

Application to DHCD Submitted through CAMS

Bedford County

Bedford County & Shentel 2023 VATI Grant Application

Application ID: 95708242022111506

Application Status: Pending

Program Name: Virginia Telecommunication Initiative 2023 - Application

Organization Name: Bedford County

Organization Address: 122 E. Main St., Suite 202
Bedford, VA 24523

Profile Manager Name:

Profile Manager Phone:

Profile Manager Email:

Project Name: Bedford County & Shentel 2023 VATI Grant Application

Project Contact Name: John Putney

Project Contact Phone: (540) 810-8041

Project Contact Email: JPutney@bedfordcountyva.gov

Project Location: 122 East Main Street
Bedford, VA 24523-2000

Project Service Area: Bedford County

Total Requested Amount: \$1,373,161.74

Required Annual Audit Status: No Current Audits Found

Application to DHCD Submitted through CAMS

Bedford County

Bedford County & Shentel 2023 VATI Grant Application

Budget Information:

Cost/Activity Category	DHCD Request	Other Funding	Total
Telecommunications	\$1,373,161.74	\$3,204,044.05	\$4,577,205.79
Construction	\$836,825.85	\$1,952,593.65	\$2,789,419.50
Construction Related Soft Costs	\$439,449.39	\$1,025,381.90	\$1,464,831.29
Other: Long Drop Core Network	\$96,886.50	\$226,068.50	\$322,955.00
Total:	\$1,373,161.74	\$3,204,044.05	\$4,577,205.79

Budget Narrative:

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 project area consists primarily of the southern portion of Shentel's RDOF award in Bedford County. Shentel's RDOF area is essentially being divided in two – this 2023 VATI application covers the southern areas around Cifax and Sedalia, while the rest is covered in the ongoing Bedford County RFP. The project area was selected based on Shentel's RDOF award, as well as several other Broadband projects that Bedford County is currently managing. Shentel was preliminarily awarded one RDOF census block group in Bedford County. This RDOF award was originally made for a wireless internet project. In conjunction with Shentel's 2022 VATI project, this application seeks funding to upgrade wireless service to wireline service in the southern portion of the RDOF award area. The remaining northern section of Shentel's RDOF award is currently included in a separate RFP that Bedford County is managing.

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:

Aside from satellite providers, the only existing providers in the project area according to publicly available broadband maps and local knowledge are Verizon DSL (15 Mbps or less), Briscnet/Seiontec (25/3 Mbps or less), T-Mobile (25/3 Mbps or less), and U.S. Cellular (2 Mbps or less) fixed wireless service. None of these existing providers offer speeds that meet the definition of Broadband. The fact that the project area overlaps Shentel's RDOF award means that the relevant census blocks were considered unserved by the FCC's 477 maps, which are known to overstate coverage. Shentel has confirmed through updated 477 maps, as well as regular communication with the County that there has been no buildout in the project area and that it remains unserved.

Application to DHCD Submitted through CAMS

Bedford County

Bedford County & Shentel 2023 VATI Grant Application

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:

As noted, this project is within Shentel's RDOF award area. As shown in Attachment 2, Riverstreet also won RDOF awards in the County. Outside of these RDOF awards, Shentel is unaware of any other federal grant funding in Bedford County that would qualify as Broadband.

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:

As noted above, the FCC identified all the passings in this project area as unserved and included them as part of its RDOF grant program. Shentel's serviceability analysis, based largely off density and proximity to served locations, has confirmed that all passings in the project are truly unserved. The County has further confirmed the lack of Broadband service in the project area through routine communication with residents.

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:

Application to DHCD Submitted through CAMS

Bedford County

Bedford County & Shentel 2023 VATI Grant Application

a. Total Passings: 565

Residential Passings: 551

Business (Non-Home Based): 3

Community Anchors: 2

Non-Residential: 9

b. Total Passings: 565

Residential Passings: 551

Business (Non-Home Based): 3

Community Anchors: 2

Non-Residential: 9

c. There are approximately 227 locations in the project area that will require special construction costs. These special construction locations are defined as any location that requires a drop in excess of 485 feet.

d. We believe that of the 227 locations that require special construction costs, 139 of them will actually take Broadband service. Based on historical experience, Shentel has estimated and budgeted that approximately 65% of the residential locations that require special construction costs will take service.

e. There are estimated to be 565 locations with speeds below 25/3 in this project area. This estimate was constructed primarily through comparisons against publicly available Broadband maps. Wireless providers, however, were not included due to the sporadic nature of wireless coverage and the lack of precision involved in estimating wireless propagation.

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:

As noted, this entire project area is within Shentel's RDOF award. The award was originally made for a wireless project at speeds of 50/5 Mbps. This project is intended to upgrade that original wireless commitment to a wireline commitment with speeds that far exceed the new definition of Broadband. Further, Shentel plans to accelerate the initial RDOF buildout timeline from 6 years to 2 years or fewer.

Application to DHCD Submitted through CAMS

Bedford County

Bedford County & Shentel 2023 VATI Grant Application

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:

Not Applicable

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:

See attachment 18 - Application Narrative Questions #8, 15 and 19

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:

As already noted, this project is based on a full Fiber to the Home (FTTH) network design.

The speeds that Shentel currently plans to offer in the project are shown in the table below.

This proposed rate structure is subject to change and reflects base pricing only. Promotions and periodic rate structure changes will be carried out at Shentel's sole discretion. Though this project is planned as 100% FTTH, there may arise certain instances where homes within this project area can much more efficiently be reached with a small extension of our DOCSIS system. In these instances, though speeds will far exceed the 100/20 definition of Broadband, the upload speeds will not be fully symmetrical.

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:

Bedford County has been heavily focused on achieving universal Broadband for several years. In the FY2022 VATI grant application cycle, Bedford County was awarded three separate VATI grants, which largely closed the remaining Broadband coverage gaps. The only two remaining gaps are the Shentel RDOF application, which is now considered unserved due to the change in the definition of Broadband, and coverage gaps left over from the County's 2019 Briscnet project. This project would close the majority of one of those two gaps: Shentel's RDOF area. The County currently has an RFP out for bid to cover the remaining gaps from the 2019 Briscnet project, which include the portions of Shentel's RDOF award that are not included in this application. Through Bedford's three awarded FY2022 VATI grants, the County's current RFP, and this VATI application, the County has cultivated a strong and growing Broadband ecosystem with multiple internet service providers to achieve not only universal wireline coverage, but also a competitive environment that begets long-term diversification, growth and sustainability.

Application to DHCD Submitted through CAMS

Bedford County

Bedford County & Shentel 2023 VATI Grant Application

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:

Because this project is within Shentel's existing RDOF area, it has already received significant attention. A high-level design has been completed along with detailed specifications through Shentel's long-form RDOF application. Although detailed design engineering and permit submission has not yet begun, Shentel has established relationships with engineering and construction vendors that either are or will be actively working all around this project area as part of its FY 2022 VATI project. This ongoing VATI project will therefore enable a much smoother construction process for this project than would otherwise have been required. Through Shentel's long history of doing work in Bedford County, there are no anticipated easement issues related to railroad crossings, or federally owned lands. Shentel has a long history of effectively working with Virginia Department of Transportation (VDOT) on required permits. Notably, Shentel has over \$10 million of construction projects currently in process with VDOT.

Shentel has previously been awarded a Broadband RFP from the County. Additionally, Shentel and Bedford have entered into a contractual agreement as part of their FY 2022 VATI award. This partnership has created a legal and administrative infrastructure that positions Shentel and the County to quickly and efficiently meet further contractual and reporting requirements that will be part of this project.

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:

Bedford County VATI Grants

In 2019, Bedford County received a VATI grant for \$1,040,000. This grant was awarded to construct four 200' fixed wireless towers which was part of a greater network of another six 200' towers and one water tower co-location. This project was part of PPEA agreement with Blue Ridge Towers and Briscnet. The construction phase of this grant was completed in the fall of 2020. Until Briscnet went it out of business and now with Seiontec assuming these duties and responsibilities, these ISPs continue to provide wireless internet service from all tower locations; however, Seiontec reports approximately only 230 subscribers in over two years of operation. Bedford County has been working diligently with DHCD's Carl Caudill to close out this grant with VATI and we are confident that should be signed off on soon.

Bedford County, in partnership with three Internet Service Provider (ISP) partners, was awarded multiple grants totaling over \$26 million from VATI in the County's ongoing efforts to achieve functional universal Broadband coverage in Bedford County. These funds will help bring reliable, high-speed internet service to almost 12,000 serviceable units to unserved parts of Bedford County.

The details for Bedford County's three grant awards are as follows: Bedford County and ISP Shentel are due to receive \$8,642,313 in funding for 5,565 serviceable units. (Bryan – change these numbers please to reflect the transition from hybrid to full wireline project). Shentel and Bedford are currently under contract – with our contract with DHCD imminent. Once that second contract has been finalized, Shentel will then have 24 months to complete this project build out.

