



Broadband Infrastructure Application
Submission to NTIA – Broadband Technology Opportunities Program

Submitted Date: Easygrants ID: 4245	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: VERMONT TELECOMMUNICATIONS AUTHORITY
Task: Submit Application - BTOP	Applicant Name: Thomas Murray

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A. General Application Information

Applicant Information	
Name and Federal ID for Applicant	
DUNS Number	829946784
CCR # (CAGE)	5DEM0
Legal Business Name	VERMONT TELECOMMUNICATIONS AUTHORITY
Point of Contact (POC)	THOMAS MURRAY 8028281788 Ext. 1788 thomas.murray@state.vt.us
Alternate POC	ART BARTLETT 8028281788 Ext. 1788 abartlett@telecomvt.org
Electronic Business POC	ARTHUR BARTLETT 8028281788 Ext. abartlett@telecomvt.org
Alternate Electronic Business POC	ARTHUR BARTLETT 8028281788 Ext. abartlett@telecomvt.org

Name and Contact Information of Person to be Contacted on Matters Involving this Application:	
Prefix	
First Name	Thomas
Middle Name	
Last Name	Murray
Suffix	
Telephone Number	802-828-1788



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Fax Number	
Email	info@telecomvt.org
Title	Executive Director, VTA

Additional Contact Information of Person to be Contacted on Matters Involving this Application:

Project Role	Name	Phone	Email
Secondary Point of Contact	Mr. Erik , Amalixsen	8028284655	erik.amalixsen@state.vt.us

Environmental Point of Contact

Prefix: Mr.
Name: Amalixsen, Erik
Suffix:
Telephone Number: 8028284655
Title: VTA Project Manager

Organization Classification

Type of Organization	State or State Agency
Is the organization a small business?	No
Does the organization meet the definition of a socially and economically disadvantaged small business concern?	No

Authorized Organizational Representative

AOR Name	MURRAY, THOMAS
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Result	Applicant Authorized
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Project Title and Project Description

Project Title: Vermont Fiber Link

Project Description: Vermont Fiber Link is a public/private partnership spearheaded by VTA and Sovernet Fiber Corp. to build a fiber-optic Middle Mile providing data transport services up to 1 Gbps to community anchor institutions, government agencies, and last mile providers across southern, central, and northeastern Vermont at lower prices and greater bandwidth than is commonly available in these communities.

CCI Priority Checklist

The following items were selected from the CCI Priority Checklist:

1. This project will deploy Middle Mile broadband infrastructure to community anchor institutions.
2. The project will deploy Middle Mile broadband infrastructure and has incorporated a public-private partnership among government, non-profit and for-profits entities, and other key community stakeholders.
3. This project will deploy Middle Mile broadband infrastructure in economically distressed areas.
4. This project will deploy Middle Mile broadband infrastructure to community colleges.
5. This project will deploy Middle Mile broadband infrastructure to public safety entities.
6. This project will deploy Middle Mile broadband infrastructure and either includes a Last Mile infrastructure component in unserved or underserved areas or has received commitments from one or more Last Mile broadband service providers to utilize the Middle Mile components. Any Last Mile components in rural areas do not exceed 20% of the total eligible costs of the project.
7. This project will deploy Middle Mile broadband infrastructure and the applicant has proposed to contribute 30 percent or more in non-federal cost match.

Comprehensive Community Infrastructure Components

The following items were selected from the Comprehensive Community Infrastructure Components:



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Middle Mile

BIP Applicants

Have you also applied to BIP for funding in the sample proposed funded service area?

➤ No

If Yes, please provide the project title and Easygrants ID number:

Title of Joint BIP Application:

Easygrants ID:

Other Applications

Is this application being submitted in coordination with any other application being submitted during this round of funding?

➤ No

Easygrants ID	Project Title

If YES, please explain any synergies and/or dependencies between this project and any other applications.

Individual Background Screening

Is the Applicant exempt from the Department of Commerce requirements regarding individual background screening in connection with any award resulting from this Application?

➤ Yes, Applicant is exempt because it is a unit of a state or local government

If the answer to the above question is "No," please identify each key individual associated with the Applicant who would be required to complete Form CD-346, "Applicant for Funding Assistance," in connection with any award resulting from this Application:



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Name	Title	Employer

B. Executive Summary, Project Purpose and Benefits

Essay Question

Executive Summary of the proposed project:

Vermont is one of the most rural states in the nation. As a small state with rugged terrain and a rural population we lack significant large businesses and densely populated neighborhoods. Correspondingly, last mile broadband and cellular providers have been unable to build profitable business cases to provide services statewide, in particular to the underserved areas targeted by the proposed project. These realities have created a “digital divide” that threatens Vermont’s economic and technological viability in the 21st century.

For Vermont’s large institutional customers, the lack of affordable high speed access threatens their ability to survive in their respective markets. For example, K-12 schools, due to declining enrollment and increasing costs, have cut curriculum, reduced teachers and consolidated services. Attempts to solve these problems through distance learning, online curriculum, shared teachers and services are thwarted by the lack of bandwidth.

The situation is similar for all entities associated with this proposed project, such as hospitals, colleges, libraries, government and public safety locations. In addition, last mile broadband and cellular providers are now seeking 100mbps or higher speeds in virtually every town and at every tower. Absent a network such as the one proposed in this application, a robust, middle mile broadband network, these entities will not be able to meet their needs or expand services. Understanding the importance of addressing the problem, Governor Jim Douglas launched an “e-state” initiative endorsed by the legislature creating the Vermont Telecommunications Authority (VTA) and charged it with bringing ubiquitous broadband and cellular service to Vermont. The VTA is specifically empowered to form public-private partnerships, pursue federal funding opportunities, and aggregate access at reduced prices to services and facilities required to provide broadband.



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The BTOP funding opportunity is exactly the type of opportunity that the VTA was created to pursue to ensure that Vermont is able to keep technological pace with the rest of the nation and the world. BTOP funding would make the economics of building this network much more reasonable and would allow Vermont to move ahead, providing needed broadband service to schools, public and private institutions of higher education, libraries, medical facilities, public safety facilities, and other anchor institutions in the service area.

Vermont Fiber Link (VFL) is a public-private partnership of the VTA and Sovernet Inc., a leading communications service provider in Vermont. Sovernet will develop, own, maintain and operate the proposed network, provide data transport and Internet access to anchor customers and last mile service providers. Sovernet Fiber Corp. (SFC) will be the sole sub-recipient of the grant to the VTA and will own the funded network, as well as implement, maintain, operate and manage the resource. The VTA will provide project oversight, grant administration and ensure that the goals of the project are met.

SFC is one of several key partners with a mutual interest in the prosperity and sustainability of this project. A consortium of anchor partners ranging from government, public safety, education, libraries, and health care has been formed to help plan the project and drive usage on the network. Each of our partners has expressed their specific need for improved affordable access to broadband services and to improved capacity.

In particular libraries, schools and health care providers in rural communities are finding themselves unable to meet their needs. The numerous letters received from partners offer testimony to their need. The VTA's consortium partners and local institutions want to use the data transport services SFC will offer, and SFC needs their revenue to be sustainable.

A key goal of VFL is to ensure that the proposed middle mile network enhances last mile broadband and cellular service expansions. Through the aggregation of anchor customers, BTOP funding and the Sovernet/VTA relationship, we will be able to create a sustainable, high capacity network. This network will be able to serve the needs of the large customer and provide backhaul pricing that will attract last mile broadband and cellular providers. BTOP funding for the capital costs will enable affordable access to the network, which will drive increased usage and will sustain long-term growth and viability well beyond the grant period.

VFL proposes to deploy broadband infrastructure capacity along a route that reaches from southern Vermont through the "North East Kingdom" (NEK). Upon completion, the VFL project will touch on 9 of Vermont's 14 counties, serving over 85 communities in the state. The proposed middle mile project's service areas contain 79,202 residences. There are [REDACTED] businesses within 100 meters of the network backbone and laterals.



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Seven institutional partners joined in consortium with the VTA to help plan this proposed project: VT Dept. of Education (DOE), VT Dept. of Libraries (DOL), VT Dept. of Public Safety, VT Dept. of Information and Innovation, VT State Colleges, VT Law School, and the New England Telehealth Consortium. The DOE and DOL also worked to aggregate participation of their local community anchor institutions (CAI's). Over 342 CAI's will be reached by the proposed project, they include State of Vermont sites, K-12 schools, colleges (including nine community college sites and three that serve vulnerable populations), health care providers, and public libraries. The State of Vermont sites also include 30 public safety and first responder locations.

In addition to Internet access service, SFC will offer carrier point-to-point/multipoint data transport services and requesting parties on negotiated, commercially reasonable terms. SFC will offer interconnection to broadband and cellular service providers at key locations along the route, providing much needed backbone connectivity. Interconnecting providers will be responsible for the security, operation and maintenance of their equipment, while SFC will manage the fiber network. The project will seek to aggregate internet connectivity for each of these large anchor user groups.

With regard to Internet access service, SFC will adopt a standard Acceptable Use Policy, Privacy Policy and Terms of Service. Sovernet's current network management practices include standard best efforts Internet delivery. Sovernet acts on complaints from content providers regarding illegal downloads, and from other ISPs about spam and possible denial of service attacks that involved Sovernet email customers. Sovernet's standard terms of use prohibit use of its Internet service for illegal purposes, but access to Web sites is not blocked or filtered. Sovernet does not manage or limit the content of the communications traffic transiting its network, except to the extent necessary to maintain reliable service, to comply with all applicable laws governing such traffic, and to comply with law enforcement requests. SFC's network management practices will not involve preferential routing of traffic on the basis of content or provider. SFC commits to adhering to the principles contained in the FCC's Internet Policy Statement.

The proposed VFL network will be a redundant Dense Wave-Division Multiplex (DWDM)/SONET infrastructure built on a backbone of 773 new miles of fiber with network extensions into New Hampshire and Massachusetts. The core DWDM system will have capabilities of simultaneous data transmission, with additional dark fibers available to significantly grow the capacity as required.

