

Application for Federal Assistance SF-424

Version 02

* 1. Type of Submission:

- Preapplication
 Application
 Changed/Corrected Application

* 2. Type of Application:

- New
 Continuation
 Revision

* If Revision, select appropriate letter(s):

* Other (Specify)

* 3. Date Received:

08/14/2009

4. Applicant Identifier:

5a. Federal Entity Identifier:

* 5b. Federal Award Identifier:

State Use Only:

6. Date Received by State:

7. State Application Identifier:

8. APPLICANT INFORMATION:

* a. Legal Name: Vermont Center for Geographic Information, Inc.

* b. Employer/Taxpayer Identification Number (EIN/TIN):

03-0333962

* c. Organizational DUNS:

859479560

d. Address:

* Street1: 58 South Main Street, Suite 2

Street2:

* City: Waterbury

County:

Washington

* State:

VT: Vermont

Province:

* Country:

USA: UNITED STATES

* Zip / Postal Code: 05676

e. Organizational Unit:

Department Name:

Division Name:

f. Name and contact information of person to be contacted on matters involving this application:

Prefix:

Mr.

* First Name:

David

Middle Name:

F.

* Last Name:

Brotzman

Suffix:

Title: Executive Director

Organizational Affiliation:

* Telephone Number: 802-882-3003

Fax Number: 802-882-3001

* Email: davidb@vcgi.org

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9. Type of Applicant 1: Select Applicant Type:

X: Other (specify)

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

State of VT non-profit 501(c)4

*** 10. Name of Federal Agency:**

Department of Commerce

11. Catalog of Federal Domestic Assistance Number:

CFDA Title:

*** 12. Funding Opportunity Number:**

0660-ZA29

* Title:

Recovery Act - State Broadband Data and Development Grant Program

13. Competition Identification Number:

Title:

14. Areas Affected by Project (Cities, Counties, States, etc.):

Vermont Statewide

*** 15. Descriptive Title of Applicant's Project:**

Vermont's Broadband Mapping Initiative

Attach supporting documents as specified in agency instructions.

Add Attachments

Delete Attachments

View Attachments

Application for Federal Assistance SF-424

Version 02

16. Congressional Districts Of:

* a. Applicant

1

* b. Program/Project

1

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachment

Delete Attachment

View Attachment

17. Proposed Project:

* a. Start Date:

09/15/2009

* b. End Date:

08/31/2014

18. Estimated Funding (\$):

* a. Federal	1,957,754.00
* b. Applicant	400,000.00
* c. State	0.00
* d. Local	0.00
* e. Other	0.00
* f. Program Income	0.00
* g. TOTAL	2,357,754.00

* 19. Is Application Subject to Review By State Under Executive Order 12372 Process?

 a. This application was made available to the State under the Executive Order 12372 Process for review on

 b. Program is subject to E.O. 12372 but has not been selected by the State for review.

 c. Program is not covered by E.O. 12372.

* 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes", provide explanation.)

 Yes

 No

Explanation

21. *By signing this application, I certify (1) to the statements contained in the list of certifications** and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)

 ** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix:

Mr.

* First Name:

David

Middle Name:

F.

* Last Name:

Brotzman

Suffix:

* Title:

Executive Director

* Telephone Number:

802-882-3003

Fax Number:

802-882-3001

* Email:

davidb@vcgi.org

* Signature of Authorized Representative:

Linda Ladd

* Date Signed:

08/14/2009

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*** Applicant Federal Debt Delinquency Explanation**

The following field should contain an explanation if the Applicant organization is delinquent on any Federal Debt. Maximum number of characters that can be entered is 4,000. Try and avoid extra spaces and carriage returns to maximize the availability of space.

Vermont's Broadband Mapping Initiative

A Project Proposal for the National Telecommunications and Information Administration State Broadband Data and Development Grant Program

**CFDA # 11.558
Opportunity #0660-ZA29**

Prepared By: The Vermont Broadband Mapping Team

Vermont Center for Geographic Information (Prime Contractor)
Vermont Department of Public Service
Vermont Telecommunications Authority
Center for Rural Studies – University of Vermont
Vermont Enhanced 9-1-1 Board

Date of Publication: 8/13/2009

Version: Final

August 12, 2009

Mr. Larry Strickling, Administrator
National Telecommunications and Information Administration
1401 Constitution Ave., N.W.
Washington, DC 20230

RE: NTIA State Broadband Data and Development Grant Program

Mr. Strickling,

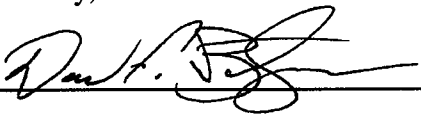
Beginning in January 2007, Vermont's Governor Jim Douglas identified broadband and wireless telecommunications access as a priority for the state. In his 2007 Budget Address the Governor proposed that Vermont should become the nation's first "e-state" – "the first state to offer universal access to broadband and wireless technology everywhere within its borders". Vermont's Broadband Mapping Initiative will build upon the broadband mapping efforts attempted to date in Vermont in support of the Governor's call to action.

Vermont has created a Mapping Team of professional organizations that is fully able to provide the requested broadband mapping data and meet the aggressive delivery milestones required in the State Broadband Data and Development Grant Program. We are confident our proposed Broadband Mapping Initiative will provide broadband coverage data that is verified and meets the long term planning needs of our state in establishing broadband telecommunications infrastructure to unserved and underserved areas of our state.

If our grant application is successful Vermont will be able to create comprehensive and verified broadband mapping coverage data that will enable the state to deploy telecommunications infrastructure wisely and efficiently in order to provide statewide access to collaborating medical, educational and government applications in facilitation of better public services.

Thank you for this opportunity to apply for grant funding under the State Broadband Data and Development Grant Program. If there is any additional information or supporting data you require please feel free to contact me at any time.

Sincerely,



David F. Brotzman
Executive Director
Vermont Center for Geographic Information

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Executive Summary

In response to NTIA's State Broadband Data and Development Grant Program Notice of Funds availability Vermont is proposing the following Broadband Mapping Initiative. The Vermont Broadband Mapping Team will initiate the development of a **comprehensive and verified** geographic inventory of broadband service availability in the State of Vermont. Landline and wireless services (fixed and mobile) will be mapped, including wireless voice and data with information from the providers and other sources. The broadband mapping information collected and verified through this proposed effort will then support the broadband development objectives identified in the RUS Broadband Initiatives Program (BIP) and NTIA's Broadband Technology Opportunities Program (BTOP) in Vermont. Most importantly, the geographic inventory will further refine our understanding of the location of "unserved" and "underserved" areas, supporting targeted investments in these areas.

The State's broadband inventory will comply with all identified NTIA and Federal standards in support of a consistent National geographic picture of broadband coverage. The inventory will be accessible to the public, while retaining the proprietary rights of the private sector providers.

To accomplish these critically important goals we are proposing that the Vermont Department of Public Service, the Vermont Telecommunications Authority, the Center for Rural Studies at the University of Vermont, Vermont's Enhanced 9-1-1 Board and the Vermont Center for Geographic Information come together as partners to create a Vermont Broadband Mapping Team. The Mapping Team members will combine their subject area expertise to create a thorough and defensible geospatial representation of the state's broadband resources. The primary members of the Vermont Broadband Mapping Team were selected to provide the following expertise;

- Vermont Center for Geographic Information (VCGI) will provide geospatial data collection, aggregation, web mapping expertise and act as Prime Contractor for the grant,
- Vermont Department of Public Service (DPS) will provide telecommunications, regulatory and data verification expertise,
- Vermont Telecommunications Authority (VTA) will provide knowledge of current and future telecommunications infrastructure in the state,
- Center for Rural Studies at the University of Vermont (CRS) will provide verification of provider coverage data by survey and an understanding of telecommunications needs in a rural context.
- Vermont's Enhanced 9-1-1 Board (E911) is the provider of the statewide E911 address information that will be the foundation for the Mapping Team's address level mapping.

VCGI will be the prime contractor for the initiative with other Mapping Team partners acting as Tier 1 contractors to VCGI. The data collection, verification and mapping will be a true partnership, as each organization plays a singular and critical role in consistently providing a quality product, on time, and for the full duration of the project.

The Vermont Broadband Mapping Team is composed of geospatial and telecommunications professionals with organizational missions intended to serve the public good. The Mapping Team is

also composed of organizations that have worked together on various mapping related projects for many years. This previous experience will help the Team respond quickly to the demanding delivery timeline of the project.