Application to DHCD Submitted through CAMS

Bedford County

Bedford County & Shentel 2023 VATI Grant Application

Bedford County and partner Zitel were awarded \$8,523,908 in funding for 4,114 passings. Zitel is under contract already and has 18 months to complete this Broadband project. Bedford County leadership, community partners, and ZITEL will be participating in a ceremonial groundbreaking on Wednesday, August 17, 2022, in the Stewartsville part of Bedford County.

Bedford County and its partner Riverstreet Networks were awarded approximately \$7.6 million in funding for 1,429 serviceable units. These VATI grant funds, in turn, will leverage approximately \$30 million dollars in leveraged funds, stemming from local government and private ISP matching funds. The agreement between Bedford County and RiverStreet/WPPDC was executed on late July of this year. Once RiverStreet and DHCD have executed their contract, RSN will have 36 months to complete this multi-locality project.

Shentel VATI Grants

Shentel has been awarded five (5) VATI grants. The following is a summary of Shentel's grant awards. All of the projects listed below will deliver Internet, video, and phone through either a coax or fiber extension. The Internet speed packages offered in these extensions include a Gigabit option in addition to lower speed options. In addition, Shentel has been awarded several grants directly with a locality (Campbell County and Albemarle County through CARES funding). All grants at the local level have been successfully closed out, and are delivering Broadband to unserved locations. The status of the VATI grants awarded through the 2022 VATI cycle are listed below.

County: Bedford County

ISP: Shenandoah Cable Television, LLC

Passings: 4,734

VATI Award: \$9,148,553

Status: Contracting

County: Campbell County

ISP: Shenandoah Cable Television, LLC

Passings: 3,509

VATI Award: \$6,442,563

Status: Contracting

County: Franklin County

ISP: Shenandoah Cable Television, LLC

Application to DHCD Submitted through CAMS

Bedford County

Bedford County & Shentel 2023 VATI Grant Application

Passings: 3,508

VATI Award: \$11,832,456

Status: Contracting

County: Roanoke County

ISP: Shenandoah Cable Television, LLC

Passings: 213

VATI Award: \$490,000

Status: Contracting

County: Shenandoah County

ISP: Shenandoah Cable Television, LLC

Passings: 4,139

VATI Award: \$12,176,662

Status: Contracting

13. Matching funds: Complete the funding sources table indicating the cash match and inkind 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:

As noted in attachments 9 and 11 the cost breakout for this project is as follows:

Shentel Contribution: \$3,204,044

VATI Contribution: \$1,373,162

Bedford County Contribution: Not to exceed \$2M

Through Bedford's ongoing RFP, they plan on allocating up to \$2M dollars towards broadband expansion in the county.

Application to DHCD Submitted through CAMS

Bedford County

Bedford County & Shentel 2023 VATI Grant Application

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:

Unlike our 2022 grant application, Bedford County and Shentel will not be utilizing the Central Virginia Planning District Commission or the Lynchburg Regional Business Alliance as lead grant facilitator and regional coordinator, respectively. Jessica Wilmer and Bryan Byrd from Shentel and John Putney from Bedford County are handling these duties. Our application team will again leverage our strong relationships with the business community, the County's public school system (including our community college campus), and the County's public library system to assist with distance learning, workforce development, and digital literacy opportunities.

The County GIS staff, led by GIS Director Carl Levandoski, continues to be an invaluable resource throughout the VATI application development process, as are the members of Bedford County's Broadband Authority's Broadband Subcommittee, Supervisors Edgar Tuck and Tommy Scott, the current Vice Chair of the Board, and the immediate past Chairman, respectively. As you know, the County hired John Putney to assist with finalizing the grant application and coordinating with Shentel, external agencies, legislators, and VATI, and to work as project manager from the County to see the project delivered to a successful completion - an extraordinary move by the Board of Supervisors and undoubtedly unique to counties like Bedford County. Further, it illustrates how serious the Board is towards achieving universal Broadband coverage, which this application certainly helps to do. The County's hiring of Erik Smedley as the County Engineer has proven to be another wise decision, as Erik has proven adept at procurement, contract, and project management duties and responsibilities. Erik's review and input has proven invaluable thus far and will be even more so as the County and Shentel work through our 2022 approved project, as well as the one we attempt to fund and build out in Shentel's RDOF footprint in the County.

Co-Applicant-Proposed Leverage Shentel will provide leverage in several different forms to support this project. Shentel has a local office location and customer support center located in Rustburg, VA. This office will provide convenience to customers who prefer to do business in-person. Shentel offers excellent local customer support to all customers across the Bedford, Campbell, and Franklin County area. This existing resource will allow Shentel to effectively manage the network and serve the customers in the project area. Shentel's existing local support and management capabilities also reduce fixed costs, as these important business elements do not need to be newly developed.

Another benefit to Shentel's existing local presence is the significant amount of infrastructure already in place. Shentel will be able to leverage its existing fiber and cable attachments to attach new fiber via overlash, rather than having to go through the entire permit and make ready process for the whole project. Shentel is additionally able to recognize significant efficiencies from the work being done as part of its FY2022 VATI grant. Shentel has already begun work on a \$29M project in the County that will reduce the engineering, design, and construction burden for this project. This ongoing project will also greatly reduce the time needed to develop new contracts, as well as new monitoring and reporting processes which will already be in place. This will both reduce costs and increase deployment speed. Shentel will also be able to leverage its existing PoP in Bedford, further decreasing costs and increasing deployment speed. This PoP connection will also ensure high quality services by linking this network to Shentel's existing fiber network with redundant Tier 1 peering points located in Ashburn, VA and Atlanta, GA.

Application to DHCD Submitted through CAMS

Bedford County

Bedford County & Shentel 2023 VATI Grant Application

15. Communications Plan: Describe efforts to keep the public informed of project progress and the broadband adoption plan.
- a. 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)
 - b. 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)
 - c. 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:

See attachment 18 - Application Narrative Questions #8, 15 and 19

Application to DHCD Submitted through CAMS

Bedford County

Bedford County & Shentel 2023 VATI Grant Application

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.

Answer:

County Grant Management Team

-

John Putney will be our Broadband Project Manager (POC, liaison with ISPs, prepare reports to VATI and Broadband Authority, assist with project logistics and outreach efforts).

Eric Smedley (County Engineer) will serve as the construction inspector and coordinate with the Project Manager on ISP pay applications.

Ashley Anderson (Finance Director) will provide financial oversight, pay invoices, and request VATI reimbursements.

Patrick Skelley (County Attorney) will draft and review agreements with ISPs and provide legal direction as needed.

PIO Shelley Basinger will assist by coordinating website and social media content, help create public meetings and events, draft press releases for project milestones and other work pertaining to updating the public.

Carl Levandoski (GIS Coordinator) will provide GIS mapping assistance.

County Administrator Robert Hiss will provide general oversight, coordination, and direction to the project team.

Shentel Project Management Team

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:

As detailed in attachments 12 and 13, Shentel estimates that the total cost of the project will be \$4,577,205. See attachments for details.

Application to DHCD Submitted through CAMS

Bedford County

Bedford County & Shentel 2023 VATI Grant Application

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:

- a. Total VATI funding request
- b. Number of serviceable units
(up to 125 points)

Answer:

1. Total VATI funding request \$1,373,162
2. Number of serviceable units 565

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

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

- a. 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.
- b. Unique partnerships involved in the proposed project. Examples include electric utilities, universities, and federal/state agencies.
- c. 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
- d. 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.
- e. 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.

Answer:

See attachment 18 - Application Narrative Questions, 8, 15 and 19

Application to DHCD Submitted through CAMS

Bedford County

Bedford County & Shentel 2023 VATI Grant Application

20. 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:

N/A

Attachments:

Map(s) of project area, including proposed infrastructure

ShentelBedford2023Attachment1ProjectAreamap824202243610.pdf

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

ShentelBedford2023Attachment2DocumentationofFederalFundingArea824202243632.pdf

Documentation that proposed project area is unserved based on VATI criteria

ShentelBedford2023Attachment3DocumentationUnservedAreaVATICriteria824202243647.pdf

Application to DHCD Submitted through CAMS

Bedford County

Bedford County & Shentel 2023 VATI Grant Application

Passings Form (Use template provided)

ShentelBedford2023Attachment4PassingsForm824202243657.pdf

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

ShentelBedford2023Attachment5RDOFPassingsForm824202243750.pdf

Timeline/Project Management Plan

ShentelBedford2023Attachment7ProjectManagementPlan824202243824.pdf

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

BedfordShentelVATI2023Attachment8MOUMOAbetweenApplicantCoApplicant8252022125337.docx

Funding Sources Table (Use template provided)

ShentelBedford2023Attachment9FundingSourcesTable825202230834.pdf

Documentation of Match Funding

ShentelBedford2023Attachment10DocumentationofMatchFunding824202243907.pdf

Prior Expended Match Form (use template provided)

BedfordShentelVATI2023Attachment11PriorExpendedMatchForm825202224452.pdf

Derivation of Cost/Project Budget (Use template provided)

