

# Application to DHCD Submitted through CAMS

LENOWISCO Planning District Commission

VATI FY2023 LENOWISCO PDC District-Wide Broadband Project Final Phase

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**Application ID:** 95708032022081746

**Application Status:** Pending

**Program Name:** Virginia Telecommunication Initiative 2023 - Application

**Organization Name:** LENOWISCO Planning District Commission

**Organization Address:** 372 Technology Trail Lane  
Duffield, VA 24244

**Profile Manager Name:** Duane Miller

**Profile Manager Phone:** (276) 431-2206

**Profile Manager Email:** dmiller@lenowisco.org

**Project Name:** VATI FY2023 LENOWISCO PDC District-Wide Broadband Project Final Phase

**Project Contact Name:** Duane Miller

**Project Contact Phone:** (276) 431-2206

**Project Contact Email:** dmiller@lenowisco.org

**Project Location:** 372 Technology Trail Lane  
Duffield, VA 24244-5330

**Project Service Area:** Lee County, Wise County, Norton City, Appalachia Town, Big Stone Gap Town, Coeburn Town, Jonesville Town, Pennington Gap Town, Pound Town, St. Paul Town, Wise Town

**Total Requested Amount:** \$53,172,880.00

**Required Annual Audit Status:** Accepted

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## Budget Information:

Cost/Activity Category	DHCD Request	Other Funding	Total
<b>Telecommunications</b>	<b>\$53,172,880.00</b>	<b>\$13,293,220.00</b>	<b>\$66,466,100.00</b>
Administration	\$1,480,000.00	\$370,000.00	\$1,850,000.00
Construction	\$38,201,680.00	\$9,550,420.00	\$47,752,100.00
Other: Electronics	\$10,091,200.00	\$2,522,800.00	\$12,614,000.00
Other: Engineering	\$3,400,000.00	\$850,000.00	\$4,250,000.00
<b>Total:</b>	<b>\$53,172,880.00</b>	<b>\$13,293,220.00</b>	<b>\$66,466,100.00</b>

### Budget Narrative:

The Total Project Request is as follows: VATI Request is \$53,172,880.00 with a Match of \$13,293,220.00 from the Co-Applicant, Scott County Telephone Cooperative (SCTC) for a total project cost of \$66,466,100.00. SCTC will construct a Fiber to the Home Project to 19,646 locations with the ability to provide a symmetrical 1,000/1,000 Mbps which will be upgradable to a 10,000/10,000 Mbps symmetrical Broadband service. SCTC anticipates a 55+% take-rate or 10,814 locations of the 19,646 locations. See Attachment 10 - Documentation of Match Funding See Attachment 12 - Derivation of Costs

## 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 proposed Scott County Telephone Cooperative (SCTC) Project is located in Lee and Wise counties in Virginia. This project will be a Fiber-To-The-Premise (FTTP) project and will be located in the towns of Big Stone Gap, Appalachia, Norton, Wise, Pound, Coeburn and Saint Paul and other areas of rural Wise County in Wise County, VA and in the towns of Jonesville and Pennington Gap in Lee County, VA to serve 19,646 households. SCTC has targeted these areas in Wise and Lee counties due to not having adequate broadband services and these counties are economically depressed. Once this project is completed all of the LENOWISCO Planning District will have access to a fiber to premise network with robust broadband speeds which can be expanded to meet any future needs the region demands.

SCTC proposes to construct 900 miles of backbone fiber and 1,536 miles of distribution/drop fiber. This project will cost \$66,466,100.00 on an 80% grant and 20% match with \$53,172,880.00 from the VTIA grant and \$13,293,220.00 match from SCTC. LENOWISCO and SCTC have the desire to have FTTP in 100% of the LENOWISCO Planning District. This will complete that goal. This FTTP project will provide a robust and reliable service with speeds scalable to up to 10Gbps of service to each location. This will cost approximately \$3,383 per location passed, which is cost competitive. SCTC has two lines of credit (\$3 Million each) with RTFC at this time for \$6 Million of the match. SCTC has \$5 Million in cash. SCTC's net income is approximately \$4 Million per year to make up the balance of the match. If SCTC foresees any cash flow issues, we will get another line of credit to cover the balance of the match.

SCTC has applied for a Reconnect Grant of \$25,000,000, which is currently under review by USDA. **If awarded**, SCTC would use that grant to match this VTIA Grant. This will be option #2. If SCTC received that grant,

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LENOWISCO would need to amend the original request to \$37,466,100 with the \$25,000,000 Reconnect Grant serving as the match from SCTC and \$4,000,000 coming from SCTC's cash on-hand for a total match of 49.6% on the total project cost and a 10.6% match by SCTC on the VATI grant of \$37,466,100. This option will only be used if SCTC is successful on the Reconnect grant application. Total project costs will be \$66,466,100.00 would be funded either way, but distributed differently if SCTC is successful on the Reconnect grant application.

There is a total of 19,646 potential locations within specified areas of Wise and Lee counties who do not have sufficient broadband services. These specific areas (PFSA) are in Big Stone Gap (3,544 locations), Appalachia (950 locations) Norton (2,524 locations), Wise (2,007 locations), Pound (2,258 locations) and Coeburn (1,540 locations) and Saint Paul and other rural areas of Wise County (4,805 locations) in Wise County, VA as well as Pennington (1,259 locations), and Jonesville (759 locations) in Lee County, VA.

The project areas were selected for the following reasons:

- Wise County has a population of 36,130 which is approximately 102.8 people per square mile. The poverty level for the county is at 20.3%. Wise County has a median household income of \$38,888 which is only 62% of the US median house hold income or 38% below the US median household income.
- The towns of Big Stone Gap, Appalachia, Norton, Wise, Pound and Coeburn are all located within the socially vulnerable communities in Wise County on the USDA records. 100% of the project area in Wise County is located in socially vulnerable communities.
- Lee County has a population of 22,173 which is 58.8 people per square mile. The poverty level is at 26%. Lee County has a median household income of \$32,888 which is 52% of the US median household income or 48% below the US median household income.
- The towns of Pennington and Jonesville are located within socially vulnerable communities in Lee County on the USDA records. 100% of this project area in Lee County is located inside socially vulnerable communities.
- The economic need is evident for these distressed areas. The SAIPE score is 26% for Lee County and 20.3% for Wise County. This demonstrates the economic needs for this Proposed Funded Service Area.

SCTC will construct a Fiber-to-the-Premise (FTTP) project to deliver speeds from 100Mbps/100Mbps symmetrical up to 1Gbps/1Gbps of symmetrical dedicated broadband service to each location, which is scalable to 10Gbps/10Gbps symmetrical. This will allow the people of the PFSA to have a better quality of life. The most important aspect of this project will provide adequate bandwidth for their children to attend school virtually, work from home/telework and conduct doctor visits from home/telemedicine. Also, a robust, reliable, fiber infrastructure will promote economic development by attracting business to these rural communities which will create jobs. This will allow a shift from a coal and farming as the primary economic generators to something that is technology-based and sustainable. The Economic Development Agencies are promoting southwestern Virginia as a Telework location due to the fiber assets and robust networks being constructed in the region. This project will complete the LENOWISCO footprint with a robust, reliable, affordable fiber broadband network to meet the regions needs today, tomorrow and into the future.

Attachment 1 – Project Area Map

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2. List existing providers in the proposed project area and the speeds offered. Describe your outreach efforts to identify existing providers and how this information was compiled with source(s).

**Answer:**

Xfinity (200/10Mbps), Point Broadband (1000/1000Mbps) and Gearheart Communications (1000/40Mbps) are shown as the existing providers. The FCC Broadband Map and the State of Virginia Broadband Map was used to identify potential service providers. Gearheart Communications, Xfinity and Point Broadband were identified as the primary providers in Lee and Wise Counties. SCTC provides service in parts of Lee County. Satellite providers were not included in this comparison.

The proposed service area in Lee County is served by Xfinity and Point Broadband. Xfinity serves the towns of Pennington Gap, VA and Jonesville, VA in Lee County. Point Broadband operates the old LENOWISCO Network in Lee County. SCTC purchased this network 9.75 years ago. Point Broadband had a 12-year lease, so it is under lease for another 2.25 more years. This leased network serves primarily the rural areas so there is little overlap. Point Broadband has a capacity problem, which is their network. Their network is currently at full capacity and they have not invested in additional capacity for electronics for a leased network with only having 2.25 years left on the lease. So, the unserved/underserved residences of Lee County, VA will remain unserved unless this project is completed. Based on SCTC's records, Point Broadband serves approximately 2,000 customers in Lee and Wise counties. There are only about 173 of the customers are located in this proposed service area in Lee and Wise counties according to SCTC's records from their lease. Point Broadband can provide 1000/1000Mbps where they serve. SCTC will light the old LENOWISCO network when the lease expires in 2.25 years to help serve the region with additional capacity for growth in the region. The old LENOWISCO fiber will serve as additional capacity outside of the towns for future growth when the lease expires. This VATI grant project will stimulate economic development in this depressed rural area by attracting businesses which will create jobs, increase educational opportunities by supplying each household a reliable and affordable broadband connection for the schools and all consumers. This project will also increase employment opportunities for telecommuting, it will increase telemedicine opportunities with a high-speed broadband connection and improve healthcare opportunities especially with spikes in the Covid-19 variants which may prohibit patients from having face-to-face meetings with their healthcare provider.

Wise County is served by Xfinity and Point Broadband as well. Xfinity is the dominate provider in the majority of Wise County. Their website says the can deliver 100/100Mbps of service to all residential customers. The FCC website says Xfinity does 200/10Mbps to residential customers. Xfinity cannot provide the service they advertise. When the network is in full demand in the evenings, their service slips below the 25/3Mbps threshold for many customers. Their network design uses a shared platform where they flood the network with 100Mbps of Bandwidth for residential customers. This shared platform is greatly reduced at each location when all locations are using bandwidth at the same time. According to the survey completed by Rural Innovation Strategies, Inc. (RISI), Xfinity only has 2.3% of their customers who can get 100/20Mbps or approximately 452 locations. Point Broadband uses the leased network from SCTC in Wise County as well. Point Broadband has the same dilemma in Wise County as they do in Lee County that their network capacity is full. The capacity of the network is used up in Wise as well just like Lee County, VA.

Wise County has a third provider, Gearheart, which according to the FCC site, delivers 1000/40Mbps. Based on the 911 addresses, Gearheart passes approximately 1,955 locations and SCTC has found this usually runs about 10% to 20% high compared to what is actually there. Gearheart seems to have the ability to deliver 100/40Mbps. SCTC feels Gearheart's footprint is exaggerated in Wise County. If you add all three (3) providers numbers together who can get 100/20Mbps, Point Broadband 173, Xfinity 452, Gearheart 1,955, you only get

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2,580 total locations, which in only 13.1% which is way under the 20% overlap rule which would be 3,920 locations. Based on RISI's survey, only 5.7% of the respondents could get 100/20Mbps. In actuality, you could double Xfinity's number and it would still be under the 20% overlap rule.

To help determine proof the proposed service area is unserved/underserved, SCTC hired RISI to conduct speed tests in the proposed service area. The results of the speed tests are attached. (See attachment 20) VTIA has put a preference on serving locations which does not have 25/3Mbps service. Based on RISI's survey 35.6% cannot get 25/3Mbps service. This equates to over 6,900 locations do not get 25/3Mbps service. Also, the survey found Xfinity could only deliver 100/20Mbps service to only 2.3% of the customers. When including all carriers the survey revealed only 5.7% of the respondents could get 100/20Mbps or greater. The threshold for overlap is 20% and 5.7% overlap is way under the allowable 20%. And by the Federal Government's definition of Broadband at 100/20 Mbps, 94.3% of these customers are unserved.

SCTC also conducted meetings with the Lee County and Wise County Board of Supervisors. Lee County provided two Town Hall type meetings at Lee High and Thomas Walker high schools for citizens to attend who did not have service. SCTC surveyed those attendees and they provided documentation as to not having service. The Wise County Board of Supervisors hired Thomas Litton, an Engineering Firm in Wise County, VA to access their Broadband needs in Wise County.

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, Community Connect, and Rural Digital Opportunity Funds (RDOF). If there have been federal funds awarded near the project area(s), provide a map showing these areas, verifying the proposed project area does not conflict with these areas. Label Map: Attachment 2 – Documentation on Federal Funding Area.

## Answer:

There is a small amount of CAF II funded areas that RDOF awarded to Point Broadband which accounts for about 224 locations inside the proposed service area in the proposed footprint and it is shown on the attached map. SCTC left these locations in the grant because if we do not build to them they will never get built because the lease expires in roughly 2 years. But again, if you include those 224 locations as Point customers the total number passed is still less than the 20% overlap. So we included them in our numbers.

The RDOF was awarded to mostly Space X in the proposed service area which is not shown on the attached maps. Space X won 269 locations in the proposed service area. Since the FCC has disallowed Space X's award, and VATI has not disqualified these areas in the past it is included in the proposed service area. LENOWISCO has been awarded a VATI 3 (VATICPF/SFRF#2022-014) grant which is contiguous to this proposed service area. This application for grant funding will complete the LENOWISCO Planning District's Footprint with robust, reliable, affordable broadband.

Attachment 2 - Documentation on Federal Funding Area

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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 below 100/20 Mbps and with less than 25% service overlap within the project area for wireless projects and 20% for wireline projects. 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:**

There is a total of 19,646 potential locations within the specified project area of Wise and Lee counties who do not have sufficient broadband services. These specific areas (PFSA) are in Big Stone Gap (3,544 locations), Appalachia (950 locations) Norton (2,524 locations), Wise (2,007 locations), Pound (2,258 locations) and Coeburn (1,540 locations) and Saint Paul and other rural areas of Wise County (4,805 locations) in Wise County, VA as well as Pennington (1,259 locations), and Jonesville (759 locations) in Lee County, VA.

To help to determine proof that the proposed service area is unserved/underserved, SCTC hired RISI to conduct speed tests in the proposed service area. The results of the speed tests have been attached. (See Attachment 20 - RISI Survey) VTIA has put a preference on serving locations which do not have 25/3Mbps service. Based on RISI's survey, 35.6% cannot get 25/3Mbps service. This equates to over 6,900 locations that do not get 25/3Mbps service. The survey also found that Xfinity could only deliver 100/20Mbps service to only 2.3% of the customers equating to 452 locations. When including all carriers, the survey revealed only 5.7% of the respondents could get 100/20Mbps or greater equating to 1,120 locations. The threshold for overlap is 20% equating to 3,920 locations. The 5.7% served overlap is considerably under the allowable 20% overlap. According to today's definition of Broadband at 100/20Mbps, 94.3% of these customers are unserved. Since SCTC has determined Point Broadband's service locations of 173 from their leased network to them, Xfinity's 2.3% number of 452 locations from the RISI survey they conducted primarily on Xfinity's footprint, and Gearhart's passings taken from the 911 map of 1,955, SCTC estimates 2,580 locations have access to 100/20Mbps which is 13.1% of the total passing of 19,646. This number is well below the 20% overlap rule. By definition, 86.9% are unserved by today's definition of Broadband Service. Based on the survey of Xfinity's service area, 35.6% cannot even get 25/3Mbps or over 6,900 locations.

Attachment #3 - Documentation Unserved Area VATI Criteria

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5. Total Passings: Provide the number of total serviceable units in the project area. Applicants are encouraged to prioritize areas lacking 25 Megabits per second download and 3 Megabits per second upload speeds, as they will receive priority in application scoring. For projects with more than one service area, each service area must have delineated passing information. Label Attachment: Attachment 4 – Passings Form.
- a. Of the total number of VATI passings, provide the number of residential, business, non-residential, and community anchors in the proposed project area.
  - b. If applicable, of the total number of RDOF passings, provide the number of residential, business, non-residential, and community anchors in the proposed project area.
  - c. If applicable, provide the number of passings that will require special construction costs, defined as a one-time fee above normal service connection fees required to provide broadband access to a premise . Describe the methodology used for these projections.
  - d. If applicable, provide the number of passings included in the application that will receive broadband access because special construction costs have been budgeted in the VATI application. Describe the methodology used for determining which passings with special construction costs were budgeted in the application.
  - e. Provide the number of passings in the project area that have 25/3 Mbps or less. Describe the methodology used for these projections. (up to 15 points)

**Answer:**

- a. Total VATI Passings: 19,646 Residential 18,444, Business 995, Non-residential 184, Community Anchors 23.
- b. RDOF Passings: Residential 22, Business 0, Non-residential 0, Community Anchors 0. These RDOF passings are in Wise County under Point Broadband. Space X had a RDOF award but has been disqualified by the FCC for their RDOF award.
- c. Special Construction passings: 0 (In all grant funded subsidized builds, SCTC does not charge additional or special construction costs to the customer and SCTC builds to all consumers that request service.
- d. Special Construction Cost passings: 0 The Methodology for Special Construction passings - At 6 customers or less per mile in rural southwest Virginia, all locations are most likely special construction ie: high costs. If the DHCD funds this VATI application, SCTC would build, as always, to everyone without a speical construction cost for the drop or the installation. With SCTC's approach, there are no Special Construction Costs in this project.
- e. Number of 25/3Mbps or less passings: 6,994. The Methodology used to determine the consumers with less than 25/3Mbps was taken from a survey conducted by RISI and is included in Attachment 20. SCTC retained RISI to survey the customers primarily in Xfinity's footprint. The survey determined 35.6% of the 19,646 locations does not have 25/3 Mbps or over 6,900 households do not have 25/3Mbps of service in the proposed service area. That is over one-third of the households in the proposed service area. When you total all three of the provider's ability to deliver 100/20Mbps, it adds up to be 2,580 locations or 13.1%. By the definition of Broadband service today, 86.9% are unserved in the proposed service area.

See Attachment 4 - Passings Form

See Attachment 20 - RISI Survey

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6. Describe if any blocks awarded in Rural Digital Opportunity Fund (RDOF) are included in the VATI application area. If RDOF areas are included in the VATI application, provide a map of these areas and include information on number of passings in RDOF awarded areas within the VATI application area, and Census Block Group ID number for each block group in the project area. Label Attachment: Attachment 5 – RDOF Awarded Areas Form in VATI Area

**Answer:**

RDOF is included in the proposed Service Area and is shown on the attached maps in Attachment #2. Space X won 269 locations. Since the FCC has disallowed that award and the VATI grants have never disallowed where they won, we left it in our proposed service area. Point Broadband won 22 locations in RDOF and approximately 202 in CAF II locations. Point Broadband does not own this network. SCTC owns the network they use/lease and their (Point Broadband's) lease will expire in 2 years. SCTC plans to use that network to provide additional capacity for growth in the future and will not renew Point Broadband's lease. It is amazing a 10-year subsidy was awarded and a 10-year contract signed when only a 5-year lease existed. With that being said, SCTC left these locations in the proposed service area because if SCTC does not build them, they will never get built. SCTC feels they should not be penalized nor the constituent/customer because of a flawed RDOF and CAF II process.

See Attachment 5 - RDOF Awarded Areas Form in VATI Area

7. **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

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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. Provide information on how capacity for scalability, or expansion, of how the network can adapt to future needs. 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 6 – Propagation Map Wireless Project.

**Answer:**

Scott County Telephone Cooperative's (SCTC's) network is configured as an actively switched Ethernet network. Active Ethernet is a relatively simpler protocol that uses less complexity and signaling overhead that can provide higher transmission speeds and greater throughput capacities. It allows a greater direct control of actual packet routing and traffic management that provides more granularity for grooming data flow and for analysis/trouble-shooting when needed. The sultant customer and inter-carrier connections provide better interoperability and less signaling complexity. SCTC currently uses a combination of Ciena and Calix hardware to light their network. SCTC's current standard deployment gear can provide each end-user with up to 1Gbps of bandwidth. But, with alternate interface cards, speeds up to 10Gbps can be provided to the end-user without deploying special hardware.

In the proposed project, SCTC will be utilizing Calix's Passive Optical Network (PON) solution in preparation of 10Gbps becoming a standard service offering. PON technology allows the service provider to centralize access equipment and reduce turn-up time. With a PON solution, SCTC is able to offer higher service speeds while reducing the total number of network components needed, thus simplifying network design and lowering administrative overhead.

The SCTC regional network consists of redundantly ringed fiber pathways across the region, each with multiple fiber strands in each cable sheath. These individual strands are lit using Dense Wave Division Multiplexing (DWDM) technology that enables multiple transmission pathways within each fiber strand. Currently, SCTC only uses eight wavelengths to enable up to 80Gbps of throughput capacity strand, but is currently in the process of expanding this to forty wavelengths. With this expansion, SCTC will be capable of transporting up to forty 100Gpbs connections.

SCTC uses redundant Juniper routers in its core to process all internet traffic. The routers currently have four 10Gbps based connections to diverse Internet backbones and two 10gbs direct peering connections. The Internet backbone connections are contracted through GTT, Lumen, Hurricane Electric, Windstream, and Bright Ridge and terminate at diverse sites in our ringed network. Direct peering is established in Atlanta using Digital Realty and in Ashburn using Equinix. The routing of Internet destined traffic across these seven pathways is managed dynamically using Border Gateway Routing Protocol (BGP).

See Attachment 19 - Detailed Technology for the Project

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9. 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 100/20 Mbps. (up to 10 points)

**Answer:**

For this project, SCTC will offer the following rates: 100Mbps/down & 100Mbps/up @ \$59.95/month, 300Mbps/down & 300Mbps/up @ \$69.95/month, 500Mbps/down & 500Mbps/up @ \$79.95/month and 1Gbps/down & 1Gbps/up @ \$99.95/month.

- Leased wireless routers are available at an additional monthly fee of \$5.00
- Whole home WiFi Extenders available for an additional \$4.95/month per device
- No Contracts or Data Caps
- No Installation fee for initial install
- Higher bandwidth speeds from 1Gbps up to 10Gbps of dedicated bandwidth is scalable per location if requested.

\*Residences with school-aged students will be offered a discount of \$10.00/month until the pandemic has ended.

SCTC currently offers the following Programs to its low-income consumers:

- Affordable Connectivity Program - \$30.00 monthly discount
- Federal Communication Commission's Lifeline Program - \$9.25 monthly discount

SCTC representatives will inform qualifying families of the up to \$30 credit that the Affordable Connectivity Program provides by distributing flyers to the schools for students to take home to their parents. All families with school-aged children will receive an additional \$10 monthly discount until the on-going Pandemic has ended.

Eligibility for the ACP program is done with NLAD/USAC, just like the Lifeline discount.

The school-aged students receive their discount by having the school guidance office to email SCTC that the student is enrolled in school to determine their eligibility.

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10. Explain how the proposed project achieves universal broadband coverage for the locality or fits into a larger plan to achieve universal broadband coverage for the locality. If applicable, explain the remaining areas of need in the locality and a brief description of the plan to achieve universal broadband coverage. (up to 50 points)

**Answer:**

This project fits into a larger project to achieve universal broadband coverage due to serving the remaining unserved areas in LENOWISCO's footprint and beyond.

Powell Valley Electric Cooperative (PVEC), SCTC's partner, has pledged to build fiber to every unserved location and SCTC has agreed to light and manage it. Under the current contract, PVEC and SCTC will do a revenue share which pays back PVEC for any investment they make by SCTC. Until that investment is paid back, PVEC is waiving all pole rental and make-ready charges. Upon repayment of their investment, PVEC will begin charging pole rental fees and the revenue share will discontinue. PVEC will continue to provide customer service and maintenance within their footprint.

The LENOWISCO PDC, SCTC and PVEC's goal is to have broadband to every location in the LENOWISCO Planning District's footprint. The execution of one VATI grant along with the last of the in-home installations of the second VATI grant have demonstrated it possible to accomplish this goal. Each entity is committed, so the remaining unserved areas of need will be completed with this project. Therefore, universal broadband coverage in LENOWISCO's footprint would be 100% achieved with this grant funding and finish out the entire LENOWISCO footprint.

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## 11. 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 are encouraged to extensively discuss, where applicable, easements relating to railroad crossings, federally-owned lands and parks, partnerships with the Virginia Department of Transportation, and mobile home parks. Applicants must include Memorandums of Understanding (MOUs) or Memorandums of Agreement (MOAs) between applicants (drafts are allowable). Label Attachments: Attachment 7 – Timeline/Project Management Plan; Attachment 8 – MOU/MOA between Applicant/Co-Applicant; (up to 10 points)

### Answer:

Planning and preliminary engineering for this project is complete. SCTC has an existing partnership with PVEC to provide broadband services to all PVEC customers. This partnership will include no make-readies and no pole rental fees for this project when located in PVEC's footprint. A revenue share agreement is in place for SCTC to pay PVEC for their investment thru that revenue share. When PVEC is paid in full, SCTC will own the network. PVEC will start charging pole rental fees and make readies once SCTC pays off PVEC's investment. PVEC will build this project and purchase outside plant materials. SCTC will purchase materials to install the electronics in the network as well as at the customer premise and provide that installation. SCTC will obtain estimates from contractors and vendors to price check. Construction will primarily be aerial and installed on pre-existing poles. Minimal to no ground disturbance is expected and significantly decreases potential environmental impacts.

SCTC has completed planning and preliminary engineering for Wise and Lee Counties. SCTC has an existing Pole Attachment Agreements with Old Dominion Power & Appalachian Power Company. The relationship with Old Dominion Power allows SCTC to Engineer and determine make-ready costs and use the portal on a system to enter the information and complete pole attachment permits. SCTC will bid the construction of this project and negotiate the best price with SCTC's existing electronics providers. SCTC will bid and purchase the materials with an emphasis on availability. SCTC's Engineers will inspect all construction and installations to ensure quality and accuracy. Minimal to no ground disturbance will occur which significantly decreases potential environmental impacts.

LENOWISCO will administer the grant funds, assist in obtaining easements and permits from KU/ODP Kentucky Utilities/Old Dominion Power and American Electric Power (AEP), if needed. SCTC will manage the construction of the project. SCTC has existing relationships with the Power companies involved to attach to their poles. (Pole Attachment Agreements are included in Attachment 18 - Pole Attachment Agreements).

LENOWISCO has a revenue sharing agreement with SCTC. In 2012, SCTC purchased the LENOWISCO Network, LLC thru its subsidiary company, Appalachian Broadband, LLC. The funds from the revenue share are used as seed money to expand broadband service or any economic development projects in the LENOWISCO PDC Footprint.

Attachment 7-Timeline/Project Management Plan

Attachment 8-MOU/MOA between Applicant and Co-Applicant

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12. Has the applicant or co-applicant received any VATI grants? If so, provide a list of these grants, with a detailed summary of the status of each.

**Answer:**

Yes, the LENOWISCO PDC have received three (3) VATI grants. The grants received are listed below.

VATI FY2020LP-001 LENOWISCO Regional Broadband Expansion Phase 1 - Project is complete.

VATI #2021-001 LENOWISCO US 58 Corridor Broadband Expansion Project - Construction is complete and SCTC is performing on-going in-home installations. This grant deadline is December 2022.

VATICPF/SFRF#2022-014 LENOWISCO District-Wide Broadband Project - Environmentals have been completed, contract negotiations have been completed and final contracts have been signed and sent back from the DHCD as of August 4, 2022. Electronics have been ordered.

13. 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 that 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 cash match is below 10% of total project cost, applicants must provide financial details demonstrating appropriate private investment. If applicants and co-applicants are seeking to include prior expended funds as matching funds, Attachment 11 must be completed. Label Attachments: Attachment 9 - Funding Sources Table; Attachment 10 – Documentation of Match Funding; Attachment 11 - Prior Expended Match Form

**Answer:**

The Project will cost: \$66,466,100.00

SCTC's Match (20%): \$13,293,220.00

VATI Funding (80%): \$53,172,880.00

See Attachment 9 - Funding Sources Table

See Attachment 10 - Documentation of Match Funding

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14. Leverage: Describe any leverage being provided by the applicant, co-applicant, and partner(s) in support of the proposed project. (up to 10 points)

**Answer:**

The LENOWISCO PDC has an existing revenue sharing agreement with Scott County Telephone Cooperative (SCTC). In 2012, SCTC purchased the LENOWISCO Network, LLC thru its subsidiary company, Appalachian Broadband, LLC. SCTC is currently doing a revenue share of 2% of the gross revenue from that network with LENOWISCO. The funds from that revenue share are used for "seed money" to expand broadband service or economic development projects in the LENOWISCO Planning District footprint. Some of that seed money was used to purchase wireless equipment for 17 WiFi hotspots throughout the LENOWISCO footprint in 2019 to provide broadband for school-aged children without service. SCTC provided the installation and the bandwidth.

Due to this grant being phased from the last three VATI LENOWISCO grants, SCTC was and will continue to use some of the same cabinets to house some of the electronics and save a considerable amount of money whenever they can. This project is contiguous to some of SCTC's existing network which allows SCTC to have redundancy in the network which improves service reliability that will be beneficial for all consumers.

Due to SCTC's partnership with PVEC, no make-ready or pole attachment fees were charged on previous VATI Projects, which was a huge savings for SCTC. The partnership allowed fiber deployment on previous VATI projects to be expedited faster and more efficiently. The Co-Applicant, SCTC has existing pole attachment agreements with the areas outside of PVEC's footprint. SCTC relationship with Old Dominion Power will also reduce costs and expedite this project. (See Attachment 18)

SCTC's partnership with PVEC has provided a great cost reduction for all LENOWISCO's broadband projects. This partnership has constructed 147 miles of fiber backbone through much of this proposed project area in Lee County which equates to about \$2.4 million. This construction of this backbone fiber will basically reduce this project cost by \$2.4 million. So, it has reduced the cost per sub substantially as well.

Attachment 18- Co-Applicant Agreement & Pole Attachment Agreements, includes a copy of SCTCs MOU and Agreement with PVEC.

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15. Communications Plan: Describe efforts to keep the public informed of project progress and the broadband adoption plan.
- Explain how you plan on communicating the project status to stakeholders, including but not limited to County leadership, project areas residents, etc. (Up to 10 points)
  - 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. (up to 10 points)
  - Describe any digital literacy efforts to ensure residents and businesses in the proposed project area sufficiently utilize broadband. Please list any partnering organizations for digital literacy, such as the local library or cooperative extension office.

## Answer:

Scott County Telephone Cooperative (SCTC) and LENOWISCO's Management Team will conduct quarterly conference calls and invite a member from each of the counties they are working in to keep everyone informed on the project. Information contained in the monthly progress reports will be reviewed as well the progress on the project. Each locality will utilize various social media and traditional communication channels to promote the project and service availability as the project is built out.

A Scott County Telephone Cooperative (SCTC) management team member (Bill Franklin, Roger Fraysier or Matthew Hill) and a staff member from LENOWISCO will provide 1 or 2 presentations annually at Board of Supervisors meetings to provide project updates within each county to be served.

SCTC's Management Team (Bill Franklin, Roger Fraysier, or Matthew Hill) will keep the County Administrators up-to-date by calling them via telephone to update them on happenings within the project areas if they are unable to be on the quarterly meetings conference call.

Upon building in an area, yard signs will be placed in the area informing all potential customers that fiber is coming soon. The signs will provide a phone number to call for information. Before drops are installed, representatives from SCTC will go door-to-door distributing flyers. SCTC estimates a 55+% take-rate or 10,814 locations of the 19,646 locations based on previous broadband projects SCTC has constructed and completed.

Direct mailers will be sent out by SCTC to addresses in the area being built. SCTC will have customer service staff readily available to answer all inquiries.

SCTC will utilize its websites to keep the communities informed when fiber connectivity will be available in their area. With the Facebook social media platform being a strong marketing tool, a strong presence will be able to reach out to users within the project areas.

SCTC customer service representatives will inform qualifying families of the up to \$30 credit that the Affordable Connectivity Program provides when customers call in to sign up for service. SCTC will also be distributing flyers to the schools for students to take home to their parents. All families with school-aged children will receive an additional \$10 monthly discount until the on-going Pandemic has ended.

During project construction, SCTC will visit each passing and place a door hanger notification when service is expected to be available and all contact information for the customer for hook-up of their service.

Digital Literacy efforts will be conducted and planned upon the grant approval.

16. 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.

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**Answer:**

<b>NAME</b>	<b>TITLE</b>	<b>YEARS OF EXPERIENCE</b>	<b>RESPONSIBILITIES</b>
Duane A. Miller	Executive Director (LENOWISCO PDC)	25	Co-oversight of all aspects of the project.
Rebecca Crockett	Director of Project Dev. (LENOWISCO PDC)	14	Project Management/Grant Administration of Project
William J. Franklin	C.E.O. (SCTC)	28	Oversight of all aspects of the project.
Roger Fraysier	Executive VP of Finance & Operations (SCTC)	21	Operational and Accounting functions of the project.
Matt Hill	C.O.O. (SCTC)	29	Engineering Management, Network Management & Design functions of the project.
Gwen Richardson	Project Manager/Office Manager/Exec. VP & Operations Manager-MountaiNet (SCTC)		

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35

Marketing, Data Management and customer support for the projects.

Melissa Jessee

Exec. Administrative Manager/Grants Adm.

31

Reporting requirements for the project.

The LENOWISCO Planning District Commission and Scott County Telephone Cooperative (SCTC) have worked together for many years to better the communities, counties and region. LENOWISCO will provide assistance to Scott County Telephone Cooperative in obtaining permits, right-of-ways, easements or any other assistance needed for this project. LENOWISCO will over-see the management of the grant funds and document the monies to insure they are dispersed properly.

Scott County Telephone Cooperative's (SCTC's) management team has had many years of experience managing and constructing broadband facilities. SCTC has completed 17 Fiber-to-the-Premise projects totaling approximately \$47 million. SCTC will design, construct, manage and maintain this project. SCTC will be responsible for 20% of the match on this project.

Powell Valley Electric Cooperative (PVEC) has completed several Fiber-to-the Home projects for other providers totaling approximately \$30 million. The existing partnership with LENOWISCO and SCTC along with SCTC's relationship with PVEC to extend Broadband to unserved areas in the region gain the efficiencies of scope and volume which allows all to combine resources to serve a much larger area. The partnerships are ideal for all constituents, whether it's a residential consumer or a business owner. It allows SCTC to offer more bandwidth at a lower price to improve the quality of life, to promote economic development, to improve education, and to improve health care thru tele-medicine in the region. That is, by example, the driving force behind Cooperatives.

SCTC has an agreement with PVEC that any projects done together, PVEC will construct the outside plant and SCTC will light it. PVEC will, in essence, provide the match for the outside plant construction, but when completed, this match will be repaid by SCTC through its current revenue sharing agreement that SCTC has with PVEC. When PVEC repaid from the revenue sharing agreement, SCTC will own the network. PVEC begins charging pole rental, customer service fees and maintenance fees. This partnership is a win/win for our communities, our region and our state.

Attachment 14 - Letters of Support (Stakeholders/Locality)

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## 17. 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 12 – Derivation of Costs; Attachment 13 - Documentation of Supporting Cost Estimates. (up to 10 points)

### Answer:

The proposed request of \$66,466,100.00 with 80% VATI (\$53,172,880.00) and 20% SCTC Match (\$13,293,220.00) for Lee & Wise counties will finalize the initial FY2020, FY2021, and FY2022 VATI Projects to finish the LENOWISCO Planning District's footprint.

Project costs include outside plant, CPE, make-ready, engineering, OLT equipment, and railroad crossing costs. All cost estimates are based on SCTC's prior projects. All other costs are procured, with the only exception of electronics. SCTC uses Calix electronic equipment to keep its network operable with SCTC's existing network.

### Attachment 12 – Derivation of Costs

Attachment 13 - Documentation of Supporting Cost Estimates

18. The cost benefit index is comprised of state cost per unit passed. Individual cost benefit scores are calculated and averaged together to create a point scale for a composite score. Provide the following:
- Total VATI funding request
  - Number of serviceable units (up to 125 points)

### Answer:

Total VATI Funding request - \$53,172,880.00

Number of Serviceable Units - 19,646

## 19. Commonwealth Priorities (Up to 50 points)

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

- 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.
- Unique partnerships involved in the proposed project. Examples include electric utilities, universities, and federal/state agencies.
- Digital equity efforts to ensure low to moderate income households in the proposed project area will have affordable access to speeds at or above 100/20 mbps, include information regarding the internet service provider's participation in the Affordable Connectivity Program
- The co-applicant's efforts to mitigate supply chain constraints, including labor shortages and order-to-delivery delays on telecommunications materials required to construct broadband networks.
- The applicant's and co-applicant's efforts to promote broadband adoption, including, but not limited to: telehealth, smart farming, e-entrepreneurship, and distance learning.

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## Answer:

- a. There are 278 businesses and 3 community anchors located in Lee County Project areas. SCTC does provide broadband service to the Lee County School System. In the last year, SCTC built a broadband connection to about 600 unserved students in Lee County. The proposed project will provide service to the remaining unserved students in Lee county. This project will provide 2,018 residences in Lee County affordable, reliable and robust broadband service. There are 924 businesses and 20 Community Anchors in Wise County project areas. SCTC hopes to accomplish in Wise County what SCTC has in Scott and soon to be Lee County, 100% broadband coverage for all school-aged children. This project will provide 17,628 residences of Wise County affordable, reliable and robust broadband service. SCTC is already serving schools, medical facilities, and business throughout the region. SCTC has partnered with LENOWISCO, and the Virginia Coalfield Coalition to provide broadband service to over 70 cell sites in the region. SCTC manage and operates this network.
- b. LENOWISCO and SCTC have a unique partnership and share a common interest to better their communities, counties and region. SCTC's partnership with PVEC is ideal for all constituents because they share the same goals of offering a service to everyone at an affordable price. All parties involved strive to improve the quality of life and promote economic development within their communities, counties and the entire region. We've seen first-hand the substantial impact that robust, reliable, and affordable high-speed internet can have on rural communities. The need for telecommuting and telemedicine increased significantly during the start of the pandemic, as well as the needs for students doing schoolwork at home were among the most dramatic. LENOWISCO and SCTC teamed up to provide 17 Wi-Fi hotspots for anyone to utilize throughout the region. SCTC extended the school network in Scot County to the homes of 167 school-aged children who did not have service due to their economic conditions. This allowed those students free access to the schools network. For the homes of all school age children and teachers in Scott County all accounts were upgraded to the next level of bandwidth at no charge. In Lee County SCTC built network to over 600 locations without broadband service. Then gave a \$10 discount to all locations which had school-aged children until the on-going pandemic ends. There were still many more unserved rural areas that did not have the reliable broadband access.
- c. Digital Equality efforts will be adopted to ensure low to moderate income households in the project areas will have affordable access to speeds above the 25/3Mbps threshold if this project is awarded. SCTC's 100/100Mbps service offering is only \$59.95. Additionally, SCTC is offering consumers with school-age children a \$10.00 price reduction to promote connectivity and enhance their educational opportunities. SCTC intends to add an affordable 2Gig/2Gig symmetrical and 10Gig/10Gig symmetrical offering for residential customers. SCTC has encouraged our customers to sign up for the ACP program which pays \$30/month for their broadband customers. SCTC feels this program will continue into the future. This will be vital for region so all of our economically challenged constituents can afford a robust broadband connection for their children's education, family health care and provide for their entrepreneurship opportunities for self-advancement.
- e. The Applicant's and Co-Applicant's efforts to promote broadband adoption will include: Conducting quarterly conference calls and invite a member from each of the two counties to keep everyone informed on the project. Information contained in the monthly progress reports will be reviewed as well the progress on the project. Each locality will utilize various social media and traditional communication channels to promote the project and service availability as the project is built-out.

20.

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## Additional Information

Please attach any letters of support from stakeholders. If the applicant is not a locality(s) in which the project will occur, please provide a letter of support from that locality.

Attachment 14 – Letters of Support.

Provide the two most recent Form 477 submitted to the FCC, or equivalent, as well as point, polygon, and, for wireless providers, RSSI shapefiles for the project area **in .zip file form**. With attachments 17 through 20, attach any other information that the applicant desires to include. Applicants are limited to four additional attachments.

Label Additional Attachments as:

- a. Attachment 15 – Two most recent Form 477 submitted to the FCC or equivalent
- b. Attachment 16 - Point and Polygon shapefiles, in.zip file form, showing proposed passings and project area
- c. Attachment 17 - For wireless applicants: shapefiles, in .zip file form, indicating RSSI projections in the application area
- d. Attachment 18 – XXXXXXXX
- e. Attachment 19 – XXXXXXXX
- f. Attachment 20 – XXXXXXXX

## Answer:

Attachment 1 Project Area Map

A1- Project Area Maps

Attachment 2 Documentation of Federal Funding Area

A2- Documentation of Federal Funding

Attachment 3 Documentation that proposed area is unserved based on VATI Criteria

A3- Documentation Unserved Area based on VATI Criteria

Attachment 4 Passings Form

A4- Passings Form

Attachment 5 RDOF Awarded Areas included in VATI Application

A5– RDOF Awarded Areas included in VATI Application

Attachment 6 Propagation Map if Wireless

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A6- N/A

Attachment 7 Timeline/Project Management Plan

A7- Timeline Project Management Plan

Attachment 8 MOU/MOA between Applicant/Co-Applicant

A8- MOU/MOA between Applicant/Co-Applicant

Attachment 9 Funding Sources Table

A9- Funding Sources Table

Attachment 10 Documentation for Match Funding

A10- Documentation of Match Funding

Attachment 11 Prior Expended Match Form

A11-N/A

Attachment 12 Derivation of Costs (Project Budget)

A12- Derivation of Costs

Attachment 13 Documentation Supporting Project Costs

A13- Documentation of Supporting Cost Estimates

Attachment 14 Letters of Support

A14-Letters of Support

Attachment 15 Two Most Recent Form 477's submitted to FCC

A15- Two most recent Form 477's

Attachment 16 Point and Polygon Shapefiles

A16- Point and Polygon Shapefiles

Attachment 17 RSSI Projections Shapefiles

A17- N/A

Attachment 18 Co-Applicant Agreements & Pole Attachment Agreements

A18- Co-Applicant Agreements & Pole Attachment Agreements

Attachment 19 Detailed Technology for the Project

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A19- Detailed Technology for the Project

Attachment 20 RISI Survey of Unserved Areas

A20- RISI Surveys on Unserved Areas

## Attachments:

Map(s) of project area, including proposed infrastructure

Attachment1ProjectAreaMaps8242022112305.zip

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

Attachment2DocumentationofFederalFundingArea8242022115643.zip

Documentation that proposed project area is unserved based on VATI criteria

Attachment3DocumentationUnservedAreaVATICriteria824202231125.pdf

Passings Form (Use template provided)

Attachment4PassingsForm297202292022.pdf

Documentation of RDOF awarded area in VATI project Area (Use template provided)

Attachment5RDOFAwardedAreasincludedinVATIApplication8242022123946.pdf

Timeline/Project Management Plan

Attachment7TimelineProjectManagementPlan823202243107.pdf

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

Attachment8MOUMOAbetweenLENOWISCOandSCTC810202224755.pdf

Funding Sources Table (Use template provided)

Attachment9FundingSourcesTable8222022100754.pdf

Documentation of Match Funding

Attachment10DocumentationofMatchFunding823202294942.pdf

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Derivation of Cost/Project Budget (Use template provided)

Attachment12DerivationofCosts8182022105139.pdf

Documentation of Supporting Cost Estimates

Attachment13DocumentationofSupportingCostEstimates8182022110135.pdf

Letters of Support

Attachment14LettersofSupport824202221607.pdf

Two most recent Form 477 submitted to the FCC or equivalent

Attachment15TwoMostRecentForm47789202242143.pdf

Point and Polygon shapefiles, in.zip file form, showing proposed passings and project area

Attachment16PointandPolygonShapefiles8242022105213.zip

Optional

Attachment18PoleAttachmentAgreementsandCoApplicantAgreementswithPVEC8222022114900.pdf

Optional

Attachment19DetailedTechnologyoftheProject816202242512.pdf

Optional

Attachment20RISISurvey816202242522.pdf

## Notes:

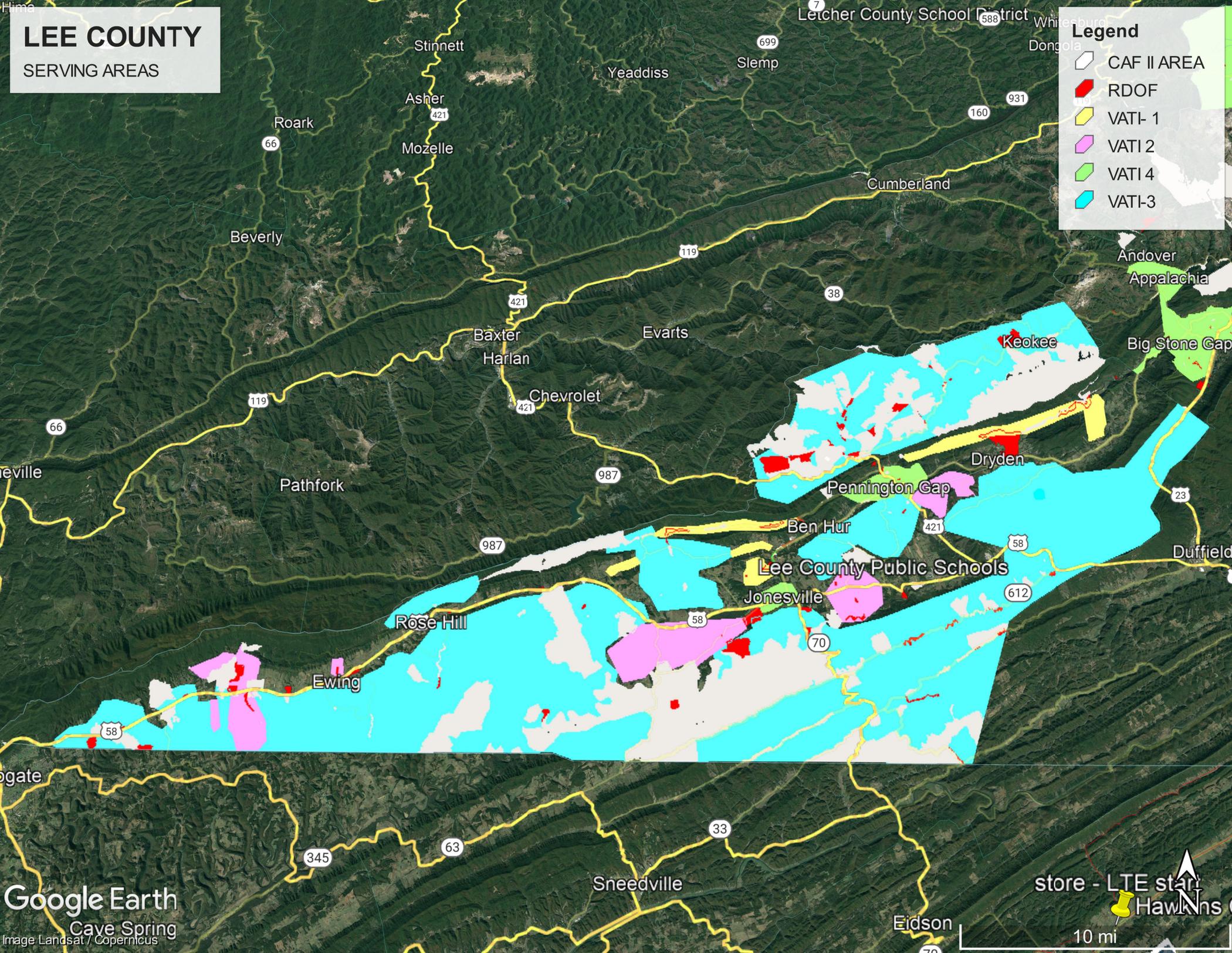
The LENOWISCO PDC and SCTC are poised to make a difference in the lives of the citizens of Lee and Wise counties. The determination to serve locations in Lee County and Wise County who do not currently have access to reliable, affordable and robust high-speed broadband that supports future-proof technology is evidence of that commitment. We are building faster and connecting more customers than anyone ever before us. This project will speed this process by providing funding which will allow us to serve the remaining consumers in the LENOWISCO PDC footprint and move closer to serving the harder to serve areas that are even more rural.