Unserved and Underserved

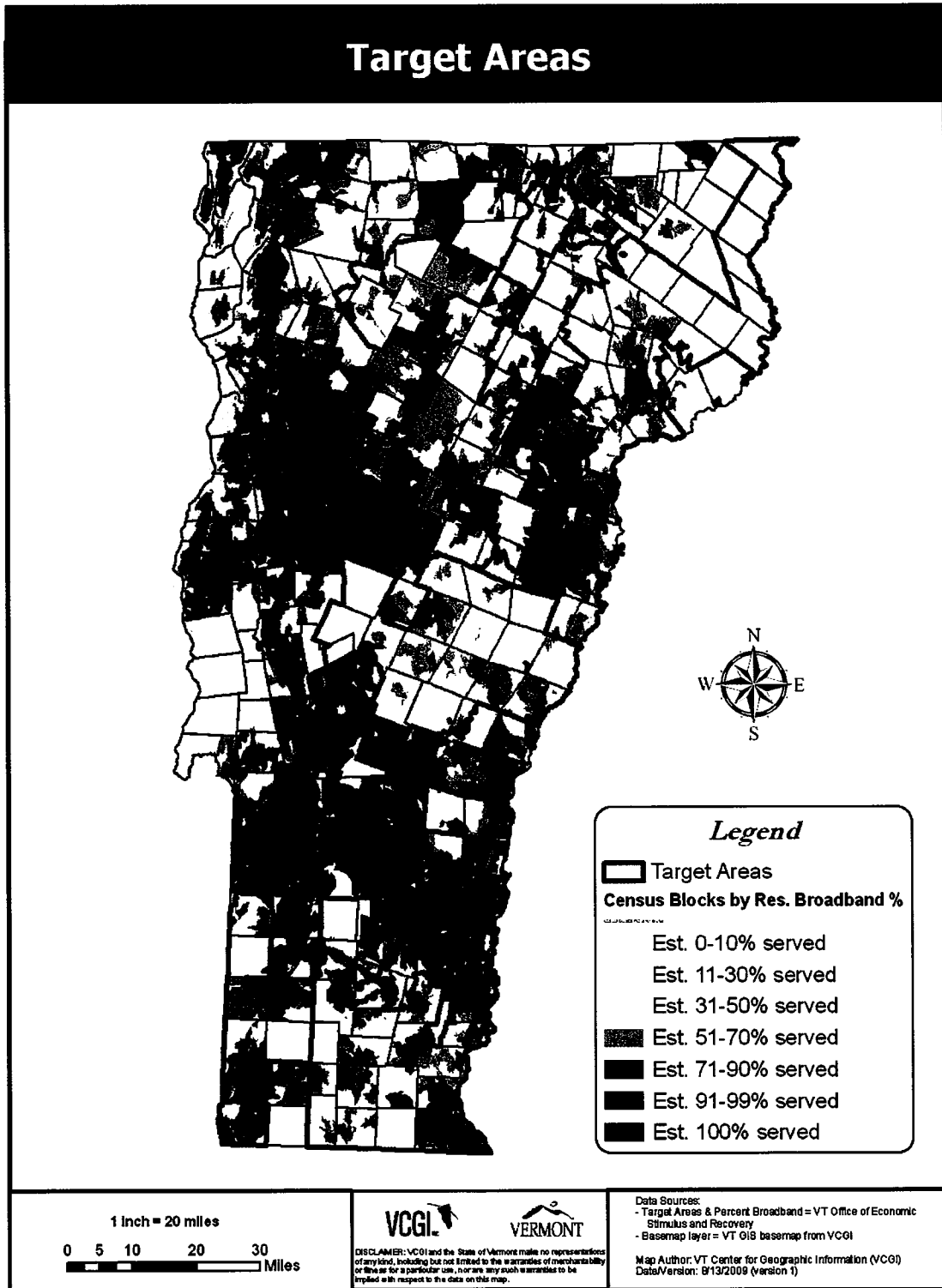
Broadband availability information was collected by the Vermont Department of Public Service (DPS) and Vermont Telecommunications Authority (VTA) from broadband service providers as part of ongoing cooperative efforts to map the availability of broadband services as of the beginning of 2008. The data has subsequently been reviewed and updated by the Vermont Office of Economic Stimulus and Recovery (VoESR) with updates provided to the State through January 2009. The data was re-analyzed to make it conform to the definitions of “broadband” and requirements of the NoFAs released by NTIA and RUS for BIP and BTOP as well as the NoFA for the State Broadband Data and Development Grant Program (SDDGP).

Known expansions of broadband service have been added to the map, whenever such information was provided in a way that could be mapped at a granular level, such as addressable locations or road segments. Coverage by service providers that did not appear to advertise (such as on a company website) data transfer rates consistent with the NoFAs’ definition of “broadband” were eliminated.

The Technical Appendix for SDDGP includes requirements for state broadband data programs regarding the accuracy of collected data that will apply to programs receiving support. Available data that did not appear to closely approximate this standard was eliminated. Where such data was not available, but it was possible to systematically produce a conservative estimate of service availability (such as areas in the immediate vicinity of telephone central offices in which DSL service is provisioned), such an estimate was substituted. Residential availability of broadband services by census block has been calculated based on the location of non-seasonal residential E911 addresses, using a statewide dataset of E911 addresses maintained by the Vermont Enhanced 9-1-1 Board. Please see the included map of broadband availability by census blocks.

The following statement has been provided by VoESR regarding state priorities for the allocation of grant funds within the state for projects within the state or affecting the state:

“The highest priorities of the State of Vermont, through VoESR, for Broadband Infrastructure grant funds are projects which deploy broadband service within areas of the state with low availability (approximated by the census blocks with less than 50% broadband availability, as represented on the included maps), and have geographically coordinated proposed service areas through VoESR. Within these areas, the State gives priority to projects that provide coverage within the targeted regions of the state (and may include improving service in other neighboring areas). Please see the map below for these areas. To the extent possible, while achieving the objective of coverage in all parts of the targeted areas without broadband service, VoESR supports funding of at least one project in the state which can offer at least 50 Mbps to end users. “Regarding middle mile projects, the priorities of the State are projects which are intended to serve the needs of multiple classes of users (education, health care, government, cellular and broadband service providers) and which support connections among community anchor institutions around the state, either directly or through interconnection with networks serving other regions or community anchor institutions.”



I. Data

a) Data Gathering

Vermont's Broadband Mapping Initiative is focused on the development and maintenance of an accurate broadband inventory map of Vermont. The goal is to gather, maintain, and disseminate a robust broadband dataset in support of the NTIA's State Broadband Data Program. This initiative will establish innovative partnerships with state-level agencies, local authorities, broadband providers, and others who can assist with the development, verification, and maintenance of a statewide broadband inventory.

Roles and Responsibilities: The Vermont Center for Geographic Information (VCGI) will be lead and prime contractor for the broadband mapping effort. The master broadband inventory database will be housed on VCGI's geospatial data server¹. VCGI will leverage the skills and expertise of the Broadband Mapping Team (Team), including VCGI's own geospatial data management expertise. The Mapping Team will also reach out to representatives from the public, private, and non-profit sectors. The Mapping Team will leverage the ideas, capabilities, and resources of each Team member in order to ensure Vermont's Broadband Mapping Initiative is successful and sustainable.

The Department of Public Service (DPS), will request and collect network infrastructure data directly from providers. The Department is well positioned as an essential partner in the collection of broadband mapping data in Vermont through its longstanding relationships with providers and its history of collecting broadband service availability data from traditional telephone companies, Commercial Mobile Radio Service (CMRS) providers, and cable operators. These providers also submit to DPS annual reports, which include the number of lines, subscribers, service capabilities and service area.

A DPS Telecommunications and GIS Specialist will act as liaison with VCGI on the technical aspects of broadband, telephony, and wireless infrastructure deployments and mapping. The Telecommunications and GIS Specialist's primary responsibility is to obtain broadband availability datasets from providers. The Specialist will develop and maintain a close working relationship with all providers and be in regular contact with all providers. As an experienced telecom professional, the Telecommunications and GIS Specialist will use accumulated technical expertise to assess the quality of the data received from providers. The Telecommunications and GIS Specialist will forward information submitted by providers to VCGI for integration into the master broadband database housed at VCGI. DPS will also be given "direct-connect" access to the broadband database, allowing their Telecommunications and GIS Specialist to evaluate and verify the data.

The Department also obtains (under confidentiality) FCC form 477 data. While the Department is currently unable to release this information to other entities, it will continue to work with providers to obtain all information required by this application. The FCC information, published twice yearly, includes data specific to broadband service capabilities such as total broadband connections to end users, broken out to specify residential end users; advertised transfer rates described by upload vs.

¹ The master broadband data will be stored on VCGI's ArcSDE server.

download speeds, and services that are provided over the local loop vs. the wireless last-mile equivalent. Cable companies submit plant maps to the state, and DSL providers have cooperated in delivering information regarding plant locations, specifications and capabilities. Finally, fixed and mobile wireless providers also submit mapping information to the State.

The Mapping Team anticipates good cooperation from broadband providers in Vermont. The NTIA's BTOP and USDA's BIP programs require that infrastructure grant recipients "must agree to participate in the State Broadband Data and Development Program"*². As a result, any broadband providers receiving infrastructure funds from BTOP or BIP will be required to cooperation with the Mapping Team. When necessary this requirement will be leverage to ensure adequate cooperation.

Objectives:

1. Support the objectives outlined in the Broadband Data Improvement Act (BDIA), Pub. L. No. 110-385 2008.
2. Support the objectives and priorities identified in the NTIA's State Broadband Data and Development Grant Program, including but not limited to;
 - a. Assist the NTIA with the development and maintenance of a comprehensive and searchable nationwide inventory map of existing broadband service availability.
 - b. Gather high-quality data on broadband availability, technology, speed, infrastructure, ARPU, and spectrum (wireless).
 - c. Provide online access to clearly present broadband maps to the public, government, and others without unduly compromising confidential information*³.
 - d. Establish innovative partnerships with state-level agencies, local authorities, broadband providers, and others who can assist with the development, verification, and maintenance of a statewide broadband inventory over a 5-year time frame.

Methodology and Deliverables: VCGI and Vermont's Broadband Mapping Team will utilize the strategies and methods outlined below to produce the deliverables necessary to meet the NTIA's State Broadband Data and Development Program requirements*⁴.

1) *Broadband Service Availability - Service Associated with a Specific Address*

a) Description:

A list of all addresses in Vermont that have broadband service available to end-users for each facilities-based provider of broadband service.

- #### b) Data Gathering Methodology: To support the requirements of this deliverable, VCGI will develop a robust set of GIS-compatible layers depicting the extent of DSL, fiber, cable modem, and terrestrial fixed wireless broadband service availability. The DSL, fiber, and

² BTOP NOFA fact sheet http://broadbandusa.sc.egov.usda.gov/files/BTOP_NOFA_FactSheet7-1-09.pdf

³ "Confidential Information" is defined in section "III. DEFINITIONS" of the NTIA's State Broadband Data and Development Grant Program NOFA and further defined in the subsequent Clarification released on 8/7/09.

⁴ All deliverable will comply with NTIA technical specifications as defined in section "Appendix A: Technical Appendix" of the NTIA's State Broadband Data and Development Grant Program NOFA.

cable modem layers will be mapped to Vermont's high-accuracy Enhanced 911 road centerline layer⁵. This will allow the state to accurately⁶ map the geographic extent of these services. All roads or sections of roads will be flagged with an attribute indicating the type (DSL, fiber, cable modem) and speed (advertised and typical) of broadband service available along each road or section of road. The terrestrial fixed wireless layer will be mapped as service area polygons depicting the geographic coverage of each wireless service provider. It will identify the technology, spectrum, and speed available from each provider.

Vermont's Mapping Team will work collaboratively with broadband service providers to compile the DSL, fiber, cable modem, and fixed wireless broadband GIS layers outlined above. The Department of Public Service (DPS) will ask broadband service providers to share any existing digital data they may have, especially data mapped to the road or address-level.

The DPS Telecommunications and GIS Specialist will obtain a list of addresses from providers (when available) where DSL service is currently offered. This information will be delivered in electronic database format and will be forwarded to VCGI. VCGI will then geocode the addresses and plot them in GIS format. Subsequently, the DPS Telecommunications and GIS Specialist and/or VCGI will analyze the GIS data, and using knowledge of telecom deployment practices, will manually update the DSL layer to accurately map the geographic extent of DSL service availability.

DPS's Telecommunications and GIS Specialist will work with cable and CMRS operators to ensure they are in compliance with the DPS requirement to submit facilities and coverage data in GIS format. After spot-checking for accuracy, the Telecommunications and GIS Specialist will deliver the GIS data to VCGI.