SFC, will develop, maintain, operate and manage the network. Significant to SFC's readiness to undertake this project, the project area lies entirely within Sovernet's current area of operations. Technicians know the area and already work in many of the same central offices. Sovernet



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presently maintains a high capacity, fiber-based network for its backbone which will be leveraged for this project. The VTA's staff is comprised of seasoned telecommunication, financial and project management experts who will ensure the project is successful. The overall project cost will be \$48,230,985 including BTOP funds and matching contributions, including a grant from the Gates Foundation. This includes all costs associated with implementing the network. In the first eight years, the VFL project is expected to serve over 450 anchor customer locations, with intent to serve over [REDACTED] businesses along the route. In addition, we have letters of intent from [REDACTED] who will serve thousands of end users. The total jobs created by this project will be 524, comprised of 235 direct, 100 indirect and 189 induced jobs.

We appreciate the NTIA's consideration of the VFL project and believe that this project will be an enormous benefit to Vermont.

Project purpose:

The proposed VT Fiber Link (VFL) project will leverage a public-private partnership between VTA and Sovernet Fiber Corp. to solve VT's broadband access and affordability problems in the defined service areas for Community Anchor Institutions (CAIs) and will be available for interconnection by Last Mile providers. VFL will deploy broadband infrastructure with up to 1 Gbps of capacity along a route that reaches from southern VT through VT's "North East Kingdom"(NEK).

VT is one of the most rural states in the U.S. Our largest city's population is 38,897 and is our only city with a population greater than 20,000. Because VT is small and rural, telecom providers have been unable to make a business case to provide broadband or cellular service in a number of areas, but especially in the areas to be served by the proposed project.

VTA's private-sector partnership is essential, but is not enough; grant funding is vital to the success of this project because it otherwise would not be economically feasible to bring high-capacity broadband services to these areas. BTOP funding for the capital costs will enable affordable access to the network; affordability will drive increased usage; increased usage will sustain long-term growth and viability beyond the grant period.

VTA has been joined by several partners (See Partners Description essay). Our State depts. of Education and Libraries partners are coordinating the participation of local CAIs along the route to meet their need for high speed connectivity yet unmet by existing private sector networks. The average Internet service available to these institutions today is 1.5-100MB with costs averaging [REDACTED]



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[REDACTED]

once the VFL connections are established.

VFL addresses five of BTOP's six statutory purposes.

Underserved. Backhaul networks with capacity to support broadband data rates can be prohibitively expensive in rural areas. As a result, service is not always available or affordable and adoption is limited. VFL will lower last mile operating costs by providing new or substantially upgraded middle-mile bandwidth to support broadband deployment in the six areas along the route that are underserved. Even areas identified as served for this project contain significant pockets of unserved and underserved territory when analyzed at the census block level, according to state broadband mapping data (link provided in the supplemental information upload).

Provide broadband education, awareness, training, access, equipment, and support. VFL will remove barriers to broadband use by providing high capacity broadband access to schools, libraries, medical and health care providers, institutions of higher learning (including community colleges and others that serve vulnerable populations). Our partners will sustain education, training and outreach efforts among local CAIs. In addition, the DOL and VSC are partners in the VT Council on Rural Development's (VCRD) funded Round 1 "eVermont" BTOP Sustainable Broadband Adoption program. VCRD's proposal targets 24 communities throughout VT to create a culture of broadband use; 9 communities in the proposed service area have submitted pre-applications to be one of these "e-communities."

Improve access to, and use of, broadband service by public safety agencies. VFL includes construction to the [REDACTED] facilities and radio communication sites along the route.

Stimulate the demand for broadband, economic growth, and job creation. The lack of universal broadband access in underserved VT acts as a brake on economic growth and job creation. The availability of high levels of affordable bandwidth will stimulate expansion of and increased capacity over last mile networks, as well as higher-bandwidth applications at CAIs and businesses, building demand. The proposed service area includes substantial portions of Essex and Caledonia Counties, which are recognized as economically distressed areas. VFL will support the business development in this as well as the other regions of the project. For example,

[REDACTED] along the [REDACTED] portion of the route, the [REDACTED]
[REDACTED] will be benefited indirectly as the route passes by them.



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The application will enhance service for health care delivery, education, or children. In addition to NETC's partnership, VT's Office of Health Access and Health Care Reform has endorsed this project. VT's vision includes a plan for ubiquitous health information exchange across the continuum of health care providers. With passage of ARRA and the HITECH Act, VT is poised to dramatically accelerate the pace, scope and scale of its health information technology infrastructure and connectivity. Enhanced broadband services across the state will be critical for this expansion, which will initially interconnect all of the state's hospitals and medical practices, extend to all of the health care providers and – with broadband connectivity to all of VT's rural homes – enable telemedicine capacity for home health monitoring and services statewide. VFL will serve part of the DOE's planned statewide managed educational network to provide schools with a variety of opportunities: the ability to deliver on-line coursework and virtual courses; centralized and much reduced pricing for content filtering; videoconferencing capabilities; and the advent of robust data systems. The impact of this effort on VT's many small and rural schools is transformative and will be crucial in addressing vital 21st century skills.

Recovery Act and Other Governmental Collaboration:

This project will serve Community Anchor Institution (CAI) locations within the proposed service areas and provide interconnection for Last Mile broadband networks. This will create greater efficiencies by encouraging use of common infrastructure instead of silo networks serving different classes of users. Specifically, this commitment will leverage or be leveraged by the following Recovery or other state and federal programs:

Title IID Enhancing Education Through Technology (CFDA # 84.318): The VT Department of Education (DOE), using \$100,000 Title IID federal funds, has solicited an entity within the state to aggregate schools around VT in anticipation of connectivity for a statewide managed network that serves K-12 schools. The DOE will receive allocations of \$3 million in ARRA Title IID funding (out of a national total of \$650 million) and \$1.2 million in FY2010 Title IID funding, and plans to make additional investments of more than \$1.5 million from this pool in educational technology equipment, distance learning and virtual classroom opportunities, technology-related professional development, and electronic educational content, which its connectivity investments will support.

Health Care Information Technology and Rural Health Care Universal Service Programs: Vermont's health reform vision, as articulated by the Office of Health Access and Health Care Reform, includes a plan for ubiquitous health information exchange (HIE) across the full



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continuum of health care providers. This requires high-speed broadband connectivity to all health care providers in the state. VT has been awarded two ONC cooperative agreements (\$6.7M to VT Information Technology Leaders to serve as the state's Regional HIT Extension Center and \$5M to the VT Division of Health Care Reform to support Health Information Exchange). The Center for Medicaid Services (CMS), through its Sec. 4201 Medicaid provider HIT adoption and operations payments; implementation funding, will be providing additional funds to states to support HIE infrastructure development that will complement broadband infrastructure development. VT has received an initial funding from CMS of approximately \$350,000, with significant additional funding anticipated. This project will also provide greater leverage to the \$24.6 million award from the FCC's Rural Health Care Universal Service program to the New England Telehealth Consortium.

Vermont State Broadband Grants: Since 2006, the State of Vermont and the VTA have provided or pledged more than \$350,000 in grant funding to towns and small Wireless Internet Service Providers for the extension of last-mile broadband networks in underserved service areas addressed by this proposal. This project will strengthen the sustainability of these projects and provide a foundation for supporting greater numbers of users, increased coverage, and increased speeds.

Fit with BTOP CCI Priorities:

The proposed Vermont Fiber Link (VFL) project will deploy Middle Mile broadband infrastructure that meets or exceeds all of the items on the CCI priority checklist.

(1) VFL will deploy Middle Mile broadband infrastructure with a commitment to offer new or substantially upgraded service to more than 342 community anchor institutions (CAIs), including State of Vermont sites, k-12 schools, colleges (including [REDACTED] community college sites), health care providers, and public libraries.

VFL not only addresses CAI needs that have been expressed at the local level, but addresses the need to tie together local schools, libraries, health care facilities, and state colleges with broadband Wide Area Networks across Vermont (VT), with high-speed connections to the Internet. The need to improve this inter-institution broadband connectivity is expressed in the efforts of the VT Dept. of Education to develop a statewide managed educational network for k-12 schools, the VT Dept. of Libraries to develop shared electronic resources for VT's small public libraries, and the New England Telehealth Consortium (NETC) to develop a network for



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health care connectivity across northern New England. These efforts expand the long-standing efforts of the State of VT, including project partner Dept. of Public Safety (DPS) to enhance the level of broadband infrastructure connectivity linking its own sites.

The proposed project's route extends from the mountainous region of southern VT north into the VT's most rural area, the "North East Kingdom". School Supervisory Unions and libraries along the route have provided letters of support explaining what they have available to them now, at what price, and how this is negatively impacting their ability to meet demand for services and programs.

(2) VFL is a public-private partnership including the VTA, a public instrumentality of the State of VT, and Sovernet, a leading for-profit communications service provider in VT. VFL is supported by a range of CAI user consortium partners from government, public safety, education, libraries, and health care. Each of our partners has expressed a need for improved access to broadband service. The story is the similar for all; the broadband capacity they need is not available to them, or not available at affordable prices. In particular libraries, schools and health care in our rural communities are finding themselves unable to meet their local users' needs. The numerous letters received from our partners and their local CAIs say it all.

(3) VFL's fiber optic Middle Mile infrastructure will connect Caledonia and Essex Counties with key statewide Middle Mile interconnection points. Caledonia and Essex Counties, along with neighboring Orleans County, have been identified as counties meeting the definition of an "economically distressed area." Historically one of the state's most remote regions, this region also contains some of the state's most underserved population (See the uploaded map entitled Estimated Household Broadband Availability by Census Block.). Through offering connections to educational institutions, businesses and last-mile providers in the region, this project will support business retention and development, support educational and training opportunities, and aid job-seeking and employment.

(4) VFL will bring substantially upgraded broadband infrastructure to [REDACTED] institutions within the VT State College (VSC) system, including [REDACTED] Community College of VT (CCV) sites in [REDACTED]

and [REDACTED] The VT State Colleges are partners in the VFL project.



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The VSC stated, “Today, the VSC pays 20 times more than the Vermont Fiber Link’s projected cost for services and is delivered 20 times less than the Vermont Fiber Link’s projected bandwidth.” As we noted in another essay, the bandwidth and cost the VSC currently pays was the best they were able to obtain through a competitive procurement. Clearly, the proposed VFL project will present them with an unsurpassed opportunity to acquire the means to enhance learning opportunities for students in the midst of a challenging economic environment.

