phones to run their business, while nearly all business respondents (87%) considered mobile phone reception a "necessity."

Many respondents indicated that they were happy with mobile phone reception in the county (62.37 percent selected "satisfactory" or "excellent"), but others (24.75%) highlighted specific areas of the region that remain disconnected or in need of improved service. These results indicate inconsistent cellular coverage throughout the county and may warrant additional study.

*78.65 PERCENT OF RESPONDENTS BELIEVE  
BOTETOURT COUNTY OFFICIALS SHOULD MAKE  
IMPROVING **BROADBAND COVERAGE** A  
PRIORITY ISSUE OVER THE NEXT TWO YEARS.*

*78.65 PERCENT OF RESPONDENTS BELIEVE  
BOTETOURT COUNTY OFFICIALS SHOULD  
MAKE IMPROVING **CELL PHONE SERVICE  
COVERAGE** A PRIORITY ISSUE OVER THE NEXT  
TWO YEARS.*

THE COUNTY  
RECEIVED  
MORE  
THAN 1,600  
RESIDENTIAL  
SURVEY  
RESPONSES

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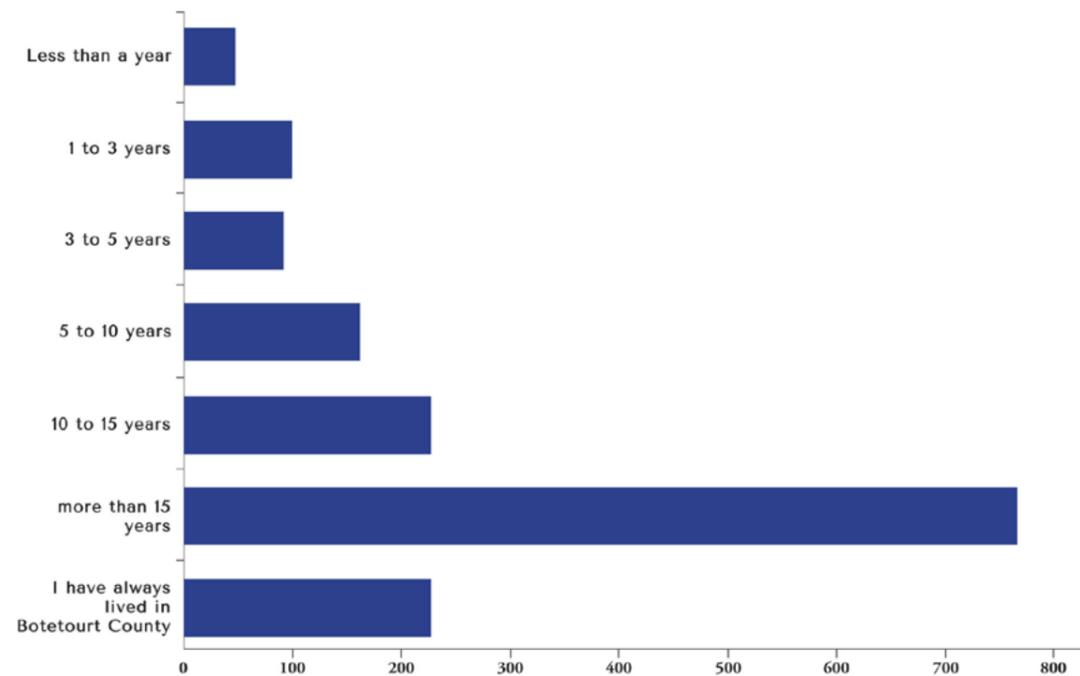
RESIDENT  
SURVEY RESULTS

## RESPONDING PROFILE

The county received more than 1,600 responses to the survey, with a response rate of more than 14 percent of the residential homes in Botetourt County. The respondent sample represented those who know Botetourt best: sixty-one percent (61%) of respondents have lived in Botetourt County for more than 15 years. Ninety-nine percent (99%) of respondents identified as the person responsible for managing technology expenditures for their household.

The average respondent is employed full-time (45.26%) or retired (37.15%) and between the ages of 19 and 90 years old (58 average age). Respondents indicated a large age-range of people living in their home, for example, with twenty-seven percent (27.76%) between the ages of 45 and 64, six percent (6.45%) under age five, and seven percent (7.37%) over age 75. Thirty-four percent (34%) of respondents indicated someone in their home telecommutes or works remotely from home. More than sixteen percent (16.72%) of respondents indicated someone in their household operates a home-based business.

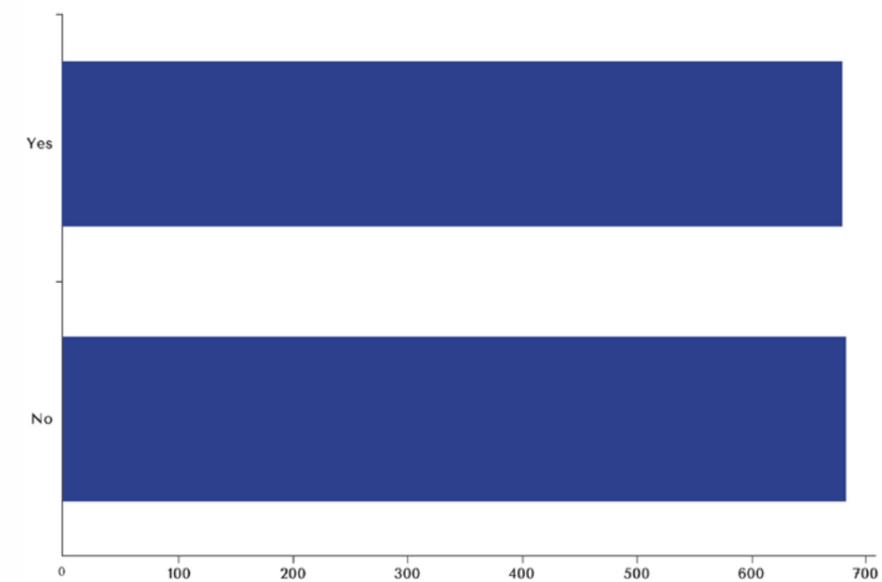
### HOW LONG HAVE YOU LIVED IN BOTETOURT COUNTY?



## CELLULAR/MOBILE PHONE SERVICE

Respondents were evenly split when asked if they used a landline phone service at home. Most respondents (80.42%) have been a customer of their current telephone service provider for more than five years. Fifteen percent (15.88%) have been a customer for one to five years, and nearly four percent (3.71%) for less than one year. Seventy-three percent (73%) of respondents bundle their phone and internet services from the same provider.

### DO YOU USE A LANDLINE PHONE SERVICE AT YOUR HOME?



*80.42 PERCENT HAVE BEEN A CUSTOMER OF THEIR CURRENT TELEPHONE SERVICE PROVIDER FOR MORE THAN FIVE YEARS.*

### EXISTING TELEPHONE SERVICE PROVIDERS

LAND LINE SERVICES: Lumos, Verizon, and Comcast are the most used land line telephone service providers in Botetourt County with more than 90 percent of respondents reporting they are customers of one of these three firms. In all, however, residential respondents surveyed identified 17 different telephone service providers of various types operating in the area, detailed in the adjacent chart. Additionally, providers with less than five respondents included Cox, HughesNet, Basik Talk, and U.S. Cellular.

COMPANY	PERCENT OF RESPONDENTS SERVED
Lumos	55.95%
Verizon	23.66%
Comcast	10.57%
nTelos	2.23%
AT&T	1.64%
VOIP Services	1.49%

MOBILE PHONE SERVICES: Verizon is the most used mobile telephone service provider in Botetourt County with more than 61 percent of respondents reporting that they are customers. Respondents of the survey identified 30 mobile phone service providers in the area. Additionally, respondents reported other providers with less than 12 respondents, including nTelos, Boost, Virgin Mobile, Cricket, Republic, Google Fi/Project Fi, Consumer Cellular, Gitterbug, T-Mobile, Lumos, Metro PCS, Net 10, Ting, FreedomPop, Great Call, PagePlus Cellular, Pure Talk, STI Mobile, Sprint, Tracfone Total Wireless, and other options provided by their workplace.

COMPANY	PERCENT OF RESPONDENTS SERVED
Verizon	61.74%
Sprint	11.33%
US Cellular	8.10%
AT&T	7.58%
Tracfone	2.70%
Straight Talk	1.35%

### SERVICE RANGES AND LOCATIONS

Nearly fifty-two percent (51.85%) of survey respondents in Botetourt reported paying \$50 or less for their residential phone service each month. Another 39.52 percent of responding residents paid between \$51 and \$100 per month.

Of users currently subscribing to phone service, forty-two percent (42.94%) would rate their service as "Satisfactory." Twenty-three percent (23.38%) said it is "excellent" and twenty-two percent (22.21%) said it is "acceptable." Only 11.47 percent indicate their phone service "needs improvement."

Botetourt County residents overwhelmingly want to be connected by mobile phone. In response to the question, "Do you have a mobile phone?" More than ninety-eight percent (98.17) of Botetourt County resident respondents answered "yes," and a further seventy-five percent (75.36%) considered their mobile phone as their primary phone.

