Unsolicited Proposal

For Fiber Network Expansion for Universal Broadband Access

Prepared for:
Thomas Jefferson Planning District

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Thomas Jefferson Planning District – Unsolicited Proposal for Universal Broadband Access

Christine Jacobs, Executive Director
Thomas Jefferson Planning District

Dear Ms. Jacobs,

Firefly Fiber Broadband appreciates the partnership with the Thomas Jefferson Planning District (TJPD) in a project to bring more than $300 million in infrastructure investment to the region with the construction of more than 4300 miles of fiber to bring internet access to more than 42,000 locations in thirteen counties that include TJPD members and other neighboring counties. The 2022 VATI grant project will ensure that every location in Albemarle, Amherst, Appomattox, Buckingham, Campbell, Cumberland, Fluvanna, Goochland, Greene, Louisa, Madison, Nelson, and Powhatan either within this project, through other VATI 2022 projects or through the present incumbent providers have access to broadband internet service. The Firefly project will build a state-of-the-art fiber optic network and deliver service at up to one gigabit per second speed/bandwidth to each location.

For the 2024 VATI grant program, the definition of an eligible location has been changed to include all locations that do not presently have a service that provides at least 100 Mbps download and 20 Mbps upload speed. This change allows thousands more locations to be eligible for grant funds to help offset the cost to bring fiber optic technology and gigabit speed internet access.

Firefly is excited to provide this proposal to partner with the Thomas Jefferson Planning District to develop a project and associated VATI application to assure that all newly defined unserved or underserved locations in the same 13 counties have access to broadband service that meets the new definition of served.

Firefly is a 5-year-old company that has almost 23,000 active accounts with a goal of exceeding 26,000 by year end. We have already established a reputation for high quality internet service and customer service.

- We are 100% FTTP Internet Service Provider
    - We have diverse connections to our upstream providers on 100Gbps circuits which can be expanded as needed
- We only offer two residential plans both with symmetrical speeds
    - 100Mbps for $49.99 and 1Gbps for $79.99
    - No data caps, no promotional pricing, no slow downs
    - Carrier Grade Wi-Fi 6 Router is included for FREE – no rental fees
- We are currently building 20-25 miles of fiber per week in rural Central Virginia. We operate the largest fiber network in central Virginia and one of the largest rural fiber networks in the state,
- We are an Eligible Telecommunication Company (ETC) and Competitive Local Exchange Carrier (CLEC); and we offer VoIP phone services, e-Rate, SIP trunking and other telecommunications services
- We also participate in the Lifeline Federal Assistance Program and the Affordable Connectivity Program (ACP)

Our attached proposal shares the details and demonstrates how we are the right partner for the TJPDC.

We look forward to meeting with you to discuss our proposal.

Best Regards,

Gary Wood
President and CEO

Qualifications and Experience

Central Virginia Electric Cooperative (CVEC) is completing a project to build a fiber optic network across its 4500-mile electric distribution system in the next month, finishing in just four years and a full year earlier than the original schedule. Firefly Fiber Broadband is a wholly owned subsidiary of CVEC; it leases the full fiber network from CVEC and provides retail internet and voice over IP services to homes and businesses.

Virginia law does not allow an electric cooperative to sell retail internet service, but the Virginia code does allow electric cooperatives to own subsidiaries engaged in any legal business in Virginia. Firefly is a separate company, but it shares the executive management of CVEC and can call on the resources of the 110 CVEC employees as well as the 35 Firefly employees who are dedicated to the internet business. Firefly is not regulated and does not have territorial restrictions like its parent CVEC. As Firefly and CVEC are completing the electric cooperative fiber system, Firefly has begun to expand its wings to reach off system locations.