(5) VFL will bring substantially upgraded broadband infrastructure to [REDACTED] and [REDACTED] in the proposed service territory [REDACTED] requires reliable, high speed, and cost effective data networks to support today’s public safety applications and services. Due to the rural nature of VT, some regions of the state do not have the types of technology needed to support these mission critical applications. In the remainder of the state where commercial offerings are available, the cost of using these services can be prohibitive. The need for cost effective, reliable and robust communications links will continue to grow as data intensive public safety applications continue to be developed. In many of the urban regions of the U.S., these technologies are already in use due to the availability of inexpensive, high speed networks. The DPS supports the VTA in its initiatives to seek funding for the development of a high speed data network within Vermont. The DPS views any network developed by the VTA to be a viable alternative within the current environment.

(6) VFL has obtained letters from at least [REDACTED] last mile broadband service providers interested in using the proposed project (if funded) to expand and upgrade broadband service in underserved areas of VT.

(7) Non-federal cost match will equal 30 percent of the total eligible costs of the project, with cash contributions from Sovernet, VTA, the VT. Dept. of Libraries; and in-kind contributions from other state entities.

Is the applicant seeking a waiver of the Buy American provision pursuant to section x.Q of the NOFA?

➤ No

Is the applicant delinquent on any federal debt?

➤ No

If Yes, justification for delinquency:



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Are you seeking a waiver of any requirement set forth in the NOFA that is not mandated by statute or applicable law?

➤ No

Is the applicant a current recipient of a grant or loan from RUS?

➤ No

C. Partners

Are you partnering with any other key institutions, organizations, or other entities for this project?

➤ Yes

If YES, key partners are listed below:

Project Role: Other
Name: Reid, Martha
Phone: 8028283265
Email: martha.reid@state.vt.us
Address 1: State of Vermont Department of Libraries
Address 2: 109 State St.
Address 3:
City: Montpelier
State: Vermont
Zip Code: 05609-0601
Organization: Vermont Department of Libraries
Organization Type: State or State Agency
Small business: No
Socially and economically disadvantaged small business concern: No

Project Role: Other
Name: Drescher, Peter
Phone: 8028285149
Email: peter.drescher@state.vt.us
Address 1: State of Vermont Department of Education
Address 2: 120 State St.
Address 3:
City: Montpelier
State: Vermont
Zip Code: 05620-2501



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Organization: Vermont Department of Education
Organization Type: State or State Agency
Small business: No
Socially and economically disadvantaged small business concern: No

Project Role: Other
Name: Eicks, Jeanne
Phone: 8028311359
Email: jeicks@vermontlaw.edu
Address 1: Vermont Law School
Address 2: 164 Chelsea St.
Address 3: P.O. Box 96
City: South Royalton
State: Vermont
Zip Code: 05068
Organization: Vermont Law School
Organization Type: Other
Small business: No
Socially and economically disadvantaged small business concern: No

Project Role: Other
Name: Donovan, Timothy
Phone: 8022412520
Email: Timothy.Donovan@vsc.edu
Address 1: Vermont State Colleges
Address 2: P.O. Box 359
Address 3:
City: Waterbury
State: Vermont
Zip Code: 05676
Organization: Vermont State Colleges
Organization Type: State or State Agency
Small business: No
Socially and economically disadvantaged small business concern: No

Project Role: Other
Name: LaValley, Terry
Phone: 8022415215
Email: tlavalle@dps.state.vt.us
Address 1: State of Vermont Department of Public Safety
Address 2: 103 South Main St.
Address 3:



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City: Waterbury
State: Vermont
Zip Code: 05671-2101
Organization: Vermont Department of Public Safety
Organization Type: State or State Agency
Small business: No
Socially and economically disadvantaged small business concern: No

Project Role: Other
Name: Tucker, David
Phone: 8028284141
Email: david.tucker@state.vt.us
Address 1: Vermont Department of Information and Innovation
Address 2: 133 State St.
Address 3:
City: Montpelier
State: Vermont
Zip Code: 05633
Organization: Vermont Department of Information and Innovation
Organization Type: State or State Agency
Small business: No
Socially and economically disadvantaged small business concern: No

Project Role: Other
Name: Thibeau, Brian
Phone: 2079411040
Email: bthibeau@netlc.org
Address 1: New England Telehealth Consortium
Address 2: 262 Harlow St.
Address 3:
City: Bangor
State: Maine
Zip Code: 04401
Organization: New England Telehealth Consortium
Organization Type: Non-profit Corporation
Small business: No
Socially and economically disadvantaged small business concern: No

Project Role: Sub-recipient
Name: Lackey, Lawrence
Phone: 8024609133
Email: Llackey@sover.net



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Submitted Date: Easygrants ID: 4245	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: VERMONT TELECOMMUNICATIONS AUTHORITY
Task: Submit Application - BTOP	Applicant Name: Thomas Murray

Address 1: 5 Canal St.
Address 2: P.O. Box 495
Address 3:
City: Bellows Falls
State: Vermont
Zip Code: 05101-0495
Organization: Sovernet, Inc.
Organization Type: For-profit Entity
Small business: No
Socially and economically disadvantaged small business concern: No

Description of the involvement of the partners listed above in the project.

A consortium currently comprising VTA, state government agencies, VT State Colleges, VT Law School, and New England Telehealth Consortium formed to promote the development of middle mile infrastructure and connections to community anchor institutions (CAIs), and to change the pricing and availability of bulk transport services to foster greater broadband usage and transform VT into an “e-state.”

In December 2009, VTA and its partners issued an RFP seeking network service provider partners to assist in providing high-bandwidth, fiber-optic connections at every participating, school, college, library, state government office, and healthcare facility. Sovernet was selected to be the service provider partner. Through the consortium, the project has reached out to and involved dozens of local CAIs.

The partners have the following roles in the proposed VT Fiber Link project:

VTA will provide overall grant management, including the subgrant to Sovernet, and will be the conduit for benefits to the other partners. It will receive gigabit capacity for data transport service on the proposed network for five years and will provide committed recurring revenue to the project over that period to support the network’s sustainability. It will provide its capacity for state government’s use. VTA will promote the proposed network as a tool to further the expansion and improvement of last-mile broadband and cellular services (including broadband cellular) alongside its other tools, which include access to state rights-of-way and buildings, and financing of telecommunications infrastructure.

Sovernet will develop, own, maintain and operate the proposed network, and provide data transport and Internet access to CAI’s and last-mile broadband service providers. Sovernet is also a leading VT-based CLEC and provider of retail Internet access to VT homes and businesses; the



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middle-mile facilities provided by this network will allow Sovernet to improve and expand its own last-mile broadband services.

VT Dept. of Libraries (DOL) supports the development of Vermont's public libraries and provides statewide technology services and products to them, including online subscription resources. This project will bring up to 1Gbps of capacity directly to 53 public libraries to meet increasing local demand for online resources for e-government, business and economic development, education and job-training, employment, and global communication. DOL has secured \$399,000 in matching funds from the Bill & Melinda Gates Foundation to support bringing the fiber to libraries. DOL has gathered letters of commitment from participating libraries and will continue to support them in sustaining the costs of the proposed connectivity and related library services by using an additional Gates Foundation grant of \$150,000 (contingent on NTIA funding this project) to develop a centralized e-rate program to benefit participating libraries.

VT Dept. of Education (DOE) is sponsoring a number of initiatives that depend heavily on Vermont's public schools being connected to each other in a statewide educational Wide Area Network with high-speed Internet access. Initiatives include the Learning Network of VT, the VT Virtual Learning Cooperative, and the VT Data Consortium. DOE will continue its outreach efforts to obtain firm commitments from public schools to connect to the proposed network and to support and assist VT schools to increase e-rate participation.

VT Dept. of Information and Innovation (DII) is the manager of the State of Vermont Wide Area Network. DII will benefit from the ubiquitous availability of high-bandwidth connectivity at state sites throughout the service area capable of supporting network applications such as data center consolidation, cloud computing, video conferencing virtualized collaboration among state employees, and the remote delivery of services electronically to citizens. DII will also contribute project management services to the VTA for oversight and management of the project.

VT Department of Public Safety (DPS) is a member and key supporter of the VT Communications Board (VCOMM), a state-local collaboration to provide multi-unit, interoperable communications between local and state first responders across the state. DPS manages backhaul communications to public safety mobile and portable communications sites for itself, other state agencies, and in support of VCOMM. Through the capacity DII provides to state government, DPS will be a user of this network.

The New England Telehealth Consortium (NETC) exists for the purpose of designing and implementing a private broadband regional telehealth network to link regional health care providers with urban public practices, research institutions, academic institutions, and medical specialists. The availability of a common network will enable the region's healthcare providers



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to share information efficiently, provide electronic health records, remote medical diagnostics, telehealth, telemedicine, remote surgery, teledentistry, telepsychiatry and behavioral health treatments. NETC has received funding for this through the FCC's Rural Health Care Pilot Program. Under the program's rules, NETC will issue public RFPs. Through NETC's bid process, Sovernet will have an opportunity to offer the proposed VFL network to meet the needs of NETC sites in VT.

Vermont State Colleges (VSC) will benefit from the opportunity to use the network, which will provide substantial opportunities to link together campuses of the VT State College system, including campuses of the Community College of VT and [REDACTED]

Vermont Law School (VLS) will benefit as a user of the network. VLS needs to improve its intra and interstate connectivity so it can offer distance learning programs and services to meet student needs. It currently has few attractive options for connectivity in its rural setting. The proposed network would improve its access to various network providers.

D. Congressional Districts

Applicant Headquarters

- Vermont

Project Service States

Vermont

New Hampshire

Project Service Areas

Vermont - At-Large

New Hampshire - 2

Will any portion of your proposed project serve federally recognized tribal entities?



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➤ No

Indicate each federally recognized tribal entity your proposed project will serve.

Have you consulted with each of the federally recognized tribal entities identified above?

➤ No

E. Service Area Details

Is the applicant seeking a waiver for providing less than 100% coverage of a service area?