ShentelBedford2023Attachment12DerivationofCosts824202243939.pdf

Documentation of Supporting Cost Estimates

ShentelBedford2023Attachment13DocumentationofSupportingCostEstimates8252022125356.pdf

Two most recent Form 477 submitted to the FCC or equivalent

ShentelBedford2023Attachment15TwoMostRecentForm477SubmittedtotheFCCorEquivalent824202244212.zip

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

ShentelBedford2023Attachment16PointandPolygonShapefiles824202244222.zip

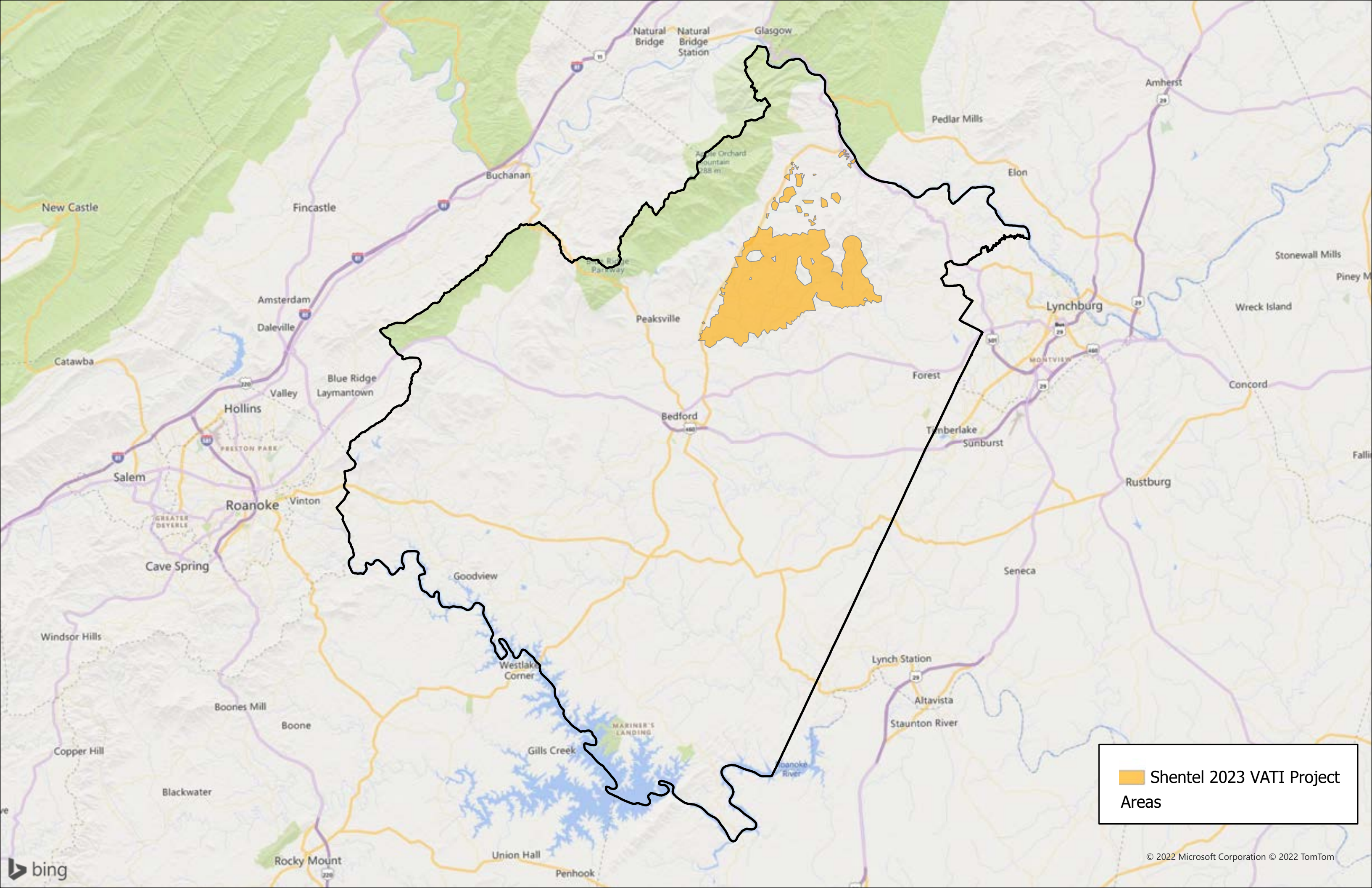
Application to DHCD Submitted through CAMS

Bedford County

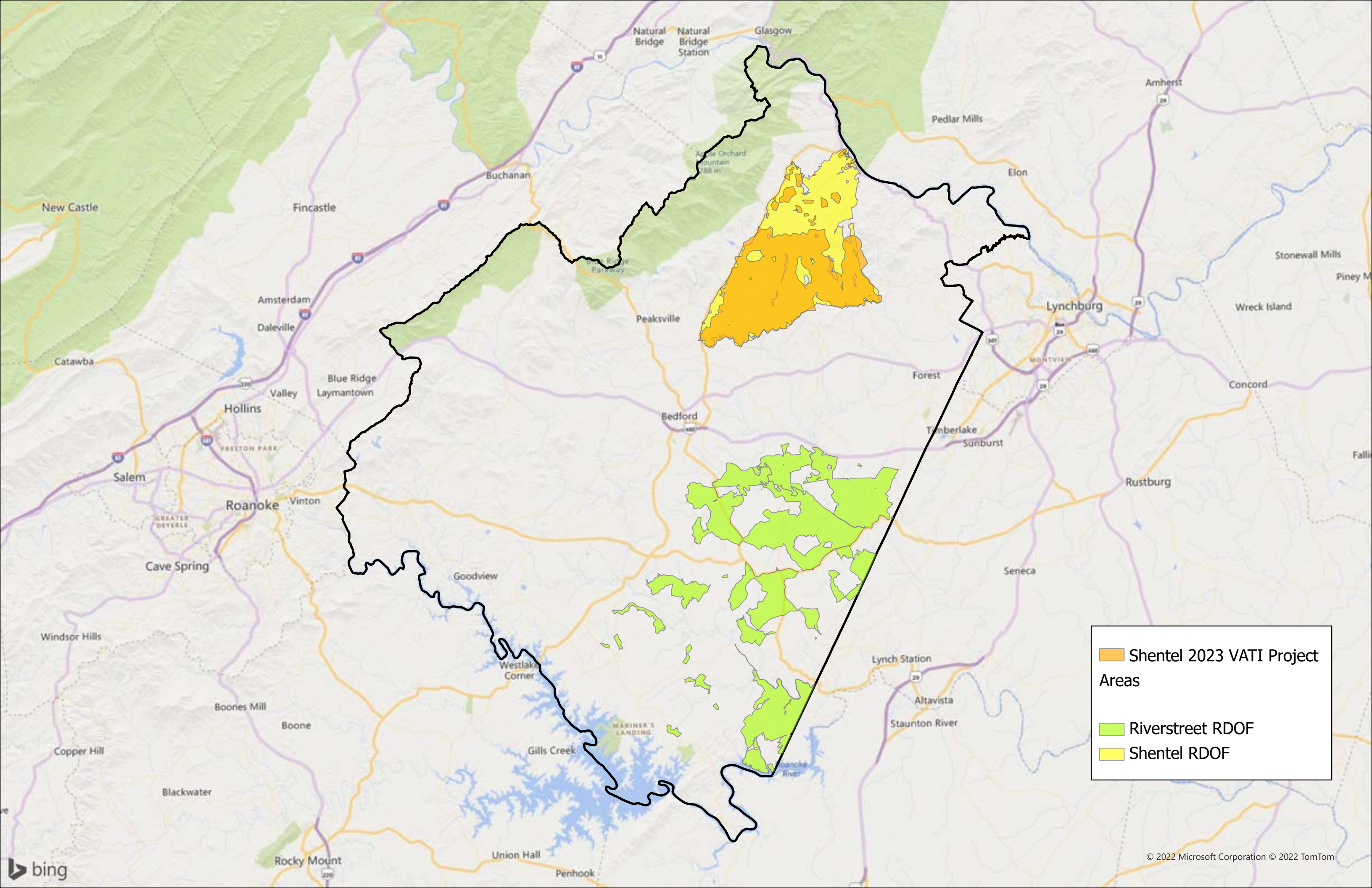
Bedford County & Shentel 2023 VATI Grant Application

Optional

ShentelBedford2023Attachment18ApplicationNarrativeQuestions815and19825202221311.pdf



Shentel 2023 VATI Project Areas



Shentel 2023 VATI Project Areas

Riverstreet RDOF

Shentel RDOF



Shentel has defined its project area through an iterative and collaborative process of identifying unserved homes. The only homes included in Shentel's VATI application are believed to be unserved. As such, Shentel anticipates no overlap other than possible incidental overlap. The process for identifying unserved homes is complicated and involves several different data sources as well as local knowledge and citizen feedback. As such, there are possible holes in the estimate that may lead to a small amount of overlap. It is also important to note that Shentel did not consider any fixed wireless services in its analysis of existing broadband coverage. Wireless coverage is often spotty and inconsistent, making it impossible to accurately measure. More importantly, Shentel has seen no evidence that the wireless service providers in its project areas can provide speeds at or above 100/20 speeds to qualify for broadband.