Firefly Fiber Broadband is led by a team with Gary Wood, Bruce Maurhoff, Tina Mallia, and Dennis Reece. The team has led the construction of the fiber network, the retail marketing effort and the delivery of retail internet service, proving the ability to complete fiber network construction on time, within budget constraints, and in compliance with federal, state and local laws and regulations. CVEC and Firefly have worked together to manage the finance and grant compliance for the fiber build. This same team is responsible for the pursuit, award, and administration of two grants from the Virginia Tobacco Region Revitalization Commission, two Virginia Telecommunications Initiative Grants, RDOF, CARES funding, several county-level grants, a $28.6 million FCC Connect America Fund II auction award, a $34 million Rural Digital Opportunity Fund auction award, a $28 million USDA ReConnect program grant/loan award, and a $14.1 million USDA ReConnect Round 2 grant within the past four years. In partnership with TJPD Firefly is embarking on the VATI 2022 project with $112 million in state and local grant funds. Firefly is well positioned financially and building an asset base rapidly; it is backed by its parent CVEC with 85 years of operating a rural utility system with sound financial practices and excellent credit.

Gary Wood is the President and Chief Executive Officer at Central Virginia Electric Cooperative (CVEC) & Central Virginia Services, Inc. (CVSI) dba Firefly Fiber Broadband (Firefly). With 32 years of service at CVEC, Mr. Wood has served as CEO of the electric cooperative since 2008. During his tenure, the electric cooperative has made great strides in improving reliability of service and has created Solar Share, a popular community solar program. CVEC regularly achieves high scores among its peers in member and employee satisfaction. Since 2018, Mr. Wood has overseen the development and build of the system-wide fiber network that is being constructed on CVEC infrastructure. The $130 million project, originally slated to take five years to complete, was completed one year earlier than expected. In 2021, Firefly announced their Regional Internet Service Expansion (RISE) program that seeks to combine private investment with state and federal support to offer internet to every underserved home or business in 13 central Virginia counties. Mr. Wood earned a BSEE from the University of Virginia as an electrical engineering undergraduate and an MBA from Auburn University.

Bruce Maurhoff is the Senior Vice President and Chief Operating Officer for CVEC & CVSI. He earned his engineering degree as an undergraduate at Grove City College in Pennsylvania. He has 35 years of experience in building electric distribution infrastructure in Georgia and Virginia electric cooperatives. He is known for consistently overseeing projects that are built safely and with long-term reliability in mind. Projects run smoothly because Mr. Maurhoff understands all the aspects of many projects and communicates them

clearly. Mr. Maurhoff's vision for success is an asset to CVEC & CVSI. Without a doubt, he translates his vision to other employees, partner consultants and contractors at an operational level. He is familiar with construction requirements of the National Electric Safety Code as well as the unique requirements of the local organizations such as the Virginia Department of Highways. He serves on the board of the Blue Ridge Power Agency, an affiliate of CVEC. He is a registered professional engineer in the state of Virginia. Mr. Maurhoff's role includes oversight of Operations, Engineering, and Information Technology. Mr. Maurhoff leads the safety program for CVEC and led a CVEC-Firefly team that developed the first formal safety manual among cooperative fiber subsidiaries in Virginia.

Tina Mallia is the Vice President and CFO for CVEC & CVSI. Ms. Mallia has been instrumental in establishing the Cooperative as a leader in its industry. She is an energetic, innovative, and passionate leader who is an asset to CVEC for her financial expertise and for her much broader impact as a company officer. Ms. Mallia's sphere of influence is broad. Her role includes oversight of accounting, finance, human resources, member services and corporate communications. Ms. Mallia has created structure to improve efficiency and developed metrics that allow better analysis and uncover opportunities. She has led an effort to restructure debt and corporate financing to exploit the low interest rate environment, delivering improved margins and reducing future debt payments for generations of future cooperative members. Ms. Mallia is a Certified Public Accountant and earned her degree from Hofstra University in New York. Prior to joining the Cooperative 12 years ago, Tina served as an audit manager for an accounting firm in New York and Virginia.