➤ No

Project Details

Service Area Type: Middle Mile
Service Area Name: [REDACTED] Underserved
Rural Classification of the Last Mile Service Area: Rural
Service Status of the Last Mile Service Area: Underserved

If Service Status is "Underserved" please select at least one applicable option from this list.

No more than 50% of the households in the proposed funded service area have access to facilities-based, terrestrial broadband service at greater than the minimum broadband transmission speed;

The rate of broadband subscribership for the proposed funded service area is 40% of households or less.

Total Square Miles in Service Area:	147
Total Population in Proposed Service Area:	5,304
Total Number of Households in Service Area:	2,045
Total Number of Businesses in Service Area:	127
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area:	34
Unemployment Rate in the Service Area:	7
Median Income in the Service Area:	37,800



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Estimated Percentage of Households with Access to Broadband: 45
Estimated Percentage of Households Subscribing to Broadband: 32

Service Area Type: Middle Mile
Service Area Name: [REDACTED] Served
Rural Classification of the Last Mile Service Area: Rural
Service Status of the Last Mile Service Area: Served

If Service Status is "Underserved" please select at least one applicable option from this list.

Total Square Miles in Service Area: 45
Total Population in Proposed Service Area: 2,515
Total Number of Households in Service Area: 1,041
Total Number of Businesses in Service Area: 110
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 16
Unemployment Rate in the Service Area: 8
Median Income in the Service Area: 35,055
Estimated Percentage of Households with Access to Broadband: 97
Estimated Percentage of Households Subscribing to Broadband: 70

Service Area Type: Middle Mile
Service Area Name: [REDACTED] Served
Rural Classification of the Last Mile Service Area: Rural
Service Status of the Last Mile Service Area: Served

If Service Status is "Underserved" please select at least one applicable option from this list.

Total Square Miles in Service Area: 16
Total Population in Proposed Service Area: 7,741
Total Number of Households in Service Area: 3,365
Total Number of Businesses in Service Area: 341
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 40
Unemployment Rate in the Service Area: 6



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Median Income in the Service Area: 43,412
Estimated Percentage of Households with Access to Broadband: 92
Estimated Percentage of Households Subscribing to Broadband: 66

Service Area Type: Middle Mile
Service Area Name: [REDACTED] Served
Rural Classification of the Last Mile Service Area: Rural
Service Status of the Last Mile Service Area: Served

If Service Status is "Underserved" please select at least one applicable option from this list.

Total Square Miles in Service Area: 944
Total Population in Proposed Service Area: 61,108
Total Number of Households in Service Area: 25,045
Total Number of Businesses in Service Area: [REDACTED]
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 465
Unemployment Rate in the Service Area: 6
Median Income in the Service Area: 39,182
Estimated Percentage of Households with Access to Broadband: 90
Estimated Percentage of Households Subscribing to Broadband: 65

Service Area Type: Middle Mile
Service Area Name: [REDACTED] Underserved
Rural Classification of the Last Mile Service Area: Rural
Service Status of the Last Mile Service Area: Underserved

If Service Status is "Underserved" please select at least one applicable option from this list.

No more than 50% of the households in the proposed funded service area have access to facilities-based, terrestrial broadband service at greater than the minimum broadband transmission speed;

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Total Square Miles in Service Area: 279



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Total Population in Proposed Service Area: 7,792
Total Number of Households in Service Area: 3,081
Total Number of Businesses in Service Area: 166
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 122
Unemployment Rate in the Service Area: 7
Median Income in the Service Area: 41,660
Estimated Percentage of Households with Access to Broadband: 49
Estimated Percentage of Households Subscribing to Broadband: 35

Service Area Type: Middle Mile
Service Area Name: [REDACTED] Served
Rural Classification of the Last Mile Service Area: Rural
Service Status of the Last Mile Service Area: Served

If Service Status is "Underserved" please select at least one applicable option from this list.

Total Square Miles in Service Area: 36
Total Population in Proposed Service Area: 8,003
Total Number of Households in Service Area: 3,452
Total Number of Businesses in Service Area: 427
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 75
Unemployment Rate in the Service Area: 7
Median Income in the Service Area: 30,832
Estimated Percentage of Households with Access to Broadband: 97
Estimated Percentage of Households Subscribing to Broadband: 70

Service Area Type: Middle Mile
Service Area Name: [REDACTED] Area Served
Rural Classification of the Last Mile Service Area: Rural
Service Status of the Last Mile Service Area: Served

If Service Status is "Underserved" please select at least one applicable option from this list.



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Total Square Miles in Service Area: 317
Total Population in Proposed Service Area: 36,573
Total Number of Households in Service Area: 14,651
Total Number of Businesses in Service Area: 1,346
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 191
Unemployment Rate in the Service Area: 8
Median Income in the Service Area: 38,110
Estimated Percentage of Households with Access to Broadband: 96
Estimated Percentage of Households Subscribing to Broadband: 69

Service Area Type: Middle Mile
Service Area Name: [REDACTED] Underserved
Rural Classification of the Last Mile Service Area: Rural
Service Status of the Last Mile Service Area: Underserved

If Service Status is "Underserved" please select at least one applicable option from this list.
No more than 50% of the households in the proposed funded service area have access to facilities-based, terrestrial broadband service at greater than the minimum broadband transmission speed;
The rate of broadband subscribership for the proposed funded service area is 40% of households or less.

Total Square Miles in Service Area: 88
Total Population in Proposed Service Area: 1,057
Total Number of Households in Service Area: 444
Total Number of Businesses in Service Area: 47
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 4
Unemployment Rate in the Service Area: 7
Median Income in the Service Area: 38,750
Estimated Percentage of Households with Access to Broadband: 43
Estimated Percentage of Households Subscribing to Broadband: 31

Service Area Type: Middle Mile



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Service Area Name: [REDACTED] Served
Rural Classification of the Last Mile Service Area: Rural
Service Status of the Last Mile Service Area: Served

If Service Status is "Underserved" please select at least one applicable option from this list.

Total Square Miles in Service Area: 19
Total Population in Proposed Service Area: 1,912
Total Number of Households in Service Area: 874
Total Number of Businesses in Service Area: 84
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 17
Unemployment Rate in the Service Area: 6
Median Income in the Service Area: 29,639
Estimated Percentage of Households with Access to Broadband: 84
Estimated Percentage of Households Subscribing to Broadband: 60

Service Area Type: Middle Mile
Service Area Name: [REDACTED] Served
Rural Classification of the Last Mile Service Area: Rural
Service Status of the Last Mile Service Area: Served

If Service Status is "Underserved" please select at least one applicable option from this list.

Total Square Miles in Service Area: 116
Total Population in Proposed Service Area: 8,318
Total Number of Households in Service Area: 3,429
Total Number of Businesses in Service Area: 257
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 57
Unemployment Rate in the Service Area: 6
Median Income in the Service Area: 40,859
Estimated Percentage of Households with Access to Broadband: 85
Estimated Percentage of Households Subscribing to Broadband: 61



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Service Area Type: Middle Mile
Service Area Name: [REDACTED] Served
Rural Classification of the Last Mile Service Area: Rural
Service Status of the Last Mile Service Area: Served

If Service Status is "Underserved" please select at least one applicable option from this list.

Total Square Miles in Service Area: 56
Total Population in Proposed Service Area: 3,805
Total Number of Households in Service Area: 1,553
Total Number of Businesses in Service Area: 191
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 28
Unemployment Rate in the Service Area: 6
Median Income in the Service Area: 39,523
Estimated Percentage of Households with Access to Broadband: 81
Estimated Percentage of Households Subscribing to Broadband: 58

Service Area Type: Middle Mile
Service Area Name: [REDACTED] Underserved
Rural Classification of the Last Mile Service Area: Rural
Service Status of the Last Mile Service Area: Underserved

If Service Status is "Underserved" please select at least one applicable option from this list.

No more than 50% of the households in the proposed funded service area have access to facilities-based, terrestrial broadband service at greater than the minimum broadband transmission speed;

The rate of broadband subscribership for the proposed funded service area is 40% of households or less.

Total Square Miles in Service Area: 47
Total Population in Proposed Service Area: 560
Total Number of Households in Service Area: 221
Total Number of Businesses in Service Area: 35
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 6
Unemployment Rate in the Service Area: 7
Median Income in the Service Area: 46,875



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Estimated Percentage of Households with Access to Broadband: 24
Estimated Percentage of Households Subscribing to Broadband: 17

Service Area Type: Middle Mile
Service Area Name: [REDACTED] Underserved
Rural Classification of the Last Mile Service Area: Rural
Service Status of the Last Mile Service Area: Underserved

If Service Status is "Underserved" please select at least one applicable option from this list.
No more than 50% of the households in the proposed funded service area have access to facilities-based, terrestrial broadband service at greater than the minimum broadband transmission speed;
The rate of broadband subscribership for the proposed funded service area is 40% of households or less.

Total Square Miles in Service Area: 75
Total Population in Proposed Service Area: 12,011
Total Number of Households in Service Area: 4,472
Total Number of Businesses in Service Area: 352
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 120
Unemployment Rate in the Service Area: 8
Median Income in the Service Area: 35,681
Estimated Percentage of Households with Access to Broadband: 39
Estimated Percentage of Households Subscribing to Broadband: 28

Service Area Type: Middle Mile
Service Area Name: [REDACTED] Served
Rural Classification of the Last Mile Service Area: Rural
Service Status of the Last Mile Service Area: Served

If Service Status is "Underserved" please select at least one applicable option from this list.
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Total Square Miles in Service Area: 310
Total Population in Proposed Service Area: 32,695



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Total Number of Households in Service Area: 13,339
Total Number of Businesses in Service Area: 1,204
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 263
Unemployment Rate in the Service Area: 7
Median Income in the Service Area: 40,571
Estimated Percentage of Households with Access to Broadband: 86
Estimated Percentage of Households Subscribing to Broadband: 62

Service Area Type: Middle Mile
Service Area Name: [REDACTED] Underserved
Rural Classification of the Last Mile Service Area: Rural
Service Status of the Last Mile Service Area: Underserved

If Service Status is "Underserved" please select at least one applicable option from this list.
No more than 50% of the households in the proposed funded service area have access to facilities-based, terrestrial broadband service at greater than the minimum broadband transmission speed;
The rate of broadband subscribership for the proposed funded service area is 40% of households or less.