# LEE COUNTY

SERVING AREAS

### Legend

- CAF II AREA
- RDOF
- VATI-1
- VATI 2
- VATI 4
- VATI-3

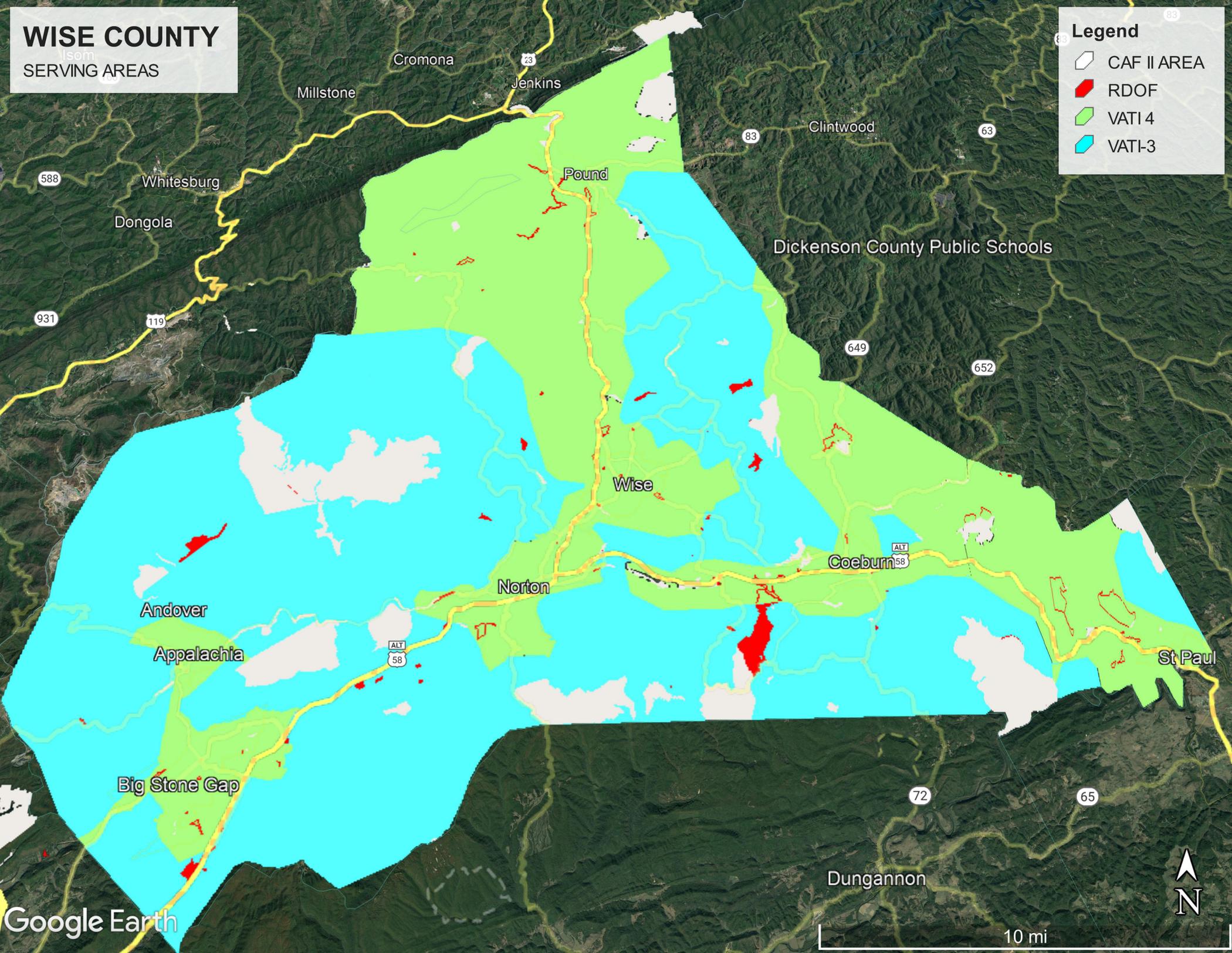


# WISE COUNTY

SERVING AREAS

**Legend**

- CAF II AREA
- RDOF
- VAT1 4
- VAT1-3

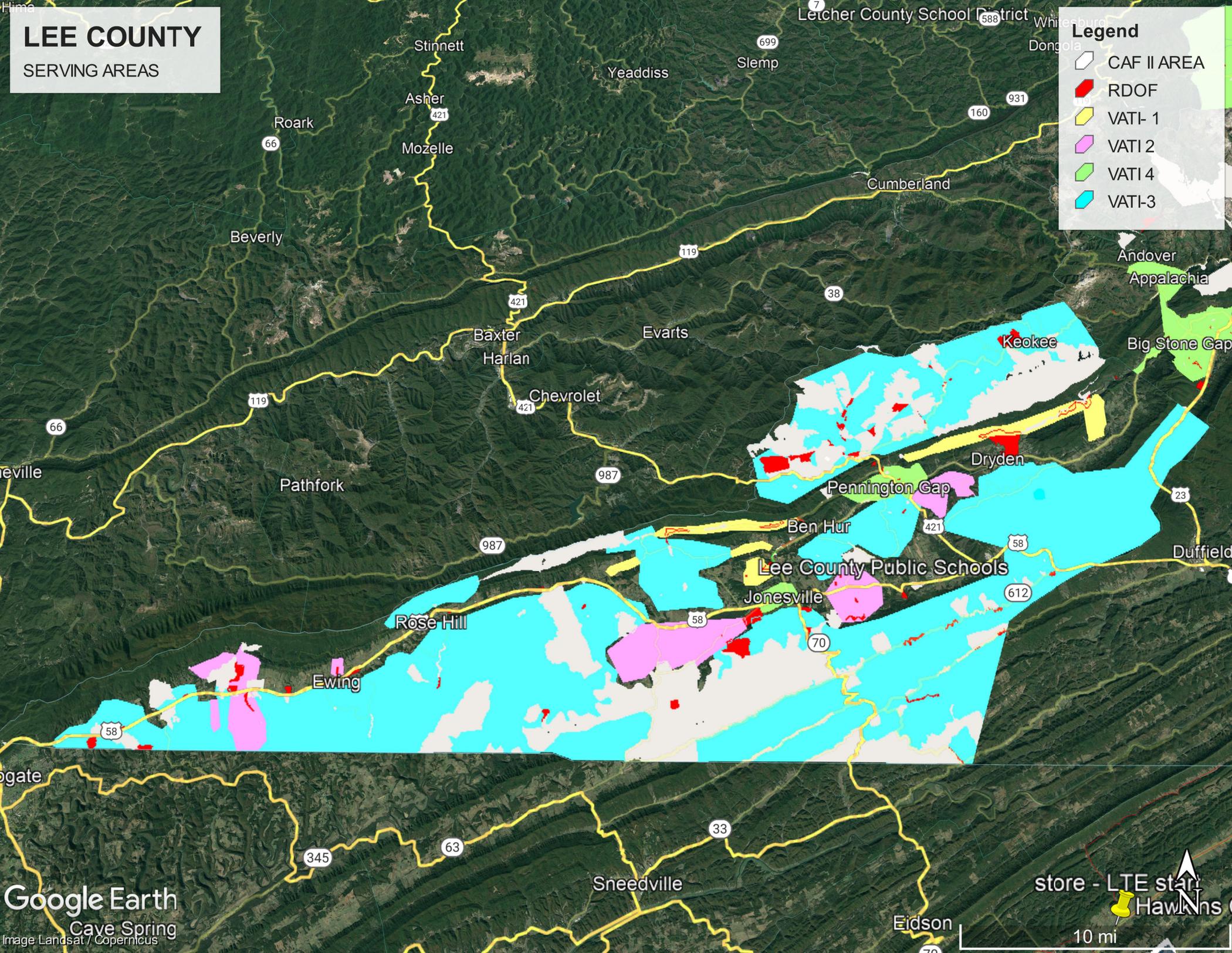


# LEE COUNTY

SERVING AREAS

### Legend

- CAF II AREA
- RDOF
- VATI-1
- VATI 2
- VATI 4
- VATI-3

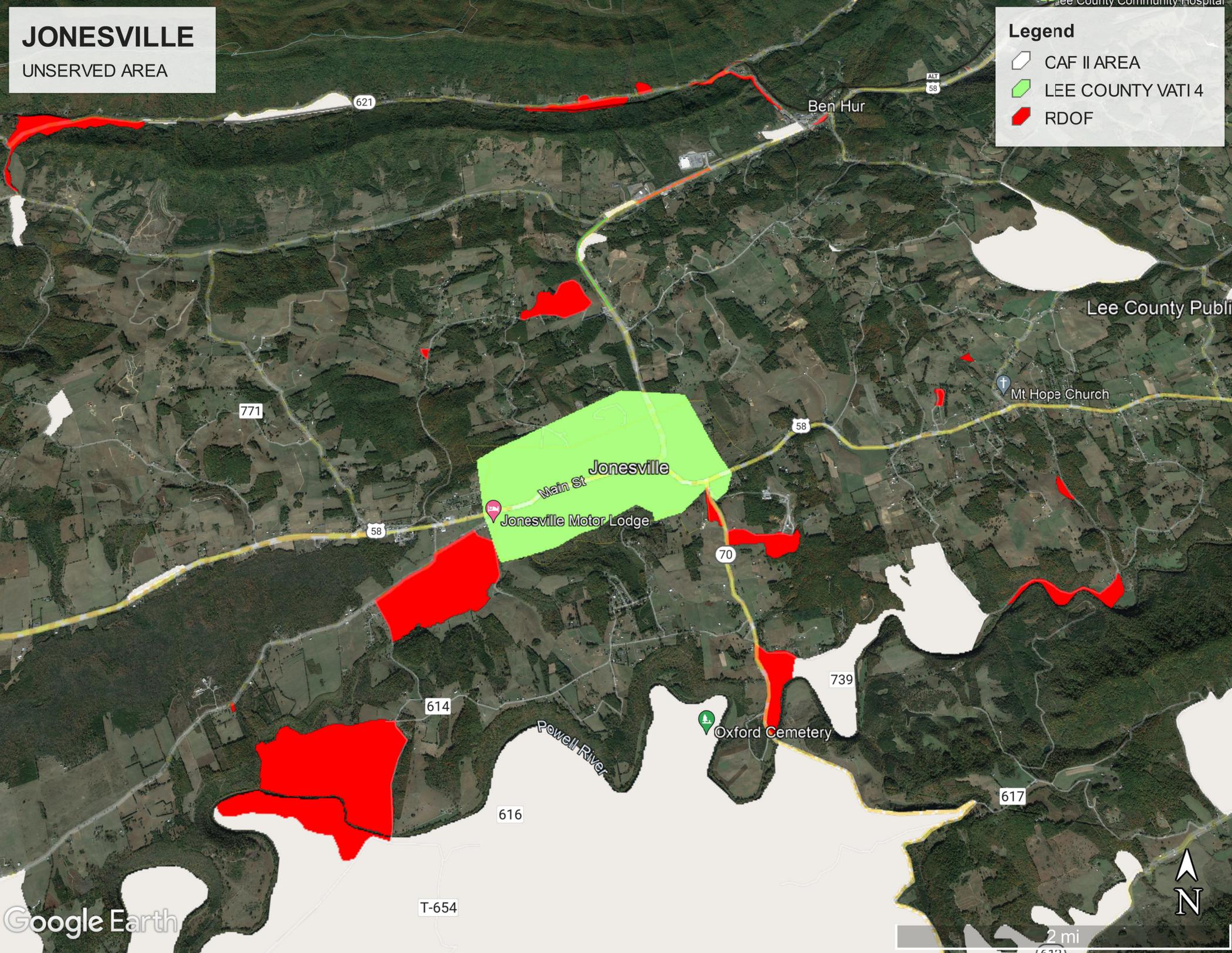


# JONESVILLE

UNSERVED AREA

## Legend

- CAF II AREA
- LEE COUNTY VATI 4
- RDOF



Ben Hur

Lee County Public

Mt Hope Church

Jonesville

Main St

Jonesville Motor Lodge

Oxford Cemetery

Powell River

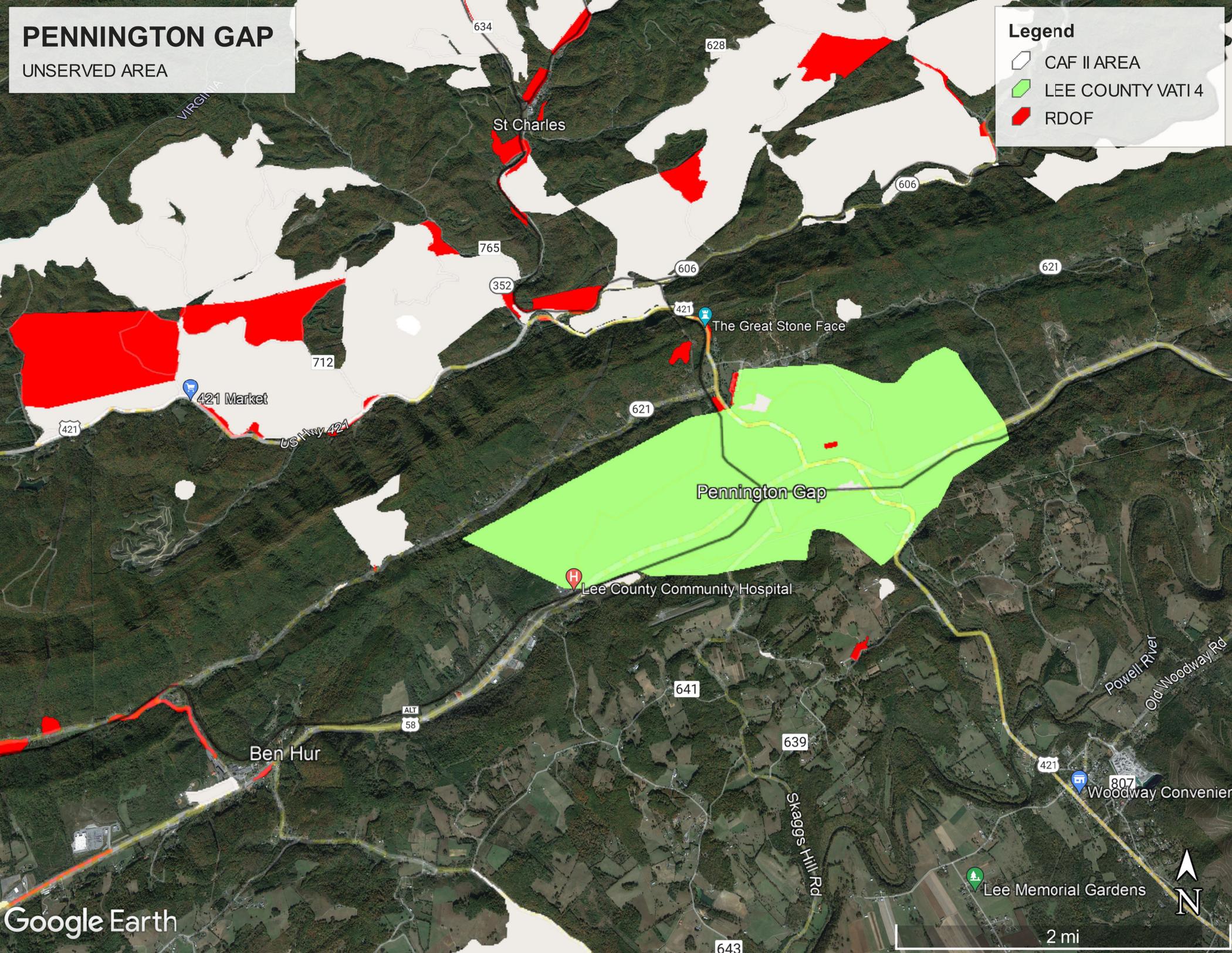


# PENNINGTON GAP

UNSERVED AREA

## Legend

- CAF II AREA
- LEE COUNTY VATI 4
- RDOF

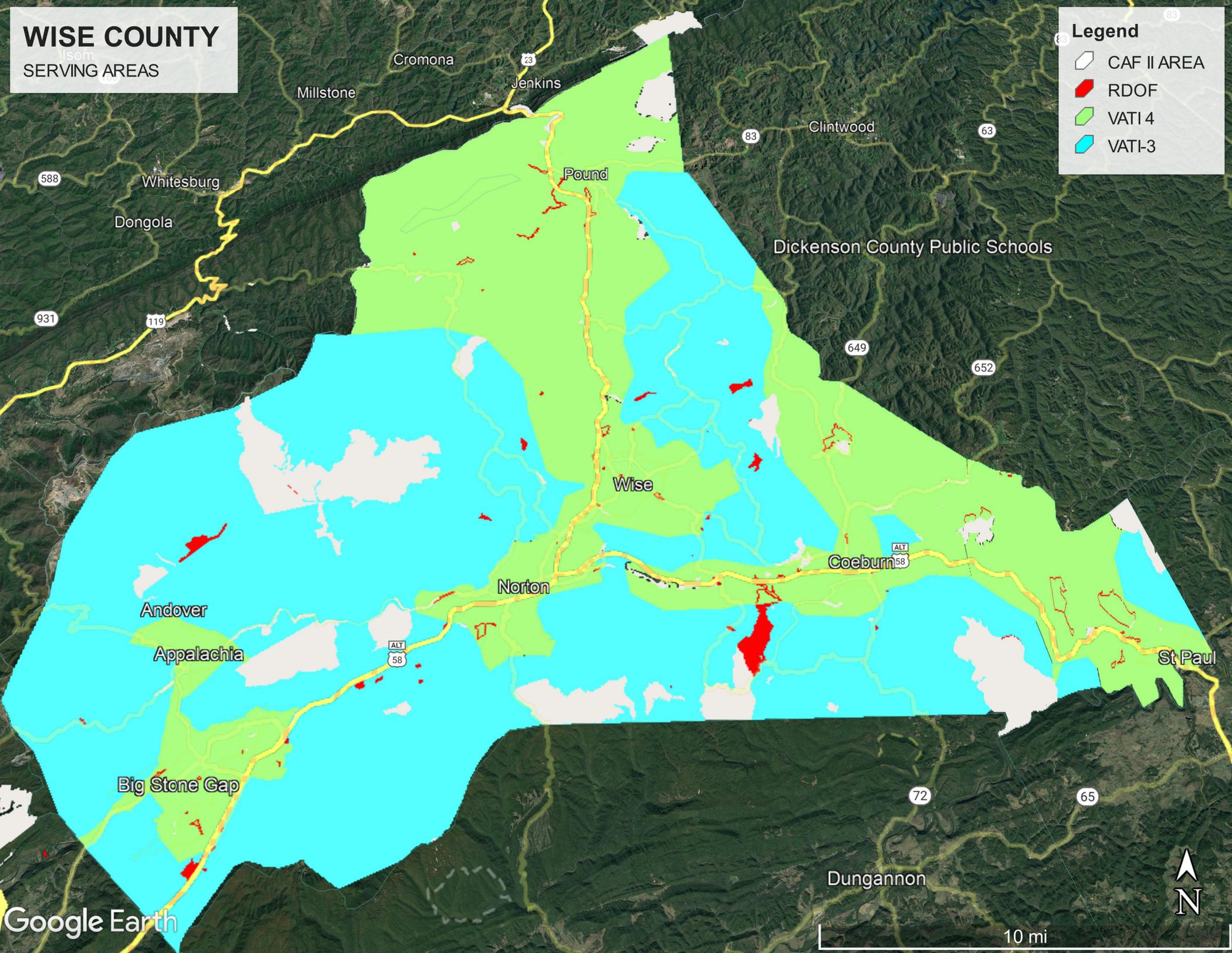


# WISE COUNTY

SERVING AREAS

**Legend**

- CAF II AREA
- RDOF
- VAT1 4
- VAT1-3



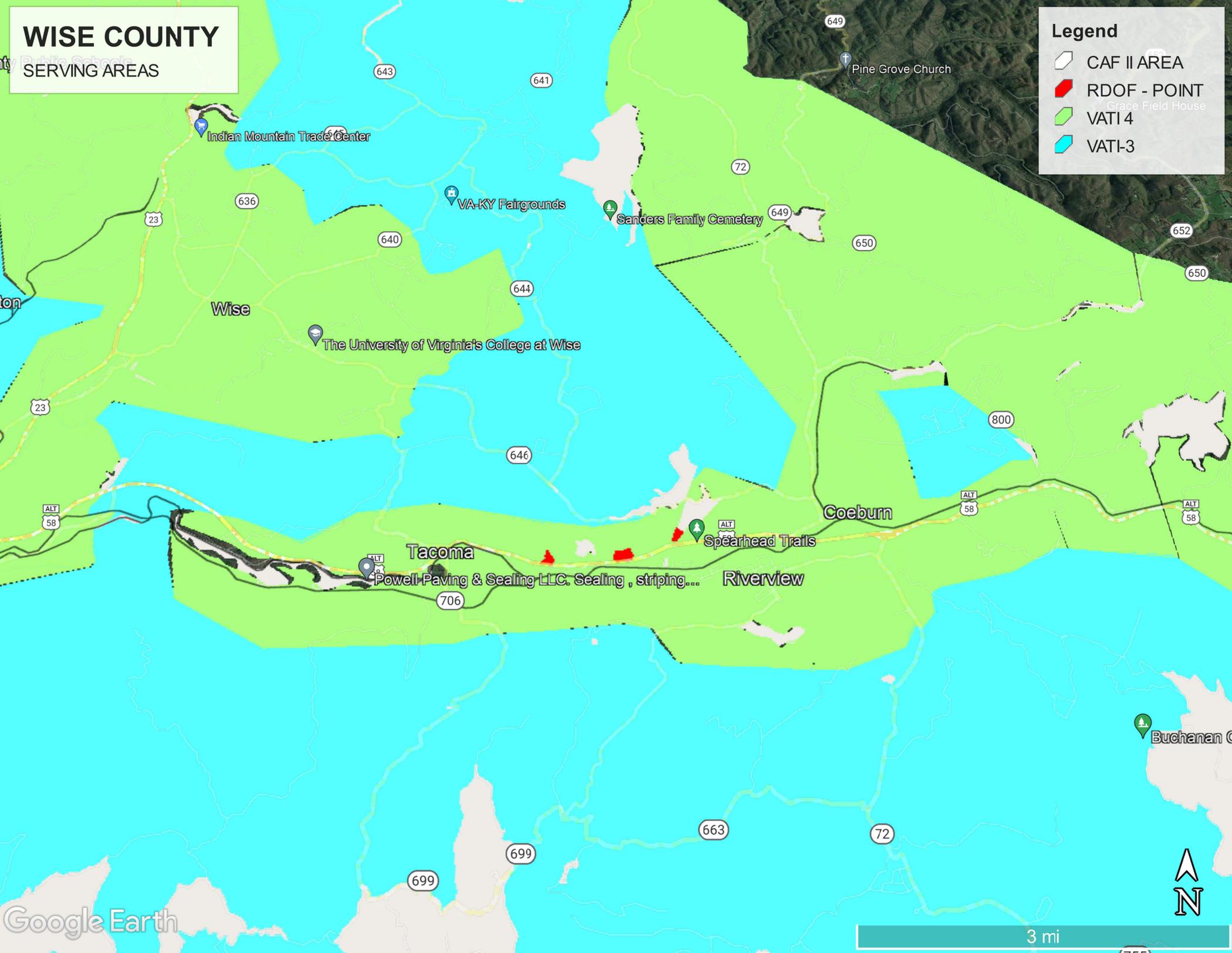


# WISE COUNTY

SERVING AREAS

## Legend

- CAF II AREA
- RDOF - POINT
- VATI 4
- VATI-3



Indian Mountain Trade Center

VA-KY Fairgrounds

Sanders Family Cemetery

The University of Virginia's College at Wise

Wise

Coeburn

Tacoma

Spearhead Trails

Riverview

Buchanan C



## Attachment #3

### Documentation Unserved Area – VATI Criteria

There is a total of 18,023 potential locations within the specified project area of Wise and Lee counties who do not have sufficient broadband services. These specific areas (PFSA) are in Big Stone Gap (3,544 locations), Appalachia (950 locations) Norton (2,524 locations), Wise (2,007 locations), Pound (635 locations) and Coeburn (1,540 locations) and Saint Paul and other rural areas of Wise County (4,805 locations) in Wise County, VA as well as Pennington (1,259 locations), and Jonesville (759 locations) in Lee County, VA.

To help to determine proof that the proposed service area is unserved/underserved, SCTC hired RISI to conduct speed tests in the proposed service area. The results of the speed tests have been attached. (See Attachment 20 - RISI Survey) VTIA has put a preference on serving locations which do not have 25/3Mbps service. Based on RISI's survey, 35.6% cannot get 25/3Mbps service. This equates to over 6,400 locations that do not get 25/3Mbps service. The survey also found that Xfinity could only deliver 100/20Mbps service to only 2.3% of the customers equating to 415 locations. When including all carriers, the survey revealed only 5.7% of the respondents could get 100/20Mbps or greater equating to 1,027 locations. The threshold for overlap is 20% equating to 3,604 locations. The 5.7% served overlap is considerably under the allowable 20% overlap. According to today's definition of Broadband at 100/20Mbps, 94.3% of these customers are unserved. Since SCTC has determined Point Broadband's service locations of 173 from their leased network to them, Xfinity's 2.3% number of 415 locations from the RISI survey they conducted primarily on Xfinity's footprint, and Gearhart's passings taken from the 911 map of 1,955, SCTC estimates 2,543 locations have access to 100/20Mbps which is 14.1% of the total passing of 18,023. This number is well below the 20% overlap rule. By definition, 83.9% are unserved by today's definition of Broadband Service. Based on the survey of Xfinity's service area, 35.6% cannot even get 25/3Mbps or over 6,400 locations.

Attached is the RISI Survey with this documentation.



**Scott County Telephone Cooperative**

**Community Speed Test Results**

**Mar 7, 2022**

<b>Key Findings</b>	2
<b>Overview and Process</b>	2
<b>Data Analysis</b>	3
Section A: Two County Summary (Wise and Lee Counties)	4
Section B: Individual Town Summaries	7

## I. Key Findings

- Far fewer than 10% of speed test respondents in the proposed service areas are able to access the USDA speed threshold of 100Mbps download / 20Mbps upload
  - Out of the 424 valid speed tests (those who successfully tested upload and download speeds) taken in the proposed service areas, only 5.5% of respondents registered speeds of 100Mbps / 20Mbps
- Across the region, there are significant numbers of people who do not subscribe to the internet; suggesting that the true percentage of people who can't get 100/20Mbps speeds is likely greater
  - Of the 69 respondents who do not subscribe to home internet, and disclosed why not, 68% said it was due to a lack of good internet options at their home
- The vast majority of speed test respondents subscribed to Comcast/Xfinity; looking at these tests alone, it is clear Comcast/Xfinity subscribers do not receive adequate speeds
  - Only 2.3% of Comcast/Xfinity subscriber registered speeds of at least 100Mbps/20Mbps
- Poor internet speeds were not a product of lack of purchasing higher speed packages from the consumer; they were a product of poor internet performance.
  - Over 90% of tests from customers that purchased speeds of 100/100, 100/20, and 200/200, failed to achieve their purchased speeds, and failed by significant margins.
  - For example, the median download speeds for customers who purchased 100/100Mbps and 100/20Mbps packages was 50Mbps and 56Mbps, respectively.

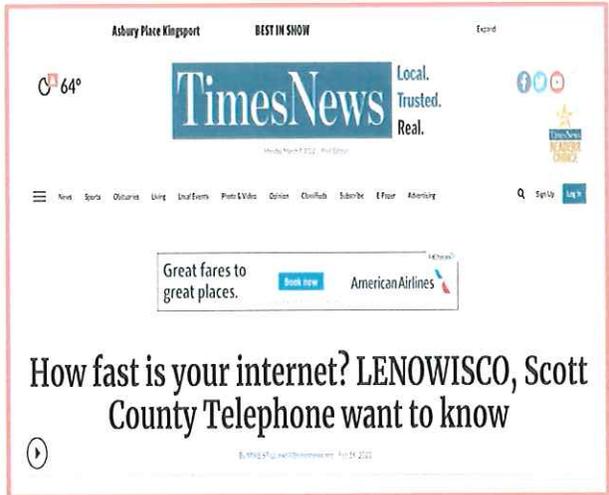
## II. Overview and Process

In January of 2022, Scott County Telephone Cooperative (SCTC) launched the **Wise and Lee County Community Speed Test and Broadband Survey**. The speed test was created using

technology created by [Measurement Labs \(M-Lab\)](#) – a national leading collector and researcher of speed test data.

This community speed test was completed through the partnership and help of local elected officials, community leaders, teachers, and volunteers, who all described a need for good, reliable broadband coverage across both counties. Data from the speed test was collected through a variety of strategies, including:

- Speed test placed on the Lenowisco Planning District Commission website
- Door-to-door canvassing throughout every town in the proposed service area
- Distributed mail program via USPS EveryDoor Mail Program
- Mass communication methods (email lists, blog posts, community pages, etc.)
- Online outreach via social media (Facebook, Twitter, Instagram, etc.)
- Earned media (local radio, [newspapers](#), and TV stations)
- Relational organizing household to household



The community speed test allowed SCTC to determine whether the current internet service providers deliver to residents the set speed standards (100 Mbps / 20 Mbps) for broadband internet access as defined by the USDA's Reconnect Service Eligibility Requirements. Specifically, the test and survey sought to understand:

- The speeds experienced by residents in Wise County and Lee County
- Where there was and was not service in the proposed service area
- How the speeds experienced by residents compared to the advertised speeds by providers

### III. Data Analysis

There were **424 speed tests** collected within Wise and Lee counties. Out of the total responses, **355** individual and valid responses (e.g., they registered a valid upload and download speed) were received within the proposed service area. The remaining **70** responses came from service areas within Wise and Lee Counties, or were from people who reported not having service (and so did not take the speed test).

The tests from just outside the proposed service areas are **not** used in the analysis of speeds experienced in the service areas, and are **not** used in the town by town summary. When those tests were made on networks shared by respondents in the proposed service areas (i.e., Comcast/Xfinity), they were included in the analysis to demonstrate the capacity of those networks.

**Section A: Two County Summary (Wise and Lee Counties)**

Of the **424 total speed tests** across both counties in the proposed service areas, **only 5.7%** (24 responses out of 424 total) of tests reached speeds of 100Mbps/20Mbps, and **64.4%** (273 of respondents out of the 424 total) of respondents reached speeds of 25Mbps/3Mbps or greater: thus, 151 of the respondents couldn't reach 25Mbps/3 Mbps or **35.6%**. This suggests that the two county region as a whole has lots of unserved and underserved areas. Thus **94.3%** get less than 100Mbps/20Mbps and **35.6%** get less than 25Mbps/3Mbps

REGION-WIDE	Upload Test Result			
	Download Test Result	< 3 Mbps	> 3 Mbps but < 20 Mbps	> 20 Mbps
< 25 Mbps	86 (20.3%)	43 (10.1%)	2 (0.47%)	131 (30.9%)
> 25 Mbps but < 100 Mbps	12 (2.8%)	121 (28.5%)	31 (7.3%)	164 (38.7%)
> 100 Mbps	8 (1.9%)	97 (22.9%)	<b>24 (5.7%)</b>	129 (30.4%)
Total	106 (25%)	261 (61.6%)	57 (13.4%)	424 (100%)

Clearly, it is unsurprising that some types of internet – for example, satellite internet or DSL – are not meeting the speed thresholds the USDA has established for eligibility. Those residents with access to cable and fiber based broadband services should, in theory, experience higher speeds.

*Out of the 424 total unique tests completed:*

- 219, or 52%, of respondents subscribed to Comcast’s cable product
- 48, or 11%, of respondents subscribed to Point Broadband’s fiber product
- 157, or 37%, of respondents had satellite service, DSL service, were unsure of their provider, or chose “Other”

Comcast/Xfinity – From the community speed test analysis, we conclude Comcast is clearly not delivering adequate speeds as only 2.3% of their subscribed customers from the data can reach 100Mbps/20Mbps.

Comcast/Xfinity	Upload Test Result			
	Download Test Result	< 3 Mbps	> 3 Mbps but < 20 Mbps	> 20 Mbps
< 25 Mbps	11 (5.0%)	14 (6.4%)	0 (0.0%)	25 (11.4%)
> 25 Mbps but < 100 Mbps	4 (1.8%)	81 (37.0%)	4 (1.8%)	89 (40.6%)
> 100 Mbps	8 (3.7%)	92 (42.0%)	<b>5 (2.3%)</b>	105 (47.9%)
Total	23 (10.5%)	187 (85.4%)	9 (4.1%)	219 (100.0%)

While no other provider operating in the proposed service area reached the speed threshold of 100Mbps/20Mbps, SCTC focused on Comcast/Xfinity for this report because they were the most reported internet provider utilized by residents in the proposed service area. According to SCTC's Community Speed Test data, the primary provider of wired broadband speeds – Comcast/Xfinity – is not delivering the speeds of 100Mbps/20Mbps and not delivering speeds remotely close to what consumers are purchasing.



*This map depicts Comcast/Xfinity's reported service area based on 477 forms in purple, with the red dots representing speed test respondents who reported having Comcast/Xfinity service.*

**Purchased Speeds vs Experienced Speeds:**

In addition, the data collected makes clear that the lack of 100/20Mbps coverage in the area was **not** due to subscribers simply not purchasing speed packages of that caliber, but rather due to the speed packages by providers, especially Comcast/Xfinity, not providing the speeds customers purchased.

The following shows the most commonly purchased speed packages at or above 25/3Mbps, and the percentage of tests that did not meet the purchased speeds.

Purchased Speeds	# of Tests	Mean Download Speed (Mbps)	Median Download Speed (Mbps)	Mean Upload Speed (Mbps)	Median Upload Speed (Mbps)	% tests that didn't meet purchased download speed	% tests that didn't meet purchased upload speeds	% tests that didn't meet one or the other (either upload or download speed)
<b>100/100 Mbps</b>	14	53.00	50.00	30.60	11.47	85.71%	92.86%	92.86%
<b>100/20 Mbps</b>	30	79.23	56.24	15.03	9.06	73.33%	90.00%	93.33%
<b>200/200 Mbps</b>	16	186.40	211.25	34.13	9.88	43.75%	93.75%	93.75%
<b>25/3 Mbps</b>	24	14.10	13.60	7.54	2.37	75.00%	58.33%	75.00%

**Over 90% of tests from customers that purchased speeds of 100/100, 100/20, and 200/200, failed to meet the purchased speeds, and often failed by significant margins.** For example, the median download speeds for people who purchased 100/100Mbps and 100/20Mbps was 50Mbps and 56Mbps, respectively.

**Non-Broadband Subscribers:**

69 respondents reported not subscribing to home broadband. Of those respondents who also disclosed *why* they did not subscribe, **62%** of them said they do not subscribe because there is *no good home internet option available* at their address, and **19%** cited affordability issues.

Taken together, it is clear that despite the FCC's data indicating a majority of both Wise and Lee counties are fully served, the region's internet reality is not adequate to meet the needs of residents – especially those in these specific communities who need high speed internet access for work, school, and telehealth – which is why the region is in desperate need of a robust internet service provider to build to the last mile.

**Quotes from residents:**

Many respondents expressed great hope that SCTC could bring better broadband to the region. The following are a selection of quotes provided via the survey:

*"No one will run internet this far up where we live and there's tons of children in school in our neighborhood and area that desperately need wifi for school work."*

*"SCTC installed my internet two weeks ago, it is absolutely fantastic. Extremely affordable and excellent service."*

*"I have had my SCTC broadband in Lee County for 1.5 years and really love the fast internet! Please bring it to the rest of us ASAP! We appreciate your sense of urgency."*

**Section B: Individual Town Summaries**

The following analysis demonstrates the internet needs of individual towns in the proposed service area: Coeburn, Appalachia, Big Stone Gap, Pennington Gap, and Jonesville. Clearly defined by the speeds highlighted in yellow, no locality is reaching 90% coverage.

<b>Coeburn</b>	<b>Upload Test Result</b>			
<b>Download Test Result</b>	< 3Mbps	> 3Mbps but < 20 Mbps	> 20Mbps	<i>Total</i>
< 25 Mbps	19 (17.1%)	9 (8.1%)	0 (0.0%)	28 (25.2%)
> 25 Mbps but < 100 Mbps	0 (0.0%)	41 (36.9%)	1 (0.9%)	42 (37.8%)
> 100 Mbps	4 (3.6%)	30 (27.0%)	<b>7 (6.3%)</b>	41 (36.9%)
<i>Total</i>	23 (20.7%)	80 (72.1%)	8 (7.2%)	111 (100.0%)

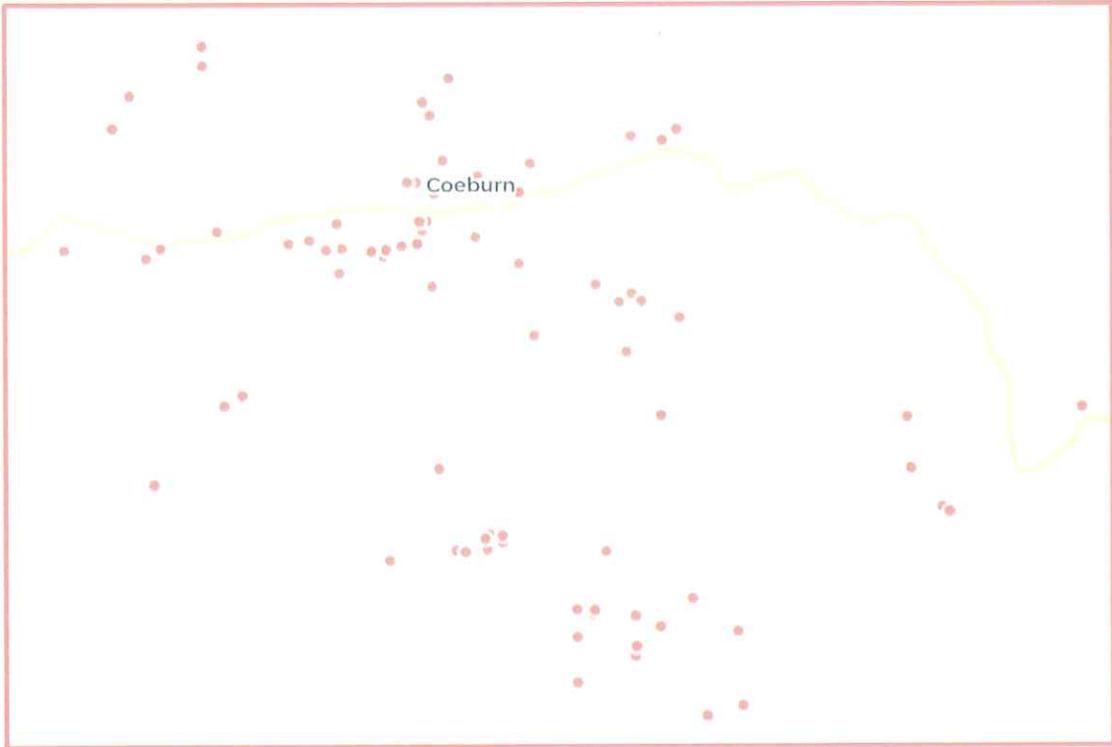
<b>Appalachia</b>	<b>Upload Test Result</b>			
<b>Download Test Result</b>	< 3Mbps	> 3Mbps but < 20 Mbps	> 20Mbps	<i>Total</i>
< 25 Mbps	4 (13.8%)	3 (10.3%)	0 (0.0%)	7 (24.1%)
> 25 Mbps but < 100 Mbps	2 (6.9%)	6 (20.7%)	3 (10.3%)	11 (37.9%)
> 100 Mbps	1 (3.4%)	8 (27.6%)	<b>2 (6.9%)</b>	11 (37.9%)
<i>Total</i>	7 (24.1%)	17 (58.6%)	5 (17.2%)	29 (100.0%)

<b>Big Stone Gap</b>	<b>Upload Test Result</b>			
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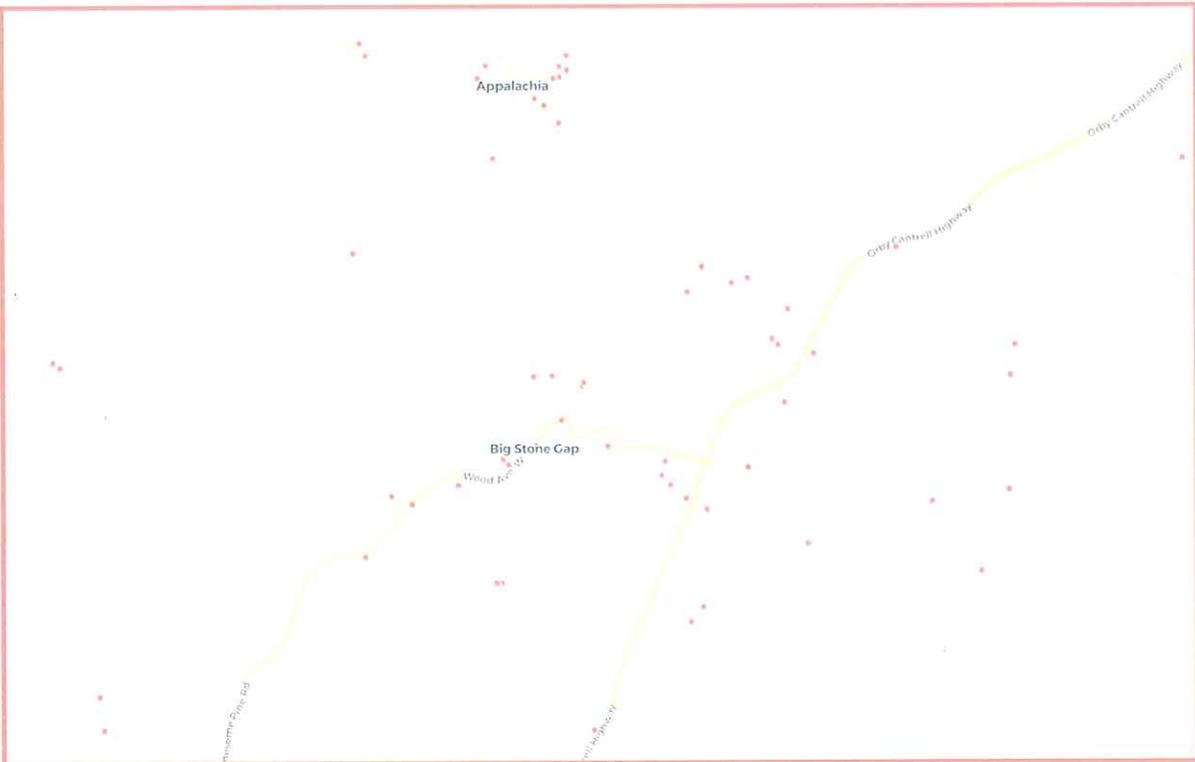
<b>Download Test Result</b>	< 3Mbps	> 3Mbps but < 20 Mbps	> 20Mbps	<i>Total</i>
< 25 Mbps	4 (7.8%)	1 (2.0%)	0 (0.0%)	5 (9.8%)
> 25 Mbps but < 100 Mbps	0 (0.0%)	19 (37.3%)	0 (0.0%)	19 (37.3%)
> 100 Mbps	0 (0.0%)	25 (49.0%)	<b>2 (3.9%)</b>	27 (52.9%)
<i>Total</i>	4 (7.8%)	45 (88.2%)	2 (3.9%)	51 (100.0%)

<b>Pennington Gap</b>	<b>Upload Test Result</b>			
<b>Download Test Result</b>	< 3Mbps	> 3Mbps but < 20 Mbps	> 20Mbps	<i>Total</i>
< 25 Mbps	8 (19.0%)	3 (7.1%)	1 (2.4%)	12 (28.6%)
> 25 Mbps but < 100 Mbps	2 (4.8%)	13 (31.0%)	3 (7.1%)	18 (42.9%)
> 100 Mbps	0 (0.0%)	9 (21.4%)	<b>3 (7.1%)</b>	12 (28.6%)
<i>Total</i>	10 (23.8%)	25 (59.5%)	7 (16.7%)	42 (100.0%)

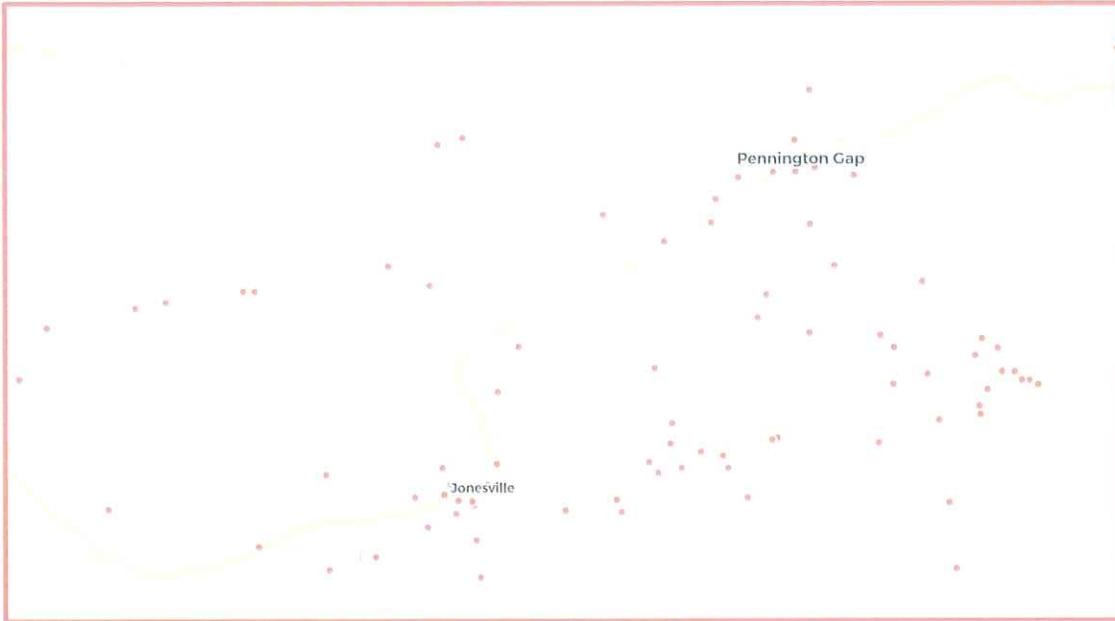
<b>Jonesville</b>	<b>Upload Test Result</b>			
<b>Download Test Result</b>	< 3Mbps	> 3Mbps but < 20 Mbps	> 20Mbps	<i>Total</i>
< 25 Mbps	15 (25.0%)	12 (20.0%)	1 (1.7%)	28 (46.7%)
> 25 Mbps but < 100 Mbps	2 (3.3%)	11 (18.3%)	15 (25.0%)	28 (46.7%)
> 100 Mbps	0 (0.0%)	2 (3.3%)	<b>2 (3.3%)</b>	4 (6.7%)
<i>Total</i>	17 (28.3%)	25 (41.7%)	18 (30.0%)	60 (100.0%)



**Speed tests in Coeburn**



**Speed tests in Big Stone Gap and Appalachia**



*Speed tests in Jonesville and Pennington Gap*



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## **Proposal: Data Collection for SCTC's USDA Reconnect Application**

Jan 3, 2022

The following includes information about us, our experience, and how we propose to complete the work, a potential timeline, and cost. We look forward to discussing at your earliest convenience.

### **About us**

Rural Innovation Strategies, Inc. (RISI) is dedicated to helping rural areas find renewed prosperity by growing entrepreneurship, digital economy jobs, skills training, and helping communities plan and develop fiber to the home plans. As an action tank, RISI participates both in the design and implementation of on the ground programming, but also intensive research, policy, and planning efforts enabled by our data science and GIS team.

### **Our experience**

To date, we have worked with 30+ rural communities across digital economic development and broadband implementation efforts in over 20 states. Our broadband experience spans feasibility assessments, business plan development, mapping and data analysis, statewide planning, policy recommendations, and funding strategies.

### **Proposed Support**

Scott County Telephone Company (SCTC) is applying for a USDA Reconnect Grant that would include servicing Wise County and Lee County in Virginia. In order to apply to serve the entire counties, SCTC must prove that over 90% of residents lack 100/20 Mbps service.

We propose an organized effort to collect accurate broadband coverage data by conducting a speed test, advertising the speed test through targeted mailers, and hiring a local organizer to reach a wide variety of homes in the county to take the speed test, to ensure a diverse response rate.



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### *I. Conduct a speed test and survey*

RISI will develop a user-friendly speed test and accompanying survey, which SCTC will host on their website, for residents to take and help determine what speeds are available throughout both counties. This speed test is meant to establish a baseline of what speed and quality of internet service is available in both counties and where improved service would be desired by residents. The survey is also meant to help gauge likely adoption and even collect pre-subscription commitments if possible.

### *II. Hire a local organizer to ensure broad response rates*

To ensure the speed test receives a substantial number of responses in a short amount of time, RISI will hire an organizer from the area to go door-to-door, ask residents to take the speed test, and answer questions as to why participation in this particular speed test is vital. The organizer will be in charge of targeted outreach to larger populations within the counties: churches, teachers, and county officials. The organizer will also lead digital engagement, and be responsible for posting the speed test in relevant Facebook groups, email lists, and other social media.

RISI staff have substantial experience managing rural organizers and field campaigns, and contacts in Lee and Wise Counties from prior engagements who can help us identify an organizer quickly. Introductory and exploratory conversations with potential local organizers are ongoing.

### *III. Design and deploy two (2) mailers for delivery*

Our Communications Team will design a mailer advertising the speed test through both a QR code and shortened URL link. We will utilize the USPS Every Door Direct Mail Service, which allows us to target neighborhoods and a Postal Service carrier delivers the mailer to every address while delivering the day's mail. If possible, notice should also be sent in SCTC monthly phone bills.

### *IV. Leverage existing public speed test data*

RISI's GIS team will use data from MLabs, a national, crowd-sourced speed test provider, to augment the SCTC speed test, if possible. Mlabs data provides an incomplete view of the county at the moment; data work must be done to determine if the data can be interpreted in a favorable way to solidify the case that the county is



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90% unserved. However, if possible, this data will provide additional proof that the majority of the county is unserved.

**Timeline**

The RISI Team can begin this project with an internal kickoff meeting on January 10th and complete the project by February 14, a six-week time frame shown below.

Week	Hours By Week					
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Scope Items	1/10/22	1/17/22	1/24/22	1/31/22	2/7/22	2/14/22
Speed Test + Survey	2	15	8			
Analyzer Mlabs Data	2	5	5			
Design and Send Mailer (2x)	2	10	10	10		
Coordinate Digital Engagement	2	12	10	10	10	10
Hire and Manage Local Organizer	12	15	10	10	10	10
Map + Analyze Results			5	12	15	20



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**Cost**

For the above scope of work, the work can be completed for a fee of \$46,780.

<b>Scope Items</b>	<b>Materials or Contractor Costs</b>	<b>RISI Personnel Costs</b>	<b>Total Costs</b>
Speed Test + Survey		\$2,250	\$2,250
Analyze Mlabs Data		\$1,080	\$1,080
Design + Send Mailers (2x)	\$20,000	\$2,880	\$22,880
Coordinate Digital Engagement		\$4,860	\$4,860
Hire and Manage Local Organizer	\$5,000	\$6,030	11,030
Map, Analyze, Write-up Results		\$4,680	\$4,680
<b>TOTAL</b>	<b>\$25,000</b>	<b>\$21,780</b>	<b>\$46,780</b>

**Thank you!**

Thank you for the opportunity to submit this proposal. Please direct any questions to Alex Kelley, Head of Broadband Consulting, at [alex.kelley@ruralinnovation.us](mailto:alex.kelley@ruralinnovation.us) or 802-369-0015.

## 2023 Virginia Telecommunication Initiative (VATI) Passing Form

Type of Passings	Total Number of Passings in the Project Area <sup>1</sup>	Passings in the Project Area, without Special Construction Costs Required <sup>2</sup>	Passings with Special Construction Costs budgeted in the Application <sup>3</sup>	Number of Passings with Speeds at 25/3 or below in Project Area <sup>4</sup>
Residential	18,444	18,444		6,994
Businesses (non-home based)	995	995		
Businesses (home-based)				
Community Anchors	23	23		
Non-residential	184	184		
<b>Total</b>	19,646	19,646		6,994

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

**Note:** Do not include passings in RDOF awarded areas that were awarded to the co-applicant; these passings should be included in the RDOF Passings Form. Passings included in this application in RDOF awarded areas that were not awarded to the co-applicant, unless successfully challenged, are considered unserved and should be counted as passings in this form.

<sup>1</sup>The total number of structures in the project area that can receive service. See definition of passing below for more detail.

<sup>2</sup>The number of structures in the project area that will not require special construction costs to provide service to. These passings fall within the broadband provider's standard service connection drop length and do not require nonstandard equipment or any additional fees above normal service connection fees required to provide broadband access to a premise.

<sup>3</sup>The number of structures in the project area with all construction costs budgeted in the application. These passings will not require any additional special construction costs beyond those budgeted for in the VATI application.

<sup>4</sup>The number of structures in the project area that do not have access to internet at speeds of at least 25 mbps download and 3 mbps upload.

# 2023 Virginia Telecommunication Initiative (VATI)

## RDOF Passings Form

Type of Passings	Total Number of Passings in the Project Area that lie within Preliminarily Awarded RDOF Areas <sup>1</sup>
Residential	22
Businesses (non-home based)	0
Businesses (home-based)	0
Community Anchors	0
Non-residential	0
<b>Total Number of RDOF Passings</b>	<b>22</b>

*Note: The Total Number of RDOF 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. Multi-unit structures may be counted as more than 1 passing, provided individual connections and account are planned at that structure.

**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.

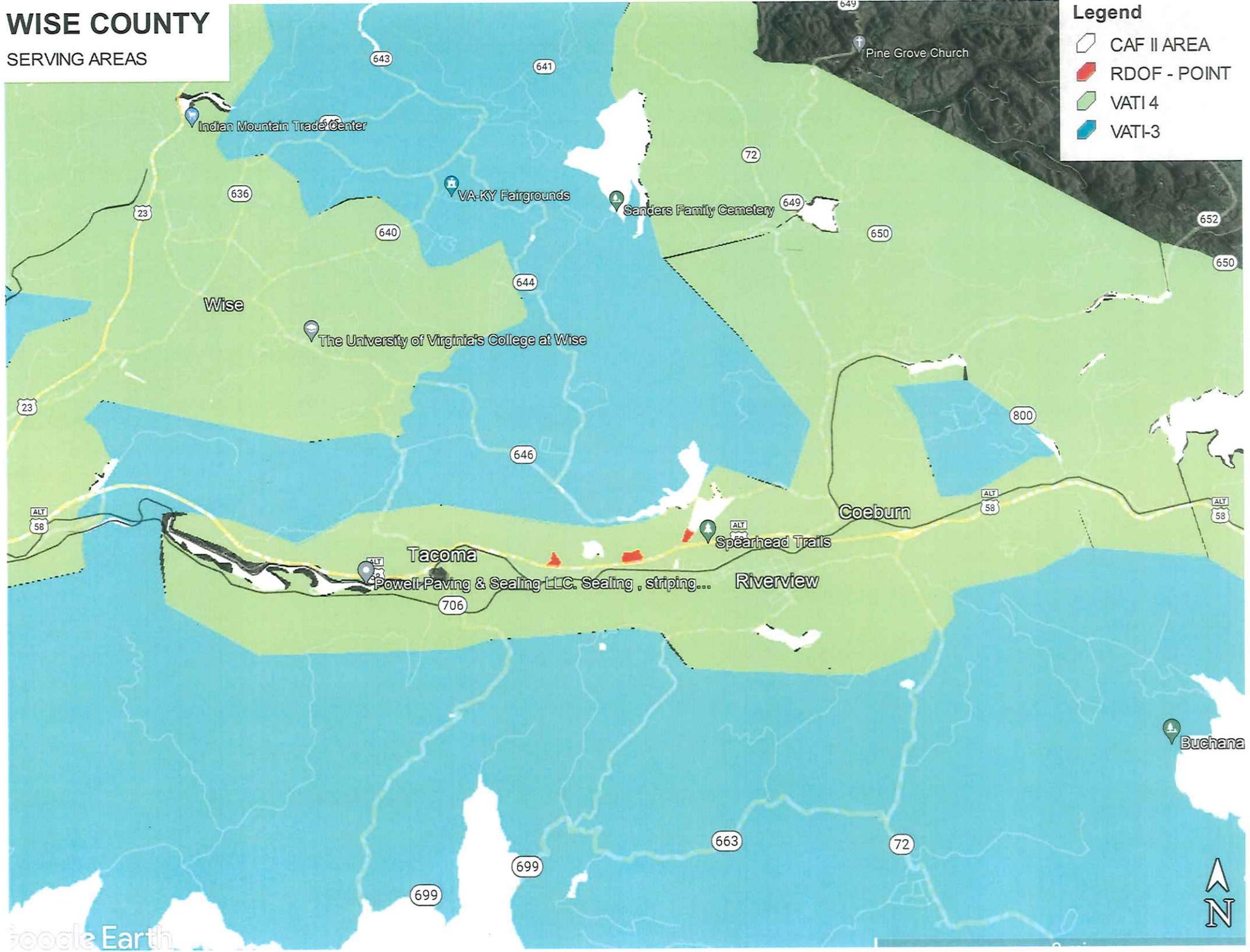
**Non-Residential Passing** – places of worship, federal, state, or local facilities or other potential customers that are neither a residence, business or a community anchor as defined above.

# WISE COUNTY

SERVING AREAS

## Legend

- CAF II AREA
- RDOF - POINT
- VATI 4
- VATI-3



**Melissa Jessee**

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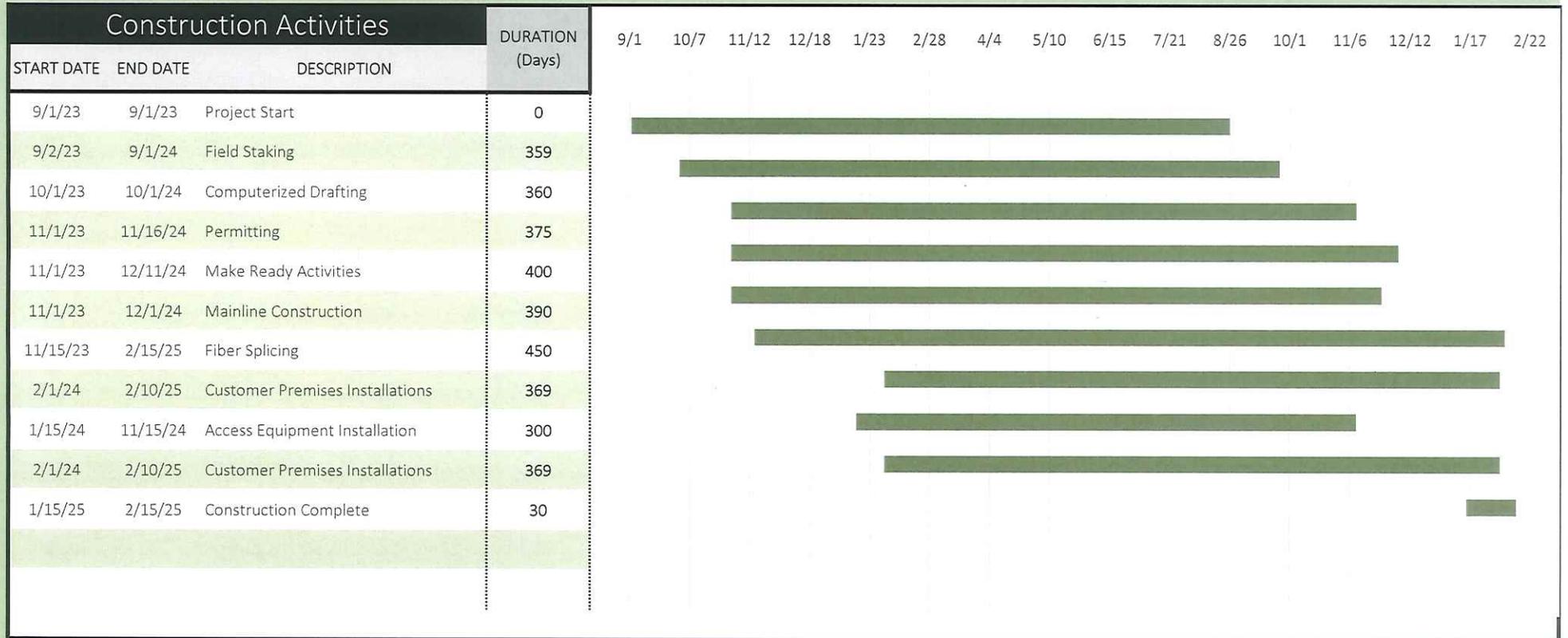
**From:** ethan@wmetts.com  
**Sent:** Wednesday, August 24, 2022 9:40 AM  
**To:** 'Bill Franklin'; mjessee@sctc.org  
**Cc:** william@wmetts.com  
**Subject:** Point Broadband RDOF Award Locations

Auction_ID	Item	State	County	locations	bidder	FRN	latency	census_id	tier
904	VA-195-9313001	VA	Wise	10	Point Broadband Fiber Holding, LLC	28,957,306	Low	511959313001	Gigabit
904	VA-195-9313002	VA	Wise	4	Point Broadband Fiber Holding, LLC	28,957,306	Low	511959313002	Gigabit
904	VA-195-9315002	VA	Wise	8	Point Broadband Fiber Holding, LLC	28,957,306	Low	511959315002	Gigabit

LENOWISCO District-Wide Broadband Project Final Phase



FY23 VATI Construction Timeline



# VATI FY23 LENOWISCO District-Wide Broadband Project Final Phase

## Project Management Plan

NAME	TITLE	YEARS OF EXPERIENCE	RESPONSIBILITIES
Duane A. Miller	Executive Director (LENOWISCO PDC)	25	Co-oversight of all aspects of the project.
Rebecca Crockett	Director of Project Dev. (LENOWISCO PDC)	14	Project Management/Grant Administration of Project
William J. Franklin	C.E.O. (SCTC)	28	Oversight of all aspects of the project.
Roger Fraysier	Executive VP of Finance and Operations (SCTC)	21	Operational and Accounting functions of the project.
Matt Hill	C.O.O. (SCTC)	29	Engineering Management, Network Management & Design functions of the project.
Bridget Betcher	Accounting Consultant	2	Accounting Functions for the Project. Upload Accounting information into CAMS.
Melissa Jessee	Exec. Administrative Manager/Grants Adm.	31	Reporting requirements for the project.
Gwen Richardson	Project Manager/Office Manager/Exec. VP & Operations Manager of MountaiNet (SCTC)	35	Marketing, Data Management, and customer support for the project.



**Memorandum of Understanding Between Scott County Telephone Cooperative and the LENOWISCO Planning District Commission**

1. Whereas the LENOWISCO Planning District Commission (LENOWISCO) is authorized by Chapter 42 of title 15.2 of the Code of Virginia, 1950 as amended, to assist local government units in planning their development; and
2. Whereas, the Scott County Telephone Cooperative's (SCTC) mission includes providing regional telecommunication services, active community service and promoting economic development; and
3. Whereas, the Virginia Department of Housing and Community Development's (DHCD) Virginia Telecommunications Initiative (VATI) is established to provide financial assistance to supplement construction costs to extend service to areas that are presently unserved; and
4. Whereas, the VATI program requires a unit of government to serve as applicant, along with a private sector provider as a co-applicant; and
5. Whereas, LENOWISCO and SCTC both actively support the same goals regarding regional broadband expansion.
6. Now Therefore Be it Resolved, that the LENOWISCO Planning District Commission and Scott County Telephone Cooperative's partnership consist of, but not limited to, the following components:
  - SCTC will coordinate planning/technical staff and applicable consultants in gathering the information necessary to submit the identified projects and subsequent implementation if awarded.
  - LENOWISCO will provide grant administrative services and technical assistance with utilities, localities, public entities, etc. where applicable.
  - 5% of the total awarded amount will be held until the project is complete.
7. Be it further resolved, that, unless duly noted, the SCTC and/or applicable consultants are responsible for creation and compilation of any and all necessary data or information required for submission and implementation of any VATI partnered project.

Accepted by Scott County Telephone Cooperative

William J. Franklin  
WILLIAM J. FRANKLIN, Chief Executive Officer

8-9-22  
Date

Accepted by the LENOWISCO Planning District Commission

Duane A. Miller  
DUANE A. MILLER, Executive Director

8-9-22  
Date

**VATI FUNDING SOURCES TABLE**

Source	Amount	%	Status
REQUESTED VATI	\$ 53,172,880	80%	Pending
SCTC-Co-Applicant	\$ 13,293,220	20%	Cash-on-Hand/Margins (Profit)/Line of Credit/Loan
	\$		
	\$		
	\$		
	\$		
	\$		
<b>TOTAL</b>	<b>\$ 66,466,100</b>	<b>100 %</b>	

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.).



**Attachment 10**

**Documentation of Match Funding from Scott County Telephone Cooperative**

*I hereby certify that \$13,293,220.00 in funds is/will be available  
from Scott County Telephone Cooperative  
for the  
LENOWISCO Planning District Commission's  
2023 Virginia Telecommunications Initiative (VATI) Grant Application  
thru the Virginia Department of Housing and Community Development (DHCD)  
for the  
LENOWISCO District-Wide Broadband Project final Phase  
located in Lee and Wise Counties in Virginia.*

SCTC Match – Cash on Hand/Margins (Profit)/Line of Credit/Loan:  
\$ 13,293,220.00

*x William J. Franklin*  
\_\_\_\_\_  
William J. Franklin  
Chief Executive Officer  
Scott County Telephone Cooperative

*8/22/22*  
\_\_\_\_\_  
Date

Avg July Bal

1130.001 Bank of America	1,006,398.75	
1130.003 Bank of America	1,464.85	
1130.005 Bank of America	106,936.39	
1130.006 Bank of Marion	52,920.45	Actual at 7.31
1130.007 Bank of America	74,839.22	
1130.008 New People Bank	371,023.90	
1130.009 New People Bank	762.14	
1130.011 Eastman Credit Union	173,558.52	Actual at 7.31
1130.012 Eastman Credit Union	449,324.60	Actual at 7.31
1130.013 Eastman Credit Union	198,904.48	Actual at 7.31
1130.015 Eastman Credit Union	1.00	Actual at 7.31
1130.408 New People Bank	85,213.98	
1130.411 Eastman Credit Union	905.84	Actual at 7.31
1130.608 New People Bank	5,199.96	
1130.711 Eastman Credit Union	53.30	Actual at 7.31
1130.712 Eastman Credit Union	25,357.07	Actual at 7.31
1130.808 New People Bank	202,671.82	
1130.908 New People Bank	<u>252,725.13</u>	
	3,008,261.40	

Farmer and Miner CD	133,295.49	Actual at 7.31
HomeTrust CD	132,355.84	Actual at 7.31
New People Bank CD	113,163.30	Actual at 7.31
Wells Fargo Invest	<u>1,420,317.47</u>	Actual at 7.31
	1,799,132.10	

RTFC Line of Credit	3,000,000.00
RTFC Loan	<u>3,000,000.00</u>
	6,000,000.00

Margins 2021 4,002,924.00

Total Cash Available 14,810,317.50

Cash without Margins 10,807,393.50



P.O. Box 15284  
Wilmington, DE 19850

SCOTT COUNTY TELEPHONE COOP  
GENERAL FUND  
PO BOX 487  
GATE CITY, VA 24251-0487

**Customer service information**

- ☎ Customer service: 1.888.400.9009
- 🌐 bankofamerica.com
- ✉ Bank of America, N.A.  
P.O. Box 27025  
Richmond, Virginia 23261-7025

## Your Full Analysis Business Checking

for July 1, 2022 to July 31, 2022

**SCOTT COUNTY TELEPHONE COOP GENERAL FUND**

Account numbers: 

### Account summary

Beginning balance on July 1, 2022	\$1,118,207.65
Deposits and other credits	1,371,176.73
Withdrawals and other debits	-663,652.49
Checks	-1,140,073.85
Service fees	-1,356.61
<b>Ending balance on July 31, 2022</b>	<b>\$684,301.43</b>

# of deposits/credits: 54  
 # of withdrawals/debits: 234  
 # of days in cycle: 31  
 Average ledger balance: **\$1,006,398.75**



P.O. Box 15284  
Wilmington, DE 19850

SCOTT COUNTY TELEPHONE COOPERATIVE  
PAYROLL ACCOUNT  
PO BOX 487  
GATE CITY, VA 24251-0487

**Customer service information**

- ☎ Customer service: 1.888.400.9009
- 🌐 bankofamerica.com
- ✉ Bank of America, N.A.  
P.O. Box 27025  
Richmond, Virginia 23261-7025

# Your Full Analysis Business Checking - Small Business

for July 1, 2022 to July 31, 2022

Account number: ~~XXXXXXXXXXXX~~

**SCOTT COUNTY TELEPHONE COOPERATIVE PAYROLL ACCOUNT**

## Account summary

Beginning balance on July 1, 2022	\$1,271.63
Deposits and other credits	206,844.41
Withdrawals and other debits	-206,794.41
Checks	-0.00
Service fees	-0.00
<b>Ending balance on July 31, 2022</b>	<b>\$1,321.63</b>

# of deposits/credits: 3  
 # of withdrawals/debits: 4  
 # of days in cycle: 31  
 Average ledger balance: **\$1,464.85**



P.O. Box 15284  
Wilmington, DE 19850

SCOTT COUNTY TELEPHONE COOPERATIVE  
PATRONS CAPITAL CREDIT  
PO BOX 487  
GATE CITY, VA 24251-0487

**Customer service information**

- Customer service: 1.888.400.9009
- bankofamerica.com
- Bank of America, N.A.  
P.O. Box 27025  
Richmond, Virginia 23261-7025

# Your Full Analysis Business Checking

for July 1, 2022 to July 31, 2022

Account numbers

**SCOTT COUNTY TELEPHONE COOPERATIVE PATRONS CAPITAL CREDIT**

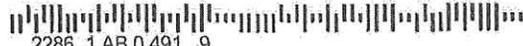
## Account summary

Beginning balance on July 1, 2022	\$107,033.34
Deposits and other credits	0.00
Withdrawals and other debits	-0.00
Checks	-408.62
Service fees	-0.00
<b>Ending balance on July 31, 2022</b>	<b>\$106,624.72</b>

# of deposits/credits: 0  
 # of withdrawals/debits: 11  
 # of days in cycle: 31  
 Average ledger balance: **\$106,936.39**

Return Service Requested

1130.006 July 2022

  
 2286 1 AB 0.491 9  
 SCOTT COUNTY TELPHONE COOPERAT <I> 30  
 PO BOX 487 0  
 GATE CITY, VA 24251-0487

REC'D AUG 08 2022

1-1VBM-DDAs-02 220801  
001-002-002286 000355083

=====  
 To make your tour reservations, call Tammy Shuler, 276-783-3116 x. 3325  
 or email: tshuler@bomva.com  
 TO REPORT A LOST OR STOLEN DEBIT CARD OR DEBIT CARD FRAUD PLEASE  
 CALL 800-889-5280

Statement of Account

Previous Balance	Summary	
\$52,918.35		
Ending Balance	Credits (1)	+\$2.10
\$52,920.45	Interest	+\$ 2.10
	Debits (0)	-\$ .00

NONPER HOMETOWN MNCA ACCOUNT 8920915031

DESCRIPTION	DEBITS	CREDITS	DATE	BALANCE
BALANCE LAST STATEMENT .....			06/30/22	52,918.35
INTEREST .....		2.10	07/29/22	52,920.45
BALANCE THIS STATEMENT .....			07/29/22	52,920.45
TOTAL CREDITS	(1)	2.10		
TOTAL DEBITS	(0)	.00		

P.O. Box 15284  
Wilmington, DE 19850

SCOTT COUNTY TELEPHONE COOPERATIVE  
PO BOX 487  
GATE CITY, VA 24251-0487

**Customer service information**

-  Customer service: 1.888.400.9009
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-  Bank of America, N.A.  
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**Your Business Economy Checking**

for July 1, 2022 to July 31, 2022

**SCOTT COUNTY TELEPHONE COOPERATIVE**

**Account summary**

Beginning balance on July 1, 2022	\$78,659.30
Deposits and other credits	0.00
Withdrawals and other debits	-7,123.22
Checks	-0.00
Service fees	-0.00
<b>Ending balance on July 31, 2022</b>	<b>\$71,536.08</b>

Account number: 

- # of deposits/credits: 0
- # of withdrawals/debits: 5
- # of deposited items: 0
- # of days in cycle: 31
- Average ledger balance: **\$74,839.22**

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PO Box 1810  
Honaker, Virginia 24260



July 2022

Page: 1 of 3  
Primary Account: ██████████

Reporting Activity 06/30 - 07/29

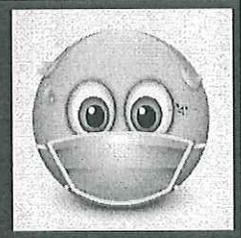
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for maps, hours and contact info.



001282 0.6200 AV 0.455  
SCOTT COUNTY TELEPHONE C0 0P  
PO BOX 487  
GATE CITY, VA 24251-0487

**Contact Information:**  
New Peoples Bank - Gate City  
663 E Jackson Street  
Gate City, VA 24251  
  
Phone: 276-386-9300  
Telephone Banking: Press Option 1

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New Peoples Bank recently notified our customers about a cybersecurity incident.  
To enroll in complimentary identity theft protection services, visit [newpeoplesbanksecurityincident.kroll.com](http://newpeoplesbanksecurityincident.kroll.com) or 855-516-3784, M-F, 9 AM - 6:30 PM ET. More info about the incident is on our website: <https://www.newpeoples.bank/>.

BUSINESS CHOICE-EC ACCOUNT					Account: 2000063	
Last Statement	Previous Balance	This Statement	Current Balance	Total Credits	Total Debits	
06/30/22	283,688.19	07/29/22	419,293.26	696,520.32 (59)	560,915.25 (15)	

Minimum Balance 163,147.60  
Average Balance 371,023.90

TRANSACTIONS					
Date	Description	Debits	Credits	Balance	
06/30/22	Balance Last Statement			283,688.19	
07/01/22	Stripe Transfer St-Y7b2b0q5d5i9		448.74	284,136.93	
07/01/22	Scott County Tel Billpay Cust Payments		5,606.83	289,743.76	
07/01/22	Merchant Bnkcd Deposit 267042023882		9,671.67	299,415.43	
07/05/22	Stripe Transfer St-B1e3x5q3f2k0		322.85	299,738.28	
07/05/22	Scott County Tel Billpay Cust Payments		7,341.99	307,080.27	
07/05/22	Merchant Bnkcd Deposit 267042023882		43,207.44	350,287.71	
07/05/22	Authnet Gateway Billing XXXXX4597	37.95		350,249.76	
07/05/22	Merchant Bnkcd Discount 267042023882	487.44		349,762.32	
07/05/22	Merchant Bnkcd Fee 267042023882	657.68		349,104.64	
07/05/22	Cds Global Payments Paydq Fees	3,052.99		346,051.65	

Continued on Next Page



PO Box 1810  
Honaker, Virginia 24260



July 2022

Page: 1 of 1  
Primary Account: [REDACTED]

Reporting Activity 06/30 - 07/29

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001285 0.4500 AV 0.455  
SCOTT COUNTY TELEPHONE C0 0P  
VIRGINIA GRANT ACCOUNT  
PO BOX 487  
GATE CITY, VA 24251-0487

**Contact Information:**  
New Peoples Bank - Gate City  
663 E Jackson Street  
Gate City, VA 24251  
  
Phone: 276-386-9300  
Telephone Banking: Press Option 1

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New Peoples Bank recently notified our customers about a cybersecurity incident.  
To enroll in complimentary identity theft protection services, visit [newpeoplesbanksecurityincident.kroll.com](http://newpeoplesbanksecurityincident.kroll.com) or 855-516-3784, M-F, 9 AM - 6:30 PM ET. More info about the incident is on our website: <https://www.newpeoples.bank/>.