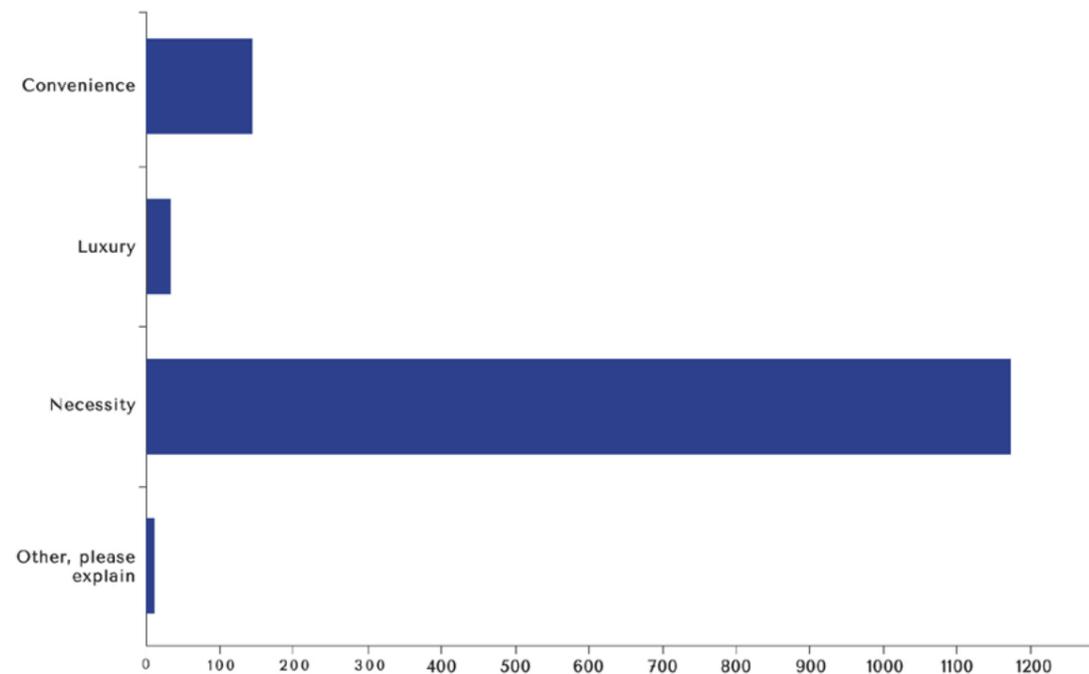
#### DO YOU CONSIDER YOUR MOBILE PHONE YOUR PRIMARY PHONE?



The majority of Botetourt respondents rated mobile phone reception positively. Nearly sixty-six percent (65.92%) of respondents rated their mobile phone reception at home as "excellent" or "satisfactory." Yet, another twenty percent (20.79%) rated it as "needs improvement" or "not available."

EIGHTY-SIX PERCENT (86.39%) OF RESPONDENTS, A TOTAL OF 1,174 REPRESENTATIVE HOUSEHOLDS, SAID THEY CONSIDER MOBILE PHONE RECEPTION TO BE A "NECESSITY."

DO YOU CONSIDER RELIABLE MOBILE PHONE RECEPTION A...



The majority of Botetourt respondents rated their current mobile phone service positively. Nearly sixty-six percent (65.92%) of respondents rated their mobile phone reception at home as "excellent" or "satisfactory." However, more than twenty percent (20.79%) of respondents or ~300 households rated cell phone reception at their home as "needs improvement" or "not available."

"LOSE CALLS AT TIMES, RECEPTION IS INTERMITTENT IN CERTAIN AREAS."

"WORKS THROUGH MOST OF THE HOUSE."

"ONLY THE OCCASIONAL SIGNAL DROP."

"THE ONLY REASON I HAVE A LANDLINE IS THAT CELL SERVICE IS SO UNRELIABLE HERE. THIS NEEDS MORE IMPROVEMENT."

"LOCATED IN A DEADSPOT."

"CANNOT TAKE CALLS RELIABLY."

"VERY SPOTTY SERVICE"

"TERRIBLE AND HAS GOTTEN EXPONENTIALLY WORSE OVER THE PAST YEAR."

"IT'S BETTER THAN IT USED TO BE."

"I HAVE TO USE WI-FI CALLING WHICH OFTEN DOESN'T WORK BECAUSE OF MY SLOW INTERNET SPEEDS"

"NO COVERAGE IN ORISKANY."

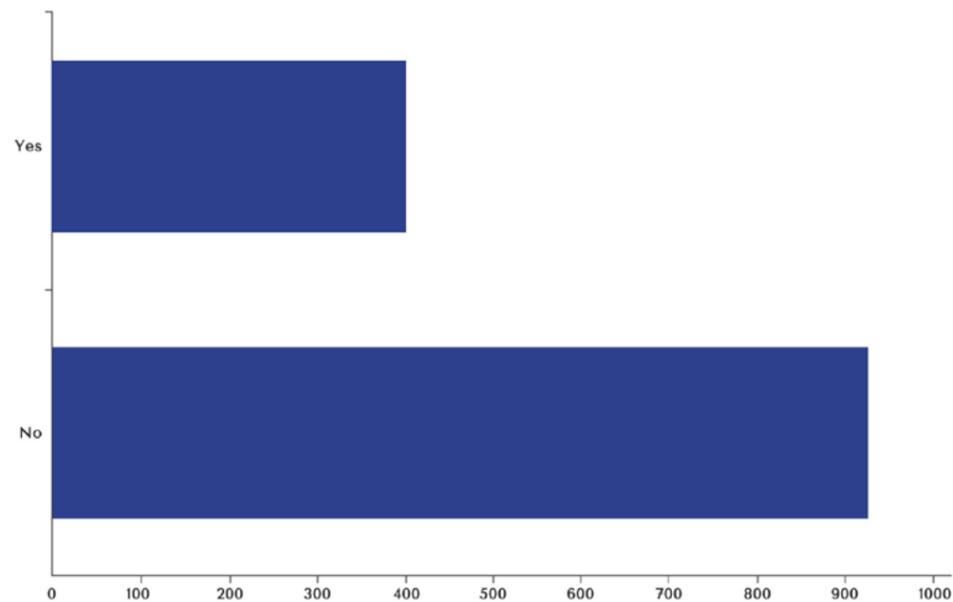
"SOMETIMES TEXT MESSAGES GET THROUGH."

### RESPONDENT CELLULAR/MOBILE PHONE USAGE

Most Botetourt respondents (82.95%) used their mobile phone to access the internet, but when at home, sixty-two percent (62.61%) are most likely to choose their wireless connection to access the internet over their data plan. Twenty-two percent (22.96%) were most likely to connect to the internet via their mobile data plan when at home.

Thirty percent (30.23%) of respondents used their mobile phone hotspot to allow other people or nearby devices to access the internet.

#### DO YOU EVER USE YOUR MOBILE PHONE AS A HOTSPOT TO ALLOW OTHER PEOPLE OR NEARBY DEVICES TO ACCESS THE INTERNET?



83.71 PERCENT OF RESPONDENTS, A TOTAL OF 1,357 REPRESENTATIVE HOUSEHOLDS, SAID THEY BELIEVE RELIABLE INTERNET TO BE A "NECESSITY."

"INTERNET DATA IS MORE IMPORTANT [THAN CELL SERVICE]. I CAN MAKE CALLS OVER WI-FI."

### INTERNET SERVICE

The data shows that most residents want to see action. When surveyed, most Botetourt residential respondents stated that they currently subscribed to internet access in their homes (92.43%). Sixty-seven percent (67%) of those respondents reported that they already had internet service but would like improved service options, while twenty-five percent (25.43%) were happy with their current service. Only a small percentage (7.57%) of respondents did not have internet access at home.

Thirty-seven percent (37%) of households responding to the survey had six to 10 devices accessing the internet in their household, and thirty-five percent (35%) had three to five devices connected. Nearly 50 percent of respondents reported experiencing slower internet speeds when multiple people in their household were online at the same time (a sign of insufficient bandwidth).

#### EXISTING PROVIDERS

More than 87 percent of respondents reported that they were customers of Lumos, Comcast, or Verizon, making those providers the most-used internet service providers in Botetourt County. Respondents surveyed identified 26 internet service providers in the area. The top ten are listed in the chart at the top of the next column. The other 16 companies each had less than five respondents name them as their residential internet service provider but included: Cox, Direct TV, T-Mobile Straight Talk, AOL, United Cellular (Mojo), B2X, Via Sat, Consumer

COMPANY	PERCENT OF RESPONDENTS SERVED
Lumos	44.82%
Comcast	27.04%
Verizon	14.95%
Hughes Net	3.18%
Shentel	1.99%
Dish TV	1.27%
Sprint	0.95%
AT&T	0.72%
Excede	0.63%
US Cellular	0.55%

Cellular, Viacom, CTI Networks, Wild Blue, DSL, Daleville Town Center, Infinet (dial-up), and nTelos.

A large percentage of respondents (66%) have been a customer of their current internet service provider for more than five years. Twenty-five percent (25%) have been a customer for one to five years, and eight percent (8%) for less than one year. Sixty-seven percent (67%) of respondents' internet service is bundled with another service such as phone (57.31%), cable television (35.28%), or satellite television (3.11%). Most respondents have always used the same internet service at their current residence (68.32%).

"IT [ALL] DEPENDS ON THE LOCATION. THERE ARE SOME AREAS OF BOTETOURT COUNTY I DO NOT EXPECT COVERAGE."