Total Square Miles in Service Area: 140
Total Population in Proposed Service Area: 5,977
Total Number of Households in Service Area: 2,199
Total Number of Businesses in Service Area: 161
Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area: 44
Unemployment Rate in the Service Area: 6
Median Income in the Service Area: 40,897
Estimated Percentage of Households with Access to Broadband: 49
Estimated Percentage of Households Subscribing to Broadband: 35

F. Community Anchor Summary



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Community Anchor Summary	
Schools (k-12)	
Libraries	53
Medical and Healthcare Providers	
Public Safety Entities	
Community Colleges	
Public Housing	0
Other Institutions of Higher Education	
Other Community Support Organization	0
Other Government Facilities	
TOTAL COMMUNITY ANCHOR INSTITUTIONS	342
Historically Black colleges and Universities	0
Tribal Colleges and Universities	0
Alaska Native Serving Institutions	0
Hispanic Serving Institutions	0
Native Hawaiian Serving Institutions	0
TOTAL MINORITY SERVING INSTITUTIONS	0



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G. Project Benefits

Demographics

Jobs	
How many direct jobs-years will be created from this project?	235
How many indirect jobs will be created from this project?	100
How many jobs will be induced from this project?	189

Methodology used to estimate jobs:

The methodology used was that suggested by the Council of Economic Advisors. With this methodology, \$92,000 = 1 job yr.

The total budget for this project is \$48,230,985. Using the Council of Economic Advisors methodology, this project would develop a total of 524 job yrs.

The induced job yrs would be 36% of the 524 job yrs or a total of 189 job yrs created by the project.

The remaining 64% equals 335 job yrs to be divided into the direct and indirect job years. For the direct job years, it was estimated that 70% of the 335 or 235 job yrs would be created. The 70% was used due to the need of job yrs directly needed to complete the project within the 3 yr timeframe. The remaining 30% or 100 job yrs would be indirect jobs yrs created by the project.

Project Impact:

The Vermont Fiber Link (VFL) project will address the needs of the proposed service areas comprehensively. The proposed project will directly connect to 342 Community Anchor Institutions (CAIs), public safety sites and government office locations, as well as numerous Points of Interest (both cellular towers and central offices). Up to 1,482 additional CAIs are in the proposed service area, all of which are potential customers of the completed network. The consortium partners for the proposed project are working actively achieve an even higher level of local CAI participation beyond that proposed for BTOP funding. There is clear potential for growth beyond what is currently proposed for funding.

VFL fits within a coordinated and comprehensive strategy, described in the just-released Draft VT Telecommunications Plan 2010, to make available abundant bandwidth throughout the state for the following purposes:

- To enable applications that will transform the delivery of services by the public, educational, and health care sectors



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- To support universal availability and adoption of broadband service
- To catalyze economic development
- To enable full participation by Vermonters in an on-line society

VFL has been shaped by our Consortium partners who have worked to aggregate k-12 and higher educational institutions, health care institutions, public libraries, state government and public safety institutions. These institutional partners represent users that will be both beneficiaries of the improvements represented by the project and local anchors for the project. For them, VFL is a key component of ongoing statewide efforts to create truly universal, high-bandwidth Wide Area Networks that link together the various types of institutional users.

Demonstrating the importance of the proposed project to local CAIs, we have received enthusiastic letters of support from local CAIs. We have uploaded as many of them as the size limitations allowed. Common themes for schools are the inadequacy of current bandwidth to meet everyday needs, never mind meet the need for virtual learning opportunities brought about, in part, by staff and program cuts. Common themes for libraries are dramatically increased usage of public computing services because people cannot afford home internet access, and need access to online resources for e-government, business and economic development, education and job-training, employment, and global communication. Project Consortium partners VT Department of Education and VT Department of Libraries have pledged to continue aggregation efforts to bring schools and libraries onto statewide Wide Area Networks supported by this project.

The project has also received letters of support from the VT Law School and from the VT State Colleges, the latter of which has [REDACTED] sites to be connected to the proposed project, including [REDACTED] community college sites. The common theme is the high cost of bandwidth that is inadequate to meet the need. The letter from the New England Telehealth Consortium, which has [REDACTED] sites along the route, demonstrates the urgent need by the fact that it has received funding through the FCC's Rural Healthcare Pilot Program. Finally, we have received letters of support from VT Department of Public Safety and the VT Department of Information and Innovation representing [REDACTED] sites, including [REDACTED] public safety sites. Mission critical public safety broadband needs are different in nature from the broadband needs of other community anchors, and are urgently important in our post 9/11 era – particularly in a state with an international border. The proposed project will provide affordable backhaul to support modern public safety communications applications and needs, and will promote communication between public safety entities through network-based services and data.



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Within the proposed funded service area there are at least [REDACTED] last mile broadband service providers who are potential users of the proposed network, in addition to Sovernet itself. These [REDACTED] providers range from a small wireless broadband cooperative and [REDACTED] to major national cellular operators upgrading and expanding their rural networks to 3G and 4G mobile broadband services. While incumbent telecom providers and major cable operators are not anticipated to become significant users of the proposed network, Sovernet will offer to sell access to the proposed network to these in-region last mile providers where it may be useful to them to expand their operations.

The proposed network will reduce the distances from abundant, affordable middle-mile backhaul services for last mile service providers within the region. In addition to Sovernet, which plans to use the network to expand backhaul capacity for its last mile business, a wide range of potential last mile service providers have expressed a positive interest in using the proposed funded service network. Some of these providers [REDACTED] the proposed network will offer greater capacity connections for the same price they are paying today, or only modestly more. The proposed network will offer last-mile [REDACTED] broadband providers [REDACTED] greater middle-mile capacity than they can access today. [REDACTED] the proposed network. [REDACTED] and the VFL project will enhance the sustainability of these networks and the capacity of these networks to support more customers at increased speeds.

Finally, the proposed network has been designed by Sovernet [REDACTED]
[REDACTED]
[REDACTED] The network design has taken care to push fiber deeply into the rural communities that would be served, including to [REDACTED]
[REDACTED]
[REDACTED] for this project. The availability of ample bandwidth at affordable prices will make possible upgrades and expansions of rural 3G and 4G mobile broadband services that either do not exist today or exist only to a limited extent in the proposed service area. This is a major impact of the proposed project.



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Although direct last-mile connections to business customers is not part of the proposed funded project, VFL's deep reach into the proposed service area to such a large number of CAIs and POIs also means it will be feasible for Sovernet to extend fiber to a [REDACTED] number of business customers. Sovernet estimates it will be able to serve [REDACTED]

[REDACTED] The ability of even the smallest of businesses in rural towns to subscribe to connections at up to gigabit speeds will provide a major incentive to keep and grow businesses in VT, including some of its most economically distressed corners.

Directly to CAIs and through connections provided to last mile service providers, the proposed project will impact a wide swath of rural VT. Using VT's statewide inventory of E9 1 1 locations and data collected through the VT Broadband Mapping Initiative (an NTIA-funded State Broadband Data and Development Program initiative), we estimate there are 14,800 non-seasonal residential locations in the proposed funded service area that lack broadband. Due to the inclusion of town center locations (which tend to be served) and unserved countryside in the same Census Tracts and Block Groups, as well as the current "Swiss cheese" pattern of broadband deployment in VT, many of these unserved locations are located in nominally "served" Tracts or Block Groups. Using publicly available E9-1-1 point data, we estimate there are more than 7,950 businesses located in the proposed service area, including 888 located in underserved service areas. Although the ultimate reach of last mile broadband services off the middle-mile network is not certain, the creation of VFL provides a firm foundation for the pursuit of the VTA's statutory mission to reach 100% broadband and cellular service availability in Vermont.

Vulnerable Populations:

The Vermont Fiber Link (VFL) will come in contact with vulnerable populations within the proposed funded service areas.

Previous essays and information submitted as part of this application have addressed the benefit of the proposed VFL project to children through connectivity to k-12 schools; to unemployed and low income people who increasingly seek services through their local public library. Approximately 13.9 % of the population is age 65 or older. The availability of high-capacity broadband and the internet can be a major asset to this group. It would permit them to have access to telemedicine and other human services programs. It would enable the elderly to make contact with county assistance organizations for help they may need. It would also permit them to stay "socially active" by participating in chat rooms or exchanging emails with friends, family and others with whom they share interests.



**Broadband Infrastructure Application
Submission to NTIA – Broadband Technology Opportunities Program**

Submitted Date: Easygrants ID: 4245	
Funding Opportunity: Broadband Technology Opportunities Program	Applicant Organization: VERMONT TELECOMMUNICATIONS AUTHORITY
Task: Submit Application - BTOP	Applicant Name: Thomas Murray

The Northeast Kingdom region of Vermont is considered an economically distressed area. As such, it has the highest unemployment within the state. VFL would allow affordable pricing for access to broadband. The libraries and other community locations would have accessible broadband for the unemployed to seek employment or to gain access to training for new jobs.

Level of Need:

The proposed Vermont Fiber Link (VFL) project will provide abundant middle mile capacity to areas of the state from north to south, providing a critical new network for the expansion and upgrade of last-mile broadband networks and the interconnection of Community Anchor Institution (CAI) locations with each other and the wider world.

The proposed project includes six service areas that are underserved due to lack of broadband availability and subscription. Even the project's nominally "served" areas have areas contain significant areas without broadband availability (See link provided in Supplemental Information upload). Many of these communities have less than 70% broadband coverage, with many census blocks less than 30%. Regarding cellular coverage, VTA's estimates indicate less than 60% of VT households have access to reliable cellular service and mobile broadband service. This data illustrates the severe challenges VT faces in providing service to these underserved areas, a problem the VFL project will address.

Fiber capacity is significantly constrained in most of the proposed project area by availability or pricing. VT did not benefit appreciably from the expansion of fiber optic networks that occurred elsewhere in the nation between 1997- 2001. Verizon, the state's largest telephone company during that time, focused on more urban states where it invested in Fiber to the Home and Verizon Wireless. [REDACTED] did expand fiber optic capacity to several VT cities during that time; [REDACTED]

[REDACTED] This is the challenge: VT's largest city, Burlington, has a population of only 38,897 and is VT's only city with a population greater than 20,000. Without significant numbers of large businesses or densely populated residential neighborhoods, major providers cannot justify fiber expansions in our rural areas.