BUSINESS 500 ACCOUNT					Account: 110002946	
Last Statement	Previous Balance	This Statement	Current Balance	Total Credits	Total Debits	
06/30/22	722.77	07/29/22	836.97	114.20 (1)	0.00	

Minimum Balance 722.77  
Average Balance 762.14

TRANSACTIONS					
Date	Description		Debits	Credits	Balance
06/30/22	Balance Last Statement	.....			722.77
07/20/22	Cova Vendorpaym 81869129	.....		114.20	836.97
07/29/22	Balance This Statement	.....			836.97



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Member Number: XXXXXX-  
 Statement Date: 07/31/22  
 Page 1 of 6

6/2/22 9:59 AM 2 0023431 20220801 2G0DZ107 ADDITONAL 2 ez DOM 2G0DZ10900\* 163609 MD  
 SCOTT COUNTY TELEPHONE COOPERATIV  
 PO BOX 487  
 GATE CITY VA 24251-0487



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REC'D AUG 08 2022



**SUMMARY OF ACCOUNTS**

ACCOUNTS	ACCOUNT NUMBER	BALANCE	YTD DIV
Business Primary Share	XXXXXXXX-XXXXXX	173,558.52	747.74
Business Checking w/ Interest	XXXXXXXX-XXXXXX	198,904.48	227.98
Beside You Business Checking	XXXXXXXX-XXXXXX	449,324.60	638.24
Business Checking w/ Interest	XXXXXXXX-XXXXXX	1.00	0.00
<b>TOTAL ACCOUNTS</b>		<b>\$821,788.60</b>	<b>\$1,613.96</b>

\*\* YTD Dividends listed in the Summary of Accounts are for the accounts listed only. Accounts closed during this statement period are included on this statement and will not appear on future statements.

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**DETAIL OF TRANSACTIONS**

Business Primary Share: ^^

Trans Date	Eff Date	Description	Deposit	Withdrawal	Balance
07-01		Starting Balance			173,514.31
07-29	07-31	Eff. 07-31 Credit Dividend	44.21		173,558.52

The total number of days in this cycle 31  
 The amount of Dividends earned this cycle is \$44.21  
 The Annual Percentage Yield Earned for this account is 0.30%

----- Dividend Rate Summary -----

Date	Rate
07-01-2022	0.300%



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**Business Checking w/ Interest: XXXXXXXX (Continued)**

Trans Date	Eff Date	Description	Deposit	Withdrawal	Balance
07-28		266374387881 Ext Deposit PVEC FIBER PVEC FIBER - BILLPAY CUST PAYMENTS	803.83		194,803.01
07-29		Ext Deposit MERCHANT BNKCD - DEPOSIT	1,904.12		196,707.13
07-29		266374387881 Ext Deposit PVEC FIBER PVEC FIBER - BILLPAY CUST PAYMENTS	696.34		197,403.47
07-29		Deposit	1,461.64		198,865.11
07-29	07-31	Eff. 07-31 Credit Dividend	39.37		198,904.48

1130.013 -

The total number of days in this cycle 31  
 The amount of Dividends earned this cycle is \$39.37  
 The Annual Percentage Yield Earned for this account is 0.29%

**Deposits, Dividends and Other Credits**

Date	Amount	Date	Amount	Date	Amount	Date	Amount
07/01	3,884.31	07/11	13,860.98	07/15	1,860.93	07/22	538.94
07/01	2,368.65	07/11	6,584.88	07/18	3,592.64	07/25	1,177.17
07/05	23,107.79	07/11	7,203.12	07/18	1,164.24	07/25	675.21
07/05	3,246.99	07/12	44,304.62	07/18	1,113.40	07/26	5,428.15
07/05	6,043.85	07/12	10,404.94	07/18	1,497.65	07/26	737.81
07/06	16,571.35	07/12	1,144.26	07/19	3,327.50	07/27	3,212.13
07/06	15,087.48	07/12	11,528.18	07/19	2,071.05	07/27	1,385.25
07/06	23,267.04	07/13	42,151.14	07/20	1,869.96	07/27	1,878.95
07/07	12,458.92	07/13	4,169.77	07/20	1,275.12	07/28	1,780.41
07/07	7,012.09	07/14	3,075.37	07/20	197.39	07/28	803.83
07/07	3,072.35	07/14	1,846.44	07/21	1,081.14	07/29	1,904.12
07/08	12,467.12	07/14	4,557.36	07/21	65.43	07/29	696.34
07/08	3,460.80	07/14	18,821.39	07/22	1,466.77	07/29	1,461.64
07/08	11,531.30	07/15	2,608.59	07/22	321.22	07/29	39.37
Total Dividends		1	39.37				
Total Deposits and Other Credits		55	358,425.47				

**Withdrawals, Fees and Other Debits**

Date	Amount	Date	Amount	Date	Amount	Date	Amount
07/05	1,371.96	07/11	240,000.00	07/13	89.34	07/15	111.22
07/05	2,369.69	07/12	391.60	07/14	115.44		
Total Fees		0	0.00				
Total Withdrawals and Other Debits		7	244,449.25				
Total Number of Checks Cleared		0	0.00				

**----- Dividend Rate Summary -----**

Date	Rate	Date	Rate	Date	Rate
07-01-2022	0.200%	07-11-2022	0.150%	07-13-2022	0.300%
07-05-2022	0.300%	07-12-2022	0.200%		

**Beside You Business Checking: XXXXXXXX**

Trans Date	Eff Date	Description	Deposit	Withdrawal	Balance
07-01		Starting Balance			186,651.70
07-01		Ext W/D IRS - USATAXPYMT 270258274829525		-45,016.63	141,635.07
07-05		Deposit	29,312.26		170,947.33
07-05		Deposit	15,134.09		186,081.42
07-05		Deposit	16,651.02		202,732.44
07-06		Descriptive Deposit night deposit	7,587.64		210,320.08



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Beside You Business Checking: XXXXXX (Continued)

Trans Date	Eff Date	Description	Deposit	Withdrawal	Balance
07-06		Deposit	6,244.20		216,564.28
07-06		Descriptive Deposit Night Deposit	16,896.13		233,460.41
07-06		Descriptive Deposit night deposit	36,988.32		270,448.73
07-06		Descriptive Deposit night deposit	43,544.17		313,992.90
07-07		Ext W/D IRS - USATAXPYMT 270258872722952		-48,923.35	265,069.55
07-07		Deposit	9,977.04		275,046.59
07-07		Deposit	8,862.80		283,909.39
07-07		Deposit	9,895.24		293,804.63
07-08		Deposit	34,681.50		328,486.13
07-08		Deposit	4,365.75		332,851.88
07-08		Deposit	17,103.78		349,955.66
07-11		Deposit	22,716.20		372,671.86
07-11		Deposit	5,789.49		378,461.35
07-11		Deposit	18,764.20		397,225.55
07-11		Deposit transfer money	240,000.00		637,225.55
07-12		Ext W/D IRS - USATAXPYMT 270259303432128		-4,919.65	632,305.90
07-12		Ext W/D Scott Co Tel 03 DISC DATA - CASH CONC		-550,000.00	82,305.90
07-12		Deposit	10,347.93		92,653.83
07-12		Deposit	8,802.00		101,455.83
07-12		Deposit	54,029.45		155,485.28
07-13		Deposit	8,198.86		163,684.14
07-14		Deposit	8,234.57		171,918.71
07-14		Deposit	7,289.88		179,208.59
07-14		Deposit	8,363.85		187,572.44
07-15		Deposit	951.42		188,523.86
07-15		Deposit	2,379.65		190,903.51
07-18		Deposit	5,932.95		196,836.46
07-18		Deposit	2,921.30		199,757.76
07-18		Deposit	210,097.67		409,855.43
07-18		Deposit	2,751.36		412,606.79
07-20		Deposit	3,728.00		416,334.79
07-21		Ext W/D IRS - USATAXPYMT 270260241592811		-46,264.17	370,070.62
07-22		Deposit	6,573.49		376,644.11
07-22		Deposit	2,313.59		378,957.70
07-25		Deposit	4,208.48		383,166.18
07-25		Deposit	13,187.50		396,353.68
07-27		Deposit	45,651.85		442,005.53
07-29		Deposit	1,931.83		443,937.36
07-29		Deposit	5,527.13		449,464.49
07-29	07-31	Eff. 07-31 Credit Dividend	81.51		449,546.00
07-29		Excess of 500 Items Charge		-221.40	449,324.60

1130.012

The total number of days in this cycle 31  
 The amount of Dividends earned this cycle is \$81.51  
 The Annual Percentage Yield Earned for this account is 0.30%

Deposits, Dividends and Other Credits

Date	Amount	Date	Amount	Date	Amount	Date	Amount
07/05	29,312.26	07/07	9,895.24	07/12	54,029.45	07/18	2,751.36
07/05	15,134.09	07/08	34,681.50	07/13	8,198.86	07/20	3,728.00
07/05	16,651.02	07/08	4,365.75	07/14	8,234.57	07/22	6,573.49
07/06	7,587.64	07/08	17,103.78	07/14	7,289.88	07/22	2,313.59
07/06	6,244.20	07/11	22,716.20	07/14	8,363.85	07/25	4,208.48
07/06	16,896.13	07/11	5,789.49	07/15	951.42	07/25	13,187.50
07/06	36,988.32	07/11	18,764.20	07/15	2,379.65	07/27	45,651.85
07/06	43,544.17	07/11	240,000.00	07/18	5,932.95	07/29	1,931.83
07/07	9,977.04	07/12	10,347.93	07/18	2,921.30	07/29	5,527.13
07/07	8,862.80	07/12	8,802.00	07/18	210,097.67	07/29	81.51



**Beside You Business Checking: XXXXXXXX (Continued)**

Total Dividends	1	81.51
Total Deposits and Other Credits	39	957,936.59

**Withdrawals, Fees and Other Debits**

Date	Amount	Date	Amount	Date	Amount
07/01	45,016.63	07/12	4,919.65	07/21	46,264.17
07/07	48,923.35	07/12	550,000.00	07/29	221.40
Total Fees		1	-221.40		
Total Withdrawals and Other Debits		5	695,566.60		
Total Number of Checks Cleared		0	0.00		

----- Dividend Rate Summary -----

Date	Rate
07-01-2022	0.300%

**Business Checking w/ Interest: XXXXXXXX**

Trans Date	Eff Date	Description	Deposit	Withdrawal	Balance
07-01		Starting Balance		1130.015	1.00

The total number of days in this cycle 31  
 The amount of Dividends earned this cycle is \$0.00  
 The Annual Percentage Yield Earned for this account is 0.00%  
 Total Dividends 0 0.00  
 Total Deposits and Other Credits 0 0.00  
 Total Fees 0 0.00  
 Total Withdrawals and Other Debits 0 0.00  
 Total Number of Checks Cleared 0 0.00

----- Dividend Rate Summary -----

Date	Rate
07-01-2022	0.100%

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Page: 1 of 4  
Primary Account: [REDACTED]

Reporting Activity 06/30 - 07/29

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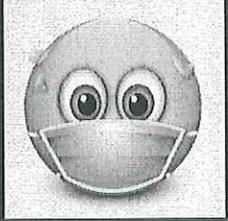


001286 0.7900 AV 0.455  
MOUNTAINET TELEPHONE CO  
PO BOX 488  
GATE CITY, VA 24251-0488

**Contact Information:**  
New Peoples Bank - Gate City  
663 E Jackson Street  
Gate City, VA 24251  
  
Phone: 276-386-9300  
Telephone Banking: Press Option 1

**If you're not comfortable walking in.... Log In.**

If you feel uneasy about visiting our branches during the COVID-19 virus threat, why not bank from the comfort of your home, or anywhere for that matter... on your home computer, tablet, or mobile phone? Pay bills, deposit checks, transfer funds; all from the comfort of wherever you'd rather be. Download our mobile app or visit us online at [newpeoples.bank](http://newpeoples.bank)



New Peoples Bank recently notified our customers about a cybersecurity incident.

To enroll in complimentary identity theft protection services, visit [newpeoplesbanksecurityincident.kroll.com](http://newpeoplesbanksecurityincident.kroll.com) or 855-516-3784, M-F, 9 AM - 6:30 PM ET. More info about the incident is on our website: <https://www.newpeoples.bank/>.

BUSINESS 500 ACCOUNT					Account: 110000999	
Last Statement	Previous Balance	This Statement	Current Balance	Total Credits	Total Debits	
06/30/22	92,026.88	07/29/22	65,181.46	0.00	26,845.42 (13)	

Minimum Balance 65,181.46  
Average Balance 85,213.98 130.408

TRANSACTIONS					
Date	Description	Debits	Credits	Balance	
06/30/22	Balance Last Statement			92,026.88	
07/01/22	Check # 5406	1,200.00		90,826.88	
07/05/22	Iconectiv Iconectiv Icvtelxxxxx8224	232.67		90,594.21	
07/06/22	Check # 5407	21.90		90,572.31	
07/19/22	Check # 5408	47.50		90,524.81	
07/21/22	TN State Revenue TN Tap XXXXXX4432	5,079.00		85,445.81	
07/21/22	VA Dept Taxation Tax Paymen *****1443	5,325.18		80,120.63	
07/25/22	Check # 5409	11,833.06		68,287.57	
07/29/22	Check # 5410	2,488.25		65,799.32	
07/29/22	Check # 5415	98.50		65,700.82	
07/29/22	Check # 5416	172.03		65,528.79	

Continued on Next Page



P.O. Box 1989  
 Kingsport, TN 37662  
 RETURN SERVICE REQUESTED  
 p 800.999.2328 | www.ecu.org

Member Number: XXXXX [REDACTED]

Statement Date: 07/31/22

Page 1 of 2

1130.411 -  
 July 2022

07/22 9:58 AM 2 0691135 20220601 2G0DZ101 ADDITONAL 1 cz DOM 2G0DZ10000\* 163629 MD  
 MOUNTAINET TELEPHONE COMPANY INC  
 PO BOX 488  
 GATE CITY VA 24251-0488



REC'D AUG 05 2022

**SUMMARY OF ACCOUNTS**

ACCOUNTS	ACCOUNT NUMBER	BALANCE	YTD DIV
Business Primary Share	XXXXXX [REDACTED]	905.84	78.52
<b>TOTAL ACCOUNTS</b>		<b>\$905.84</b>	<b>\$78.52</b>

\*\* YTD Dividends listed in the Summary of Accounts are for the accounts listed only. Accounts closed during this statement period are included on this statement and will not appear on future statements.

**Set the course for adventure with an ECU RV & Powersports loan!**

Whether it's a new camper or a new motorcycle, now is the time to take a leap and live out your dreams. Play now and pay later with no payment for 90 days.

**Visit [ecu.org/fun](http://ecu.org/fun) to apply today!**

**DETAIL OF TRANSACTIONS**

Business Primary Share: XXXXX [REDACTED]

Trans Date	Eff Date	Description	Deposit	Withdrawal	Balance
07-01		Starting Balance			905.61
07-29	07-31	Eff. 07-31 Credit Dividend	0.23		905.84

1130.411

The total number of days in this cycle 31  
 The amount of Dividends earned this cycle is \$0.23  
 The Annual Percentage Yield Earned for this account is 0.30%

----- Dividend Rate Summary -----

Date	Rate
07-01-2022	0.300%



Want your statement earlier? View them online with e-statements! Sign-up today at [www.ecu.org](http://www.ecu.org).

001284



PO Box 1810  
Honaker, Virginia 24260

Return Service Requested



July 2022

Page: 1 of 1  
Primary Account: [REDACTED]

Reporting Activity 06/30 - 07/29

Scan code or visit  
[www.newpeoples.bank](http://www.newpeoples.bank)  
for maps, hours and contact info.

1130.608 - July 2022



001284 0.4500 AV 0.455 TR00005



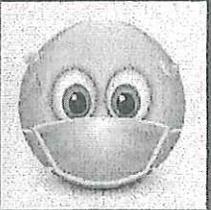
NEPB SCTC MANAGEMENT GROUP INC  
PO BOX 487  
GATE CITY, VA 24251-0487

Contact Information:  
New Peoples Bank - Gate City  
663 E Jackson Street  
Gate City, VA 24251  
Phone: 276-386-9300  
Telephone Banking: Press Option 1

REC'D AUG 03 2022

**If you're not comfortable walking in.... Log In.**

If you feel uneasy about visiting our branches during the COVID-19 virus threat, why not bank from the comfort of your home, or anywhere for that matter... on your home computer, tablet, or mobile phone? Pay bills, deposit checks, transfer funds; all from the comfort of wherever you'd rather be. Download our mobile app or visit us online at [newpeoples.bank](http://newpeoples.bank)



New Peoples Bank recently notified our customers about a cybersecurity incident.

To enroll in complimentary identity theft protection services, visit [newpeoplesbanksecurityincident.kroll.com](http://newpeoplesbanksecurityincident.kroll.com) or 855-516-3784, M-F, 9 AM - 6:30 PM ET. More info about the incident is on our website: <https://www.newpeoples.bank/>.

BUSINESS 500 ACCOUNT				Account: [REDACTED]	
Last Statement	Previous Balance	This Statement	Current Balance	Total Credits	Total Debits
06/30/22	5,199.96	07/29/22	5,199.96	0.00	0.00

Minimum Balance 5,199.96  
Average Balance 5,199.96

TRANSACTIONS					
Date	Description		Debits	Credits	Balance
06/30/22	Balance Last Statement	.....			5,199.96
07/29/22	Balance This Statement	.....			5,199.96

NEPB-001-001284-001-000-220730 001284 K06 24251048787



**EASTMAN  
CREDIT  
UNION**  
ECU BESIDE YOU

P.O. Box 1989  
Kingsport, TN 37662  
RETURN SERVICE REQUESTED  
p 800.999.2328 | www.ecu.org

Member Number: [REDACTED]

Statement Date: 07/31/22

Page 1 of 2



SW VA FIBER NETWORK LLC  
PO BOX 487  
GATE CITY VA 24251-0487



REC'D AUG 05 2022

**SUMMARY OF ACCOUNTS**

ACCOUNTS	ACCOUNT NUMBER	BALANCE	YTD DIV
Business Primary Share	XXXXXX [REDACTED]	53.30	5.22
Business Checking w/ Interest	XXXXXX [REDACTED]	25,357.07	22.09
<b>TOTAL ACCOUNTS</b>		<b>\$25,410.37</b>	<b>\$27.31</b>

\*\* YTD Dividends listed in the Summary of Accounts are for the accounts listed only. Accounts closed during this statement period are included on this statement and will not appear on future statements.

**Set the course for adventure with an ECU RV & Powersports loan!**

Whether it's a new camper or a new motorcycle, now is the time to take a leap and live out your dreams. Play now and pay later with no payment for 90 days.

**Visit [ecu.org/fun](http://ecu.org/fun) to apply today!**

**DETAIL OF TRANSACTIONS**

Business Primary Share: XXXXXX [REDACTED]

1130.712 July 2022

Trans Date	Eff Date	Description	Deposit	Withdrawal	Balance
07-01		Starting Balance			53.29
07-29	07-31	Eff. 07-31 Credit Dividend	0.01		53.30

The total number of days in this cycle 31  
The amount of Dividends earned this cycle is \$0.01  
The Annual Percentage Yield Earned for this account is 0.22%

----- Dividend Rate Summary -----

Date	Rate
07-01-2022	0.300%

Want your statement earlier? View them online with e-statements! Sign-up today at [www.ecu.org](http://www.ecu.org).



Business Primary Share: XXXXXX (Continued)

**Need to free up space, eliminate unnecessary theft and security risks or get rid of old, outdated, and useless files?**

ECU Shred Days are back for the fall! For a complete schedule, visit [ecu.org/shred](http://ecu.org/shred).

Business Checking w/ Interest: XXXXXXXX

Trans Date	Eff Date	Description	Deposit	Withdrawal	Balance
07-01		Starting Balance			25,353.84
07-29	07-31	Eff. 07-31 Credit Dividend	3.23		25,357.07

1130.711 - July 2022

The total number of days in this cycle 31  
The amount of Dividends earned this cycle is \$3.23  
The Annual Percentage Yield Earned for this account is 0.15%

Deposits, Dividends and Other Credits

Date	Amount
07/29	3.23
Total Dividends	1 3.23
Total Deposits and Other Credits	0 0.00
Total Fees	0 0.00
Total Withdrawals and Other Debits	0 0.00
Total Number of Checks Cleared	0 0.00

----- Dividend Rate Summary -----

Date	Rate
07-01-2022	0.150%

**Did you know that ECU offers several mortgage options with up to 100% financing?**

We may also be able to finance all or a portion of your closing costs! There's even an option to include additional funds for renovations or upgrades. Whatever your need, ECU can customize a mortgage just for you.

**Visit [ecu.org/mortgage](http://ecu.org/mortgage) to learn more or apply today.**



Want your statement earlier? View them online with e-statements! Sign-up today at [www.ecu.org](http://www.ecu.org).



PO Box 1810  
Honaker, Virginia 24260



July 2022

Page: 1 of 4  
Primary Account: [REDACTED]

Reporting Activity 06/30 - 07/29

Scan code or visit  
[www.newpeoples.bank](http://www.newpeoples.bank)  
for maps, hours and contact info.



001283 0.7900 AV 0.455  
MOUNTAINET  
PO BOX 487  
GATE CITY, VA 24251-0487

**Contact Information:**  
New Peoples Bank - Gate City  
663 E Jackson Street  
Gate City, VA 24251  
  
Phone: 276-386-9300  
Telephone Banking: Press Option 1

**If you're not comfortable walking in.... Log In.**

If you feel uneasy about visiting our branches during the COVID-19 virus threat, why not bank from the comfort of your home, or anywhere for that matter... on your home computer, tablet, or mobile phone? Pay bills, deposit checks, transfer funds; all from the comfort of wherever you'd rather be. Download our mobile app or visit us online at [newpeoples.bank](http://newpeoples.bank)



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To enroll in complimentary identity theft protection services, visit [newpeoplesbanksecurityincident.kroll.com](http://newpeoplesbanksecurityincident.kroll.com) or 855-516-3784, M-F, 9 AM - 6:30 PM ET. More info about the incident is on our website: <https://www.newpeoples.bank/>.

BUSINESS CHOICE-EC ACCOUNT				Account:	
Last Statement	Previous Balance	This Statement	Current Balance	Total Credits	Total Debits
06/30/22	203,860.74	07/29/22	184,160.49	25,403.62 (6)	45,103.87 (17)

Minimum Balance 184,160.49  
Average Balance 202,671.82

TRANSACTIONS						
Date	Description		Debits	Credits		Balance
06/30/22	Balance Last Statement					203,860.74
07/06/22	XXXXXX2759 070122 #xxxxx2759			800.87		204,661.61
07/06/22	Check # 14902		3,531.25			201,130.36
07/08/22	Bank Of Tennessee Banktel 5307			470.16		201,600.52
07/08/22	Check # 14901		730.00			200,870.52
07/11/22	Etsu Vendor Pmt Invoice E00018949			2,815.61		203,686.13
07/11/22	First Bk & Trust Inv Pmt			15,950.73		219,636.86
07/13/22	Earthlink Ap Payables Mounte02			3,371.25		223,008.11
07/15/22	Etsu Vendor Pmt Invoice E00018949			1,995.00		225,003.11
07/18/22	Check # 14905		400.00			224,603.11
07/18/22	Check # 14906		2,525.64			222,077.47

Continued on Next Page



PO Box 1810  
Honaker, Virginia 24260



July 2022

Page: 1 of 4  
Primary Account: [REDACTED]

Reporting Activity 06/30 - 07/29

Scan code or visit  
[www.newpeoples.bank](http://www.newpeoples.bank)  
for maps, hours and contact info.



001281 0.7900 AV 0.455  
SCOTT TELECOM AND ELECTRONICS  
PO BOX 487  
GATE CITY, VA 24251-0487

**Contact Information:**  
New Peoples Bank - Gate City  
663 E Jackson Street  
Gate City, VA 24251  
  
Phone: 276-386-9300  
Telephone Banking: Press Option 1

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BUSINESS CHOICE-EC ACCOUNT					Account: 0000055	
Last Statement	Previous Balance	This Statement	Current Balance	Total Credits	Total Debits	
06/30/22	232,022.40	07/29/22	278,482.19	150,635.51 (3)	104,175.72 (13)	

Average Balance **252,725.13**

TRANSACTIONS					
Date	Description		Debits	Credits	Balance
06/30/22	Balance Last Statement	.....			232,022.40
07/01/22	Check # 24151		21,171.78		210,850.62
07/05/22	Check # 24147		4,370.46		206,480.16
07/05/22	Check # 24148		1,449.18		205,030.98
07/05/22	Check # 24149		1,362.91		203,668.07
07/05/22	Check # 24150		44,058.84		159,609.23
07/05/22	Check # 24152		1,114.75		158,494.48
07/05/22	Check # 24153		1,102.54		157,391.94
07/06/22	Check # 24146		117.79		157,274.15
07/07/22	Check # 24155		1,114.51		156,159.64
07/07/22	Check # 24156		2,816.50		153,343.14
07/11/22	Transfer Money			150,000.00	303,343.14

**Continued on Next Page**

FARMERS AND MINERS BANK  
41526 WEST MORGAN AVENUE  
PENNINGTON GAP, VA 24277

\*\*\* CAPITALIZATION NOTICE \*\*\*

DATE 07/19/22  
TELEPHONE 276-546-4692

DEAR CUSTOMER  
ON THE PAYMENT DATE BELOW, INTEREST EARNED ON YOUR  
TIME DEPOSIT ACCOUNT FOR THE PERIOD INDICATED WAS PAID  
AND ADDED TO YOUR ACCOUNT BALANCE. THE NEW CURRENT  
BALANCE IS REFLECTED BELOW. PLEASE CONTACT US IF YOU  
HAVE ANY QUESTIONS.

SCOTT COUNTY TELEPHONE COOPERATIVE  
PO BOX 487  
GATE CITY VA 24251-9999

ACCOUNT NUMBER	[REDACTED]
PREVIOUS BALANCE	133,162.69
INTEREST AMOUNT	132.80
INTEREST WITHHELD	.00
PAYMENT DATE	07/19/22
CURRENT BALANCE	133,295.49

REC'D JUL 22 2022

30 July

P.O. Box 10  
Asheville, NC 28802-0010  
htb.com

**RETURN SERVICE REQUESTED**

>003220 2563286 0001 92644 10Z

SCOTT COUNTY TELEPHONE COOPERATIVE  
PO BOX 487  
GATE CITY VA 24251-0487

**Statement Ending 06/30/2022**

SCOTT COUNTY TELEPHONE

Page 1 of 2

Account:xxxxxx

**Managing Your Accounts**

-  Online Access htb.com
-  Customer Care 800-627-1632
-  Address PO Box 10  
Asheville NC 28802-0010



REC'D JUL 05 2022

**Summary of Accounts**

Certificate of Deposit	Certificate Number	Ending Balance
15 MONTH CD	XXXXXX	\$132,355.84

**15 MONTH CD-XXXXXXX**

**Certificate Summary**

Date	Description	Amount	Description	Amount
04/01/2022	Beginning Balance	\$132,289.88	Interest Rate	0.2000%
06/30/2022	Ending Balance	\$132,355.84	Interest Paid YTD	\$131.17
	Issue Date	06/22/2004		
	Maturity Date	11/01/2022		

**Account Activity**

Transaction Date	Description	Amount	Balance
04/01/2022	Beginning Balance		\$132,289.88
06/30/2022	INTEREST ADDED	\$65.96	\$132,355.84
06/30/2022	Ending Balance		\$132,355.84

35  
June  
1160.003





PO BOX 1810  
Honaker, Virginia 24260

000 00011 01  
Customer:

Page: 1  
07/29/2022

Return Service Requested



31 1 SP 0.570 1



MOUNTAINET TELEPHONE CO  
PO BOX 488  
GATE CITY, VA 24251-0488

REC'D AUG 05 2022

=====  
COD 12 MONTHS Certificate 151504  
=====

Original Issue Date:	07/31/2018	Interest Rate:	.1000 %
Original Issue Value:	109,839.22	Maturity Date:	07/31/2023
Last Renewal Date:	07/31/2022	Term:	12 Months
Last Renewal Value:	113,163.30	Balance as of 07/29/2022:	113,163.30

\*\*\*\*\*  
\* Interest Advice \*  
\*\*\*\*\*

Interest paid on:	07/30/2022	Interest paid this term:	113.10
Interest Paid:	28.21		
Interest Paid 2022:	84.60		

Interest will be compounded on a daily basis.  
Interest will be credited to your certificate quarterly.

On 08/01/2022, assuming no other activity, the projected balance of your COD 12 MONTHS Certificate ~~151504~~ will be 113,163.30.

\*\*\*\*\*  
\* Interest Rate Change \*  
\*\*\*\*\*

On 07/31/2022, the interest rate on your certificate will increase from .1000 % to .4000 % with an annual percentage yield of .40 %.

Contact us at 276-386-9300 if you have any questions.

1-NEPB-NOTC-02 220729  
001-001-000031 000354183

4689  
1160.401  
7326.400  
Rec 5



Advisors

SNAPSHOT

SCOTT COUNTY TELEPHONE COOPERATIVE INC

JULY 1, 2022 - JULY 31, 2022

ACCOUNT NUMBER: [REDACTED]

Progress summary

	THIS PERIOD	THIS YEAR
Opening value	\$1,362,815.67	\$426,665.75
Cash deposited	0.00	1,117,998.91
Securities deposited	0.00	0.00
Cash withdrawn	-2,582.04	-6,583.82
Securities withdrawn	0.00	0.00
Change in value	60,083.84	-117,763.37
<b>Closing value</b>	<b>\$1,420,317.47</b>	<b>\$1,420,317.47</b>

As a Wells Fargo Advisors client, you can upgrade your investment account to add Brokerage Cash Services at no additional cost. Brokerage Cash Services provides access to convenient money movement options including mobile deposit services. It also includes teller deposit services at Wells Fargo branch locations which are provided through a limited purpose Bank account. You'll have access to many more features and benefits to help you manage your finances. It's as simple as talking with Your Financial Advisor. Ask them today about Brokerage Cash Services.

Portfolio summary

ASSET TYPE	PREVIOUS VALUE ON JUN 30	%	CURRENT VALUE ON JUL 31	%	ESTIMATED ANN. INCOME
<b>ASSETS</b>					
Cash and sweep balances	4,698.63	0.34	2,117.03	0.15	4
Stocks, options & ETFs	0.00	0.00	0.00	0.00	0
Fixed income securities	73,165.50	5.37	73,868.40	5.20	0
Mutual funds	1,284,951.54	94.29	1,344,332.04	94.65	31,301
<b>Asset value</b>	<b>\$1,362,815.67</b>	<b>100%</b>	<b>\$1,420,317.47</b>	<b>100%</b>	<b>\$31,305</b>

FARMERS AND MINERS BANK  
41526 WEST MORGAN AVENUE  
PENNINGTON GAP, VA 24277

\*\*\* RENEWAL NOTICE \*\*\*

DATE 07/29/22  
TELEPHONE 276-546-4692

DEAR CUSTOMER  
ON THE DATE BELOW YOUR TIME DEPOSIT WAS RENEWED AT THE  
RENEWAL INTEREST RATE AND RENEWAL TERM INDICATED.  
THE NEXT MATURITY DATE HAS BEEN CALCULATED FOR YOUR  
CONVENIENCE.  
PLEASE CONTACT US IF YOU HAVE ANY QUESTIONS.

SCOTT COUNTY TELEPHONE COOPERATIVE  
PO BOX 487  
GATE CITY VA 24251-9999

ACCOUNT NUMBER	[REDACTED]
PREVIOUS BALANCE	133,162.69
INT PYMT DATE	07/19/22
INT CAPITALIZED	132.80
CURRENT BALANCE	133,295.49
RENEWAL DATE	07/19/22
NEXT MATURITY DATE	07/19/24
RENEWAL RATE	.25000
RENEWAL TERM	24 MONTHS

REC'D AUG 03 2022



P.O. Box 10  
Asheville, NC 28802-0010  
htb.com

**RETURN SERVICE REQUESTED**

>003220 2563286 0001 92644 10Z

SCOTT COUNTY TELEPHONE COOPERATIVE  
PO BOX 487  
GATE CITY VA 24251-0487

**Statement Ending 06/30/2022**

SCOTT COUNTY TELEPHONE

Page 1 of 2

Account # [REDACTED]

**Managing Your Accounts**

- Online Access [htb.com](http://htb.com)
- Customer Care 800-627-1632
- Address PO Box 10  
Asheville NC 28802-0010



REC'D JUL 05 2022

**Summary of Accounts**

Certificate of Deposit	Certificate Number	Ending Balance
15 MONTH CD	XXXXXX [REDACTED]	\$132,355.84

**15 MONTH CD-XXXXXXXX2624**

**Certificate Summary**

Date	Description	Amount	Description	Amount
04/01/2022	Beginning Balance	\$132,289.88	Interest Rate	0.2000%
06/30/2022	Ending Balance	\$132,355.84	Interest Paid YTD	\$131.17
	Issue Date	06/22/2004		
	Maturity Date	11/01/2022		

**Account Activity**

Transaction Date	Description	Amount	Balance
04/01/2022	Beginning Balance		\$132,289.88
06/30/2022	INTEREST ADDED	\$65.96	\$132,355.84
06/30/2022	Ending Balance		\$132,355.84



03220 2563286 003221 006441 0001/0001



PO BOX 1810  
Honaker, Virginia 24260

000 00011 01  
Customer:

Page: 1  
07/29/2022

Return Service Requested



31 1 SP 0.570 1



MOUNTAINET TELEPHONE CO  
PO BOX 488  
GATE CITY, VA 24251-0488

REC'D AUG 05 2022

1-NEPB-NOTC-02 220729  
001-001-000031 000354183

=====  
COD 12 MONTHS Certificate  
=====

Original Issue Date:	07/31/2018	Interest Rate:	.1000 %
Original Issue Value:	109,839.22	Maturity Date:	07/31/2023
Last Renewal Date:	07/31/2022	Term:	12 Months
Last Renewal Value:	113,163.30	Balance as of 07/29/2022:	113,163.30

\*\*\*\*\*  
\* Interest Advice \*  
\*\*\*\*\*

Interest paid on:	07/30/2022	Interest paid this term:	113.10
Interest Paid:	28.21		
Interest Paid 2022:	84.60		

Interest will be compounded on a daily basis.  
Interest will be credited to your certificate quarterly.

On 08/01/2022, assuming no other activity, the projected balance of your COD 12 MONTHS Certificate ~~151,504~~ will be 113,163.30.

\*\*\*\*\*  
\* Interest Rate Change \*  
\*\*\*\*\*

On 07/31/2022, the interest rate on your certificate will increase from .1000 % to .4000 % with an annual percentage yield of .40 %.

Contact us at 276-386-9300 if you have any questions.



Advisors

SNAPSHOT

SCOTT COUNTY TELEPHONE COOPERATIVE INC

JULY 1, 2022 - JULY 31, 2022 ACCOUNT NUMBER: [REDACTED]

Progress summary

	THIS PERIOD	THIS YEAR
Opening value	\$1,362,815.67	\$426,665.75
Cash deposited	0.00	1,117,998.91
Securities deposited	0.00	0.00
Cash withdrawn	-2,582.04	-6,583.82
Securities withdrawn	0.00	0.00
Change in value	60,083.84	-117,763.37
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<b>ASSETS</b>					
Cash and sweep balances	4,698.63	0.34	2,117.03	0.15	4
Stocks, options & ETFs	0.00	0.00	0.00	0.00	0
Fixed income securities	73,165.50	5.37	73,868.40	5.20	0
Mutual funds	1,284,951.54	94.29	1,344,332.04	94.65	31,301
<b>Asset value</b>	<b>\$1,362,815.67</b>	<b>100%</b>	<b>\$1,420,317.47</b>	<b>100%</b>	<b>\$31,305</b>



**Rural Telephone  
Finance Cooperative**

---

REC'D AUG 15 2022

20701 Cooperative Way  
Dulles, Virginia 20166  
703-467-1800 | www.rfc.coop

July 22, 2022

Mr. William J. Franklin  
Chief Executive Officer  
Scott County Telephone Co-operative  
P.O. Box 487  
Gate City, VA 24251-0487

RE: Loan Designation #VA510-A-9005  
RE: Line of Credit #VA510-R-5101

Dear Mr. Franklin:

Your cooperative has executed and returned all required RTFC loan documents and supporting papers in connection with the loan designated above. These documents have been reviewed and found legally acceptable and satisfactory to RTFC and thus constitute a binding agreement between RTFC and your system.

Loan funds may now be requisitioned in accordance with the terms of the Loan Agreement. Enclosed also, for your records, is a copy of the fully executed Line of Credit Agreement. Line of Credit funds may now be requisitioned in accordance with the terms of the Line of Credit Agreement.

We at RTFC appreciate the opportunity to serve your system and look forward to our continued business relationship.

Sincerely,

A handwritten signature in black ink, appearing to read "Adam Lush", is written over a light blue horizontal line.

Adam Lush  
Associate Vice President

## LOAN AGREEMENT

**LOAN AGREEMENT** ("Agreement") made as of March 14, 2022, by and between SCOTT COUNTY TELEPHONE CO-OPERATIVE, a Virginia corporation ("Borrower"), and RURAL TELEPHONE FINANCE COOPERATIVE, a District of Columbia cooperative association ("Lender").

### RECITALS

**WHEREAS**, Borrower has requested Lender to make the Loan to Borrower described in Schedule 1 hereto; and

**WHEREAS**, Lender is willing to make the Loan upon the terms and conditions set forth in this Agreement.

**NOW, THEREFORE**, for and in consideration of the premises and the mutual covenants hereinafter contained, Borrower and Lender do hereby agree as follows:

#### 1. CONSTRUCTION AND DEFINITION OF TERMS

All accounting terms not specifically defined herein shall have the meanings assigned to them as determined by GAAP. In addition to the terms defined elsewhere in this Agreement, unless the context otherwise requires, when used herein, the following terms shall have the following meanings:

**"Adjustment Date"** shall mean a date or dates, determined by the Lender based on the term (or rate period) of the applicable Fixed Rate, after the date of the initial Advance to the Maturity Date, which date or dates shall be the first of the month.

**"Advance"** shall mean each advance of funds by the Lender to the Borrower pursuant to the terms and conditions of this Agreement.

**"Annual Operating Cash Flow"** shall mean the sum of (a) pre-tax income or deficit, as the case may be, excluding extraordinary gains, the write-up of any asset and any investment income or loss; (b) total interest expense, including capitalized, accreted or paid-in-kind interest; and (c) depreciation and amortization expense, excluding depreciation associated with grant assets, as calculated on a consolidated basis for Borrower and all its Subsidiaries.

**"Business Day"** shall mean any day that both Lender and the depository institution Lender utilizes for funds transfers hereunder are open for business.

**"Cash Margins"** for any given year, shall mean net income excluding extraordinary gains, gains on the sale of assets, the write-up of any asset and any investment income or loss, plus depreciation, amortization and any other non-cash charges, less any non-cash credits and principal on long-term debt payable in such year, as calculated on a consolidated basis for Borrower and all its Subsidiaries.

**"Certified"** shall mean that the information, statement, schedule, report or other document required to be "Certified" shall contain a representation of a duly authorized

## SCHEDULE 1

1. The "Commitment" shall mean \$3,000,000.00.
2. The "Guarantor's Mortgage" is the mortgage and security agreement by and between Guarantor and Lender dated as of even date herewith, as it may have been or shall be supplemented, amended, restated or consolidated from time to time.
3. The months relating to the Payment Date are March, June, September and December.
4. The method of amortization referred to in Section 2.03 shall be based upon the level principal or level debt service method.
5. The date of Borrower's financial statement referred to in Section 4.06 is December 31, 2020.
6. The place of business or, if more than one, its chief executive office as well as the Borrower's mailing address if different referred to in Section 4.12 is 149 Woodland Street, Gate City, VA 24251-0487.
7. The government authorities referred to in Section 4.13 are: none.
8. The purpose of the Loan is for capital expenditures.
9. The special conditions referred to in Section 5.05 are as follows: none.
10. The special affirmative covenants referred to in Section 6.07 are as follows: none.
11. The special negative covenants referred to in Section 7.06 are as follows: none.
12. The address for notices to the Borrower referred to in Section 10.07 is:

If by personal delivery, overnight mail or courier service:

Scott County Telephone Co-operative  
149 Woodland Street  
Gate City, VA 24251-0487  
Attention: General Manager

If by United States mail or telecopy:  
Scott County Telephone Co-operative  
P.O. Box 487  
Gate City, VA 24251-0487  
Attention: General Manager  
Fax: (276) 452-2447

PROMISSORY NOTE

\$3,000,000.00

dated as of March 14, 2022

Scott County Telephone Co-operative, a Virginia corporation (the "Borrower"), for value received, hereby promises to pay, without setoff, deduction, recoupment or counterclaim, to the order of RURAL TELEPHONE FINANCE COOPERATIVE (the "Payee"), at its office in Dulles, Virginia, or such other location as the Payee may designate to the Borrower, in lawful money of the United States, the principal sum of THREE MILLION AND 00/100 DOLLARS (\$3,000,000.00), or such lesser sum of the aggregate unpaid principal amount of all advances made by the Payee pursuant to that certain Loan Agreement dated as of even date herewith by and between the Borrower and the Payee, as it may be amended from time to time (herein called the "Loan Agreement"), and to pay interest on all amounts remaining unpaid hereunder from the date of each advance in like money, at said office, at the rate and in amounts and payable on the dates provided in the Loan Agreement together with any other amount payable under the Loan Agreement. If not sooner paid, any balance of the principal amount and interest accrued thereon shall be due and payable five (5) years from the date of the first Advance (such date herein called the "Maturity Date").

This Note is the Note referred to in, and has been executed and delivered pursuant to, the Loan Agreement. The principal hereof and accrued interest thereon and any other amount due under the Loan Agreement may be declared to be forthwith due and payable in the manner, upon the conditions, and with the effect provided in the Loan Agreement.

The Borrower waives demand, presentment for payment, notice of dishonor, protest, notice of protest and notice of non-payment of this Note and waives the defense of usury.

IN WITNESS WHEREOF, the Borrower has caused this Note to be signed in its corporate name and its corporate seal to be hereunto affixed and to be attested by its duly authorized officers, all as of the day and year first above written.

(SEAL)



Scott County Telephone Co-operative, ~~INC.~~

Attest: [Signature]  
Secretary

By: Roger Francis  
Executive  
Title: Vice President of Finance and Operations

RTFC Loan No.: VA510-A-9005

## REVOLVING LINE OF CREDIT AGREEMENT

REVOLVING LINE OF CREDIT AGREEMENT (this "Agreement"), dated as of March 14, 2022, between Scott County Telephone Co-operative ("Borrower"), a corporation organized and existing under the laws of the State of Virginia and RURAL TELEPHONE FINANCE COOPERATIVE ("RTFC"), a cooperative association organized and existing under the laws of the District of Columbia.

### RECITALS

**WHEREAS**, the Borrower has applied to RTFC for a line of credit for the purposes set forth in Schedule 1 attached hereto, and RTFC is willing to extend such a line of credit to the Borrower on the terms and conditions stated herein.

**NOW, THEREFORE**, for and in consideration of the premises and the mutual covenants hereinafter contained, the parties hereto agree and bind themselves as follows:

- 1. Revolving Credit and Term.** RTFC agrees to make advances to the Borrower pursuant to the terms of this Agreement ("Advances") in the maximum amount specified on Schedule 1 attached hereto (the "RTFC Commitment") or such lesser amount as may be approved by RTFC in accordance with the terms and conditions hereof. Within such limits, the Borrower may borrow, repay and reborrow at any time or from time to time for a period from the Effective Date up to, but not including, the Maturity Date, at which time all principal amounts outstanding, and accrued, but unpaid interest thereon, shall be due and payable in full.

"Effective Date" shall mean the date designated as such by RTFC on the signature page hereof.

"Maturity Date" shall mean the date which is specified on Schedule 1 attached hereto.

- 2. Requisitions.** Borrower will requisition each Advance by submitting its written requisition to RTFC in form and substance satisfactory to RTFC no later than 12:00 noon local time at RTFC's offices in Dulles, Virginia on the Business Day prior to the Business Day Borrower seeks to have funds advanced. Such request shall be in the form of Exhibit A attached hereto. RTFC may require the Borrower to submit such additional information as it may reasonably require prior to funding the Advance request.

"Business Day" shall mean any day that both RTFC and the depository institution RTFC utilizes for funds transfers hereunder are open for business.

- 3. Interest Rate and Payment.** Borrower unconditionally promises and agrees to pay, as and when due, interest on all amounts advanced hereunder from the date of each Advance and to repay all amounts advanced hereunder with interest on the Maturity Date, if not sooner paid. Interest shall be due and payable in accordance with RTFC's regular billing cycles as may be in effect from time to time. RTFC shall invoice the Borrower at

**SCHEDULE 1**

1. The purpose of the loan is to provide funds for the Borrower's general corporate use, consistent with the Borrower's articles of incorporation, bylaws and applicable federal, state and local laws and regulations.
2. The aggregate RTFC Commitment shall mean \$3,000,000.00.
3. "Maturity Date" shall mean the date which is (2) years from the Effective Date.
4. The "Guarantor's Mortgage" is the mortgage and security agreement by and between Guarantor and RTFC dated as of even date herewith, as it may have been or shall be supplemented, amended, restated or consolidated from time to time.
5. The address for notices to the Borrower is:

If by personal delivery, overnight mail or courier service:

Scott County Telephone Co-operative  
149 Woodland Street  
Gate City, VA 24251-0487  
Attention: General Manager

If by United States mail or telecopy:

Scott County Telephone Co-operative  
P.O. Box 487  
Gate City, VA 24251-0487  
Attention: General Manager  
Fax: (276) 452-2447

**Scott County Telephone Cooperative, Inc.**  
Independent Auditor's Reports and Consolidated  
Financial Statements with Supplementary Information  
December 31, 2021 and 2020

**Scott County Telephone Cooperative, Inc.**  
**December 31, 2021 and 2020**

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**Scott County Telephone Cooperative, Inc.**  
**Consolidated Statements of Operations**  
**Years Ended December 31, 2021 and 2020**

	<b>2021</b>	<b>2020</b>
<b>Operating Revenues</b>		
Local network services	\$ 2,510,266	\$ 2,322,154
Network access and long distance services	5,255,017	5,244,041
Video and internet services	11,242,125	9,371,950
Grant revenues	100,544	-
Miscellaneous	1,401,243	1,328,892
Uncollectibles	(28,417)	(104,548)
	<u>20,480,778</u>	<u>18,162,489</u>
<b>Operating Expenses</b>		
Plant specific expenses	3,523,291	3,811,569
Plant nonspecific expenses	6,011,936	4,983,314
Depreciation	3,344,203	2,971,295
Customer operations	1,543,583	1,439,958
Corporate operations	2,281,119	2,181,510
	<u>16,704,132</u>	<u>15,387,646</u>
<b>Operating Margins</b>	<u>3,776,646</u>	<u>2,774,843</u>
<b>Other Income (Expenses)</b>		
Investment income	33,754	41,212
Unrealized gain on equity securities	165,665	281,979
Interest expense	(1,042,566)	(398,754)
Allowance for funds used during construction	802,100	143,638
Gain on cash surrender insurance policies	163,778	231,607
Gain on Payroll Protection Program loan forgiveness	1,123,956	-
Other	(256,800)	(228,356)
	<u>989,887</u>	<u>71,326</u>
<b>Margins Before Income Taxes</b>	<u>4,766,533</u>	<u>2,846,169</u>
<b>Income Tax Expense</b>	<u>763,609</u>	<u>386,226</u>
<b>Net Margins</b>	<u>\$ 4,002,924</u>	<u>\$ 2,459,943</u>

**Pro Forma 5-Year Financial Forecast**

VATI FY2023 LENOWISCO PDC District-Wide Broadband Project Final Phase

Scott County Telephone Cooperative, Inc. and Subsidiary

	Historical		Forecast Period					
	2020	2021	2022	2023	2024	2025	2026	2027
Cash	\$ 5,650,554	\$ 2,858,104	\$ 7,309,043	\$ 8,977,627	\$ 4,275,706	\$ 1,533,779	\$ 2,866,933	\$ 4,573,111
Certificate of Deposit	245,164	1,194,407	1,394,407	1,594,407	1,794,407	1,994,407	2,194,407	2,394,407
Accounts Receivable	629,366	1,264,639	537,054	547,279	597,504	667,729	737,954	748,179
Materials & Supplies	1,945,612	2,134,356	2,762,541	1,868,287	2,362,541	2,456,795	2,551,049	2,645,303
Other current assets	396,551	301,484	2,480,464	2,404,256	2,854,256	2,882,799	3,432,799	3,467,127
<b>Total Current Assets</b>	<b>8,867,247</b>	<b>7,752,990</b>	<b>14,483,509</b>	<b>15,391,856</b>	<b>11,884,414</b>	<b>9,535,509</b>	<b>11,783,141</b>	<b>13,828,126</b>
Plant in Service	78,375,629	82,369,875	127,019,720	164,270,337	209,631,070	215,881,070	219,131,070	224,381,070
Plant Under Construction	9,087,823	32,122,707	11,750,461	10,700,461	9,950,461	8,955,415	8,059,873	7,253,886
Accumulated Depreciation - Other Assets	(48,103,503)	(49,400,435)	(53,483,532)	(58,923,004)	(64,913,857)	(71,546,904)	(78,648,464)	(86,181,462)
Other Non-Current Assets	9,932,244	9,466,004	11,720,876	10,570,876	9,420,876	9,270,876	9,120,876	8,970,876
<b>Total Non-Current Assets</b>	<b>49,292,193</b>	<b>74,558,151</b>	<b>97,007,525</b>	<b>126,618,669</b>	<b>164,088,550</b>	<b>162,560,457</b>	<b>157,663,356</b>	<b>154,424,371</b>
<b>Total Assets</b>	<b>\$ 58,159,440</b>	<b>\$ 82,311,141</b>	<b>\$ 111,491,034</b>	<b>\$ 142,010,525</b>	<b>\$ 175,972,964</b>	<b>\$ 172,095,966</b>	<b>\$ 169,446,497</b>	<b>\$ 168,252,497</b>

	2020	2021	2022	2023	2024	2025	2026	2027
Accounts Payable	\$ 4,276,951	\$ 1,055,884	\$ 1,110,755	\$ 1,260,755	\$ 1,110,755	\$ 960,755	\$ 810,755	\$ 660,755
Current Portion - Existing Debt	750,000	680,000	2,123,000	1,930,000	1,841,000	1,841,000	1,841,000	1,041,000
Other Current Liabilities	1,376,477	1,178,525	1,212,279	1,927,279	1,912,279	1,762,279	1,612,279	1,462,279
<b>Total Current Liabilities</b>	<b>6,403,428</b>	<b>2,914,409</b>	<b>4,446,034</b>	<b>5,118,034</b>	<b>4,864,034</b>	<b>4,564,034</b>	<b>4,264,034</b>	<b>3,164,034</b>
Deferred Grant Revenue	5,108,674	12,536,937	27,016,737	58,346,030	90,877,315	86,333,450	82,016,777	77,915,938
Other Non-Current Liabilities	9,706,109	9,852,128	14,881,470	14,406,470	13,931,470	12,956,470	10,981,470	9,006,470
Long-term Debt, net of current maturities	12,846,125	28,518,749	33,982,761	30,004,578	26,928,125	23,087,129	21,246,130	20,213,110
<b>Total Non-Current Liabilities</b>	<b>27,660,908</b>	<b>50,907,814</b>	<b>75,880,968</b>	<b>102,757,078</b>	<b>131,736,910</b>	<b>122,377,049</b>	<b>114,244,377</b>	<b>107,135,519</b>
<b>Total Liabilities</b>	<b>34,064,336</b>	<b>53,822,223</b>	<b>80,327,002</b>	<b>107,875,112</b>	<b>136,600,944</b>	<b>126,941,083</b>	<b>118,508,411</b>	<b>110,299,553</b>
Capital Stock	104,236	106,576	197,636	201,386	205,136	208,886	212,636	216,386
Accumulated other comprehensive income	(4,412,854)	(3,831,906)	(4,306,775)	(4,960,000)	(5,135,000)	(5,135,000)	(5,135,000)	(5,135,000)
Patronage Capital Credits	28,403,722	32,214,248	35,273,171	38,894,027	44,301,883	50,080,997	55,860,450	62,871,557
Total Equity	24,095,104	28,488,918	31,164,032	34,135,413	39,372,019	45,154,883	50,938,086	57,952,943
<b>Total Liabilities and Equity</b>	<b>\$ 58,159,440</b>	<b>\$ 82,311,141</b>	<b>\$ 111,491,034</b>	<b>\$ 142,010,525</b>	<b>\$ 175,972,964</b>	<b>\$ 172,095,966</b>	<b>\$ 169,446,497</b>	<b>\$ 168,252,497</b>

See summary of significant forecast assumptions and accounting policies and accountant's report.

Pro Forma 5-Year Financial Forecast  
Income Statement

VATI FY2023 LENOWISCO PDC District-Wide Broadband Project Final Phase

Scott County Telephone Cooperative, Inc. and Subsidiary

	Historical		Forecast Period					
	2020	2021	2022	2023	2024	2025	2026	2027
<b>REVENUES</b>								
Broadband, Voice and Video	\$ 9,371,950	\$ 13,752,391	\$ 15,235,207	\$ 17,719,632	\$ 20,305,909	\$ 22,646,868	\$ 25,549,744	\$ 28,504,197
Network Access Service Revenues	2,322,154	3,007,090	4,200,000	4,450,000	5,200,000	5,252,205	5,502,205	5,522,205
Long distance	5,244,041	2,247,927	1,875,014	1,837,514	1,800,763	1,764,748	1,729,453	1,694,864
Other Operating Revenues	1,328,892	1,501,787	1,675,843	1,752,091	1,828,339	1,904,587	1,980,835	2,057,083
Uncollectible Revenues	\$ (104,548)	\$ (28,417)	\$ (152,352)	\$ (177,196)	\$ (203,059)	\$ (226,469)	\$ (255,497)	\$ (285,042)
<b>Total Revenues</b>	<b>18,162,489</b>	<b>20,480,778</b>	<b>22,833,712</b>	<b>25,582,040</b>	<b>28,931,952</b>	<b>31,341,939</b>	<b>34,506,739</b>	<b>37,493,307</b>
<b>EXPENSES</b>								
Plant Specific	3,811,569	3,523,291	4,162,520	4,836,090	5,354,443	5,509,724	7,195,341	8,367,511
Plant Non-specific (excluding depreciation)	4,983,314	6,011,936	5,960,025	5,450,774	5,228,235	5,916,823	6,815,982	6,890,982
Depreciation	2,971,295	3,344,203	4,083,097	5,439,472	5,990,853	6,633,047	7,101,560	7,532,998
Customer Operations and Corporate	3,621,468	3,824,702	5,120,134	5,817,553	5,905,300	6,304,768	6,541,791	6,646,665
<b>Total Expenses</b>	<b>15,387,646</b>	<b>16,704,132</b>	<b>19,325,776</b>	<b>21,543,888</b>	<b>22,478,831</b>	<b>24,364,362</b>	<b>27,654,674</b>	<b>29,438,155</b>
<b>Net Operating</b>	<b>2,774,843</b>	<b>3,776,646</b>	<b>3,507,936</b>	<b>4,038,152</b>	<b>6,453,121</b>	<b>6,977,577</b>	<b>6,852,066</b>	<b>8,055,152</b>
Nonoperating Net Income	326,442	1,230,353	304,887	165,769	167,427	169,101	170,792	170,792
Interest Expense - Existing Debt	398,754	1,042,566	1,057,789	1,423,318	1,250,381	1,108,331	1,036,481	897,143
AFUDC	143,638	802,100	954,775	1,050,253	787,689	590,767	443,075	332,306
Income Taxes	386,226	763,609	650,887	210,000	750,000	850,000	650,000	650,000
<b>Net Income (Loss)</b>	<b>\$ 2,459,943</b>	<b>\$ 4,002,924</b>	<b>\$ 3,058,922</b>	<b>\$ 3,620,856</b>	<b>\$ 5,407,856</b>	<b>\$ 5,779,114</b>	<b>\$ 5,779,452</b>	<b>\$ 7,011,107</b>

See summary of significant forecast assumptions and accounting policies and accountant's report.

**Pro Forma 5-Year Financial Forecast**  
Statements of Cash Flows

VATI FY2023 LENOWISCO PDC District-Wide Broadband Project Final Phase

Scott County Telephone Cooperative, Inc. and Subsidiary

	Historical		Forecast Period					
	2020	2021	2022	2023	2024	2025	2026	2027
Beginning Cash	\$ 3,130,536	\$ 5,650,554	\$ 2,858,104	\$ 7,309,043	\$ 8,977,627	\$ 4,275,706	\$ 1,533,779	\$ 2,866,933
<b>CASH FLOWS FROM OPERATING ACTIVITIES</b>								
Net Income (Loss)	2,459,943	4,002,924	3,058,922	3,620,856	5,407,856	5,779,114	5,779,452	7,011,107
Adjustments to Reconcile Net Income (Loss) to Net Cash From Operating Activities:								
Add: Depreciation - Other Assets	2,971,295	3,344,203	4,083,097	5,439,472	5,990,853	6,633,047	7,101,560	7,532,998
Changes in Assets and Liabilities:								
Accounts Receivable	(408,105)	390,490	727,585	(10,225)	(50,225)	(70,225)	(70,225)	(10,225)
Materials & Supplies	(1,194,862)	(188,744)	(628,185)	894,254	(494,254)	(94,254)	(94,254)	(94,254)
Other Non-Current Assets	63,986	(27,391)	(2,178,980)	76,208	(450,000)	(28,543)	(550,000)	(34,328)
Accounts Payable	3,614,743	(1,979,120)	54,871	150,000	(150,000)	(150,000)	(150,000)	(150,000)
Other Current Liabilities	(649,870)	(1,027,883)	33,754	715,000	(15,000)	(150,000)	(150,000)	(150,000)
Other Cash Flows from Operations								
<b>Net Cash From Operating Activities</b>	<b>6,857,130</b>	<b>4,514,479</b>	<b>5,151,064</b>	<b>10,885,565</b>	<b>10,239,230</b>	<b>11,919,139</b>	<b>11,866,533</b>	<b>14,105,299</b>
<b>CASH FLOWS FROM FINANCING ACTIVITIES</b>								
Change in Memberships	1,840	2,340	91,060	3,750	3,750	3,750	3,750	3,750
Change in Deferred Grant Revenue	3,673,268	5,173,314	14,479,800	31,329,293	32,531,285	(4,543,866)	(4,316,672)	(4,100,839)
Proceeds (Repayment) from Existing Debt	7,622,494	17,810,784	9,030,012	(2,241,183)	(1,324,453)	(1,999,996)	1	(792,020)
Repayments of Debt	(1,889,793)	(2,208,160)	(2,123,000)	(1,930,000)	(1,841,000)	(1,841,000)	(1,841,000)	(1,041,000)
Other Cash Flows impacts other	1,123,956	(192,398)	2,299,601	21,775	500,000	(825,000)	(1,825,000)	(1,825,000)
<b>Net Cash From Financing Activities</b>	<b>10,531,765</b>	<b>20,585,880</b>	<b>23,777,473</b>	<b>27,183,635</b>	<b>29,869,582</b>	<b>(9,206,112)</b>	<b>(7,978,921)</b>	<b>(7,755,108)</b>
<b>CASH FLOWS FROM INVESTING ACTIVITIES</b>								
Capital Expenditures	(14,814,011)	(27,467,433)	(21,423,099)	(31,769,543)	(35,748,587)	(5,254,954)	(2,354,459)	(4,444,015)
Grant Match - capital portion - VATI	-	-	(2,854,500)	(4,431,073)	(8,862,147)	-	-	-
Change in Certificate of Deposits	(54,866)	(425,376)	(200,000)	(200,000)	(200,000)	(200,000)	(200,000)	(200,000)
Other Cash Flows from Investing	-	-	-	-	-	-	-	-
<b>Net Cash From Investing Activities</b>	<b>(14,868,877)</b>	<b>(27,892,809)</b>	<b>(24,477,599)</b>	<b>(36,400,617)</b>	<b>(44,810,733)</b>	<b>(5,454,954)</b>	<b>(2,554,459)</b>	<b>(4,644,014)</b>
<b>Increase (Decrease) in Cash</b>	<b>2,520,018</b>	<b>(2,792,450)</b>	<b>4,450,938</b>	<b>1,668,584</b>	<b>(4,701,921)</b>	<b>(2,741,927)</b>	<b>1,333,153</b>	<b>1,706,178</b>
Ending Cash	\$ 5,650,554	\$ 2,858,104	\$ 7,309,043	\$ 8,977,627	\$ 4,275,706	\$ 1,533,779	\$ 2,866,933	\$ 4,573,111

See summary of significant forecast assumptions and accounting policies and accountant's report.

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NOTE 1 - NATURE OF THE FORECASTS

Scott County Telephone Cooperative, Inc. and Subsidiary (the Cooperative) is located in Gate City, Virginia. The financial forecast presents the Cooperative's plans for operations for the next five years.