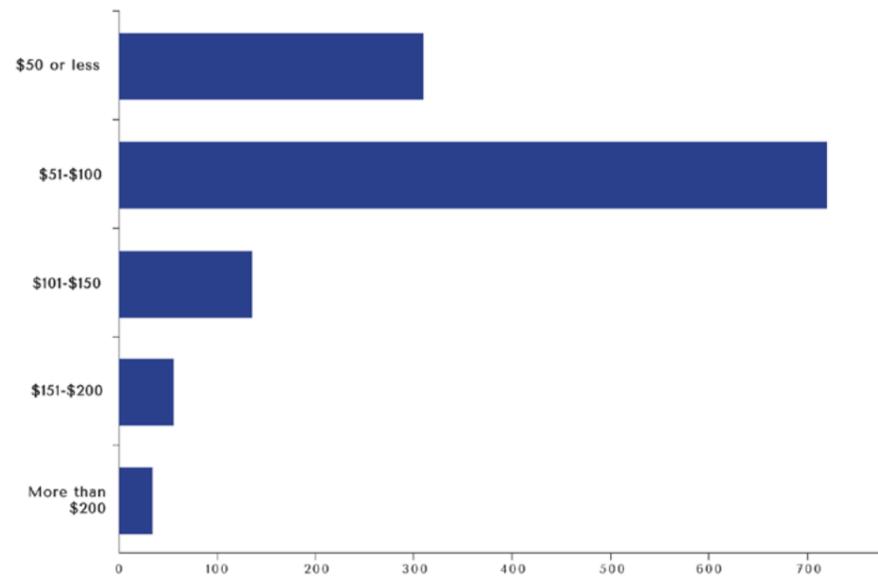
### SERVICE RANGES AND LOCATIONS

More than fifty-seven percent (57%) of respondents paid between \$50 to \$100 per month for internet service; 24 percent paid less than \$50, and less than 20 percent paid more than \$100. When asked how much they would be willing to pay monthly for their dream residential internet service solution, 47.16 percent of respondents

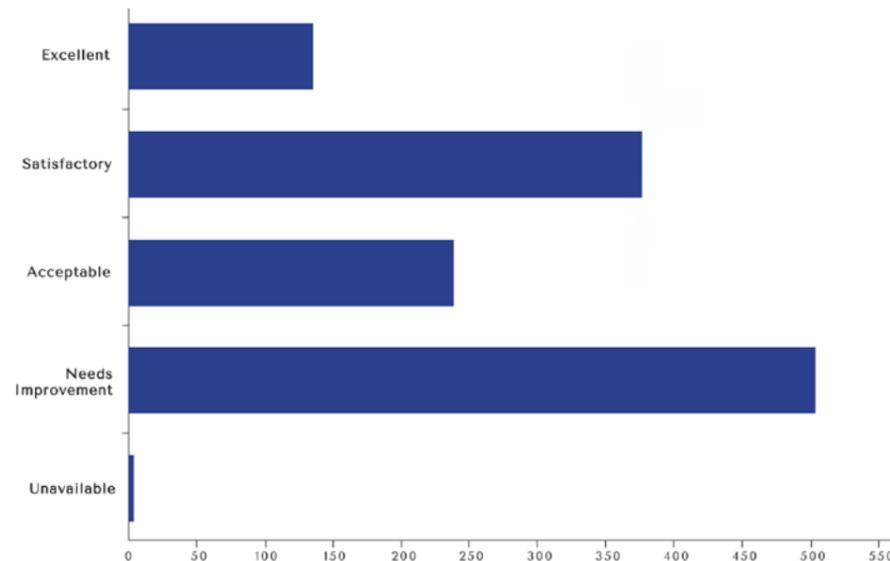
said \$50 to \$100, while 42.83 percent preferred to spend \$50 or less. Ten percent of respondents would be willing to pay more than \$100 for their dream solution.

Of users currently subscribing to internet, forty percent (40%) would rate their service as "needs improvement," twenty-nine percent (29%) say it is "satisfactory."

#### HOW MUCH DO YOU PAY FOR INTERNET SERVICE AT YOUR HOME EACH MONTH?



#### HOW WOULD YOU RATE THE INTERNET SERVICE AT YOUR HOME?



## 53 PERCENT OF RESIDENTIAL RESPONDENTS SAID THEIR HOUSEHOLD USES THE INTERNET FOR SCHOOL WORK OR JOB TRAINING.

### RESIDENTIAL RESPONDENT INTERNET USAGE

Botetourt County residents with access at home frequently use their home internet connections throughout their daily lives. About one third of respondents indicated their households use the internet for three to five hours a day (32%). Responses were similar when asked how long individuals used the internet per day, with 39 percent responding three to five hours.

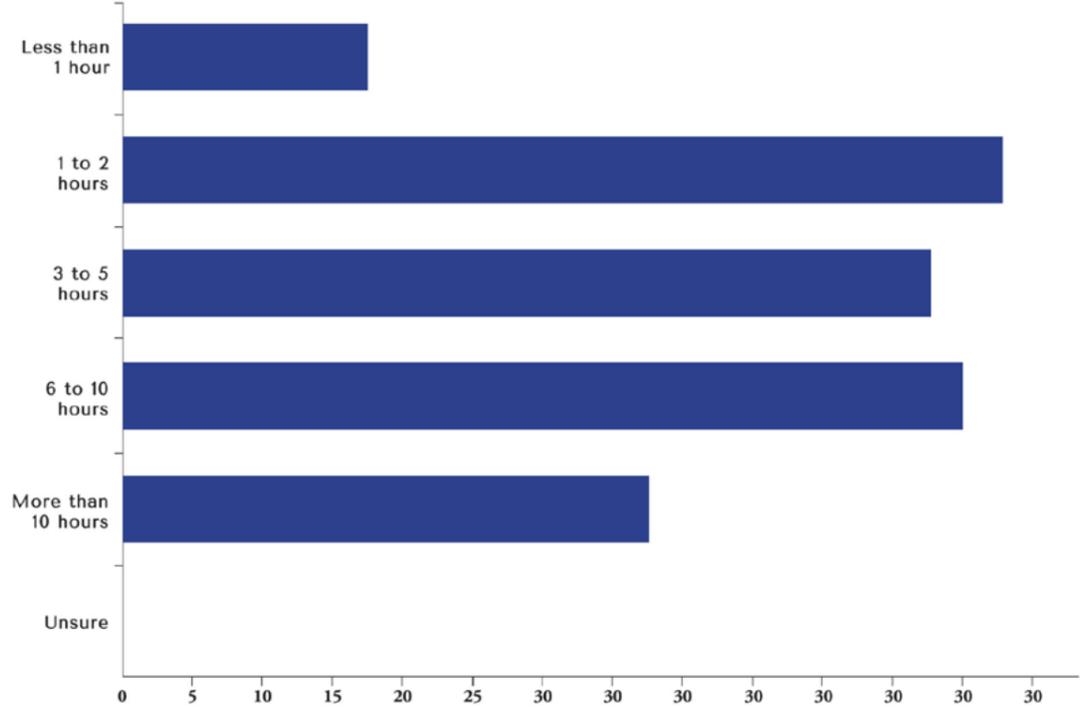
Respondents reported that they utilize the internet for a variety of reasons. While no one online activity as a stand-out, the top five activities were "browse the web," "emailing friends/family," "making online purchases," "gathering financial information/make financial transactions/budgeting," and "gathering health information/managing health." More than fifty-three (53%) percent of respondent households use the internet for school work or on-the-job training.

Other activities selected included learning about career planning/job searching, learning about local businesses or events, streaming music or videos, working from home, file sharing, gaming, video or voice communication, religious activities, library services, news/weather/sports updates, volunteering, home automation, data backup, professional networking, and helping kids with homework.

48.7 PERCENT OF RESPONDENTS ANSWERED SOMEONE IN THEIR HOME WOULD BE LIKELY TO TELECOMMUTE OR WORK FROM HOME IF THEY COULD DEPEND ON FAST, RELIABLE INTERNET SERVICE.

ACTIVITIES	RESPONDENTS
Browsing the web	9.69%
Emailing friends/ family	9.45%
Make online purchases (books, electronics, travel, clothes or other)	9.39%
Gathering financial information / make financial transactions/ budgeting	8.44%
Gathering health information / managing health	7.96%
Personal or professional research	7.37%
Social networking	7.29%
Learning about local businesses and/or activities	7.10%
Streaming music or video	6.56%
Online education	4.98%
Working from home	4.37%
File sharing	3.56%
Gaming	3.52%
Voice / Video communication	3.51%
Career planning / job searching	3.29%
Searching for work / employment / career advancement opportunities	3.06%
Other	0.46%
Online registration, point of sale, donations, payments, billing and invoicing	

ON AVERAGE, INCLUDING WORK AND HOME, HOW MUCH TIME DO YOU PERSONALLY SPEND ONLINE EACH DAY?



32.67% of respondents reported using virtual private networks (VPNs) to connect to an employer’s internal network from home. Since VPN networks are typically leveraged by larger and more established companies, it is likely safe to correlate this figure with an assumption that these associated jobs are typically more secure and higher paying - often corporate management positions.