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In 2003 ABS declared bankruptcy, which reduced its build out plans; its assets are now owned by Level 3. [REDACTED] In 2008, Verizon sold its landline assets to FairPoint, which has since filed bankruptcy, further impacting the availability of investments in rural areas. FairPoint lost 13% of its access lines across New England in 2009 and is [REDACTED]

[REDACTED]

will build new facilities along that route. While small cities now may have two or three middle mile providers, the networks do not offer services comprehensively in rural communities, focusing on the largest and most easily reached institutions, businesses and tower sites.

A key goal of VFL is to ensure this middle mile network enhances last mile broadband and cellular service expansions. FairPoint has regulatory commitments to serve roughly half of its exchanges with 100% broadband availability; this project will extend in great part into communities not covered by that commitment. Companies like [REDACTED]

[REDACTED]

cost alone, this situation leaves no margin for profit on a service that retails for \$50/month. SFC, through an arrangement with VTA, dramatically improves the economics for such provision of last-mile broadband service in underserved areas by making [REDACTED] transport connections [REDACTED] available to fixed-location broadband providers for up to [REDACTED] new backhaul connections in underserved areas within the PFSA. Even leaving aside the opportunity to offer higher speed services that this service will support, in the example described above, VFL will reduce the last-mile provider's backhaul costs by [REDACTED]



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The lack of cellular service in the areas covered by this project is another driver for a more robust and affordable middle mile network. National cellular carriers have stated that T-1's are no longer adequate to meet their backhaul needs at towers. In order to consider a new tower location these carriers are expecting 100 mbps or better in order to offer their voice and data services. In many areas it will be the cellular carriers with their 3rd and 4th generation services that will provide next generation wireless broadband services to VT consumers, but only if they have adequate middle mile connections. In addition, these carriers continue to [REDACTED]

In the past decade the need for good cellular coverage, now including mobile broadband, has become an increasingly important component of VT's ability to have a strong economy. Tourism is VT's largest private sector industry and economic engine, but visitors have begun to choose to travel to other states with better coverage. In one recent story, doctors from Boston refused to attend a conference in VT due to their inability to obtain good cellular coverage in case they needed to be reached. Even manufacturing companies in VT's rural areas have recently threatened to leave the state, due to their customers' inability to use their cellular service when visiting the manufacturing plants. These manufacturing companies, many within the footprint of this project, are some of the last remaining employers in these areas and the loss of any of these companies would have devastating impacts on VT. The current market in VT significantly inhibits the ability of CAI's throughout the rural areas to obtain needed high-capacity broadband services at reasonable prices. We offer five examples.

1. For institutions like the [REDACTED] in [REDACTED] the lack of affordable 100 mbps+ access threatens their ability to survive in their respective markets. [REDACTED]

bandwidth provisioning; there are [REDACTED] conjunction with unaffordable and unsustainable costs cause [REDACTED] guarantee [REDACTED] In contrast, [REDACTED] with access to multiple competitive



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middle mile providers, [REDACTED]

[REDACTED] with their

current connectivity options.

2. The dearth of middle mile networks also has a dramatic impact on K-12 schools in this region. Declining enrollment and increasing costs have forced schools to cut curriculum, reduce the number of teachers and consolidate services. Advanced placement classes, foreign languages and science/engineering classes have fallen victim to budget pressures at a time when these types of classes are critical to building the workforce of the 21st century. Attempts to solve the problem through distance learning, online curriculum and shared teachers and services are thwarted by the lack of bandwidth. The [REDACTED] Supervisory Union [REDACTED] has been working to procure increased bandwidth to meet student and operational needs, but has been “limited because the rural locations of our schools limit the telecommunication services that are available to us.” The [REDACTED] letter of support cites the inability of providers to make investments in the communities within its territory.

3. The VT State College system, which includes [REDACTED] community colleges in the proposed funded area, stated that it currently pays 20 times more than the proposed VFL project’s projected cost for services and is delivered 20 times less than the VFL’s projected bandwidth. The State College system’s current pricing and bandwidth was [REDACTED]

4. The New England Telehealth Consortium (NETC) was created to provide an affordable, high-bandwidth network to its Maine, New Hampshire and VT members to help them address the challenges inherent in rural health care access. It wrote, “Vermont can achieve efficiencies and improve health care only with” access to affordable, robust broadband; “technology that is beyond the reach of our less-well-funded institutions.” In testament to the urgent need to solve this problem, NETC was awarded funding through the FCC’s Rural Health Care Pilot program to procure a network.

5. Facing similar funding pressures as the school systems, state government must have high-capacity connectivity to deliver services more efficiently. Within this projects proposed area, the VTA’s network will connect state [REDACTED]

[REDACTED] agencies, such as Human Services, are transitioning to a kiosk model where constituents can use terminals placed at libraries and other public places to access services and even video conference for assistance. Absent high speed connections these cost saving options will not be available.



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The many other letters of support tell a similar story.

VTa has sought out proposals from existing providers to address these needs prior to seeking BTOP funding. In December 2009, the VTA issued a Request for Proposals seeking providers to offer services and reasonable rates to address these challenges. All proposals except Sovernet's were unresponsive, unaffordable and did not address the needs of the state. The rates proposed on average would have increased monthly service charges for CAIs five-fold (from \$[REDACTED] month to over \$[REDACTED]).

VT needs the kind of abundant bandwidth that reaches deep into rural communities that this project offers. By offering CAIs and last mile providers the ability to have fiber-based data transport service at up to gigabit rates at rates that are affordable for small institutions and rural backhaul, VFL will remove barriers to applications of this bandwidth in VT communities today and in the future.

H. Technology

Technology Type

Indicate the technology that will be used to deliver last mile services. The following items were selected:

Wireline - Fiber-optic Cable

Other:

Technology Questions

Methodology for Area Status:

The proposed project contains six underserved service areas and nine served service areas. All six underserved service areas qualify as "underserved" due to less than 50% of households having access to facilities-based terrestrial broadband service greater than the minimum speed of 768 kbps down/200 kbps up ("availability"). In addition, all six underserved service areas qualify on the basis of having less than an estimated 40% of households that subscribe to terrestrial broadband service ("adoption").

Availability was calculated from state broadband mapping data collected by the VT Dept. of Public Service (PSD), participating with the VT Center for Geographic Information as part of the



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VT Broadband Mapping Initiative, an NTIA-funded initiative through its State Broadband Data and Development Program (SBDDP). Availability information was collected from broadband service providers and other publicly-available sources for the availability of broadband services in the state, and was critically analyzed against definitions of “broadband” service and other requirements contained in the Round 2 BTOP and BIP NoFAs, as well as the NoFA released by NTIA for the SBDDP. These data were aggregated across broadband service providers at the census block level of granularity through Vermont’s official Recovery office website and provided to potential BTOP and BIP applicants. The data were intended to represent broadband availability as of June 30, 2009, or later. Residential availability of broadband was calculated for each census block using the location within the blocks of address points published by the VT E911 Board. Nonseasonal residential addresses were used to represent households.

“Underserved” service areas were identified as sets of contiguous census block groups within the proposed funded service area containing, in the aggregate, less than 50% availability of broadband service according to the state broadband mapping data. (See the map entitled Household Broadband Availability by Census Block and related notes at recovery.vermont.gov/broadband).

In addition, the results of a telephone survey conducted by the PSD in November and December 2009 strongly suggest that all six areas would also qualify as “underserved” due to subscribership levels. The statewide survey included questions about the availability and subscribership of broadband service at home. A key finding of the survey was that 72% of those residential respondents who believed that they had access to broadband service subscribed to broadband service at home. There is little reason to believe that the rate of subscribership is higher in those parts of the state with lower rates of availability than are generally available throughout the state. If not more than 72% of those who have broadband available in the identified “underserved” service areas subscribe to it, then a rate of availability of 50% or less will also produce an overall adoption rate of less than 40% as well.

Description of Network Openness:

The network will be owned by sub-recipient Sovernet Fiber Corp (SFC), and managed by affiliate Sovernet, Inc. With regard to Internet access service, SFC will adopt an Acceptable Use Policy, Privacy Policy and Terms of Service similar to those of Sovernet:

https://corp.sover.net/site/index.php?option=com_content&task=view&id=166&Itemid=227

SFC commits to (i) adhere to the principles contained in the FCC’s Internet Policy Statement (FCC 05-151, adopted August 5, 2005) or any subsequent ruling or statement; (ii) not favor any



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lawful Internet applications and content over others; (iii) display any network management policies in a prominent location on the service provider's web page and provide notice to customers of changes to these policies; (iv) connect to the public Internet directly; and (v) offer interconnection, where technically feasible without exceeding current or reasonably anticipated capacity limitations, at reasonable rates and terms to be negotiated with requesting parties. Sovernet's current network management practices include standard best efforts Internet delivery. Sovernet acts on complaints from content providers regarding illegal downloads, and from other ISPs about spam and possible denial of service attacks that involved Sovernet email customers. Sovernet's standard terms of use prohibit use of its Internet service for illegal purposes, but access to Web sites is not blocked or filtered. Sovernet does not manage or limit the content of the communications traffic transiting its network, except to the extent necessary to maintain reliable service, to comply with all applicable laws governing such traffic, and to comply with law enforcement requests.

In addition to Internet access service, SFC will offer carrier point-to-point and point-to-multipoint data transport services, not including the sales or lease of dark fiber transport, to bona fide requesting parties on negotiated, commercially reasonable terms and conditions. SFC will offer interconnection to other broadband service providers at the points identified as such in the Points of Interest worksheet. Interconnecting providers are responsible for the security, operation and maintenance of their equipment. Where POI's are located in another carrier's facilities, SFC's customer must arrange and pay for their own co-location space with that carrier and meet that carrier's legal and technical requirements.

SFC will participate in the planned Vermont Traffic Exchange, which will establish an open Internet peering point within the project area.

SFC's network management practices will not involve preferential routing of traffic on the basis of content or provider.