These financial forecasts present, to the best of management's knowledge and belief, the Cooperative's expected financial position, results of operations, and cash flows for the forecast periods. Accordingly, the forecasts reflect its judgment as of August 24, 2022, the date of these forecasts, of the expected conditions and its expected course of action. The assumptions disclosed herein are those that management believes are significant to the forecasts. There will usually be differences between the forecasted and actual results, because events and circumstances frequently do not occur as expected, and those differences may be material.

NOTE 2 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES:

The following is a summary of significant accounting policies of Scott County Telephone Cooperative, Inc. and Subsidiary (the Cooperative):

Consolidation - The consolidated financial statements included the accounts of Scott County Telephone Cooperative, Inc. and its wholly owned subsidiary, SCTC Management Group, Inc. Scott Telecom and Electronics, Inc., Scott County Long Distance, Inc., MountaiNet, Inc., and Appalachian Broadband, LLC are wholly owned subsidiaries of SCTC Management Group, Inc. MountaiNet Telephone Cooperative, Inc. and MountaiNet Long Distance, Inc. are wholly owned subsidiaries of MountaiNet, Inc. SW VA Fiber Network, LLC is a wholly owned subsidiary of Appalachian Broadband, LLC. All material intercompany balances and transactions have been eliminated.

The Cooperative's principal line of business is providing local telephone service, long distance, security, telephone service, and cable and internet access services. The revenues reported on these statements of income reflect the relative importance of each type of service. The principal market for these telecommunications services are local residential and business customers residing in the exchange the Cooperative serves in Gate City, Virginia.

Revenue recognition - Compensation for interstate access services is received through tariffed access charges filed by the National Exchange Carrier Association (NECA) with the Federal Communications Commission (FCC) on behalf of the member companies. These access charges are billed by the Cooperative to the interstate interexchange carriers, and pooled with like revenues from all NECA member companies. The portion of the pooled access charge revenue received by the Cooperative is based upon its actual cost of providing interstate access service, plus a return on the investment dedicated to providing that service.

Compensation for Intrastate/IntraLATA access services (for toll traffic not carried by an interexchange carrier) is received under an IntraLATA Toll Originating Responsibility Plan (ITORP). Access charges, as filed with the Virginia State Corporation Commission, are billed to the originating local exchange carrier for terminating toll traffic, and retained by the Cooperative. Toll revenue is billed to the end user at the Cooperative's local tariffed rates, and is retained by the Cooperative. The Cooperative pays the other local exchange carrier for terminating the toll traffic.

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NOTE 2 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES: (continued)

Compensation for Intrastate/InterLATA service and Intrastate/IntraLATA service (for toll traffic carried by an interexchange carrier) is received through tariffed access charges as filed with the Virginia State Corporation Commission. These access charges are billed to the interexchange carriers carrying the traffic and retained by the Cooperative.

Compensation for long distance service is received through charges for providing usage of the local exchange network. Toll revenues are recognized when services are rendered.

Compensation for cable television and Internet access is received through monthly charges for providing cable television programming and Internet access to customers that subscribe to these services.

Taxes - The Cooperative collects communications taxes from its members on behalf of the State of Virginia. Revenue is presented net of taxes collected in the statements of income.

Income taxes - The Cooperative accounts for income taxes in accordance with the Income Taxes Topic of the FASB Accounting Standards Codification. This topic requires companies to record deferred tax liabilities or assets for the deferred tax consequences of all temporary differences. Deferred taxes are provided on the liability method whereby deferred tax assets are recognized for deductible temporary differences and operating loss and tax credit carry forwards, and deferred tax liabilities are recognized for taxable temporary differences. Temporary differences are the differences between reported amounts of assets and liabilities and their tax bases. Deferred tax assets are reduced by a valuation allowance, when, in the opinion of management, it is more likely than not that some portion or all of the deferred tax assets will not be realized. Deferred tax assets and liabilities are adjusted for the effects of changes in tax laws and rates on the date of enactment.

Inventories - The Cooperative's inventories are priced at cost. The Cooperative's inventory cost is determined by the average cost method.

Cash equivalents - The Cooperative considers all highly liquid investments with maturity of one year or less when purchased to be cash equivalents.

Accounts receivable - The Cooperative extends credit to its commercial and residential subscribers, the majority of whom reside in southwest Virginia. Accounts receivable are carried at original invoice amount less an estimate made for doubtful receivables based on a review of all outstanding amounts on a monthly basis. Management determines the allowance for doubtful accounts by identifying troubled accounts and by using historical experience applied to an aging of accounts.

Accounts receivable, which do not accrue interest, are written-off when deemed uncollectible. Recoveries of accounts receivable previously written-off are recorded when received.

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Depreciation - Depreciation is computed principally by the straight-line method. The estimated annual rates used to compute depreciation for financial reporting purposes are as stated below.

Property, plant, and equipment - Property, plant, and equipment in service and under construction are stated at cost. Listed below are the major classes of property, plant, and equipment.

	ESTIMATED ANNUAL DEPRECIATION RATES
Vehicles and other work equipment	10.00% - 12.86%
Buildings	2.86%
Furniture	6.33%
Leasehold improvements	2.86%
Central office and computer equipment	6.33% - 12.22%
Outside plant - pole, aerial, and buried	4.40% - 4.66%

**NOTE 3 - NATURE OF OPERATIONS DURING THE FORECAST PERIOD:**

Operating revenues and expenses - The following are significant assumptions for revenues and expenses:

General statement and historical reconciliation - The 2020 and 2021 revenues and expenses are based on actual, unaudited year-to-date balances. The 2022 revenues and expenses are based on annualized, unaudited balances from the year to date 2022 financials. Each financial statement line item was reviewed for any known and measurable items that could affect the amount. If any further adjustment was made, the assumption will be noted in the line items below. There are no gaps in between the historical period and the forecast period. The forecast period is December 31, 2022 through December 31, 2027.

Access line counts and projection assumptions - Existing access lines for the consolidated entity were gathered by service for 2020 and 2021. These categories were forecasted based on the historical trend for those years. The access lines for the new areas served are based on engineering data in the application, the total population, and the number of homes passed each quarter. SCTC projects to obtain a 60% take rate by the end of 2023 and will provide voice, and broadband services.

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NOTE 3 - NATURE OF OPERATIONS DURING THE FORECAST PERIOD: (continued)

Revenues:

	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
Voice	6,599	7,918	7,195	7,794	8,335	9,957	9,820	9,685
Broadband	7,323	7,719	10,658	13,055	15,218	21,706	21,570	21,434
Video	4,662	4,951	5,150	5,021	4,896	4,773	4,654	4,538
Security	275	300	325	326	327	328	300	301
Total Connections	<u>18,858</u>	<u>20,887</u>	<u>23,327</u>	<u>26,196</u>	<u>28,775</u>	<u>36,764</u>	<u>36,343</u>	<u>35,957</u>

1. Local voice service – Historically and previous to 2020, Scott County Telephone Cooperative, Inc. (SCTC) has experienced a 1.1% decrease in voice lines in its ILEC study area. However, SCTC has seen a 1.7 to 3.5% increase in basic revenue per year based on local rate increases and additions in its non-ILEC areas. SCTC forecasts an average 8.00% increase on revenue, which is attributed to the net gains for new areas such as Lee and Wise counties as well as 18,023 new premises passed in this application. These areas are vastly underserved and SCTC has shown tremendous success in recent years in new areas. Also, SCTC has been proactive in rolling out new services and new bundle pricing. It is forecasted that this rate increase will help offset some of the revenue loss due to access line decrease.

Management forecasts a 10% take rate by the end of year one with an average bill of \$70 per month. Customer passing's will be 18,023 for VATI #4 and an additional 10,964 with 100 in Scott County, 4962 in Lee County, and 5902 in Wise County from previous VATI applications. Broadband penetration will be 60% by the end of 2023 with, phone at 25% in Lee and Wise Counties and 100% in Scott County. This trend is expected to continue through 2027. Based on the access line forecast, SCTC forecasted local revenues based on average revenue per unit (ARPU). Local revenue is based on an average ARPU of \$26.50 per month over the entire period 2020 to 2027. This price is inclusive of local service, features, and local bundles. The ARPU is based on an average historical and forecasted price.

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NOTE 3 - NATURE OF OPERATIONS DURING THE FORECAST PERIOD: (continued)

2. Broadband data service - Based on the access line forecast chart above, SCTC forecasted Data revenues based on an average ARPU of \$70.00 per month. The ARPU is based on the average historical price. The increases are from new areas served by the recently closed BIP award, other grants, and increases in the study area. This forecast is based on the engineering, which shows approximately 18,023 for VATI #4 and previous VATI areas of 10,964 new homes passed. SCTC forecasts a 60% take rate by the end of 2023 for data service at an average price of \$70.00 per month. The areas included in this grant and their line increases are included above.
3. Video service - Based on the customer count forecast chart above, SCTC forecasted Video revenues based on an average ARPU of \$50.27 per month. This includes cable and video customers. The ARPU is based on an average historical and forecasted price. SCTC passes on content increases, including local channels as necessary. SCTC will provide new customers with data options and streaming capabilities.
4. Middle mile - SCTC has middle mile revenues from billings to other carriers for special and switched access. As the new plant is placed in service, new revenues will be derived from special access services from businesses including wireless companies purchasing access to towers from switched facilities. Based on current tariff rates and contracts this computes to approximately \$33,500 per year on average. SCTC is in the process of completing negotiations with various cell companies for special access that covers ten cells sites for transports and maintenance.
5. Network access - Since 2019, access has remained relatively flat with only minor variations. SCTC maintains annual plant upgrades to its regulated rate base, which, in turn helps in maintaining revenues from federal sources. Following the most recent FCC order, SCTC is well below Universal Service Fund caps and has not experienced any decrease from regulatory rule changes. Since regulated expenses are stable over the forecast period, SCTC expects a relatively flat access revenue change. Overall, this revenue category decreases on average about 7.4% per year for 2020 through 2027. Overall MOU is declining but Connect America Funds (CAF) and NECA settlements are relatively flat. This trend of decreasing MOU will continue. Also, by FCC order, the CAF will decrease at 5% per year. NECA settlements make up the difference as SCTC's rate base is projected to increase after the stimulus project and new facilities are constructed throughout the forecast period and recognized in settlements.
6. Universal Service Fund (USF) - SCTC's study area cost per loop will increase each year as new plant and regulated expenses are incurred. Due to the potential impacts of the FCC regulatory changes, SCTC forecasts USF to decrease by an average of 1.62% from 2020 to 2027.

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NOTE 3 - NATURE OF OPERATIONS DURING THE FORECAST PERIOD: (continued)

7. Toll service/long distance voice (Toll/LD) - Revenue is based on SCTC forecasted Toll/LD customer bill an average of \$27.60 per month. The ARPU is based on an average historical price. SCTC expects an average decline of 1.0% per year
8. Installation revenues - The installation revenue is based on new customers and the rate depends on what type of package is selected. The forecast for new installed customers per year is based on management's forecast. The install revenue is forecasted to grow at a steady amount.
9. Uncollectible revenues - This line item has been calculated from the monthly open balance registers. Items over the 60 balance are considered for uncollectibility. As local revenues change, the amount of the uncollectible estimate does as well.
10. Other revenue - Other revenue is made up of security services, billing, collection, service charges, and AFUDC. Due to plant construction level and borrowings, this continues in 2022 and then new projects accelerate in 2023 through 2027 based on an average 12.5% increase each year based on historic trends.

Expenses:

1. Plant Specific - Backhaul/interconnection assumptions - These assumptions are based on the expense per customer per year. As the numbers of customers grow each year, the expense is expected to grow accordingly. Below is a description of each type of expense category relating to backhaul, IP, and video:
  - a. The December 31, 2020 cost for Plant Specific is \$3,811,569 or \$16.84 per customer per month with 18,859 total customer connections. SCTC will need more capacity as new broadband and video customers are added and previous cost savings have been absorbed. The average cost over the period is projected to be \$14.96 per customer per month. See the project description for the operational needs of the project.
  - b. The current Plant Non-Specific cost is \$4,983,314 at December 31, 2020 or \$34.65 per subscriber per month. There are 11,985 customers who have an Internet connection either for broadband or video. The average price per connection will decrease over time. The average cost over the period is projected to be \$28.48 per subscriber per month.

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NOTE 3 - NATURE OF OPERATIONS DURING THE FORECAST PERIOD: (continued)

- c. Video content cost is \$2,517,480 or \$45.00 per video and cable customer per month with 4,662 customers at December 31, 2020. As the number of customers grows the total cost will increase. The average cost per customer per month is expected to be more than \$55.00 due to pricing increases over time after 2022.
  
2. Plant Non-Specific - Network maintenance/monitoring - This is based on the payroll expense for the central office, cable, and wire, engineering, and general support departments. It is forecasted to increase by approximately 2.4% through 2027 for two reasons. First, as the fiber plant is deployed and the old copper plant removed, maintenance costs drop. Several temporary employees are expected to drop off the payroll in the forecast period. However, management plans to hire as many employees as possible in some of its non-regulated subsidiaries. Additionally, SCTC plans to hire three to five technicians to keep up with the new network beginning in 2022. Cost of living and raises account for the increase in 2022 through 2027.
  
3. Utilities expense - SCTC forecasts that power expenses will increase based on the need of the new network electronic equipment, which should increase modestly from 2022 to 2027.
  
4. Sales/marketing - SCTC forecasts a modest decline throughout the forecast period as new areas of service can be marketed through existing advertisement. Employee attrition is projected in 2022 and 2027 for retirements and consolidations.
  
5. Customer care - SCTC forecasts a growth for new hiring for the new areas. SCTC will be able to attend to the new service areas.
  
6. Corporate G&A - Management expects this and customer care expenses will increase by 7.7% each year based on normalized trends.
  
7. Property taxes - As a new plant is completed, property taxes will accrue on the plant in service. The taxes are expected to increase each year as a new plant is constructed. Taxes are approximately .45% of gross plant.
  
8. Depreciation - Depreciation is calculated based on historically approved depreciation rates times the plant in service balance. The average depreciable life is 20 years since the majority of the plant relates to cable and wire fiber facilities. Plant is forecasted to increase each year as SCTC completes its five year construction plan and maintains upgrades each year.

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NOTE 4 - BALANCE SHEET AND CASH FLOW STATEMENTS:

The balance sheet items other than the ones discussed above were forecasted using one or a combination of several techniques. Trends were used where feasible and then known and measureable items were taken into account. The following summarizes the significant assumptions impacting the balance sheet line items and cash flow statements:

1. General - The starting point of the forecasted balance sheet is based on the general ledger as of December 31, 2021. Then, any items that are known and measurable were applied to approximate the balance as of the end of each forecasted year. Any adjustments made are described in the assumptions below. SCTC is rate regulated under Part 32 and its Board of Directors.
2. Cash and forecasted cash flow statements - SCTC has historically enjoyed a strong cash balance as management balances leverage with plant investment. The balance at 2021 of \$3.9 million will be used over time for plant upgrades.
3. Current assets - No significant changes are anticipated. This line item includes accounts receivables and inventory and will grow based on new customer growth.
4. Accounts receivable - SCTC forecasts that connection counts will increase based on historical trends, new services, and new areas. New revenues are from customers for broadband and video. Accounts receivable is approximately 4% of revenues. SCTC has very strong collection policies in place with most of its accounts receivable in the less than 60 days category.
5. Non-current assets - No significant changes are expected. This line item is based on investments in securities and affiliated subsidiaries, in compliance with, the equity method of recording investments.
6. Property, plant, and equipment - SCTC plans on building needed plant upgrades and continuing its five year construction plan process. Historically, SCTC has added, on average, approximately \$1,000,000 to \$14,000,000, using part cash flow and part leverage as needed. Most of the plant relates to fiber build outs in SCTC member areas. This is the main use of cash at SCTC. Plant is forecasted to grow considerably with VATI grants including this application. VATI #4 is \$66,466,100 total with a match of \$13,293,220.
7. Current liabilities - No significant changes are expected for accounts payables, accrued liabilities, or SCTC's current debt structure. This line item is expected to decrease as SCTC pays its accounts payable down each year. SCTC pays invoices as they come in each week after proper review.

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NOTE 4 - BALANCE SHEET AND CASH FLOW STATEMENTS: (continued)

8. Non-current liabilities - Significant changes are expected for SCTC's long-term debt structure and its deferred grant revenue. SCTC has over \$9 million of debt and lines of credit available for the match as well as other needs. Deferred revenue will increase based on the grant awards from previous VATI grants as well as this application. Principal payments continue based on the amortization schedule.
9. Equity - No significant changes are expected. Additions to patronage capital come from net margins and no distributions are expected.
10. Capital stock - No significant change is expected nor forecasted.
11. Accumulated other comprehensive income - This amount represents the effects of ASC Topic 715-30 relating to pensions. This relatively new accounting standard requires companies to recognize in equity the impacts of initial transition costs when it adopted its new retirement plan. No significant change is expected.
12. Patronage capital credits - This amount is affected by income or loss. See the comments made for the statements of equity for other assumptions.

Cash Flow Statement:

1. General - The cash flow statement was prepared using the indirect method and is composed of an operating, investing, and financing section. No estimate of cash paid for interest was made. The preparation of the cash flow is based on the changes in the balance sheet and any non-cash items from the income statement, for example, depreciation. The underlying assumptions for the balance sheet and income statement drive the numbers on the cash flow; therefore, no detailed explanation is warranted here. Please review the assumptions for the other financial statements.
2. Operating - Cash flow from operations is impacted by net income, depreciation, current assets, and current liabilities. As net income increases over the forecast period so does the corresponding cash. This is a significant source of cash.

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NOTE 4 - BALANCE SHEET AND CASH FLOW STATEMENTS: (continued)

3. Investing - Cash flow from investing activities is impacted primarily from the acquisition and construction of plant. SCTC forecasts plant construction based on the engineering in this grant application. This is the major use of cash. The capital investments will begin in 2022 and be completed in 2023. As far as other capital additions outside of the grant process, SCTC is in the process of constructing several new areas with a combination of loans, grants, and cash flow from operations. Most of the investment is for cable and wire facilities to fulfill its obligations under RUS current work plan, state of Virginia grants, and FCC directives for broadband. A major investment is the match for this and prior VATI grants. SCTC has already secured the cash and debt for the required amounts.
  
4. Financing - Cash flow from financing activities is impacted primarily by the borrowing and repayment of long-term debt. The principle payments are based on the projected amortization schedule of debt for this loan, as well as, existing debt. The proceeds or new borrowings are based on the FRS forms submitted to RUS as plant is constructed. This is a major source of cash.
  - a. Sale of equity - None is forecasted.
  
  - b. Proceeds from existing debt – Approximately \$9 million is forecasted for the match for this grant.
  
  - c. Repayments debt - The outstanding debt is from RUS and is paid back over a 16 year time period at an average rate of 4.78%.
  
  - d. Payments of patronage capital credits - No payments of capital credits are forecasted.
  
  - e. Payments of dividends - No payments of dividends are forecasted.
  
5. Cash and cash equivalents at the end of the year - Management prefers to have a reasonable amount of cash that is secured in various banks and short-term investments. SCTC considers any investment with a maturity date of one year or less to be cash equivalent.

CDBG Derivation of Cost

Product	Total	VATI	Non-VATI	Source of Estimate
<b>TOTAL</b>	<b>\$ 66,466,100.00</b>	<b>\$ 53,172,880.00</b>	<b>\$ 13,293,220.00</b>	SCTC Engineering
<u>Outside Plant Construction</u>	\$ 47,752,100.00	\$ 38,201,680.00	\$ 9,550,420.00	SCTC Engineering
<u>Electronics</u>	\$ 12,614,000.00	\$ 10,091,200.00	\$ 2,522,800.00	SCTC Engineering
<u>Engineering</u>	\$ 4,250,000.00	\$ 3,400,000.00	\$ 850,000.00	SCTC Engineering
<u>Administration</u>	\$ 1,850,000.00	\$ 1,480,000.00	\$ 370,000.00	SCTC Engineering

Product	Total	VATI	Non-VATI	Source of Estimate
<b>Outside Plant Construction</b> (Fiber Buried, Aerial Fiber, Drops, Cabinets, Make Readies, Right of way Clearing, & Pre-Fab shelters)	<b>\$ 47,752,100</b>	<b>\$ 38,201,680</b>	<b>\$ 9,550,420</b>	<b>SCTC Engineering</b>
<b>Electronics</b> (OLT's Chassis, Optics,BGP Routing Equipment, & Customer Premise Equipment)	<b>\$ 12,614,000</b>	<b>\$ 10,091,200</b>	<b>\$ 2,522,800</b>	<b>SCTC Engineering</b>
<b>Engineering</b> (Staking Services, Drafting Computerization, Construction Management, Plans & Specifications.	<b>\$ 4,250,000</b>	<b>\$ 3,400,000</b>	<b>\$ 850,000</b>	<b>SCTC Engineering</b>
<b>Administration</b> (Pre Application Expense)	<b>\$ 1,850,000</b>	<b>\$ 1,480,000</b>	<b>\$ 370,000</b>	<b>SCTC Engineering</b>
<b>Total - Lee &amp; Wise County VATI Project</b>	<b>\$ 66,466,100</b>	<b>\$ 53,172,880</b>	<b>\$ 13,293,220</b>	<b>SCTC Engineering</b>
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	

CDBG Derivation of Cost

	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	

CDBG Derivation of Cost

Date
8/10/2022
8/10/2022
8/10/2022
8/10/2022
8/10/2022

Date
<b>8/10/2022</b>

# CDBG Derivation of Cost


VATI #4 Norton PSFA Asset Category	2524 Asset Type	Description	Quantity	Unit	Unit Cost	Total Cost
Network and Access Equipment	Routing Equipment	BGP Routing Equipment	2	Unit	\$ 100,000.00	\$ 200,000.00
Network and Access Equipment	Access Equipment	OLT with Optics	1514	Unit	\$ 125.00	\$ 189,250.00
Network and Access Equipment	Access Equipment	OLT Chassis	1514	Unit	\$ 75.00	\$ 113,550.00
<b>Total Network and Access Equipment</b>						<b>\$ 502,800.00</b>
Outside Plant	Fiber Cable -Aerial	Fiber Cable Aerial	60	Route Miles	\$ 20,000.00	\$ 1,200,000.00
Outside Plant	Fiber -Buried Cable	Fiber -Buried Cable	2	Route Miles	\$ 50,000.00	\$ 100,000.00
Outside Plant	Drops	Customer Drops	1514	Unit	\$ 850.00	\$ 1,286,900.00
Outside Plant	Cabinets/Underground Vaults	Splitter Cabinets (PON)	9	Unit	\$ 10,000.00	\$ 90,000.00
Outside Plant	Make Readies KU/ODP, AEP	Pole Make Readies	1	Lump Sum	\$ 774,815.00	\$ 774,815.00
Outside Plant	Make Readies Railroad Crossings	Railroad Crossings	8	Lump Sum	\$ 15,000.00	\$ 120,000.00
Outside Plant	Others (Specify)	Fiber Optic Enclosures	757	Unit	\$ 600.00	\$ 454,200.00
Outside Plant	Others (Specify)	Fiber Optic Splicing HO-1	6000	Unit	\$ 30.00	\$ 180,000.00
<b>Total Outside Plant</b>						<b>\$ 4,205,915.00</b>
Buildings	Pre-Fab Huts	Pre Fab Telco Hut	1	Unit	\$ 100,000.00	\$ 100,000.00
<b>Total Buildings</b>						<b>\$ 100,000.00</b>
Customer Premise Equipment	Inside Wiring	Inside Wiring,Nid, Cables	1514	Unit	\$ 350.00	\$ 529,900.00
Customer Premise Equipment	Others (Specify)	ONT- Installations and Provisioning	1514	Unit	\$ 450.00	\$ 681,300.00
<b>Total Customer Premise Equipment</b>						<b>\$ 1,211,200.00</b>
<b>Total</b>						<b>\$ 6,019,915.00</b>

VATI #4

**Big Stone Gap PSFA**

<b>Asset Category</b>	<b>3544 Asset Type</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
Network and Acces Equipment	Routing Equipment	BGP Routing Equipment	2	Unit	\$ 100,000.00	\$ 200,000.00
Network and Acces Equipment	Access Equipment	OLT with Optics	2126	Unit	\$ 125.00	\$ 265,750.00
Network and Acces Equipment	Access Equipment	OLT Chassis	2126	Unit	\$ 75.00	\$ 159,450.00
<b>Total Network and Acces Equipment</b>						<b>\$ 625,200.00</b>
Outside Plant	Fiber Cable -Aerial	Fiber Cable Aerial	75	Route Miles	\$ 20,000.00	\$ 1,500,000.00
Outside Plant	Fiber -Buried Cable	Fiber -Buried Cable	2	Route Miles	\$ 50,000.00	\$ 100,000.00
Outside Plant	Drops	Customer Drops	2126	Unit	\$ 850.00	\$ 1,807,100.00
Outside Plant	Cabinets/Underground Vaults	Splitter Cabinets (PON)	8	Unit	\$ 10,000.00	\$ 80,000.00
Outside Plant	Make Readies KU/ODP, AEP	Pole Make Readies	1	Lump Sum	\$ 1,176,985.00	\$ 1,176,985.00
Outside Plant	Make Readies Railroad Crossings	Railroad Crossings	6	Lump Sum	\$ 15,000.00	\$ 90,000.00
Outside Plant	Others (Specify)	Fiber Optic Enclosures	1063	Unit	\$ 600.00	\$ 637,800.00
Outside Plant	Others (Specify)	Fiber Optic Splicing HO-1	8500	Unit	\$ 30.00	\$ 255,000.00
<b>Total Outside Plant</b>						<b>\$ 5,646,885.00</b>
Buildings	Pre-Fab Huts	Pre Fab Telco Hut	1	Unit	\$ 100,000.00	\$ 100,000.00
Buildings	Others (Specify)	Cabinets on Pre Fab Pads	2	Unit	\$ 25,000.00	\$ 50,000.00
<b>Total Buildings</b>						<b>\$ 150,000.00</b>
Customer Premise Equipment	Inside Wiring	Inside Wiring,Nid, Cables	2126	Unit	\$ 350.00	\$ 744,100.00
Customer Premise Equipment	Others (Specify)	ONT- Installations and Provisioning	2126	Unit	\$ 450.00	\$ 956,700.00
<b>Total Customer Premise Equipment</b>						<b>\$ 1,700,800.00</b>
<b>Total</b>						<b>\$ 8,122,885.00</b>

VATI #4

**Pennington Gap PSFA**

<b>Asset Category</b>	<b>1259 Asset Type</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
Network and Acces Equipment	Routing Equipment	BGP Routing Equipment	2	Unit	\$ 100,000.00	\$ 200,000.00
Network and Acces Equipment	Access Equipment	OLT with Optics	756	Unit	\$ 125.00	\$ 94,500.00
Network and Acces Equipment	Access Equipment	OLT Chassis	756	Unit	\$ 75.00	\$ 56,700.00
<b>Total Network and Acces Equipment</b>						<b>\$ 351,200.00</b>
Outside Plant	Fiber Cable -Aerial	Fiber Cable Aerial	25	Route Miles	\$ 20,000.00	\$ 500,000.00
Outside Plant	Fiber -Buried Cable	Fiber -Buried Cable	2	Route Miles	\$ 50,000.00	\$ 100,000.00
Outside Plant	Drops	Customer Drops	756	Unit	\$ 850.00	\$ 642,600.00
Outside Plant	Cabinets/Underground Vaults	Splitter Cabinets (PON)	5	Unit	\$ 10,000.00	\$ 50,000.00
Outside Plant	Make Readies KU/ODP, AEP	Pole Make Readies	1	Lump Sum	\$ 515,000.00	\$ 515,000.00
Outside Plant	Make Readies Railroad Crossings	Railroad Crossings	3	Lump Sum	\$ 15,000.00	\$ 45,000.00
Outside Plant	Others (Specify)	Fiber Optic Enclosures	378	Unit	\$ 600.00	\$ 226,800.00
Outside Plant	Others (Specify)	Fiber Optic Splicing HO-1	4000	Unit	\$ 30.00	\$ 120,000.00
<b>Total Outside Plant</b>						<b>\$ 2,199,400.00</b>
Buildings	Pre-Fab Huts	Pre Fab Telco Hut	1	Unit	\$ 100,000.00	\$ 100,000.00
<b>Total Buildings</b>						<b>\$ 100,000.00</b>
Customer Premise Equipment	Inside Wiring	Inside Wiring,Nid, Cables	756	Unit	\$ 350.00	\$ 264,600.00
Customer Premise Equipment	Others (Specify)	ONT- Installations and Provisioning	756	Unit	\$ 450.00	\$ 340,200.00
<b>Total Customer Premise Equipment</b>						<b>\$ 604,800.00</b>
<b>Total</b>						<b>\$ 3,255,400.00</b>

VATI #4

Jonesville PSFA

Asset Category

Network and Acces Equipment

Network and Acces Equipment

Network and Acces Equipment

**Total Network and Acces Equipment**

Outside Plant

**Total Outside Plant**

Buildings

**Total Buildings**

Customer Premise Equipment

Customer Premise Equipment

**Total Customer Premise Equipment****Total**

759

Asset Type

Routing Equipment

Access Equipment

Access Equipment

Fiber Cable -Aerial

Fiber -Buried Cable

Drops

Cabinets/Underground Vaults

Make Readies KU/ODP, AEP

Make Readies Railroad Crossings

Others (Specify)

Others (Specify)

Pre-Fab Huts

Inside Wiring

Others (Specify)

Description

BGP Routing Equipment

OLT with Optics

OLT Chassis

Fiber Cable Aerial

Fiber -Buried Cable

Customer Drops

Splitter Cabinets (PON)

Pole Make Readies

Railroad Crossings

Fiber Optic Enclosures

Fiber Optic Splicing HO-1

Pre Fab Telco Hut

Inside Wiring,Nid, Cables

ONT- Installations and Provisioning

Quantity Unit

2 Unit

456 Unit

456 Unit

15 Route Miles

2 Route Miles

456 Unit

3 Unit

1 Lump Sum

0 Lump Sum

228 Unit

3500 Unit

0 Unit

456 Unit

456 Unit

Unit Cost

\$ 100,000.00

\$ 125.00

\$ 75.00

\$ 20,000.00

\$ 50,000.00

\$ 850.00

\$ 10,000.00

\$ 250,000.00

\$ 15,000.00

\$ 600.00

\$ 30.00

\$ 100,000.00

\$ 350.00

\$ 450.00

Total Cost

\$ 200,000.00

\$ 57,000.00

\$ 34,200.00

**\$ 291,200.00**

\$ 300,000.00

\$ 100,000.00

\$ 387,600.00

\$ 30,000.00

\$ 250,000.00

\$ -

\$ 136,800.00

\$ 105,000.00

**\$ 1,309,400.00**

\$ -

**\$ -**

\$ 159,600.00

\$ 205,200.00

**\$ 364,800.00****\$ 1,965,400.00**

VATI #4

Coeburn PSFA

		1540				
Asset Category	Asset Type	Description	Quantity	Unit	Unit Cost	Total Cost
Network and Acces Equipment	Routing Equipment	BGP Routing Equipment	2	Unit	\$ 100,000.00	\$ 200,000.00
Network and Acces Equipment	Access Equipment	OLT with Optics	924	Unit	\$ 125.00	\$ 115,500.00
Network and Acces Equipment	Access Equipment	OLT Chassis	924	Unit	\$ 75.00	\$ 69,300.00
<b>Total Network and Acces Equipment</b>						<b>\$ 384,800.00</b>
Outside Plant	Fiber Cable -Aerial	Fiber Cable Aerial	35	Route Miles	\$ 20,000.00	\$ 700,000.00
Outside Plant	Fiber -Buried Cable	Fiber -Buried Cable	2	Route Miles	\$ 50,000.00	\$ 100,000.00
Outside Plant	Drops	Customer Drops	924	Unit	\$ 850.00	\$ 785,400.00
Outside Plant	Cabinets/Underground Vaults	Splitter Cabinets (PON)	6	Unit	\$ 10,000.00	\$ 60,000.00
Outside Plant	Make Readies KU/ODP, AEP	Pole Make Readies	1	Lump Sum	\$ 650,000.00	\$ 650,000.00
Outside Plant	Make Readies Railroad Crossings	Railroad Crossings	8	Lump Sum	\$ 15,000.00	\$ 120,000.00
Outside Plant	Others (Specify)	Fiber Optic Enclosures	462	Unit	\$ 600.00	\$ 277,200.00
Outside Plant	Others (Specify)	Fiber Optic Splicing HO-1	6160	Unit	\$ 30.00	\$ 184,800.00
<b>Total Outside Plant</b>						<b>\$ 2,877,400.00</b>
Buildings	Pre-Fab Huts	Pre Fab Telco Hut	1	Unit	\$ 100,000.00	\$ 100,000.00
<b>Total Buildings</b>						<b>\$ 100,000.00</b>
Customer Premise Equipment	Inside Wiring	Inside Wiring,Nid, Cables	924	Unit	\$ 350.00	\$ 323,400.00
Customer Premise Equipment	Others (Specify)	ONT- Installations and Provisioning	924	Unit	\$ 450.00	\$ 415,800.00
<b>Total Customer Premise Equipment</b>						<b>\$ 739,200.00</b>
<b>Total</b>						<b>\$ 4,101,400.00</b>

VATI #4

Pound PSFA

Asset Category	Asset Type	Description	Quantity	Unit	Unit Cost	Total Cost
Network and Acces Equipment	Routing Equipment	BGP Routing Equipment	2	Unit	\$ 100,000.00	\$ 200,000.00
Network and Acces Equipment	Access Equipment	OLT with Optics	381	Unit	\$ 125.00	\$ 47,625.00
Network and Acces Equipment	Access Equipment	OLT Chassis	381	Unit	\$ 75.00	\$ 28,575.00
<b>Total Network and Acces Equipment</b>						<b>\$ 276,200.00</b>
Outside Plant	Fiber Cable -Aerial	Fiber Cable Aerial	20	Route Miles	\$ 20,000.00	\$ 400,000.00
Outside Plant	Fiber -Buried Cable	Fiber -Buried Cable	2	Route Miles	\$ 50,000.00	\$ 100,000.00
Outside Plant	Drops	Customer Drops	381	Unit	\$ 850.00	\$ 323,850.00
Outside Plant	Cabinets/Underground Vaults	Splitter Cabinets (PON)	3	Unit	\$ 10,000.00	\$ 30,000.00
Outside Plant	Make Readies KU/ODP, AEP	Pole Make Readies	1	Lump Sum	\$ 425,000.00	\$ 425,000.00
Outside Plant	Make Readies Railroad Crossings	Railroad Crossings	0	Lump Sum	\$ 15,000.00	\$ -
Outside Plant	Others (Specify)	Fiber Optic Enclosures	191	Unit	\$ 600.00	\$ 114,600.00
Outside Plant	Others (Specify)	Fiber Optic Splicing HO-1	3000	Unit	\$ 30.00	\$ 90,000.00
<b>Total Outside Plant</b>						<b>\$ 1,483,450.00</b>
Buildings	Pre-Fab Huts	Pre Fab Telco Hut	1	Unit	\$ 100,000.00	\$ 100,000.00
<b>Total Buildings</b>						<b>\$ 100,000.00</b>
Customer Premise Equipment	Inside Wiring	Inside Wiring,Nid, Cables	381	Unit	\$ 350.00	\$ 133,350.00
Customer Premise Equipment	Others (Specify)	ONT- Installations and Provisioning	381	Unit	\$ 450.00	\$ 171,450.00
<b>Total Customer Premise Equipment</b>						<b>\$ 304,800.00</b>
<b>Total</b>						<b>\$ 2,164,450.00</b>

VATI #4

Wise PSFA

Asset Category

2007

Asset Type

Description

Quantity Unit

Unit Cost

Total Cost

Network and Acces Equipment	Routing Equipment	BGP Routing Equipment	2	Unit	\$ 100,000.00	\$ 200,000.00
Network and Acces Equipment	Access Equipment	OLT with Optics	1204	Unit	\$ 125.00	\$ 150,500.00
Network and Acces Equipment	Access Equipment	OLT Chassis	1204	Unit	\$ 75.00	\$ 90,300.00
<b>Total Network and Acces Equipment</b>						<b>\$ 440,800.00</b>
Outside Plant	Fiber Cable -Aerial	Fiber Cable Aerial	30	Route Miles	\$ 20,000.00	\$ 600,000.00
Outside Plant	Fiber -Buried Cable	Fiber -Buried Cable	2	Route Miles	\$ 50,000.00	\$ 100,000.00
Outside Plant	Drops	Customer Drops	1204	Unit	\$ 850.00	\$ 1,023,400.00
Outside Plant	Cabinets/Underground Vaults	Splitter Cabinets (PON)	7	Unit	\$ 10,000.00	\$ 70,000.00
Outside Plant	Make Readies KU/ODP, AEP	Pole Make Readies	1	Lump Sum	\$ 515,000.00	\$ 515,000.00
Outside Plant	Make Readies Railroad Crossings	Railroad Crossings	0	Lump Sum	\$ 15,000.00	\$ -
Outside Plant	Others (Specify)	Fiber Optic Enclosures	602	Unit	\$ 600.00	\$ 361,200.00
Outside Plant	Others (Specify)	Fiber Optic Splicing HO-1	5000	Unit	\$ 30.00	\$ 150,000.00
<b>Total Outside Plant</b>						<b>\$ 2,819,600.00</b>
Buildings	Pre-Fab Huts	Pre Fab Telco Hut	1	Unit	\$ 100,000.00	\$ 100,000.00
<b>Total Buildings</b>						<b>\$ 100,000.00</b>
Customer Premise Equipment	Inside Wiring	Inside Wiring,Nid, Cables	1204	Unit	\$ 350.00	\$ 421,400.00
Customer Premise Equipment	Others (Specify)	ONT- Installations and Provisioning	1204	Unit	\$ 450.00	\$ 541,800.00
<b>Total Customer Premise Equipment</b>						<b>\$ 963,200.00</b>
<b>Total</b>						<b>\$ 4,323,600.00</b>

VATI #4

**Appalachia PSFA**

Asset Category	950 Asset Type	Description	Quantity	Unit	Unit Cost	Total Cost
Network and Acces Equipment	Routing Equipment	BGP Routing Equipment	2	Unit	\$ 100,000.00	\$ 200,000.00
Network and Acces Equipment	Access Equipment	OLT with Optics	570	Unit	\$ 125.00	\$ 71,250.00
Network and Acces Equipment	Access Equipment	OLT Chassis	570	Unit	\$ 75.00	\$ 42,750.00
<b>Total Network and Acces Equipment</b>						<b>\$ 314,000.00</b>
Outside Plant	Fiber Cable -Aerial	Fiber Cable Aerial	20	Route Miles	\$ 20,000.00	\$ 400,000.00
Outside Plant	Fiber -Buried Cable	Fiber -Buried Cable	2	Route Miles	\$ 50,000.00	\$ 100,000.00
Outside Plant	Drops	Customer Drops	570	Unit	\$ 850.00	\$ 484,500.00
Outside Plant	Cabinets/Underground Vaults	Splitter Cabinets (PON)	4	Unit	\$ 10,000.00	\$ 40,000.00
Outside Plant	Make Readies KU/ODP, AEP	Pole Make Readies	1	Lump Sum	\$ 350,000.00	\$ 350,000.00
Outside Plant	Make Readies Railroad Crossings	Railroad Crossings	5	Lump Sum	\$ 15,000.00	\$ 75,000.00
Outside Plant	Others (Specify)	Fiber Optic Enclosures	285	Unit	\$ 600.00	\$ 171,000.00
Outside Plant	Others (Specify)	Fiber Optic Splicing HO-1	4000	Unit	\$ 30.00	\$ 120,000.00
<b>Total Outside Plant</b>						<b>\$ 1,740,500.00</b>
Buildings	Pre-Fab Huts	Pre Fab Telco Hut	1	Unit	\$ 100,000.00	\$ 100,000.00
<b>Total Buildings</b>						<b>\$ 100,000.00</b>
Customer Premise Equipment	Inside Wiring	Inside Wiring,Nid, Cables	570	Unit	\$ 350.00	\$ 199,500.00
Customer Premise Equipment	Others (Specify)	ONT- Installations and Provisioning	570	Unit	\$ 450.00	\$ 256,500.00
<b>Total Customer Premise Equipment</b>						<b>\$ 456,000.00</b>
<b>Total</b>						<b>\$ 2,610,500.00</b>

VATI #4

**Rural Wise County Non-Funded****Asset Category****4805****Asset Type****Description****Quantity Unit****Unit Cost****Total Cost**

Network and Acces Equipment	Routing Equipment	BGP Routing Equipment	2 Unit	\$ 100,000.00	\$ 200,000.00
Network and Acces Equipment	Access Equipment	OLT with Optics	2883 Unit	\$ 125.00	\$ 360,375.00
Network and Acces Equipment	Access Equipment	OLT Chassis	2883 Unit	\$ 75.00	\$ 216,225.00

**Total Network and Acces Equipment****\$ 776,600.00**

Outside Plant	Fiber Cable -Aerial	Fiber Cable Aerial	600 Route Miles	\$ 20,000.00	\$ 12,000,000.00
Outside Plant	Fiber -Buried Cable	Fiber -Buried Cable	4 Route Miles	\$ 50,000.00	\$ 200,000.00
Outside Plant	Drops	Customer Drops	2883 Unit	\$ 850.00	\$ 2,450,550.00
Outside Plant	Cabinets/Underground Vaults	Splitter Cabinets (PON)	20 Unit	\$ 10,000.00	\$ 200,000.00
Outside Plant	Make Readies KU/ODP, AEP	Pole Make Readies	1 Lump Sum	\$ 7,200,000.00	\$ 7,200,000.00
Outside Plant	Make Readies Railroad Crossings	Railroad Crossings	2 Lump Sum	\$ 15,000.00	\$ 30,000.00
Outside Plant	Others (Specify)	Fiber Optic Enclosures	1440 Unit	\$ 600.00	\$ 864,000.00
Outside Plant	Others (Specify)	Fiber Optic Splicing HO-1	20000 Unit	\$ 30.00	\$ 600,000.00

**Total Outside Plant****\$ 23,544,550.00**

Buildings	Pre-Fab Huts	Pre Fab Telco Hut	3 Unit	\$ 100,000.00	\$ 300,000.00
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**Total Buildings****\$ 300,000.00**

Customer Premise Equipment	Inside Wiring	Inside Wiring,Nid, Cables	2883 Unit	\$ 350.00	\$ 1,009,050.00
Customer Premise Equipment	Others (Specify)	ONT- Installations and Provisioning	2883 Unit	\$ 450.00	\$ 1,297,350.00

**Total Customer Premise Equipment****\$ 2,306,400.00**

<b>Total</b>					<b>\$ 26,927,550.00</b>
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TOTALS Page

VATI#4 Towns	Passings	Passings @60%	Reconnect Passings	Alternate VATI#
Norton PSFA	2524	1514.4	2034	490
Big Stone Gap PSFA	3544	2126.4	3239	305
Pennington Gap PSFA	1259	755.4	1333	-74
Jonesville PSFA	759	455.4	0	759
Coeburn PSFA	1540	924	1735	-195
Pound PSFA	635	381	0	635
Wise PSFA	2007	1204.2	0	2007
Appalachia PSFA	950	570	0	950
Rural Wise County Non Funded	4805	2883		

8341. In original Reconnect Grant Application

Total Passings in Vati #4 Application	18023	10813.8	8341	0	4877
Total Passings not funded in Wise	0			0	

VATI #4

Asset Category	Asset Type
Network and Access Equipment	Routing Equipment
Network and Access Equipment	Access Equipment
Network and Access Equipment	Access Equipment

Description	Quantity	Unit	Unit Cost	Total Cost
BGP Routing Equipment	18	Unit	\$ 100,000.00	\$ 1,800,000.00
OLT with Optics	10814	Unit	\$ 125.00	\$ 1,351,750.00
OLT Chassis	10814	Unit	\$ 75.00	\$ 811,050.00

4805 Alternate VATI #5 if we get all 13,218 in VATI#4 hinged on not getting reconnect  
This would alternate VATI #4, if we get Reconnect Grant  
Total Addons to Williams Reconnect

Total Network and Access Equipment

Outside Plant	Fiber Cable -Aerial	Fiber Cable Aerial	880	Route Miles	\$ 20,000.00	\$ 17,600,000.00
Outside Plant	Fiber -Buried Cable	Fiber -Buried Cable	20	Route Miles	\$ 50,000.00	\$ 1,000,000.00
Outside Plant	Drops	Customer Drops	10814	Unit	\$ 850.00	\$ 9,191,900.00
Outside Plant	Cabinets/Underground Vaults	Splitter Cabinets (PON)	65	Unit	\$ 10,000.00	\$ 650,000.00
Outside Plant	Make Readies KU/ODP, AEP	Pole Make Readies	1	Lump Sum	\$ 11,856,800.00	\$ 11,856,800.00
Outside Plant	Right of way Clearing	Right of way Clearing	250	Route Miles	\$ 3,500.00	\$ 875,000.00
Outside Plant	Make Readies Railroad Crossings	Railroad Crossings	32	Lump Sum	\$ 15,000.00	\$ 480,000.00
Outside Plant	Others (Specify)	Fiber Optic Enclosures	5406	Unit	\$ 600.00	\$ 3,243,600.00
Outside Plant	Others (Specify)	Fiber Optic Splicing HO-1	60160	Unit	\$ 30.00	\$ 1,804,800.00

Total Outside Plant

Buildings	Pre-Fab Huts	Pre Fab Telco Hut	10	Unit	\$ 100,000.00	\$ 1,000,000.00
Buildings	Others (Specify)	Cabinets on Pre Fab Pads	2	Unit	\$ 25,000.00	\$ 50,000.00

Total Buildings

Customer Premise Equipment	Inside Wiring	Inside Wiring,Nid, Cables	10814	Unit	\$ 350.00	\$ 3,784,900.00
Customer Premise Equipment	Others (Specify)	ONT- Installations and Provisioning	10814	Unit	\$ 450.00	\$ 4,866,300.00

Total Customer Premise Equipment

Pre Application Expenses	Pre Application Expenses		1	Lump Sum	\$ 50,000.00	\$ 50,000.00
Professional Services	Engineering Services	Staking Services	875	Lump Sum	\$ 1,000.00	\$ 875,000.00
Professional Services	Engineering Services	Drafting Computerization	875	Lump Sum	\$ 1,000.00	\$ 875,000.00
Professional Services	Engineering Services	Construction Management	24000	Lump Sum	\$ 75.00	\$ 1,800,000.00
Professional Services	Engineering Services	Plans & Specifications	50	Lump Sum	\$ 25,000.00	\$ 1,250,000.00
Professional Services	Engineering Services		50	Lump Sum	\$ 25,000.00	\$ 1,250,000.00

Total Professional Services

Total						\$ 66,466,100.00
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Price Per Sub @60% Take Rate \$ 3,687.85

\*Note - Cost Estimates are based on current VATI and RUS Projects\*

H. MORGAN GRIFFITH  
9TH DISTRICT, VIRGINIA

COMMITTEE ON  
ENERGY AND COMMERCE  
SUBCOMMITTEES:

ENERGY

HEALTH

OVERSIGHT AND INVESTIGATIONS  
VICE CHAIR

[www.morgangriffith.house.gov](http://www.morgangriffith.house.gov)



Congress of the United States  
House of Representatives  
Washington, DC 20515-4609

2202 RAYBURN HOUSE OFFICE BUILDING  
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(202) 225-3861 PHONE  
(202) 225-0076 FAX

323 WEST MAIN STREET  
ABINGDON, VA 24210  
(276) 525-1405 PHONE  
(276) 525-1444 FAX

17 WEST MAIN STREET  
CHRISTIANSBURG, VA 24073  
(540) 381-5671 PHONE  
(540) 381-5675 FAX

August 22, 2022

Dr. Tamarah Holmes  
Director, DHCD Office of Broadband  
Virginia Department of Housing and Community Development  
600 East Main Street, Suite 300  
Richmond, VA 23219-2430

Dear Dr. Holmes,

I am writing to express my interest in the grant application for the Virginia Telecommunications Initiative (VATI) through the Virginia Department of Housing and Community Development submitted by LENOWISCO Planning District Commission in Duffield VA.

In preparing this grant application, LENOWISCO Planning District Commission's cited many factors contributing to the need for this funding in my congressional district. I ask that you give this application your most thoughtful and serious consideration. If there is any additional information that my office can provide, please contact Cody Mumpower at my Abingdon office at (276) 525-1405.

I would very much appreciate it if you would acknowledge receipt of this letter and keep me apprised of your action regarding this application when review is complete. You should respond to LENOWISCO Planning District Commission's in care of my Abingdon office at (276) 525-1405 by phone or by mail to 323 W. Main Street, Abingdon, Virginia 24210.

Thank you for your time and attention to this matter. I look forward to hearing from you. I remain

Sincerely yours,

H. MORGAN GRIFFITH  
Member of Congress



COMMONWEALTH OF VIRGINIA  
HOUSE OF DELEGATES  
RICHMOND

TERRY G. KILGORE  
MAJORITY LEADER

POST OFFICE 669  
GATE CITY, VIRGINIA 24251

FIRST DISTRICT

COMMITTEE ASSIGNMENTS:  
COMMERCE AND ENERGY (VICE-CHAIR)  
COURTS OF JUSTICE  
RULES

August 22, 2022

Ms. Tamarah Holmes, Ph.D  
Director, Office of Broadband  
Virginia Department of Housing and Community Development  
600 E Main Street, Suite 300  
Richmond, VA 23219

**RE: LENOWISCO District-Wide Broadband Project**

Dear Dr. Holmes:

I am writing in support of the LENOWISCO Planning District Commission's application for a Virginia Telecommunications Initiative (VATI) grant through the Virginia Department of Housing and Community Development (DHCD). This District-Wide initiative, in cooperation with Scott County Telephone Cooperative (SCTC) will generate an immediate and self-sustaining benefit to southwest Virginia. I would like to offer my strong support of the project.

The goal is to construct a Fiber-to-the-Premises project that will provide a robust, reliable and affordable broadband G-PON connection to support up to ten (10) gigabit of bandwidth to each customer premise. If approved, the availability of broadband services will enhance Lee, Wise and Scott County's ability to operate more efficiently and attract new businesses. This project will promote economic development, improve the educational opportunities for all students, enhance telemedicine services, as well as improve the quality of life for each individual in the areas to be served. This VATI grant will be vital to the Region and will pass 18,023 total locations with an investment of \$66,466,100.00.

I feel all partners involved are dedicated to meet the goals of the VATI Program in the vital deployment of broadband. I strongly support the application of the LENOWISCO Planning District and urge favorable consideration by the DHCD. Please feel free to contact me anytime with questions.

Thank you for your time and consideration of this much needed project.

Sincerely,

Delegate Terry G. Kilgore  
House District 1

# SENATE OF VIRGINIA



TODD E. PILLION

40<sup>TH</sup> SENATORIAL DISTRICT

ALL OF GRAYSON, LEE, SCOTT, AND WASHINGTON  
COUNTIES; ALL OF THE CITY OF BRISTOL; AND PART  
OF SMYTH, WISE, AND WYTHE COUNTIES

851 FRENCH MOORE JR. BOULEVARD, SUITE 178  
ABINGDON, VIRGINIA 24210  
(276) 220-1209

COMMITTEE ASSIGNMENTS:  
EDUCATION AND HEALTH  
GENERAL LAWS AND TECHNOLOGY  
REHABILITATION AND SOCIAL SERVICES  
TRANSPORTATION

August 22, 2022

Ms. Tamarah Holmes, Ph.D  
Director, Office of Broadband  
Virginia Department of Housing and Community Development  
600 E Main Street, Suite 300  
Richmond, VA 23219

Dear Dr. Holmes:

I am writing in support of the LENOWISCO Planning District Commission's application for a Virginia Telecommunications Initiative (VATI) grant through the Virginia Department of Housing and Community Development (DHCD). This District-Wide initiative, in cooperation with Scott County Telephone Cooperative (SCTC) will generate an immediate and self-sustaining benefit to southwest Virginia. I would like to offer my strong support of the project.

The goal is to construct a Fiber-to-the-Premises project that will provide a robust, reliable and affordable broadband G-PON connection to support up to ten (10) gigabit of bandwidth to each customer premise. If approved, the availability of broadband services will enhance Lee, Wise and Scott County's ability to operate more efficiently and attract new businesses. This project will promote economic development, improve the educational opportunities for all students, enhance telemedicine services, as well as improve the quality of life for each individual in the areas to be served. This VATI grant will be vital to the Region and will pass 18,023 total locations with an investment of \$66,466,100.00.

I feel all partners involved are dedicated to meet the goals of the VATI Program in the vital deployment of broadband. I strongly support the application of the LENOWISCO Planning District and urge favorable consideration by the DHCD.

Thank you for your time and consideration of this much needed project.

Sincerely,

A handwritten signature in red ink, appearing to read "T. Pillion".

Todd Pillion



**Office of County Administrator**

TELEPHONE 276-328-2321  
FAX 276-328-9780

COURTHOUSE

**WISE, VIRGINIA 24293**

P.O. BOX 570  
206 E. MAIN STREET

August 22, 2022

Ms. Tamarah Holmes, Ph.D.  
Director, Office of Broadband  
Virginia Department of Housing and Community Development  
600 E Main Street, Suite 300  
Richmond, VA 23219

RE: LENOWISCO District-Wide Broadband Project

Dear Dr. Holmes:

I am writing in support of the LENOWISCO Planning District Commission's application for a Virginia Telecommunications Initiative (VATI) grant through the Virginia Department of Housing and Community Development (DHCD). This District-Wide initiative, in cooperation with Scott County Telephone Cooperative (SCTC) will generate an immediate and self-sustaining benefit to southwest Virginia. I would like to offer my strong support of the project.

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Thank you for your time and consideration of this much needed project.

Sincerely,

A handwritten signature in black ink, appearing to read 'Michael W. Hatfield', is written over a horizontal line.

Michael W. Hatfield  
County Administrator



Wise County Industrial Development Authority

P.O. Box 570  
Wise, Virginia 24293  
Telephone: (276) 328-2321  
Fax: (276) 328-9780



August 23, 2022

Ms. Tamarah Holmes, Ph.D  
Director, Office of Broadband  
Virginia Department of Housing and Community Development  
600 E Main Street, Suite 300  
Richmond, VA 23219

RE: LENOWISCO District-Wide Broadband Project

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I am writing in support of the LENOWISCO Planning District Commission's application for a Virginia Telecommunications Initiative (VATI) grant through the Virginia Department of Housing and Community Development (DHCD). This District-Wide initiative, in cooperation with Scott County Telephone Cooperative (SCTC) will generate an immediate and self-sustaining benefit to southwest Virginia. I would like to offer my strong support of the project.

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I feel all partners involved are dedicated to meet the goals of the VATI Program in the vital deployment of broadband. I strongly support the application of the LENOWISCO Planning District and urge favorable consideration by the DHCD. Please feel free to contact me anytime with questions.

Thank you for your time and consideration of this much needed project.

Sincerely,

Brian D. Falin, Executive Director  
Industrial Development Authority of Wise County



## Lee County Board of Supervisors

LEE COUNTY  
P.O. Box 367  
Jonesville, Virginia 24263-0367

COUNTY ADMINISTRATOR  
Telephone 276-346-7714  
Fax 276-346-7712  
www.leecova.org

August 22, 2022

Ms. Tamarah Holmes, Ph.D  
Director, Office of Broadband  
Virginia Department of Housing and Community Development  
600 E Main Street, Suite 300  
Richmond, VA 23219

RE: LENOWISCO District-Wide Broadband Project

Dear Dr. Holmes:

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I feel all partners involved are dedicated to meet the goals of the VATI Program in the vital deployment of broadband. I strongly support the application of the LENOWISCO Planning District and urge favorable consideration by the DHCD. Please feel free to contact me anytime with questions.

Thank you for your time and consideration of this much needed project.

Sincerely,

D. Dane Poe  
County Administrator

# LEE COUNTY ECONOMIC DEVELOPMENT AUTHORITY

P.O. Box 912  
Jonesville, VA 24263



Telephone: 276-346-7766  
Fax: 276-346-4016  
Richard Johnson II ● Director

August 22, 2022

Ms. Tamarah Holmes, Ph.D  
Director, Office of Broadband  
Virginia Department of Housing and Community Development  
600 E Main Street, Suite 300  
Richmond, VA 23219

RE: LENOWISCO District-Wide Broadband Project

Dear Dr. Holmes:

I am writing in support of the LENOWISCO Planning District Commission's application for a Virginia Telecommunications Initiative (VATI) grant through the Virginia Department of Housing and Community Development (DHCD). This District-Wide initiative, in cooperation with Scott County Telephone Cooperative (SCTC) will generate an immediate and self-sustaining benefit to Southwest Virginia. I would like to offer my strong support of the project. The goal is to construct a Fiber-to-the-Premises project that will provide a robust, reliable and affordable broadband G-PON connection to support up to ten (10) gigabit of bandwidth to each customer premise. If approved, the availability of broadband services will enhance Lee, Wise and Scott County's ability to operate more efficiently and attract new businesses. There has been an extreme shift in the local economies of the region in recent years as we have seen the decline of mining operations as well as commercial farming operations. The expansion of reliable broadband connections will ultimately enable the region to sustain a much more diverse workforce and enable those that wish to work from the comfort of their home the opportunity to do so. This project will promote economic development, improve the educational opportunities for all students, enhance telemedicine services, as well as improve the quality of life for each

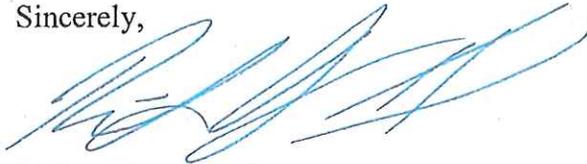
# LEE COUNTY ECONOMIC DEVELOPMENT AUTHORITY

individual in the areas to be served. This VATI grant will be vital to the region and will pass 18,023 total locations with an investment of \$66,466,100.00.

I feel all partners involved are dedicated to meet the goals of the VATI program in the vital deployment of broadband. I strongly support the application of the LENOWISCO Planning District and urge favorable consideration by DHCD. Please feel free to contact me or any member of our Authority if you have any questions.

Thank you for your time and consideration of this much needed project.

Sincerely,



Richard Johnson II

Executive Director

# Form 477 Filing Summary

<b>FRN:</b> 0002069862	<b>Data as of:</b> Dec 31, 2021	<b>Operations:</b> ILEC	<b>Submission Status:</b> Revised - Submitted	<b>Last Updated:</b> Jun 1, 2022 02:52 PM
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## Filer Identification

Section	Field	Response
<b>Filer Information</b>	Company Name	Scott County Telephone Cooperative
	Holding Company Name	Scott County Telephone Cooperative
	Filing Type	ILEC
	SAC ID	190248
	499 ID	804426
<b>Data Contact Information</b>	Data Contact Name	Roger Fraysler
	Data Contact Phone Number	(276) 452-7364
	Data Contact E-mail	rfraysier@sctc.org
<b>Emergency Operations Contact Information</b>	Emergency Operations Name	Roger Fraysler
	Emergency Operations Phone Number	(276) 452-7364
	Emergency Operations E-mail	rfraysier@sctc.org
<b>Certifying Official Contact Information</b>	Certifying Official Name	Roger Fraysier
	Certifying Official Phone Number	(276) 452-7364
	Certifying Official E-mail	rfraysier@sctc.org

## Data Submitted

Form Section	File Name	Date & Time	Number of Rows
Fixed Broadband Deployment	SCTC FBD (2020).csv	Jun 1, 2022 02:42 PM	1,071
Fixed Broadband Subscription	SCTC FBS 12.31.21Revised.csv	Jun 1, 2022 02:43 PM	151
Fixed Voice Subscription	SCTC FVS 12.31.21.csv	Jun 1, 2022 02:42 PM	18

## Fixed Broadband Deployment

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

State	DBA Name	Technology	Blocks
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State	DBA Name	Technology	Blocks
Tennessee	Scott County Telephone Cooperative, Inc.	Asymmetric xDSL	1
		Optical Carrier/Fiber to the End User	29
Virginia	Scott County Telephone Cooperative, Inc.	Asymmetric xDSL	513
		Optical Carrier/Fiber to the End User	528
<b>Total</b>			<b>1,071</b>

## Fixed Broadband Subscription

### Fixed Broadband Subscriptions by State, Technology and End User Type

State	Technology	Subscriptions			Total
		Census Tracts	Consumer	Business/Govt.	
Tennessee	Optical Carrier/Fiber to the End User	34	679	17	696
Virginia	Asymmetric xDSL	9	2,051	88	2,139
	Optical Carrier/Fiber to the End User	108	5,094	321	5,415
<b>Total</b>		<b>151</b>	<b>7,824</b>	<b>426</b>	<b>8,250</b>

### Fixed Broadband Subscriptions by Bandwidths and End User Type

Downstream Bandwidth (In Mbps)	Upstream Bandwidth (In Mbps)	Consumer	Business/Govt.	Total
3.000	0.768	2,006	118	2,124
5.000	1.000	1,221	74	1,295
10.000	2.000	29	39	68
10.000	5.000	1	1	2
10.000	10.000	0	1	1
25.000	5.000	13	115	128
25.000	12.000	3,277	12	3,289
25.000	25.000	0	1	1
50.000	10.000	3	30	33
50.000	25.000	283	0	283
100.000	20.000	3	16	19
100.000	50.000	241	3	244
100.000	100.000	162	11	173
200.000	100.000	230	1	231
200.000	200.000	0	1	1

Downstream Bandwidth (In Mbps)	Upstream Bandwidth (In Mbps)	Consumer	Business/Govt.	Total
300.000	300.000	69	0	69
500.000	200.000	47	1	48
500.000	500.000	126	0	126
1,000.000	500.000	100	2	102
1,000.000	1,000.000	13	0	13
<b>Total</b>		<b>7,824</b>	<b>426</b>	<b>8,250</b>

Fixed Broadband Subscriptions by Technology, Bandwidths and End User Type

Technology	Downstream Bandwidth (In Mbps)	Upstream Bandwidth (In Mbps)	Consumer	Business/Govt.	Total
Asymmetric xDSL	3.000	0.768	1,161	57	1,218
	5.000	1.000	890	31	921
Optical Carrier/Fiber to the End User	3.000	0.768	845	61	906
	5.000	1.000	331	43	374
	10.000	2.000	29	39	68
	10.000	5.000	1	1	2
	10.000	10.000	0	1	1
	25.000	5.000	13	115	128
	25.000	12.000	3,277	12	3,289
	25.000	25.000	0	1	1
	50.000	10.000	3	30	33
	50.000	25.000	283	0	283
	100.000	20.000	3	16	19
	100.000	50.000	241	3	244
	100.000	100.000	162	11	173
	200.000	100.000	230	1	231
	200.000	200.000	0	1	1
	300.000	300.000	69	0	69
500.000	200.000	47	1	48	
500.000	500.000	126	0	126	
1,000.000	500.000	100	2	102	
1,000.000	1,000.000	13	0	13	
<b>Total</b>			<b>7,824</b>	<b>426</b>	<b>8,250</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
Tennessee	57	57	0	0
Virginia	3,924	3,426	23	11
<b>Total</b>	<b>3,981</b>	<b>3,483</b>	<b>23</b>	<b>11</b>

## Fixed Voice Subscription (VGE Lines)

### VGE Lines Provided to Unaffiliated Providers by State

State	Wholesale	UNE-L
Tennessee	0	0
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		Business/Govt.		
				& No PIC	& PIC	& No PIC	& PIC	
Tennessee	57	42	15	9	48	0	0	
Virginia	3,924	2,110	1,814	2,997	429	241	257	
<b>Total</b>	<b>3,981</b>	<b>2,152</b>	<b>1,829</b>	<b>3,006</b>	<b>477</b>	<b>241</b>	<b>257</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	
Tennessee	57	57	0	0	51	0	0	6	
Virginia	3,924	3,924	0	0	1,130	0	0	2,794	
<b>Total</b>	<b>3,981</b>	<b>3,981</b>	<b>0</b>	<b>0</b>	<b>1,181</b>	<b>0</b>	<b>0</b>	<b>2,800</b>	

## Fixed Voice Subscription (iVoIP)

### Over-the-Top VoIP Subscriptions by State and End User Type

State	Total	Consumer	Business/Govt.
Virginia	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>

All Other VoIP Subscriptions by State, End User Type, Bundle and Last-Mile Medium

State	Total	by End User Type		by Bundle		by Last-Mile Medium			
		Consumer	Business/Govt.	Sold w/ Internet	Sold w/o Internet	FTTP	Coax	Fixed Wireless	Copper
Virginia	23	11	12	23	0	23	0	0	0
<b>Total</b>	<b>23</b>	<b>11</b>	<b>12</b>	<b>23</b>	<b>0</b>	<b>23</b>	<b>0</b>	<b>0</b>	<b>0</b>

Reminder: Use 2010 Census geographies for data as of June 30, 2021 and before. Use 2020 Census geographies for data as of December 31, 2021 and after.