The Telecommunications and GIS Specialist will develop and foster relationships with WISP's and obtain coverage data for further analysis by the Team. VCGI and DPS will determine if the data meets the quality and accuracy requirements necessary to support NTIA's broadband mapping specifications. If so, the data will be integrated into the statewide broadband database.

VCGI and DPS will also work with providers who do not have existing digital data. The Team will utilize a combination of hard copy maps and online web mapping tools to collect information from DSL, fiber, and cable modem providers. In the case of fixed wireless broadband providers, the Mapping Team will work with providers to generate high-quality

⁵ The E911 road centerline layer includes all public and private roads in the State of Vermont. It is actively maintained by VT E911 at a horizontal accuracy of +/-5 meters.

⁶ For example, current DSL maps in Vermont are generally limited to 3-mile radius ("as the crow flies") around central offices (and/or whole exchanges). However, DSL does not follow a straight line from the central office to someone's home. Instead it zig-zags its way along streets. Therefore, modeling the DSL (and cable/fiber) along Vermont's road network will more accurately represent the true extent of these services, and allows for finer-grained refinement of the DSL map over time.

wireless propagation maps depicting the strength and geographic extent of each fixed wireless facility.

The Telecommunications and GIS Specialist and/or VCGI will evaluate every road in the state to verify the availability or absence of broadband services (DSL, fiber, and cable modem). VCGI will crosscheck this information against the best available information from broadband providers. Online web mapping tools will also allow broadband providers to review their coverage information online, and give them the option of reporting corrections or submitting extensions to their existing physical plant.

Finally, VCGI will create a list of all addresses in Vermont that have broadband service available to end-users for each of the facilities-based providers (DSL, fiber, cable modem, and terrestrial fixed wireless). Vermont's high-accuracy E911 address GIS layer (ESITE) will be leveraged toward this effort. This data layer includes a GPS coordinate for every E911 address in Vermont, including the type of structure (e.g.: residential, commercial, public, etc). The DSL, fiber, cable modem, and fixed wireless GIS layers will be used to identify all E911 address points within a specified distance of these service areas. The resulting data will be used to generate a list of all addresses in the state, including the type and speed of each broadband service at every address. The list will also include a unique identifier for each address point (SITEID), which will provide a direct-link back to the E911 ESITE database. This relational database link will allow VCGI and E911 to establish a tightly coordinated data maintenance cycle. It will also allow broadband information to be updated and maintained at the address level. For example, the public will be able to use online feedback tools (developed by VCGI) to enter their address and verify what is available at their address (it will also allow them to test the speed of their connection). This information will be automatically transferred to VCGI's geospatial data warehouse and linked to the corresponding E911 ESITE address point. VCGI's mapping specialist will be automatically notified of the feedback, and will have the option of updating the master database using the submitted information.

- c) Verification Methodology: The Team will utilize the following methods to verify the accuracy and completeness of these deliverables. A complete description of each verification method is outlined in section *I.b (Accuracy and Verification)*.
 - i) Verification by Survey
 - ii) Verification Online by the Public
 - iii) Verification Online by Broadband Providers

- d) Deliverables:
 - i) A robust set of GIS-compatible layers (shapefiles) depicting the extent of DSL, fiber, cable modem, and terrestrial fixed wireless broadband service availability.
 - ii) A single tab-delimited plain text file (address_availability_VT.txt) listing all addresses in Vermont that have broadband service available to end-users for each of the facilities-based providers (DSL, fiber, cable modem, and terrestrial fixed wireless).
 - iii) Detailed documentation outlining the sources and methods used to create the deliverables noted above. This will include FGDC compliant metadata for every GIS-compatible layer.

2) **Broadband Service Availability – Wireless Services (not provided to a specific address)**

- a) **Description:** A set of GIS-compatible map layers depicting areas in which wireless broadband service is available to end-users (for those facilities-based providers of wireless broadband service that are not address specific such as nomadic, terrestrial mobile wireless, or satellite).
- b) **Data Gathering Methodology:** To support the requirements of this deliverable, VCGI (and the Broadband Mapping Team) will develop a robust set of GIS-compatible layers depicting the extent of terrestrial mobile wireless and satellite-based broadband service availability. The terrestrial mobile wireless layer will be mapped as service area polygons depicting the geographic coverage of each wireless service provider. It will identify the technology, spectrum, and speed available from each provider.

VCGI, the Mapping Team and project partners (e.g.: broadband providers, state government) will work collaboratively to compile the mobile wireless and satellite-based broadband GIS layers outlined above. VCGI and DPS will ask broadband service providers to share any existing digital data they may have, especially detailed wireless propagation maps based on well documented sources and methods. VCGI and DPS will determine if the data meets the quality and accuracy requirements necessary to support NTIA's broadband mapping specifications. If so, the data will be integrated into the statewide broadband database. Otherwise, VCGI's subcontractors (wireless mapping contractors) will work with wireless and satellite providers to generate high-quality wireless propagation maps depicting the strength and geographic extent of wireless broadband services. DPS's Telecommunications and GIS Specialist and/or VCGI's Mapping Specialist will crosscheck the results against the best available information from broadband providers. Online web mapping tools will also allow wireless broadband providers to review their coverage information online, and give them the option of reporting corrections or submitting extensions to their existing physical plant (e.g.: new wireless towers/antennae).

- c) **Verification Methodology:** The Team will utilize the following methods to verify the accuracy and completeness of these deliverables. A complete description of each verification method is outlined in section *I.b (Accuracy and Verification)*.
 - i) Verification by Survey
 - ii) Verification Online by the Public
 - iii) Verification Online by Broadband Providers
 - iv) Verification by Drive Testing
- d) **Deliverables:**
 - i) A robust set of GIS-compatible layers (shapefiles) depicting the extent of terrestrial mobile wireless and satellite-based broadband service availability, including the technology, spectrum, and speed available from each provider.
 - ii) Detailed documentation outlining the sources and methods used to create the deliverables noted above. This will include FGDC compliant metadata for every GIS-compatible layer.

3) *Residential Broadband Service Pricing*

- a) Description: For each broadband service provider in the state, the Vermont Broadband Mapping Initiative will provide the NTIA with;
 - i) Average Revenue Per End-User (ARPU) associated with residential subscribers by county.
 - ii) Subscriber-Weighted Nominal Speed (blended average rate) by county.

- b) Data Gathering Methodology: DPS will work collaboratively with broadband service providers to compile information necessary to calculate the 1) average revenue per end-user (ARPU) and 2) subscriber-weighted nominal speed. DPS will ask broadband service providers to share the baseline information (e.g.: revenue by county) necessary to making these calculations.

- c) Verification Methodology: The Team will utilize the following methods to verify the accuracy and completeness of these deliverables. A complete description of each verification method is outlined in section *I.b (Accuracy and Verification)*.
 - i) Verification by Survey
 - ii) The Team will also crosscheck information on broadband provider websites to compare advertised rates against those reported in the Residential Broadband Service Pricing dataset.

- d) Deliverables:
 - i) A single tab-delimited plain text file (pricing_VT.txt) listing the Average Revenue Per End-User (ARPU) and Subscriber-Weighted Nominal Speed (blended average rate) by county for each broadband service provider in the state.
 - ii) Detailed documentation outlining the sources and methods used to create the deliverables noted above.

4) *Broadband Service Infrastructure - Last-Mile Connection Points*

- a) Description: A list of “first points of aggregation” (last mile connection points*⁷) in the networks (serving facilities) used by facilities-based broadband providers in Vermont.

- b) Data Gathering Methodology: To support the requirements of this deliverable, VCGI (and its subcontractors) will develop a robust GIS-compatible layer identifying the location of all last mile connection points (“first point of aggregation”) used by facilities-based broadband providers in Vermont. Examples of “first points of aggregation” include central offices and remote terminals locations, cable headend locations, and wireless tower (antennae) or base station locations. The layer will identify the location (latitude/longitude), transmission technology, backhaul capacity, backhaul type, number of end-users served, and elevation above grade.

⁷ “Last-mile” infrastructure consists of facilities used to provide broadband service between end-user (including residences, businesses, community anchor institutions, etc.) equipment and the appropriate access point, router or first significant aggregation point in the broadband network. Refer to section “Appendix A: Technical Appendix” of the NTIA’s State Broadband Data and Development Grant Program NOFA for additional details.

Vermont's Mapping Team will work collaboratively with project partners (e.g.: broadband providers, state government) to map "first points of aggregation" locations. DPS will ask broadband service providers and others (e.g.: state government) who manage such locations to share any existing digital data they may have, especially latitude/longitude information. VCGI and DPS will determine if the data meets the quality and accuracy requirements necessary to support NTIA's broadband mapping specifications. If so, the data will be integrated into the statewide "first points of aggregation" database. Otherwise, the DPS Telecommunications and GIS Specialist and/or VCGI will work with providers to locate and map "first points of aggregation". All locations will be mapped using GPS or high-resolution aerial photography (1:1250 or 1:5000 scale orthophotography). Online web mapping tools will also allow broadband providers to review their information online, and give them the option of reporting corrections or submitting extensions to their existing physical plant (e.g.: new points of aggregation).

- c) **Verification Methodology:** The Team will utilize the following methods to verify the accuracy and completeness of these deliverables. A complete description of each verification method is outlined in section *I.b (Accuracy and Verification)*.
 - i) Verification Online by Broadband Providers
 - ii) Verification by Groundtruthing
- d) **Deliverables:**
 - i) A single tab-delimited plain text file (lastmile_VT.txt) listing all "first points of aggregation" for each broadband service provider in the state. The file will identify the location (latitude/longitude), transmission technology, backhaul capacity, backhaul type, number of end-users served, and elevation above grade.
 - ii) Detailed documentation outlining the sources and methods used to identify and map all "first point of aggregation" locations.

5) Broadband Service Infrastructure - Middle-mile and Backbone Interconnection Points

- a) **Description:** A list of interconnection points of facilities in Vermont that provide connectivity between (a) a service provider's network elements (or segments) or (b) between a service provider's network and another provider's network, including the Internet backbone (collectively (a) and (b) are "middle-mile and backbone interconnection points").
- b) **Data Gathering Methodology:** To support the requirements of this deliverable, VCGI will develop a robust GIS-compatible layer identifying the location of all middle-mile and backbone interconnection points used by broadband providers in Vermont. The middle-mile and backbone interconnection points layer will identify the location (latitude/longitude), ownership status (owned vs leased), bandwidth capacity, type of transport facility (e.g.: fiber, copper, wireless, etc.), and elevation above grade.