Dennis Reece is the Director of Engineering and Operations of CVSI. Mr. Reece has more than 26 years of telecommunications experience. He was the Assistant General Manager and Chief Operating Officer of Citizens Telephone Cooperative, Inc. in Floyd, Virginia for twelve years before joining CVSI in early 2020. Mr. Reece has extensive experience with grants, regional/local partnerships, and fiber construction and operations. In 2009, he took the lead, in partnership with the New River Valley Planning District Commission, on an $11.5 million NTIA BTOP grant for a 200-mile middle mile fiber project; this was one of the few NTIA projects that was completed on time and on budget. In 2015, Mr. Reece led the creation of a master plan to build FTTP to all members of Citizens Telephone Cooperative and the plan started with building FTTH in the Town of Floyd in 2016. He took the lead on the VATI 2019 grant application for a $816,727 project in partnership with Floyd County to build FTTH to the Copper Hill area of the county. He also successfully managed the completion of two Virginia Tobacco Region Revitalization Commission grant projects. Mr. Reece earned an undergraduate degree from the Pamplin College of Business at Virginia Tech.

Mr. Reece will use his expertise experience to lead the build for this project, with the full support of the Firefly team with more than 100 years' experience in fiber system construction, operation and project management. He will also lead and oversee the team of contractors who will provide additional services for Firefly on the project. He is a local resident who is familiar with the region and who will give the project the priority it requires.

For construction, CVEC and Firefly have used the same team of Conexon for design and project management, and S&N Communications for fiber construction. Conexon is the leading fiber system designer in the electric cooperative community, responsible for tens of thousands of miles of design and construction oversight each year. S&N is a large regional contractor headquartered in Louisa, with experience in large projects such as Verizon builds in northern Virginia and Virginia Beach as well as Google fiber projects in Atlanta and San Antonio. Along with its utility partners in AEP, Dominion and Rappahannock Electric Cooperative, Firefly will

deploy more 250 personnel daily in design and construction for the project. The high level of safety performance for S&N and their depth of staff to provide the necessary line technicians, equipment operators and splicers provide an assurance of success to the project.

Firefly has a proven record of success in fiber projects and success in growth and currently serves almost 23,000 active subscribers. Starting 2019 with 0 paying subscribers, it will approach 26,000 at the end of 2023. Firefly has operational staff, such as line techs and installers working out of Colleen, Appomattox, and Palmyra with customer service staff located at its office in Palmyra, VA. The company has the technical capabilities and the depth of labor to provide for installation in the homes of new subscribers and maintenance of the entire fiber system from communication hut to the wireless connections inside the homes. Firefly is hiring the best and brightest with experience in the industry and currently has 35 employees and growing. This local company will be a great partner for TJPD in assuring gigabit speed service is available at every unserved location across the region.

Firefly has experience with structures for the ownership of the fiber used to serve its subscribers. Firefly leases all fiber in CVEC cables, almost all fiber in REC cables and some fibers in Dominion cables as well as owning its own fiber assets when that option provides the most economical and timely solution to providing broadband service. For this project, Firefly will use the same method of reviewing options for direct ownership as well as having its utility partners Dominion Energy and Rappahannock Electric Cooperative use the build and lease model to provide the fiber necessary to assure universal service to unserved locations within the region.

Project Characteristics

The project will seek to make world class, fiber-to-the-home connected internet service at speeds up to one gigabit per second available at every home and business location identified as unserved within the 13 counties. The first option for construction would be utilizing existing utility poles. Firefly has a close relationship with American Electric Power (AEP), Dominion Energy, Rappahannock Electric Cooperative (REC) and Southside Electric Cooperative from other projects and will work to determine the best possible options for leveraging these assets already in place. If the make ready work to prepare the poles makes the aerial build cost prohibitive, Firefly will consider building underground facilities. There are no known environmental or condemnation impacts. The Virginia state code includes a provision that allows facilities for internet access to be placed in existing utility easements, reducing the need for individual easements and rights of way. Firefly will obtain any other easements necessary to assure success of the project.

Firefly will operate and maintain the system after construction with Firefly network and operations staff for all fiber owned by Firefly and REC, and Dominion will provide maintenance for any fiber it owns and leases to Firefly. Firefly builds its network to local, state, and federal requirements and works closely with the utilities and with Virginia Department of Transportation (VDOT) including permits and bonding requirements.

Firefly understands the interest of TJPD and the partner counties on an expedited timeline. The project schedule will be dependent somewhat on the method of construction and on the completion of the adjacent facilities in the 2022 VATI project. The project will leverage the construction built in the 2022 VATI project. The 2024 VATI project will begin after contracts are in place for the project and continue for 18 months.