Furthermore, Shentel is committed to continuing to minimize overlap throughout the life of this project. Rather than preemptively remove unserved homes, Shentel will cooperatively participate in the challenge process and work with DHCD and any providers that can adequately demonstrate that they provide broadband services to enough locations to sustain a valid challenge.

2023 Virginia Telecommunication Initiative (VATI) Passing Form

Type of Passings	Total Number of Passings in the Project Area ¹	Passings in the Project Area, without Special Construction Costs Required ²	Passings with Special Construction Costs budgeted in the Application ³	Number of Passings with Speeds at 25/3 or below in Project Area ⁴
Residential	551	338	139	551
Businesses (non-home based)	3	0	0	3
Businesses (home-based)	0	0	0	0
Community Anchors	2	0	0	2
Non-residential	9	0	0	9
Total	565	338	139	565

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.

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

²The 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.

³The 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.

⁴The 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.

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.

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 ¹
Residential	551
Businesses (non-home based)	3
Businesses (home-based)	0
Community Anchors	2
Non-residential	9
Total Number of RDOF Passings	565

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.

Project Management Plan

Project Timeline																							
Month 1 = Contract Award Notification and Contract Fully Executed																							
Project Deadline = December, 2024 (24 months)																							

Detailed description of each of the aforementioned Project Tasks are as follows:

Project Tasks

Field Engineering – Phased

- Outside Plant:
 - Shentel shall complete a full review of the planned fiber route to determine feasibility, costs, and challenges for construction. This review shall consist of Shentel personnel visually inspecting the entire planned fiber route. Shentel typically follows utility routes such as power or telephone, with those utilities for new pole attachments when there is not existing Shentel attachment to allow overlash.
 - Shentel shall make a determination to go underground if the utility routes are deemed unfavorable or contain challenges that would result in high costs to construct.
 - Shentel shall collect all pole information and route information and prepare the proper permits to pole owners and VDOT.

Design Engineering – Phased

- Outside Plant:

- Shentel shall complete a detailed Engineering Package that includes the entire defined fiber build route, as well as a complete list of all required materials to complete the fiber build.
 - Engineering Package shall consist of geospatial drawings of the physical route (aerial versus buried), list all physical structures and other possible obstructions, provide required materials and their physical placement, and note key requirements that construction is required to follow to complete the project.
- Inside Plant:
 - Shentel shall complete a full design and procure all required equipment and ancillary hardware to support all planned services.

Permitting – Phased

- Outside Plant:
 - Shentel shall permit all utility pole owners for any overlash or new pole attachments.
 - For any new permitted utility pole that is located on private property, Shentel shall follow the Virginia and Federal code that would allow Shentel to utilize existing like-kind utility easements. Shentel shall engage the County to aid in any dispute that would arise from a landowner denying Shentel access to utility easements.
 - Shentel shall submit all other permits such as city, town, railroad, or VMRC permits as required.

Construction – Phased

- Outside Plant:
 - Shentel shall complete all construction requirements as outlined and defined in the Engineering Package once all permits have been approved.
 - Required changes during construction shall be communicated and approved before construction can be completed.
 - Shentel shall complete end-to-end fiber characterization and testing of fiber to determine if fiber passes all defined criteria. Any noted problems are corrected at the time of testing.
- Inside Plant:
 - Shentel shall configure, deploy, and install all equipment and ancillary hardware.
 - Shentel shall complete end-to-end testing and certification to validate the service.

Customer Installation Commencement – Phased

- Operations:
 - Release of addresses to sales database
 - Shentel shall complete the installation, test, and turn-up of all customer CPE (Customer Premise Equipment) at the home/business to support the service.

Project Close-Out – Phased

- Shentel shall complete a full review of the completed construction against the Engineering Package to verify that all requirements have been completed.
- Shentel shall complete a full review of all received equipment and ancillary hardware to complete verify that all materials have been received and placed into service.
- Shentel shall complete a full review of all vendor invoices against their completed work and materials to verify billing accuracy.
- Shentel shall complete all financial true-ups and closeouts to complete the project.

Bedford County grant management team:

- John Putney will be our Broadband Project Manager (POC, liaison with ISPs, prepare reports to VATI and Broadband Authority, assist with project logistics and outreach efforts).
- Eric Smedley (County Engineer) will serve as the construction inspector and coordinate with the Project Manager on ISP pay applications.
- Ashley Anderson (Finance Director) will provide financial oversight, pay invoices, and request VATI reimbursements.
- Patrick Skelley (County Attorney) will draft and review agreements with ISPs and provide legal direction as needed.
- PIO Shelley Basinger will assist by coordinating website and social media content, help create public meetings and events, draft press releases for project milestones and other work pertaining to updating the public.
- Carl Levandoski (GIS Coordinator) will provide GIS mapping assistance.
- County Administrator Robert Hiss will provide general oversight, coordination, and direction to the project team.

Shentel Project Management Plan

Shentel's project will build on its existing infrastructure and will be managed by many individuals that have been doing work in this area for many years. The Shentel project will be managed by the following individuals.

Employee	Title	Role	Qualifications
Dan Meenan	Vice President, Operations	Executive oversight of Fiber to the Home deployment for the VATI projects.	Executive with over twenty years of diverse telecommunications management experience inclusive of wireless mobility networks, fixed wireless networks, and cable television.
Harris Duncan	Vice President, Network Engineering	Executive oversight of Core integration & support for the VATI projects.	Executive with over twenty years of diverse telecommunications management experience inclusive of wireline fiber networks and cable television.
Brith Osinkosky	Director OSP Engineering & Construction	Responsible for Fiber to the Home engineering and construction for the VATI projects.	Accomplished leader with twenty years of experience in Outside Plant engineering, construction and operations, specializing in large-scope projects, and broadband acquisitions/overbuilds/upgrades. Currently managing 20,000+ miles of Shentel's OSP network. Extensive experience with FTTH designing and implementation.
Paul Lopez	Director of Broadband Operations	Responsible for all customer installation and support for Fiber to the Home.	Strategic and solutions-oriented leader with more than twenty years in the Telecommunications Industry. Responsible for the ongoing operations and maintenance of the Broadband Network as well as the installation and support of customers.
Jessica Wilmer	Manager, Project Management	Responsible for the coordinated deployment of Fiber to the Home and for project management updates and cost reimbursement related to the VATI projects.	20 years of wireless telecommunications industry real estate acquisition and site development expertise. Previously project managed Shentel's Wireless Mobility network comprised of approximately 2,000 cell sites in seven states, including developing over 500 new cell sites. Former Zoning Administrator in Augusta County. Extensive experience with Zoning and Planning, the Wireless industry, and government affairs.

Project Management Team Signatures

Chief Administrative Official

Date

Grant Administrator

Robert Hiss, County Administrator

Organization

Grant Manager

Date

Name

Organization

Project Manager

Date

John Putney [Title]

Organization

Financial Manager

Ashley Anderson, Finance Director

Organization

Date

Project Architect/Engineer/ISP

Dan Meenan, Vice President, Operations

Shentel

Date

MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding ("MOU") entered into on this ____ day of _____, 2022, by and between Shenandoah Telecommunications Company, located at 500 Shentel Way, Edinburg, VA 22824 hereinafter referred to as "Shentel", and the County of Bedford, Virginia, a political subdivision of the Commonwealth of Virginia, located at 122 East Main Street, Bedford, Virginia 24523, hereinafter referred to as the "County" (Shentel and County are collectively referred to as the "Parties"), for the purpose of establishing and achieving various goals and objectives relating to the project contemplated by the Parties.

WHEREAS, the Parties are desirous to enter into this Memorandum to set forth the working arrangements that both Parties agree shall be necessary to pursue their efforts to bring the Project to fruition;

MISSION

The Project is intended to provide the areas of the County with access to broadband Internet service ("Broadband"), in order to meet the future needs of residents and businesses in those areas of the County.

PURPOSE AND SCOPE

The Parties intend for this Memorandum to outline the structure for any binding contracts which the Parties may enter into in the future related to the Project.

OBJECTIVES

The Parties agree to work together to attempt to secure funding and establish policies and procedures that will promote and sustain a market for Broadband availability and intend to work toward delivering a product and/or services that meet or exceed business and industry standards.

RESPONSIBILITIES AND OBLIGATIONS OF THE PARTIES

The Parties agree to work together in good faith and collaboratively in an effort to bring the Project to successful completion. This Memorandum does not create any legal or equitable obligations or rights on the part of either Party and no such obligations or rights shall exist unless and until such time as the Parties may enter into a written agreement signed by both Parties.