Vermont's Mapping Team will work collaboratively with project partners (e.g.: broadband providers, state government) to map all middle-mile and backbone interconnection points locations. VCGI and DPS will ask broadband service providers and others (e.g.: state

government) who manage such locations to share any existing digital data they may have, especially latitude/longitude information. VCGI and DPS will determine if the data meets the quality and accuracy requirements necessary to support NTIA's broadband mapping specifications. If so, the data will be integrated into the statewide "middle-mile and backbone interconnection points" database. Otherwise, the DPS Telecommunications and GIS Specialist and/or VCGI will work with providers and partners to locate and map these locations. All locations will be mapped using GPS or high-resolution aerial photography (1:1250 or 1:5000 scale orthophotography). Online web mapping tools will also allow broadband providers to review their information online, and give them the option of reporting corrections or submitting extensions to their existing physical plant (e.g.: new "middle-mile and backbone interconnection points").

- c) **Verification Methodology:** The Team will utilize the following methods to verify the accuracy and completeness of these deliverables. A complete description of each verification method is outlined in section *I.b (Accuracy and Verification)*.
 - i) Verification Online by Broadband Providers
 - ii) Verification by Groundtruthing

- d) **Deliverables:**
 - i) A single tab-delimited plain text file (middlemile_VT.txt) listing all "middle-mile and backbone interconnection points" in the state. The file will identify the location (latitude/longitude), ownership status (owned vs. leased), bandwidth capacity, type of transport facility (e.g.: fiber, copper, wireless, etc.), and elevation above grade.
 - ii) Detailed documentation outlining the sources and methods used to identify and map all "middle-mile and backbone interconnection points" locations.

6) **Community Anchor Institutions**

- a) **Description:** A list of "community anchor institutions" in Vermont, including schools, libraries, medical and healthcare providers, public safety entities, community colleges and other institutions of higher education, and other community support organizations and entities.

- b) **Data Gathering Methodology:** To support the requirements of this deliverable, the Broadband Mapping Team will develop a robust GIS-compatible layer identifying the location of all "community anchor institutions" in Vermont. These include schools, libraries, medical and healthcare providers, public safety entities, community colleges and other institutions of higher education, and other community support organizations. The layer will identify the location (latitude/longitude), address, type of institution, broadband subscription status, broadband transmission technology, and advertised download and upload speeds.

The Team and project partners will work collaboratively to map community anchor institutions locations, and to characterize the availability and nature of broadband services. VCGI will map the location of all anchor institutions. They will leverage existing⁸ locational

⁸ The State of Vermont has developed a comprehensive Critical Facilities database, which includes many of the community anchor institutions.

information for these institutions. All locations will be geocoded, GPS'd, or mapped using high-resolution aerial photography (1:1250 or 1:5000 scale orthophotography). DPS will ask community anchor institutions (e.g.: school, library, government) who manage such locations to share any information characterizing the type of broadband service available at the institution. CRS will conduct an outreach and collection campaign to obtain information from the remaining institutions. CRS interviewers will use both electronic mail and a telephone survey to contact the institutions to collect the information or direct them to an online survey to submit the information themselves. VCGI will join the attributes collected by DPS and CRS to the mapped locations. Online tools will also allow community anchor institutions to review their information online, and give them the option of reporting corrections or additions (e.g.: new public facility with broadband access).

- c) **Verification Methodology:** The Team will utilize the following methods to verify the accuracy and completeness of these deliverables. A complete description of each verification method is outlined in section *I.b (Accuracy and Verification)*.
 - i) Verification Online by Public (targeted toward community anchor institutions)
 - ii) Verification by Survey (targeted toward community anchor institutions)
- d) **Deliverables:**
 - i) A single tab-delimited plain text file (comm_anchor_VT.txt) listing all “community anchor institutions” in the state. The file will identify the location (latitude/longitude), address, type of institution, broadband subscription status, broadband transmission technology, and advertised download and upload speeds at each location.
 - ii) Detailed documentation outlining the sources and methods used to identify, map, and characterize all “community anchor institution” locations.

b) Accuracy and Verification

The Vermont Broadband Mapping Team is proposing several verification methodologies to independently validate the accuracy for data supplied by broadband providers. The initial cumulative results of the broadband mapping effort proposed in section *I.a) Data Gathering* will be independently verified using one or more of the methods outlined in this section.

Table 1 provides a comprehensive view of the verification method proposed for each broadband deliverable.

	1. Address Specific Service	2. Mobile Wireless Service	3. Residential Service Pricing	4. Last Mile Connection Points	5. Middle Mile and Backbone Interconnections	6. Community Anchor Institutions
Surveying	X	X	X			X
Drive Testing		X				
Online by Public	X	X				X
Online by Broadband Providers	X	X		X	X	
Groundtruthing				X	X	

Table 1. - Broadband Deliverable and Verification Matrix

1) Verification Online by Broadband Providers

VCGI (and its subcontractors) will develop an online tool that will allow broadband providers to verify their broadband maps (physical plant) online. Broadband providers will be allowed to identify errors for correction. VCGI will evaluate online submissions for quality and consistency. Valid submission will be used to update the statewide broadband inventory.

2) Verification Online by the Public

VCGI (and its subcontractors) will develop an online tool (hosted on the BroadbandVT website) that will allow the public to identify and flag errors on the broadband map. Users will be given the option of verifying data or flagging errors down to the address-level (e.g. home or business). They will also be able to test their broadband speed and report back at the address-level, helping to verify “typical” broadband speed information. Users will also have the option of specifying how much they pay for broadband service. VCGI will evaluate online submissions by the public to determine if they can be used to update or correct the master broadband inventory. If so, the feedback will be used to update the statewide broadband inventory. Address-level submission will be used to update the statewide address list outlined in deliverable #1 (Broadband Service Availability - Service Associated with a Specific Address) under section *I.(a) Data Gathering*.

A robust outreach effort (led by the Department of Public Service) will be used to create public awareness about the online broadband feedback tool outlined above. DPS will use existing contacts in town and local government to notify the public of the online tool. News media and public information outlets will be used to make the public aware of the online tool and its value to the state and communities. Special attention will be paid to information outlets that will reach rural areas of the state.

3) Verification by Drive Testing

Wireless drive-testing will be used to collect real-time mobile wireless information. Data will be collected for all Federal Aid roads in Vermont (3,872 miles) on an annual basis for the five years of the program. The drive-test data will be used to determine the accuracy of the mobile wireless broadband polygons.

4) Verification by Groundtruthing (Field Check)

The Mapping Team will utilize “on the ground” data verification techniques for certain broadband datasets, including last-mile and middle-mile connection points. In some cases this may involve going to the offices of the broadband providers to validate information against internal documents. In other cases it may involve going out “into the field” with line workers to verify information.

5) Verification by Surveying (CRS and DPS)

The Department of Public Service (DPS) and the Center for Rural Studies (CRS) will implement telephone polls of random samples of Vermont households and businesses to ascertain respondent broadband connectivity, coverage, and pricing. The polls will also gauge cell phone coverage and pricing. The results of these polls will be linked to a broadband service map by address. For each address point covered by the poll, the respondents’ answers for broadband connectivity and

availability will be compared to the corresponding variables of the addresses from the service map. From this comparison the project will conclude a percentage of accuracy for the service map.*⁹

Ten verification surveys will be conducted during the course of this online project. CRS will conduct a basic verification survey eight times, and DPS will contract out the implementation of two expanded surveys. The “Basic Verification” and “Expanded Information” aspects of these two surveying efforts are explained in the Surveying Plan below.

a) Surveying Plan

i) Phase One – Developing the Telephone Poll Sample

Basic Verification: This project will begin with an analysis of the broadband service map. The number of addresses on the map will be summed for rural areas and by county. If it is deemed that low numbers of addresses in certain areas of the state may represent obstacles to regional representation in the results of the telephone survey, these areas will be “flagged” for stratification or oversampling. Stratification is a means by which goals are set to ensure that adequate numbers of addresses from certain areas are sampled. Oversampling goes even farther to ensure that a higher percentage of addresses from one area are polled versus other areas that may have higher original totals. The goal is for the telephone poll to represent all of the State of Vermont to the highest degree possible regionally and rurally*¹⁰ and for the confidence interval to be as rigorous as possible.

After this preliminary analysis, CRS (for the eight basic verification surveys) will purchase a random sample of thousands of household and business landline phone numbers from a professional service that maintains and verifies such registries regularly. These records will also include address information for the respondents. The number of records purchased will depend upon estimates of what is necessary to result in a response that will result in a confidence interval of 95 percent with a confidence interval (margin of error) of plus or minus 5 percent. Additional numbers may also be necessary if stratification or oversampling is required for certain areas of the state.

Expanded Information: For the two expanded surveys, the DPS contractor will draw a sample with a method sufficient to match the statistical validity and geographic coverage of the CRS method. In addition, the DPS expanded survey will include cell phone numbers.

ii) Phase Two – Developing the Survey Instrument

⁹ An example of the true depiction of accuracy could be that “96 percent of the time, this service map would verify to be 95 percent accurate within a range of +/- 5 percent.”

¹⁰ By the definitions of the State Broadband Data and Development Grant Program, the city of Burlington is the only non-rural area in Vermont. With nearly 93.5 percent of the Vermont population living outside Burlington, representing Vermont’s rural areas is not seen as a major obstacle in this project.

Basic Verification: CRS will work with project partners to develop a list of questions to be asked of poll respondents. CRS has demonstrated expertise in designing survey questions for efficiency of time, avoidance of respondent frustration, adherence to accepted research practices, and strong linkage to the topics being covered. Information desired in this case includes:

- whether the respondent has a broadband connection and through what delivery method,
- what broadband services and delivery methods are available to the respondent overall,
- whether the respondent has cell phone coverage at that location, the monthly price that the respondent pays for broadband/cell services, and the respondent's physical address.

A survey instrument of only 5-10 questions will be necessary to garner this information, and the shortness of the poll is anticipated be optimal for overall response rate and quality of information.

Expanded Information: The expanded DPS survey will include the basic verification questions as well as questions relating to communications technology adoption, applications, decision-making priorities, and usage for businesses and residents. Each survey will include approximately sixty questions. DPS will consult with Vermont Council on Rural Development, state and local agencies including the Department of Education and state libraries to understand the information needs of their constituents and incorporate appropriate questions into the surveys.

iii) Phase Three – Conducting the Telephone Poll

Basic Verification: From the CRS offices on the University of Vermont campus, specially trained interviewers will begin calling the purchased list of telephone numbers and either conducting the survey with respondents or coding reasons for refusal or ineligibility^{*11}. The interviewers will be using computer-assisted telephone interviewing (CATI) software. All respondents will be informed of the source and purpose of the survey and that it is entirely voluntary and confidential.