For help or assistance, please contact (877) 480-3201 or (717) 338-2834 (TTY) or you may submit an [online e-support ticket](#).

Federal Communications Commission  
 45 L St NE, Washington, DC 20002  
 Phone: [1-888-225-5322](tel:1-888-225-5322)  
 TTY: [1-888-835-5322](tel:1-888-835-5322)  
 Videophone: [1-844-432-2275](tel:1-844-432-2275)  
 Fax: [1-866-418-0232](tel:1-866-418-0232)  
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# Form 477 Filing Summary

**FRN:**

0002069862

**Data as of:**

Jun 30, 2021

**Operations:**

ILEC

**Submission Status:**

Revised - Submitted

**Last Updated:**

Nov 4, 2021 11:22 AM

## Filer Identification

Section	Field	Response
<b>Filer Information</b>	Company Name	Scott County Telephone Cooperative
	Holding Company Name	Scott County Telephone Cooperative
	Filing Type	ILEC
	SAC ID	190248
	499 ID	804426
<b>Data Contact Information</b>	Data Contact Name	Roger Fraysier
	Data Contact Phone Number	(276) 452-7364
	Data Contact E-mail	rfraysier@sctc.org
<b>Emergency Operations Contact Information</b>	Emergency Operations Name	Roger Fraysier
	Emergency Operations Phone Number	(276) 452-7364
	Emergency Operations E-mail	rfraysier@sctc.org
<b>Certifying Official Contact Information</b>	Certifying Official Name	Roger Fraysier
	Certifying Official Phone Number	(276) 452-7364
	Certifying Official E-mail	rfraysier@sctc.org

## Data Submitted

Form Section	File Name	Date & Time	Number of Rows
Fixed Broadband Deployment	SCTC FBD.csv	Nov 4, 2021 11:09 AM	1,868
Fixed Broadband Subscription	SCTC FBS Revised.csv	Nov 4, 2021 11:09 AM	72
Fixed Voice Subscription	SCTC FVS.csv	Nov 4, 2021 11:09 AM	16

## Fixed Broadband Deployment

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

State	DBA Name	Technology	Blocks
Tennessee	Scott County Telephone Cooperative, Inc.	Asymmetric xDSL	1
		Optical Carrier/Fiber to the End User	34
Virginia	Scott County Telephone Cooperative, Inc.	Asymmetric xDSL	1,022
		Optical Carrier/Fiber to the End User	811
<b>Total</b>			<b>1,868</b>

## Fixed Broadband Subscription

### Fixed Broadband Subscriptions by State, Technology and End User Type

State	Technology	Census Tracts	Subscriptions			Total
			Consumer	Business/Govt.		
Tennessee	Optical Carrier/Fiber to the End User	6	44	0		44
Virginia	Asymmetric xDSL	10	2,377	100		2,477
	Optical Carrier/Fiber to the End User	56	2,587	195		2,782
<b>Total</b>		<b>72</b>	<b>5,008</b>	<b>295</b>		<b>5,303</b>

### Fixed Broadband Subscriptions by Bandwidths and End User Type

Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
3.000	0.768	1,744	94	1,838

Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
5.000	1.000	1,144	56	1,200
10.000	2.000	41	35	76
25.000	5.000	9	75	84
25.000	12.000	1,754	5	1,759
25.000	25.000	0	1	1
50.000	10.000	2	15	17
50.000	25.000	88	0	88
100.000	20.000	3	11	14
100.000	50.000	83	1	84
100.000	100.000	2	0	2
200.000	100.000	112	1	113
200.000	200.000	0	1	1
500.000	200.000	11	0	11
1,000.000	500.000	15	0	15
<b>Total</b>		<b>5,008</b>	<b>295</b>	<b>5,303</b>

### Fixed Broadband Subscriptions by Technology, Bandwidths and End User Type

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
Asymmetric xDSL	3.000	0.768	1,363	63	1,426
	5.000	1.000	1,014	37	1,051
Optical Carrier/Fiber to the End User	3.000	0.768	381	31	412
	5.000	1.000	130	19	149
	10.000	2.000	41	35	76
	25.000	5.000	9	75	84
	25.000	12.000	1,754	5	1,759
	25.000	25.000	0	1	1
	50.000	10.000	2	15	17
	50.000	25.000	88	0	88

Technology	Downstream Bandwidth (in Mbps)	Upstream Bandwidth (in Mbps)	Consumer	Business/Govt.	Total
	100.000	20.000	3	11	14
	100.000	50.000	83	1	84
	100.000	100.000	2	0	2
	200.000	100.000	112	1	113
	200.000	200.000	0	1	1
	500.000	200.000	11	0	11
	1,000.000	500.000	15	0	15
<b>Total</b>			<b>5,008</b>	<b>295</b>	<b>5,303</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
Tennessee	59	59	0	0
Virginia	4,027	3,521	2	0
<b>Total</b>	<b>4,086</b>	<b>3,580</b>	<b>2</b>	<b>0</b>

### Fixed Voice Subscription (VGE Lines)

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

State	Wholesale	UNE-L
Tennessee	0	0
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	Business/Govt.

State	Total	by Bundle		Product Type		PIC	
		Sold w/ Internet	Sold w/o Internet	Consumer	Business/Govt.	& No PIC	& PIC
Tennessee	59	43	16	50	0		
Virginia	4,027	2,165	1,862	3,080	441	245	261
<b>Total</b>	<b>4,086</b>	<b>2,208</b>	<b>1,878</b>	<b>3,089</b>	<b>491</b>	<b>245</b>	<b>261</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	
Tennessee	59	59	0	0	53	0	0	6	
Virginia	4,027	4,027	0	0	1,159	0	0	2,868	
<b>Total</b>	<b>4,086</b>	<b>4,086</b>	<b>0</b>	<b>0</b>	<b>1,212</b>	<b>0</b>	<b>0</b>	<b>2,874</b>	

Fixed Voice Subscription (iVoIP)

Over-the-Top VoIP Subscriptions by State and End User Type

State	Total	Consumer	Business/Govt.
Virginia	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>

All Other VoIP Subscriptions by State, End User Type, Bundle and Last-Mile Medium

State	Total	by End User Type		by Bundle		by Last-Mile Medium			
		Consumer	Business/Govt.	Sold w/ Internet	Sold w/o Internet	FTTP	Coax	Fixed Wireless	Copper
Virginia	2	0	2	2	0	2	0	0	0
<b>Total</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>

Reminder:

Use 2010 Census geographies for data as of June 30, 2021 and before.  
 Use 2020 Census geographies for data as of December 31, 2021.

For help or assistance, please contact (877) 480-3201 or (717) 338-2834 (TTY) or you may submit an [online e-support ticket](#).

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**SCTC & Subsidiary (STE) Pole Attachment Agreements**

1. Appalachian Power Company
2. Old Dominion Power

**SCTC/PVEC Agreement**

**AGREEMENT**

**COVERING THE JOINT USE OF POLES**

**BETWEEN**

**APPALACHIAN POWER COMPANY**

**AND**

**SCOTT COUNTY TELEPHONE COOPERATIVE**

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AGREEMENT  
COVERING THE JOINT USE OF POLES

THIS AGREEMENT, effective September 2, 1989, is made by and between APPALACHIAN POWER COMPANY, a corporation of the State of VIRGINIA (hereinafter called the "Electric Company") and the SCOTT COUNTY TELEPHONE COOPERATIVE, a corporation of the State of VIRGINIA (herein called the "Telephone Company").

WITNESSETH

WHEREAS, the Electric Company and the Telephone Company desire to promote the joint use of their respective poles when and where such joint use shall be mutually advantageous,

NOW, THEREFORE, in consideration of the promises and the mutual covenants herein contained, the parties hereto, for themselves, their successors and assigns, do hereby covenant and agree as follows:

ARTICLE 1

SCOPE OF AGREEMENT

1.01 This Agreement shall be in effect in such portions of the State of Virginia in which both parties to this Agreement now or hereafter operate and shall cover all poles of each of the parties now existing or hereafter erected or acquired in the above territory when said poles are brought hereunder in accordance with this Agreement.

1.02 Each party reserves the right to exclude from joint use:

- a. Poles which in Owner's judgment are necessary for its own sole use; or
- b. Poles which carry, or are intended by Owner to carry, circuits of such a character that in Owner's judgment the proper rendering of its service now or in the future makes joint use of such poles undesirable.

## ARTICLE 2

### EXPLANATION OF CERTAIN TERMS

For the purpose of this Agreement, certain terms shall have the meanings given in this article.

2.01 JOINT USE is the simultaneous use of any pole for the attachment of both parties.

2.02 NORMAL SPACE ALLOCATION on a joint pole is the following described basic space for the exclusive use of each party, respectively, with the associated mutual vertical clearance space for maintenance of separations, in accordance with the specifications referred to in Article 3.

- a. For the Electric Company, the uppermost seven (7) feet, measured from top of pole.
- b. For the Telephone Company, the lowest three (3) feet, measured upward from a point of attachment on the pole which will obtain basic clearances to

ground as required by the specifications referred to in Article 3 and permit practical horizontal grading of facilities.

- c. Mutual vertical clearance space on the pole between each company's attachments shall never be less than that which will obtain minimum separations as required by the specifications referred to in Article 3.

These specifications referred to in Article 3 do not preclude certain attachments of one party being located in and extending vertically through space reserved for the other party.

2.03 OWNER - The party owning the pole.

2.04 LICENSEE - The party having the right under this Agreement to make attachments to Owner's poles.

2.05 APPLICANT - The party making application to the Owner for permission to become a Licensee on Owner's poles.

2.06 SUBTRANSMISSION - Voltage below 138kV not otherwise designated as distribution.

2.07 COST IN PLACE - ADDITIONAL OR REPLACEMENT POLE - Cost In Place shall include the Total Cost to Owner for setting a bare pole. When replacing a pole and for additional poles, due solely to the Licensee's requirements, Cost In Place shall include the Total Cost to Owner for setting a pole including the cost of transferring facilities and removal of old pole with credit for any salvageable material.

2.08 TOTAL COST - Total Cost shall include all material, labor and overheads.

2.09 EMBEDDED POLE COST - The average original installed cost of a bare pole based on the original cost of all poles including all sizes and vintage years; in the case of the Electric Company, distribution poles plus any subtransmission and transmission poles actually occupied shall be included.

2.10 THIRD PARTY - Any additional licensees other than the Electric Company and Telephone Company.

2.11 BARE POLE - A pole exclusive of any type of attachments.

2.12 PROPOSALS - A standardized form used by the parties to communicate either their needs, requirements or intentions regarding attachments.

2.13 ATTACHMENT - Any device now or hereafter fastened to a joint use pole by the parties hereto.

2.14 ELECTRIC COMPANY - Includes APPALACHIAN POWER COMPANY and its subsidiary companies to the extent that such companies are not covered under separate agreements with SCOTT COUNTY TELEPHONE COOPERATIVE.

2.15 TELEPHONE COMPANY - Includes SCOTT COUNTY TELEPHONE COOPERATIVE and its subsidiary companies to the extent that such companies are not covered under separate agreements with APPALACHIAN POWER COMPANY.

2.16 FIELD SUPERVISOR - The Owner's representative responsible for scheduling construction work.

### ARTICLE 3

#### SPECIFICATIONS

3.01 Each party shall be responsible for maintaining its own facilities on joint use poles covered by this Agreement,

and each party shall maintain its facilities in conformity with good industry practice and with the terms and provisions of The National Electrical Safety Code, and the rules of THE STATE CORPORATION COMMISSION OF VIRGINIA and any other applicable binding orders, statutes, ordinances, rules and regulations of any other governmental body.

3.02 Each party has the right, but not the obligation to inspect facilities on joint use poles. If either party places or maintains its facilities not in conformance with Article 3.01, then the other party may give written notice to the nonconforming party to bring its facilities into compliance with this Agreement subject to the limitations contained in Article 3.04. The nonconforming party must bring its facilities into compliance within ninety (90) days of notification. If facilities are not brought into compliance within ninety (90) days of notification, the party giving notice shall have the right to rearrange the nonconforming party's attachments, including pole replacement, to result in such attachments conforming to the requirements of Article 3.01. The nonconforming party shall reimburse the other party for the Total Cost incurred by that party in rearranging any attachments, including expenses associated with pole replacement. Where pole replacement is required, the new pole shall be the property of the party performing the work unless the nonconforming party wishes to retain ownership by paying the Cost In Place of the new pole.

3.03 Wood poles shall comply with American Standards Association specifications and have a preservative treatment, full length, in accordance with good modern practice at the time of installation.

3.04 It is the intent of this Agreement, that poles having attachments prior to this Agreement, providing that their installation conformed to the specifications referred to in Article 3 herein at the time original attachment was made, will not be replaced or attachments rearranged solely to meet the requirements of 2.02 a., and 2.02 b., under NORMAL SPACE ALLOCATION or the current specifications referred to in Article 3.01.

The foregoing does not prohibit the replacement of a pole if Licensee compensates Owner in accordance with Article 8.01.

#### ARTICLE 4

##### ESTABLISHING JOINT USE OF EXISTING POLES

4.01 Whenever either party desires to reserve space on any pole owned by the other party, either as initial space or additional space on said pole, it shall submit a proposal therefore, specifying the location of the pole in question, the amount of space desired and the number and character of circuits to be placed thereon. Within ten (10) days after the receipt of such application, Owner shall notify the Applicant in writing whether or not said pole is among those excluded from joint use under the provisions of Article 1.02. If for any reason the Owner cannot respond in writing within ten (10) days, an oral request for an extension shall be made. Failure of response

within such ten (10) day period shall create a presumption that permission has been granted and Applicant may proceed accordingly. Upon receipt of Owner's notice that the said pole is not among those excluded from joint use and after the completion by Owner of any transferring or rearranging which in Owner's judgment is then required with respect to attachments on said poles, including any necessary pole replacements, the Applicant shall have the right as Licensee hereunder to use said space for attachments and circuits of the character specified in said notice in accordance with the terms of the notice and of this Agreement.

4.02 Whenever any jointly used pole or any existing pole about to be so used under the provisions of this Agreement is insufficient in height or strength for the existing attachments and for the proposed immediate additional attachments thereon, Owner shall replace such pole with a new pole of the necessary height and strength and shall make such other changes in the existing pole line in which such pole is included as the conditions may then require, and bill Licensee in accordance with Article 8.

Whenever Licensee requests any existing jointly used pole be replaced and Owner cannot complete replacement and/or rearrangements within the time required by Licensee, Licensee may replace the subject pole and shall be the Owner of the new pole, and shall be reimbursed by the Owner of the original pole for the cost of transferring its facilities to the new pole and removing said original pole.

4.03 Except as herein otherwise expressly provided, on jointly used poles each party shall at its own expense, place, maintain, transfer, rearrange and remove its own attachments, including any tree trimming or cutting incidental thereto, place guys to sustain unbalanced loads due to its attachments, and shall perform such work promptly and in such manner as not to interfere with the service of the other party.

#### ARTICLE 5

##### ESTABLISHING JOINT USE OF ADDITIONAL POLES

5.01 Whenever either party hereto requires new poles within the territory covered by this Agreement, either as an additional pole line, as an extension of an existing pole line, or in connection with the reconstruction of an existing pole line, and such pole facilities are not to be excluded from joint use under the provisions of Article 1, it shall promptly notify the other party by submitting a proposal (oral notice subsequently confirmed in writing may be given in cases of emergency) stating the location and size of the new poles and the character of circuits it proposes to use thereon. Within ten (10) days after the receipt of such notice, the other party shall reply in writing, stating whether it does, or does not, desire space on the said poles and, if it does, the character of the circuits it desires to use and the amount of space it wishes to reserve. Failure of response within ten (10) days shall create a presumption that no joint use is desired and the proposing party may proceed accordingly. Should the party to whom the proposal was made express interest in joint use after the ten (10) day

period referred to above, any and all additional expenses incurred by the party having given notice in order to then make joint use available, including, but not limited to, labor costs and other expenses associated with rearrangement of facilities, shall be borne by the party to whom notice was originally given. Failure of either party to provide ten (10) days written notice to the other party of its' intention to install pole line facilities as described above and by so doing installs pole line facilities not adequate in the judgment of the other party for the joint use needs of the other party, the party installing the pole line facilities shall, upon receiving written notice within ninety (90) days from the date the poles were set, replace the poles at no cost to the other party except for the extra height or strength (as specified in Article 8) for which the other party would have been billed if notified initially.

5.02 In any case where the parties hereto shall conclude arrangements for the joint use of any new pole to be erected, and the party proposing to construct the new pole facilities already owns more than its Ownership Objective of joint poles, (55% for the Electric Company and 45% for the Telephone Company) the parties shall take into consideration the desirability of having the new pole facilities owned by the party owning less than its Ownership Objective of joint poles so as to work toward such a division of ownership of the joint poles that both parties shall equitably share in the benefits of joint use.

5.03 Each party shall, at its own expense, place and maintain its own attachments on the new joint poles, including any tree

trimming or cutting incidental thereto, place guys to sustain unbalanced loads due to its attachments, and shall perform such work promptly and in such manner as not to interfere with the service of the other party.

#### ARTICLE 6

##### RIGHTS-OF-WAY FOR LICENSEE'S ATTACHMENTS

6.01 Owner shall not be required to secure any right, license or permit from any governmental body, authority or other person or persons which may be required for the construction or maintenance of attachments of Licensee, and Owner does not grant, guarantee nor convey any easements, rights-of-way or franchises for the construction and maintenance of said attachments, and if objection is made thereto and Licensee is unable to satisfactorily adjust the matter within a reasonable time, Owner may at any time, upon notice in writing to Licensee, require Licensee to remove its attachments from the poles involved, and Licensee shall, within sixty (60) days after receipt of said notice, remove its attachments from such poles at its sole expense.

#### ARTICLE 7

##### MAINTENANCE OF POLES AND ATTACHMENTS

7.01 Owner shall maintain its jointly used poles in a safe and serviceable condition in accordance with Owner's standards and in accordance with the specifications referred to in Article 3, and shall replace, reinforce or repair poles as they become defective.

7.02 When replacing a jointly used pole carrying terminals of aerial cable, underground connections, or other special equipment,

the new pole shall be set in a manner which will minimize the transfer cost of both parties. Should special conditions warrant setting the new pole in the old pole hole, written notice on the standard Proposal form shall be provided to the Owner prior to construction.

7.03 Whenever it is necessary to replace or relocate a jointly used pole, Owner shall, before making the change, give notice thereof in a proposal (except in cases of emergency, when oral notice may be given and subsequently confirmed in writing) to Licensee, specifying in such notice the time of such proposed replacement or relocation. Licensee shall transfer its attachments to the new or relocated pole at the time specified by Owner's Field Supervisor. If Licensee does not transfer its attachments, Licensee shall remove and dispose of the old pole unless Owner specifically instructs otherwise. If Licensee fails to transfer its attachments and remove the pole within ten (10) working days of receipt of Owner's notification of completion of work, Licensee shall reimburse Owner for all additional expenses incurred including costs associated with the transfer of Licensee's attachments and pole removal, because of Licensee's noncompliance.

7.04 Each party shall maintain all of its attachments on jointly used poles in accordance with the specifications referred to in Article 3 and shall keep them clear of trees, in safe condition and in thorough repair in accordance with each party's standards.

7.05 The Telephone Company, when operating either as Owner or Licensee, without any charge other than normal joint use rental, may install electrical bonding from communication cables or equipment to Electric Company's pole grounds on jointly used poles in accordance with Article 3.

7.06 The Licensee may replace Owner's pole during emergency conditions when Owner is not able to replace such pole in a timely manner. In this event, the Owner shall pay the Licensee's costs in accordance with Article 8.05.

#### ARTICLE 8

##### DIVISION OF COSTS

8.01 The Cost In Place of new poles jointly used under this Agreement, either in new pole lines, or in extensions of existing pole lines, or to replace existing poles, shall be borne by the parties as follows:

- a. The Cost In Place of a pole sufficient to provide the NORMAL SPACE ALLOCATION for Owner's requirements shall be borne by Owner except as provided in b., c., and d., herein.
- b. Licensee shall pay to Owner a sum equal to the difference between the Cost In Place of a new pole adequate to accommodate Licensee's attachments and the current Cost In Place of a pole considered by Owner to be adequate to accommodate the attachments of Owner and its other licensees under the following conditions:

- (1) Where the extra height or strength of an additional pole proposed for joint use is necessary solely to adequately accommodate the attachments of Licensee; or
- (2) Where the new pole is installed to replace an existing damaged or deteriorated jointly used pole hereunder and the extra height or strength of the new pole is provided to adequately accommodate the attachments of Licensee.
- c. Licensee shall pay Owner a sum equal to the Cost In Place of a new pole, where such new pole is erected hereunder to replace an existing pole solely to adequately provide for the attachments Licensee proposes to place on the new pole.
- d. In the case of a pole taller or stronger than a pole suitable for joint use, the extra height or strength of which is due to the requirements of public authorities (other than requirements with regard to keeping the wires of either party clear of trees), Licensee shall pay to Owner a sum equal to one-half the difference between the Cost In Place of such pole and the Cost In Place of a pole considered by Owner to be adequate to accommodate the attachments of Owner and its other licensees, unless the Owner is reimbursed by the public authority requesting replacement.

- e. The cost in excess height or strength provided for the attachments of third parties shall be billed to and reimbursed by the third party according to the agreement between the Owner and the third party.
- f. Any such new pole shall be the property of Owner regardless of any payments by Licensee toward the cost of such new pole and Licensee shall acquire no right, title or interest in and to such pole.
- g. Each party shall place, maintain, rearrange, transfer and remove its own attachments at its own expense, except as otherwise expressly provided elsewhere in this Agreement.

8.02 Placement and Replacement of Fifty (50) foot and Higher Poles. The Electric Company shall own all new poles having a length of fifty (50) feet or more. Proposals by third parties for the replacement of existing poles with fifty (50) foot or higher poles are to be submitted to the Owner in all cases and where Owner is the Telephone Company, it will then propose the Electric Company install a fifty (50) foot or higher pole. Costs incurred as a result of such a request from a third party shall be billed to and reimbursed by the third party according to the agreement between the parties involved.

8.03 Cost of Pole Replacement and Transfer of Attachments. Except as otherwise herein expressly provided, in situations requiring either (a) the replacement of a joint use pole in kind, i.e., the same height and class, or (b) where replacement pole must be taller or stronger due to Owner's requirements, the costs

of replacement of the pole shall be borne by the Owner, and the costs of transferring shall be borne by each party for its own facilities. Failure of Licensee to transfer its facilities thereby requiring Owner to perform Licensee's work shall be billed to Licensee at Total Cost.

8.04 Assistance Required. If Owner cannot install a new pole or replace a pole for joint use, as required in Article 4.02 without the assistance of the Licensee, then Owner shall reimburse Licensee the Total Cost incurred in rendering the required assistance.

8.05 Emergency Conditions. Where Licensee must replace Owner's pole under emergency conditions, Owner shall pay Licensee for all costs incurred in placing the pole and, if the Licensee removes the old pole, the cost of removing the old pole. Title to the pole will remain with the Owner. Licensee will transfer its own facilities at no cost to the owner.

8.06 Cost of Rearrangements on Existing Poles. Whenever joint use is requested by the Licensee on an existing pole, and space can be provided by rearrangement of the Owner's attachments, the Total Cost of such rearrangements shall be borne by the Licensee.

8.07 Sharing of Space. Each party shall, upon request of the other party, share with such other party any assigned or reserved space not presently being used, so long as the requirements of Article 3 are satisfied. Upon written notice from the sharing party that any such shared space is required for such party's

operations, the other party shall within sixty (60) days relocate or rearrange its facilities at its expense. If replacement of any poles is necessary, the cost thereof shall be allocated as otherwise provided in this Article 8.

8.08   Anchors  . All anchors and guys with the exception of jointly used anchors as provided in Article 8.09 below, shall be placed by and at the expense of the party whose attachments make such work necessary. Such anchors and guys shall remain the sole property of the party placing them and shall not be considered a part of the supporting structure.

8.09   Jointly Used Anchors  . Normally each company will place separate anchors; however, when it is advantageous to both companies, an anchor rod suitable for joint attachment shall be placed by the owner of the pole with the Total Cost of the anchor and anchor rod to be shared equally by the parties. If one anchor is inadequate for the combined requirements of both parties, then the Licensee shall place the additional anchorage required.

#### ARTICLE 9

##### PROCEDURE WHEN CHARACTER OF CIRCUITS IS CHANGED

9.01 When either party desires to change the character of its circuits on jointly used poles, such party shall give ninety (90) days' written notice to the other party of such contemplated change.

The parties shall then cooperate in determining, (1) the conditions under which joint use may be continued on a mutually satisfactory basis, or (2) if in the judgment of both parties

continued joint use is not feasible, the most practical and economical method of providing for separate lines.

In the latter event, the party whose circuits are to be removed from the jointly used poles shall promptly carry out the necessary work.

The cost of establishing such circuits in the new location shall be borne by each party under the provisions of this paragraph. In the event one party owns all the poles, the Licensee shall relocate its facilities at no expense to the Owner. If the parties agree that it is more practical for the Licensee to remain on the existing centerline and Owner's facilities should be relocated, Licensee shall reimburse Owner for the cost of relocation based upon the reestablishment of similar facilities. In the event neither party is the Owner of all the poles involved, the cost of reestablishing equivalent facilities in a new location shall be divided between the parties in proportion to the percent ownership of the existing poles. Where the ownership is divided the party owning a majority of the poles shall have the right to remain on an existing centerline unless it is mutually agreed otherwise. The cost of relocation shall be divided according to ownership with the party who retains the centerline paying a portion of the relocating party's cost equal to the percent of poles involved which are owned by the relocating party. For example, if one party owns 60% of the poles and the second party owns 40%, the second party would relocate and receive payment equal to 40% of its cost from the first party. Where the

ownership of the poles involved is equal, the parties shall decide which facilities are more practical to relocate and the relocating party will be reimbursed 50% of its relocation costs. If the party owning less than 50% of the poles prefers to remain on the existing centerline and the other party is agreeable, the entire cost of the relocating party's expense shall be paid by the party retaining its facilities on the existing centerline.

9.02 Attachments may be permitted on subtransmission and transmission poles of the Electric Company with the understanding that should the characteristics of the Electric Company facilities (circuits) change resulting in either the Electric Company or the Telephone Company deciding joint use is no longer feasible, the Telephone Company shall remove its facilities with no cost or obligation to the Electric Company.

#### ARTICLE 10

##### TERMINATION OF JOINT USE

10.01 If Owner desires at any time to abandon any jointly used pole, it shall give Licensee notice in writing to that effect at least sixty (60) days prior to the date on which it intends to remove its attachments from such pole. If, at the expiration of said period, Owner shall have no attachments on such pole but Licensee shall not have removed all of its attachments therefrom, such pole shall thereupon become the property of Licensee, and Owner shall transfer title to said pole and Licensee shall accept title to said pole in the manner provided for under Article 11. Licensee shall indemnify, protect and hold harmless the Owner from

all obligations, liabilities, damages, costs, expenses, or charges incurred after the expiration of the above mentioned sixty (60) day period, and not arising out of anything theretofore occurring, because of, or arising out of, the presence or condition of such pole or of any attachment thereon; and shall pay Owner a sum equal to the Seller's Embedded Pole Cost based on height and type of such abandoned pole. In the event the Telephone Company is the Seller and its' Embedded Pole Cost is not readily available, it has the option of using the Electric Company's Embedded Pole Cost to determine its' selling price.

10.02 Licensee may at any time abandon the use of a jointly used pole by giving due notice thereof in writing to Owner and by removing therefrom any and all attachments it may have thereon.

#### ARTICLE 11

##### TRANSFERS OF TITLE

11.01 Anytime it is determined that either party owns more or less than its objective percentage of jointly used poles as stated in Section 5.02, both parties shall have the right to request permission from the other party to either sell or purchase poles so as to progress towards achieving the objective percentage of ownership. If both parties are agreeable to the proposed sale, the number and location of the poles to be sold shall be determined by mutual agreement.

11.02 Each party shall obtain, at its expense, the approval of any governmental agency having jurisdiction over such party's

part of the transaction. When ownership of poles is to be transferred, a mutually approved Proposal in accordance with the Owner's standard selling policy shall be prepared to cover such transfer. Payments for such poles by the Licensee will be made at the time of purchase. The price of such poles shall be the Seller's Embedded Pole Cost at the time of sale for the height and type of poles involved. In the event the Telephone Company is the Seller and its' Embedded Pole Cost is not readily available, it has the option of using the Electric Company's Embedded Pole Cost to determine its' selling price.

11.03 A formal Bill of Sale will be required for the transfer of ownership of all poles. The transferring party shall also obtain any necessary mortgage releases if the poles to be transferred are subject to any mortgages, and shall submit such releases to the other party.

## ARTICLE 12

### RENTALS

12.01 For purposes of this Agreement, a Rental Year shall be the period between successive anniversary dates of this agreement. Any space occupied or reserved by Licensee during any portion of any such Rental Year shall be deemed to have been so occupied or reserved during the entire year. The amount of rent shall be computed, billed, and paid in accordance with the following sections of this Article 12.

12.02 Licensee shall pay rent annually to Owner for those poles on which space is occupied or reserved by Licensee and for which rent is payable, in an amount per pole as follows:

<u>Rental Rate</u>	<u>Rental Year</u>	<u>Year Rent to be Paid</u>
\$2.40	1989	1990
\$3.80	1990	1991
\$5.20	1991	1992
\$6.60	1992	1993
\$8.00	1993	1994

12.03 Each party shall submit to the other, on or before each September 15, a determination of the number of poles subject to this Agreement on which space was occupied or reserved by such other party as of the preceding anniversary date of this agreement. Each such determination shall be deemed correct unless written exception is taken within thirty (30) days of receipt. If any such exception cannot be otherwise resolved, a joint inspection of the poles in dispute and records pertaining thereto shall be made. If the parties are not able to resolve any such exception by the next billing date, the number originally proposed shall be used until such resolution is accomplished, at which time a retroactive adjustment shall be made if necessary.

12.04 The Bills for the annual rental shall be rendered each year on or about October 2 and shall contain the total rental due for the current Rental Year based on a formal recapitulation of the poles actually occupied or reserved during such Rental Year. All bills shall be paid within thirty (30) days of receipt.

12.05 In order to make the transition between this Agreement, and any prior agreement, rentals for the period September 2, 1988

to September 2, 1989 shall be based on the number of poles, and the annual rental rate specified in the Joint Use Agreement superseded by this Agreement.

#### ARTICLE 13

##### UNAUTHORIZED USE: JOINT FIELD CHECKS

13.01 If unauthorized occupancy of poles is found, a Proposal shall be prepared to establish a record of this occupancy on the next annual billing. The party responsible for unauthorized occupancy shall owe the Owner the rental for the entire period dating back to the last joint field check including interest compounded annually. The annual rate of interest shall be equal to the Rate of Return for Short Term Debts of the party owning more than its objective ownership of poles. If no Short Term Debt is available for any portion of the billing period, the Rate of Return for Long Term Debt shall be used for such periods.

If the only attachment on a pole is unused hardware it shall not be considered a rental attachment; however, provisions will be made to have such hardware promptly removed. If not removed within thirty (30) days after formal notification, the current annual rental will apply.

13.02 The parties shall participate in a joint field check no less often than every five (5) years. Should one party elect not to participate, that party shall pay one-half (1/2) the cost of the field check performed by the other party. The non-participating party has sixty (60) days in which to verify the findings after which the results of the inventory will become final.

ARTICLE 14

LIABILITY AND DAMAGES

14.01 Whenever any liability is incurred by either or both of the parties hereto for damages for injury to persons (including death) or damage to property, arising out of the joint use of poles under this Agreement, which joint use is understood to include the wires and fixtures of the parties hereto, attached to the jointly used poles covered by this Agreement, the liability for such damages, as between the parties hereto, shall be as follows:

- a. Each party shall be liable for all damages for such injuries to persons or property caused solely by its negligence or solely by its failure to comply at any time with the specifications referred to in Article 3, and will indemnify, protect and hold harmless the other party in any such instance.
- b. Each party shall be liable for one-half (1/2) of all damages for such injuries to persons and for one-half (1/2) of all damages for such injuries to property that are caused by the concurrent negligence of both parties hereto or that are due to causes which cannot be traced to the sole negligence of either party.
- c. All claims for damages arising hereunder that are asserted against or affect both parties hereto shall be dealt with by the parties hereto jointly; provided, however, that in any case under the

provisions of paragraph b., of this Article and where the claimant desires to settle such claim upon terms acceptable to one of the parties hereto but not to the other, the party to which said terms are acceptable may, at its election, pay to the other party one-half (1/2) of the amount which such settlement would involve, and thereupon said other party shall be bound to protect the party making such payment from all further liability and expense on account of such claim.

- d. In the adjustment between the parties hereto of any claim for damages arising hereunder, the liability assumed hereunder by the parties shall include, in addition to the amounts paid to the claimant, all expenses incurred by the parties in connection therewith, which shall include costs, attorneys' fees, disbursements and other proper charges and expenditures.
- e. It is further understood and agreed between the parties hereto that at all times during the term of this Agreement and particularly during the time of any construction, repair or new attachments to poles covered by this Agreement that the parties shall consider the electric wires of the Electric Company to be energized.
- f. It is further agreed between the parties hereto, that to the extent any of the provisions of this

Article 14 should be determined to be contrary to law or held to be invalid by any court of competent jurisdiction, this Article shall be construed and applied as if such invalid provisions were not contained herein, attempting at all times to conform, to the extent possible, to the intent of the parties as herein stated.

#### ARTICLE 15

##### DEFAULTS

15.01 If either party shall default in any of its obligations under this Agreement and such default continues thirty (30) days after notice thereof in writing by the other party, the party not in default may suspend the rights of the party in default insofar as concerns the granting of further joint use. If such default shall continue for a period of sixty (60) days after such suspension, the party not in default may forthwith terminate this Agreement as far as it concerns the further granting of joint use, and shall be under no further obligation to permit additions to or changes in attachments of the defaulting party upon poles in joint use on the date of such termination.

15.02 If either party shall default in the performance of any work which it is obligated to do under this Agreement at its expense, the other party may elect to do such work, and the party in default shall reimburse the other party for the cost thereof. Failure on the part of the defaulting party to make such payment

within thirty (30) days after presentation of bills therefor shall, at the election of the other party, constitute a default under Section 15.01 of this Article.

## ARTICLE 16

### ATTACHMENTS OF OTHER PARTIES

16.01 Nothing herein contained shall be construed as prohibiting the granting by Owner to others, not parties to this agreement, by contract or otherwise, rights or privileges to use any poles covered by this Agreement. The attachments of any such outside party shall be treated as attachments belonging to the Owner, who shall have the entire right to any payments from such party.

16.02 Attachments of other parties shall at all times be in conformity with Article 3.

16.03 If space is shared by the Owner or Licensee with a third party in order to minimize such third party's costs, the sharing party retains its right to use the shared portion of its space. If Owner or Licensee thereafter requires the full use of its space, it is the duty of the Owner to provide that all costs of making that space available shall be borne by the third party.

16.04 If there is insufficient space on a joint use pole to accommodate a third party's attachments, the third party shall be required to reimburse Owner and Licensee for all costs incurred by them in making such space available.

## ARTICLE 17

### WAIVER OF TERMS OR CONDITIONS

17.01 The failure of either party to enforce or insist upon compliance with any of the terms or conditions of this Agreement shall not constitute a general waiver or relinquishment of any such terms or conditions, and the same shall be and remain at all times in full force and effect.

## ARTICLE 18

### PAYMENT OF TAXES

18.01 Each party shall pay all taxes and assessments levied on its own property upon said jointly used poles, and the taxes and the assessments which are levied on said jointly used poles shall be paid by the Owner.

## ARTICLE 19

### BILLS AND PAYMENT FOR WORK

19.01 Upon the completion of work performed hereunder by either party, the expense of which is to be borne wholly or in part by the other party, the party performing the work shall present to the other party within sixty (60) days after the completion of such work a statement of the costs in accordance with the provisions of this Agreement and such other party shall within thirty (30) days after such statement is presented, pay to the party doing the work such other party's portion of the cost of said work.

## ARTICLE 20

### EXISTING AGREEMENTS

20.01 All existing Agreements, written or oral, between the parties hereto for the joint use of poles within the territory covered by this Agreement are by mutual consent hereby terminated, and poles covered by such agreements are brought under this Agreement as of the effective date hereof, but such termination shall not extinguish any obligation arising prior to the effective date of this Agreement.

## ARTICLE 21

### TERM OF AGREEMENT

21.01 Subject to the provisions of Article 15, Defaults, herein, this Agreement may be terminated by either party after the second day of September, 1994 upon one (1) year's notice in writing to the other party. If not so terminated, it shall continue in force until terminated by either party at any time upon one (1) year's notice in writing to the other party as aforesaid. Despite any termination under this Article, this Agreement shall remain in full force and effect with respect to all poles jointly used by the parties at the time of such termination until a new Agreement is entered into by the parties. Following such termination until a new Agreement is entered into between the parties, neither party shall be under an obligation to permit additions to or changes in attachments of the other on poles in joint use on the date of such termination.

## ARTICLE 22

### OPERATING ROUTINE

22.01 An Operating Routine may be jointly prepared by the parties hereto, and shall be approved respectively by the Manager of the Telephone Company and by the T & D Manager for the Electric Company. This routine shall be based on this Joint Use Agreement and shall give the detailed methods and procedures which will be followed in establishing, maintaining and discontinuing the joint use of poles. In case of any ambiguity or conflict between the provisions of this Agreement, and those of the "Operating Routine" the provisions of this Agreement shall be controlling. This Operating Routine may be changed at any time upon the approval of the Manager of the Telephone Company and the T & D Manager of the Electric Company, provided such changes do not conflict with the terms of this Joint Use Agreement.

## ARTICLE 23

### MISCELLANEOUS

23.01 Force Majeure. Neither party shall be considered in default in the performance of its obligations herein, or any of them, to the extent that performance is delayed or prevented due to causes beyond the control of said party, including but not limited to, Acts of God or the public enemy, war, revolution, terrorism, civil commotion, blockade or embargo, acts of government, any law, order, proclamation, regulation, ordinance, demand, or requirement of any government, fires, explosions,

cyclones, floods, unavoidable casualties, quarantine, restrictions, strikes, labor disputes, lockouts and other causes beyond the reasonable control of either of the parties.

23.02 Modifications of Agreement. No amendments or modifications to this Agreement and no waiver of any of its provisions or conditions shall be valid unless in writing and signed by duly authorized representatives of the parties.

23.03 Invalidity. If any provision of this Agreement shall for any reason be held to be invalid, illegal or unenforceable under any laws, rules or regulations of any governmental body or agency having jurisdiction thereof, any such invalidity, illegality or unenforceability shall not effect any other provision of this Agreement, and this Agreement shall be construed as if such invalid, illegal or unenforceable provision had never been incorporated herein.

23.04 Execution. This Agreement may be executed in two counterparts each of which so executed shall be deemed to be an original.

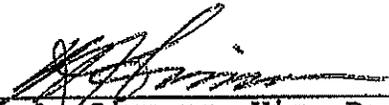
23.05 Headings. Headings used in this Agreement are inserted only for the convenience of the parties and shall not affect the interpretation or construction of this Agreement.

23.06 Applicable Law. This contract shall be governed by and interpreted under laws of the State of Virginia.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed as of the day and year first above written.

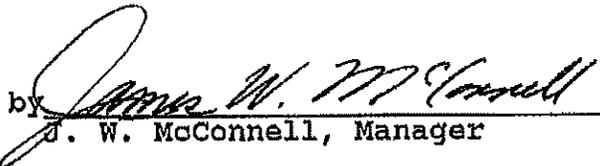
APPALACHIAN POWER COMPANY

Attest:

Shirley F. Bowers by   
C. A. Simmons, Vice President

SCOTT COUNTY TELEPHONE COOPERATIVE

Attest:

Lynia B. McCarty by   
J. W. McConnell, Manager

8-29-19

**POLE LICENSE AGREEMENT**

**between**

**KENTUCKY UTILITIES COMPANY d/b/a**

**OLD DOMINION POWER COMPANY**

**and**

**SCOTT TELECOM AND ELECTRONICS**

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## LICENSE AGREEMENT

This License Agreement (this "Agreement") is made as of the 10<sup>th</sup> day of December, 2019, ("Effective Date") by and between KENTUCKY UTILITIES COMPANY d/b/a OLD DOMINION POWER COMPANY, a corporation organized under the laws of the Commonwealth of Kentucky, having its principal office at 220 West Main Street, Louisville, Kentucky 40202 ("ODP" or "Company") and SCOTT TELECOM AND ELECTRONICS, a Virginia Corporation organized under the laws of the State of Virginia, having its principal place of business at 149 Woodland Street, Gate City, Virginia 24251 ("Licensee"), each a "Party" and together the "Parties."

### RECITALS

ODP is an electric utility company providing services in the Commonwealth of Virginia. ODP owns and maintains certain Structures (as defined below) to support electric service conductors. Such Structures also are useful for supporting Cables (as defined below) used in the provision of communications services.

Licensee is either a cable television system or a telecommunications carrier as those terms are used in 47 U.S.C. §224 (the "Pole Attachments Act").

Licensee desires to install and operate Cables on the Structures in the Service Area as described below, and ODP desires to make Structures available to Licensee, subject to the terms and conditions set forth below.

### AGREEMENT

NOW THEREFORE, in consideration of the promises and the mutual covenants herein, and for other good and valuable consideration, the receipt of which is hereby acknowledged, the Parties agree as follows:

1. Definitions. The following definitions shall apply for purposes of this Agreement. Capitalized terms used in this Agreement but not defined in this Section 1 shall have the meaning provided elsewhere in this Agreement. The meaning applied to all terms shall be equally applicable to both the singular and plural forms of the term defined.

"Affiliate" means, with respect to any Person, any other Person controlling, controlled by or under common control with, such Person. For purposes of this definition, the term "control" of a Person means direct or indirect ownership of more than fifty percent (50%) of the outstanding voting stock of a corporate person or voting interest in a non-corporate Person.

"Approved Contractor" means a contractor approved by ODP for a particular purpose.

"Attachment" means the Cable and all associated appliances including without limitation any overlashed cable, small splice panels and vertical overhead to underground risers but excluding power supplies, equipment cabinets, meter bases and other equipment that

impedes accessibility or otherwise conflicts with ODP's electric design and construction standards. This term also excludes any wireless facilities, other than as expressly set forth herein.

"Business Day" shall mean any Monday through Friday during which ODP is open for regular business.

"Cable" means the fiber optic and/or coaxial cable, as well as any messenger wire or support strand.

"Communication Space" shall mean the area below the Communication Worker Safety Zone to the limit of allowable NESC clearance, department of transportation or other governmental requirements, and ODP's internal construction standards.

"Communication Worker Safety Zone" is defined by the NESC and ODP's internal construction standards as that space between the facilities located in the Electric Space and facilities located in the Communications Space. Except for limited exceptions such as brackets, conduits, or drip loops of luminaires, no electric supply or communication facilities shall be located in the Communication Worker Safety Zone.

"Contractor" means any Person employed or engaged by Licensee to perform work or render services under this Agreement upon or in the immediate vicinity of ODP's Structures or associated facilities other than Licensee and Licensee's employees.

"Credit Rating" means, with respect to any entity, the rating then assigned to such entity's unsecured, senior long-term debt obligations (not supported by third party credit enhancements) by Standard and Poor's Rating Group or its successor ("S&P"), or Moody's Investor Services, Inc. or its successor ("Moody's"), or if such entity does not have a rating for its senior unsecured long-term debt, then the rating then assigned to such entity as its "corporate credit rating" assigned by S&P, or the "long-term issuer rating" assigned by Moody's.

"Distribution Pole" means a utility pole supporting electric supply facilities, all of which operate at less than 69 kV.

"Electric Space" shall mean the space above the Communications Worker Safety Zone reserved for the installation of electric supply lines. Specific clearances and exceptions are contained in the NESC and ODP's internal construction standards.

"FCC" means the Federal Communications Commission.

"Federal Laws" means applicable federal statutes, case law, orders, rules and regulations, and administrative decisions.

"Letter(s) of Credit means one or more irrevocable, transferable standby letters of credit issued by a U.S. commercial bank or a foreign bank with a U.S. branch in a form acceptable

to the Company. Costs of a Letter of Credit shall be borne by the applicant for such Letter of Credit.

“Licensee Event of Default” shall have the meaning provided in Section 15 of this Agreement.

“License Fee” shall have the meaning provided in Section 17 of this Agreement.

“Make Ready Survey” means a survey, in the form prescribed by ODP from time to time, prepared by ODP, Licensee or an Approved Contractor describing in reasonable detail the make-ready engineering requirements, and such other information as ODP may hereafter require, for the installation of an Attachment or group of Attachments on a Structure or group of Structures.

“National Electrical Safety Code” or “NESC” shall refer to the publication of the Institute of Electrical and Electronic Engineers, as modified, amended, and/or supplemented from time to time.

“Performance Assurance” means collateral in the form of cash, surety bond, Letter(s) of Credit, or other security acceptable to the Company.

“Person” means a corporation, limited liability company, partnership, association, organization, joint venture, company, governmental body or individual.

“SCC” means the Virginia State Corporation Commission, Division of Public Utility Regulation.

“Service Area” means the geographic area within Virginia in which ODP provides electrical service, as such area is defined by the SCC and as such area may be modified, expanded, contracted and/or redefined by the SCC or any successor agency from time to time. ODP’s current Service Area is described in Schedule 1, attached hereto.

“Service Drop” means a Cable, attached to a pole with a J-hook or other similar hardware, that connects the trunk line a customer’s premises. No service cable may extend more than one span along the trunk line to the Service Drop.

“State Laws” means applicable state statutes, case law, orders, rules and regulations, administrative decisions, including but not limited to those of the SCC.

“Structure” means any pole normally used by ODP to support its electric conductors but does not include either (1) any Transmission Pole, or (2) any pole used solely for street or outdoor lighting purposes.

“Transmission Pole” means any utility pole supporting electric supply facilities designed to operate at 69 kV or greater.

2. License. Subject to the terms and conditions set forth herein, including payment of fees and consideration as may be set forth herein, as of the Effective Date, ODP hereby grants to Licensee and Licensee hereby accepts from ODP a non-exclusive license to affix and install Attachments on Structures located in the Service Area.
3. Structures Subject to Agreement; Other Licensees.
  - a. All Structures used pursuant to this Agreement shall be and remain the property of ODP regardless of the nature or amount of any payment by Licensee, and Licensee shall not, except as specifically provided herein, acquire any right, title or interest in or to any such Structures except as provided herein.
  - b. Except as specifically provided herein, Licensee's license is non-delegable, non-transferable and non-assignable, and any delegation, transfer, or assignment of any interest in such license without prior written consent of ODP shall be voidable at ODP's option.
  - c. Nothing herein shall be construed as affecting the rights or privileges previously conferred by ODP, by contract or otherwise, to others not party to this Agreement, to use any Structure covered by this Agreement. The license herein granted shall at all times be subject to such previously conferred privileges. Furthermore, nothing herein shall be construed as affecting the rights or privileges that may be conferred by ODP in the future, by contract or otherwise, to others not party to this Agreement, to use any Structure covered by this Agreement, and ODP shall have the right to extend such rights and privileges.
  - d. The existing telephone companies with whom ODP has joint use agreements generally are assigned to the lowest relative position on any given pole. Licensee generally should occupy the next available space above the highest existing attachment (not including any of ODP's facilities); but in no event shall Licensee place its attachments within the space allocated to the telephone company pursuant to the joint use agreement without permission from the telephone company. If such permission is granted to Licensee by the telephone company, and at some later date the party to which the space is allocated needs to utilize the space occupied by Licensee's Attachment, Licensee shall either (1) remove it Attachment or (2) pay ODP's cost to replace the pole or make other required modifications.
  - e. Unless otherwise expressly stated in this Agreement, no reference to Federal Laws or State Laws or to any government agency in this Agreement shall be interpreted as either Party's agreement or acquiescence to the applicability of such laws or the jurisdiction of such agency.
  - f. In the event ODP determines that ODP will cease use of a Structure and abandon or remove such Structure, ODP shall provide Licensee with a minimum of sixty (60) days' notice before such abandonment unless ODP is required to complete such abandonment in a shorter time period due to state or municipal requirements,

easement provisions or contractual obligations to third parties, in which case ODP shall provide as much notice as possible under the circumstances.

4. Easements.

- a. Licensee shall secure any right-of-way, easement, license, franchise or permit from any Person which may be required for the construction or maintenance of Attachments by or for Licensee. ODP does not convey or guarantee any easements, rights-of-way or franchises for the construction or maintenance of said Attachments.
- b. Upon written request by Licensee, ODP may provide to Licensee such non-private information as ODP may have regarding the name of the record landowners from which ODP obtained easements for Structures. Such information will be provided without representation or warranty of any kind as to its accuracy or completeness. ODP shall have no obligation to correct or supplement any information so provided.
- c. In the event ODP provides assistance to Licensee in obtaining easements or other property rights, Licensee shall reimburse ODP's cost of providing such assistance within thirty (30) days of receipt of an invoice.

5. Approval for Attachments; Make-Ready Work.

- a. Except as set forth in Sections 5.h. and 5.i. below, Licensee shall make no Attachment to any Structure without ODP's prior written approval as set forth in this Agreement.
- b. Licensee shall make written application, in the form prescribed by ODP, for permission to install Attachments on any Structure. Each application shall include: (i) the number and location of all Structures for which license to attach is sought and the amount of space required thereon; (ii) the physical attributes of all proposed Attachments; (iii) a load bearing study for each Attachment, unless the Company finds such study is not necessary; (iv) the proposed start date for installation of the Attachments described in the application; (v) any issues then known to Licensee regarding space, engineering, access or other matters that might require resolution before installation of Attachments. Unless the Parties agree otherwise in writing, Licensee shall submit applications for no more than 300 Structures during any thirty (30) day period.
- c. Within forty-five (45) days after receipt of a completed application (such completeness to be determined in ODP's sole discretion), ODP shall notify Licensee in writing whether ODP will permit the use by Licensee of the Structures sought to be licensed and any conditions imposed on the installation or use of Attachments. If ODP denies access to any Structures, ODP's notice shall explain the basis of the denial. This forty-five (45) day period shall be primarily for the purpose of performing a Make-Ready Survey and engineering analysis in connection with the proposed Attachments. Licensee shall be responsible for all

costs associated with the Make-Ready Survey and engineering analysis, and shall reimburse ODP upon presentation of an invoice for same.

- d. If an application is approved, ODP shall provide Licensee a written estimate of the costs of any necessary ODP make-ready work (including but not limited to rearrangement of electric supply facilities and pole change out). Licensee shall indicate its approval of the make-ready estimate by submitting payment of the estimated amount within fifteen (15) days of receipt of the estimate. ODP will commence such work following receipt of payment of the invoice. If facilities of a third party are required to be rearranged or transferred, Licensee shall coordinate with the third party for such rearrangement or transfer and shall pay the costs related thereto.
- e. Where a new Structure is erected (including the replacement of an existing Structure) solely to provide adequate capacity for Licensee's proposed Attachments, the actual cost of the new Structure, as well as related appurtenances, plus the cost of removal of the existing Structure, minus the salvage value of the removed Structure, if any, shall be included within the make-ready estimate. The new Structure shall be the property of ODP regardless of any payments by Licensee toward its cost, and Licensee shall acquire no right, title or interest in or to such Structure.
- f. In the event ODP has failed to perform the Make-Ready Survey and engineering analysis within the forty-five (45) day period referenced in Section 5.c. above, Licensee may perform such work at Licensee's expense using Approved Contractors.
- g. In the event ODP has failed to perform the ODP make-ready work within ninety (90) days of receipt of Licensee's payment of the make-ready estimate, Licensee may perform such work at Licensee's expense using an Approved Contractor, provided that ODP shall provide a refund of any unexpended make-ready fees to Licensee within ten (10) days of Licensee notifying ODP that Licensee has performed the work. In the event make-ready work is performed by Licensee as described above in this Section 5.g., Licensee shall notify ODP upon completion of such make-ready work, and ODP may, at Licensee's expense, perform an inspection of such work prior to the construction of Attachments.
- h. Service Drops may be affixed and installed on a Structure without making written application if (1) it is affixed within six (6) inches of Licensee's existing Attachment, (2) it conforms to all ODP standards and all federal, state and local government laws, rules, regulations, ordinances, or other lawful directives applicable to construction and installation of Attachments, and (3) written notice of each such Service Drop is provided to ODP in the month following the month of its installation. A Service Drop shall be counted as an Attachment for purposes of billing and permitting if it (1) is attached to a pole without an existing Attachment, (2) extends more than one span along the trunk line (in which case each individual

pole to which such Service Drop is attached shall be treated as the site of an individual Attachment), or (3) is affixed to a pole at a point beyond six (6) inches of Licensee's existing Attachment.

- i. Licensee shall provide fifteen (15) days' prior notice of any proposed overlash of an existing Attachment. The notice shall include: (i) the date of the proposed work; (ii) the exact route of the proposed overlash; (iii) the specifics of the fiber, coaxial or other cable to be overlashed to the existing Attachment; (iv) a pole loading analysis performed by a qualified contractor that demonstrates the proposed overlash will not create a violation or exacerbate an existing violation; and (v) any other information reasonably required by ODP from time to time. In the event make-ready work is necessary to accommodate Licensee's proposed overlash Licensee may not proceed with the overlash until such make-ready work is completed in the normal course as set forth in Sections 5.b. through 5.g. above.
- j. Before deploying any strand-mounted wireless communications devices other than strand-mounted wi-fi access points, Licensee shall at least forty-five (45) days prior to planned deployment notify Company of the proposed deployment and provide sufficient information regarding the nature of the device to permit Company to assess the safety and loadbearing implications of the proposed deployment.

6. Construction and Maintenance Requirements and Specifications.

- a. Design, construction, or installation practices for Attachments and Licensee's installation thereof shall be approved by ODP in writing before any construction or installation of Attachments.
- b. All Attachments shall be constructed and installed in a manner reasonably satisfactory to ODP and so as not to interfere with the present or future use which ODP reasonably may desire to make of its Structures. At all times, Licensee shall maintain, operate and construct all Attachments in such manner as to insure that ODP has full and free access to all of its facilities. All Attachments shall, with respect to clearances and otherwise, conform to ODP's electric design and construction standards and applicable requirements of the NESC, the National Electrical Code, and all other applicable codes and laws. In the event of a conflict, the more stringent standard shall apply.
- c. Licensee shall identify each of its Attachments with a tag, approved in advance by ODP, that includes Licensee's name, twenty-four (24) hour contact telephone number, and such other information as ODP may require. Licensee shall tag new Attachments at the time of construction. Any Attachments existing as of the date of this Agreement shall be tagged within one hundred and eighty (180) days of the date of this Agreement.
- d. In the design, installation and maintenance of its Attachments, Licensee shall follow all ODP safety guidelines in addition to safety and design requirements promulgated by the United States Occupational Safety and Health Administration,

the Virginia Department of Labor, the SCC and any other regulatory body having jurisdiction over the work of constructing and installing the Attachments, all as may be changed from time to time. All work shall be performed in accordance with the applicable standards of the NESC and the National Electrical Code. Licensee shall take all necessary precautions, by the installation of protective equipment or other means, to protect all persons and property of all kinds against injury or damage caused by or occurring by reason of the construction, installation or existence of Attachments.

- e. Licensee shall make immediate report to ODP of (i) any damage caused to property of ODP or others in the course of installing or maintaining Attachments and (ii) any failure by Licensee to meet the requirements set forth herein for assuring the safety of persons and property and compliance with laws and regulations of public authorities and standard-setting bodies.
- f. Licensee shall complete installation of its Attachments within sixty (60) days of approval of any application or completion of make-ready work, whichever is later. Licensee shall notify ODP in writing upon completion of installation. ODP, at Licensee's expense, may conduct an inspection of such Attachments, and Licensee shall reimburse ODP within thirty (30) days of presentation of an invoice for such inspections.
- g. ODP may monitor Licensee's construction and installation of Attachments. If the need for a monitor is caused by Licensee's failure to comply with the terms of this Agreement, applicable laws or regulations, Licensee shall be responsible for the actual cost(s) of any such monitoring within thirty (30) days of receipt of an invoice.
- h. Licensee may use qualified contractors of its own choice to perform work below the Communication Worker Safety Zone. For any work in or above the Communication Worker Safety Zone (when expressly permitted by this Agreement), Licensee must use an Approved Contractor.
- i. Licensee shall comply with all applicable Federal Laws, State Laws, and local laws, rules and regulations with respect to environmental practices undertaken pursuant to its performance of this Agreement. Licensee shall not bring, store or utilize any hazardous materials on any ODP site without the prior express written consent of ODP. To the extent reasonably practicable, Licensee shall restore any property altered pursuant to its performance under this Agreement to its condition existing immediately prior to Licensee's alteration. ODP shall have no obligation to correct or restore any property altered by Licensee and shall bear no responsibility for Licensee's compliance with applicable environmental regulations.
- j. If Licensee has not installed Attachments in accordance with the design standards and terms of this Agreement, and ODP provides written notice to Licensee describing the defect, Licensee, at its own expense, shall make necessary adjustments within thirty (30) days. Subject to Section 10 below, if Licensee fails to make such adjustments within thirty (30) days, ODP, at its option, may make

such repairs or adjustments, and Licensee shall pay ODP for the actual cost thereof, plus liquidated damages in the amount of 50% of the actual cost, within thirty (30) days of receipt of an invoice.