Internet service will be available at symmetrical gigabit level speed to every home and business. Firefly has a 100Gbps backhaul connection from the network head end that can be easily expanded as necessary to ensure each user will be able to transmit and receive at the 1 Gbps rate should they choose to. Expansion to 200Gbps is anticipated as the subscriber base grows. Network monitoring will ensure there is never a slow down or lack of bandwidth for the users to access the internet at the speed at which they pay.

The broadband services being offered will be Fiber to the Premise (“FTTP”). Both Passive Optical Network(“PON”) and Active Ethernet equipment can be used to meet both residential and business needs. PON is a shared bandwidth technology and Active Ethernet is dedicated bandwidth. For Residential (Fiber to the Home) (“FTTH”) service, G-PON will be deployed and for Business Fiber service either G-PON or Active Ethernet will be used based on business needs. As needed, a different card can be inserted in a hub chassis and 10G-PON can be run on the same fibers as the G-PON and offer even higher speeds once we upgrade the equipment at the select homes/businesses.

Our tiered pricing structure has no contracts, bandwidth limits, data-caps, overages, and no hidden fees or introductory pricing. A carrier-grade Wi-Fi 6 (latest standard) router is included at no charge, and only symmetrical bandwidth plans are offered. There are two residential plans: 100Mbps for $49.99 / month and 1Gbps for $79.99 / month. Standard business plans are 100Mbps for $79.99 / month; 250Mbps for $149.99 / month; and 1Gbps for $249.99 / month. Advanced business services are offered and include dedicated point-to-point or point-to-multipoint connections, and these are quoted on a case-by-case basis. Residential voice with

unlimited long distance is $34.99 / month if stand-alone; a $5 credit is given if combined with internet service. Business phone service starts at $29.99 / month with unlimited long distance.

Firefly is an active participant in the federal Affordable Connectivity Program (ACP) which provides a $30 monthly supplement to qualified applicants to help offset monthly charges for low and moderate income households, veteran households and others. Firefly is committed to exploring and accessing all possible methods to make internet service affordable to every household.

With its subscriber satisfaction priority and service first focus, Firefly is the best partner for TJPD to assure universal broadband access within the region. We have experience in rural infrastructure construction, maintenance and operation. Both Firefly and CVEC have recent subscriber and member satisfaction scores among the best in the nation. We are local, and Firefly's ownership does not prioritize profit over service. Firefly is the right fit for rural broadband and for a partnership with TJPD.

Project Scope, Permits and Financing

The project will identify all unserved households and develop a plan to assure service is available to each through the expansion of the Firefly fiber networks or in rare occasions, the use of the Virginia state long extension assistance plan to connect the location to incumbent providers. The initial estimate without detailed development is that there are between 2000 and 3000 unserved locations that do not have available 20 mbps upload and 100 mbps download speed internet service within the 13 counties.

We are including a map showing the 13 counties and the area already served by Firefly. There are several known areas for inclusion in the project and they are circled in red. Further investigation during the development of the project might lead to additional locations. Goochland, Powhatan, and Louisa have areas for further investigation and other counties might also have areas of unserved locations.

Firefly will use a combination of speed test surveys, field data gathering and county government input to finalize the project scop in time for the final VATI application to be completed.

At present, known permit requirements include the Virginia Department of Transportation and regional railroads for work done within their easements, and local planning departments for any hut locations. The new fiber will cross the incumbent electric utilities who are partners to Firefly as well as rural water and sewer utilities in the areas within the project. The final scoping will identify any other necessary permits. Firefly is familiar with the permit application processes and will assure that permits are available on a timely basis.

As the areas requiring extended service get smaller and more sparse, the cost to serve them goes up on a per passing basis. Combined with the cost impacts of constrained supply chains and labor markets push the total price up. Higher density in some areas help balance the increased capital cost on a per passing basis. Preliminary estimates are for the project to cost $15 million to $25 million, but the cost may go up if other areas of need are identified.