Expanded Information: The DPS contractor will conduct the two expanded surveys using similar methods to the CRS survey. These two surveys will also have to implement methods to reimburse cell phone respondents for minutes answering the survey.

In addition, targeted focus groups will be held to represent the qualitative aspects of telecommunications usage, adoption and non-adoption among seniors, the most rural and low-income, unemployed, and vulnerable populations at ten locations around the state. Analysis of the data will ultimately inform decisions about the development and efficacy of new and existing demand stimulation programs and aid in the creation of market intelligence to improve the case for businesses to deploy more broadband services.

iv) Phase Four – Poll Data Analysis

¹¹ One aspect of eligibility will be that a survey respondent must be 18 years of age or older.

Basic Verification: CRS staff will verify the integrity of data in the poll results. For respondent records that are missing a physical address that can be matched with the service map, reverse telephone look-up will be used to the fullest extent possible.

CRS, in collaboration with project partners, will compare the telephone survey connectivity, availability and service type results with the service map analysis, address-by-address. The result of this comparison will be measures of the service map's accuracy statewide, for rural (non-Burlington) areas only, and for any regions of the state that require stratification or oversampling.

Expanded Information: The accuracy verification procedures for the expanded DPS survey will follow the same procedures as the CRS method.

In addition, the surveys and focus groups will augment statewide broadband mapping efforts that are also described in this response by VCGI and the VTA. Results of the surveys will be shared with all Vermont entities that are focusing efforts on broadband-based economic development, professional development training and infrastructure deployment. Survey results and focus group analysis will be used to formulate policy recommendations and they will be published in the Telecommunications Plan and online. The public and private sectors will be encouraged to use the information to establish programs that stimulate broadband demand, through affordable access and availability of appropriate equipment and relevant content. In particular, results of focus group analysis will be used to understand and address the needs and barriers to entry of vulnerable populations.

The survey results will describe current and relevant broadband adoption, preferences, priorities and applications of Vermont residents and businesses. In keeping with the changing dynamic of how Vermonters communicate, the sample must include cell phone users. Among other things, cell phone user data will inform the State on the degree to which cell phone users use data plans for broadband access, their intention to maintain landlines at home and their level of satisfaction with the provider and service in Vermont. Additionally, the focus groups will provide a qualitative aspect of the research that relates to barriers to broadband adoption and necessary technology training for low-income, unemployed, aged, and otherwise vulnerable populations. Technology leadership teams throughout the state will use the data to develop programs that provide broadband education, awareness, training, access, and equipment to community support organizations and entities that facilitate greater use of broadband service. Furthermore, the information will be used for the Legislature to develop policy based on an understanding of broadband use and demand as it relates to the need for further State support of training, economic development and healthcare opportunities.

v) Surveying Deliverables

Basic Verification

- A 5-10 question statewide telephone survey.

- Draft univariate frequency report in electronic format no later than two weeks after survey is completed
- Full univariate frequency report with graphical and tabular data representation
- The complete raw dataset in Excel or SPSS format
- Comparison of the survey data to the broadband service map and a determination and explanation of accuracy.

c) Accessibility

Vermont's Broadband Mapping Team will establish an online presence (BroadbandVT) to house all broadband related information, maps, and resources. The BroadbandVT website will provide online access to clearly presented broadband maps to the public, government, and others without unduly compromising confidential information*¹². VCGI (and its subcontractors) will develop a set of web-based solutions enabling the public and other stakeholders to easily visualize and understanding the geographic extent and nature of broadband services in Vermont.

The BroadbandVT website will include a user-friendly, interactive, and searchable web mapping tool allowing users to easily navigate to any location in the state. The map will be fast and simple to use*¹³, and will allow the public and others to determine the availability of broadband services in their area. The online tool will also allow users to provide feedback and corrections at the address-level*¹⁴.

VCGI will also develop a set of static broadband maps (Adobe Portable Document Format), both statewide and county-based. Web links (URLs) will be provided to the NTIA as stipulated in the State Broadband Data and Development Program grant specifications.

d) Security and Confidentiality

1) Transparency

The Vermont Broadband Mapping Team sees transparency of process as a priority. Process transparency allows the opportunity for others to assess and provide comment to our approach and the methods we employ in creating the Broadband data. The ability to improve our methodologies through feedback is an important self-improvement goal of the effort. While the Team is interested in improving our methods through feedback we are also aware we need to retain the focus on the primary goals of the effort as established at outset. Redefining critical information such as data definitions or defined data aggregation approaches over time, even if well intended, will weaken the analysis of the mapping effort over time. Geographically defined temporal change analysis of the unserved and underserved populations in the state is critical to understanding the success of future broadband infrastructure deployment. Only consistent methodologies will

¹² "Confidential Information" is defined in section "III. DEFINITIONS" of the NTIA's State Broadband Data and Development Grant Program NOFA.

¹³ Examples of fast and simple to use interactive maps include <http://www.bing.com/maps/>, <http://www.google.com/maps/>, <http://gis.cityofboston.gov/solarboston/>

¹⁴ The online BroadbandVT user feedback tool will leverage related design ideas and software solutions developed by others, including the Vermont Telecommunications Authority's "VT Connectivity Map" and the eCorridors's "Community Broadband Access Map".

support that analysis. As experienced and responsible process engineers we are able to recognize the line between process improvement and destructive redesign.

The Vermont Team's approach will ensure transparency through;

- Fully documenting our approach;
- Providing documentation online on a dedicated, publicly accessible web page.

Our Team places a high value on communication and each team member has already been working with other team members on developing methodologies to accomplish all of the elements of the broadband mapping effort in accordance with the defined requirements. Each team member will contribute to project documentation that defines a clear set of project goals, approach and methodology (including changes over time), any standards used, metrics and outcomes. Project documentation will be available on a publicly available website established for the VT Broadband Mapping effort.

2) *Confidentiality*

The VT Broadband Mapping Team will establish Non-Disclosure Agreements (NDAs) with those broadband service providers that wish to keep their data restricted from public access and distribution. VCGI already has NDA's with two of the broadband providers in the state for the provision of broadband mapping data. Other NDA's will be established by VCGI with/in consultation with the VT Department of Public Service as the providers request.

Confidentiality may also be achieved through the aggregation of provider data into the publicly available mapping data products. By aggregating the data supplied by multiple broadband providers into a single graphic representation the specific details of a single provider's services are not shown. For instance, by showing the aggregated statewide availability of wireless services in Vermont from all providers as a single map layer the individual service areas of each provider are discernable and yet the understanding of wireless coverage availability is not diminished. The use of aggregation for all publicly available products will be used in mapping and reporting the broadband availability data. The team will work with the data providers to be sure they are comfortable with the methods being used to represent publicly available data.

Another important aspect of maintaining confidentiality is proprietary data control. Our plan for the collection of provider service coverage information is for that information to be sent to a single point of collection, VCGI. In addition proprietary data may come from the Federal Communications Commission (FCC) or DPS. VCGI will be the single point of data control for proprietary data used in the project. As the data aggregator, VCGI will then be able to take the provided data, aggregate it according to the defined processes and provide it to the public.

As the state's designated geographic data depository, VCGI has previous experience with data control methods and the disciplined process necessary to ensure the limiting of data access. VCGI was the prime contractor on Vermont's Critical Facilities geographic data collection contract lasting from 2005 to 2008. Information relating to location and attribution for some of the feature types designated for collection in this effort were defined to have limited access. VCGI worked with the state and federal Homeland Security teams to define the controlled data types and ensure

the data was kept secure from collection through database loading at the state's emergency management facility.

It is our intention, through the implementation of the processes mentioned above, to ensure that the Team provides open access and transparency of the methods we employ in our work while also ensuring that proprietary data from providers, federal and state entities is controlled and distributed without disclosing proprietary information.

II. Project Feasibility

a) Applicant Capabilities

1) Project Budget Spreadsheets

(See Appendix B for a year by year breakdown of project budget)

Budget Item Number	Total Project Budget (5 Years)	Time Estimate Total Hours	Cost Estimate
Personnel Budget Elements			
1	Project Management	400	\$39,036
2	Central Administration (0.5%)		\$9,738
3	Data - Gathering	4900	\$330,036
4	Data - Verification	1120	\$76,716
5	Data - Accessibility	700	\$66,361
6	Data - Updating	2520	\$203,457
	TOTAL ESTIMATE	9640	\$725,344
Partner Contractual			
7	VT Dept. of Public Service		\$518,547
8	Center for Rural Studies - Univ. of VT		\$200,513
9	Enhanced 9-1-1- Board		\$44,750
10	VT Telecommunications Authority		\$0
11	Contract Services		\$424,600
12	Supplies & Software		\$36,000
13	Travel		\$4,000
14	Equipment		\$4,000
15	Other Direct Costs		\$0
	TOTAL OTHER DIRECT COSTS		\$1,232,410
	TOTAL BUDGETED FULL PROJECT COSTS		\$1,957,754

Estimated Available Matching Funds Worksheet

Funding Match Item #	Potential Match (All Years)	Estimated Amount
1	VCGI - In-Kind (from previous Broadband data collection and)	\$40,000
2	VCGI – In-Kind (ED’s salary for creation, evaluation and award of RFPs)	\$15,000
3	DPS - In-Kind (Contribution for Landline Telephone Survey)	\$60,000
4	VTA - In-Kind (Previous mapping and partial salaries July 08 to June 09)	\$90,150
5	E-9-1-1- In-Kind (Cost of Addressing data collection statewide)	\$2,100,000
6	VCGI – In-Kind (Cost of statewide Orthophotography collection)	\$400,000
	Total Project Value	\$1,957,754
	Total Estimated Match Required (20%)	\$391,551
	Total Estimated Match Available	\$2,705,150

2) *Budget Narrative*

Vermont Center for Geographic Information Activities

Budget Item #1

Project Management – VCGI’s budget for Project Management is intended to cover the estimated cost for the Project Manager to organize, manage, review, and document project activities. Other activities covered in this cost estimate include scheduling and planning for meetings, coordination of Contractors, issue resolution, and risk management.

Budget Item #2

Central Administration- VCGI is allocating .5% of the total contract value for Central Administration of the project as directed by the Vermont Secretary of Administration for all ARRA projects in the State. As defined by the Secretary of Administration, Central Administration is intended to cover the costs of accounting and Federal reporting requirements for any ARRA project.