SERVICES COOPERATION

The goal of the Project is to provide the following services in the areas of the County contemplated in the Project, which services include, but are not necessarily limited to:

Broadband Internet access services

Phase 1 (beginning after MOU execution): The Parties will work together to apply for Virginia Telecommunication Initiative (“VATI”) grant(s). The Parties anticipate that VATI guidelines will require contributions by Shentel and by the County as matching funds to secure a FY2023 VATI Grant through the Virginia DHCD. DHCD funding shall not exceed 80% of Project costs.

The total budget for the Project is expected to be \$4,577,205. The County agrees to provide a total match of \$0 in funding for the Project. Shentel agrees to provide a minimum match of \$3,204,044 in funding for the Project. The amount of the VATI Grant to be requested for the Project will be at least \$12,379,364 and the total number of homes projected to be passed by the Project shall be at least 5,590.

Phase 2 (beginning after Phase 1): Shentel will work with the County to continue Project planning and the Parties will seek additional Federal, State and local funding to expand the availability of Broadband service in the County.

TIMELINE

The above outlined scope and objective shall be contingent on the Parties’ ability to obtain the necessary funding required for the Project, as described in any applicable grant or business loan application. Responsibilities with regard to commencement and completion of the Project will be established in any future agreement between the Parties, and may coincide with the period specified in connection with any grants awarded in connection with the Project.

TERM

This MOU shall remain in effect, subject to the termination provisions in this MOU, up until the Parties mutually determine whether they are able to move forward with the Project.

If the Parties are successful in securing sufficient grant funding that they are both willing to move forward with the Project, then they agree to use good faith efforts to negotiate, execute and deliver a formal contract regarding the Project (“Project Agreement”). The Parties contemplate that a Project Agreement will contain terms and conditions, representations, warranties, covenants, and other provisions that are customary in service arrangements of the sort contemplated in this MOU. If the Parties are unable to agree on the terms and conditions of a Project Agreement within 60 days of receiving notice of the award of such grant funding, then either Party may give notice of the termination of this MOU. In that event, the Parties shall have no further obligations to each other under this MOU except for any obligations which are specifically provided to survive a termination of this MOU. This MOU does not create any legal or equitable obligations or legal rights.

AMENDMENT OR CANCELLATION OF THIS MEMORANDUM

This Memorandum may be amended or modified at any time in writing by mutual agreement of both Parties.

In addition, this MOU may be cancelled by either Party without cause on sixty (60) days advance written notice. This MOU may be terminated for cause, where cause for termination may include, but is not limited to, a material breach of any of the provisions contained herein, upon delivery of written notice of such termination to the other Party.

GENERAL PROVISIONS

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

If at any time either Party is unable to perform its duties or responsibilities under this MOU consistent with such Party's statutory and regulatory mandates, the affected Party shall immediately provide written notice of such to the other Party and, if possible, establish a date for such performance.

LIMITATION OF LIABILITY

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

ARBITRATION/MEDIATION DISPUTE RESOLUTION

The Parties to this MOU agree that should any dispute arise regarding any aspect of their relationship or the Project, including, but not limited to, any matters, disputes or claims, the Parties shall confer in good faith to promptly resolve any such dispute. In the event that the Parties are unable to resolve the issue or dispute between them, then the matter shall be subject to non-binding mediation in an attempt to resolve any and all issues between the Parties.

The Parties agree that venue for any claim or dispute that arises from or through this MOU shall be in the state and Federal courts for Bedford County, Virginia.

NOTICE

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

GOVERNING LAW

This MOU shall be governed by and construed in accordance with the laws of the Commonwealth of Virginia, exclusive of its conflicts of laws rules.

SEVERABILITY CLAUSE

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

ASSIGNMENT

Neither Party may assign this Memorandum without the prior written consent of the non-assigning Party, whose approval shall not be unreasonably withheld or conditioned. Notwithstanding the foregoing, Shentel shall have the right to assign this MOU without the County's consent to any parent, subsidiary, affiliate, or any person, firm, or corporation that shall control, be under the control of, or be under common control with Shentel, or to any entity into which Shentel may have merged or consolidated or which purchases all or substantially all of the assets of Shentel.

ENTIRE UNDERSTANDING

This MOU reflects the entire understanding and agreement of the Parties pertaining to all matters contemplated hereunder.

MOU SUMMARIZATION

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

- The Parties to this MOU shall work together in a cooperative and coordinated effort, and in a manner and fashion intended to bring about the achievement and fulfillment of the goals and objectives of the Project.
- It is not the intent of this MOU to restrict the Parties from their involvement in or participation with any other public or private individuals, agencies or organizations or opportunities.
- The Parties to this MOU shall mutually contribute and take part in any and all phases of the planning and development of the Project, to the fullest extent possible.

- This MOU is not a binding contract, and it is not the intent or purpose of this MOU to create any rights, benefits, obligations and/or trust responsibilities by or between the Parties.
- This MOU shall in no way hold or obligate either Party to supply or transfer funds to maintain and/or sustain the Project or the effort to bring it to fruition.
- Should there be any need or cause for the reimbursement or the contribution of any funds to or in support of the Parties' efforts relating to the Project, then such shall then be done in accordance with applicable Virginia laws, regulations and/or procedures, and any Project Agreement which the Parties may enter into in the future.
- In the event that it should become necessary to provide funding for the effort to develop the Project, then any such endeavor shall be addressed in a separate and mutually agreed upon written agreement signed by the Parties or their representatives, in accordance with applicable laws and regulations, and in no way does this MOU provide such right or authority or obligate any Party to provide any such funding.
- The Parties have the right to individually or jointly terminate their participation in this MOU provided that advanced written notice is delivered to the other Party as provided for herein.

AUTHORIZATION AND EXECUTION

The signing of this Memorandum of Understanding does not constitute a formal undertaking, and as such it simply reflects the intentions of the Parties to undertake preliminary efforts to achieve the goals and objectives stated in this MOU.

IN WITNESS WHEREOF, the Parties hereto have set their hands as of the day and year first above written.

Shentel

By:

Title: Vice President

BEDFORD COUNTY, VIRGINIA

By: _____
Robert Hiss
County Administrator

VATI FUNDING SOURCES TABLE

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

Source	Amount	%	Status
REQUESTED VATI	\$ 1,373,162	30%	Pending
Shentel	\$ 3,204,044	70%	Pending
Bedford County	NOT TO EXCEED \$2,000,000	--%	Pending
TOTAL	\$ 4,577,205	100%	

Shentel is prepared to provide all necessary match funding in alignment with this grant application. All VATI grant projects will be accounted for in the annual budget and funded to the necessary level. Furthermore, Shentel is committed to the proposed projects and has more than adequate financial backing to support their completion.

SHENANDOAH TELECOMMUNICATIONS COMPANY AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
 Years Ended December 31, 2021, 2020 and 2019

(in thousands, except per share amounts)

	2021	2020	2019
Service revenue and other	\$ 245,239	\$ 220,775	\$ 206,862
Operating expenses:			
Cost of services	102,299	89,657	83,572
Selling, general and administrative	82,451	85,016	77,846
Restructuring expense	1,727	—	—
Impairment expense	5,986	—	—
Depreciation and amortization	55,206	48,703	46,786
Total operating expenses	247,669	223,376	208,204
Operating loss	(2,430)	(2,601)	(1,342)
Other income, net	8,665	3,187	3,280
Income before income taxes	6,235	586	1,938
Income tax (benefit) expense	(1,694)	(990)	6
Income from continuing operations	7,929	1,576	1,932
Discontinued operations:			
Income from discontinued operations, net of tax	94,667	124,097	53,568
Gain on the sale of discontinued operations, net of tax	896,235	—	—
Total income from discontinued operations, net of tax	990,902	124,097	53,568
Net income	998,831	125,673	55,500
Other comprehensive income:			
Net gains (losses) on interest rate swaps, net of tax	4,706	(5,014)	(7,972)
Comprehensive income	\$ 1,003,537	\$ 120,659	\$ 47,528
Net income per share, basic and diluted:			
Basic - Income from continuing operations	\$ 0.16	\$ 0.03	\$ 0.04
Basic - Income from discontinued operations, net of tax	\$ 19.81	\$ 2.49	\$ 1.07
Basic net income per share	\$ 19.97	\$ 2.52	\$ 1.11
Diluted - Income from continuing operations	\$ 0.16	\$ 0.03	\$ 0.04
Diluted - Income from discontinued operations, net of tax	\$ 19.76	\$ 2.48	\$ 1.07
Diluted net income per share	\$ 19.92	\$ 2.51	\$ 1.11
Weighted average shares outstanding, basic	50,026	49,901	49,811
Weighted average shares outstanding, diluted	50,149	50,024	50,101
Cash dividends declared per share	\$ 18.82	\$ 0.34	\$ 0.29

See accompanying notes to consolidated financial statements.