ACCESS AROUND TOWN

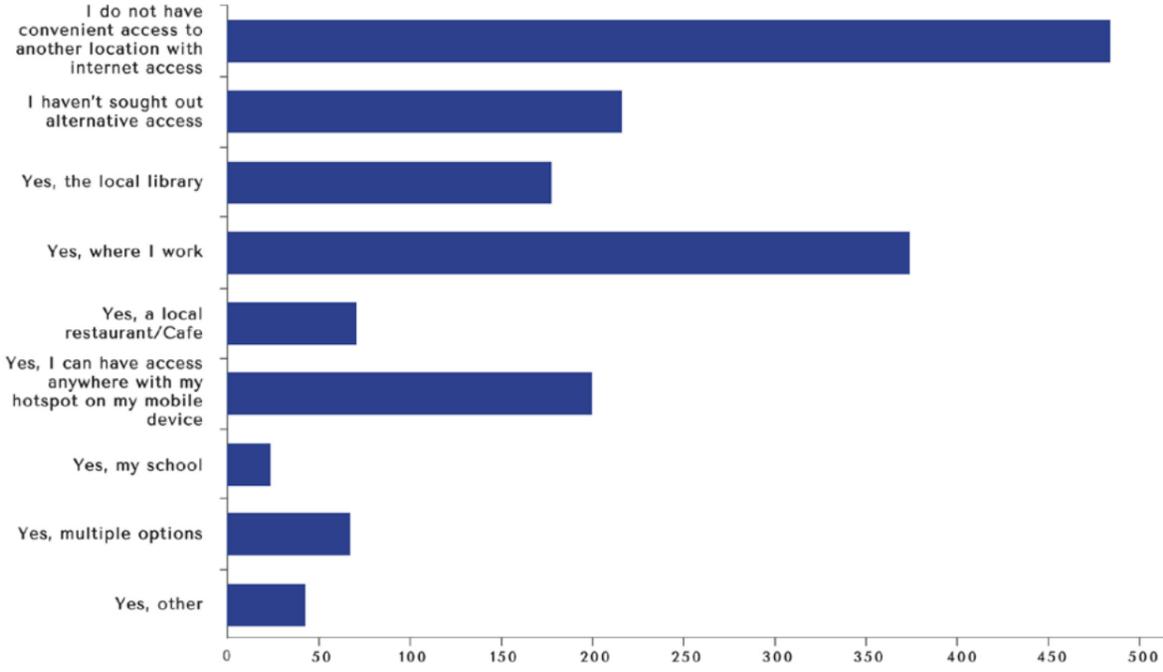
Internet access is an important consideration to respondents outside of the home. Twenty-four percent (24%) of respondents seek out locations that provide free wi-fi, and an nearly eighteen percent (17.96%) answered they seek out free wi-fi “sometimes.” Yet, twenty-nine percent of respondents answered they do not seek out locations with free wi-fi, with

one respondent answering “in this day and age I expect quality establishments to offer free wi-fi.” More than twenty-nine percent (29%) of respondents indicated they do not have access to another location with internet access, outside the home. Others access the internet from locations such as their work (22.6%), via their mobile device (12%), the library (10.73%), a restaurant (4.28%) or at school (1.45%). Thirteen percent (13.02%) of respondents have not sought out alternate access, and four percent (4.1%) or respondents have multiple options.

Respondents rated the quality of their alternative internet access on a scale of one to 100.

- Average score for speed was scored 60.7
- Average reliability was scored 65.3
- Average ease of access was scored 65.7

DO YOU HAVE CONVENIENT ACCESS TO ANOTHER LOCATION WITH INTERNET ACCESS?



While the averages are not notably discouraging, it is worth noting that connection quality and speeds are not uniform across the community and event alternate location options are not meeting the full needs of the entire County’s population.

Thirty-one percent (31%) of respondents report that their needs are met, while the remaining sixty-nine percent (69%) reported that their service options limit them from:

- Transmitting large amounts of data (15.71%)
- Video conferencing (11.18%)
- Working from home (9.92%)
- Taking online courses (8.22%)
- Conducting research (6.25%)
- Sharing healthcare communications (3.34%)
- More/other (14.58%)

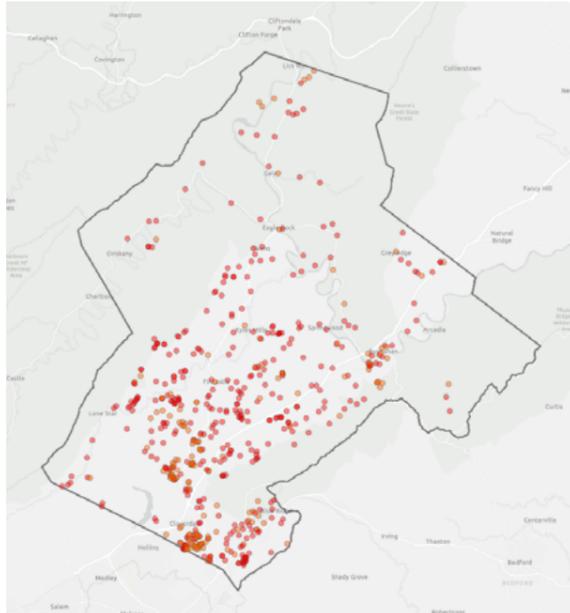
Nearly fifty-five percent (55%) of respondents said they would be very likely to access the internet from home more often if a faster/more reliable service option was available.

A small group (8%) of respondents reported having no internet access at home, with the majority of those citing issues with service as the primary reason why. Twenty-eight percent (28.3%) of these “unconnected” respondents indicated they have no service options. Nineteen percent (19.5%) said the slow connection speeds offered in their area do not meet their needs. Another seventeen percent (17%) reported the internet is too expensive, and less than nine percent (8.81%) said they have no need for internet access at home.

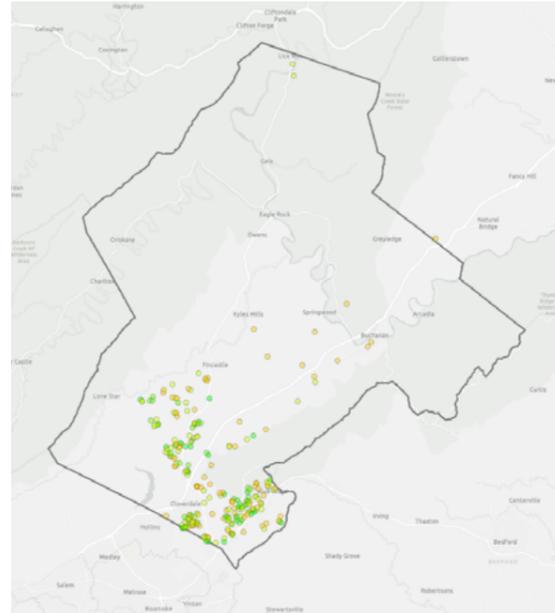
## SPEED TEST RESULTS

More than 1,000 Botetourt respondents voluntarily provided answers to the optional speed test portion of the survey. The majority of them (more than ninety-two percent \*92%) took the speed test from their home.

### TEST SPEEDS (DOWNLOAD)



*Red and orange dots each represent a connected household whose internet service did not qualify as having "Broadband" level service by the Federal Communications Commission Standard (68.73%).*

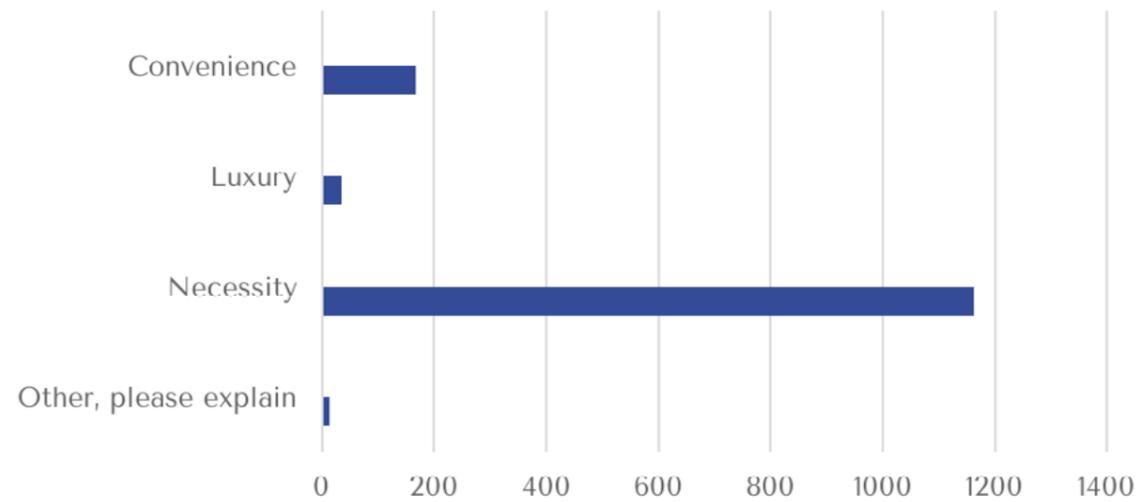


*Green and yellow dots each represent a connected household whose internet service did qualify as "Broadband" level service by the Federal Communications Commission Standard based on download speeds alone (31.27%).*

While the average county internet speed (based on those who took the test) was consistent with national averages for rural regions, the spread of between those with extremely fast speeds and those with barely passable internet connections was far more dramatic than typically seen. The most common upload speeds were also less than 25 Mbps (94.14%). Fourteen respondents who attempted the speed test reported that they could not get the program to run because their internet connection was too slow to run the program.