1. Licensee at all times warrants compliance with all requirements set out in this Section 6, assumes the continuing responsibility for such compliance in the future and assumes all responsibility for any damage, fines or penalties resulting from any noncompliance. ODP undertakes no duty to require any specific action by Licensee and assumes no responsibility by requiring such compliance or by requiring Licensee to meet any specifications or to make any corrections, modifications, additions or deletions to any work or planned work by Licensee.
  - m. Within 15 days of completion of the installation, Licensee shall provide ODP with complete "as-built" drawings in a computer-generated electronic format (or such other format as is agreeable to ODP). No hand drawings satisfy this requirement. Such "as-built" drawings of Licensee's facilities shall be considered confidential and proprietary and subject to the provisions of Section 22 of this Agreement.
7. [RESERVED].
8. Maintenance of Attachments; Vegetation Management; National Joint Utilities Notification System.
- a. At all times, Licensee shall, at its own expense, maintain Attachments in safe condition and in good repair, in a manner reasonably suitable to ODP and so as not to conflict with any use of ODP facilities (including Structures) by ODP or by any other Person using such facilities pursuant to any license or permit by ODP. Licensee shall also ensure that its Attachments are constructed in a manner so as to minimize aesthetic nuisance, and maintained in a manner so as to avoid unsightliness. Licensee agrees not to interfere with the working use of any other Person's property on such facilities or any such property, which may, from time to time, be placed on or near ODP's Structures and other facilities. Maintenance of the Attachments shall be performed only by qualified personnel as provided in Section 6.h. of this Agreement.
  - b. Licensee shall, at its own risk and expense, perform any tree trimming and/or vegetation management work necessary to keep its Attachments and Cables free from vegetation. In the event such work presents the risk of contact with energized electric facilities, Licensee shall so notify ODP and ODP will perform such work at Licensee's sole risk and expense.
  - c. The Parties recognize that improved coordination of activities under this Agreement is of mutual benefit to all parties, and that Licensee's and ODP's participation in the National Joint Utilities Notification System ("NJUNS"), a Web-based system developed for the purpose of improving the coordination of such activities, would improve their respective operations under this Agreement. Licensee will join NJUNS prior to making application for Attachment, or within

thirty (30) days of the execution of this Agreement (if it has not already), whichever is sooner, and, during the term of this Agreement or as long as Licensee has Attachments on ODP's poles, will actively participate by entering field information into the NJUNS system within the times required by the system. Should Licensee fail to actively participate in NJUNS and should such failure cause ODP to incur any expense or any liability to others, Licensee shall reimburse ODP its expense and indemnify and hold ODP harmless from any damages or liability arising out of such failure. ODP may, in its sole discretion, utilize a different web-based system for the purposes stated in this Section 8.c., but shall provide Licensee with at least sixty (60) days' notice of any such change.

9. Structure Inspection: Field Inspections.

- a. ODP undertakes no duty to inspect or ensure the repair of any facilities or Structures. ODP may make periodic inspections, as conditions may warrant, for the purpose of determining compliance with this Agreement. Neither ODP's right to make inspections nor any inspection made by ODP shall relieve Licensee of any responsibility, obligation or liability assumed under this Agreement.
- b. ODP may conduct a complete field inspection of its Structures at any time for the purpose of verifying the number, location and type of all Attachments of Licensee on ODP's Structures. ODP shall give Licensee at least thirty (30) days' notice of such inspection.
  - i. If the field inspection reveals that Licensee has more Attachments than shown in ODP's existing records, the additional Attachments shall be treated as Unauthorized Attachments pursuant to Section 18.
  - ii. Licensee shall reimburse ODP for the cost of such inspections (or a pro rata share of such inspections, if the facilities of other licensees are inspected at the same time).

10. Interference or Hazard. If ODP notifies Licensee in writing or orally with written confirmation that, in ODP's reasonable judgment, the Attachments or the condition of Attachments of Licensee on any Structures (i) interfere with the use of such Structures or the operation of ODP facilities or equipment, (ii) constitute a hazard to the service rendered by ODP or any other Persons licensed by ODP to use such Structures, (iii) cause a danger to employees of ODP or other persons, or (iv) fail to comply with applicable codes, specifications, laws or regulations, then Licensee shall, within a reasonable period, remove, rearrange, repair or change its Attachments as needed or as directed by ODP. In the case of any immediate hazard or danger, such period shall not exceed twenty-four (24) hours from receipt of such notice. In case of a hazardous condition or other emergency which in ODP's good faith and reasonable judgment requires ODP to immediately remove or relocate the Attachments of Licensee, ODP reserves the right, at Licensee's expense, without prior notice and with no liability therefor, to remove or relocate such Attachments as required (provided ODP shall provide Licensee with notice, which may be by telephone, of any such action as soon as reasonably possible thereafter).

11. Rearrangement; Relocation of Structures; New Structures.

- a. If Licensee's desired Attachments can be accommodated on existing Structures of ODP only by rearranging facilities of ODP, or if because of Licensee's proposed Attachments it is necessary for ODP to rearrange or transfer its facilities on any facility not owned by it, Licensee shall reimburse ODP for the actual expense incurred in making such rearrangement.
- b. Upon sixty (60) days prior written notice delivered to Licensee (except in emergency or dangerous situations, in which event ODP shall give only as much prior notice as practical under the circumstances), ODP shall have the right to replace, relocate, remove or abandon any Structure and to cause the alteration, relocation or removal of any Attachment, consistent with normal operating, maintenance and development procedures and prudent utility practices. ODP will bear all costs and expenses of any relocation of the Structures not attributable to or caused by Licensee or the Attachments, and Licensee will bear all costs and expenses of any relocation and removal of the Attachments and all costs and expenses attributable to or caused by Licensee or the Attachments. Licensee shall be solely responsible for, and hold ODP harmless from, any losses occasioned by the interruption of Licensee's business or operations.
- c. In the event ODP determines that any space occupied by the Attachments is required in connection with the services provided by ODP or any of its Affiliates, ODP shall be entitled to direct, by written notice to Licensee, that such Attachments be removed from the Structures. Licensee agrees to complete such removal within sixty (60) days of ODP's request.
- d. If Licensee fails to timely perform any work as instructed by ODP pursuant to this Section 11 or any other Section of this Agreement, ODP may either (i) perform such work at Licensee's sole risk and expense in which case Licensee shall pay ODP for the actual cost thereof, plus liquidated damages in the amount of 50% of the actual cost, within thirty (30) days of receipt of an invoice, or (ii) ODP may charge Licensee, as liquidated damages, \$50 per Structure on which Licensee has failed to timely perform such work and an additional \$50 per Structure for each thirty (30) day period until Licensee performs such work.

12. Licensee's Abandonment of Structures. Licensee may at any time abandon the use of a Structure hereunder by removing therefrom all of its Attachments and by giving written notice thereof to ODP. Licensee shall bear all cost of removal and any ODP costs incurred as a result of such removal within thirty (30) days of receipt of an invoice. ODP shall make no refund of any amount paid by Licensee for use of such Structure, nor shall any other obligation or liability of Licensee under this Agreement be affected by such abandonment.

13. Maintenance and Operation of ODP's Structures. ODP reserves to itself, its successors, Affiliates and assigns, the right to maintain Structures and other ODP property and to operate its business and maintain its property in such a manner as will, in its own judgment, best enable it to fulfill its own service requirements. ODP shall not be liable to Licensee

for any interference with the operation of Licensee's facilities, or loss of business arising in any manner out of the use of ODP's Structures or other property hereunder.

14. Indemnity; Limitation of Liability.

a. Indemnity.

- i. Licensee agrees to protect, defend, indemnify and save harmless ODP, its Affiliates, their officers, directors, employees and representatives (each an "Indemnitee" hereunder) from and against all damage, loss, claim, demand, suit, liability, penalty or forfeiture of every kind and nature, including but not limited to costs and expenses of defending against the same, payment of any settlement or judgment therefor and reasonable attorney's fees that are incurred by Indemnitee, by reason of any claims arising from Licensee's activities under this Agreement, or from Licensee's presence on the premises of ODP, or from or in connection with the construction, installation, operation, maintenance, presence, replacement, enlargement, use or removal of any facility of Licensee attached to, or in the process of being attached to or removed from, any Structure of ODP by Licensee, its employees, agents, or other representatives, including but not limited to (a) claims alleging injuries or deaths to persons; (b) claims alleging damage to or destruction of property including loss of use thereof; (c) power or communications outage, interruption or degradation; (d) pollution, contamination of or other adverse effects on the environment; (e) violation of governmental laws, regulations or orders; or (f) rearrangement transfer or removal of any third party attachment on, from or to any Structure of ODP. The indemnity set forth in this section shall include indemnity for ODP's own negligence, but shall not include indemnity to the extent of ODP's gross negligence or willful misconduct.
- ii. Licensee hereby expressly agrees to indemnify and save harmless ODP from any and all claims, including the expenses incurred by ODP to defend itself against such claims, resulting from or arising out of the failure of Licensee to secure any right of way, easement, license, franchise or permit as required in Section 4 above.

- b. Limitation of Liability. IN NO EVENT SHALL ODP OR ANY OF ITS REPRESENTATIVES BE LIABLE UNDER THIS AGREEMENT TO LICENSEE FOR CONSEQUENTIAL, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, PUNITIVE OR ENHANCED DAMAGES, LOST PROFITS OR REVENUES OR DIMINUTION IN VALUE, ARISING OUT OF, OR RELATING TO, OR IN CONNECTION WITH THIS AGREEMENT, REGARDLESS OF (A) WHETHER SUCH DAMAGES WERE FORESEEABLE, (B) WHETHER OR NOT ODP WAS ADVISED OF THE POSSIBILITY OF SUCH DAMAGES OR (C) THE LEGAL OR EQUITABLE THEORY (CONTRACT, TORT OR OTHERWISE) UPON WHICH THE CLAIM IS

BASED.

15. Default by Licensee.

- a. Each of the following shall constitute a Licensee Event of Default:
  - i. Failure by Licensee to pay any fee required, perform any material obligations undertaken or satisfy any warranty or representation made under this Agreement; and
  - ii. The occurrence of a sale, lease, license, mortgage, hypothecation, or other transfer of any kind, by instrument, judgment, operation of law or otherwise, of any interest in Attachments to any Person without the express written consent of ODP, which consent shall not be unreasonably conditioned, withheld or delayed; provided, however, that a contract for service to a customer of Licensee or the transfer of rights to use dark fiber within the Cable without a transfer of any interest in Attachments shall not alone constitute a transfer described in this paragraph.
- b. If, within thirty (30) days after receipt of ODP's written notice of the occurrence of a Licensee Event of Default, Licensee has not cured the default so notified, ODP may take any or all of the following actions:
  - i. Terminate the license granted herein to the extent of Structures to which such default or non-compliance is applicable;
  - ii. Remove, relocate, or rearrange Attachments of Licensee to which such default or non-compliance relates, all at Licensee's expense;
  - iii. Decline to permit additional Attachments hereunder until such failure or default is cured;
  - iv. Terminate this Agreement, and recover from Licensee all costs and expenses incurred as a result of or reasonably related to the Licensee Event or Events of Default and the termination of this Agreement;
  - v. To the extent permitted by applicable laws, in the event that Licensee shall have terminated business operations and shall be unable or unwilling to remove substantially all Attachments from the property of ODP, assume ownership and control of all Attachments and all related equipment of Licensee attached to ODP's Structures; and
  - vi. Pursue any and all remedies that may be available in law and equity, including specific performance.
- c. No liability shall be incurred by ODP upon its taking of any or all actions described in this Section 15 and Licensee shall be liable for all expense, including reasonable

attorney's fees and court costs incurred by ODP in pursuit of such remedies or as a result of the termination of this Agreement thereunder. The remedies provided herein are cumulative and in addition to any other remedies available to ODP under this Agreement or otherwise. No refund of any license fee will be due on account of termination.

16. Default by ODP. If ODP fails to comply with any provisions of this Agreement or defaults in the performance of any of its obligations under this Agreement and fails within thirty (30) calendar days, after written notice from Licensee, to cure the default (except that if such a failure is of a nature that cannot be reasonably cured within 30 days then ODP shall not be deemed in default hereunder and Licensee may not take any of the following actions so long as ODP commences good faith action to cure the default notified within such 30 day period and thereafter diligently pursues such action), then Licensee may terminate this Agreement and/or pursue any and all such remedies as may be available in law or in equity, including, without limitation, the remedy of specific performance. No liability shall be incurred by Licensee because of any or all such actions. The remedies provided herein are cumulative and in addition to any other remedies available to Licensee under this Agreement or otherwise.

17. License Fees.

- a. All attachment charges for use of Structures will be billed semi-annually based upon the number of Licensee's Attachments reflected in ODP's records on December 1 and June 1. Payment of License Fees and other consideration provided in this Agreement shall not entitle Licensee to affix or install Attachments if other terms of this Agreement have not been met.
- b. All invoices submitted by ODP under this Agreement are due when rendered. Any bill not paid in full within sixty (60) days of its issuance shall be assessed a late payment fee of 3 percent on the bill's current charges. If the Licensee fails to pay all charges and fees billed within six months of the bill's issuance, ODP may remove any or all of Licensee's Attachment's.
- c. For all Attachments made under this Agreement, the annual License Fee shall be \$6.97/year per each Attachment, subject to annual adjustment as set forth in Section 17.d. below.
- d. The License Fee may be adjusted annually based upon on the preceding year's data in accordance with the FCC's pole attachment rate formulas.

18. Unauthorized Attachments. If Licensee makes any Attachment that requires ODP approval and Licensee has not obtained such approval, such Attachment shall be deemed an "Unauthorized Attachment" and shall be presumed to have been affixed to OPD's Structure(s) for five (5) years or since completion of the most recent field inspection (whichever is less). Licensee shall be liable for License Fees for this time period, and shall pay additional liquidated damages in the amount of \$25.00 for each Unauthorized Attachment to offset indirect administrative costs reasonably anticipated in connection

with the Unauthorized Attachment. Licensee shall also submit to ODP an application for approval of the Unauthorized(s) Attachment within 30 days of discovery. If Licensee fails to submit the required applications or fails to timely remit any necessary payments to ODP in connection with the application process (including but not limited to any make-ready fees necessary to accommodate the Unauthorized Attachments), ODP may remove any or all such Unauthorized Attachments at Licensee's sole risk and expense.

19. Waivers. Failure by either Party to enforce or insist upon compliance with any of the terms or conditions of this Agreement shall not constitute a general waiver or relinquishment of any such terms or conditions, but the same shall be and remain at all times in full force and effect.
  
20. Term and Termination.
  - a. This Agreement shall become effective upon the Effective Date.
  
  - b. If not terminated in accordance with the provisions of this Section 20 or Sections 15 or 16 above or by mutual agreement of the Parties, this Agreement shall continue in effect for a term of five (5) years from the Effective Date, and shall thereafter automatically renew for successive one (1) year periods unless one Party gives the other Party written notice of termination at least sixty (60) days in advance of the next renewal date.
  
  - d. Upon termination of this Agreement, Licensee shall remove all Attachments from Structures and other ODP property within one hundred eighty (180) days. All costs of such removal shall be borne by Licensee. Licensee shall exercise precautions to avoid damage to all persons and to facilities of ODP and other parties in so removing Attachments and assumes all responsibility for any and all such damage caused by Licensee. If Licensee's Attachments and other property are not promptly removed upon termination of this Agreement, as herein provided, unless the time is extended by mutual agreement, ODP shall have the right to remove said Attachments without liability therefor, and Licensee shall pay ODP the cost of such removal within thirty (30) days of receipt of an invoice.
  
  - e. ODP may terminate this Agreement without liability to Licensee, upon giving sixty (60) days advance written notice to Licensee: (i) at such time as it is determined in the reasonable opinion of ODP's legal counsel that ODP's performance hereunder would be illegal under applicable law or regulation or under any order or ruling issued by the SCC, or any other federal, state or local agency having regulatory jurisdiction over ODP and same cannot be cured by ODP without unreasonable expense or without materially and substantially altering the terms and conditions of this Agreement; or (ii) if, in the reasonable opinion of ODP's legal counsel, termination is required to preserve ODP's rights under any franchise, right-of-way, permit, easement or other similar right which is material and substantial to ODP's business or operations. In the event of such termination, the Parties shall pay and perform obligations, which have arisen prior to the effective date of termination,

but shall not be obligated to pay and perform obligations, which arise after the effective date of termination.

21. Insurance.

- a. For the entire duration of this Agreement (and thereafter until the completion of this Agreement, including but not limited to any period of time during which Licensee's Attachments remain on ODP's Structures) on a per occurrence basis with respect to this Agreement, Licensee shall, at its own expense, maintain and carry in full force and effect, and shall require any of its Contractors and subcontractors to maintain and carry in full force and effect, the following insurance:
  - i. Workers' Compensation and Employer's Liability Policy, which shall include:
    - (a) Workers' Compensation (Coverage A), with statutory limits, and in accordance with the laws of all states where the Attachments are located;
    - (b) Employer's Liability (Coverage B) with minimum limits of One Million Dollars (\$1,000,000) Bodily Injury by Accident, each Accident, \$1,000,000 Bodily Injury by Disease, each Employee;
    - (c) Thirty (30) Day Cancellation Endorsement; and
    - (d) Broad Form All States Endorsement.
    - (e) with respect to any personnel of Licensee or any Subcontractor who perform work to which the U.S. Longshore and Harbor Workers Compensation Act is applicable, U.S. Longshore and Harbor Workers Compensation Act coverage (required if workers of Licensee or Subcontractor are performing work that falls under such Act; and
    - (f) with respect to any personnel of Licensee or any Subcontractor who perform work on commercial vessels, Maritime Employers Liability (MEL) including Jones Act coverage (required at all times workers of the Licensee or Subcontractor are working on commercial vessels) any time during the period of this Agreement.
  - ii. Commercial General Liability Policy, which shall have minimum limits of One Million Dollars (\$1,000,000) each occurrence; One Million Dollars (\$1,000,000) Products/Completed Operations Aggregate each occurrence; One Million Dollars (\$1,000,000) Personal and Advertising Injury each occurrence, in all cases subject to Two Million Dollars (\$2,000,000) in the General Aggregate for all such claims, and including:
    - (a) Thirty (30) Day Cancellation Endorsement;
    - (b) Blanket Written Contractual Liability to the extent covered by the policy against liability assumed by Licensee under this Agreement;
    - (c) Insurance for liability arising out of blasting, collapse, and underground

- damage (deletion of X, C, U exclusions);
- (d) General Aggregate Limit – Per Project Endorsement (CG2503);
- (e) Products/Completed Operations coverage shall be extended for five (5) years beyond the completion of all work;
- (f) No exclusion for use of watercraft;
- (g) Include Additional Insured Endorsement GC 2010 or CG2037, or its equivalent; and
- (h) Sudden & accidental pollution liability.

- iii. Commercial Automobile Liability Insurance covering the use of all owned, non-owned, and hired automobiles, with a bodily injury, including death, and property damage combined single minimum limit of One Million Dollars (\$1,000,000) each occurrence.
- iv. Umbrella/Excess Liability Insurance with minimum limits of Five Million Dollars (\$5,000,000) per occurrence; Five Million Dollars (\$5,000,000) aggregate, to apply to employer's liability, commercial general liability and automobile liability, including:
  - (a) Products/Completed Operations coverage shall be extended for five (5) years beyond the completion of all work.
  - (b) Must include "follow form" provisions including any required marine coverage.
  - (c) Total limits can be met by any combination of the underlying primary coverage with umbrella/excess policies.
- v. If any fixed wing, rotor, or any aircraft will be used by Licensee in performing the work allowed or required under this Agreement, Aircraft Public Liability Insurance covering such aircraft whether owned, non-owned, leased, hired or assigned with a combined single minimum limit for bodily injury and property damage of Five Million Dollars (\$5,000,000) including passenger liability coverage.
- vi. If any Unmanned Aircraft Systems (UAS) will be used by Licensee in performing the work allowed or required under this Agreement, Drone Liability Insurance covering such aircraft whether owned, non-owned, leased, hired or assigned with a \$1,000,000 per occurrence combined single limit for bodily injury, property damage and personal injury.
- vii. With respect to any work with includes professional services that fall within a professional liability exclusion from the Commercial General Liability Policy provided under Section 21.a.ii above, Professional Liability Insurance with the following characteristics:
  - (a) Claims made basis;

- (b) Shall remain in force continuously for three (3) years or an extended discovery period will be exercised for a period of three (3) years beginning from the time the work is completed;
  - (c) Include coverage for a pollution event resulting from the professional services; and
  - (d) If the work includes engineering or architectural services, the minimum limits shall be \$3,000,000 per claim and \$3,000,000 in the aggregate.
- b. The above policies to be provided by Licensee shall be written by insurance companies which have an A.M. Best Rating of not less than "A-, VIII". These policies shall not be materially changed or canceled except with thirty (30) days written notice to ODP from Licensee and the insurance carrier. Evidence of coverage, notification of cancellation or other changes shall be mailed to: Attention: Manager, Supply Chain, LG&E and KU Services Company, P.O. Box 32020, Louisville, Kentucky 40232.
- c. Except with regard to workers' compensation and professional liability, Licensee shall name ODP as additional insured on each of the above referenced policies. All policies will be primary/non-contributory in favor of ODP. Licensee shall waive any rights of subrogation against ODP and its insurance carriers.
- d. For any of the foregoing policies that are issued on a claims made basis, after termination of this Agreement, Licensee shall maintain such policies in place (and/or provide comparable tail coverage) for at least five years after all of Licensee's obligations under this Agreement have been fulfilled. The retroactive date must be prior to the commencement of any work done on behalf of ODP.
- e. ODP reserves the right to request and receive a summary of coverage of any of the above policies or endorsements; however, ODP shall not be obligated to review any of Licensee's certificates of insurance, insurance policies, or endorsements, or to advise Licensee of any deficiencies in such documents. Any receipt of such documents or their review by ODP shall not relieve Licensee from or be deemed a waiver of ODP's rights to insist on strict fulfillment of Licensee's obligations under this Agreement.
- f. Licensee shall provide Certificates of Insurance to Company for each policy of insurance required above and evidence the items noted hereafter: (1) Each Certificate shall properly identify the certificate holder as Company; (2) Under no circumstances shall Licensee begin any work (or allow any Subcontractor to begin any work) prior to submitting Certificate(s) (evidencing the required insurance of the Licensee or Subcontractor, as applicable) acceptable to Company. Company retains the right to waive this requirement at its sole discretion; (3) Certificate shall evidence thirty (30) days prior notice of cancellation; (4) Certificate shall verify additional insured status on all coverage including the endorsements required by this Section 21; (5) Certificate shall verify Blanket Waiver of subrogation - All policies of insurance shall include waivers of subrogation against Company. Except

where not applicable by law; (6) Certificate shall verify Primary/Non-contributory wording in favor of Company; and (7) Certificate shall identify policies which are written on a Claims Made coverage form and state the retroactive date.

- g. Licensee shall provide notice of any accidents or claims involving Licensee's Attachment or Licensee's work under this Agreement to ODP's Manager, Risk Management at LG&E and KU Services Company, P.O. Box 32030, Louisville, Kentucky 40232 and ODP's site authorized representative. Additionally, Licensee shall notify ODP of any threatened, pending or paid off claims to third parties, individually or in the aggregate, which from time to time may affect the coverage inuring to the benefit of ODP as hereinafter specified.
  - h. Each policy of insurance required to be maintained by Licensee under this Section 21 (except the Workers' Compensation and Employer's Liability Policy) shall cover all losses and claims of Licensee regardless of whether they arise directly or indirectly. Section 21 only represents minimum insurance requirements; it does not mitigate or reduce liability required by the indemnity provisions in this Agreement. Licensee is responsible for ensuring that its contractors' insurance meets the requirements of Section 21.
  - i. Licensee shall have insurance coverage in place at Licensee's expense prior to performing any work under this Agreement. ODP retains the right to refuse to allow the performance of such work in the absence of such coverage.
  - j. Policy limits shall not be deemed to be limit of Licensee's liability to ODP under this Agreement.
  - k. Self-Insured retentions are not acceptable without ODP's consent, except for the \$10,000 maintenance retention on Umbrella coverage.
22. Confidentiality and Publicity. Each Party acknowledges that, in the course of the performance of this Agreement, it may have access to privileged and proprietary information claimed to be unique, secret and confidential and which constitutes the exclusive property or trade secrets of the other Party. This information may be presented in documents marked with a restrictive notice or otherwise tangibly designated as proprietary, or disclosed during oral discussions, at which time representatives of the disclosing Party will specify that the information is proprietary. Unless jointly agreed to in writing, neither Party shall knowingly disclose to third parties any proprietary information received from the other Party in connection with this Agreement, nor shall they disclose the terms of this Agreement to any other person or entity (other than to their respective Affiliates, directors, officers, employees, agents and contractors who have a need to know the same) unless required in order to prosecute or defend any claim in an action involving any of the Parties hereto, or unless required by any court, governmental agency or regulatory body having competent jurisdiction. In the case of disclosure for such prosecution or defense or as required by any such judicial or quasi-judicial body, the non-

disclosing Party shall be given sufficient notice so as to allow it to seek a protective order with respect to such disclosure. The Parties shall each protect proprietary information received from the other with the same degree of care that they would take to protect their own proprietary information, and each Party shall be responsible for ensuring that its directors, officers, employees, agents and contractors who have access to the confidential or proprietary information of the other, maintain the confidentiality of such information in accordance with this Section 22. However, the Parties shall have no obligation to keep confidential any information that is in or becomes part of the public domain through no fault of their own. No Party shall issue news releases, publicity statements or advertising which references the other Party, this Agreement, or any provision hereof, without first obtaining the prior written approval of the other Party; provided, that the foregoing restriction shall not prevent the disclosure by a Party of any proprietary information to the extent (i) in the opinion of that Party's legal counsel, such disclosure is required by any law, regulation or rule of any securities exchange; or (ii) such disclosure is made to a person or other entity that is itself bound to maintain the confidentiality of the same pursuant to a written confidentiality agreement with the disclosing Party consistent with the provisions in this Section 22. Notwithstanding the foregoing, ODP may disclose the existence and terms of this Agreement to federal, state and municipal bodies having jurisdiction over the operations of ODP. Further, nothing herein shall prevent ODP from disclosing information to others as necessary to facilitate the orderly administration of this Agreement.

23. Binding Effect; Assignment. All provisions of this Agreement shall inure to the benefit of and be binding upon each of the Parties hereto upon the Effective Date and upon their successors and assigns. Licensee shall not assign this Agreement or any of its rights or obligations hereunder without the prior written consent of ODP, which consent shall not be unreasonably withheld, conditioned or delayed.

24. Performance Assurance.

a. Licensee shall furnish Performance Assurance in the following amounts to guarantee the payment of any sums which may become due for attachment charges, inspections, or work performed by the Company under this Agreement, including the removal of attachments upon termination of the Agreement by any of its provisions:

<u>Number of Attachments</u>	<u>Amount per Attachment</u>	<u>Maximum Total</u>
1-5,000	\$20/Attachment	\$100,000
5,001-10,000	\$10/Attachment	\$150,000
10,001+	\$5/Attachment	\$1,000,000

The above-stated amounts are incremental. By way of example, 7,500 Attachments would require Performance Assurance in the amount of \$125,000 (\$20 per Attachment for the first 5000 Attachments; \$10 per Attachment for the next 2,500 Attachments); 15,000 Attachments would require Performance Assurance in the amount of \$175,000 (\$20 per

Attachment for the first 5000 Attachments; \$10 per Attachment the next 5,000 Attachments; and \$5 per Attachment for the last 5,000 Attachments).

The amount of the Performance Assurance shall be calculated by the Company annually based on the Licensee's then-existing number of Attachments. Licensee shall provide the Performance Assurance within 30 days of its request by the Company.

In the event the Customer provides Performance Assurance in the form of a surety bond or Letter of Credit, each bond or Letter of Credit shall contain the provision that it shall not be terminated prior to six (6) months after Company's receipt of written notice of the desire of the bonding or insurance company, or bank, to terminate such bond or Letter of Credit. Company may waive this requirement if an acceptable replacement is received before the six (6) months has ended. Upon termination of such surety bond or Letter of Credit, Company shall request Licensee to immediately remove its Cables, Attachments and all other facilities from Company Structures. If Licensee should fail to complete the removal of all of its facilities from Company's Structures within thirty (30) days after receipt of such request, then Company may remove Licensee's facilities at Licensee's expense and without liability for any damage to Licensee's facilities.

Each surety bond shall be issued by an entity having a minimum A.M. Best rating of A- and each Letter of Credit shall be issued by an entity having a minimum Credit Rating of A- by S& P or A3 by Moody's at the time of issuance and at all times the relevant instrument is outstanding.

25. Notice. Any notice or request required by this Agreement shall be deemed properly given if sent overnight by nationally recognized overnight courier, sent by certified U.S. mail, return receipt requested, postage prepaid, or sent by telecopier, if number provided below, with confirmed receipt, to:

In the case of ODP:

Vice President, Electric Distribution  
KENTUCKY UTILITIES COMPANY  
d/b/a OLD DOMINION POWER COMPANY  
220 W. Main Street  
Louisville, KY 40202  
Phone: (502) 627-4743  
Fax: (502) 627-4165

With a copy to:

Office of the General Counsel  
And Corporate Secretary  
KENTUCKY UTILITIES COMPANY  
d/b/a OLD DOMINION POWER COMPANY  
220 W. Main Street

Louisville, KY 40202

In the case of Licensee:

Chief Executive Officer  
SCOTT TELECOM AND ELECTRONICS  
PO Box 489  
149 Woodland Street  
Gate City, VA 24251  
Phone: (276) 452-9119  
Fax: (276) 452-2448

With a copy to:

Whiteford Taylor Preston  
Attn: Vernon E. Inge, Jr.  
One James Center  
901 E. Cary Street, Suite 500, Richmond, VA 23219

The designation of the person(s) to be notified, and his, her or their address(es) may be changed by ODP or Licensee at any time, or from time to time, by similar notice.

26. Force Majeure. In the event Licensee or ODP is delayed in or prevented from performing any of its respective obligations under this Agreement due to acts of God, war, riots, civil insurrection, acts of the public enemy, strikes, lockouts, acts of civil or military authority, government shutdown, fires, floods, earthquakes, fiber, cable or other material failures, shortages or unavailability, delay in delivery not resulting from the responsible Party's failure to timely place orders therefor, lack or delay in transportation, or failure of a third party to grant or recognize a right beyond the reasonable control of the Party delayed or due to any other causes beyond the reasonable control of the Party delayed, then such delay or nonperformance shall be excused.
27. Accounting Standards. In computing or estimating expenses, costs, or other charges to be paid or reimbursed by Licensee under this Agreement, ODP shall use the accounting principles, practices, and records commonly employed in its business and as permitted or required by State Law.
28. Liens. To the extent permitted by law, in the event any construction lien or other encumbrance shall be placed on the Attachments by the actions of Licensee or its Contractor, Licensee shall promptly, in accordance with applicable laws, discharge such lien or encumbrance without cost or expense to ODP, and Licensee hereby agrees to indemnify ODP for any and all actual damages that may be suffered or incurred by ODP in discharging or releasing said lien or encumbrance.
29. Relationship of Parties and Independent Contractor Status. Neither ODP nor Licensee shall be deemed to be a partner, agent or joint venturer with or of the other by reason of this

Agreement or the consummation of the transactions contemplated herein. ODP and Licensee shall perform their duties under this Agreement as independent contractors, and at their own risk. Neither ODP nor Licensee shall at any time hold itself out as being a partner, co-venturer or agent of the other.

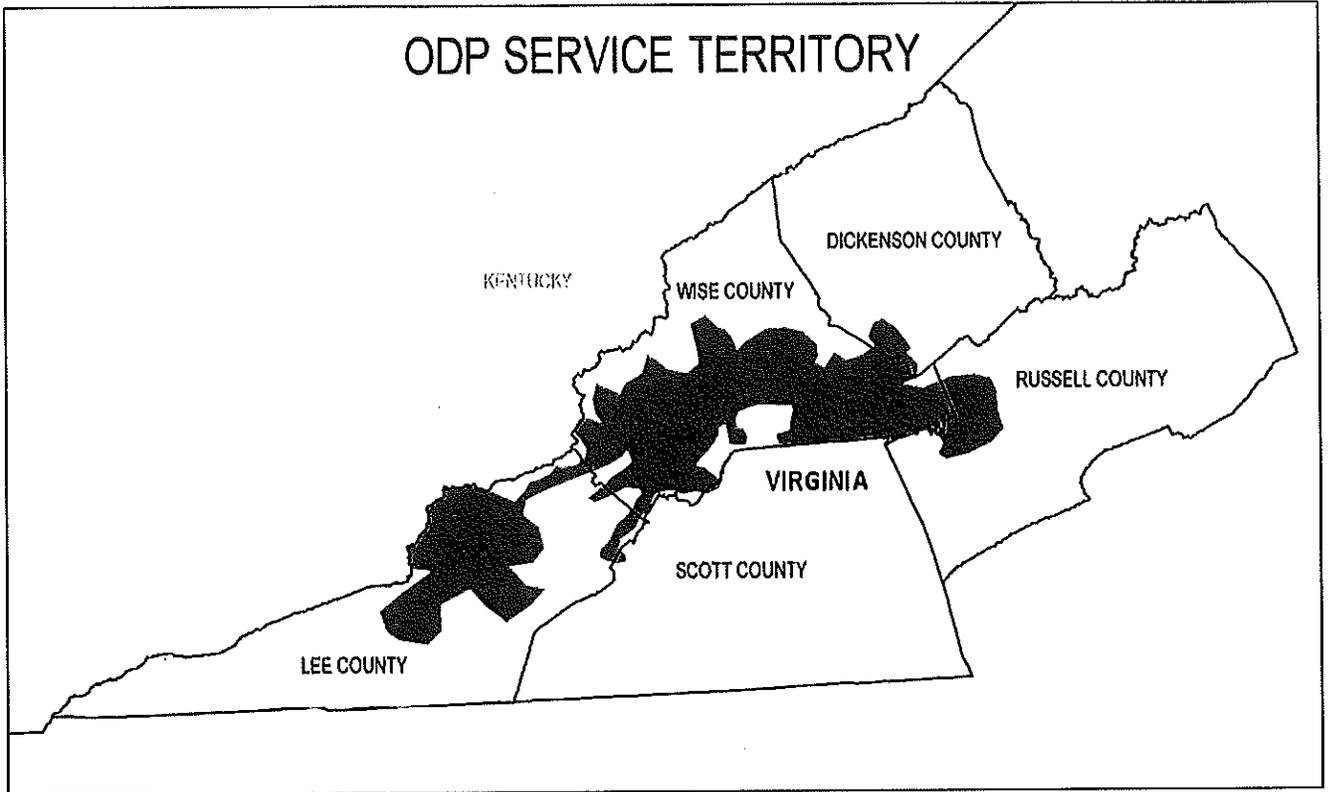
30. Execution. This Agreement may be executed in multiple counterparts, each being deemed an original and all together being deemed the same document.
31. Further Assurances. Each Party shall execute such assignments, endorsements and other instruments and give such further assurances and perform such acts as are or may become necessary and appropriate to effectuate and carry out the provisions of this Agreement.
32. Entire Agreement; Good Faith Negotiations. This Agreement constitutes the entire Agreement between ODP and Licensee regarding the Attachments, and all previous representations relative thereto, either written or oral, are hereby annulled and superseded, including but not limited to the license agreement between ODP and East Tennessee Management Company, dated February 19, 1990. No modification of this Agreement shall be binding on ODP or Licensee unless it shall be in writing and signed by both Parties. Nothing contained in this Agreement shall be construed as having any effect in any future agreement or contemplated future agreement between the Parties. The parties acknowledge that the terms and conditions set forth in this Agreement are fair, reasonable and just, and that they were agreed to voluntarily after extensive good faith negotiations at arm's length and contain concessions, valuable consideration, benefits and burdens for and from both parties.
33. Governing Law; Venue. The laws of the Commonwealth of Kentucky, without regard to the conflict of laws provisions thereof, shall apply to this Agreement and to its interpretation. All legal proceedings to enforce this Agreement shall be brought only in a state or federal court in Jefferson County, Kentucky.
34. Injunctive Relief. Each Party acknowledges that the other party may not be adequately compensated by money damages in the event of a breach of any covenant or agreement contained herein and that the other Party may be entitled to specific performance of such covenants and agreements, or other injunctive relief, in accordance with applicable laws, in addition to all other remedies.
35. Headings. Paragraph headings are for the convenience of the Parties only and are not to be construed as part of the terms of this Agreement.
36. Dispute Resolution. In the event any dispute arises between the Parties under this Agreement, the Party seeking resolution of the dispute must submit written notice to the other describing the dispute and such Party's desire to resolve the dispute in accordance with the provisions of this Section 36. If the Parties are then unable to resolve such dispute in the normal course of business within fifteen (15) days after delivery of the written notice as provided herein, each of the Parties shall promptly, but in no event later than twenty (20) days after delivery of such written notice, appoint a designated representative who has authority to settle the dispute. The designated representatives shall meet as often as they

reasonably deem necessary in order to discuss the dispute and negotiate in good faith in an effort to resolve such dispute. The specific format for such discussions will be left to the discretion of the designated representatives; however, all reasonable requests for relevant non-privileged information made by one Party to the other Party shall be honored. If the Parties are unable to resolve issues related to the dispute within forty-five (45) days after the Parties' appointment of the designated representatives, then either Party may pursue its rights and remedies under law or equity without further delay. Each Party shall bear its own costs and expenses in seeking resolution of any dispute under this Agreement pursuant to this Section 36.

IN WITNESS WHEREOF, the Parties have caused this Agreement to be duly executed by their authorized officers as of the Effective Date.

<p>KENTUCKY UTILITIES COMPANY d/b/a OLD DOMINION POWER COMPANY</p> <p>By: <u>Denise Simon</u></p> <p>Name: <u>Denise Simon</u></p> <p>Title: <u>Director, Distribution Reliability, Analytics, and Administration</u></p> <p>Date: <u>12/19/2019</u></p>	<p>SCOTT TELECOM AND ELECTRONICS</p> <p>By: <u>Roger Fraysier</u></p> <p>Name: <u>Roger Fraysier</u></p> <p>Title: <u>Operations Manager</u></p> <p>Date: <u>December 10, 2019</u></p>
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Schedule 1



## **Memorandum of Understanding (MOU)**

Whereas Powell Valley Electric Cooperative (PVEC) and Scott County Telephone Cooperative (SCTC) wish to cooperate to design, construct, and operate additions to the existing SCTC fiber optic network for purposes of providing Automated Meter Infrastructure (AMI) capability to every PVEC member.

Whereas PVEC is recognized as having extensive and longstanding experience in line construction and maintenance.

Whereas SCTC is recognized as a leader in rural fiber optic broadband deployment.

PVEC hereby coordinates with SCTC for the expansion of fiber lines to the homes and businesses of PVEC members to meet the goal of providing AMI to every PVEC member as appropriate and providing communications for PVEC's other electrical needs.

**PVEC RESPONSIBILITIES:** PVEC will be responsible for:

- Construction of backbone fiber, drop fiber, installation of member premise electronics, and splicing.
- PVEC will work with SCTC to verify materials are compatible to SCTC's existing network.
- Maintenance on all fiber in the PVEC footprint and this maintenance charge will be at PVEC cost and billed to SCTC monthly.

**FINANCIAL RESPONSIBILITIES:** PVEC will finance any or all of PVEC's costs (including both capital and construction) associated with its responsibilities listed above in PVEC RESPONSIBILITIES. These costs will be accrued through the PVEC work order system and a running total of its Project Costs will be maintained by PVEC. All PVEC work order costs, which are not offset by grant funding, will be reimbursed by SCTC at a monthly rate of \$40.00 per member connected and serviced on the broadband network. These member revenues will be tabulated monthly and the amounts paid to PVEC. All applicable payments will be deducted from the running Project total owed to PVEC by SCTC.

**AUDIT RIGHTS:** SCTC will have the right to audit project-related portions of PVEC's work order system at any time to determine total accumulated costs. PVEC will have the right to audit SCTC's collections of project-related revenue and all other SCTC expenditures pursuant to this initiative.

**SCTC RESPONSIBILITIES:** SCTC will be responsible for

- Providing light to the fiber,

- Provisioning services, monitoring equipment, engineering, material specifications,
- Identifying target areas in conjunction with PVEC,
- Quality control, training on installation of electronics, and training for splicing.

**NETWORK OWNERSHIP:** PVEC, at its sole discretion, may declare an area materially complete and, SCTC will then start paying Joint Use pole attachment rent to PVEC for poles in that area. The designated areas will be determined by PVEC. When 100% of the fiber network is paid in full, ownership of the fiber network will be transferred "AS IS" from PVEC to SCTC.

SCTC will provide, free of charge, network connectivity and communications to all installed PVEC Demarc equipment indefinitely, including downline devices, substations, radios, etc.

**DEFINITIVE AGREEMENT:** This Memorandum of Understanding sets forth the understanding of the parties regarding the transactions described herein. The parties shall exercise definitive agreements, including but not limited to, an operating agreement for Project by January 1, 2019, unless otherwise agreed by the parties.

If the foregoing is acceptable to you, please sign and date this Memorandum of Understanding in the space provided below.

**SCOTT COUNTY TELEPHONE COOPERATIVE**

BY: Bill Franklin  
Bill Franklin, General Manager/CEO

Date 1-17-19

**POWELL VALLEY ELECTRIC COOPERATIVE**

BY: Randell Meyers  
Randell Meyers, General Manager/CEO

Date 1/14/2019

Command 1087

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Score 4 PVEC

**Fiber Lease Agreement  
between  
Scott County Telephone Cooperative  
and  
Powell Valley Electric Cooperative, Inc.**

This Agreement, made and entered into this the first day of January, 2019 between Scott County Telephone Cooperative of Gate City, Virginia (hereinafter called "SCTC"), and Powell Valley Electric Cooperative, Inc., with headquarters at New Tazewell, Tennessee (hereinafter called "PVEC") and collectively called "Parties."

**WITNESSETH:**

WHEREAS, the PVEC's service area includes all or parts of Claiborne, Hancock, Union, Grainger and Hawkins Counties in Tennessee, and parts of Lee, Scott and Wise Counties in Virginia (hereinafter called "Service Area") and, in an effort to modernize its electric grid, PVEC proposes to deploy fiber throughout its service area to meet the current and future needs of its electrical system; and

WHEREAS, in addition to improving communications with its offices, substations, down line devices, radios, and other equipment, PVEC plans to replace its existing antiquated metering system with real time metering (called AMI) by deploying fiber throughout its Service Area; and

WHEREAS, SCTC recognizes that Sunset Digital Communications, LLC currently provides PVEC with communications to its offices, substations, down line devices, radios, etc. under a long term agreement and

understands the need to coordinate its fiber deployment accordingly; and

WHEREAS, to ensure the success and timelines of PVEC's grid moderation project, PVEC plans to construct fiber and associated equipment to each home and business within its service area (hereinafter called "Buildout") and lease the excess fiber to SCTC, it being the objective of PVEC to provide the fiber deployment at zero net cost to its members.

NOW THEREFORE, for and in consideration of the premises and the mutual covenants set forth, the parties hereto covenant and agree to the following terms:

- I. Training: SCTC will provide, at SCTC's expense, adequate training for PVEC's personnel in all aspects of fiber installation and related equipment installation. SCTC will also provide, to PVEC at SCTC's expense, training in splicing, fiber allocation, and related training.
- II. Engineering and Design: PVEC will have full control of all design and construction of facilities it builds under this Agreement. SCTC may advise and consult but must, upon PVEC's request, provide all engineering. SCTC must determine, for PVEC and at no cost to PVEC, if materials that PVEC specifies are compatible with SCTC's network.
- III. Construction ("Buildout"):
  - A. Non-grant: PVEC will provide, install and splice dark fiber and provide and install associated hardware, enclosures, etc. (but will not provide or install pop sites or associated electronics) to every home and business without Broadband within PVEC's service area to meet

the PVEC's current and future electrical needs and will initially own the facilities that it constructs. SCTC may also construct (at its expense) and own facilities within PVEC's Service Area. To ensure compatibility, SCTC will purchase and provide all electronics.

B. Grant/Loan: SCTC and PVEC may jointly or individually apply for grants and/or loans to fund Broadband projects within PVEC's Service Area. The parties may negotiate separate unit prices and payment arrangements for such projects.

C. Fiber Lighting: In either case (Non-Grant or Grant/Loan), SCTC will light all fiber and incorporate it into SCTC's Network. SCTC shall offer Broadband Services to each prospective PVEC member.

IV. Maintenance: PVEC, at SCTC's expense, will, to the extent that it is able to do so, perform maintenance on the Buildout and SCTC's Network located within PVEC's service area. Said maintenance costs are not to be considered part of the Buildout Project costs.

V. Buildout Costs, Lease and Reimbursement:

A. Buildout costs incurred by the Cooperative will be accumulated utilizing the Cooperative's standard work order system and will include applicable overheads. In addition, Buildout costs will be increased to reflect PVEC's costs for any 3<sup>rd</sup> party joint-use pole rents paid for non-PVEC owned poles and for property taxes hereinafter described. All accumulated net buildout costs will be increased monthly by a 1/12 of 5% finance charge. All costs will be

accumulated and totaled on an ongoing basis to reflect PVEC's current Buildout Project costs.

B. SCTC will pay to PVEC a monthly lease fee equal to the following:

(a) For Residential Internet Service; 66.67% of SCTC's share of its revenue, and

(b) For Residential Dial Tone Service; 50.00% of SCTC's share of its net revenue, and

(c) For all services sold to businesses; 50.00% of SCTC's share of its net revenue, and

(d) For all video services, 0.00% of SCTC's share of its revenue.

These payments will be based on each customer connected and serviced from the Network (regardless of which party provided the construction), commencing January 1, 2019, and will continue until the sum of all monthly lease payments made hereunder equals PVEC's current total Buildout Project costs, including its finance charge, plus an accrued sum of 1/12 of 0.57% per month of PVEC's Gross Buildout Project Costs to cover its associated property taxes on the Buildout Project. Work performed by PVEC after this point is reached will be billed to and paid by SCTC on a "per job basis."

C. SCTC will promptly reimburse PVEC for any payments due it under any grant/loan projects. These reimbursements will be in addition to any monthly lease fee payments. Facility ownership will be in accordance with each applicable grant/loan.

- VI. Communication Services Provided: SCTC will provide perpetually, at no cost to PVEC, all of the PVEC's communication requirements throughout its entire service area including but not limited to, its offices, substations, line equipment, radios and meters.
- VII. The term of this agreement is perpetual and infinite. Either Party reserves the right to cancel this Agreement at any time subject to the following:
- A. SCTC must continue making the monthly fiber lease payment, as provided above, until such time as the total fiber lease payments made hereunder equals PVEC's total Buildout Project costs, all 3<sup>rd</sup> party joint-use pole rents; all finance charges and all accrued property tax amounts, or pay all amounts due herein in full lump sum; and
  - B. SCTC must continue providing to PVEC the communication services set forth in VI above free of charge perpetually. In the event that SCTC or its successors assigns fail to adequately provide these free communications, SCTC (or its successors or assigns) herein grants PVEC an irrevocable right to use (IRU) 4 dark fibers within its entire network in Virginia and Tennessee to continue meeting its communication needs.
- VIII. Customer Service/Payment Collections:  
Both Parties herein agree to mutually explore such means and methods by which PVEC may collect bill payments for and/or handle service requests for SCTC and negotiate a corresponding price per service/collection fee payable by SCTC to PVEC for such services rendered.

- IX. Transfer of Ownership/Joint Use rents/Taxes:  
When the total lease payments made, (as provided in Article V.B above) equals PVEC's total Buildout Projects costs including the accrued property tax amount, accrued finance charges and any 3<sup>rd</sup> party joint-use pole rents, PVEC will sell its Buildout fiber facilities to SCTC for the sum of \$1.00 and other considerations as listed in Article VI and Article VII.B. Transfer of ownership will be "AS IS." PVEC, at its sole discretion, may also declare an area materially complete. SCTC must then start paying pole rent as provided under its current joint use pole agreement with PVEC for the additional attachments made to PVEC owned poles during the Buildout. Each party is responsible to the applicable taxing authority for the payment of taxes due on the fiber Buildout facilities that it owns. During the Buildout, SCTC is responsible for any joint use pole rents due PVEC for only SCTC owned facilities attached to PVEC owned poles.
- X. 3<sup>rd</sup> Party: SCTC recognizes that some buildout facilities will be attached to 3<sup>rd</sup> party poles. For facilities constructed outside of PVEC's service area, PVEC will only serve as a subcontractor and SCTC will be responsible to PVEC for all of its costs. SCTC will own the facilities and be responsible for securing any 3<sup>rd</sup> party joint-use agreements. For facilities constructed within PVEC's service area, SCTC will be responsible for securing any applicable 3<sup>rd</sup> party joint-use agreements prior to the transfer of ownership from PVEC to SCTC.
- XI. Audit Rights: SCTC will have the right to audit project related portions of PVEC's work order system at any time to determine total accumulated costs. PVEC will have the right to audit SCTC

collections of project related revenue pursuant to this Agreement.

XII. Power Space: SCTC recognizes that the Buildout facilities may include some fiber facilities being located in PVEC's power space and that such facilities require special qualifications and training for personnel working in such power space.

XIII. Assignment: This Agreement is not assignable by either party unless specifically approved by the other party.

XIV. Hold Harmless:

A. SCTC agrees to indemnify and hold harmless PVEC from and against any and all liability, costs, attorneys' fees incurred, expenses, claims and demands, including payment under any workman's compensation laws or under any plan for employee's disability and death benefits, for damage to property, and/or injury to or death of persons, including but not limited to, injuries to and death of employees of SCTC when such damage to property or injury to or death of persons arises out of, results from, or is caused by the negligence or intentional act of SCTC or its employees.

B. PVEC agrees to indemnify and hold harmless SCTC from and against any and all liability, costs, attorneys' fees incurred, expenses, claims and demands, including payment under any workman's compensation laws or under any plan for employee's disability and death benefits, for damage to property, and/or injury to or death of persons, including but not limited to, injuries to and death of employees of PVEC when such damage to property or injury to or death of

persons arises out of, results from, or is caused by the negligence or intentional act of PVEC or its employees.

- XV. Relationship between the Parties: It is understood and agreed that the relationship between the Parties created by this Agreement is that of independent lessor and independent lessee. The Parties agree to comply with all state and federal laws regarding employment of their own employees (if any) including, but not limited to: (a) unemployment insurance, (b) worker compensation (c) withholding of taxes, (d) social security, (e) pension and retirement plans, and (f) medical insurance, and any and all other such regulations and laws, and to further forever save and hold harmless the other party from any and all liability resulting from their failure to so perform.

*(Signatures appear on following page.)*

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed by their respective officers thereunto duly authorized, as of the day and year first written above.

SCOTT COUNTY TELEPHONE  
COOPERATIVE

William J. Franklin  
William J. Franklin, CEO

ATTEST:

Charles "B" Good

POWELL VALLEY ELECTRIC  
COOPERATIVE, INC.

Randell W. Meyers  
Randell W. Meyers  
General Manager/CEO

ATTEST:

Charles "B" Good



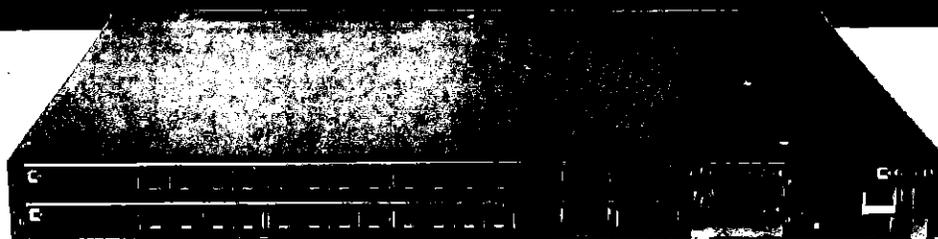
# Calix E7-2 Ethernet Service Access Platform

## DESCRIPTION

What could unparalleled flexibility and network convergence mean to you?

The E7 is a highly extensible, standards-based Ethernet service access platform that offers service providers a modular chassis-based option to address the emerging bandwidth challenges of today's world. As next-generation Ethernet services gain momentum in the marketplace and begin to extend out from the metropolitan area networks, they will drive demand for versatile, cost-effective aggregation out at the network edge.

By adding the AXOS platform, the E7-2 is now even more of a disruptive and compelling enabler to next generation networks that connect the world. The Calix AXOS E7-2 Intelligent Modular System is a breakthrough evolutionary system that provides a transformational path to next generation networks, fiber technologies, and Software Defined Access. The E7-2 is the industry's benchmark for a modular, small form factor, environmentally hardened access solution for service providers. The AXOS E7-2 leads a rapidly expanding family of AXOES E-Series systems capable of supporting both centralized and decentralized network architectures that range from the data center edge, central office, or headend, to the remote cabinet, or MDU.



## **FUNCTIONAL DESCRIPTION**

### **ETHERNET SERVICE ACCESS PLATFORM:**

Residential and business services are converging as more subscribers work from home offices and Internet "over the top" video services consume an increasing percentage of both enterprise and service provider network capacity. IP and Ethernet are the dominant network and transport protocols, and all services – voice, data, and video – are rapidly migrating to a packet-based architecture. High performance applications demand high performance solutions; the Calix E7-2 Ethernet Service Access Platform meets the demanding requirements of Ethernet services access networks.

The Calix E7 delivers a wide array of high performance applications, including 10GE Ethernet transport, delivery of high density residential triple play services over copper pairs (VDSL2/ADSL2+), GPON and point-to-point Ethernet, Metro Ethernet Forum (MEF) compliant business services, mobile backhaul, and protected GE aggregation of Calix E7, C7, B6 and E5 platforms.

### **HIGH DENSITY SUBSCRIBER ACCESS**

With two cards per system, the E7-2 provides flexible, high density subscriber access options in a 1RU shelf:

- 96 VDSL2/ADSL2+ & POTS Combo (48 Overlay)
- 16 GPON and 8 GE ports (1024 ONTs)
- 48 point-to-point GE ports (48 ONTs)
- 8 XGS-PON/NG-PON2 ports

With Multi-dwelling unit (MDU) ONTs, the subscribers per 1RU system can exceed several thousand.

### **MODULAR CHASSIS ARCHITECTURE**

The Calix E7-2 modular chassis enables a pay-as-you-grow architecture, combining the most advantageous attributes of a small form factor product with a large chassis-based system.

- 1RU design can expand from a single slot, for very low first install cost, to multiple chassis, to add subscriber growth yielding a near linear cost curve
- Twenty line cards are managed as a single chassis for operational efficiency
- Mix and match line cards in a common chassis – no common control equipment required
- Line cards can be added or replaced without uninstalling/installing power, alarms, or cables – reducing MTR from hours to minutes
- Subscribers are easily aggregated and network resources efficiently shared across protected trunk facilities
- Hardened 1RU system delivers GPON and Ethernet with 10GE transport from CO, cabinet or pole mount
- Resilient, hot-swappable line cards and fan tray

With the E7-2, service providers no longer need to decide between a single service product and a high growth chassis solution. E7-2 provides low first install cost, operational efficiency and near linear incremental cost per subscriber, enabling Calix customers to maximize their business return.

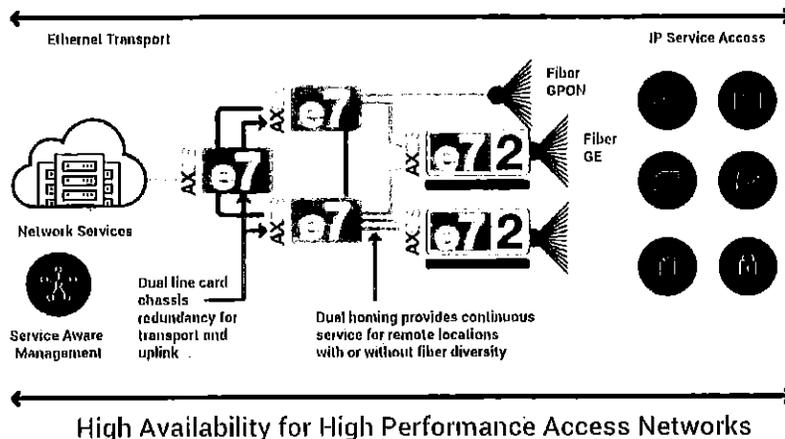
### **FULL SPECTRUM OF SERVICES**

The E7 delivers a full spectrum of access services over GPON and Point-to-Point Ethernet using the family of Calix ONTs, including Single Family Unit (SFU), Small Business Unit (SBU), Multi-Dwelling Unit (MDU), and rack-mount models.

- IPTV – broadcast and Video on Demand (VoD)
- MEF compliant business services
- High-Speed Internet (HSI) access
- Voice – Native SIP/VoIP and TDM Gateway support
- T1 services
- CATV video: RF video overlay with RF return

Calix ONTs support auto sensing GPON and GE network interfaces, allowing service providers to manage service changes without subscriber onsite technical support.

## NETWORK CONVERGENCE



### DELIVERING "QUALITY OF EXPERIENCE"

The E7 provides per-subscriber and per-service hierarchical QoS to deliver uncompromised triple play and business services. A powerful collection of classification, policing, queuing and scheduling algorithms let operators manage per-subscriber and per-service traffic flows to maintain priority/delay/loss service differentiation within the E7 network.

### SCALABLE IPTV SUPPORT

IPTV services are by far the most demanding in terms of quality, and user expectations are very high. The E7 supports industry standard IGMP snooping to identify and replicate multicast video sent between the set-top box and the video distribution network, providing efficient, scalable, high-quality IPTV distribution on both GPON and Ethernet interfaces.

### INTEGRATED HIGH-CAPACITY AGGREGATION

The E7 is built on a core Layer 2 and Layer 3 switch capable of full-duplex, line rate forwarding at all frame sizes and traffic types across all interfaces. This capacity makes the E7 ideal for aggregation and transport of IP/Ethernet services across the access network. The E7 platform supports industry standard pluggable modules for all service and network interfaces, including ITU G.984 compliant GPON, Small Form-Factor Pluggable (SFP) Gigabit Ethernet, XFP 10GE ports, and SFP+ 10GE ports.

### NETWORK RESILIENCY

The Calix E7 supports a flexible set of standards-based network topology protocols for use in aggregation, ring-based transport, and uplink applications.

- ITU G.8032 Ethernet Ring Protection Switching (ERPS)
- IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
- IEEE 802.3ad/802.1AX Link Aggregation

### SERVICE AWARE MANAGEMENT

The E7, along with the Calix Management System (CMS), allows operators to manage services while understanding their relationship to the network infrastructure. Service-oriented management includes rapid service provisioning, service templates and policies, and service assurance. Comprehensive network management tools let operators create physical and logical topology maps, engineer traffic flows, and manage network commissioning and software upgrades. Network inventory, alarm surveillance and PM collection are enabled by the E7 system. The E7 provides locally hosted Web GUI, CLI, and SNMP interfaces

#### BACKPLANE BANDWIDTH

100 Gbps between slots

#### SLOTS

2 universal line card slots

1 Fan Tray slot

#### DIMENSIONS (W x H x D)

17.5 x 1.7 x 11.45 inches

44.5 x 4.3 x 29.1 cm

Height is 1 RU

#### WEIGHT

5.9 lb (2.7 kg) E7 shelf

7.4 lb (3.4 kg) shelf with Fan Tray

#### OPERATING ENVIRONMENT

Temperature: -40 to +65° C

(-40° F to +149° F)

Humidity: 10 to 95%

(non-condensing)

Operating altitude: 10,000 ft

(3,049 m)

#### STORAGE ENVIRONMENT

Temperature: -40 to +85° C

(-40° F to +185° F)

Humidity: 5 to 95%

#### MANAGEMENT SUPPORT

Calix CMS network management

Calix CLI and Web GUI for local

management interface

SNMP v2c and v3 performance

and fault monitoring

#### MANAGEMENT INTERFACES

Ethernet 10/100 (RJ-45

connector on Calix E7-2 Fan

Tray)

Ethernet 10/100 (RJ-45

connector on back of Calix E7-2)

RS-232 (RJ-11 connector on

Calix E7-2 Fan Tray)

#### SYNCHRONIZATION

Synchronization is enabled by

the E7-2 line cards as

required

External reference timing

Built-in Stratum-3 clock

Hardware-ready to support

Synchronous Ethernet

#### ALARM I/O INTERFACES

Wire wrap pin access on E7 back

User definable alarm inputs:

7; outputs: 1

#### FIBER INTERFACES

All optical ports use pluggable

optics (SFP, XFP, SFP+)

LC or SC connectors on modules

#### ANALOG/METALLIC

#### INTERFACES

Two standard 25-pair RJ-21

connectors per slot

#### TIMING I/O INTERFACES

Access through wire wrap pins

on the back of the Calix E7

BITS clock (sink and source)

#### STANDARDS COMPLIANCE

NEBS Level 3 compliance

(GR-63-CORE, GR-1089-

CORE, GR-3028)

UL 60950

FCC Part 15 Class A

#### POWER FEEDS

Integrated power management

on Calix E7-2 line cards

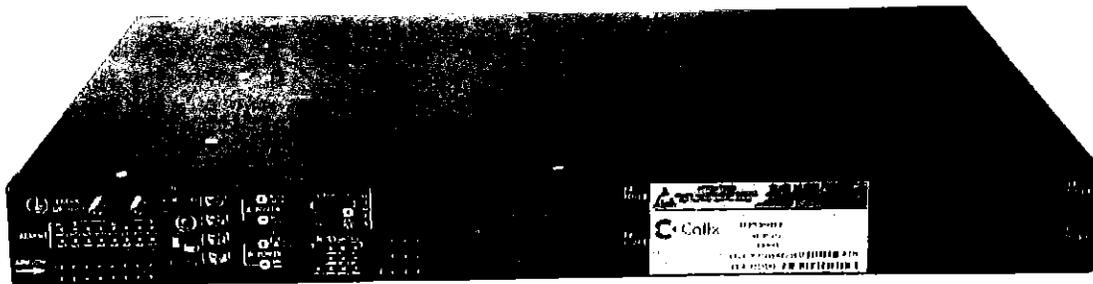
Redundant -48/60 VDC battery

feeds (A and B)

Input Range: -42.5VDC to

-72VDC

Fuse: 7.5 Amps (A and B)



### FAN TRAY ASSEMBLY (100-01451)

#### FANS

4 fans housed in fan tray  
Resilient design maintains  
system cooling with one fan  
failure

#### MANAGEMENT INTERFACES

Ethernet 10/100 (RJ-45  
connector)  
RS-232 (RJ-11 connector)

#### SYSTEM INFORMATION

7-segment LCD display  
System Controller (MGT) –  
GREEN

#### SHELF ALARM INDICATOR

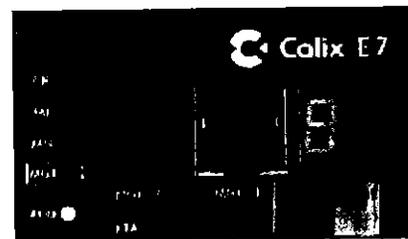
Critical (CR) - RED  
Major (MJ) - RED  
Minor (MN) - AMBER  
Alarm Cut-Off (ACO) button

#### POWER SPECIFICATIONS

Min Input Power:  
22 Watts @ -48V  
Max Input Power:  
65 Watts @ -48V

#### MAINTENANCE

Field-replaceable air filter (not  
used in RT locations)  
Hot-swappable fan tray  
assembly



### FAN TRAY ASSEMBLY-2 (100-03590)

#### FANS

4 fans housed in fan tray  
Resilient design maintains  
system cooling with one fan  
failure

Variable speed operation  
depending on operating  
temperature\*

#### MANAGEMENT INTERFACES

Ethernet 10/100 (RJ-45  
connector)  
RS-232 (RJ-11 connector)

#### SYSTEM INFORMATION

7-segment LCD display  
System Controller (MGT) –  
GREEN

#### SHELF ALARM INDICATOR

Critical (CR) - RED  
Major (MJ) - RED  
Minor (MN) - AMBER  
Alarm Cut-Off (ACO) button

#### POWER SPECIFICATIONS

Min Input Power:  
8.5 Watts @ -48V  
Max Input Power:  
48 Watts @ -48V

#### MAINTENANCE

Field-replaceable air filter  
(not used in RT locations)  
Hot-swappable fan tray  
assembly





## NOTES

For GPON OIM, 10GE XFP, 10GE SFP+ pluggable transceivers, Direct Attach cables, and all transceivers used in CSFP Option 2 sockets, only products purchased directly from Calix are supported. The use of GPON OIM, Active Ethernet CSFPs, 10GE XFP, 10GE SFP+ pluggable transceivers and Direct Attach cables not purchased directly from Calix is not supported and will void all product warranties covering the Calix equipment to which such third-party materials are connected.