Chris Kyle
 Vice President, Industry Affairs & Regulatory

Attachment 11 – Prior Expended Match Form

Local Government expenditures incurred after June 2, 2021, one year prior to the application open date, are eligible to be included in the application as match funds. Incurred expenses must be related to the proposed VATI project and meet VATI criteria. Expenditures incurred by internet service providers after December 13, 2021 are also eligible to be included in the application as match funds. For these match funds to be considered, the co-applicant internet service provider and local government applicant must have been unsuccessful in the FY22 round of VATI. Please complete the table below to explain any prior expended funds which have been considered as matching funds in this application. Incurred expenses must also be directly related to the proposed VATI project and meet VATI criteria. DHCD staff reserves the right to make administrative determinations on the validity of matching funds and accept a proportion of the funds when necessary.

Prior Expended Match Table				
Expense Incurred By: (Local Government or Internet Service Provider)	Source: (Local, State, Federal, Other, Loan, etc.) Please list fund source (i.e. Local Fiscal Recovery Fund)	Amount:	Brief Description: (Construction, Administration Expenses, or Other)	How is this expense directly related to the proposed VATI project? If more space is needed, please describe in detail below the table with numbered references in the cells below.
Local Government	ARPA Contingency	Not to exceed \$2,000,000	Construction costs	Expanding broadband service adjacent to the VATI project area, and, In conjunction with the FY 2023 VATI application submission, achieving functional universal wireline broadband coverage.

ATTACHMENT 12 - Derivation of Costs

	Total	VATI	Non-VATI		
Product	100%	30.00%	70.00%	Source of Estimate	Date
Plant Build	\$ 4,254,250	\$ 1,276,275	\$ 2,977,975	Shentel - please see Attachment 13 for supporting documentation	8/19/2022
Long Drops at Customer Premise	\$ 172,955	\$ 51,887	\$ 121,069	Shentel - please see Attachment 13 for supporting documentation	8/19/2022
Core Network Capacity Additions	\$ 150,000	\$ 45,000	\$ 105,000	Shentel - please see Attachment 13 for supporting documentation	8/19/2022
	\$ -	\$ -	\$ -		
PROJECT TOTAL	\$ 4,577,205	\$ 1,373,162	\$ 3,204,044		
	100%	30.00%	70.00%		



August 26, 2022

Dr. Tamarah Holmes, Director
Office of Broadband
Virginia Department of Housing & Community Development
600 East Main Street, Ste 300
Richmond, VA 23219

Re: Attachment 13 – Documentation of Supporting Cost Estimates

Dr. Holmes:

The purpose of this letter is to provide information regarding Shentel's Attachment 13 – Documentation of Supporting Cost Estimates for its 2023 Virginia Telecommunications Initiative (VATI) applications in partnership with Bedford, Franklin, Roanoke, and Shenandoah Counties. On August 24, 2022, Shentel submitted a FOIA Exemption Request for its Attachment 13 information. On August 25, 2022, your office granted this FOIA Exemption Request. Shentel has a long history of accurately and conservatively estimating broadband deployment projects. To this end, we submitted confidential, detailed costing documentation as a part of our 2023 VATI applications under the FOIA Exemption we were granted.

If and when necessary, Shentel is willing to share additional cost information. If you or your office requires any additional information, please let me know.

Sincerely,

Chris Kyle
Vice President, Industry Affairs & Regulatory



August 26, 2022

Dr. Tamarah Holmes, Director
Office of Broadband
Virginia Department of Housing & Community Development
600 East Main Street, Ste 300
Richmond, VA 23219

Re: Attachment 15 – Two Most Recent Form 477 Submitted to the FCC or Equivalent

Dr. Holmes:

The purpose of this letter is to provide information regarding the recent Form 477 submissions or equivalent by Shentel to the Federal Communications Commission. Data from Shentel's submissions can be located at <https://www.fcc.gov/general/broadband-deployment-data-fcc-form-477>

Should you have any questions regarding this information listed above, please do not hesitate to contact me.

Sincerely,

Chris Kyle
Vice President, Industry Affairs & Regulatory

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.

Shentel will be building a new Wireline solution leveraging XGS-PON Fiber to the Home (“FTTH”) technology via the ITU G.9807.1 standard to the VATI locations within this proposed project area. This 100% FTTH solution will involve building new fiber extensions in the County. These new fiber extensions will connect to Shentel’s existing fiber plant within this same County. Because Shentel already has an existing Broadband Network in this same County (inclusive of existing Core Network access and existing Distribution Network), this proposed project will simply be an extension of existing Broadband services to the proposed VATI locations. Further, Shentel will maintain end-to-end ownership of its entire Broadband Network within the County and will not be sharing resources.

Shentel deploys XGS-PON for its FTTH product. XGS-PON (X=10, G=Gigabit, S=Symmetrical, PON = Passive Optical Network) is an advanced standard for Passive Optical Networks (PON). XGS-PON is scalable to support up to 10 Gbps symmetrical data. By contrast, earlier PON networks are extremely limited in the amount of downstream and upstream capacity available to the end user. Although XGS-PON required significant additional Shentel investment, the growing demand for symmetrical Broadband made the investment in XGS-PON the best choice.

Shentel will initially provide speed tiers of 1 Gbps up and 1 Gbps down (“1Gbps Symmetrical”). However, the network is scalable to provide symmetrical data speeds of up to 10Gbps.

XGS-PON deployments are designed as both centralized and distributive fiber split topology, depending on the geography of the network. A single fiber from the service provider provides an efficient point-to-multipoint Broadband connection for multiple end users. In this rural VATI project area, Shentel will use a Distributed Split architecture to provide a more direct approach to ensuring that fiber capacity, technology, and plant records can be easily managed and scaled for growing Broadband demands.

Shentel typically initiates the fiber split from the Optical Line Terminal (OLT) out to the Customer Premise. Each OLT is fed with dedicated fiber(s) from a Central Office (CO) or Point of Presence (POP). Shentel leverages these fibers to easily expand its fiber presence in each of the FTTH markets, and scale to future bandwidth requirements. This robust fiber infrastructure also allows us to accommodate commercial sales opportunities within the same areas.

Equipment Vendors

Shentel maintains a diverse, geo-redundant core network using currently available hardware and software from the industry’s leading vendors to provide infrastructure support and service assurance to all networks and customers. Internal controls maintain policies and procedures that dictate network management, performance criteria, and preventive maintenance. Strict guidelines and procedures

ensure that Shentel's existing network continues to operation efficiently. For this project, Shentel will install new Calix Access Edge Optical Line Terminals (OLT) at strategic locations to feed end-user customers. At these same OLT sites, Shentel will also install out-of-band routers and console servers for remote management of our equipment.

Shentel's decision to utilize the industry's leader technology vendors has created an ecosystem whereas Shentel's ability to meet all current and future service requirements is guaranteed. Shentel has also partnered with its technology partners to determine, implement, and support the adherence to stringent standards that support specific requirements to be positioned to provide best-in-class services to all customers.

Shentel's Core Network is built on Cisco's NCS-55A and NCS-5501 platforms. The Core Network is built around diversity and resiliency in mind, with a dual 100 Gbps or 200 Gbps architecture providing both physical diversity and resiliency if a network failure or fiber cut occurs. The Core Network is composed of ten Core devices and two 100 Gbps or 200 Gbps paths between each device. These Core devices are located in Hagerstown, Maryland; Beckley, West Virginia; and Ashburn, Virginia; Harrisonburg, Virginia; and Redwood, Virginia.

Shentel's Access Distribution Network is built on Cisco's ASR-90xx, ASR-99xx, NCS-5001, and NCS-540 platforms. The Distribution Network is made up of many platforms deployed throughout Shentel's existing service footprint. Although the Core Network is the primary element within Shentel's topology, it is the actual Distribution Network that is the workhorse of the network.

Shentel's XGS-PON Network is built on Calix's Access Edge Optical Line Terminal (OLT). The Calix Access Edge systems is available in several variants to allow Shentel the versatility to install the units in Central Offices, outside plant cabinets, or other remote environments. The Calix E7-2 system is a single-chassis system which can host up to 2,048 Optical Network Terminals (ONTs) with two 8-port XGS-PON cards operating up to a 1:128 split ratio. Several Calix E7-2 OLT systems will be deployed to support the rural customer base including systems located in both existing Shentel POPs, as well as in remote cabinets. Using a Distributed Split architecture, our implementation will begin with a per port split ratio of 1:64 through a distributed split architecture with a combination of cascaded 1x2, 1x4, and 1x8 optical splitters. The splitters will be placed such that future capacity upgrades can be easily accommodated through a combination of XGS-PON port additions and split ratio reductions by way of splitter removals. Each Calix E7-2 OLT system will operate at layer-2 (802.1q) and will be dual-homed to two separate Distribution-layer Cisco NCS-540s. A dual 20GE LAG utilizing LACP in an active/standby configuration will be employed for the dual-homing.