ONLY 271 OF THE MORE THAN 800 HOUSEHOLDS WHO TOOK THE RESIDENTIAL SPEED TEST HAD BASIC "BROADBAND" LEVEL DOWNLOAD SPEEDS AS DEFINED BY THE FEDERAL COMMUNICATIONS COMMISSION.

DO YOU CONSIDER RELIABLE INTERNET A....



*RESIDENTIAL PERSPECTIVES ON INTERNET USAGE*

More than eighty-three percent (83%) of Botetourt respondents considered reliable internet a "necessity." Twelve percent (12%) consider it a "convenience," and two percent (2.47%) viewed it as a "luxury."

Open comments were varied but heavily weighted to demonstrate a wide number of use cases and personal scenarios:

- "[I] have a school age grandson that has to use the internet, I pay bills on line. I have a disabled son who depends on the internet for communication."
- "[Internet] is an extreme necessity. It is important Need for daughter with autism spectrum disorder to watch shows and play learning games"
- "My hobby is genealogy and I use the internet daily to research my different Ancestors."
- "Most modern appliances, tech and communications require fast internet"
- "We use a lot of internet, yet ours is not fast enough to do many of the things we would like, so we are very limited. "
- "Unreliable service is why I don't have a home business. It is down more than up daily! My daughter frequently has to go into Daleville to use wifi to complete her homework courses for online college studies."
- "Over-priced rip off"
- "Don't use it"
- "Cost too much"
- "Work from home is critical!!!!!!!!!"
- "Keeping up with the news/ local government access- we read the Buchanan Town Council minutes online when we can't attend the meetings"
- "I would look to work at home if I had a faster connection and thought it would be reliable."

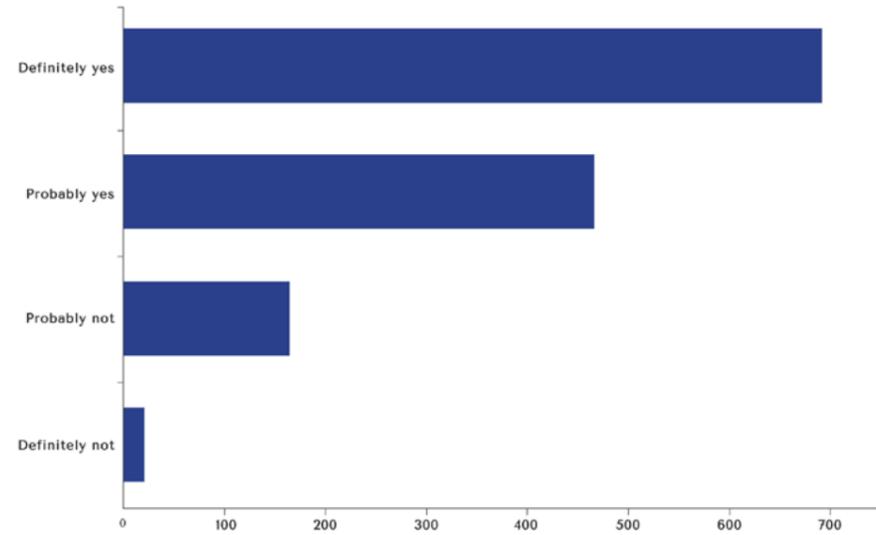
"MY CAREER DEPENDS ON FAST INTERNET! I AM CONSIDERING A MOVE FOR THAT REASON"

*COUNTY ROLE AND CONSIDERATIONS*

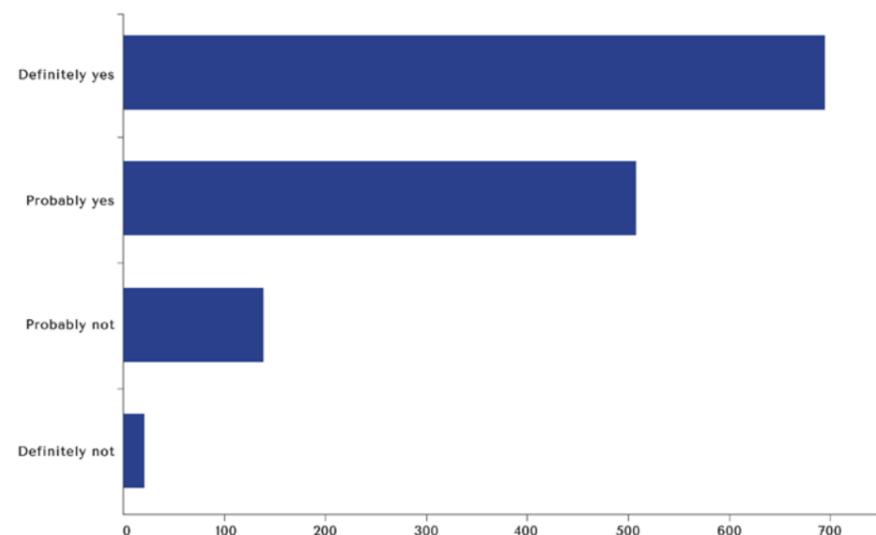
Botetourt County does not currently offer or provide any publicly funded internet or telephone services to residents. The County holds a reserved founding member Board of Directors seat on the Roanoke Valley Broadband Authority, an organization which has built an open access regional municipal broadband network throughout its three other member communities (Roanoke City, Roanoke County, and the City of Salem). To date, Botetourt County Government has not made a decision to invest the capital expenditure funds required to extended the RVBA network into Botetourt County.

*PROPERTY VALUES*

DO YOU BELIEVE THE AVAILABILITY OF RELIABLE INTERNET ACCESS AFFECTS YOUR PROPERTY OR HOME VALUE?



DO YOU BELIEVE THE AVAILABILITY OF STRONG CELL PHONE SERVICE AFFECTS YOUR PROPERTY OR HOME VALUE?

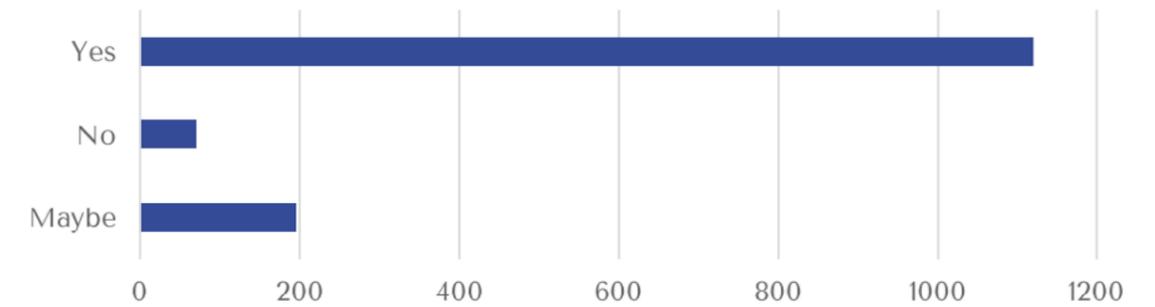


Respondents indicated that they felt strongly that their access to reliable phone and internet impacts their home property values. More than eighty-six percent (86.39%) of respondents believed the availability of reliable internet access affects their property or home value, and more than 88 percent of Botetourt resident respondents believed strong cell phone service affects their property or home value.

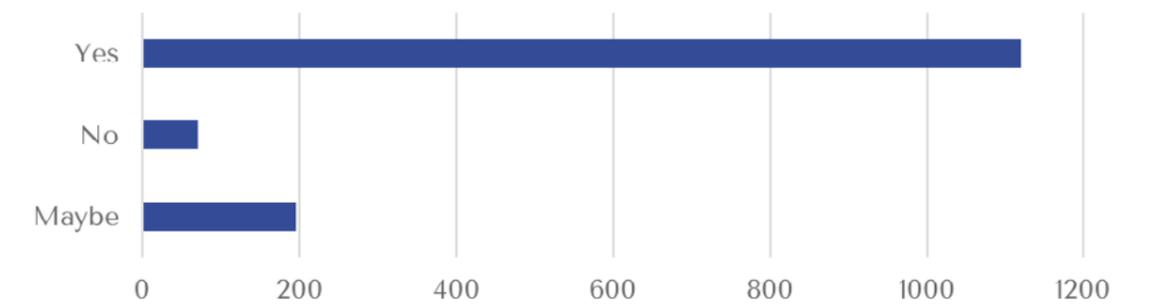
*COMMUNITY PRIORITIES*

More than eighty percent (80.49%) of respondents believed Botetourt County officials should make improving broadband coverage a priority issue over the next two years. Similarly, nearly seventy-five percent (74.69%) of respondents believed Botetourt County officials should make improving cell phone service coverage a priority issue over the next two years.

DO YOU BELIEVE BOTETOURT COUNTY OFFICIALS SHOULD MAKE IMPROVING BROADBAND COVERAGE A PRIORITY ISSUE OVER THE NEXT TWO YEARS?



DO YOU BELIEVE BOTETOURT COUNTY OFFICIALS SHOULD MAKE IMPROVING CELL PHONE SERVICE COVERAGE A PRIORITY ISSUE OVER THE NEXT TWO YEARS?