- SFP modules may also be used in CSFP Option 2 sockets, and in SFP+ sockets at 1GE rate.

- Copper Direct Attach cables can operate in SFP, CSFP Option 2, and SFP+ sockets at 1GE, 2.5GE, and 10GE data rates as supported by the card type.

## CALIX E7-2 ETHERNET SERVICE ACCESS PLATFORM

**000-00372** ..... E7-2 Chassis with Fan Tray Assembly and Installation Kit

**100-01451** ..... E7-2 Fan Tray Assembly

**000-00228** ..... E7-2 Fan Tray Assembly Filter, Package of 10 units

**100-03590** ..... E7-2 Fan Tray Assembly 2 (FTA2)\*

**000-00760** ..... E7-2 Fan Tray Assembly 2 (FTA2) Filter, Package of 10 units

\* Variable speed operation under software control requires a minimum of E7 Release 2.2 software. In releases prior to 2.2, the FTA2 fan speeds are identical to the original FTA.

## CALIX PLUGGABLE TRANSCEIVER MODULES

The E7-2 supports pluggable modules for all service and network interfaces. Refer to the Calix Optical Transceiver Modules Datasheet (#250-00191) for a complete list of modules and specifications.

CSFP Option 2 ..... 1GE optical dual-port Compact Small Form-factor Pluggable (CSFP) Option 2 modules

SFP ..... 1GE and 2.5GE optical and copper Small Form-factor Pluggable (SFP) modules

SFP+ ..... 10GE optical Enhanced Small Form-factor Pluggable (SFP+) modules

Direct Attach ..... Multi-rate copper Small Form-factor Pluggable (SFP/SFP+) cables

XFP ..... 10GE optical Small Form-factor Pluggable (XFP) modules

GPON OIM ..... 2.5Gbps GPON (Class B+ ODN with minimum 28dB link budget, up to 1:64 splits)

ER-GPON OIM ..... 2.5Gbps Extended Reach GPON (up to 58 km with 1:4 split)

## CALIX MOUNT KIT

**100-03382** ..... E7-2 ETSI Rack Mount Kit



AX

# Calix E7-2 AXOS GPON-8 r2

## DESCRIPTION

Looking to future-proof your next-generation GPON network in preparation for launching advanced services?

As North America's most widely deployed access system, the Calix AXOS E7-2 Intelligent Modular System is a breakthrough evolutionary system that provides a transformational path to next generation networks, fiber technologies, and Software Defined Access. The E7-2 is the industry's benchmark for a modular, small form factor, environmentally hardened access solution for service providers. By adding the AXOS platform, the E7-2 is now even more of a disruptive and compelling enabler to next generation networks that connect the world. The AXOS E7-2 leads a rapidly expanding family of AXOS E-Series systems capable of supporting both centralized and decentralized network architectures that range from the data center edge, central office, or headend, to the remote cabinet, or MDU.



## **FUNCTIONAL DESCRIPTION**

**GPON AND POINT-TO-POINT ETHERNET:**  
The Calix E7-2 AXOS GPON-8 r2 card provides multiservice capability over IP/Ethernet-based networks. Each GPON-8 r2 provides eight GPON OLT ports that subtend up to 128 ONTs each, for a card capacity of 1024 GPON ONTs, or 2048 per E7-2 1RU chassis. An additional four SFP/CSFP sockets per card can provide high-bandwidth, point-to-point Ethernet services to individual subscribers or be used to aggregate other Ethernet devices. The Calix E7-2 GPON-8 r2 card can co-exist with other Calix E7-2 AXOS line cards in a shelf.

## **KEY FEATURES AND CAPABILITIES**

GPON-8 r2 card features and capabilities include:

- Based on ITU G.984 GPON family of standards—including G.988
- GPON: 2.488 Gbps downstream, 1.244 Gbps upstream
- GEM (Ethernet) based GPON
- Interoperable with Calix ONTs, including the GigaFamily
- Integrated 10GE and GE/2.5GE aggregation and transport
- Class B+ ODN, +28 dB link budget, up to 20 km at 32-way splits
- Class C+ ODN, +32 dB link budget with Forward Error Correction (FEC), up to 35 km at 32-way split, up to 60 km at 2-way split
- Hardened for central office and remote terminals

## **INTEGRATED HIGH-CAPACITY AGGREGATION**

The E7-2 AXOS GPON-8 r2 card is built on a core Layer 2 and Layer 3 switch capable of full-duplex, line rate forwarding at all frame sizes and traffic types across all interfaces. Each GPON OLT port has a dedicated 2.5Gbps switch interface. Industry standard pluggable modules are used for all interfaces, including ITU G.984 compliant GPON, GE and 2.5GE optical SFP, 10GE XFP, and 10GE SFP+. The GPON-8r2 supports (4) CSFP (Compact SFP) modules that are mechanically compatible with the industry-ubiquitous SFP module. Each CSFP module supports two independent bidirectional transceivers (1490nm Tx / 1310nm Rx), each capable of operating at a 1 Gbps bi-directional rate. The SFP+ ports also support SFP modules and Direct Attach copper cables.

## **IP SERVICES DELIVERY**

The Calix E7-2 AXOS GPON-8 r2 card delivers a full spectrum of IP access services over GPON and Point-to-Point Ethernet networks.

- Secure AES encryption on the PON
- IPTV – broadcast and Video on Demand (VoD)
- MEF compliant business services
- High-Speed Internet (HSI) access
- Voice – Native SIP/VoIP and TDM Gateway support
- T1 services
- CATV: 1550nm RF video overlay; 1610nm RF return

## **NETWORK RESILIENCY**

All Calix E7-2 AXOS GPON-8 r2 cards support a flexible set of standards-based network topology protocols for use in aggregation, ring-based transport, and uplink.

- ITU G.8032 Ethernet Ring Protection Switching (ERPS)
- ITU G.8032v2 Ethernet Ring Protection Switching (ERPS)
- IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
- IEEE 802.3ad/802.1AX Link Aggregation
- ITU G.983.5 – Type B Protection and enhanced survivability for GPON OLTs

## **MOBILE BACKHAUL**

With integrated network synchronization, hierarchical QoS and support for T1 services, the E7-2 AXOS GPON-8 r2 card transport uncompromised mobile broadband traffic while also supporting triple play residential and MEF certified business services from a single platform. A powerful collection of classification, policing, and scheduling algorithms let operators manage per-subscriber and per-service traffic flows to maintain priority/delay/loss service differentiation within the E7 network.

## **SCALABLE IPTV SUPPORT**

The E7 supports industry standard IGMP snooping to identify and replicate multicast video sent between the set-top box and the video distribution network, providing efficient, scalable, high-quality IPTV distribution on both GPON and Ethernet interfaces.

## MINIMUM SYSTEM

### REQUIREMENTS

Calix AXOS Software Release  
3.1.3

### DIMENSIONS (W x H x L)

14 x 10.1 x 0.78 inches  
35.6 x 25.7 x 2 cm

### WEIGHT

2.08 lbs. (0.94 kg)

### PORTS

8 GPON OLT ports  
8 CSFP 1GE ports (4 CSFP  
sockets, also support SFP  
modules)  
2 SFP+ ports supporting 10GE  
and GE optical modules  
2 XFP ports supporting 10GE  
optical modules

### PACKET SWITCHING

#### CAPACITY

Wire speed forwarding across all  
Ethernet and GPON OLT ports  
64,000 MAC addresses per  
system  
9,000 byte jumbo frames  
2,000 byte frames over GPON  
4,096 VLANs  
4,000 IGMP Multicast channels

## QUALITY OF SERVICE

Service classification based on  
port, SVLAN-ID, CVLAN-ID,  
P-Bit  
Port and flow-based policing to  
1Mbps increments  
8 CoS queues per port  
Strict priority scheduling with  
minimum bandwidth  
guarantee  
Congestion avoidance: Tail Drop

## STANDARDS AND RFC

### SUPPORT

TR101 VLAN Service models  
IEEE802.1ag Connectivity Fault  
Management (G.8032  
support)  
IEEE 802.1D Rapid Spanning  
Tree  
IEEE 802.1p CoS Prioritization  
IEEE 802.1 MAC Bridges  
IEEE 802.1Q VLAN tagging  
IEEE 802.1ad VLAN stacking  
(Q-in-Q) support  
IEEE 802.1w RSTP  
IEEE 802.3ad/802.1AX Link  
Aggregation  
RFC 2236 IGMP v2  
RFC 3376 IGMP v3  
RFC 3046 DHCP Relay Agent  
Information Option ("Option  
82")  
RFC 4541 IGMP snooping  
RFC 4553 Structure-Agnostic  
Time Division Multiplexing  
(TDM) over Packet (SAToP)  
ITU-T G.8032 Ethernet Ring  
Protection Switching (ERPS)/  
Enhanced EAPS  
ITU-T G.8032v2 Ethernet Ring  
Protection Switching (ERPS)  
ITU-T G.984 GPON  
ITU G.984.1 Type B Protection  
Dynamic Bandwidth Assignment  
(DBA)  
NIST Advanced Encryption  
Standard (AES)

## SYNCHRONIZATION

Synchronization enabled by E7  
line cards  
External reference timing  
Built-in Stratum-3 clock  
Hardware-ready to support  
Synchronous Ethernet, IEEE  
1588v2

## COMPLIANCE

NEBS Level 3 compliance  
(GR-63-CORE, GR-1089-  
CORE, GR-3028)  
UL 60950  
FCC Part 15 Class A  
CE Mark

## POWER SPECIFICATIONS

GPON-8 r2 power/heat  
dissipation: 85 Watts  
(Maximum) 75 Watts  
(Typical)

## OPERATING ENVIRONMENT

Temperature: -40° to +65° C  
(-40° F to +149° F)  
Humidity: 10 to 95% (non-  
condensing)

## STORAGE ENVIRONMENT

Temperature: -40° to +85° C  
(-40° F to +185° F)  
Humidity: 5 to 95%



## NOTES

For AXOS GPON OIM, 10GE XFP, 10GE SFP+ pluggable transceivers and Direct Attach cables, and all transceivers used in CSFP Option 2 sockets only products purchased directly from Calix are supported. The use of GPON OIM, 10GE XFP, 10GE SFP+ pluggable transceivers and Direct Attach cables not purchased directly from Calix is not supported and will void all product warranties covering the Calix equipment to which such third-party materials are connected.

Only AXOS GPON OIMs are supported by the E7-2 AXOS GPON-8 r2 card

SFP modules may also be used in SFP+ sockets at 1GE rate.

Copper Direct Attach cables can operate in SFP and SFP+ sockets at 1GE, 2.5GE, and 10GE data rates as supported by the card type.

## CALIX ONTs

The E7-2 AXOS GPON-8 r2 card supports the Calix family of ONTs, including 700GX, 700GE, 836GE, and 800G GigaFamily. Calix ONTs support auto sensing GPON and GE network interfaces, allowing service providers to manage service changes without subscriber onsite technical support.

## CALIX E7-2 AXOS LINE CARDS

**100-04665**.....E7-2 AXOS GPON-8 r2 (8x GPON OIM, 4x GE SFP, 2x 10GE SFP+, 2x 10GE XFP)

## CALIX PLUGGABLE TRANSCEIVER MODULES

The E7-2 supports pluggable modules for all service and network interfaces. Refer to the Calix Optical Transceiver Modules Datasheet (#250-00191) for a complete list of modules and specifications.

**SFP**..... 1GE and 2.5GE optical and copper Small Form-factor Pluggable (SFP) modules

**SFP+** ..... 10GE optical Enhanced Small Form-factor Pluggable (SFP+) modules

**CSFP Option 2**... 1GE optical dual-port Compact Small Form-factor Pluggable (CSFP) Option 2 modules

**XFP**..... 10GE optical Small Form-factor Pluggable (XFP) modules

**Direct Attach**..... Multi-rate copper Small Form-factor Pluggable (SFP/SFP+) cables

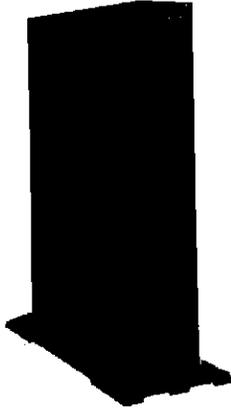
## AXOS GPON

**B+ OIM**..... 2.5Gbps GPON (Class B+, 20km, C-Temp, AXOS) 2.5Gbps GPON (Class B+, 20km, I-Temp, AXOS)

## AXOS GPON

**C+ OIM**..... 2.5Gbps GPON (Class C+, 60Km, I-Temp, AXOS)

## 844G and 854G GigaCenters | ANSI



### DESCRIPTION

The Calix 844G and 854G GigaCenters are next generation residential premises service delivery platforms that extend the access network into the home and act as a strategic location for control of the gigabit experience. Supporting broadband connectivity within the home and managing subscriber voice, data and video services, this intelligent, high-performance service platform integrates a 2.5 GPON optical interface with switching and routing functions that manage premises network traffic at speeds up to 1 Gbps. The GigaCenter service interfaces include: carrier class wireless networking with 802.11ac Wi-Fi and four Gigabit Ethernet (GE) ports for IPTV video and data services, two integrated voice lines supporting carrier grade VoIP and network-based TDM voice circuits, a USB port for home networking services, and an option for RF video.

**GIGABIT SUBSCRIBER EXPERIENCE:** The 844G and 854G GigaCenters are integrated access and gateway solutions that deliver advanced network management and software features to unleash the gigabit experience throughout a subscriber's home. The GigaCenter service delivery platform terminates a GPON fiber optic link at the subscriber's premises and provides carrier class Wi-Fi and Gigabit Ethernet interfaces for customer multi-media devices. The 844G and 854G GigaCenters enable residential subscribers to receive gigabit broadband data, IP video, and VoIP or TDM based voice on a single fiber. Using the latest 802.11ac 5GHz technology incorporating 4x4 multi-user multiple-input and multiple-output (MU-MIMO) and beamforming, the 844G and 854G GigaCenters allow service providers to extend the access network inside the home and establish a strategic location for the delivery and control of broadband services. A USB port is available for home networking with other Ethernet appliances. The GigaCenter family also includes the option of RF signaling for broadcast video services over existing Hybrid Fiber Coax (HFC) networks.

Calix engineered the 844G and 854G GigaCenters for optimal whole-home coverage with simultaneous dual-band 2.4GHz and 5GHz operation and dynamic beamforming at 5GHz. For maximum performance, the GigaCenter supports high-power 2x2 MIMO spatial diversity at 2.4GHz and 4x4 MU-MIMO at 5GHz. The 844G and 854G GigaCenters support the entire 5GHz band including DFS channels and can be provisioned to support 80MHz bandwidth at 5GHz. The GigaCenter solution delivers HD video and data throughout a subscriber's home with control and management of an increasingly video-rich and mobile broadband environment.

**EASY TO INSTALL, ACTIVATE, AND MAINTAIN:** With the 844G and 854G GigaCenters, Calix has redefined how to install and activate residential services at a subscriber's premises. Using the Calix Smart Activate feature and a phone or laptop, a field technician can install and apply the subscriber's service profile without special equipment or assistance from the central office. Calix also provides the innovative Compass software portfolio, including Consumer Connect, which allows the service provider to configure, activate and upgrade the GigaCenter quickly from a remote location using in-band management or TR-069. Extensive troubleshooting capabilities, remote software downloads, and easy-to-use service activation ensure that services are delivered and maintained without needless truck rolls and hardware upgrades. Employing GigaCenters allows service providers to reduce their operational expenses while effectively delivering the gigabit experience to their subscribers.

**TRUE CARRIER GRADE VOICE SOLUTION:** The 844G and 854G GigaCenters deliver a truly agile and responsive service platform with lifeline voice in the event of local AC power loss. A carrier grade 120-240 VAC, 50-60 Hz AC to 12 VDC Uninterruptible Power Supply (UPS) provides battery backup of voice services compliant to Telcordia GR-909. The 844G and 854G GigaCenters can monitor battery status, battery charge and battery life, and report results through the Calix Management System (CMS).

# 844G and 854G GigaCenters | ANSI

## KEY ATTRIBUTES

- Standards-based Full Service Access Network (FSAN), ITU-T GPON compliant
- Home Gateway:
  - Layer 2 bridge and Layer 3 routing for High Speed Internet (HSI) data and IPTV video services
  - DHCP server options
  - DHCP (IPoE) and PPPoE network connections
  - Network Access Translation (NAT), public to private IP addressing
  - Configurable IP address schemes, subnets, static-IP addresses
  - DNS server
  - Bridge port assignment and data traffic mappings
  - Port forwarding
  - Firewall and security
  - Application and website filtering
  - Selectable forwarding and blocking policies
  - DMZ hosting
  - Parental controls, time of day usage
  - Denial of service
  - MAC filtering
  - Time/Zone support
  - Universal Plug-and-Play (UPnP)
- Wireless:
  - 2.4GHz and 5GHz, simultaneous dual-band
  - 5GHz 802.11ac certified, 802.11a/g/n compatible
  - 2.4GHz 802.11n certified, 802.11b/g compatible
  - WPA/WPA2
  - WPS push-button
  - WEP 64/128 bit encryption
  - Eight SSIDs per band with factory default SSIDs
  - MAC filtering
- Two voice lines:
  - FXS ports, ANSI
  - Carrier grade SIP, H.248, MGCP VoIP
  - TDM GR-303/TR-08 Mode II/GR-57, GR-08 (TR-08 Mode I) voice services
- Four Gigabit Ethernet (GE) interfaces:
  - Symmetrical 1 Gbps bandwidth for residential IPTV and data services
  - Multi-rate 10/100/1000 BaseT Ethernet, auto-negotiating
- USB port:
  - USB 2.0 - Type A configured as a host interface
- RF video bandwidth to 1 GHz for extended digital programming
- Supports multiple data service profiles
- Traffic management and Quality of Service (QOS):
  - 802.1Q VLANs
  - 802.1p service prioritization
  - Q-in-Q tagging
  - Multiple VLANs
  - Rate limiting
  - DiffServ
  - Pre-defined QOS on service type
- IPTV, IGMPv2, IGMPv3:
  - IGMP Snooping and Proxy
  - IGMP Fast Leaves
- Complete OAM&P support via Calix Management System (CMS)
- Gateway Management:
  - TR-069
  - Local Home Gateway GUI, access provisionable
  - Remote WAN side GUI access
  - Default username/password
  - Set-up persistence, factory reboot support
- Indoor mounting:
  - Wall and Structured Wiring Enclosure (SWE) mount with fiber management
  - Desktop mounting stand
- Optional voice lifeline service power source with in-home battery backup and alarm monitoring
- AC to 12 VDC power adapter available for non-lifeline services.

## SPECIFICATIONS

# 844G and 854G GigaCenters | ANSI

### DIMENSIONS

Width: 7.9 in (20.0 cm)  
Height: 10.6 in (26.9 cm)  
Depth: 1.8 in (4.6 cm)  
Weight: 28 oz. (.8 kg)

### PON CHARACTERISTICS

Max. split: 64 GPON  
Max. reach: 58 km (36 miles) with C+/FEC  
Maximum Optical Distribution Network (ODN) Attenuation:  
GPON Class B+, 28 dB  
GPON Class C+, 32 dB  
1490 ± 10 nm optical receiver:  
-27.0 to -8.0 dBm  
1310 ± 20 nm optical transmitter:  
0.5 to 5.0 dBm

### INTERFACES

Wireless: 2.4GHz 2x2 and 5Hz 4x4 internal antennas  
Telephony: Two RJ-11 connectors  
Data/IPTV: Four 10/100/1000 BaseT Ethernet ports, RJ-45 connectors  
USB: USB 2.0 Type A  
RF Video: F-connector, 75 Ohms  
PON: Single 9/125 μm (single mode) fiber, SC/APC connector, minimum 50 dB return loss  
Power: 8-pin connector

### TELEPHONY

General: SIP, H.248, MGCP or TDM Gateway (GR-303, GR-57, TR-08 Mode I, TR-08 Mode II)  
Number of lines: 2  
RENs per line: 5 maximum  
RENs per unit: 10 maximum  
Drop length: Maximum 500 feet (152.4 m)  
DSO Output: 23.5 mA

### DATA

Drop length: 328 feet (100 m) maximum using CAT5 cable  
Auto MDI/MDIX crossover for 1000BASE-TX, 100BASE-TX, and 10BASE-T ports  
Traffic Management and QOS: 802.11Q VLAN; 802.11p voice, video, data and management priorities; Q-In-Q tagging; Rate Limiting

### WIRELESS

2.4GHz 802.11 b/g/n  
2x2 MIMO, high-power  
5GHz 802.11 a/g/n/ac  
4x4 MU-MIMO, implicit/explicit dynamic beamforming  
2.4GHz and 5GHz simultaneous  
8 SSIDs per band (2 SSID subscriber default)  
Auto channel selecting and interference detection  
WPS, WPS push button  
Wireless Security: Wi-Fi protected access (WPA/WPA2) WEP, MAC address filtering  
Wi-Fi multimedia (WMM)

### VIDEO-ANALOG RF OUTPUT

Bandwidth: 54 to 550 MHz  
Return loss: 10 dB minimum  
Signal strength (with AGC range):  
18 ± 2 dBmV  
Flatness: ± 1.0 dB  
Tilt: 1.0 dB ± 1.0 dB from 54 to 550 MHz

### VIDEO-DIGITAL RF OUTPUT

Bandwidth: 550 to 1003 MHz  
Return loss: 8 dB minimum  
Signal strength (with AGC range):  
12 ± 2 dBmV  
Flatness: ± 1.5 dB  
Tilt: 4.0 dB ± 1.0 dB from 550 to 1003 MHz  
Modulation Error Ratio (MER): 33 dB

### VIDEO-DIGITAL RF INPUT

Optical Input (GPON)  
Wavelength: 1555 ± 5 nm  
Signal strength at 3.5% OMI (within AGC range):  
-6.0 to 2.0 dBm

### REMOTE MANAGEMENT

OAM&P via CMS  
TR-069 remote management  
TR-064 CPE management  
TR-098 Internet Gateway Device Data Model

### ENVIRONMENTAL

Operating temperature: Indoor ambient temperature, 0° to 40°C (32° to 104° F)  
Operating/storage relative humidity: 8 to 95 % non-condensing  
Altitude: -200 to 10,000 feet (-61 to 3,048 m) above sea level

### CERTIFICATION AND COMPLIANCE

Emissions:  
FCC Part 15 Class B, IC ICES-003 Class B  
CISPR-22  
Safety:  
UL 60950 and UL 1697 approved  
IEEE: 802.3, 802.3AB, 802.3U, 802.11p, 802.11Q  
Wi-Fi Alliance Certified  
802.11ac and 802.11n



USB-IF Compliance  
USB 2.0



### POWERING AND ALARMS

8-pin connector with 7-conductor power and alarm cable  
Input voltage: 12 VDC (nominal), 10 VDC (min.), 15 VDC (max)  
External Power Adapter: 12 VDC, 2.5 A  
Residential battery backup source: UPS mounted at subscriber's residence  
Battery backup time rated capacity:  
8 hours based on Telcordia GR-909 calculation methods using recommended UPS.

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ORDERING INFORMATION

## 844G and 854G GigaCenters | ANSI

### Calix 844G and 854G GigaCenters

100-04011.....844G-1 GigaCenter, 2 POTS, 4 GE, Dual Wi-Fi, 1 USB -UPS Power Interface  
100-04013.....854G-1 GigaCenter, 2 POTS, 4 GE, Dual Wi-Fi, 1 USB, 1 RF -UPS Power Interface

### Calix 844G and 854G UPS and UPS Cords

100-04068.....Indoor UPS, 12V 7.2AH 36W, Black - AM Type B Grounded  
100-03893.....Indoor UPS Power Cord, 7 pin UPS to 8 pin ONT Male, 1M Black  
100-03894.....Indoor UPS Power Cord, 7 pin UPS to 8 pin ONT Male, 3M Black  
100-03895.....Indoor UPS Power Cord, Un-terminated to 8 pin ONT Male, 6M Black



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250-00331, Rev.11



**EX**

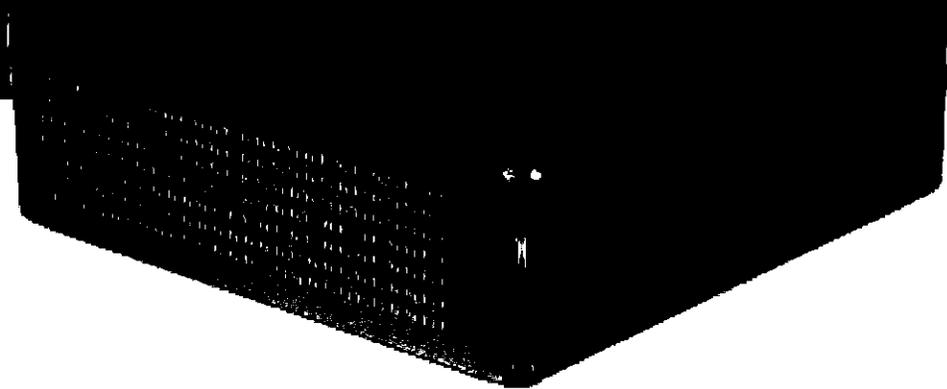
# GigaPoint<sup>®</sup> (GP1000X)

POWERED BY EXOS

## DESCRIPTION

The Calix GP1000X GigaPoint<sup>™</sup> is a small form factor service delivery terminal that delivers broadband connectivity to the subscriber using the XGS-PON standard.

This high-performance terminal integrates a XGS-PON optical WAN interface that enables residential and symmetrical business network traffic at speeds up to 10 Gbps. The GP1000X GigaPoint includes one 10 Gigabit Ethernet (10 GE) port for IPTV video and data services.



### **10 GIGABIT SUBSCRIBER EXPERIENCE**

The GP1000X GigaPoint is an integrated access device that delivers advanced network management and software features to enable the 10 Gigabit experience. The GP1000X GigaPoint terminates an XGS-PON fiber-optic link at the subscriber's premises and provides an industry-standard 100/1000/10G BASE-T interface for the customer premises equipment. The GP1000X GigaPoint enables residential subscribers to receive 10 Gigabit broadband data and IP video on a single fiber.

### **EASY TO INSTALL, ACTIVATE, AND MAINTAIN**

With the GP1000X GigaPoint, Calix has redefined how to install and activate residential and business services at a subscriber's premises. Using the Calix Smart Activate feature and laptop, a field technician can install and apply the subscriber's service profile without special equipment or assistance from the central office. Employing the GP1000X GigaPoint allows service providers to reduce their operational expenses while effectively delivering the 10 Gigabit experience to their subscribers.

### **POWER OPTIONS**

The GP1000X GigaPoint power options include a 120-240 V AC, 50-60 Hz to 12 V DC power adapter.

## KEY ATTRIBUTES

- Standards-based Full Service Access Network (FSAN), XGS (G.9807.1) compliant
- One 10G BASE-T Gigabit Ethernet (GE) interface
  - Symmetrical 10 Gbps bandwidth for residential IPTV and data services
  - Multi-rate 100/1000/10G BASE-T Ethernet, auto-negotiating
- Supports multiple data service profiles
- Traffic management and Quality of Service (QoS):
  - 802.1Q VLANs
  - 802.1p service prioritization
  - Q-in-Q tagging
  - Multiple VLANs
  - Rate limiting
  - DiffServ
  - Pre-defined QoS on service type
- IPTV, IGMPv2, IGMPv3 ASM:
  - IGMP Snooping
  - IGMP Fast Leaves
- Complete Calix Smart Activation
- Indoor mounting options:
  - Wall mount
  - Desktop mount: horizontal or vertical
- AC to 12 V DC power adapter



## SPECIFICATIONS

### DIMENSIONS

Height: 2.38 in (6.0 cm)  
Width (square): 6.88 in (17.5 cm)  
Height: 2.3 in (5.8 cm)  
Weight: 20 oz (0.58 kg)

### PON CHARACTERISTICS

Max. split\*: 128 XGS-PON  
Max. reach\*: 20 km (12.4 miles), N1 Class  
Maximum Optical Distribution Network  
(ODN) Attenuation: XGS, 29 dB  
Optical receiver 1577nm: -28dBm  
Optical transmitter 1270nm: +4 to +9 dBm

### INTERFACES

Data/IPTV:  
One 10G BASE-T 10G Ethernet port  
PON: Single 9/125 µm (single mode) fiber,  
SC/APC connector, minimum 50 dB  
return loss  
Power: 8-pin connector

### DATA

Drop length: 180 feet (55m) maximum,  
using CAT6 cable; 328 feet (100m)  
maximum, using CAT6A or CAT7 cable  
Auto MDI/MDIX crossover for  
100/1000/10G BASE-T ports  
IEEE 802.3an and IEEE802.3-2012  
Traffic Management and QoS: 802.1Q  
VLAN, 802.1 video data and  
management priorities; Q-in-Q tagging;  
rate limiting

### ACTIVATION MANAGEMENT

Calix Smart Activation

### CERTIFICATION AND COMPLIANCE

Emissions:  
FCC Part 15 Class B  
CISPR-22  
Safety:  
UL 60950 and UL 1697 approved  
IEEE: 802.3, 802.3AB, 802.3U, 802.11p,  
802.11Q

### ENVIRONMENTAL

Operating temperature:  
Indoor ambient temperature,  
0° to 40°C (32° to 104° F)  
Relative humidity (non-condensing):  
Operating/Storage: 5%-90%  
Shipment/Storage: 5%-95%

### POWERING AND ALARMS

8-pin connector  
Input voltage: 12 V DC (nominal),  
10 V DC (min), 21 V DC (maximum)  
External Power Adapter: External Power  
Adapter: 12 V DC, 2.5 A  
Maximum power consumption: 13.6 W

\*Not necessarily simultaneously

## ORDERING INFORMATION

### Calix GP1000X GigaPoint

100-04647.....GP1000X 10G GigaPoint, 10 GE and 12 V DC US Power Adapter  
100-04992.....GP1000X GigaPoint, 1 10GE – UPS Power Interface  
100-04141 .....Power Adapter CPA5 12 V 2.5 A – EU Type C w/ 8-pin connector  
000-01057.....GP1000X GigaPoint, 1 10GE -UPS Power Interface and 12 V DC EU Power Adapter

Note: Calix believes the information in this publication to be accurate as of publication date, and is not responsible for error. Product Specifications are subject to change without notice.

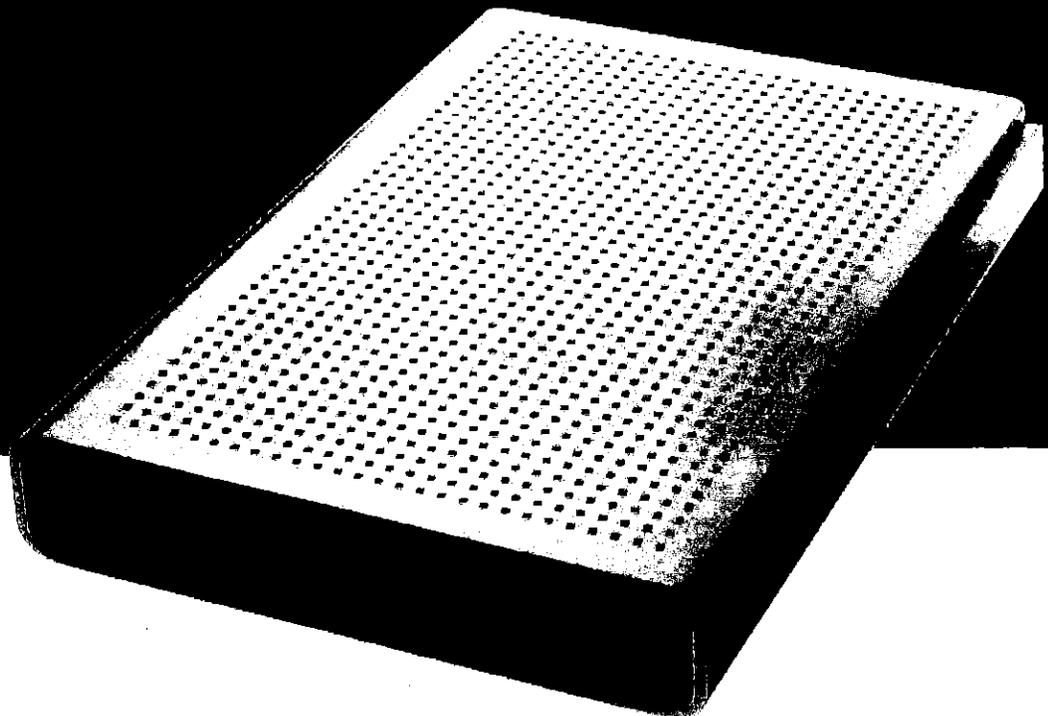


# GigaPro (GPR3000X)

POWERED BY EXOS

## DESCRIPTION

The GPR3000X GigaPro business Ethernet services edge device delivers 10 Gigabit broadband connectivity using the XGS standard to the enterprise environment. This high-performance device delivers IP and Carrier Ethernet services in compliance with MEF CE 2.0. Flexible SFP+ XGS optical WAN interface assures traffic speeds up to 10 Gbps. The GPR3000X service interfaces include: one 10G SFP+ Ethernet port and two 10/100/1000 BASE-T Ethernet ports for business and data services.



## **10 GIGABIT BUSINESS EXPERIENCE**

The Calix GPR3000X GigaPro delivers advanced network management and software features with MEF CE 2.0 E-LINE support. The GigaPro business Ethernet platform has an SFP+ optical WAN interface to terminate an XGS fiber-optic wavelength link at the business premises, providing one 10 Gigabit and two Gigabit Ethernet interfaces for customer multi-media devices. Both the 10 Gigabit and two Gigabit Ethernet interfaces have the flexibility to be configured for UNI or I-NNI applications. Multiple services of the same or different types can be multiplexed on the same Ethernet interface to create a multiservice, multi-subscriber demarcation. The GPR3000X enables business and enterprise subscribers to receive 10 gigabit broadband data on a single fiber.

## **ETHERNET SWITCHING**

The GPR3000X GigaPro supports multiple EVCs per UNI with policing to provide CE 2.0-compliant multi-Class of Service (CoS) capabilities. You can apply bandwidth profiles on the GPR3000X on a per-CoS basis in an EVC. Each GPR3000X GigaPro can support up to 80 EVCs. Scheduling options include Strict Priority Queuing (SP) and Deficit Weighted Round Robin (DWRR). The Ethernet interfaces support 8 CoS egress queues with scheduling, marking of DEI based on classifiers, and minimum/maximum rate controls. The GPR3000X supports an MTU of 9,600 Bytes.

## **PERFORMANCE ASSURANCE**

The Calix GPR3000X GigaPro is compliant with MEF CE 2.0 manageability requirements through support for IEEE 802.1ag and ITU Y1731 standards. The GPR3000X also supports Service Activation Testing (SAT) based on ITU Y.1564, and MEF 48, where the GigaPro acts as reflector or load generator/collector for single ended measurements.

## **EASY TO INSTALL, ACTIVATE, AND MAINTAIN**

The GPR3000X GigaPro supports zero-touch commissioning. A field technician can install without a configuration file, command line interface, special equipment, or central office assistance. Calix also provides the innovative Operations Cloud software portfolio that includes management via Activate and birth, allowing Calix to configure, activate, upgrade and meet MEF CE 2.0 compliance quickly from a remote location. Extensive troubleshooting capabilities and easy-to-use service activation ensure that broadband services are delivered and maintained without needless truck rolls and hardware upgrades.

## **CARRIER-GRADE BUSINESS ETHERNET SOLUTION**

The GPR3000X GigaPro delivers a truly agile and responsive business Ethernet service platform with high availability. The GPR3000X supports carrier grade 120-240 V AC, 50-60 Hz AC to +12 V DC power adapter.

## KEY ATTRIBUTES

- Standards-based Full Service Access Network (FSAN), XGS (G.9807.1) compliant
- Two Gigabit Ethernet (GE) interfaces:
  - Symmetrical 1 Gbps bandwidth for business services
  - Multi-rate 10/100/1000 BASE-T Ethernet, auto-negotiating
- SFP+ XGS uplink port
- One 10 GigaBit Ethernet SFP+ interface
- Access, traffic management and Quality of Service (QoS):
  - 2r3c policing
  - 802.1Q VLANs
  - 802.1p service prioritization
  - Q-in-Q tagging
  - Multiple EVCS, Multiple VLANs
  - DiffServ
  - Pre-defined QoS on service type
  - Broadcast, Multicast and Destination Lookup Failure (DLF) Storm Control
- Network timing:
  - G.987.3 time of day (TOD) distribution
- Indoor mounting options:
  - Wall mount
  - 19" horizontal rack mounting in 1 RU with mounting bracket
  - Desktop mount; horizontal or vertical
- AC to +12 V DC power adapter

## SPECIFICATIONS

### DIMENSIONS

Height: 9.0 in (22.8 cm)  
Width: 6.5 in (16.5 cm)  
Depth: 1.66 in (4.2 cm)  
Weight: 23 oz (0.7 kg)

### PON CHARACTERISTICS

Max. split\*\*: 128 GPON  
Max. reach\*\*: 20 km (12.4 miles), N1 Class  
Maximum Optical Distribution Network (ODN) Attenuation: XGS, 29 dB  
Optical receiver 1577nm: -28dBm  
Optical transmitter 1270nm: +2.0 to +7 dBm

### INTERFACES

Data/Business Ethernet:  
Two 10/100/1000 BASE-T Ethernet port RJ 45 connectors  
One SFP+ 10G Ethernet port  
SFP+ XGS uplink port  
PON: Single 9/125  $\mu$ m (single mode) fiber, SC/APC connector, minimum 50 dB return loss  
Power: 8-pin connector

### DATA

Drop length: 328 feet (100 m) maximum, using CAT6 or CAT6A cable  
Auto MDI/MDIX crossover for 10/100/1000 BASE-T ports  
Traffic Management and QoS: 802.1Q VLAN, data and management priorities; Q-in-Q tagging; ingress port policing at LAN and WAN

### STANDARDS SUPPORT

IEEE Bridging  
IEEE 802.3 Ethernet  
VLAN Cross-Connect – based on Outer, Outer and Inner VLAN tags  
IEEE 802.1p Prioritization  
IEEE 802.1Q VLAN tagging  
IEEE 802.1ad VLAN stacking (Q-in-Q) support  
IEEE 802.1ag Connectivity Fault Management  
Y.1731 OAM functions and mechanisms for Ethernet based networks  
Y.1564 Ethernet service activation test methodology  
MEF 6.1.1 – L2CP aspects Amendment to 6.1

MEF 10.3 Service Attributes  
MEF 11/13/20 UNI type 1 and 2  
MEF 23.1 Class of Service Phase 2 Implementation Agreement  
MEF 30 Service OAM Fault Management Implementation Agreement  
MEF 35 Service OAM Performance Monitoring Implementation Agreement  
MEF 45 Multi-CEN L2CP  
MEF 48 Service Activation Testing  
MEF 49 Service Activation Testing Protocol and PDU Formats

### CERTIFICATION AND COMPLIANCE

#### Emissions:

FCC Part 15 Class B  
CISPR-22

#### Safety:

UL 60950 and UL 1697 approved  
IEEE: 802.3, 802.3AB, 802.3U, 802.11p, 802.11Q

## SPECIFICATIONS (... CONTINUED)

### TIMING

ITU G.987.3 10-Gigabit-capable passive optical networks

SyncE SSM per ITU-T G.781  
Synchronization Layer Function

### ENVIRONMENTAL

Operating temperature:

Indoor ambient temperature,  
0° to 40°C (32° to 104° F)

Relative humidity (non-condensing):

Operating/Storage: 5% to 90%

### POWERING AND ALARMS

8-pin connector

Input voltage: 12 V DC (nominal),  
10 V DC (min), 15 V DC (max)

External Power Adapter: External Power  
Adapter: 12 V DC, 2.5 A

### QUALITY OF SERVICE

Classification based on Ethernet and IP  
header

Priority bit (Pbit) and DSCP mapping  
capability at the subscriber edge

Priority bit based CoS queuing; 8 queues  
per egress interface and 4 CoS queues  
per shaped service

MEF-compliant single level policing

Ingress Policing per service, per classified  
traffic

Egress Policing per service, per classified  
traffic

Color blind policers

Burst size

Weighted Random Early Detection  
(WRED) per queue

Advanced Scheduling options: Strict  
Priority, and Deficit Weighted Round  
Robin. A combination of these  
scheduling options can be used on an  
egress interface.

### SERVICE ACTIVATION TESTING (SAT)

Support Generator/Collector for Two-  
Way SAT, frame delivery, SCT (cir,  
eir+cir, policing), SPT (cir)

Keeps up to 5 of the last test results which  
can be referenced via the "  
transaction\_id", i.e tid (persists across  
reboot)

Supports both tagged (FL-PDU) and un-  
tagged (IPv4) subscriber test frames

Support testing multiple EVCs and CoS on  
a single interface simultaneously (up  
to 64 frame-sets) (only one active SAT  
test per interface)

Frame Delivery (unicast, multicast, and  
broadcast)

Bad frame testing supported, CVLAN  
preservation testing

Delay measurement for SCT (cir, cir+eir,  
policing), and SPT

Supports both fixed packet and emix  
profile testing for SCT/SPT (bandwidth  
profile testing and performance testing)

Supports testing DSCP/filtering setting for  
untagged frames

Supports blocking of EVC traffic from  
subscriber ports for both generator and  
reflector

Auto configure parameters from traffic  
management configuration system

Support Per EVC (up to 64 simultaneous)  
latching loopback interface

Supports packet lengths up to full ethernet  
frame sizes of 9,600+ bytes.

Supports auto-configuration required by  
SAT YANG model, as well as specific  
user-defined test settings such as:

- CIR/EIR
- CVID+CPBIT settings (auto-selects  
lowest values when un-specified)
- DSCP value to use (auto-selects  
lowest value when un-specified)

### ETHERNET OAM

802.1ag & Y.1731

Supports CFM, SOAM and Maintenance  
End Points

Peer to Peer Delay Measurements

2-way Delay Measurement

Y.1564 based Service Activation Testing

Service Activation Testing: Multi-Gigabit  
Load generation, Multi-Gigabit Loop  
back

Interoperable with systems supporting  
802.1ag and Y.1731

RFC2544 based Service Activation  
Testing

Continuity Check Message at 100  
milliseconds interval

### MANAGEMENT SUPPORT

Performance monitoring and statistics

Network Configuration Protocol  
(NETCONF)

MEF 31 YANG equivalent Service OAM  
Fault Management Definition of  
Managed Objects

MEF 38 YANG equivalent Service OAM  
Fault Management YANG Modules

### PERFORMANCE MANAGEMENT

Internet Protocol Flow Information Export  
(IPFIX)

\*\*Not necessarily simultaneously



## ORDERING INFORMATION

### Calix GPR3000X GigaPro

000-01101	.....	GPR3000X (100-04811) and XGS-PON SFP+ optical module 1270/1577nm, single fiber transceiver, I-Temp (100-04531)
100-04811	.....	GPR3000X 10G GigaPro, 2 GE, 1 SFP+10GE, AM Power Adapter
100-04994	.....	GPR3000X 10G GigaPro, 2 GE, 1 SFP+10GE, UPS Power Interface
100-05088	.....	GPR3000X 19 inch rack mount bracket and accessories

Note: Calix believes the information in this publication to be accurate as of publication date, and is not responsible for error. Product Specifications are subject to change without notice.

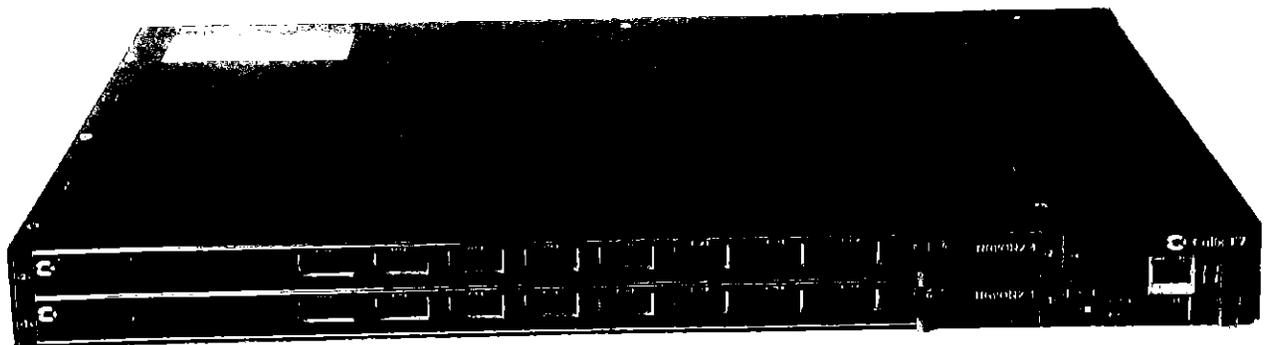


# Calix E7-2 A AXOS NGPON2-4

## DESCRIPTION

Looking to future-proof your next-generation GPON network in preparation for launching advanced services?

As North America's most widely deployed access system, the Calix AXOS E7-2 Intelligent Modular System is a breakthrough evolutionary system that provides a transformational path to next generation networks, fiber technologies, and Software Defined Access. The E7-2 is the industry's benchmark for a modular, small form factor, environmentally hardened access solution for service providers. By adding the AXOS platform, the E7-2 is now even more of a disruptive and compelling enabler to next generation networks that connect the world. The AXOS E7-2 leads a rapidly expanding family of AXOES E-Series systems capable of supporting both centralized and decentralized network architectures that range from the data center edge, central office, or headend, to the remote cabinet, or MDU.



## FUNCTIONAL DESCRIPTION

### 10 GIGABIT PON:

The Calix AXOS E7-2 NGPON2-4 line card provides all the benefits of Calix AXOS while bringing both NG-PON2 and XGS-PON technology to the access network. Each card provides 4 XGS-PON or NG-PON2 OLT channel termination ports that subtend up to 128 ONTs each, for a capacity of 512 ONTs per card and 1024 ONTs per E7-2 1RU chassis. Each port can be independently provisioned to support NG-PON2 or XGS-PON.

## KEY FEATURES AND CAPABILITIES

The NGPON2-4 card features and capabilities include:

- Based on ITU G.989 NG-PON2 and XGS-PON family of standards
- 9.953 Gbps downstream, 9.953 Gbps upstream
- Supports up to 4 TWDM wavelengths (one per physical port, upgradeable to 8 wavelengths in future) and the XGS-PON wavelength
- Supports NG-PON2 wavelength mobility
- Leveraging OMCI and GEM (Ethernet) based provisioning model as GPON
- Interoperable with Calix Next Generation 10G PON Residential SFUs and MDUs as well as Business ONTs
- Class N1 +29 dB link budget, up to 1:128 splits
- Integrated 10GE aggregation and transport
- Hardened for central office and remote terminals

## IP SERVICES DELIVERY

The Calix AXOS E7-2 NGPON2-4 line card delivers a full spectrum of IP access services over PON fiber networks.

- 4K IPTV – broadcast and Video on Demand (VoD)
- MEF CE 2.0 compliant business services
- Ultra-fast High-Speed Internet (HSI) access
- Voice – Native SIP/VoIP and TDM Gateway support

## INTEGRATED HIGH-CAPACITY TRANSPORT

Built on a core Layer 2 and Layer 3 switch, the AXOS E7-2 NGPON2-4 line card is capable of full-duplex, line rate forwarding at all frame sizes and traffic types across all interfaces. Each PON port has a dedicated 10 Gbps switch interface. Four 10 GE XFP uplinks provide support for backhaul of all traffic.

## NETWORK RESILIENCY

The Calix AXOS E7-2 NGPON2-4 line card supports a flexible set of standards-based network topology protocols for use in point to point or ring based transport.

- ITU G.8032v2 Ethernet Ring Protection Switching (ERPS)
- IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
- IEEE 802.3ad/802.1AX Link Aggregation

## MOBILE BACKHAUL & FRONTHAUL

With integrated network synchronization, Ethernet OAM and advanced timing capabilities, the AXOS E7-2 NGPON2-4 line card can be used to transport mobile front haul as well as backhaul traffic while also supporting triple play residential and MEF certified business services from a single platform.

## UNIFIED ACCESS INFRASTRUCTURE

With advanced QoS and intelligent NG-PON2 card architecture, operators have a cost-effective way to start with XGS-PON for high density MDU residential services such as Gfast. Then, operators can seamlessly migrate to TWDM

optics and further monetize their investment by offering SLA-driven business and mobile hauling capabilities. The AXOS E7-2 NGPON2-4 line card will thus offer ultra-high bandwidth residential IPTV services, mobile and business services over a single unified access infrastructure.

**MINIMUM SOFTWARE  
RELEASE**

Calix E7 AXOS Release 3.0

**DIMENSIONS (W x H x L)**

14 x 10.1 x 0.78 inches  
35.6 x 25.7 x 2 cm

**WEIGHT**

2 lbs. (1 Kg)

**PORTS**

4 XFP interfaces for 10G/10G,  
10G/2.5G PON Access  
Links (4 TWDM channels  
per card)  
4 XFP interfaces for  
10GE network uplink

**WAVELENGTH SUPPORT**

XGS-PON: 1577nm Down,  
1270  
nm Up  
NG-PON2: Up to 4  
TWDM wavelengths:  
1596-  
1599 Down, 1532-1535 Up [one  
wavelength pair per OLT  
port]

**SPLIT RATIO\***

XGS-PON: 1:128  
NG-PON2: 1:128  
(\*Refer to Calix PPG  
for engineering  
design guidelines)

**QUALITY OF SERVICE**

Service classification based  
on port, SVLAN-ID,  
CVLAN-ID,  
p-bit  
Strict priority and Weighted  
Round Robin (WRR)  
based scheduling with  
minimum bandwidth  
guarantees  
Congestion avoidance: Tail  
Drop

**STANDARDS AND RFC  
SUPPORT**

ITU-T G.989.2 a1 NG-PON2  
ITU-T XGS-PON  
ITU-T G.8032v2 Ethernet Ring  
Protection Switching  
(ERPS)  
TR-101 VLAN Service models  
IEEE 802.1p CoS  
Prioritization IEEE 802.1 MAC  
Bridges  
IEEE 802.1Q VLAN tagging  
IEEE 802.1ad VLAN  
stacking  
(Q-in-Q)  
support RFC 2236  
IGMP v2 RFC  
3376 IGMP v3  
RFC 3810 MLDv2  
RFC 3046 DHCP Relay Agent  
Information Option ("Option  
82")  
RFC 4541 IGMP Proxy  
RFC 4553 Structure-Agnostic  
Time Division Multiplexing  
(TDM) over Packet  
(SAToP)  
Dynamic Bandwidth Allocation  
(DBA)  
Advanced Encryption  
Standard (AES)  
Forward Error Correction (FEC)

**PACKET SWITCHING**

**CAPACITY**

9216 byte frames over NGPON2/  
XGS-PON  
4,096 VLANs per system  
4,096 IGMP Multicast channels

**SYNCHRONIZATION**

Integrated Stratum-3 reference  
Timing Options: BITS, Synch,  
1588v2 (TC, OC, BC)

**COMPLIANCE**

NEBS Level 3 compliance  
(GR-63-CORE, GR-  
1089-CORE, GR-  
3028)  
UL 60950  
FCC Part 15 Class  
A CE Mark

**POWER AND**

**HEAT**

**DISSIPATION**

NGPON2-4 power consumption:  
125 Watts (typical with  
optics)

**OPERATING ENVIRONMENT**

Temperature: -40° to +65° C  
(-40° F to +149° F)  
Humidity: 10 to 95%  
(non-condensing)

**STORAGE ENVIRONMENT**

Temperature: -40° to +85° C  
(-40° F to +185° F)  
Humidity: 5 to 95%



**NOTES**

For XGS-PON XFP, NG-PON2 XFP, and 10GE XFP, only products purchased directly from Calix are supported. The use of XGS-PON XFP, NG-PON2 XFP, and 10GE XFP pluggable transceivers not purchased directly from Calix is not supported and will void all product warranties covering the Calix equipment to which such third-party materials are connected.

**CALIX ONTs**

The AXOS E7-2 NGPON2-4 line cards support operation with the Next Generation GigaFamily of ONTs using fixed (XGS- PON) and tunable TWDM wavelengths.

**CALIX E7 LINE CARDS**

**100-04636**..... E7-2 NGPON2-4 (4x XGS-PON/NG-PON2 XFP, 4x 10GE XFP)

**CALIX PLUGGABLE TRANSCEIVER MODULES**

The E7-2 supports pluggable modules for all service and network interfaces. Refer to the Calix Optical Transceiver Modules Datasheet (#250-00191) for a complete list of modules and specifications.

**XFP**.....10GE optical Small Form-factor Pluggable (XFP) modules

**XGS-GPON XFP** .....10Gbps XGS-PON optical Small Form-factor Pluggable (XFP) modules

**NG-PON2 XFP** .....10Gbps NG-PON2 optical Small Form-factor Pluggable (XFP) modules (CO use only)

# AXOS<sup>®</sup>

Data Sheet

## AX e7 2<sup>®</sup> XG801



Looking to future-proof your next-generation XGS-PON / GPON network in preparation for launching advanced broadband services? As North America's most widely deployed access system, the Calix AXOS E7-2 Intelligent Modular System is a breakthrough evolutionary system that provides a transformational path to next generation networks, fiber technologies, and Software Defined Access. The E7-2 is the industry's benchmark for a modular, small form factor, environmentally hardened access solution for communications service providers (CSPs). Powered by the AXOS platform, the E7-2 is now even more of a disruptive and compelling enabler to next generation networks that connects everyone and everything. The AXOS E7-2 leads a rapidly expanding family of Intelligent Access EDGE systems capable of supporting both centralized and decentralized network architectures that range from the data center edge, central office, or headend, to the remote cabinet, or MDU.

### Functional Description

#### XGS-PON / GPON AND POINT-TO-POINT ETHERNET:

The Calix E7-2 AXOS XG801 card provides multi-service capability over IP/Ethernetbased networks. Each XG801 provides eight selectable XGS-PON / GPON OLT ports that subtend up to 128 ONTs each, for a card capacity of 1,024 PON ONTs, or 2048 per E7-2 1RU chassis. An additional four 10GE SFP+ sockets per card can provide high-bandwidth, point-to-point Ethernet services to individual subscribers or be used to aggregate other Ethernet devices. Each port can be independently provisioned to support XGS-PON, GPON, or Ethernet connections. The Calix E7-2 XG801 card can co-exist with other Calix E7-2 AXOS line cards in a shelf.

## KEY ATTRIBUTES

XG801 card features and capabilities include:

- Based on ITU G.989 XGS-PON family of standards
- XGS-PON: 9.953 Gbps downstream, 9.953 Gbps upstream
- GPON: 2.488 Gbps downstream, 1.244 Gbps upstream
- GEM (Ethernet) based GPON
- Interoperable with Calix ONTs, including GigaFamily and Calix Next Generation 10GPON Residential SFUs, MDUs, and Business ONTs
- Class N1 +29 dB link budget, up to 1:128splits
- Class N2 +31 dB link budget, up to 1:128splits
- Class B+ ODN, +28 dB link budget, up to 20 km at 32-way splits
- Class C+ ODN, +32 dB link budget with Forward Error Correction (FEC), up to 35km at 32-way split, up to 60 km at 2-way split
- Integrated 100GE and 10GE aggregation and transport
- Hardened for central office and remote terminals

## INTEGRATED HIGH-CAPACITY AGGREGATION

The E7-2 AXOS XG801 card is built on a core Layer 2 and Layer 3 switch capable of full-duplex, line rate forwarding at all frame sizes and traffic types across all interfaces. Each XGS-PON OLT port has a dedicated 10Gbps switch interface. Industry standard pluggable modules are used for all interfaces, including ITU G.989 XGS-PON and G.984 compliant GPON, GE, 10GE SFP+, and QSFP-DD 100GE. The XG801 supports (2) QSFPDD sockets supporting QSFP28 100GE optical modules and QSFP-DD Point-to-Point and Point-to-Multipoint Direct Attach cables. The XG801 also provides (4) SFP+ modules that are mechanically compatible with the industry-ubiquitous SFP module. Each SFP+ interface supports 10GE/1GE modules as well as Direct Attach copper cables.

## IP SERVICES DELIVERY

The Calix E7-2 AXOS XG801 card delivers a full spectrum of IP access services over XGSPON, GPON and Point-to-Point Ethernet networks.

- Secure AES encryption on the PON
- IPTV – broadcast and Video on Demand (VoD)

- MEF compliant business services
- High-Speed Internet (HSI) access
- Voice – Native SIP/VoIP and TDM Gateway support
- T1 services
- CATV: 1550nm RF video overlay; 1610nmRF return

## NETWORK RESILIENCY

All Calix E7-2 AXOS XG801 cards support a flexible set of standards-based network topology protocols for use in aggregation, ring-based transport, and uplink.

- ITU G.8032 Ethernet Ring Protection Switching (ERPS)
- ITU G.8032v2 Ethernet Ring Protection Switching (ERPS)
- IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
- IEEE 802.3ad/802.1AX Link Aggregation
- ITU G.983.5 - Type B Protection and enhanced survivability for XGS-PON and GPON OLTs

## MOBILE BACKHAUL

With integrated network synchronization, hierarchical QoS and support for T1 services, the E7-2 AXOS XG801 card enables transport of uncompromised mobile broadband traffic while also supporting triple play residential and MEF certified business services from a single platform. A powerful collection of classification, policing, and scheduling algorithms let CSPs manage per-subscriber and per-service traffic flows to maintain priority/delay/loss service differentiation within the E7 network.

## SCALABLE IPTV SUPPORT

The E7 supports industry standard IGMP snooping to identify and replicate multicast video sent between the set-top box and the video distribution network, thus providing efficient, scalable, high-quality IPTV distribution on both GPON and Ethernet interfaces.

## SPECIFICATIONS

### Minimum System Requirements

- Calix AXOS Software Release 21.2

### Dimensions (W x H x L)

- Height: 14 in (35.6 cm)
- Width: 10.1 in (25.7 cm)
- Depth: 0.78 in (2 cm)
- Weight: 2.08 lbs (0.94 kg)

### Ports

- 8 SFP ports supporting selectable
- XGS-PON / GPON optical modules
- 4 SFP+ ports supporting 10GE, 2.5GE, and GE optical modules
- 2 QSFP-DD ports supporting
- 40GE/100GE optical modules

### Packet Switching Capacity

- Wire speed forwarding across all
- Ethernet and XGS-PON / GPON
- OLT ports
- 64,000 MAC addresses per system
- 9,000 byte jumbo frames
- 2,000 byte frames over GPON
- 4,096 VLANs
- 4,000 IGMP Multicast channels

### Quality of Service

- Service classification based on port, SVLAN-ID, CVLAN-ID, P-Bit
- Port and flow-based policing to 1Mbps increments
- 8 CoS queues per port
- Strict priority scheduling with minimum bandwidth guarantee
- Congestion avoidance: Tail Drop

### Standards and RFC Support

- TR101 VLAN Service models
- IEEE802.1ag Connectivity Fault Management (G.8032 support)
- IEEE 802.1D Rapid Spanning Tree
- IEEE 802.1p CoS Prioritization
- IEEE 802.1 MAC Bridges
- IEEE 802.1Q VLAN tagging
- IEEE 802.1ad VLAN stacking (Q-in-Q) support
- IEEE 802.1w RSTPIEEE 802.3ad/802.1AX
- Link Aggregation
- RFC 2236 IGMP v2
- RFC 3376 IGMP v3
- RFC 3046 DHCP Relay Agent Information Option ("Option 82")
- RFC 4541 IGMP snooping
- RFC 4553 Structure-Agnostic Time Division Multiplexing (TDM) over Packet (SAToP)
- ITU-T G.8032 Ethernet Ring Protection Switching (ERPS)/ Enhanced EAPS
- ITU-T G.8032v2 Ethernet Ring Protection Switching (ERPS)
- ITU-T G.989 XGS-PON
- ITU-T G.984 GPON
- ITU G.984.1 Type B Protection
- Dynamic Bandwidth Assignment (DBA)
- NIST Advanced Encryption Standard (AES)

### Synchronization

- Synchronization enabled by E7 line cards
- External reference timing
- Built-in Stratum-3 clock
- Hardware-ready to support Synchronous Ethernet, IEEE 1588v2

### Compliance

- NEBS Level 3 compliance (GR-63-CORE, GR-1089- CORE, GR-3028)
- UL 62368 FCC Part 15 Class A
- CE Mark

### Operating Environment

- Temperature: -40° to +65° C (-40° F to +149° F)
- Humidity: 10 to 95% (noncondensing)

### Storage Environment

- Temperature: -40° to +85° C (-40° F to +185° F)
- Humidity: 5 to 95%

**Notes:** For AXOS XGS-PON OIM and GPON OIM transceivers purchased directly from Calix are supported. The use of OIM pluggable transceivers not purchased directly from Calix is not supported and will void all product warranties covering the Calix equipment to which such third-party materials are connected.