The Calix E7-2 OLT system is designed with redundant links to the two Cisco NCS-540 routers. Network links are provisioned between the routers for redundancy and throughput reliability. The routers are interconnected in a sub-ring configuration with 20 Gbps LAG interfaces to our geo-diverse routing platforms in the Distribution layer. Each of the routers in the Distribution and Core Network layers are configured in a ring/sub-ring configuration utilizing IS-IS and MPLS. The routers are fully redundant with processor cards, line cards, and power supplies. In addition to equipment and fiber diversity, Shentel has hardened switching and collocation facilities inclusive of generators, and battery backup of 8-hour capacity.

Customer Premise Equipment – FTTH

At the Customer Premise, a Network Interface Device (NID) is installed to serve as a transition point between Outside Plant Fiber and Inside Plant Fiber. For FTTH Broadband services, a Calix GP1100X or GP11001X Optical Network Terminal (ONT) is utilized. The type of ONT deployed is determined by the service ordered. Both Voice and Internet Data services will be separated on to two separate VLANs from the ONT, through the OLT and onto the Distribution-layer routers. AES encryption is employed on the XGS-PON layer between the ONT and OLT to safeguard the customer's network. The ONT will be engineered to not exceed 22 km's from the OLT.

Core - Transit

Transit is Shentel's paid service that allows Shentel's network to connect to an upstream Internet provider. Shentel has established physical collocations in two major Internet Exchange Points (IXP) data centers. Shentel is currently using NTT and Arelia (formally, Telia Carrier) as its upstream Internet providers. Shentel is connected to NTT and Arelia in the Ashburn, VA and Atlanta, GA IXP's via 3 x 100 Gbps links to each upstream provider. At each IXP and in strategic locations on the Shentel network, private peering, public peering, and edge cache systems are deployed to increase capacity and lower latency with a total capacity of 1.31 Terabits per second. Actual addresses of these two IXPs are as follows:

Equinix Data Center

21715 Filigree Ct

Ashburn, Virginia

Digital Realty

56 Marietta St

Atlanta, Georgia

Shentel's transport network includes:

- Extensive Dense Wavelength Division Multiplexing (DWDM) network
- 200Gbps core routed network with distribution and access layers
- Metro Ethernet Forum (MEF) 3.0 certified network
- And the aforementioned Transit connections in Ashburn, VA and Atlanta, GA.

Core - Private Peering

Shentel has taken an aggressive approach to peer with Content and Service Providers to migrate internet traffic from Transit Links. This improves Shentel's ability to deliver content and reduce access costs. These critical network locations have allowed Shentel to support three tiers of peering. Private Peering is Shentel's dedicated peering links to specific Content Providers that allow traffic specifically belonging to them to route between the networks without using the Transit network. In addition to these Private Peering links, Shentel has also placed the Content Provider's Content Delivery Network (CDN) appliances within the network. This strategy has allowed Shentel to originate content from within the network without having to depend on the Internet. If content is not available via the CDN appliances, the content is sourced over the Private Peering links. The Content Providers also use these Private Peering links for nightly content fills and updates on the CDN appliances.

Content Providers CDN Appliances

- Amazon
- Apple
- Facebook
- Google
- Netflix
- Akamai
- Verizon Media
- Twitch
- StackPack

Capacity Management

Network utilization for Border Routers, Core Routers, Edge Routers, Access Switches, Optical Line Terminals (OLT) are reviewed on a weekly basis. Shentel utilizes server tools with SNMP polling to report the maximum utilization of key network elements and link interfaces in 1-minute intervals. This data is transformed into the criteria shown below for visual representation. Once link utilization reaches the monitor stage, a high-level augment plan is created in preparation for increasing capacity. As traffic increases above the augment threshold, further analysis is performed to determine if the increase is a result of a one-time event or a result of growth. If the increase is determined to be normal growth, the augment plan is executed.

Attachment 18 – Application Narrative Questions 8, 15 and 19

	Core Network	Border Network	Edge Router	Access Switch	CMTS/OLT Network Uplink
Good	<40%	<60%	<60%	<60%	<60%
Monitor/Plan	40%-60%	60%-90%	60%-80%	60%-80%	60%-80%
Investigate/Augment	>60%	>90%	>80%	>80%	>80%

Downstream and upstream utilization is reviewed on a weekly basis. A threshold report is utilized from Shentel's internal tools to report on any downstream and upstream interfaces that exceed 80% and 90% utilization. This report records the amount of time above the threshold during the previous week. This data is transformed into the criteria below to provide visual representation for the downstream and upstream interfaces that require research. If no other resolution can be used to reduce the utilization, an augment will be planned.

>80% Criteria

- >1 Hour = Highlighted in YELLOW
- <1 Hour = Flagged with GREEN flag
- >1<2.5 Hours = Flagged with YELLOW flag
- >2.5 Hours = Flagged with RED flag

>90% Criteria

- Yes = Highlighted in RED
- <1 Minute = Flagged with NO flag
- >1 Minute = Flagged with RED flag

Managing network resources based on an oversubscription method is an antiquated view. It becomes challenging to properly plan network resource usage because the users of network resources are a diverse group of users. Instead, Shentel manages network resources based on peak utilizations against the established criteria. Shentel will use some general oversubscription practices such as 2:1 oversubscription on 1 Gbps links and 6:1 oversubscription on 10 Gbps links, however. These general practices are intended to start the planning process when sizing the links between users of network resources and Shentel's network.

Finally, the aforementioned information was sourced by internal Shentel engineering resources and existing Shentel vendor relationships, and ultimately reviewed and approved by Harris Duncan, Vice President Network Engineering and Dan Meenan, Vice President Operations.

15. Communications Plan: Describe efforts to keep the public informed of project progress and the Broadband adoption plan.

Shentel has a strong and constantly improving marketing strategy, driven by its expansive growth in recent years. Their marketing plan utilizes public relations, mass media, social media, digital advertising, direct mail, email, printed collateral and merchandising pieces. All of these are reinforced by a robust website, a dedicated customer service team and Sales & Marketing representatives on the ground, in market. Shentel's existing Fiber to the Home business involves many customer touchpoints both before and after construction. Before construction begins, Shentel uses staged digital and direct mail announcements to alert customers of the upcoming service. This advance notice serves to both alert residents to the service that will be available to them and to give them advance warning of impending construction. Construction alerts and coming soon ads help to continue to keep residents aware of the reason for the construction work that may involve work in the rights of way or easements near their home. Throughout this process, door to door sales will be employed to maintain clear communication with residents.

a. 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)

County and Shentel will continue to work collaboratively to ensure that all stakeholders, including the Board of Supervisors/Broadband Authority, residents, business owners, and community anchors, are kept apprised of project developments. As part of the management of the project, the County will have access to the monthly progress reports that will be submitted to DHCD. Additionally, Shentel and the County will work together to establish an appropriate cadence on which to present updates to the Board of Supervisors and Broadband Authority. Residents and business owners will also be able to check their address on Shentel's website to determine if they are included in the project and to get an estimate of when service is expected to be live at their location.

b. 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)

Shentel will engage in a targeted iterative marketing effort during and after its construction to ensure awareness of this project and its benefits. In addition to providing regular updates to County Officials and working with the County to notify residents of project status, Shentel will carry out its own direct marketing outlined below.

45 Days prior to construction: Direct Mail to targeted service area announcing beginning construction.

3 Days prior to construction: Construction imminent door tags of affected homes

Construction Start Date: Email to pre-registered leads

30 Days before DCP is Active: Direct Mail to targeted service area with special offer to sign-up early

Construction progress: Email to pre-registered leads

Service Available: Email to pre-registered leads, Direct Mail postcard announcing order availability

Installation: Yard stake

Note: Direct marketing will include information informing long-drop eligible residents of their limited-time opportunity to have their long-drop costs covered through grant funding.

Shentel is also a participant in the Federal Affordable Connectivity Program which provides a discount of up to \$30.00 to qualifying households.

As time goes on, take rates will be closely monitored and further advertising will be developed and deployed as needed. Shentel believes 50% to 70% of the homes passed will subscribe to internet service within 5 years of availability, based on experience with previously unserved homes elsewhere.

- c. **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.**

Bedford County Public Schools' strategic plan states clearly its support for the expansion of broadband coverage so "all students can access the internet from home and in the greater community." Students in Bedford's school system have been directly affected by the lack of broadband connectivity in many parts of the county prior to and during the pandemic. Bedford is in the fifth year of a 1:1 device program in grades 6-12 and currently has over 13,000 Chromebooks available for student use. These devices are crucial for continuity of instruction for in-person and remote learning formats. In 2020-2021, over 20% of BCPS students opted for remote learning. While that number is much lower this year, much of the schoolwork is assigned electronically. Computer devices have very little benefit without internet access, and in approximately 30% of Bedford County homes, access is poor or non-existent. As previously stated, those students and their parents are forced to go to school or library parking lots or local businesses to access essential learning material.