System Design:

The proposed Vermont Fiber Link (VFL) expansion will be a redundant Dense Wave-Division Multiplex (DWDM)/SONET infrastructure built on a backbone of [REDACTED] new miles of fiber and [REDACTED] existing miles of Fiber in VT with network extensions into New Hampshire and Massachusetts. The core DWDM system will have capabilities up to 400 Gbps of simultaneous data transmission, with [REDACTED] as required.

The completed VFL network will consist of 18 points of presence (POPs), many in rural areas, including access to 4 Internet POPs around the state. This network also opens access to all



in Vermont and allows users in these rural areas to have access to the existing Sovernet network, including an additional POP's, Data Centers, Carrier Hotels, the proposed Vermont Traffic Exchange and Sovernet's subsidiary, ION, a statewide fiber network in NY State.

Key Network Elements: The key network elements to ensure high scalability within the system design are

Sovernet's current network is comprised of an [REDACTED] vendors [REDACTED] upgraded to enable cost effective scalability. [REDACTED]

The following standards-based technologies will be used in the network:

- DWDM: The proposed DWDM equipment will be standards-based and proven interoperable



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- [REDACTED]
- [REDACTED] which has demonstrated to be a highly reliable and redundant platform. [REDACTED] will provide [REDACTED] supporting services ranging from [REDACTED]

Existing network connectivity will be expanded by the construction of [REDACTED] miles of additional fiber in order to serve underserved areas. The builds provide additional connectivity to the targeted community anchor institutions that will be the customers of the network. Fiber has been chosen for these builds since it will provide the same service capability to all of the end users of the network. [REDACTED]

Is the applicant seeking a waiver pursuant to section IX.C of the NOFA so as to sell or lease portions of the award-funded broadband facilities during their life?

No



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I. Project Budget

Project Budget		
	Federal Grant Request	Match
Last Mile	0	0
Middle Mile	33,393,402	14,837,583
Total	33,393,402	14,837,583

Project Budget Total: \$48,230,985

Match Percent: 30.8%

Projects Outside Recommended Funding Range:

- Not applicable. Project budget is inside range recommended in NOFA.

Outside Leverage	
Applicant is providing matching funds of at least 20% towards the total eligible project costs?	Yes
Matching cost detail	<p>Total spending for this project is \$48,230,985.</p> <p>Vermont Telecommunications Authority will make a grant match \$308,102, or 0.64% of spending, of which \$25,000 will be used for Administration (application development engineering costs), \$100,000 will be used for network construction, and \$183,102 will be used for grant administration and application development costs. Please see Budget Narrative Template, Items 1 Administration and 9 Construction.</p> <p>The Bill and Melinda Gates Foundation will make a grant match of \$399,900, or 0.83% of total spending, which will be used for construction spending to connect libraries to the network. Please see Budget Narrative Template, Item 9, Construction.</p> <p>The State of Vermont Department of Information and Innovation will make an in-kind match of \$58,125 which represents the cost of staff</p>



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	<p>support in the preparation of this application. Please see Budget Narrative Template Item 1 Administration.</p> <p>Sovernet will make a grant match of \$14,071,456, or 29.18% of total spending, of which \$377,270 will be used for grant administration and \$13,694,186 will be used for building out the network. Please see Budget Narrative Template for details.</p> <p>Applicant is requesting BTOP funding of \$33,393,402 which will be used for building out the network, grant administration and application development costs.</p> <p>No contributor of an in-kind match (ie the Vermont DII) will receive any free or discounted access to the network.</p>
Unjust enrichment	<p>No, neither the Vermont Telecommunications Authority, nor sub-recipient Sovernet Fiber Corp. is receiving or has applied for federal support in the same proposed funded service area as the Vermont Fiber Link project.</p>
Disclosure of federal and/or state funding sources	<p>Direct Project Funding:</p> <p>The Vermont Telecommunications Authority has committed to provide up to \$2 million in grant funds to the project subject to a capital funding appropriation to the VTA by the Vermont General Assembly. As of the date of this application, a bill that would appropriate at least this amount is pending in the House of that body. This grant has not been included in our Proforma because it is still subject to the yearly capital appropriations process, which is typically complete by April or May of each year.</p> <p>The VTA, which is a corporation created by the State of Vermont, has granted Sovernet \$25,000 for development engineering costs related to the BTOP application. The VTA has also granted Sovernet the sum of \$100,000 from the VTA's fiscal year 2010 or 2011 capital appropriation in support of the Vermont Fiber Link project</p> <p>Indirect Project Funding through Purchase of Services:</p> <p>Sovernet is not a recipient of federal or state Universal Service Funds,</p> <div style="background-color: black; height: 100px; width: 100%;"></div>



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	<div></div> <p>K-12 schools and public libraries are among the CAI's that Vermont Fiber Link will serve. Most of these institutions are eligible to receive FUSF "e-rate" support to reimburse a portion of expenses they incur to purchase broadband service from Sovernet. The revenue projections provided in support of this application reflect service revenue from schools and libraries that receive e-rate support.</p> <div></div>
Budget reasonableness	<p>Network Access Equipment <div></div></p> <p><div></div> Sovernet has designed a network capable of providing the necessary services in our rural service areas at a reasonable cost. Sovernet has significant experience purchasing network equipment and working with leading vendors. Our estimate is based on a design created with our consulting engineer and vendor quotes. <div></div></p> <p>be used <div></div></p> <div></div>



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	<p>technologies are used to deploy services to end users to maximize cost efficiencies.</p> <p>[REDACTED]</p>
	<p>OSP [REDACTED] Our average cost/mile of \$ [REDACTED] reflects routes</p> <p>[REDACTED]</p>
	<p>Buildings & Land \$ [REDACTED]</p> <p>[REDACTED]</p>
	<p>Billing and Operational Support System \$ [REDACTED]</p> <p>[REDACTED]</p>
	<p>Operating equipment \$ [REDACTED] -Estimated cost of [REDACTED] bucket trucks.</p>
	<p>Engineering/Professional Services \$ [REDACTED] in professional engineering services for OSP Engineering Design, and Project and Construction Mgmt, staking, permitting, ROW, make-ready, inspection, environmental assessment and application</p>



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	<p>development expenses. Also includes [REDACTED] installation, test and turn up (\$ [REDACTED])</p> <p>[REDACTED]</p> <p>managing projects. Grant administration budget for VTA and Sovernet of \$ [REDACTED]</p> <p>Testing \$ [REDACTED]</p>
Demonstration of need	<p>As noted on the NPV/IRR Table, this project has the following NPV's at a discount rate of 15% with and without BTOP funding: Without BTOP Funding [REDACTED] With BTOP Funding [REDACTED] Difference [REDACTED]</p> <p>Applicant is requesting funding of \$33,393,402. This funding level is [REDACTED]</p> <p>Vermont is a rural state and the economics of providing broadband in a rural area makes project justification difficult. The BTOP funding requested in this application makes those economics much more reasonable and will allow the applicant to move ahead and provide needed broadband service to schools, libraries, [REDACTED] and other anchor institutions in the service area.</p> <p>The applicant is aware of no source of funding, other than BTOP that would make this project financially feasible. Without grant funding for a substantial proportion of the project cost, the project would [REDACTED] were it to rely on project debt financing that are the norm for this type of infrastructure project.</p> <p>The Internal Rate of Return for this project, with BTOP funding, is [REDACTED]</p> <p>In calculating revenues, expenses and cash flow for Vermont Fiber Link, [REDACTED]</p> <p>[REDACTED]</p>



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Funds to States/Territories

States	Amount of Federal Grant Request
Vermont	
New Hampshire	

Funds to States/Territories Total: \$33,393,402

J. Historical Financials

Matching Funds			
	2007	2008	2009
Revenue	0	713,254	1,172,300
Expenditures	0	521,912	1,188,816
Net Assets	0	195,398	189,952
Change in Net Assets from Prior Year	0	195,398	-5,446
Bond Rating (if applicable)	n/a	n/a	n/a



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K. Project Readiness

BTOP Organizational Readiness

The VTA was created in 2007 specifically to enter into public/private partnerships with providers like Sovernet Fiber Corp (SFC). The VTA's staff is comprised of seasoned telecom industry professionals, regulatory experts and engineering construction experts. Its CFO has managed billion dollar budgets in both the public and private sector. The VTA's Executive Director has managed telephone, long distance and wireless companies, as well as his strong background in state government. The VTA's staff resources include data communications experts and construction project managers, with over 70 years of combined experience. SFC will be the sole sub-recipient of the grant to the VTA. Sovernet, Inc. ("Sovernet"), parent of SFC, [REDACTED] SFC will own the funded network, and Sovernet will maintain and manage it. More broadly, SFC is one of several key partners with a mutual interest in the prosperity and sustainability of this project. [REDACTED]



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Construction and Vendor Contracts

Through a competitive RFP process, the VTA and its CAI consortia partners selected Sovernet as its partner to build, own and operate the Vermont Fiber Link network. The VTA and Sovernet have entered a high-level MOU that memorializes key conditions, project funding, and Sovernet's role as sub-recipient of the BTOP grant.

resources to do so. All contracts will be awarded on the basis of price, demonstrated quality of work and successful prior project completion, and ability to complete the projects in the time milestones established in the NOFA, using procedures that comply with applicable federal and state regulations, including the Uniform Administrative Requirements for Grants and Agreements.