- Only AXOS XGS-PON and GPON OIMs are supported by the E7-2 AXOS XG801 card
- SFP modules may also be used in SFP+ sockets at 1GE rate.
- 100GE optical modules used in QSFP-DD sockets may be provisioned to operate at either 100Gbps or 40Gbps rates.
- Copper Direct Attach cables can operate in SFP and SFP+ sockets at 1GE and 10GE data rates as supported by the card type.
- Copper Direct Attach cables can operate in QSFP-DD sockets at 100GE and 10GE data rates as supported by the card type.

### Calix ONTs

The E7-2 AXOS XG801 card supports the Calix family of ONTs, including 700GX, 700GE, 836GE, as well as the 800G GigaFamily. 10G PON ONTs are also supported, including the GP1000X, GP1100X, GH3200X, and GPR3000X ONTs.

Calix ONTs support auto sensing GPON and GE network interfaces, allowing service providers to manage service changes without subscriber onsite technical support.

### Calix E7-2 AXOS Line Cards

**100-05529**..... E7-2 AXOS XG801 (8x XGS-PON/GPON OIM, 4x 10GE SFP+, 2x 100GE QSFP-DD)

### Calix Pluggable Transceiver Modules

The E7-2 supports pluggable modules for all service and network interfaces.

Refer to the Calix Optical Transceiver Modules Datasheet (#250-00191) for a complete list of modules and specifications.

**SFP**..... 1GE and 2.5GE optical and copper Small Form-factor Pluggable (SFP) modules

**SFP+**..... 10GE optical Enhanced Small Form-factor Pluggable (SFP+) modules

**Direct Attach**..... Multi-rate copper Small Form-factor Pluggable (SFP/SFP+) cables

### AXOS XGS-PON / GPON

**B+ OIM**..... 2.5Gbps GPON (Class B+, 20km, C-Temp, AXOS) 2.5Gbps GPON (Class B+, 20km, I-Temp, AXOS)AXOS GPON

**C+ OIM**..... 2.5Gbps GPON (Class C+, 60Km, I-Temp, AXOS)

**N1 OIM**.....10Gbps XGS-PON (Class N1, 20km, I-Temp, AXOS)

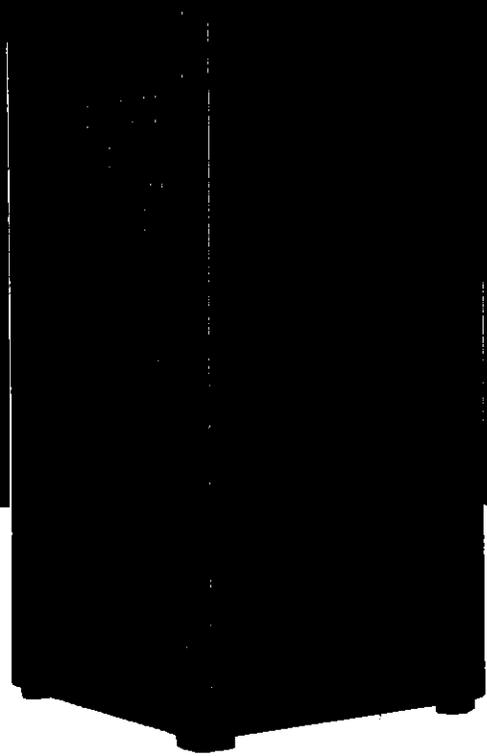
**N2 OIM**.....10Gbps XGS-PON (Class N2, 20km, I-Temp, AXOS)

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**Giga**

**BLAST u6.1**



The Calix GigaSpire® BLAST® u6.1 (GS4220E) is a new generation smart home system that extends the access network into the home and acts as a strategic location for control of the ultimate Wi-Fi experience. Besides supporting broadband connectivity of data and video services, this intelligent, high-performance system offers the latest 802.11ax 'Wi-Fi 6' technology. The GigaSpire BLAST u6.1 provides switching and routing functions that support multi-Gigabit throughput for IPTV video and data services.



## MULTI-GIGABIT SUBSCRIBER EXPERIENCE

The GigaSpire BLAST u6.1 is a premium smart home system that delivers the latest 'Wi-Fi 6' certified technology (802.11ax). The GigaSpire BLAST u6.1 uses a 1 Gigabit Ethernet link at the subscriber's premises to provide carrier-class Wi-Fi and four (4) Gigabit Ethernet interfaces for customer multi-media devices. The GigaSpire BLAST u6.1 enables residential subscribers to receive Gigabit broadband data, Internet Protocol (IP) video, and voice

(POTS) services. Using the latest 802.11ax technology in both the 2.4 and 5 GHz radios, the GigaSpire BLAST u6.1 incorporates 6x6 streams of Wi-Fi delivery (2x2 @ 2.4 GHz and 4x4 @ 5 GHz). In addition, with multi-user multiple-input and multiple-output (MU-MIMO) and beamforming, the GigaSpire BLAST u6.1 allows service providers to extend the access network inside the home and establish a strategic location for the delivery and control of broadband services.

With Wi-Fi being the de facto wireless data communication technology of choice for consumers, Calix engineered the GigaSpire BLAST u6.1 for optimal whole-home coverage with simultaneous dual-band 2.4 GHz and 5 GHz operation and dynamic beamforming at 5 GHz. Leveraging the latest Wi-Fi 6 features, the GigaSpire BLAST u6.1 provides longer range, higher efficiency and less interference compared to earlier generations of Wi-Fi technology. The GigaSpire BLAST u6.1 also supports the entire 5 GHz band, including Dynamic Frequency Selection (DFS) channels and can be provisioned to support 160 MHz channel bandwidth at 5 GHz. The GigaSpire BLAST u6.1 easily delivers HD and UHD (ultra-HD) video and data throughout a subscriber's home in an increasingly video-rich and mobile broadband environment.

Ensuring consumers can have ultra-fast Wi-Fi throughout their premises, the GigaSpire BLAST u6.1 provides the latest generation of redundant mesh via the Calix Mesh

BLAST u4m (GM1028) (please see the GM1028 data sheet for more information). With the GigaSpire BLAST u6.1 as the hub, and the BLAST u4m as the satellite extenders, consumers can truly gain the whole home/smart home experience. For even higher mesh performance, GigaSpire BLAST u6.1 can also be a mesh unit. This means that two GigaSpire BLAST u6.1 systems can connect to each other with one being the residential gateway and the other being the satellite.

## EASY TO INSTALL, ACTIVATE, AND MAINTAIN

With the GigaSpire BLAST u6.1, Calix has redefined how to install and activate residential services at a subscriber's premises. Using the CommandIQ® mobile app and a phone

or laptop, a field technician can install and apply the subscriber's service profile without special equipment or assistance from the central office. Calix also provides the innovative Calix Support Cloud (CSC), which allows the service provider to configure, activate

and upgrade the GigaSpire BLAST u6.1 quickly from a remote location using in-band management or TR-069. Extensive troubleshooting capabilities, remote software downloads, and easy-to-use service activation features ensure that services are delivered and maintained without needless truck rolls and hardware upgrades. Employing GigaSpire BLAST u6.1 systems allows service providers to reduce their operational expenses while effectively delivering the Gigabit experience to their subscribers.



BLAST v6.1

Data Sheet

## **CALIX EXPERIENCE INNOVATION PLATFORM**

All GigaSpire BLAST systems are powered by the Calix Innovation Experience Platform.

This container-based platform allows service providers to quickly change and adapt their services to embrace new technologies and offer new, value-added services. This approach can generate recurring revenue and increase subscriber satisfaction.



## KEY ATTRIBUTES

### Home Gateway:

- Layer 2 bridge and Layer 3 routing for High Speed Internet (HSI) data and IPTV video services
- DHCP server options
- DHCP (IPoE) and PPPoE network connections
- Network Access Translation (NAT), public to private IP addressing
- Configurable IP address schemes, subnets, static-IP addresses
- DNS server
- Bridge port assignment and data traffic mappings
- Port forwarding
- Firewall and security
- Application and website filtering
- Selectable forwarding and blocking policies
- DMZ hosting
- Parental controls, time of day usage
- Denial of service (DoS) protection
- MAC filtering
- Time/Zone support
- Universal Plug-and-Play (UPnP)

### Wi-Fi:

- 2.4 GHz and 5 GHz, simultaneous dual-band
- 5 GHz 802.11ax (Wi-Fi 6) certified, 802.11a/n/ac compatible
- 6x6 streams (2x2 @ 2.4 GHz and 4x4 @ 5 GHz)
- 2.4 GHz 802.11ax (Wi-Fi 6) certified, 802.11b/g/ac compatible

- WPA/WPA2/WPA3; WEP 64/128 bit encryption
- PuF (Physical Unclonable Functions)
- WPS push-button
- 4x4 DL/UL MU-MIMO with beamforming (5 GHz radio)
- 2x2 DL/UL MU-MIMO with beamforming (2.4 GHz radio)
- 1024 QAM; OFDMA; BSS Coloring
- DCM (Dual Carrier Modulation)
- TWT (Target Wake Time) for IoT clients

### Wi-Fi Redundant Mesh:

- Self Managed: self configuration, Air time fairness
- Dynamic Mesh: load balancing, band/node steering; interference management
- Self Healing: backhaul failover; diagnostics; events

### 1 Gigabit Ethernet (GE) WAN interface:

- Multi-rate 100/1000/2500 BASE-T Ethernet, auto-negotiating

### Gigabit Ethernet (GE) LAN interfaces:

- Four (4) ports of multi-rate 10/100/1000 BASE-T Ethernet, auto-negotiating for residential IPTV and data services

### Two voice lines:

- Carrier grade SIP, H.248 (aka Megaco) and MGCP<sup>1</sup>

### USB port:

- USB 2.0 - Type A host interface

### Supports multiple data service profiles

### Traffic management and Quality of Service (QoS):

- 802.1Q VLANs
- 802.1p service prioritization
- Q-in-Q tagging
- Multiple VLANs
- DiffServ
- Pre-defined QoS on service type
- LAG of GE ports
- MAP-T

### IPTV, IGMPv2, future support of IGMPv3:

- IGMP Snooping and Proxy
- IGMP Fast Leaves

### Gateway Management:

- CSC (Calix Support Cloud)
- TR-069
- Local Home Gateway GUI, access provisionable
- Remote WAN side GUI access
- Default username/password

### AC to 12 V DV power adapter

<sup>1</sup> Currently supporting MetaSwitch and Ribbon softswitches

## SPECIFICATIONS

### Dimensions

- Width: 4.75 in (12.1 cm)
- Height: 8.5 in (21.6 cm)
- Depth: 4.75 in (12.1 cm)
- Weight: 36 oz (1.02 kg)

### WAN Interface

- Interface: One 2.5 Gigabit-Ethernet Port, RJ-45 connector

### Interfaces

- Wireless: 2.4 GHz 2x2 and 5 GHz 4x4 internal antennas
- LAN Data/IPTV: Four (4) 10/100/1000 BASE-T Ethernet port, RJ 45 connectors
- WAN: One (1) 10/100/1000/2500
- USB: USB 3.0 Type A
- Voice: Two ports supporting carrier grade SIP, H.248 (aka Megaco) and MGCP
- Power: Single pin and 8-pin

### Data

- Drop length: 328 feet (100 m) max using CAT5 cable for GigE
- Auto MDI/MDIX crossover for 1000BASE-TX, 100BASE-TX
- Traffic Management and QoS: 802.11Q VLAN; 802.11p voice, video, data and management priorities; Q-in-Q tagging

### Wireless

- 2.4 GHz 802.11 b/g/n/ac/ax
- 5 GHz 802.11 a/n/ac/ax
- 4x4 DL/UL MU-MIMO, implicit/explicit high-power, dynamic beamforming (5 GHz radio)
- 2x2 DL/UL MU-MIMO implicit/explicit high-power, dynamic beamforming (2.4 GHz radio)
- 2.4 GHz and 5 GHz simultaneous
- DCM, TWT, extended GI
- Auto channel selecting and interference detection
- WPS, WPS push button
- Wi-Fi multimedia (WMM)
- Supports up to 250 wireless clients

### Remote Management

- TR-069 remote management
- TR-098 Internet Gateway Device Data Model

### Environmental

- Operating temperature: Indoor ambient temperature, 0° to 40°C (32° to 104° F)
- Operating and storage relative humidity: 10 to 90 % and 5 to 95% non-condensing respectively

### Certification and Compliance

- Emissions: FCC Part 15 Class B IC ICES-003 Class B CISPR-22
- Safety: UL 60950 and UL 1697 approved
- IEEE: 802.3, 802.3AB, 802.3U, 802.11p, 802.11Q
- Wi-Fi Alliance Certified 802.11ax



- USB-IF Compliance USB 2.0



### Powering and Alarms

- Single pin and 8-pin
- Input voltage: 12 V DC (nominal)
- External Power Adapter: 12 V DC, 3A

### Ookla-based

### Performance Testing

- Subscribers can run an Ookla-based performance test from within the Calix CommandIQ® mobile app
- Symmetrical speed test results in excess of 2 Gbps are possible with the GigaSpire BLAST u6.1 system (owing to the 1 GigE WAN port)



## ORDERING INFORMATION

Calix GS4220E GigaSpire BLAST u6.1

**100-01175**..... GS4220E GigaSpire BLAST u6.1, 1 GE WAN, 4 GE LAN, 2 POTS,  
Dual Wi-Fi – AM Power Adapter

Calix GS4220E GigaSpire BLAST u6.1 Power Adapter

**100-05484**..... GigaSpire BLAST u6.1/u6.2 (GS4220E/GS4227E) Power Adapter, 12 V, 3 A – AM Type A

Optional Mounting Bracket

**100-05467**..... GS4227E/GS4220E Mounting Bracket — Quantity 10

Optional Uninterruptible Power Supply (UPS)

**100-04068**..... Indoor UPS (8 hour support), Wall Mount or Desktop, 12 V, 7.2 AH, 36 W, Black - AM,  
Type B, Grounded

**100-05345**..... Indoor UPS (24 hour support), Wall Mount or Desktop, 12 V, 20AH, 75W, Audible Alarm,  
Regulated Output R3 Production

UPS Power Adapters

**100-03893**..... Indoor UPS Power cord, 7-pin UPS to 8-pin ONT Male, 1m, black

**100-03894**..... Indoor UPS Power cord, 7-pin UPS to 8-pin ONT Male, 3m, black

**100-03895**..... Indoor UPS Power cord, Unterminated to 8-pin ONT Male, 6m, black

Removeable Branding Plate

**100-05522**..... Blank, removable branding plate. Contact your sales representative to order branding  
plates that can be customized with your company logo

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Product Specifications are subject to change without notice.

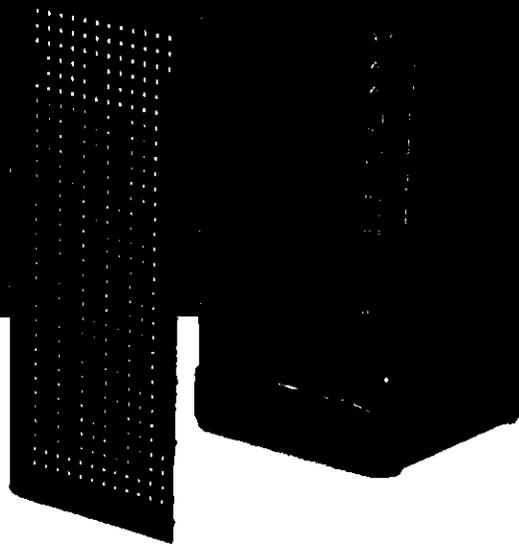


**REVENUE  
EDGE**

Data Sheet

  
**Giga**

**BLAST u6x**



 **Calix**

The Calix GigaSpire® u6x (GS4227) is a new generation smart home system that integrates optical network termination (ONT) and residential gateway functionality into a single system\*. It supports virtually any passive optical network (PON) and Ethernet technology, while providing the ultimate Wi-Fi experience. Besides supporting broadband connectivity of data and video services, this intelligent, high-performance system offers the latest 802.11ax 'Wi-Fi 6' technology. The GigaSpire BLAST u6x provides switching and routing functions that support multi-Gigabit throughput for IPTV video and data services.

**Note:** A white form factor is also available, called the GS4227W.



## MULTI-GIGABIT SUBSCRIBER EXPERIENCE

The GigaSpire BLAST u6x is a premium smart home integrated system that delivers the latest Wi-Fi 6 certified technology (802.11ax). The GigaSpire BLAST u6x uses an SFP+ cage supporting a 10 Gigabit link\* at the subscriber's premises to provide carrier-class WAN, including GPON and XGS PON, as well as 1 and 10 Gigabit Ethernet (both copper and Active Ethernet) options. On the LAN side, Wi-Fi and four (4) Gigabit Ethernet interfaces are available for customer multi-media devices.

The GigaSpire BLAST u6x enables residential subscribers to receive Gigabit broadband data, Internet Protocol (IP) video, and voice (POTS) services. Using the latest 802.11ax technology in both the 2.4 and 5 GHz radios, the GigaSpire BLAST u6x incorporates 6x6 streams of Wi-Fi delivery (2x2 @ 2.4 GHz and 4x4 @ 5 GHz). In addition, with multi-user multiple-input and multiple-output (MU-MIMO) and beamforming, the GigaSpire BLAST u6x allows service providers to extend the access network inside the home and establish a strategic location for the delivery and control of broadband services. With Wi-Fi being the de facto wireless data communication technology of choice for consumers, Calix engineered the GigaSpire BLAST u6x for optimal whole-home coverage with simultaneous dual-band 2.4 GHz and 5 GHz operation and dynamic beamforming in both spectrums.

Leveraging the latest Wi-Fi 6 features, the GigaSpire BLAST u6x provides longer range, higher efficiency, and less interference compared to earlier generations of Wi-Fi technology. The GigaSpire BLAST u6x also supports the entire 5 GHz band, including Dynamic Frequency Selection (DFS) channels and can be provisioned to support 160 MHz channel bandwidth at 5 GHz. The GigaSpire BLAST u6x easily delivers HD and UHD (ultra-HD) video and data throughout a subscriber's

home in an increasingly video-rich and mobile broadband environment. Ensuring consumers can have ultra-fast Wi-Fi throughout their premises, the GigaSpire BLAST u6x provides the latest generation of redundant Wi-Fi 6 mesh via the Calix GigaSpire Mesh GigaSpire BLAST u4m (please see the GM1028 data sheet for more information). With the GigaSpire BLAST u6x as the hub, and the Mesh GigaSpire BLAST u4m as the satellite extenders, consumers can truly gain the whole home/smart home experience. For even higher mesh performance, an additional GigaSpire BLAST u6 system, such as the GigaSpire BLAST u6.1, can also be deployed as a mesh unit. This means that two GigaSpire BLAST u6 systems can connect to each other with one being the residential gateway and the other being the mesh.

## EASY TO INSTALL, ACTIVATE, AND MAINTAIN

With the GigaSpire BLAST u6x integrated system, Calix has redefined how to install and activate residential services at a subscriber's premises. Using CommandIQ® and a phone or laptop, a field technician can install and apply the subscriber's service profile without special equipment or assistance from the central office. Calix also provides the innovative Calix Support Cloud (CSC), which allows the service provider to configure, activate and upgrade the GigaSpire BLAST u6x quickly from a remote location using in-band management, TR-069, or ONT Management Control Interface (OMCI).

Extensive troubleshooting capabilities, remote software downloads, and easy-to-use service activation features ensure that services are delivered and maintained without needless truck rolls and hardware upgrades. Deploying GigaSpire BLAST u6x systems allows service providers to reduce their operational expenses while effectively delivering

**Note:** XGS PON technology, although referred to as "10 Gig PON" is limited to a maximum symmetrical throughput of approximately 8.5 Gbps, owing to various overhead limitations and network conditions.



BLAST u6x

the Gigabit experience to their subscribers. If a PON module is being used, PON configuration and management is done via the OMCI protocol.

## **CALIX EXPERIENCE INNOVATION PLATFORM**

All GigaSpire BLAST systems are powered by the Calix Innovation Experience Platform.

This container-based platform allows service providers to quickly change and adapt their services to embrace new technologies and offer new, value-added services. This approach can generate recurring revenue and increase subscriber satisfaction.



BLAST u6x

## KEY ATTRIBUTES

### Home Gateway:

- Layer 2 bridge and Layer 3 routing for High Speed Internet (HSI) data and IPTV video services
- DHCP server options
- DHCP (IPoE) and PPPoE network connections
- Network Access Translation (NAT), public to private IP addressing
- Configurable IP address schemes, subnets, static-IP addresses
- DNS server
- Bridge port assignment and data traffic mappings
- Port forwarding
- Firewall and security
- Application and website filtering
- Selectable forwarding and blocking policies
- DMZ hosting
- Parental controls, time of day usage
- Denial of service (DoS) protection
- MAC filtering
- Time/Zone support
- Universal Plug-and-Play (UPnP)

### Wi-Fi:

- 2.4 GHz and 5 GHz, simultaneous dual-band
- 5 GHz 802.11ax (Wi-Fi 6) certified, 802.11a/n/ac compatible
- 6x6 streams (2x2 @ 2.4 GHz and 4x4 @ 5 GHz)
- 2.4 GHz 802.11ax (Wi-Fi 6) certified, 802.11b/g/ac compatible

- WPA/WPA2/WPA3; WEP 64/128 bit encryption
- PuF (Physical Unclonable Functions)
- WPS push-button
- 4x4 DL/UL MU-MIMO with beamforming
- 1024 QAM; OFDMA; BSS Coloring
- DCM (Dual Carrier Modulation)
- TWT (Target Wake Time) for IoT clients

### Wi-Fi Redundant Mesh:

- Self Managed: self configuration, Air time fairness
- Dynamic Mesh: load balancing, band/node steering; interference management
- Self Healing: backhaul failover; diagnostics; events

### SFP + interface:

- Full 10 Gigabit bandwidth
- Supporting several SFP WAN modules, including: GPON, 1 Gigabit Ethernet (copper) and 10 Gigabit Ethernet (copper), XGS (future release), 1G and 10G Active Ethernet (future release)

### Gigabit Ethernet (GE)

#### LAN interfaces:

- Four (4) ports of multi-rate 10/100/1000 BASE-T Ethernet, auto-negotiating for residential IPTV and data services

#### Two voice lines:

- Carrier grade SIP, H.248 (aka Megaco) and MGCP<sup>1</sup>

### USB port:

- USB 2.0 - Type A host interface

### Supports multiple data service profiles

### Traffic management and Quality of Service (QoS):

- 802.1Q VLANs
- 802.1p service prioritization
- Q-in-Q tagging
- Multiple VLANs
- DiffServ
- Pre-defined QoS on service type
- LAG of GE ports
- MAP-T

### IPTV, IGMPv2, future support of IGMPv3:

- IGMP Snooping and Proxy
- IGMP Fast Leaves

### Gateway Management:

- CSC (Calix Support Cloud)
- TR-069
- Local Home Gateway GUI, access provisionable
- Remote WAN side GUI access
- Default username/password

### AC to 12 V DV power adapter

### Optional UPS power unit available

<sup>1</sup> Currently supporting MelaSwitch and Ribbon softswitches



BLAST u6x

## SPECIFICATIONS

### Dimensions

- Width: 4.9 in (12.2 cm)
- Height: 9.9 in (25.2 cm)
- Depth: 4.9 in (12.2 cm)
- Weight: 41 oz (1.16 kg)

### WAN Interface

- Interface: SFP+ cage (with options for GPON, 1 GBT, 10 GBT, XGS, and Active Ethernet)

### Interfaces

- Wireless: 2.4 GHz 2x2 and 5 GHz 4x4 internal antennas
- LAN Data/IPTV: Four (4) 10/100/1000 BASE-T Ethernet port, RJ 45 connectors
- WAN: SFP+ cage
- USB: USB 2.0 Type A
- Voice: Two ports supporting Metaswitch; C15; C20 SIP; H.248 and MGCP
- Power: Single pin and 8-pin

### Data

- Drop length: 328 feet (100 m) max using CAT5 cable for GigE
- Auto MDI/MDIX crossover for 1000BASE-TX, 100BASE-TX
- 10GBT: 110 feet (30m) CAT6e/7 cable
- Traffic Management and QoS: 802.11Q VLAN; 802.11p voice, video, data and management priorities; Q-in-Q tagging

### Wireless

- 2.4 GHz 802.11 b/g/n/ac/ax
- 2x2 UL/DL MU-MIMO
- 5 GHz 802.11 a/n/ac/ax
- 4x4 DL/UL MU-MIMO, implicit/explicit high-power, dynamic beamforming (5 GHz radio)
- 2x2 DL/UL MU-MIMO implicit/explicit high-power, dynamic beamforming (2.4 GHz radio)
- 2.4 GHz and 5 GHz simultaneous
- DCM, TWT, extended GI
- Auto channel selecting and interference detection
- WPS, WPS push button
- Wi-Fi multimedia (WMM)

### Remote Management

- TR-069 remote management
- TR-098 Internet Gateway Device Data Model

### Environmental

- Operating temperature: Indoor ambient temperature, 0° to 40°C (32° to 104° F)
- Operating and storage relative humidity: 10 to 90 % and 5 to 95% non-condensing respectively

### Certification and Compliance

- Emissions: FCC Part 15 Class B IC ICES-003 Class B CISPR-22
- Safety: UL 60950 and UL 1697 approved
- IEEE: 802.3, 802.3AB, 802.3U, 802.11p, 802.11Q
- Wi-Fi Alliance Certified 802.11ax



- USB-IF Compliance USB 2.0



### Powering and Alarms

- Single pin and 8-pin
- Input voltage: 12 V DC (nominal)
- External Power Adapter: 12 V DC, 3A
- Optional UPS power unit available

### Ookla-based

#### Performance Testing

- Subscribers can run an Ookla-based performance test from within the Calix CommandIQ® mobile app
- Symmetrical speed test results in excess of 2 Gbps are possible with the GigaSpire BLAST u6x system (when a 10 GigE or GPON SFP module is activated)



BLAST u6x

## ORDERING INFORMATION

### Calix GS4227 GigaSpire BLAST u6x

**100-05603**..... GS4227 GigaSpire BLAST u6x , SFP+, 4 GE LAN, 2 POTS,  
Dual Wi-Fi – AM Power Adapter

### Calix GS4227 GigaSpire BLAST u6x Bundles

**000-01201**..... GS4227 GigaSpire BLAST u6x , SFP+, 4 GE LAN, 2 POTS,  
Dual Wi-Fi – AM Power Adapter (with GPON SFP module)

**000-01202**..... GS4227 GigaSpire BLAST u6x , SFP+, 4 GE LAN, 2 POTS,  
Dual Wi-Fi – AM Power Adapter (with XGS SFP module; future release)

**000-01207**..... GS4227 GigaSpire BLAST u6x , SFP+, 4 GE LAN, 2 POTS,  
Dual Wi-Fi – AM Power Adapter (with Active Ethernet SFP module; future release)

### Calix GS4227 GigaSpire BLAST u6x SFP Modules

**100-05609**..... GPON ONT SFP module

**100-05656**..... 1GE SFP, UTP Copper, RJ-45, 100m, I-Temp

**100-05622**..... 10GE SFP+, UTP Copper, RJ-45, 100m, I-Temp

**100-05610**..... XGS ONT SFP+ module (future release)

**100-05620**..... 1 Gigabit Active Ethernet SFP module (future release)

**100-05721**..... 10GE BIDI SFP+, Single Mode single fiber Upstream transceiver, 20Km, 1330nm,  
SC/APC, I-Temp (future release)

### Calix GS4227 GigaSpire BLAST u6x Power Adapter

**100-05484**..... GigaSpire BLAST u6.1/u6.2/u6x (GS4220E/GS4227E/GS4227)  
Power Adapter, 12 V, 3 A – AM Type A

### Optional Mounting Bracket

**100-05467**..... GS4227E/GS4220E Mounting Bracket — Quantity 10

### Optional Uninterruptible Power Supply (UPS)

**100-04068**..... Indoor UPS (8 hour support), Wall Mount or Desktop, 12 V, 7.2 AH, 36 W, Black – AM,  
Type B, Grounded

**100-05345**..... Indoor UPS (24 hour support), Wall Mount or Desktop, 12 V, 20 AH, 75 W, Audible Alarm,  
Regulated Output R3 Production



BLAST u6x

## ORDERING INFORMATION

### UPS Power Adapters

- 100-03893..... Indoor UPS Power cord, 7-pin UPS to 8-pin ONT Male, 1m, black
- 100-03894..... Indoor UPS Power cord, 7-pin UPS to 8-pin ONT Male, 3m, black
- 100-03895..... Indoor UPS Power cord, Underterminated to 8-pin ONT Male, 6m, black

### Removeable Branding Plate

- 100-05522..... Blank, removable branding plate. Contact your sales representative to order branding plates that can be customized with your company logo

**Note:** Calix believes the information in this publication to be accurate as of publication date, and is not responsible for error. Product Specifications are subject to change without notice.

# 803G GigaPoint<sup>®</sup> (Version 1)



The Calix 803G GigaPoint<sup>®</sup> is an indoor, 2.5 Gbps GPON small form factor service delivery terminal that provides broadband connectivity to the subscriber. This high-performance terminal features one Gigabit Ethernet (GE) interface delivering IPTV video and data services, and voice line supporting carrier grade VoIP and network-based TDM voice circuits. Connecting a Calix GigaCenter (844E) to the LAN port of the 803G allows for the delivery of a sensational Wi-Fi experience to your subscribers. Decoupling the broadband demarcation from the premises system provides more flexibility and reduces costs. The 803G GigaPoint is designed for the industry-leading Calix E-Series fiber access GPON optical line terminals (OLTs).

## **EASY TO INSTALL, ACTIVATE, AND MAINTAIN**

With the 803G GigaPoint, Calix has redefined how to install and activate residential services at a subscriber's premises. Using the Calix Smart Activate feature and a phone or laptop, a field technician can install and apply the subscriber's service profile without special equipment or assistance from the central office. Calix also provides an innovative software portfolio, including management via CMS and Calix Support Cloud (CSC) enabling the service provider to configure, activate and upgrade the GigaPoint using in-band management.

Extensive troubleshooting capabilities, remote software downloads, and easy-to-use service activation ensures that services are delivered and maintained without needless truck rolls and hardware upgrades. Employing the 803G GigaPoint allows service providers to reduce their operational expenses while effectively delivering the Gigabit experience to their subscribers.

## KEY ATTRIBUTES

Standards-based Full Service Access Network (FSAN), ITU-T GPON compliant

One Gigabit Ethernet (GE) interface

- Symmetrical 1 Gbps bandwidth for residential IPTV and data services
- Multi-rate 10/100/1000 BASE-T Ethernet, auto-negotiating

One voice line

- FXS ports, ANSI or ETSI
- Carrier grade SIP, H.248, MGCP VoIP
- TDM GR-303/TR-08 Mode II/GR-57, GR-08 (TR-08 Mode I) voice services

Supports multiple data service profiles

Traffic management and Quality of Service (QoS)

- 802.1Q VLANs
- 802.1p service prioritization
- Q-in-Q tagging
- Multiple VLANs
- Rate limiting
- DiffServ
- Pre-defined QoS on service type

IPTV, IGMPv2, IGMPv3

- IGMP Snooping and Proxy
- IGMP Fast Leaves

Complete OAM&P support via Calix Management System (CMS)

Calix Support Cloud (CSC)

Indoor mounting options

- Wall Mount or Structured Wiring Enclosure (SWE) mount with fiber management
- Desktop mount: horizontal or vertical

AC to 12 V DC power adapter available for non-lifeline services

Optional uninterruptible power supply (UPS) for voice lifeline service power



## SPECIFICATIONS

### Dimensions

- Width: 3.0 in (7.6 cm)
- Height: 4.0 in (10.2 cm)
- Depth: 1.25 in (3.2 cm)
- Weight: 4 oz (0.1 kg)

### PON Characteristics

- Max. spllt: 64 GPON
- Max. reach: 58 km (36 miles) with C+/FEC
- Maximum Optical Distribution Network (ODN) Attenuation: GPON Class B+, 28 dB GPON Class C+, 32 dB
- 1490 ± 10 nm optical receiver: -27.0 to -8.0 dBm (Class B+); -30.0 to -8.0 dBm (Class C+ with FEC)
- 1310 ± 20 nm optical transmitter: 0.5 to 5.0 dBm

### Interfaces

- Data/IPTV: One 10/100/1000 BASE-T: Ethernet port, RJ-45 connector
- Telephony: One RJ-11 connector
- PON: Single 9/125 μm (single mode) fiber, SC/APC connector, minimum 50 dB return loss
- Power: 2-pin connector

### Telephony

- General: SIP, H.248, MGCP or TDM Gateway (GR-303, GR-57, TR-08 Mode I, TR-08 Mode II)
- Number of lines: 1
- RENs: 5 maximum
- Drop length: Maximum 500 feet (152.4 m)
- DS0 Output: 23.5 mA
- Ring Voltage: 56–84 V AC

### Data

- Drop length: 328 feet (100 m) maximum, using CAT6 or CAT6A cable
- Auto MDI/MDIX crossover for 1000BASE-TX, 100BASE-TX, and 10BASE-T ports
- Traffic Management and QoS: 802.1Q VLAN; 802.1p Video, Data and Management Priorities; Q-in-Q tagging; Per-Port Rate Shaping; Rate Limiting

### Environmental

- Operating temperature: Indoor ambient temperature, 0° to 40°C (32° to 104° F)
- Relative humidity (non-condensing): Operating/Storage: 8% to 90%

### Certification and Compliance

- Emissions: FCC Part 15 Class B, IC ICES-003 Class B, CISPR-22
- Safety: UL 60950 and UL 1697 approved
- IEEE: 802.3, 802.3AB, 802.3U, 802.11p, 802.11Q

### Powering and Alarms

- 2-pin connector
- Input voltage: 12 V DC (nominal), 10 V DC (min), 15 V DC (max)
- External Power Adapter: 12 V DC, 1.5 A
- Typical Power: 3.5 W, Peak Power: 7 W
- Battery backup time rated capacity: 8 hours based on Telcordia GR-909 calculation methods using recommended UPS. Contact Calix for recommended UPS.

## ORDERING INFORMATION

### Calix 803G GigaPoint

**100-04255**.....803G GigaPoint, 1 GE, 1 POTS

### Calix 803G Power Adapters

**100-04323**.....Power Adapter CPA3 12V 1.5Amp – AM Type A

**100-04324**.....Power Adapter CPA3 12V 1.5Amp – EU Type C

**100-04037**.....Power Adapter CPA5 12V 2.5Amp – UK Type G

**100-04038**.....Power Adapter CPA5 12V 2.5Amp – AU/NZ Type I

**100-04039**.....Power Adapter CPA5 12V 2.5Amp – AR Type I

### Calix 803G Packages with Power Adapter

**000-00951**.....803G GigaPoint, 1 POTS, 1 GE – AM Type A Power Adapter

**000-00952**.....803G GigaPoint, 1 POTS, 1 GE – EU Type C Power Adapter

**000-00953**.....803G GigaPoint, 1 POTS, 1 GE – UK Type G Power Adapter

**000-00954**.....803G GigaPoint, 1 POTS, 1 GE – AU/NZ Type I Power Adapter

**000-00955**.....803G GigaPoint, 1 POTS, 1 GE – AR Type I Power Adapter

**Note:** Calix believes the information in this publication to be accurate as of publication date, and is not responsible for error. Product Specifications are subject to change without notice.



**Scott County Telephone Cooperative**

**Community Speed Test Results**

**Mar 7, 2022**

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## I. Key Findings

- Far fewer than 10% of speed test respondents in the proposed service areas are able to access the USDA speed threshold of 100Mbps download / 20Mbps upload
  - Out of the 424 valid speed tests (those who successfully tested upload and download speeds) taken in the proposed service areas, only 5.5% of respondents registered speeds of 100Mbps / 20Mbps
- Across the region, there are significant numbers of people who do not subscribe to the internet; suggesting that the true percentage of people who can't get 100/20Mbps speeds is likely greater
  - Of the 69 respondents who do not subscribe to home internet, and disclosed why not, 68% said it was due to a lack of good internet options at their home
- The vast majority of speed test respondents subscribed to Comcast/Xfinity; looking at these tests alone, it is clear Comcast/Xfinity subscribers do not receive adequate speeds
  - Only 2.3% of Comcast/Xfinity subscriber registered speeds of at least 100Mbps/20Mbps
- Poor internet speeds were not a product of lack of purchasing higher speed packages from the consumer; they were a product of poor internet performance.
  - Over 90% of tests from customers that purchased speeds of 100/100, 100/20, and 200/200, failed to achieve their purchased speeds, and failed by significant margins.
  - For example, the median download speeds for customers who purchased 100/100Mbps and 100/20Mbps packages was 50Mbps and 56Mbps, respectively.

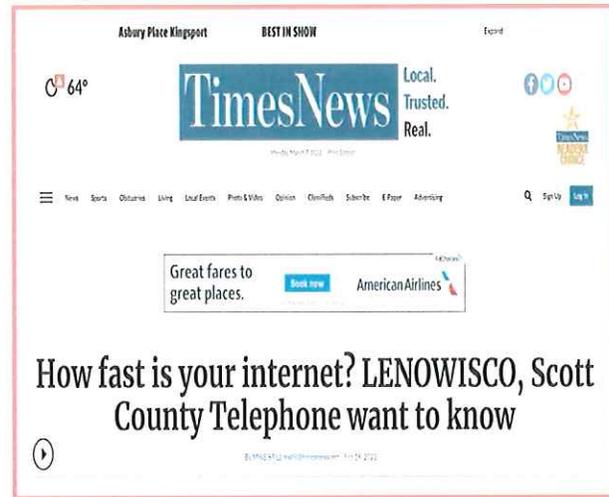
## II. Overview and Process

In January of 2022, Scott County Telephone Cooperative (SCTC) launched the **Wise and Lee County Community Speed Test and Broadband Survey**. The speed test was created using

technology created by [Measurement Labs \(M-Lab\)](#) – a national leading collector and researcher of speed test data.

This community speed test was completed through the partnership and help of local elected officials, community leaders, teachers, and volunteers, who all described a need for good, reliable broadband coverage across both counties. Data from the speed test was collected through a variety of strategies, including:

- Speed test placed on the Lenowisco Planning District Commission website
- Door-to-door canvassing throughout every town in the proposed service area
- Distributed mail program via USPS EveryDoor Mail Program
- Mass communication methods (email lists, blog posts, community pages, etc.)
- Online outreach via social media (Facebook, Twitter, Instagram, etc.)
- Earned media (local radio, [newspapers](#), and TV stations)
- Relational organizing household to household



The community speed test allowed SCTC to determine whether the current internet service providers deliver to residents the set speed standards (100 Mbps / 20 Mbps) for broadband internet access as defined by the USDA's Reconnect Service Eligibility Requirements. Specifically, the test and survey sought to understand:

- The speeds experienced by residents in Wise County and Lee County
- Where there was and was not service in the proposed service area
- How the speeds experienced by residents compared to the advertised speeds by providers

### III. Data Analysis

There were **424 speed tests** collected within Wise and Lee counties. Out of the total responses, **355** individual and valid responses (e.g., they registered a valid upload and download speed) were received within the proposed service area. The remaining **70** responses came from service areas within Wise and Lee Counties, or were from people who reported not having service (and so did not take the speed test).

The tests from just outside the proposed service areas are **not** used in the analysis of speeds experienced in the service areas, and are **not** used in the town by town summary. When those tests were made on networks shared by respondents in the proposed service areas (i.e., Comcast/Xfinity), they were included in the analysis to demonstrate the capacity of those networks.

**Section A: Two County Summary (Wise and Lee Counties)**

Of the **424 total speed tests** across both counties in the proposed service areas, **only 5.7%** (24 responses out of 424 total) of tests reached speeds of 100Mbps/20Mbps, and **64.4%** (273 of respondents out of the 424 total) of respondents reached speeds of 25Mbps/3Mbps or greater: thus, 151 of the respondents couldn't reach 25Mbps/3 Mbps or **35.6%**. This suggests that the two county region as a whole has lots of unserved and underserved areas. Thus **94.3%** get less than 100Mbps/20Mbps and **35.6%** get less than 25Mbps/3Mbps

REGION-WIDE	Upload Test Result			
	Download Test Result	< 3 Mbps	> 3 Mbps but < 20 Mbps	> 20 Mbps
< 25 Mbps	86 (20.3%)	43 (10.1%)	2 (0.47%)	131 (30.9%)
> 25 Mbps but < 100 Mbps	12 (2.8%)	121 (28.5%)	31 (7.3%)	164 (38.7%)
> 100 Mbps	8 (1.9%)	97 (22.9%)	<b>24 (5.7%)</b>	129 (30.4%)
Total	106 (25%)	261 (61.6%)	57 (13.4%)	424 (100%)

Clearly, it is unsurprising that some types of internet – for example, satellite internet or DSL – are not meeting the speed thresholds the USDA has established for eligibility. Those residents with access to cable and fiber based broadband services should, in theory, experience higher speeds.

*Out of the 424 total unique tests completed:*

- 219, or 52%, of respondents subscribed to Comcast’s cable product
- 48, or 11%, of respondents subscribed to Point Broadband’s fiber product
- 157, or 37%, of respondents had satellite service, DSL service, were unsure of their provider, or chose “Other”

Comcast/Xfinity – From the community speed test analysis, we conclude Comcast is clearly not delivering adequate speeds as only 2.3% of their subscribed customers from the data can reach 100Mbps/20Mbps.

Comcast/Xfinity	Upload Test Result			
	Download Test Result	< 3 Mbps	> 3 Mbps but < 20 Mbps	> 20 Mbps
< 25 Mbps	11 (5.0%)	14 (6.4%)	0 (0.0%)	25 (11.4%)
> 25 Mbps but < 100 Mbps	4 (1.8%)	81 (37.0%)	4 (1.8%)	89 (40.6%)
> 100 Mbps	8 (3.7%)	92 (42.0%)	<b>5 (2.3%)</b>	105 (47.9%)
Total	23 (10.5%)	187 (85.4%)	9 (4.1%)	219 (100.0%)

While no other provider operating in the proposed service area reached the speed threshold of 100Mbps/20Mbps, SCTC focused on Comcast/Xfinity for this report because they were the most reported internet provider utilized by residents in the proposed service area. According to SCTC's Community Speed Test data, the primary provider of wired broadband speeds – Comcast/Xfinity – is not delivering the speeds of 100Mbps/20Mbps and not delivering speeds remotely close to what consumers are purchasing.



*This map depicts Comcast/Xfinity's reported service area based on 477 forms in purple, with the red dots representing speed test respondents who reported having Comcast/Xfinity service.*

**Purchased Speeds vs Experienced Speeds:**

In addition, the data collected makes clear that the lack of 100/20Mbps coverage in the area was **not** due to subscribers simply not purchasing speed packages of that caliber, but rather due to the speed packages by providers, especially Comcast/Xfinity, not providing the speeds customers purchased.

The following shows the most commonly purchased speed packages at or above 25/3Mbps, and the percentage of tests that did not meet the purchased speeds.

Purchased Speeds	# of Tests	Mean Download Speed (Mbps)	Median Download Speed (Mbps)	Mean Upload Speed (Mbps)	Median Upload Speed (Mbps)	% tests that didn't meet purchased download speed	% tests that didn't meet purchased upload speeds	% tests that didn't meet one or the other (either upload or download speed)
<b>100/100 Mbps</b>	14	53.00	50.00	30.60	11.47	85.71%	92.86%	92.86%
<b>100/20 Mbps</b>	30	79.23	56.24	15.03	9.06	73.33%	90.00%	93.33%
<b>200/200 Mbps</b>	16	186.40	211.25	34.13	9.88	43.75%	93.75%	93.75%
<b>25/3 Mbps</b>	24	14.10	13.60	7.54	2.37	75.00%	58.33%	75.00%

**Over 90% of tests from customers that purchased speeds of 100/100, 100/20, and 200/200, failed to meet the purchased speeds, and often failed by significant margins.** For example, the median download speeds for people who purchased 100/100Mbps and 100/20Mbps was 50Mbps and 56Mbps, respectively.

**Non-Broadband Subscribers:**

69 respondents reported not subscribing to home broadband. Of those respondents who also disclosed *why* they did not subscribe, **62%** of them said they do not subscribe because there is *no good home internet option available* at their address, and **19%** cited affordability issues.

Taken together, it is clear that despite the FCC's data indicating a majority of both Wise and Lee counties are fully served, the region's internet reality is not adequate to meet the needs of residents – especially those in these specific communities who need high speed internet access for work, school, and telehealth – which is why the region is in desperate need of a robust internet service provider to build to the last mile.

**Quotes from residents:**

Many respondents expressed great hope that SCTC could bring better broadband to the region. The following are a selection of quotes provided via the survey:

*"No one will run internet this far up where we live and there's tons of children in school in our neighborhood and area that desperately need wifi for school work."*

*"SCTC installed my internet two weeks ago, it is absolutely fantastic. Extremely affordable and excellent service."*

*"I have had my SCTC broadband in Lee County for 1.5 years and really love the fast internet! Please bring it to the rest of us ASAP! We appreciate your sense of urgency."*

**Section B: Individual Town Summaries**

The following analysis demonstrates the internet needs of individual towns in the proposed service area: Coeburn, Appalachia, Big Stone Gap, Pennington Gap, and Jonesville. Clearly defined by the speeds highlighted in yellow, no locality is reaching 90% coverage.

Coeburn	Upload Test Result			
	Download Test Result	< 3Mbps	> 3Mbps but < 20 Mbps	> 20Mbps
< 25 Mbps	19 (17.1%)	9 (8.1%)	0 (0.0%)	28 (25.2%)
> 25 Mbps but < 100 Mbps	0 (0.0%)	41 (36.9%)	1 (0.9%)	42 (37.8%)
> 100 Mbps	4 (3.6%)	30 (27.0%)	7 (6.3%)	41 (36.9%)
Total	23 (20.7%)	80 (72.1%)	8 (7.2%)	111 (100.0%)

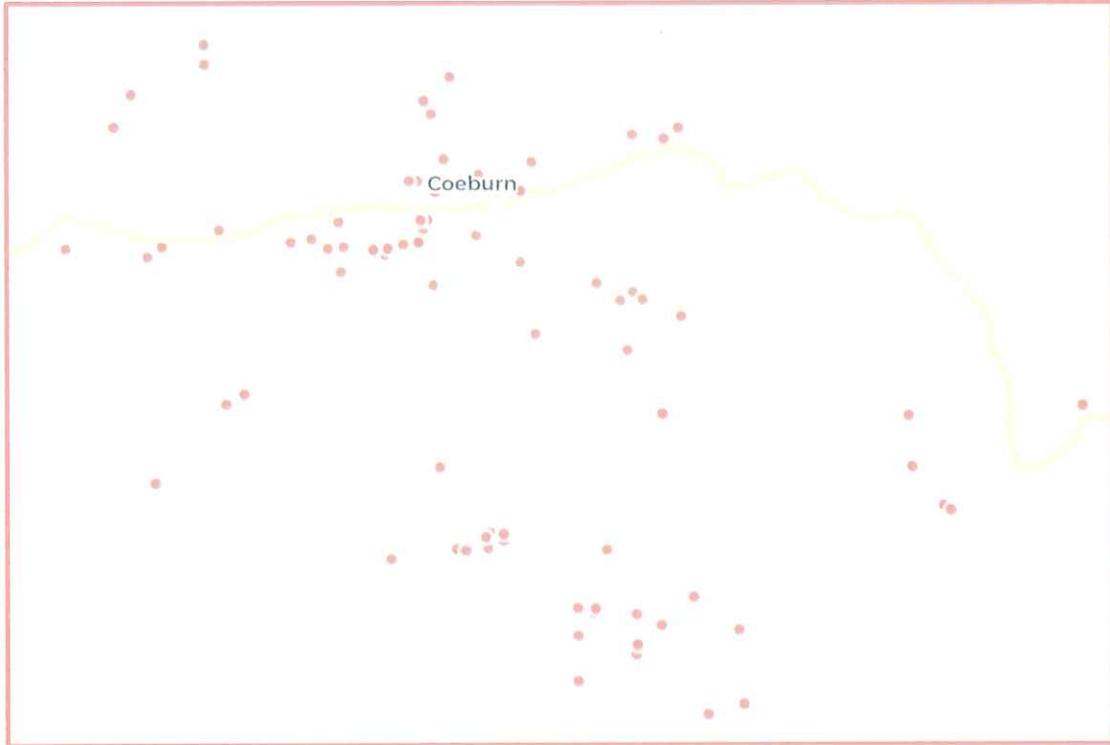
Appalachia	Upload Test Result			
	Download Test Result	< 3Mbps	> 3Mbps but < 20 Mbps	> 20Mbps
< 25 Mbps	4 (13.8%)	3 (10.3%)	0 (0.0%)	7 (24.1%)
> 25 Mbps but < 100 Mbps	2 (6.9%)	6 (20.7%)	3 (10.3%)	11 (37.9%)
> 100 Mbps	1 (3.4%)	8 (27.6%)	2 (6.9%)	11 (37.9%)
Total	7 (24.1%)	17 (58.6%)	5 (17.2%)	29 (100.0%)

Big Stone Gap	Upload Test Result			
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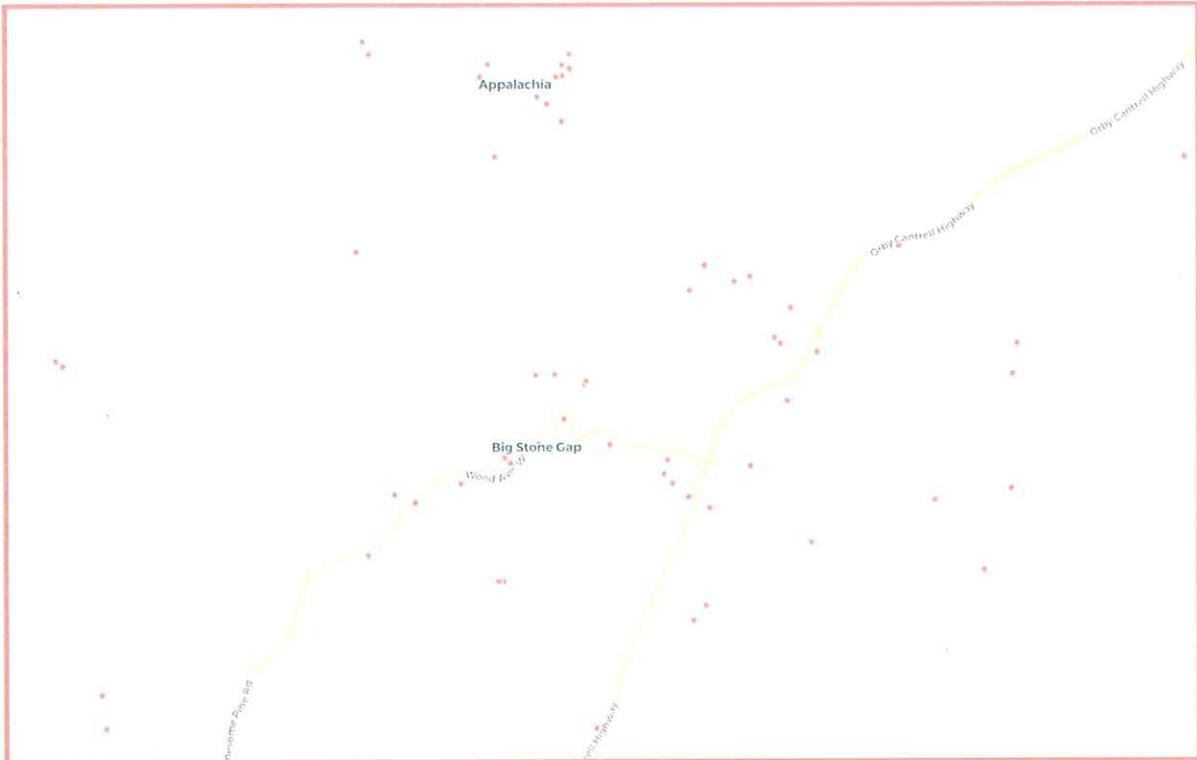
<b>Download Test Result</b>	< 3Mbps	> 3Mbps but < 20 Mbps	> 20Mbps	<i>Total</i>
< 25 Mbps	4 (7.8%)	1 (2.0%)	0 (0.0%)	5 (9.8%)
> 25 Mbps but < 100 Mbps	0 (0.0%)	19 (37.3%)	0 (0.0%)	19 (37.3%)
> 100 Mbps	0 (0.0%)	25 (49.0%)	<b>2 (3.9%)</b>	27 (52.9%)
<i>Total</i>	4 (7.8%)	45 (88.2%)	2 (3.9%)	51 (100.0%)

<b>Pennington Gap</b>	<b>Upload Test Result</b>			
<b>Download Test Result</b>	< 3Mbps	> 3Mbps but < 20 Mbps	> 20Mbps	<i>Total</i>
< 25 Mbps	8 (19.0%)	3 (7.1%)	1 (2.4%)	12 (28.6%)
> 25 Mbps but < 100 Mbps	2 (4.8%)	13 (31.0%)	3 (7.1%)	18 (42.9%)
> 100 Mbps	0 (0.0%)	9 (21.4%)	<b>3 (7.1%)</b>	12 (28.6%)
<i>Total</i>	10 (23.8%)	25 (59.5%)	7 (16.7%)	42 (100.0%)

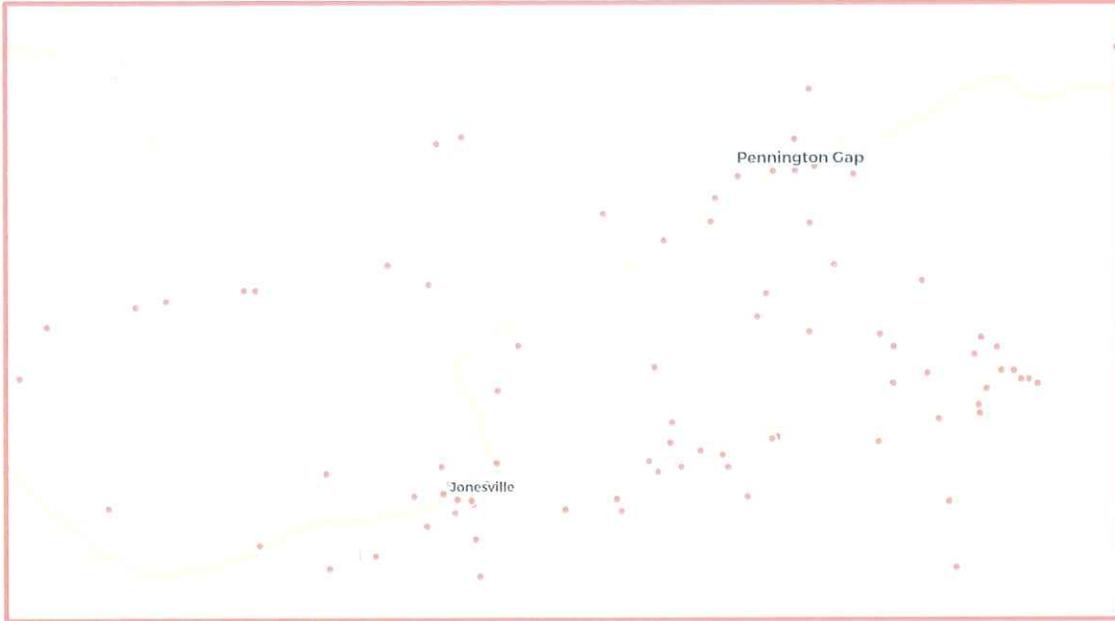
<b>Jonesville</b>	<b>Upload Test Result</b>			
<b>Download Test Result</b>	< 3Mbps	> 3Mbps but < 20 Mbps	> 20Mbps	<i>Total</i>
< 25 Mbps	15 (25.0%)	12 (20.0%)	1 (1.7%)	28 (46.7%)
> 25 Mbps but < 100 Mbps	2 (3.3%)	11 (18.3%)	15 (25.0%)	28 (46.7%)
> 100 Mbps	0 (0.0%)	2 (3.3%)	<b>2 (3.3%)</b>	4 (6.7%)
<i>Total</i>	17 (28.3%)	25 (41.7%)	18 (30.0%)	60 (100.0%)



**Speed tests in Coeburn**



**Speed tests in Big Stone Gap and Appalachia**



*Speed tests in Jonesville and Pennington Gap*



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## **Proposal: Data Collection for SCTC's USDA Reconnect Application**

Jan 3, 2022

The following includes information about us, our experience, and how we propose to complete the work, a potential timeline, and cost. We look forward to discussing at your earliest convenience.

### **About us**

Rural Innovation Strategies, Inc. (RISI) is dedicated to helping rural areas find renewed prosperity by growing entrepreneurship, digital economy jobs, skills training, and helping communities plan and develop fiber to the home plans. As an action tank, RISI participates both in the design and implementation of on the ground programming, but also intensive research, policy, and planning efforts enabled by our data science and GIS team.

### **Our experience**

To date, we have worked with 30+ rural communities across digital economic development and broadband implementation efforts in over 20 states. Our broadband experience spans feasibility assessments, business plan development, mapping and data analysis, statewide planning, policy recommendations, and funding strategies.

### **Proposed Support**

Scott County Telephone Company (SCTC) is applying for a USDA Reconnect Grant that would include servicing Wise County and Lee County in Virginia. In order to apply to serve the entire counties, SCTC must prove that over 90% of residents lack 100/20 Mbps service.

We propose an organized effort to collect accurate broadband coverage data by conducting a speed test, advertising the speed test through targeted mailers, and hiring a local organizer to reach a wide variety of homes in the county to take the speed test, to ensure a diverse response rate.



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### *I. Conduct a speed test and survey*

RISI will develop a user-friendly speed test and accompanying survey, which SCTC will host on their website, for residents to take and help determine what speeds are available throughout both counties. This speed test is meant to establish a baseline of what speed and quality of internet service is available in both counties and where improved service would be desired by residents. The survey is also meant to help gauge likely adoption and even collect pre-subscription commitments if possible.

### *II. Hire a local organizer to ensure broad response rates*

To ensure the speed test receives a substantial number of responses in a short amount of time, RISI will hire an organizer from the area to go door-to-door, ask residents to take the speed test, and answer questions as to why participation in this particular speed test is vital. The organizer will be in charge of targeted outreach to larger populations within the counties: churches, teachers, and county officials. The organizer will also lead digital engagement, and be responsible for posting the speed test in relevant Facebook groups, email lists, and other social media.

RISI staff have substantial experience managing rural organizers and field campaigns, and contacts in Lee and Wise Counties from prior engagements who can help us identify an organizer quickly. Introductory and exploratory conversations with potential local organizers are ongoing.

### *III. Design and deploy two (2) mailers for delivery*

Our Communications Team will design a mailer advertising the speed test through both a QR code and shortened URL link. We will utilize the USPS Every Door Direct Mail Service, which allows us to target neighborhoods and a Postal Service carrier delivers the mailer to every address while delivering the day's mail. If possible, notice should also be sent in SCTC monthly phone bills.

### *IV. Leverage existing public speed test data*

RISI's GIS team will use data from MLabs, a national, crowd-sourced speed test provider, to augment the SCTC speed test, if possible. Mlabs data provides an incomplete view of the county at the moment; data work must be done to determine if the data can be interpreted in a favorable way to solidify the case that the county is



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90% unserved. However, if possible, this data will provide additional proof that the majority of the county is unserved.

### Timeline

The RISI Team can begin this project with an internal kickoff meeting on January 10th and complete the project by February 14, a six-week time frame shown below.

Week	Hours By Week					
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Scope Items	1/10/22	1/17/22	1/24/22	1/31/22	2/7/22	2/14/22
Speed Test + Survey	2	15	8			
Analyzer Mlabs Data	2	5	5			
Design and Send Mailer (2x)	2	10	10	10		
Coordinate Digital Engagement	2	12	10	10	10	10
Hire and Manage Local Organizer	12	15	10	10	10	10
Map + Analyze Results			5	12	15	20



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**Cost**

For the above scope of work, the work can be completed for a fee of \$46,780.

<b>Scope Items</b>	<b>Materials or Contractor Costs</b>	<b>RISI Personnel Costs</b>	<b>Total Costs</b>
Speed Test + Survey		\$2,250	\$2,250
Analyze Mlabs Data		\$1,080	\$1,080
Design + Send Mailers (2x)	\$20,000	\$2,880	\$22,880
Coordinate Digital Engagement		\$4,860	\$4,860
Hire and Manage Local Organizer	\$5,000	\$6,030	11,030
Map, Analyze, Write-up Results		\$4,680	\$4,680
<b>TOTAL</b>	<b>\$25,000</b>	<b>\$21,780</b>	<b>\$46,780</b>

**Thank you!**

Thank you for the opportunity to submit this proposal. Please direct any questions to Alex Kelley, Head of Broadband Consulting, at [alex.kelley@ruralinnovation.us](mailto:alex.kelley@ruralinnovation.us) or 802-369-0015.