Budget Item #3

Data Gathering- VCGI’s budget for Data Gathering contains the cost of leading the initial broadband data collection and data mapping effort including the creation and population of the master broadband inventory database. This budget activity will support the cost of contacting the Broadband providers, aggregating, and integrating their data as well as resolving data issues for all six requested data types.

Budget Item #4

Data Verification- VCGI's budget for Data Verification contains the cost of verifying the six requested data types using the methods outlined in this proposal. It also includes the cost of developing online verification and feedback tools.

Budget Item #5

Data Accessibility- VCGI's budget for Data Accessibility includes the cost of establishing the BroadbandVT website to house all broadband related information, maps, and resources. The online website will allow users to provide feedback and corrections at the address-level. This budget activity also covers the cost for VCGI to develop a set of statewide and county-based static broadband maps.

Budget Item #6

Data Updating- VCGI's budget for Data Updating includes the cost of integrating the yearly updated broadband information from the Service Providers and the verification data from the project partners. It includes the time necessary to resolve data issues, and populate the master broadband inventory database for all six requested data types.

Budget Item #11

Contract Services- VCGI's cost estimate for Contract Services includes the estimated cost of hiring a contractor from the Private Sector to perform propagation analysis for fixed and mobile wireless assets and then map the resulting analysis statewide. The initial data collection will be performed in year 1 with updates to be performed in years 2-5, an estimated total of \$216,000 for all five years.

It includes the estimated cost of hiring a contractor from the private sector to perform Drive Testing once each year for the full five year period in order to verify actual Wireless coverage in the state, an estimated total of \$193,600 for all five years.

It also includes the cost of hiring a contractor to develop the BroadbandVT website, an estimated total of \$15,000.

Budget Item #12

Supplies and Software- VCGI's cost estimate for Software includes the acquisition of the following items;

- Latitude Geographics' Geocortex Essentials (Internet Mapping Development Software) - \$15,000,
- Google Basemap or MS Virtual Earth License (5 years) - \$10,000,
- ESRI ArcGIS Desktop license (5 years) - \$6,000,
- Speed Test Software - \$5,000.

Budget Item #13

Travel- The costs for Travel during the 5 year term of the contract were intended to be in support of Groundtruthing. It was determined that a total estimate of \$4000 or \$800/year would be used. All travel will be in-state and charged at the prevailing Federal mileage rate (currently .50/mile).

Budget Item #14

Equipment- VCGI's cost estimate for Equipment includes the acquisition of the following items;

- One Computer Workstation - \$2500
- One professional quality GPS Unit - \$1500

All cost estimates for VCGI activities cover the full 5 year term of the contract unless otherwise designated. All VCGI cost estimates include .75% for fringe benefits on all staff salary/wages and 1.40% for indirect costs. All rates are approved by an independent audit and applied universally to all contracts.

Vermont Department of Public Service Activities

Budget Item #7

Telecommunications and GIS Specialist: The Department of Public Service will hire one FTE Telecommunications and GIS Specialist who will work in coordination with partners at VCGI and the DPS Telecommunications Director to estimate and map the capabilities of mobile and fixed wireless and landline based broadband infrastructure. The position is responsible for understanding telecommunications technology and networks and is responsible for implementing methodologies for gathering and presenting information about the state of telecommunications networks in Vermont. The Specialist will perform specialized analysis related to the present and future capabilities and availability of Vermont's telecommunications infrastructure. Estimated annual compensation for the position including benefits is \$94,500 annually. This estimate is based on similar job specifications and compensation described by the State of Vermont on its website for Telecommunications Infrastructure Specialist and a GIS Specialist. The position must be filled for four years.

Total estimated four year cost: \$378,000

Telephone Survey Cost: The estimated total cost to conduct the surveys in 2009 and again in 2013 is \$41,400. Estimates include compensation to cell phone users who must pay for the time they take to answer survey questions. Compensation may be a \$5 gift card or an equivalent donation to a national non-profit of the participant's choice. The estimate is based on the average pricing provided by competitive vendors. This includes the estimated cost for random sampling of;

- 400 businesses statewide.
- 400 Vermont residents.
- 40-50 cell phones.

All DPS budget items are subject to a multiplier for Indirect Costs of 23.64%

Vermont Telecommunications Authority Activities

Budget Item #10

VTA is not requesting funding under the NTIA State Broadband Data and Development Grant Program. They will be providing information and support to the Mapping Team as part of their existing program responsibilities.

Center for Rural Studies – University of Vermont Activities

Budget Item #8

CRS Verification Surveys Budget Narrative

The estimated total cost incurred by the Center for Rural Studies for completing the 8 Verification Surveys is estimated at \$17,459.45 for the 2010 fiscal year with a total of \$122,797.14 for the combined 5 years of effort. The project budget accounts for disbursements for; salaried CRS staff who will develop, conduct, analyze and report findings; specially-trained phone survey hourly staff; fringe benefit costs at the appropriate levels; operating costs including phone charges and supplies; and the University of Vermont's Facilities and Administration overhead fee.

Staff Salary/Wages includes expenses associated with the following specific activities: Develop the survey with project partners, create and test the survey instrument, provide database management, provide training and management to survey staff, provide financial accounting, data tabulation, analysis and reporting including document development and meetings. Hourly rates and fringe rates at the University of Vermont are included for all salaried staff and hourly staff, and subsequent annual adjustments have been applied to the budget worksheet. The annual adjustment for hourly rates has been estimated at 3 percent. The increases to fringe rates have been estimated by the University Of Vermont Office Of Sponsored Programs. No fringe rate is applied to temporary phone survey staff.

Operating Costs take into account the costs for travel to project meetings, the procurement of the sample call list for the survey, phone charges incurred during surveying, and miscellaneous office supplies. The University of Vermont's Facilities and Administration overhead fee set at 29.5% for fiscal year 2010 and assumed to remain constant.

CRS Anchor Institutions Budget Narrative

The estimated total cost incurred by the Center for Rural Studies for completing the 5 annual "Anchor Institutions" data collection efforts outlined above is estimated at \$8,335.14 for the 2010 fiscal year with a total of \$44,555.79 for the combined 5 years of effort. The project budget accounts for disbursements for; salaried CRS staff who will develop, conduct, analyze and report findings; specially-trained hourly staff; fringe benefit costs at the appropriate levels; operating costs including phone charges and supplies; and the University of Vermont's Facilities and Administration overhead fee.

Staff Salary/Wages includes expenses associated with the following specific activities: Develop the database with project partners, provide database management, provide training and management to hourly staff conducting the data collection, provide financial accounting, data tabulation, analysis and reporting including document development and meetings. Hourly rates and fringe rates at the University of Vermont are included for all salaried staff and hourly staff, and subsequent annual adjustments have been applied to the budget worksheet. The annual adjustment for hourly rates has been estimated at 3 percent. The increases to fringe rates have been estimated by the University of Vermont's Office of Sponsored Programs.

Operating Costs take into account the costs for travel to project meetings, phone charges incurred during data collection, and miscellaneous office supplies. The University of Vermont's Facilities and Administration overhead fee is set at 29.5% for fiscal year 2010 and is assumed to remain constant.

Vulnerable Communities Focus Groups: The estimated cost for two studies (2009 and 2013) of ten focus groups located around the state is \$33,160 (\$16,580/study). Cost includes 4-5 meeting facilitation for each group of up to 10 members, content analysis, location and travel costs for group leader and incidentals for the group.

Vermont Enhanced 9-1-1 Board Activities

Budget Item #9

The estimated total cost incurred by the Vermont Enhanced 9-1-1 Board for completing the creation of a dynamic data service that will provide VCGI with the E9-1-1 locatable address data through SDE/SQL server replication from database to database for the 2010 fiscal year is a total of \$24,750. The cost of providing continuing data support to the initiative for the remaining 4 years of effort is \$20,000 or \$5,000 per year. The project budget accounts for salaried staff who will develop the dynamic data service application and maintain the data feed for the duration of the project, fringe benefit costs at the appropriate levels; and standard overhead costs for Enhanced 9-1-1 personnel.

Potential Project Matching Funds

The Vermont Mapping Team is able to include potential matching funds well in excess of 100% of the final value of our full proposal cost. The support narrative for the numerous potential funding match items is as follows;

1. Funding Match Item #1. references In-Kind match from the aggregated cost of previous Telecommunication mapping data collection activities by VCGI in support of the Dept. of Public Service and the CIO's office. State building broadband access analysis was also performed. All costs for this item occurred from 2006 to the present.
2. Funding Match Item #2. references future In-Kind match from the estimated cost of the VCGI Executive Director salary to create, evaluate, award and manage the RFP process proposed for having the public sector provide Drive Testing to verify the availability of Mobile Wireless service in Vermont.
3. Funding Match Item #3. references In-Kind match from the actual and estimated costs of the, already in-progress, Dept. of Public Service Landline Telephone Survey to determine public access to Broadband services in Vermont.
4. Funding Match Item #4. references In-Kind match from the aggregated costs of previous Broadband service area data collection from providers and subsequent data conflation activities by VCGI and the Vermont Telecommunications Authority. It also includes partial salaries from VTA personnel in collecting the service coverage area information. All costs for this item occurred from 2006 to the present.

5. Funding Match Item #5. references In-Kind match from the actual costs for the State of Vermont to collect statewide addressing data. Vermont has identified, by GPS, the location coordinates for every E911 address in Vermont, with attribution including the type of structure (e.g.: residential, commercial, public, etc). Having this highly accurate data available increases the value of the final Broadband Mapping data products to the public. The assigned value of this effort represents only the costs paid to a subcontractor to collect the address data and not the cost of ancillary efforts such as program development, training, hardware, software, or maintenance.
6. Funding Match Item #6. references In-Kind match from the actual costs for the State of Vermont to collect the latest version of its statewide 1:5,000 scale orthophotography. The statewide orthophotography will be used for a.) Background reference data to support Online Verification by the public and b.) Verification by field checking personnel.

b) Applicant Capacity, Knowledge and Experience

The Vermont Broadband Mapping Team is composed of several partners all identified as providing a critical expertise to the Team. In addition, each of the Team members has already worked with the prime contractor, VCGI, in recent years on other state mapping initiatives or in the creation of preliminary broadband mapping. The VT team is composed of well established state entities with existing working relationships that are able to provide a singular expertise to the effort. Each of the participating partners has been fully engaged in the discussion and decision making process from the beginning and communication with the partners is a priority for the Team.

1) Vermont Center for Geographic Information

The prime contractor for the Vermont Broadband Mapping Team is the Vermont Center for Geographic Information (VCGI). VCGI is a non-profit, 501(c)4, corporation established as an instrumentality of the State of Vermont that is statutorily charged with the coordination and implementation responsibilities relating to the state's geospatial resources. VCGI is responsible for the management of Vermont's Geographic Information System (VGIS).