## RESEARCH SUMMARY

With more than 14 percent of all Botetourt residential households reporting, the Botetourt Telecommunications Survey of 2017 revealed increasing interest and demand for high speed internet access options and greater cellular phone infrastructure across the county.

Residents use the internet for a wide variety of daily tasks, including shopping, education, job training, healthcare, research, and communications, and typically use anywhere from three to 10 devices that connect their home to the internet.

While multiple service providers are available in the area, residents have expressed consistent frustration with the speed, reliability, and/or price of the available residential options.

Most conclusively, residents have indicated that they believe a lack of high-speed internet is negatively impacting property values in the community. A clear majority of respondents indicated that improving broadband coverage should be a priority for local government leaders in the next two years (80%), and that improving cell phone service/coverage should be a priority for local government leaders in the next two years (74%).

Similarly, respondents are making clear by their behavioral choices that high quality mobile phone reception and the mobile internet access have become table-stakes of the modern lifestyle.

Most respondents were relatively satisfied with mobile phone reception in the county (65 percent selected "satisfactory" or "excellent"), but others highlighted specific areas of the county that remain disconnected or in need of improved service (~21%).

About one-half of respondents to the survey (50.11%) reported that they do not maintain a landline phone service for their household. By contrast, nearly all respondents (98.17%) reported that they have a mobile phone.

MORE THAN SEVENTY-  
NINE PERCENT (79%) OF  
RESPONDENTS ASKED  
TO BE UPDATED ON THE  
AGGREGATE RESULTS OF  
THIS SURVEY AND ANY  
RELATED FOLLOW-ON  
INITIATIVES THAT MAY  
RESULT.

BOTETOURT COUNTY  
HAS A UNIQUE  
OPPORTUNITY TO  
LEVERAGE BROAD  
COMMUNITY  
SUPPORT TO ADDRESS  
THE EVOLVING  
TELECOMMUNICATIONS  
NEEDS OF THEIR  
COMMUNITY.

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RECOMMENDATIONS

# RECOMMENDATIONS

Based on the findings of this initial study, Eddy Communications recommends Botetourt County take the following measured next steps:

1. The Department of Economic Development and Department of Community Development should review the provided interactive maps and consider coverage trends and end-user satisfaction scores on future zoning and development plans.
2. The Board of Supervisors should consider appointing a Telecommunications Working Group to begin investigating appropriate ways for local government to make "improving broadband and cellular phone service in the community a priority over the next two years."
3. Enable and encourage the working group to:
  - Meet with existing local providers to determine what opportunities to partner to solve the challenges outlined in this report may exist. Brainstorm possible collaboration models that benefit both the business and residential communities and account for both internet access and mobile/cellular coverage expansion
  - Carefully consider existing resources, business models and expansion options available through the existing Botetourt County membership in the Roanoke Valley Broadband Authority
  - Research and consider the economic and citizen impact of both investing county revenues in addressing this issue and choosing not to do so
  - Develop a prioritized schedule of the community's sub-regions that need focused attention based on both current state existing access and future development plans
4. Consider leveraging the existing Roanoke Valley Broadband Authority to either oversee or support whatever next steps are determined right for the community
5. Continuously and transparently communicate with citizens and all interested regional stakeholders as the County moves through this process
6. Call on established local and national resources who are knowledgeable about these issues and helping communities like Botetourt to sort through their options including:
  - LOCAL**
    - Mike Lockaby – Botetourt County Land Use Attorney
    - Ken McFadyen – Botetourt County Economic Development Director AND President of the Virginia Association of Economic Developers (VEDA)
  - REGIONAL**
    - Sam Darby – Chief Counsel for the Roanoke Valley Broadband Authority
    - Kevin Bogess, City Manager, City of Salem – Chairman of the Board, Roanoke Valley Broadband Authority

- Wayne Strickland, Executive Director, The Roanoke Valley Alleghany Regional Commission
- Frank Smith, President and CEO, Roanoke Valley Broadband Authority AND President of Friends of Municipal Broadband - a statewide alliance of community broadband networks
- Peter Sforza, Director of the Virginia Tech Center for Geospatial Information Technology and lead author of the Broadband Planning and Analysis Toolbox
- Mary Beth Dunkenberger, Senior Program Director of the Virginia Tech Institute for Policy and Governance

#### STATE

- Virginia Chapter of National Association of Telecommunications Officers and Advisors
- The Center for Innovative Technology
- Governor's Office of Telework Promotion and Broadband Assistance

#### NATIONAL

- Broadband USA
- Muninetworks.org
- Fiber Broadband Association
- Broadband Now

7. Issue a media alert/host a press conference (Broadband Summit) to detail the high-level findings in this report and planned next steps. Now that the community has been asked for its opinion, it is important to keep stakeholders informed of next steps and any resulting action.

*THE OPTIONS FOR NEXT  
STEPS ARE PLENTIFUL  
BUT SWIFT ACTION IS  
NECESSARY TO ENSURE  
THAT THE COUNTY  
IS READY FOR THE  
EXPECTATIONS OF BOTH  
ITS CURRENT CITIZENS  
AND ITS FUTURE  
WORKFORCE.*



RSB WORKBOOK						
CUSTOMER NAME	LUMOS NETWORKS			ENGINEER	Terry Strock	
CUSTOMER LOCATION	VERIZON LEC (Hardbarger_Lithia Polygon)			DATE	8/18/2020	
SALES PERSON				Project #	HLE	
SALES SUPPORT PERSON		Permits Due Date		Job Package Date		
CAPITAL BUDGET #		Planning Guide #				
					Cost	Days
Project #		Aerial Construction	0	DOH	\$10,000.00	
EWO #		New Aerial	0	Municipal	\$0.00	
DDID #		Overlash	0	RR	\$36,000.00	
Planned Completion		Buried Construction	0	Easement	\$0.00	
HLE		Existing Conduit	0	Pole	\$147,875.00	
Detailed		Fiber Footage	143962	Conduit	\$0.00	
Job Package		Distance Covered	0	Other	\$81,942.42	
MRC	-	Variance Approved Dates		Traffic Control	\$12,878.00	
NRC	-	HLE to Detailed Est		Engineering	\$48,454.00	
<b>Total OSP Cost</b>	<b>\$949,254.90</b>	Detailed Est to JP		Drafting	\$7,680.00	
<b>Total Including Equ.</b>	<b>\$949,254.90</b>			Permitting	\$0.00	
				Construction	\$532,680.29	
				Splicing	\$62,414.31	
				Access Equipment	\$0.00	
				LCP Equipment	\$9,330.87	
LIST OF PERMITS - EASEMENTS - IRU SPLICING NEEDED						
NAME		DESCRIPTION		DUE	SENT	APPROVED
COMMENTS						
Hardbarger_Lithia Polygon HLE INCLUDES FEEDER and Adtran node. 149 Addresses						
*** BELOW IS FOR ADMIN USE ONLY***						
JP Approval Date:		Approved By:		Date sent to Construction:		
Construction Complete:		Miss Utility Polygon:				
REVISION DATE 5/3/2018						



CUSTOMER NAME	LUMOS NETWORKS	Tax	5%
ENGINEER	Terry Strook	Provisioning	10%
Project #	HLE		

Task Name	QUANTITY	ACTUAL QUANTITY	REEL NUMBER	ITEM #	DESCRIPTION	COST	TOTAL
- AERIAL FIBER ASSET MATERIAL							
O.FBR.AERL	143962			FIBOFSH144FORTEX	Average for all cable sizes	0.86	\$123,806.98
O.FBR.AERL	126			HDWANCH10HLX	ANCHOR 10" HELIX C102-5205	41.64	\$5,246.21
O.FBR.AERL	126			HDWTRPLEYENUT	TRIPLEYE EYENUT 12585	7.51	\$945.95
O.FBR.AERL	126			HDWANCHRD1X7	ANCHOR ROD 1" X 7' 12334P	32.49	\$4,093.11
O.FBR.AERL	53			MTPCOM6PRT700	Average for 2,4, and 6 Port MP	188.00	\$9,964.00
O.FBR.AERL	119968			STRSTRAND6MM	STRAND 6M	0.34	\$40,369.23
O.FBR.AERL	3780			STRSTRAND10M	STRAND 10M	0.51	\$1,923.26
O.FBR.AERL	126			HDWGGRDYLW7	GUY GUARD YELLOW PVC X 7'0 G5517	4.58	\$577.08
O.FBR.AERL	546			HDWLUMOAERCBLTAG	LUMOS AERIAL CABLE WRAP TAG	3.51	\$1,916.46
- BURIED FIBER ASSET MATERIAL							
O.FBR.BURD	0			PEDFTTHPRFRM10	PEDESTAL- FTTH- PRO10FSNGURB 10" PROFORM - EMERSON	76.19	\$0.00
- CONDUIT ASSET MATERIAL							
O.CONDUIT	0			INDSMOOTH2	Average for 2" and 1.25" Conduit	0.79	\$0.00
O.CONDUIT	0			PBXCHI30X48X24	Average for All Pull Box Sizes	432.00	\$0.00
O.CONDUIT	0			SPLROUTEMARKER	FIBER ROUTE MARKER SIGN	20.64	\$0.00
- AERIAL SPLICING MATERIAL							
O.FBR.AERL	40			SPLCOYTCLS95X28	9.5"x28" DOME KIT W/7 PORT ENDPLATE & GROMMETS - 96F & LARGER	355.28	\$14,207.41
O.FBR.AERL	320			SPLCOYTTRAY0086	COYOTE SPLICE TRAY - 36 SPLICE PER TRAY - NEW CLOSURES	24.48	\$7,831.51
O.FBR.AERL	864			SPLHEATSHRINK60MM	HEAT SHRINK SLEEVE/SING FIBER(50MM)	0.21	\$181.96
MISC.	80			SPLGROM8003989	GROMMET 4 HOLE FLAT DROP ONLY	10.48	\$838.18
- LCP / EQUIPMENT							
S.D.EQ	1			CABCOM432ARMLT	COMMSCOPE 432 PORT POLE MOUNT LCP (216 FIBER TAILS)	6,749.16	\$6,749.16
S.D.EQ	2			HDWCOMPLGNPLYSPLTR	COMMSCOPE 32 PORT SPLITTER FOR ALL LCPS (INCLUDES PIG TAILS)	682.32	\$1,364.64
						<b>Sheet Total</b>	<b>\$253,017.41</b>