Libraries – Before, during, and after the pandemic, few community anchors have proven as indispensable as public libraries. Thousands of county residents rely on our library system as a technology hub for educational access, but also employment updates and other essential government services. According to Bedford Public Library System Director, Jenny Novalis, the Library's WIFI usage increased at all six County facilities from the pre-pandemic year, 2019, to the pandemic year 2020 and has remained high afterward. Furthermore, this indicator of community need increased almost 200% in some of our most rural libraries. As part of its digital literacy program, BPLS began purchasing e-book collections 10 years ago and now spends about 1/3 of its overall book budget on these digital resources. E-books offer instantaneous access to reading and educational materials from a home Internet connection. Without a home Internet connection this literary option is unavailable to our citizens. One of the vulnerable populations the library serves now are a growing number of homebound citizens.

These county residents are generally older, living at or below the poverty level, and are on a fixed income. They are unable, physically, to come to the library due to a variety of reasons. An experiment BPLS tried last year was to equip E-readers with educational and popular titles and loan the devices to our homebound patrons. The experiment failed in large part because the Kindles must be preloaded with e-books when the person does not have a home Internet connection. Additionally, in late 2021 BPLS has started a new partnership to help Bedford County adults. The program, called Chromebooks for Community Success, teaches digital literacy to parents and grandparents of kids in Bedford County Public Schools. The course is free and includes a free Chromebook for participants upon completion. “So, you get to actually walk out of here with a Chromebook that you can use to help your child or to further your own career skills,” said Jenny Novalis, director.

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

- a. 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.

Community anchors such as community colleges, libraries, schools, and other community support organizations continue to prove how they can help bridge the digital divide that exists in rural and certain urban communities in the Commonwealth. Often because rural communities have inconsistent, weak, or non-existent internet connectivity, these well-connected community anchors become essential institutions for the vulnerable populations, including the elderly, the unemployed, and those of low-income. The global COVID pandemic proved just how important these anchor institutions are and the essential role they play in educating and caring for Virginians, and a key component of their ability to do so is their internet connectivity. County government’s coordination with and outreach to these community anchors and the services and programs they offer, the quality of Bedford citizens’ personal, professional, educational, and civic lives will be enhanced demonstrably with the improved broadband connectivity the county will achieve in this defined project area once it is complete.

- b. Unique partnerships involved in the proposed project. Examples include electric utilities, universities, and federal/state agencies.

Shentel has a variety of unique partnerships planned to cost effectively construct the proposed network. For example, over the past 15 years, Shentel has developed an extensive partnership with MBC (<https://mbc-va.com/>) and is one of the largest customers of MBC fiber. For both Bedford County schools, and Franklin County schools, Shentel and MBC designed a “joint network” that leveraged existing assets to cost effectively serve all school locations. As part of this grant, Shentel will leverage a similar contractual relationship to share fibers with MBC.

Shentel also looks forward to working with Appalachian Electric Power (AEP). They have

signed an NDA with AEP and are collaborating on network plans and designs.

Shentel also serves the entire Bedford County library system (seven locations) through the E-Rate program. In addition, Shentel has fiber into the GigaPark in Bedford, and provides connectivity to several businesses in the park. Shentel has always partnered with the local communities through investment in organizations like the Lynchburg Regional Alliance (<https://www.yeslynchburgregion.org/>), and the local Chamber of Commerce.

- c. 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.

Shentel is a participant in the FCC's Affordable Connectivity Program (ACP), which provides a \$30 discount for all qualifying customers.

Social Services – According to County Social Services Director, Andrew Crawford, all Virginia Department of Social Services computer systems are now web based, making internet a critical infrastructure for both citizens and staff. Bedford's citizens use the internet to apply for benefits, report changes, and to communicate with Social Services staff either by email or video calls. Citizens need access to the quality internet to find resources for their family, to apply for jobs, and to have access to training. Similarly Social Services staff need access to quality internet to complete their work in the field or when teleworking, which became far more prevalent during the throes of and continues to be a prominent issue during the pandemic. The Bedford Department of Social Services has employees who currently drive to local churches or businesses, to complete mandated work, as these organizations have better Wi-Fi speed than what they can access at their office or at client homes.

- d. 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.

Shentel has an established supply chain with trusted and diversified vendors, a mobilized workforce, a dedicated Purchasing team, an extremely strong balance sheet, and a highly experienced management team. Notably:

- Shentel currently has over 1,700 miles of fiber already in Inventory.
- To avoid risks associated with timely delivery, Shentel has an additional 3,500 miles of fiber on order for confirmed delivery in 2022 and 2023. Further, Shentel is in the process of ordering an additional 4,000 miles of fiber for 2024 delivery.
- Shentel has completed over 1,500 miles of new fiber dedicated to Fiber to the Home over the last several years
- Shentel currently has over 5,000 miles of new fiber in various stages of development

- Shentel has constructed and certified over 125,000 new fiber to the home passings in the last several years.
 - Shentel is actively engaged with over 35 outside plant contract companies currently building fiber to the home across four states. These contractors want to work with Shentel because we treat them with respect, because we have materials when they need them, we are exceedingly organized and don't waste their time, because we believe in very safe working conditions, and because we pay them more efficiently than our competitors.
- e. 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

Bedford County Public Schools' strategic plan states clearly its support for the expansion of broadband coverage so "all students can access the internet from home and in the greater community." Students in Bedford's school system have been directly affected by the lack of broadband connectivity in many parts of the county prior to and during the pandemic. Bedford is in the fifth year of a 1:1 device program in grades 6-12 and currently has over 13,000 Chromebooks available for student use. These devices are crucial for continuity of instruction for in-person and remote learning formats. In 2020-2021, over 20% of BCPS students opted for remote learning. While that number is much lower this year, much of the schoolwork is assigned electronically. Computer devices have very little benefit without internet access, and in approximately 30% of Bedford County homes, access is poor or non-existent. As previously stated, those students and their parents are forced to go to school or library parking lots or local businesses to access essential learning material.

Libraries – Before, during, and after the pandemic, few community anchors have proven as indispensable as public libraries. Thousands of county residents rely on our library system as a technology hub for educational access, but also employment updates and other essential government services. According to Bedford Public Library System Director, Jenny Novalis, the Library's WIFI usage increased at all six County facilities from the pre-pandemic year, 2019, to the pandemic year 2020 and has remained high afterward. Furthermore, this indicator of community need increased almost 200% in some of our most rural libraries. As part of its digital literacy program, BPLS began purchasing e-book collections 10 years ago and now spends about 1/3 of its overall book budget on these digital resources. E-books offer instantaneous access to reading and educational materials from a home Internet connection. Without a home Internet connection this literary option is unavailable to our citizens. One of the vulnerable populations the library serves now are a growing number of homebound citizens. These county residents are generally older, living at or below the poverty level, and are on a fixed income. They are unable, physically, to come to the library due to a variety of reasons. An experiment BPLS tried last year was to equip E-readers with educational and popular titles and loan the devices to our homebound patrons. The experiment failed in large part because the Kindles must be preloaded with e-books when the

person does not have a home Internet connection. Additionally, in late 2021 BPLS has started a new partnership to help Bedford County adults. The program, called Chromebooks for Community Success, teaches digital literacy to parents and grandparents of kids in Bedford County Public Schools. The course is free and includes a free Chromebook for participants upon completion. “So, you get to actually walk out of here with a Chromebook that you can use to help your child or to further your own career skills,” said Jenny Novalis, director.

Agriculture – As emphasized by Economic Development Authority’s Agricultural Board, Bedford County’s farming and agricultural communities have also has prioritized broadband connectivity in rural Virginia because today’s generation of farmers understand that farm operations can be more environmentally friendly, economically sound, and efficient using technology. The County’s producers need the ability to use the latest technology to be successful – whether it is checking the price of a commodity, marketing their products online, purchasing their next herd sire through an online sale, or participating in an online seminar, broadband internet is crucial for today’s modern agriculture business. For that technology to work effectively, reliable connectivity is required. Bedford Extension Services state “The use of technology has increased significantly in recent years to meet increased demands for products while keeping input costs low. Extension services and field experts have become highly specialized and internet capabilities have allowed agriculturalists to connect with industry leaders across the world that they normally would not be able to access. Marketing agricultural products now require farmers to reach out further than their localities and into the national and international communities. This requires the strategic use of social media, networking, and virtual connections. Lack of broadband access limits the use of technology on farms. Rural farmers are disadvantaged compared to other parts of the industry that have more ready access to internet services, thus negatively affecting their profit margins and sustainability.

Health Care – Healthcare has faced many challenges in recent years. The ability to manage patients remotely and to be able to offer more intensive management through telehealth is vital to meet the needs of complex patients. Broadband access allows patients to have secure, HIPPA compliant video chats with their providers to address their chronic health issues. However, many patients, who lack access to broadband are limited to telephone or audio only visits, which significantly limits the ability of the provider to assess the patient. Many advanced technologies now used to manage diabetes or chronic heart patients, such as remote glucose monitoring, blood pressure monitoring and heart rhythm detection rely on patient access to broadband to be optimized and successfully utilized. Without broadband access, patient care is compromised, and patients may not be as comfortable with treatment regimens due to lack of interaction with their healthcare providers. However, lack of access to broadband services is a disservice to healthcare providers and patients as well as places rural areas at an unfair disadvantage.