VCGI has maintained a continually operating statewide GIS data repository and data coordination office for the State of Vermont since 1989. VCGI employs proven and fully documented business processes to ensure business continuity in accordance with industry standards for an organization similar to ours. VCGI's financial records are audited through an independent auditor every year and in the most recent year, as in previous years, the results were found to be free of financial misstatement and there were no instances of non-compliance that are required to be reported under Government Auditing Standards. A copy of the most recent Financial Statements and Supplementary Information from VCGI's auditor is available upon request. VCGI has a Board of Directors composed of 12 individuals selected by the Governor of Vermont representing a wide range of state interests from VT Senate and House members to academic representatives from the universities and colleges in VT to a representative from the private sector. Mr. Tom Murray, state CIO, is Chair of the VCGI Board of Directors.

As mentioned previously, VCGI has acted as prime contractor on other state data collection initiatives over the years. The most significant project recently completed was the state's Critical

Facilities data collection efforts. This was a multi-year effort funded and directed by the federal Department of Homeland Security. The project was sub-granted through each state's respective Homeland Security Office. The total value of the grant to VCGI was over \$870,000 and VCGI was responsible for creating and maintaining 10+ sub-contracts with the local and regional data collection managers. VCGI provided all required state and federal project and financial reporting on time and completed the project ahead of schedule. Every year VCGI maintains several contracts with state government agencies and departments and also with federal partners. In the past, VCGI has successfully contracted with or worked on grants from the US Geological Survey, Federal Emergency Management Agency (FEMA), Environmental Protection Agency (EPA), and U.S. Department of Transportation (USDOT). VCGI also has experience creating, evaluating and awarding competitive Requests for Proposals to the private sector for the provision of data collection and mapping information.

VCGI has maintained an active, registered, fully compliant National Spatial Data Infrastructure clearinghouse node for the State's GIS data since 1993. The node currently offers literally dozens of different data layers for download access all with FGDC compliant metadata. In 2002, VCGI extended their data distribution services by developing a web map interface 'clip and zip' data download capability for public access to the State's data. Project managers at VCGI have developed several web mapping applications for different customers. Currently, they provide a secure web mapping application to Vermont Emergency Management for their use in emergency mitigation, planning and training activities. VCGI has also created demonstration web mapping applications using the State's foundation data for the Vermont Dept. of Information and Innovation, the Dept. of Health and the University of Vermont, Center for Rural Studies.

The primary project technical lead for VCGI will be Mr. Stephen Sharp. Mr. Sharp is a Senior Project Manager at VCGI as well as Database Administrator and Web Site Manager. Mr. Sharp already has a solid professional working relationship with geospatial and telecommunications technical personnel at all of the partnership organizations, having been the lead on all previous telecommunications mapping. Specifically, over the past two years Mr. Sharp has worked with the VT Department of Public Service, the VT CIO and the VT Telecommunications Authority in support of broadband access data development and the provision of telecommunications mapping needs. Mr. Sharp also supervises technical staff at VCGI on projects involving state data development, integration, conversion, maintenance and analysis.

The Executive Director (ED) at VCGI, Mr. David Brotzman will provide program guidance, financial and resource management, and the creation and management of Requests for Proposals (RFPs) for private sector contractors on the project. Mr. Brotzman has been ED for 9+ years at VCGI and prior to his tenure he was Lead Engineer and Project Manager in large Federal mapping system projects in the National Imagery and Mapping Agency (NIMA, now NGA) while working with Intergraph Corporation and British Aerospace Engineering Systems. He has 30 years of experience in systems design as well as technical and financial project management. In addition, VCGI, as a non-profit corporation, has a fully functioning business office with a full time Business Manager that has been with the organization for over 10 years. VCGI has both the capacity and the experience to manage the technical and business aspects of this project.

Additionally, to ensure that all project activities meet the larger goals of the national American Recovery and Reinvestment Act, VCGI will maintain regular communication with the **Vermont Office of Economic Stimulus and Recovery (ESR)**. Established by the Governor of Vermont in early 2009, the Office of Economic Stimulus and Recovery (ESR) assists and coordinates efforts of State, community, and private organizations to obtain stimulus funds for projects, which not only alleviate the pain of the current recession but build the infrastructure necessary for Vermonters to succeed in the second decade of the 21st century.

Accountability and transparency in the expenditure of stimulus (American Recovery and Reinvestment Act or ARRA) funds are key responsibilities of ESR. ESR has a Director of Audit and works closely with the State Auditor of Accounts to assure that ARRA-funded projects are designed from the beginning to meet stringent reporting requirements.

2) *Vermont Department of Public Service*

The Vermont Department of Public Service (DPS) represents the public interest in matters regarding energy, telecommunications, water, and wastewater. The Telecommunications Division is responsible for implementing telecommunication policy objectives, including support for universal availability of broadband and mobile phone services.

The Department of Public Service is well positioned as an essential partner in the collection of broadband mapping and survey data. Through its longstanding relationships with providers and its history of collecting broadband service availability data from traditional telephone companies and cable operators, the Department has a proven track record in identifying key information and its technical ability to create and publish useful broadband mapping information. Since 1992, the Department has conducted extensive telephone surveys concerning consumer expectations, product demand, availability and use of services in both the residential and business communities. The Department's history with the surveys has enabled it to keep up to date on trends in consumer demand and expectations and to deliver quality analysis to the state legislature for action. Staff members at the Department have extensive GIS experience and in-depth knowledge of global technology trends, national communications policy and local efforts to attract broadband providers to rural communities through demand aggregation programs.

Deborah Shannon, Telecommunications Policy Analyst, is the designated survey and planning Coordinator for this effort and will be supported by the GIS Telecommunications Specialist. In June 2009, Deb released the Vermont Telecommunications Almanac. Her 12 years experience in sales and community technology education and planning qualify her to lead the planning efforts for this application. Prior to her position with the state, Deb worked in education and development for Vermont's first ISP. She has developed training materials for new Internet users and lead forums for businesses interested in developing a web presence. In 2004, MontpelierNet, a wireless broadband provider in the state capital, hired Deb to respond to sales and customer development requests.

As a telecommunications Policy Analyst with the Department since 2008, Deb published the Vermont Telecommunications Almanac, which provides key data about the status of telecommunications in Vermont. These statistics, described in relationship to national and global

data provide important indicators of where Vermont has progressed in meeting its telecommunication needs, and where there is room for further improvement. The Almanac includes maps of where and what types of broadband services are available in Vermont. Deb's experience with colleagues at DPS Consumer Affairs Division and the Vermont Council on Rural Development qualifies her as a knowledgeable and capable aggregator of statewide information on broadband. She demonstrates a unique knowledge of current broadband needs and the ability to synthesize and analyze data for use in public policy forums. As a policy maker, Deb communicates regularly with ISP decision makers around the state. Her well-rounded network of broadband providers, wireless technology developers and consumers positions her to develop research tools that identify core issues around adoption and non-adoption of broadband services. Furthermore, her position at the Department provides access to statewide communications tools including multiple websites, mailing lists and consumer contacts, which she will utilize to distribute the survey results.

Corey Chase, Acting Telecommunications Director, formerly the Telecommunications Infrastructure Specialist at DPS and past President of V-Sat Telecom, Inc., Corey has worked closely with VCGI on the development and maintenance of state broadband service availability maps. He is responsible for fine-tuning the Vermont Broadband maps to offer the most accurate representation possible of broadband availability throughout the state. He provides testimony to the Public Service Board and is responsible for telecommunication policy development concerning service quality standards, benchmarks, consumer affairs and new service deployments. Their combined level of expertise and ability to build successful relationships with providers has established Vermont DPS as a national forerunner in broadband surveying and mapping.

3) *Vermont Telecommunications Authority*

Signed in June 2007 by Governor Jim Douglas, VT Act 79 created the Vermont Telecommunications Authority to facilitate the establishment and delivery of mobile phone and internet access infrastructure and services for residents and businesses throughout Vermont. The authority is focused on unserved and underserved areas and an overall long-term goal of establishing broadband and mobile phone infrastructure throughout the state.

The VTA is statutorily directed as follows:

- (1) to develop and maintain an inventory of locations at which mobile telecommunications and broadband services are not available within the state, develop and maintain an inventory of infrastructure that is available or reasonably likely to be available to support provision of services to areas unserved, and develop and maintain an inventory of infrastructure necessary for provision of these services to the areas unserved;
- (2) to identify the types and locations of infrastructure and services needed;
- (3) to coordinate the agencies of the state to make public resources available to support the extension of mobile telecommunications and broadband infrastructure and services to all unserved areas;

- (4) to coordinate and establish public-private partnerships to extend availability of mobile telecommunications and broadband services, and to promote development of the infrastructure that enables the provision of these services;
- (5) to support and facilitate local initiatives to extend the availability of mobile telecommunications and broadband services, and to promote development of the infrastructure that enables the provision of these services;
- (6) to provide resources to local, regional, public and private entities in the form of loans, grants, and other incentives funded through bonded capital and other resources;
- (7) to solicit and consider input from local municipal authorities, districts designated by the federal economic development administration, regional planning commissions, and metropolitan planning organizations;
- (8) to inventory and assess the potential to use federal radio frequency licenses held by instrumentalities of the state to enable broadband service in unserved areas of the state; take whatever steps are consistent with the powers granted the authority under this chapter to promote the use of those licensed radio frequencies for that purpose; and recommend to the general assembly any further legislative measures with respect to ownership, management, and utilization of these licenses as would promote the general good of the state; and
- (9) to utilize existing buildings and structures, historic or otherwise, as sites for visually-neutral placement of mobile telecommunications and wireless broadband antenna facilities.

Since its inception in 2007 the VTA has been actively pursuing the same infrastructure development goals that have been recently identified by the BTOP and BIP federal broadband development programs, specifically, providing broadband service to unserved and underserved communities. As an active enabler of the development of broadband infrastructure in Vermont, with existing programs in place, VTA is an important partner for the Team. They provide a connection to existing future Broadband development plans and relationships with service providers. They also provide to the Team an experience based knowledge of telecommunications technologies and the specific issues related to their implementation throughout Vermont.

4) *University of Vermont - Center for Rural Studies*

The Center for Rural Studies (CRS) is a nonprofit, fee-for-service research organization that addresses social, economic, and resource-based problems of rural people and communities. Based in the College of Agriculture and Life Sciences at the University of Vermont (UVM), CRS provides consulting and research services in Vermont, the United States, and abroad. Over its three decades of existence, CRS has developed its expertise and reputation in the areas of survey research, program evaluation, community data, community planning, focus groups, and outreach and capacity building. Today CRS's 7-10 member staff continues to demonstrate CRS's breadth and depth, managing various different projects every year, from single-client consultations to large federal research grants worth hundreds of thousands of dollars.