CUSTOMER NAME - LUMOS NETWORKS  
 ENGINEER - Terry Strock  
 Project # - HLE

Solid Rock Adder

A U AND AFO

Task Name	QUANTITY	UNIT	UNIT DESCRIPTION	UNIT COST	TOTAL
<b>ENGINEERING</b>					
-	1.00		PROJECT PLANNING / DESIGN - COMPANY LABOR	1.00	\$48,545.00
<b>DRAFTING</b>					
-	240		CONTRACTOR - CAD INPUT / MAPPING (M4)	32.00	\$7,680.00
<b>PERMITTING</b>					
-	-		PERMIT FEES - RR	36,000.00	\$36,000.00
-	-		PERMIT FEES - POLE	147,875.00	\$147,875.00
-	-		PERMIT FEES - OTHER	81,942.42	\$81,942.42
-	-		PERMIT FEES - TRAFFIC CONTROL (ENGINEERING DESIGN)	12,878.00	\$12,878.00
<b>AERIAL</b>					
O.FBR.AERL	119968	100AF	PLACE AERIAL FIBER PER S&N CONTRACT - NEW CONSTRUCTION	2.59	\$310,717.12
O.FBR.AERL	2953	100A1	PLACE AERIAL FIBER PER S&N CONTRACT - OVERLASH	1.35	\$3,986.55
<b>BURIED FIBER</b>					
O.FBR.BURD	0	210	PULL FIBER IN EXISTING CONDUIT	1.20	\$0.00
O.FBR.BURD	0	200	BURIED ANY METHOD PER S&N CONTRACT	13.40	\$0.00
O.FBR.AERL	40	112	Install Closure - Two (2) Cables	150.00	\$5,998.40
O.FBR.AERL	864	122	Fusion Splice (Testing Included): 1 - 36 Fibers	32.00	\$27,648.00
O.FBR.AERL	15	129	Lower Aerial Cable/Closure/Loop from Strand (Bucket Truck)	75.00	\$1,125.00
O.FBR.AERL	15	130	Raise Aerial Cable/Closure/Loop on Strand (Bucket Truck)	75.00	\$1,125.00
<b>FTTP UNIT PRICING</b>					
O.FBR.AERL	53	803	Mount Multi Port Tap to Strand	16.50	\$874.50
O.FBR.BURD	4	815	Place/Remove or Transfer Fiber Term/LCP (Pole or Handhole installation)	202.00	\$808.00
TOTAL LABOR COST					<b>\$697,202.99</b>







CUSTOMER NAME	LUMOS NETWORKS	Tax	5%
ENGINEER	Terry Strook	Provisioning	10%
Project #	HLE		

Task Name	QUANTITY	ACTUAL QUANTITY	REEL NUMBER	ITEM #	DESCRIPTION	COST	TOTAL
- AERIAL FIBER ASSET MATERIAL							
O.FBR.AERL	11584			FIBOFSH144FORTEX	Average for all cable sizes	0.86	\$99,402.24
O.FBR.AERL	187			HDWANCH10HLX	ANCHOR 10" HELIX C102-5205	41.64	\$7,786.04
O.FBR.AERL	187			HDWTRPLEYENUT	TRIPLEYE EYENUT 12585	7.51	\$1,403.90
O.FBR.AERL	187			HDWANCHRD1X7	ANCHOR ROD 1" X 7' 12334P	32.49	\$6,074.70
O.FBR.AERL	82			MTPCOM6PRT700	Average for 2,4, and 6 Port MP	188.00	\$15,416.00
O.FBR.AERL	87809			STRSTRAND6MM	STRAND 6M	0.34	\$29,547.73
O.FBR.AERL	5610			STRSTRAND10M	STRAND 10M	0.51	\$2,854.37
O.FBR.AERL	187			HDWGGRDYLW7	GUY GUARD YELLOW PVC X 7'0 G5517	4.58	\$856.46
O.FBR.AERL	424			HDWLUMOAERCBLTAG	LUMOS AERIAL CABLE WRAP TAG	3.51	\$1,486.84
- BURIED FIBER ASSET MATERIAL							
O.FBR.BURD	11			PEDFTTHPRFRM10	PEDESTAL- FTTH- PRO10FSNGURB 10" PROFORM - EMERSON	76.19	\$810.60
- CONDUIT ASSET MATERIAL							
O.CONDUIT	8511			INDSMOOTH2	Average for 2" and 1.25" Conduit	0.79	\$6,723.69
O.CONDUIT	17			PBXCHI30X48X24	Average for All Pull Box Sizes	432.00	\$7,353.50
O.CONDUIT	17			SPLROUTEMARKER	FIBER ROUTE MARKER SIGN	20.64	\$351.33
- AERIAL SPLICING MATERIAL							
O.FBR.AERL	32			SPLCOYTCLS95X28	9.5"x28" DOME KIT W/7 PORT ENDPLATE & GROMMETS - 96F & LARGER	355.28	\$11,406.86
O.FBR.AERL	257			SPLCOYTTRAY0086	COYOTE SPLICE TRAY - 36 SPLICE PER TRAY - NEW CLOSURES	24.48	\$6,287.77
O.FBR.AERL	864			SPLHEATSHRINK60MM	HEAT SHRINK SLEEVE/SING FIBER(50MM)	0.21	\$181.96
MISC.	64			SPLGROM8003989	GROMMET 4 HOLE FLAT DROP ONLY	10.48	\$672.96
- LCP / EQUIPMENT							
S.D.EQ	1			CABCOM432ARMLT	COMMSCOPE 432 PORT POLE MOUNT LCP (216 FIBER TAILS)	6,749.16	\$6,749.16
S.D.EQ	2			HDWCOMPLGNPLYSPLTR	COMMSCOPE 32 PORT SPLITTER FOR ALL LCPS (INCLUDES PIG TAILS)	682.32	\$1,364.64
						<b>Sheet Total</b>	<b>\$237,740.36</b>