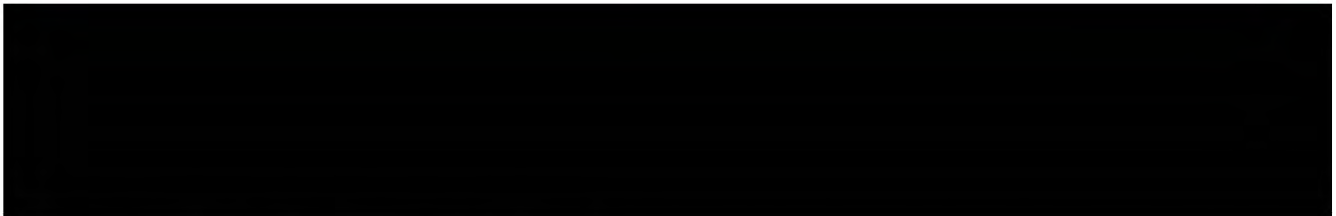
Customer Base

The applicant, VTA, has no customers. Sub-recipient, Sovernet Fiber Corp. (SFC), is



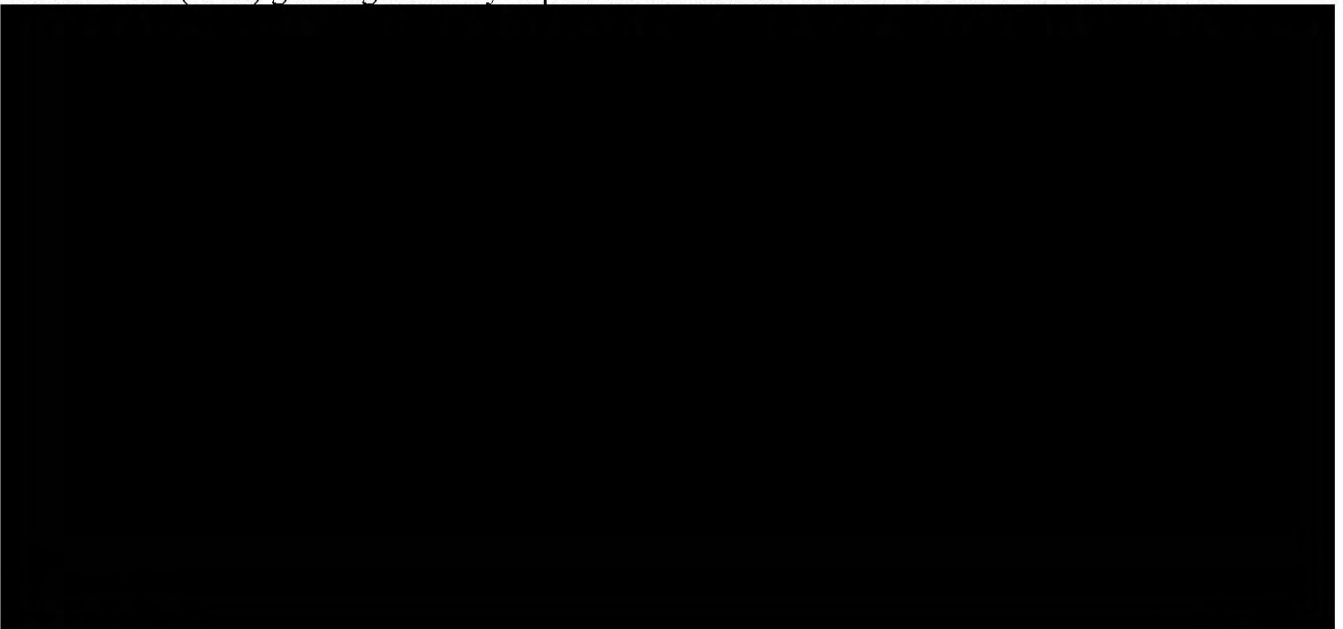
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Licenses, Regulatory Approvals and Agreements

Sovernet Fiber Corp. (SFC) will apply to the VT Public Service Board (PSB) for a Certificate of Public Good (CPG) granting authority to provide telecom services in the State of Vermont. The



SPIN Number



L. Environmental Questionnaire

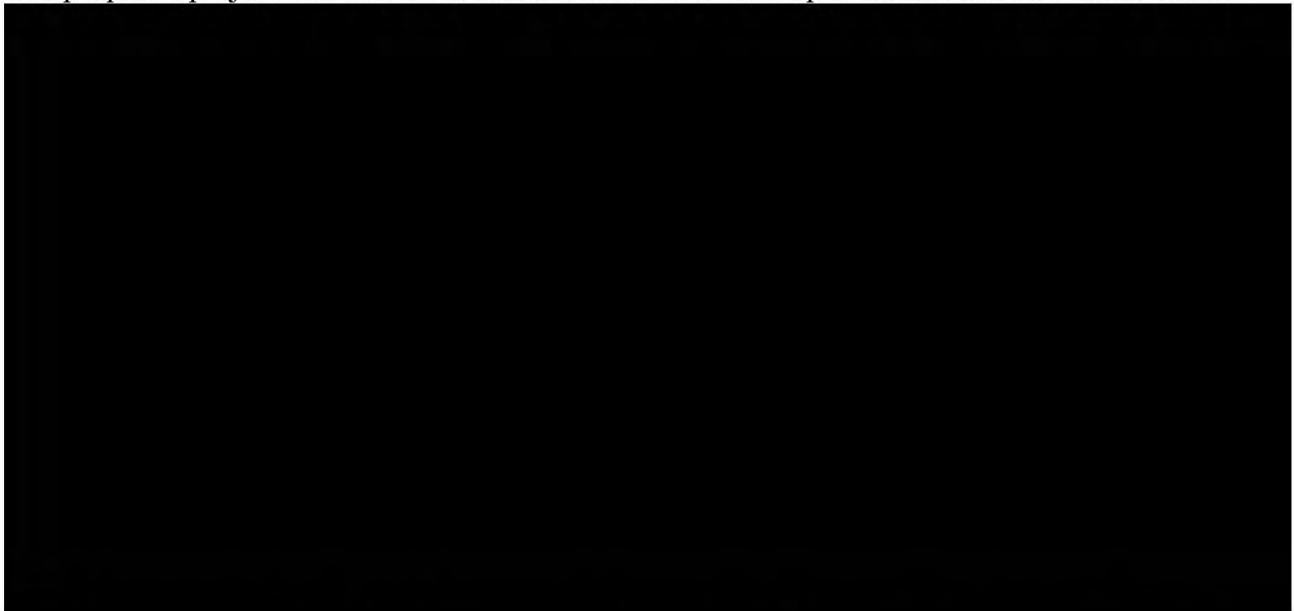


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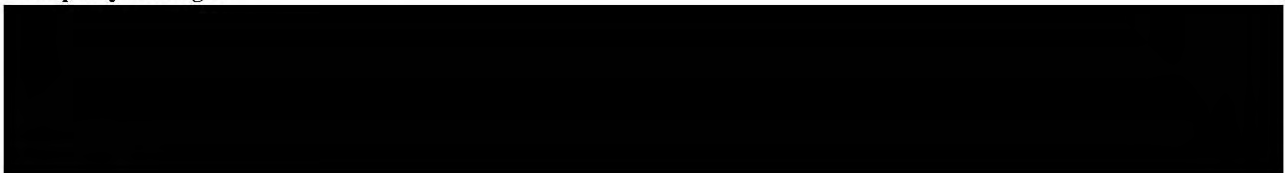
Project Description

The proposed project will consist of installation of new fiber optic cables. The new cable routes



See the environmental map for the proposed cable routes and environmental locations in the supplemental information upload for this application.

Property Changes



Buildings



Wetlands



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the proposed construction corridor. We will use all approved NTIA procedures, follow all state and local practices for permitting and construction when in or near these wetland areas. The VTA and its partners will obtain the appropriate permits from the Army Corps of Engineers, the State Department of Environmental Conservation, and State Storm Water Pollution Prevention Plan prior to beginning construction.

Critical Habitats

The VTA and its partners will obtain from the US Fish and Wildlife Service a list by County of Threatened or Endangered Species that may be present within the proposed construction routes. The VTA and its partners will contact the USFWS and the Vermont Agency of Natural Resources prior to starting construction to obtain the appropriate permits if endangered species are found to be impacted by the proposed construction.

Floodplain

There will be new aerial and buried fiber optic cable placed within the flood plains, as there are rivers, creeks and fresh water emergent wetlands that will need to be crossed as part of the project. The VTA and its partners will obtain the appropriate permits from the Army Corps of Engineers, the Vermont Department of Environmental Conservation, and State Storm Water Pollution Prevention Plan prior to beginning construction.

Protected Land

To the best knowledge of VTA and its partners, there are no tribal lands located within the project area, based on review of the proposed fiber routes and the locations of tribal lands.

The VTA and its partners will contact an archaeologist to perform the required file search and survey (if required) of the proposed cable routes for the project and provide a completed archeological report for the proposed cable routes in the grant application.

A SHPO Map for proposed cable routes and SHPO sites can be found in the supplemental upload for this application.

Coastal Area



Broadband Infrastructure Application
Submission to NTIA – Broadband Technology Opportunities Program

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Coastal areas are not located within the proposed project as identified on the Coastal Management website.

Brownfield

This project does not have new facilities that will be located within Brownfield sites as identified on the EPA website.



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Uploads

The following pages contain the following uploads provided by the applicant:

Upload Name	File Name	Uploaded By	Uploaded Date
Service Offerings and Competitor Data	Service Offerings and Competitor Data.xls	Murray, Thomas	03/26/2010
Network Diagram	Network Diagram.pdf	Murray, Thomas	03/26/2010
Build Out Timeline	Build Out Timeline.doc	Murray, Thomas	03/26/2010
List of Community Anchors and Points of Interest	CAI POI.xls	Murray, Thomas	03/26/2010
Management Team Resumes and Organization Chart	VTA and Sovernet Org Chart and Resumes.pdf	Murray, Thomas	03/25/2010
Government and Key Partnerships	Government and Key Partnerships.pdf	Murray, Thomas	03/26/2010
Historical Financial Statements	VTA and Sovernet Historical Financials.pdf	Murray, Thomas	03/26/2010
Budget Narrative	Budget Narrative.docx	Murray, Thomas	03/26/2010
Detailed Budget	Detailed Project	Murray, Thomas	03/26/2010



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	Budget.xlsx		
Pro-forma Forecast		Murray, Thomas	03/26/2010
Subscriber Estimates	Subscriber Estimates.xlsx	Murray, Thomas	03/26/2010
Dashboard Metrics	Dashboard Metrics.doc	Murray, Thomas	03/26/2010
Service Area Data	Service Area Data.xls	Murray, Thomas	03/26/2010
Network Maps	Network Map.pdf	Murray, Thomas	03/26/2010
BTOP Certifications	BTOP Certifications - Signed.pdf	Murray, Thomas	03/22/2010
SF-424 C and D	SF 424 C and D.pdf	Murray, Thomas	03/26/2010
Supplemental Information	Supplemental Information.pdf	Murray, Thomas	03/26/2010