Firefly has looked at the cost, revenues, and margins closely. Firefly can support approximately $4,000 in investment per connected home in rural areas. Given that some locations in this project might overlap cable providers who are not delivering 20 mbps upload but still be the internet provider of choice for subscribers, Firefly assumes a 50% initial take rate. The budget and level of grant request will be calculated on this basis.

The necessary capital to match the grant funding request will come from Firefly for the Firefly owned fiber, from REC for the REC owned fiber and from Dominion should fiber be needed through their middle mile program. Each of those entities is financially sound and capable of providing equity and accessing the necessary debt from multiple sources to finance the construction of the network. Firefly has relationships with multiple private banks for fiber infrastructure loans.

Project Benefit and Compatibility

Fiber to the Home (FTTH) or Fiber to the Premise (FTTP) offer a lot of benefits to a community, including tax revenues, economic development, remote work, and remote learning.

The pandemic highlighted the need for true broadband services with higher upload speeds not just download. With families attempting to work from home and students attending virtual classrooms as shown that asymmetrical broadband even with a high download can cause performance issues within the home. A high definition 1080p video call uses 3.8 Mbps upload and 3Mbps download; when you have two adults using this for work and kids using this or something similar for remote classrooms, a 10Mbps bandwidth upload can quickly bottleneck causing video and audio issues, especially if other devices are using bandwidth at the same time.

Firefly has experienced great interest and enthusiasm for its projects bringing fiber throughout the local central Virginia communities. Firefly also embraces each opportunity to become an active community member and supporter, giving back to the subscribers through sponsorship of local events and support for local groups providing technical training to enhance digital literacy. The region will benefit indirectly in many ways.

Regional residents will benefit directly from having reliable, competitively priced broadband service. A typical family in CVEC territory realizes $1500 to $2500 in savings depending upon previous provider prices for internet service, telephone service and television subscriptions. Even those who do not choose Firefly often benefit when incumbent providers offer more competitive pricing once Firefly service is available in the area.

Residents and the county governments benefit from higher home values. A study in 2015 found that on average having FTTH will increase the value of a home by 3.1% and up to 7% for gigabit connected homes.

- https://www.fiberbroadband.org/blog/study-shows-home-values-up-3.1-with-access-to-fiber
- For a home valued at $170,000, that is an increase ranging from $5,270 to $11,900.

The economic development benefits of FTTP in a community has been researched, but it hard to be put an exact number due to external variables and most studies that can found online are from outside the US. Having FTTH for employees living in the community is an important factor in attracting and retaining employees in addition to the business benefits and the attraction of new employers.

- Deloitte can out with a study in April 2021 titled “Broadband for all: charting a path to economic growth”. This study highlights the impact of the COVID-19 pandemic has placed on the US economy at a pivotal moment when economic prosperity depends on reliable, affordable, and fast internet connectivity to all as well as how it has highlighted significant gaps and the digital divide. It also looks at the economic benefits of broadband.

- https://www2.deloitte.com/content/dam/Deloitte/us/Documents/process-and-operations/us-broadband-for-all-economic-growth.pdf

Fiber is future proof, and it can help revitalize communities. A recent study has demonstrated how valuable a fiber network can be to a city. Chattanooga, TN built a citywide fiber optic network a decade ago and since then has had an economic impact of over $2.69 billion. According to a study produced by the University of Tennessee the project saved or created 9,516 jobs in Hamilton County. The network has enabled residents and businesses to continue to operate even through the pandemic. Amongst some of its important benefits, the infrastructure has helped to close the digital education divide enabling low-income households to have internet access.

The project fits into the goal of the Commonwealth and the recent federal goal of having fiber-based internet broadband access to as many locations as possible. It will enhance economic development opportunities for the TJPD and the surrounding central Virginia region, as all businesses today consider access to broadband to be as essential to their operation as having adequate electric service. The project will not have any negative impact on planning or zoning or other aspect of land use. It is good project, and a necessary project for the counties within the regional project to continue to thrive for the decades ahead.

Firefly References

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Addendum 1: Map

The map shown below are areas previously identified as unserved and/or underserved and were included in the TJPDC VATI 2023 submission. We are working with each of our county partners to identify additional areas that also meet this definition and that might be added to this proposal/project. This map is subject to change.