CUSTOMER NAME - LUMOS NETWORKS  
 ENGINEER - Terry Strock  
 Project # - HLE

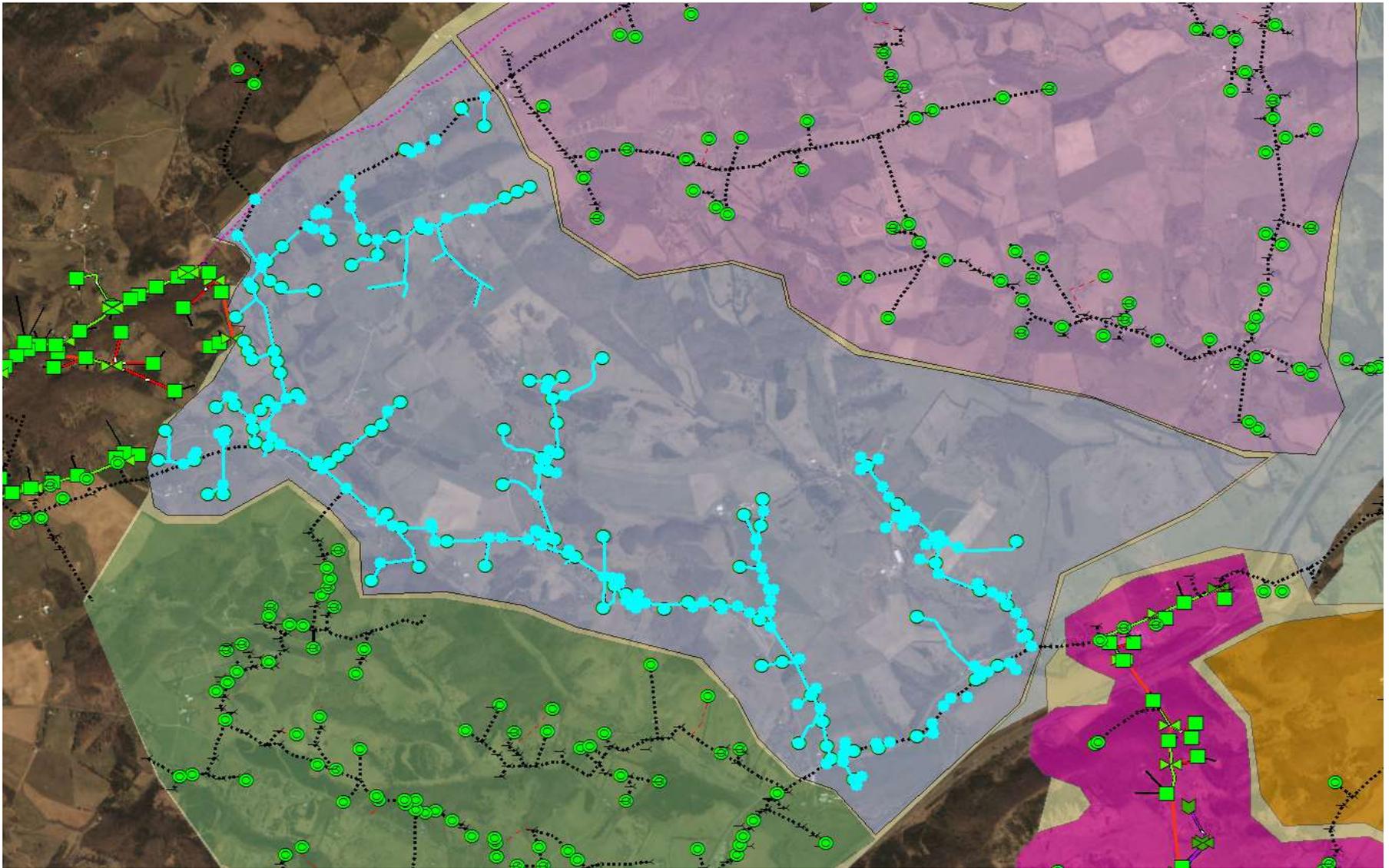
Solid Rock Adder

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Task Name	QUANTITY	UNIT	UNIT DESCRIPTION	UNIT COST	TOTAL
<b>ENGINEERING</b>					
-	120		PROJECT PLANNING / DESIGN - COMPANY LABOR	50.00	\$6,000.00
<b>DRAFTING</b>					
-	240		CONTRACTOR - CAD INPUT / MAPPING (M4)	32.00	\$7,680.00
<b>PERMITTING</b>					
-	-		PERMIT FEES - POLE	114,725.00	\$114,725.00
-	-		PERMIT FEES - TRAFFIC CONTROL (ENGINEERING DESIGN)	12,878.00	\$12,878.00
<b>AERIAL</b>					
O.FBR.AERL	87809	100AF	PLACE AERIAL FIBER PER S&N CONTRACT - NEW CONSTRUCTION	2.59	\$227,425.31
<b>BURIED FIBER</b>					
O.FBR.BURD	8511	210	PULL FIBER IN EXISTING CONDUIT	1.20	\$10,213.20
O.FBR.BURD	8511	200	BURIED ANY METHOD PER S&N CONTRACT	13.40	\$114,047.40
O.FBR.AERL	32	112	Install Closure - Two (2) Cables	150.00	\$4,816.00
O.FBR.AERL	864	122	Fusion Splice (Testing Included): 1 - 36 Fibers	32.00	\$27,648.00
O.FBR.AERL	50	129	Lower Aerial Cable/Closure/Loop from Strand (Bucket Truck)	75.00	\$3,750.00
O.FBR.AERL	50	130	Raise Aerial Cable/Closure/Loop on Strand (Bucket Truck)	75.00	\$3,750.00
<b>FTTP UNIT PRICING</b>					
O.FBR.AERL	82	803	Mount Multi Port Tap to Strand	16.50	\$1,353.00
O.FBR.BURD	4	815	Place/Remove or Transfer Fiber Term/LCP (Pole or Handhole installation)	202.00	\$808.00
<b>TOTAL LABOR COST</b>					<b>\$618,760.73</b>







CUSTOMER NAME	LUMOS NETWORKS	Tax	5%
ENGINEER	Terry Strock	Provisioning	10%
Project #	HLE		

Task Name	QUANTITY	ACTUAL QUANTITY	REEL NUMBER	ITEM #	DESCRIPTION	COST	TOTAL
- AERIAL FIBER ASSET MATERIAL							
O.FBR.AERL	103864.8			FIBOFSH144FORTEX	Average for all cable sizes	0.86	\$89,323.73
O.FBR.AERL	173			HDWANCH10HLX	ANCHOR 10" HELIX C102-5205	41.64	\$7,203.13
O.FBR.AERL	173			HDWTRPLEYENUT	TRIPLEYE EYENUT 12585	7.51	\$1,298.80
O.FBR.AERL	173			HDWANCHRD1X7	ANCHOR ROD 1" X 7' 12334P	32.49	\$5,619.91
O.FBR.AERL	91			MTPCOM6PRT700	Average for 2,4, and 6 Port MP	188.00	\$17,108.00
O.FBR.AERL	78875			STRSTRAND6MM	STRAND 6M	0.34	\$26,541.44
O.FBR.AERL	5190			STRSTRAND10M	STRAND 10M	0.51	\$2,640.67
O.FBR.AERL	173			HDWGGRDYLW7	GUY GUARD YELLOW PVC X 7'0 G5517	4.58	\$792.34
O.FBR.AERL	390			HDWLUMOAERCBLTAG	LUMOS AERIAL CABLE WRAP TAG	3.51	\$1,368.90
- BURIED FIBER ASSET MATERIAL							
O.FBR.BURD	10			PEDFTTHPRFRM10	PEDESTAL- FTTH- PRO10FSNGURB 10" PROFORM - EMERSON	76.19	\$731.36
- CONDUIT ASSET MATERIAL							
O.CONDUIT	7679			INDSMOOTH2	Average for 2" and 1.25" Conduit	0.79	\$6,066.41
O.CONDUIT	15			PBXCHI30X48X24	Average for All Pull Box Sizes	432.00	\$6,634.66
O.CONDUIT	15			SPLROUTEMARKER	FIBER ROUTE MARKER SIGN	20.64	\$316.99
- AERIAL SPLICING MATERIAL							
O.FBR.AERL	29			SPLCOYTCLS95X28	9.5"x28" DOME KIT W/7 PORT ENDPLATE & GROMMETS - 96F & LARGER	355.28	\$10,250.30
O.FBR.AERL	231			SPLCOYTTRAY0086	COYOTE SPLICE TRAY - 36 SPLICE PER TRAY - NEW CLOSURES	24.48	\$5,650.25
O.FBR.AERL	864			SPLHEATSHRINK60MM	HEAT SHRINK SLEEVE/SING FIBER(50MM)	0.21	\$181.96
MISC.	58			SPLGROM8003989	GROMMET 4 HOLE FLAT DROP ONLY	10.48	\$604.72
- LCP / EQUIPMENT							
S.D.EQ	1			CABCOM432ARMLT	COMMSCOPE 432 PORT POLE MOUNT LCP (216 FIBER TAILS)	6,749.16	\$6,749.16
S.D.EQ	2			HDWCOMPLGNPLYSPLTR	COMMSCOPE 32 PORT SPLITTER FOR ALL LCPS (INCLUDES PIG TAILS)	682.32	\$1,364.64
						<b>Sheet Total</b>	<b>\$219,014.46</b>

CUSTOMER NAME - LUMOS NETWORKS  
 ENGINEER - Terry Strock  
 Project # - HLE

Solid Rock Adder

A U AND AFO

Task Name	QUANTITY	UNIT	UNIT DESCRIPTION	UNIT COST	TOTAL
<b>ENGINEERING</b>					
-	120		PROJECT PLANNING / DESIGN - COMPANY LABOR	50.00	\$6,000.00
<b>DRAFTING</b>					
-	240		CONTRACTOR - CAD INPUT / MAPPING (M4)	32.00	\$7,680.00
<b>PERMITTING</b>					
-	-		PERMIT FEES - POLE	105,625.00	\$105,625.00
-	-		PERMIT FEES - TRAFFIC CONTROL (ENGINEERING DESIGN)	12,878.00	\$12,878.00
<b>AERIAL</b>					
O.FBR.AERL	78875	100AF	PLACE AERIAL FIBER PER S&N CONTRACT - NEW CONSTRUCTION	2.59	\$204,286.25
<b>BURIED FIBER</b>					
O.FBR.BURD	7679	210	PULL FIBER IN EXISTING CONDUIT	1.20	\$9,214.80
O.FBR.BURD	7679	200	BURIED ANY METHOD PER S&N CONTRACT	13.40	\$102,898.60
O.FBR.AERL	29	112	Install Closure - Two (2) Cables	150.00	\$4,327.70
O.FBR.AERL	864	122	Fusion Splice (Testing Included): 1 - 36 Fibers	32.00	\$27,648.00
O.FBR.AERL	15	129	Lower Aerial Cable/Closure/Loop from Strand (Bucket Truck)	75.00	\$1,125.00
O.FBR.AERL	15	130	Raise Aerial Cable/Closure/Loop on Strand (Bucket Truck)	75.00	\$1,125.00
<b>FTTP UNIT PRICING</b>					
O.FBR.AERL	91	803	Mount Multi Port Tap to Strand	16.50	\$1,501.50
O.FBR.BURD	4	815	Place/Remove or Transfer Fiber Term/LCP (Pole or Handhole installation)	202.00	\$808.00
<b>TOTAL LABOR COST</b>					<b>\$596,421.26</b>