CRS will bring its knowledge and expertise in survey research and rural context to this project to design, implement and analyze a statewide telephone poll that will verify the accuracy of broadband service in Vermont to within a statistically rigorous range.

Using a stratified random sampling methodology, CRS will verify the accuracy of existing broadband availability and connectivity data sets at a confidence level of 95 percent with a confidence interval (margin of error) of plus or minus 5 percent. This means that 95 percent of the time the verification will be accurate to within a 10 percent total range of the survey response.

This verification will consist of making contact with a statistically significant number of Vermont residences and businesses to determine their broadband connectivity and perceived availability (both by service type). Physical addresses will be utilized, which will allow for comparisons to the physical address points used in the existing broadband availability and connectivity datasets. If this study finds that, for example, 90 percent of physical addresses in the connectivity dataset self-report actual broadband connectivity, the conclusion will be the dataset is 90 percent accurate within the range of the above confidence interval. It should be noted that factors of the study, once conducted, may enable an even more precise confidence interval.

No other organization is better suited for this particular task dealing with this particular topic area in the State of Vermont than the Center for Rural Studies. Using its annual *Vermont Poll*, CRS has been tracking various aspects of the digital divide for more than a decade, including such variables as household computer ownership, Internet connectivity, broadband connectivity and service type, desire for Internet, perceived barriers to high-speed Internet, and the use of online resources. CRS has observed, for instance, that the proportion of Vermont households with high-speed or broadband Internet has increased from 9% in 2001 to slightly more than 66% in 2009. Nevertheless a geographic divide remains: 76% of rural households with Internet connections have broadband versus urban (88%) or suburban (93%) households.

CRS has also gauged public interest in the involvement of state and local government in broadband service provision. The 2007 *Vermont Poll* found a majority (58%) of respondents in support of the allocation of State funds toward universal broadband. In 2008, a vast majority of respondents (77%) were in favor of having their city or town involved in such an effort.

Other technology-related projects that CRS has been involved in recently include the 1999-2002 *Town Officer's Connectivity Project*, the 2006 *CyberSkills for Vermont Municipalities* project, and the ongoing *Municipal E-Government Outreach Project*, including the 2004 *Vermont Municipal E-Government Conference*. CRS has also provided monetary and technical support for the Vermont Council on Rural Development's community broadband facilitation work since 2003.

5) Vermont Enhanced 9-1-1 Board

Title 30 VSA Chapter 87, authorized the establishment of a statewide emergency 9-1-1 calling system. The Enhanced 9-1-1 Board is the agency responsible for the design and maintenance of the 9-1-1 network, call-handling equipment, call-handling and mapping software support,

telecommunication training, and maintenance of all necessary databases for 9-1-1 call routing and handling, including its statewide enhanced 9-1-1 GIS database.

In 1995, roughly 75 % of the state did not have a conventional street addressing system. The Enhanced 9-1-1 Board worked to develop a GIS database with coordinate information, providing a cost efficient and time saving method to address Vermont municipalities, with the goal of creating a digital map able to accommodate both wire line and wireless enhanced 9-1-1.

Currently, Vermont's statewide enhanced 9-1-1 GIS database contains:

- 322,125 sites
- 63,359 street segments
- 35,019 roads/road names (including all private roads)
- 80,701 driveways
- 465 Emergency Service Zones (ESZs), including the primary Emergency Service Agencies (ESAs) for each ESZ.

The State of Vermont Enhanced 9-1-1 Board also maintains wireless tower and sector information for Verizon Wireless, Sprint/Nextel, T-Mobile, AT&T Mobility, US Cellular, and Unicef. Together there are 782 wireless towers distinct to wireless carrier with 2494 associated wireless sectors. Attached is an example of the wireless information maintained (*Information Needed From All Wireless Carriers for the Implementation of FCC Order 94-102*).

The GIS database is maintained primarily by three members of the Board staff (a GIS Database Administrator, a GIS Technician, and an Office Assistant) with indirect department support (see attached budgetary document). Also, 30 VSA § 7056 (a) requires that all municipalities participating in enhanced 9-1-1 are required to appoint a Municipal 9-1-1 Coordinator who is responsible for updating the E9-1-1 Board with address information as outlined in the attached "*Municipal Government Enhanced 9-1-1 Maintenance Responsibilities*." This municipal-based relationship is integral to having accurate, up-to-date addressing data.

Updates from the municipalities are added to Vermont's GIS dataset and flagged for GPS field verification. The Board has its own vehicle equipped with an OmniStar, WASS, and Beacon enabled differentially corrected GPS unit and software specifically designed for capturing E9-1-1 road and site information. This data is meticulously and constantly maintained, as it is used primarily for purposes of public safety. We have processes in place to ensure the timely update of any new roads, sites, or emergency service zones:

- Municipalities are required to submit updates to the Board for any changes to sites, roads, or ESZs, as they occur.
- Each year municipalities are provided with a 9-1-1 atlas showing all the changes submitted in the previous 12 months. They must review their atlas, ensuring that all the changes submitted have been processed.
- ALI/GIS Discrepancies – the 9-1-1 call-taker is required to complete a discrepancy form if the address on the map display is incorrect based on information provided by the 9-1-1 caller or emergency service responder.

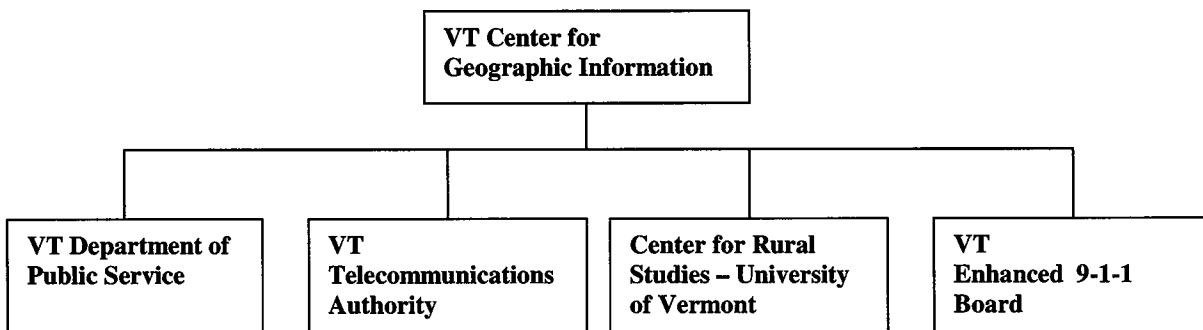
- ALI/GIS Site Audit – an annual comparison of the addresses in the ALI database to the addresses in the GIS database. Any inconsistencies are sent back to the Municipal 9-1-1 Coordinator for resolution.

Future GIS Database Development for Broadband Mapping Proposal

The Enhanced 9-1-1 Board will provide VCGI with the E9-1-1 locatable address through SDE/SQL server replication from database to database.

6) Organization

An effective project organizational structure is essential to achieving success. The following diagram graphically depicts the proposed organizational structure of the Broadband Mapping Team:



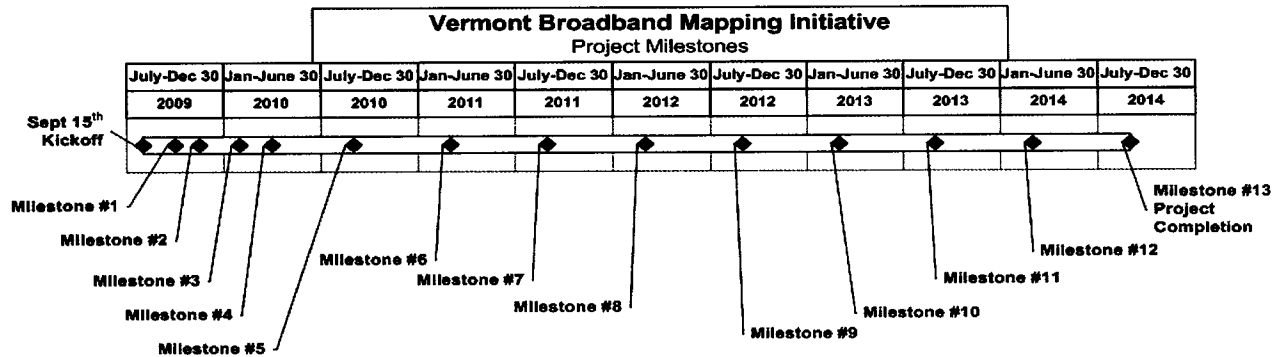
7) Additional Project Partners:

Project partners from other areas of the telecommunications community are also included as part of the project plan. The specific role(s) of each of these partners is identified in the narrative. The additional partners are;

- **VT Council on Rural Development (VCRD)** The Vermont Council on Rural Development (VCRD) is a non-profit organization dedicated to the support of the locally defined progress of Vermont's rural communities. VCRD is a dynamic partnership of federal, state, local, non-profit and private partners. Actively non-partisan with an established reputation for community-based facilitation, VCRD is uniquely positioned to sponsor and coordinate collaborative efforts across governmental and organizational categories concerned with policy questions of rural import.
- **Telecommunications Companies** (cable, phone, wireless, etc.) Vermont has 20+ telecommunications companies that offer services in the state and the Team sees each of those providers as a full partner to the development of quality Broadband data in this initiative. We hope to establish long term relationships with the providers based upon trust and a willingness to respect the business and civic needs of the respective partners.
- **Private Sector Companies:** The private sector will play an important role by helping to collect field data, build propagation models, and perform other specialized tasks.
- **Data collection sub-contractors:** VCGI, DPS and CRS will be hiring consultants or temporary employees to support their organizations for this initiative.

III. Expedient Data Delivery

Vermont Broadband Mapping Initiative will leverage the capabilities of the Mapping Team, subcontractors, and project partners to ensure the timely delivery of all data specified by the NTIA^{*15}. The chart below identifies all critical milestones during the 5-year timeframe of this effort. Each milestone is described in more detail below.



Description of Milestones: The milestone numbers below correspond with the numbers on the milestone chart.

- **Milestone #1 – (November 1st, 2009):** A “substantially complete set of availability data”^{*16} will be delivered to the NTIA on November 1st, 2009. The deliverables will not be verified as of November 1st, 2009, and therefore will be preliminary. The package will include the following deliverables (refer to section *I.(a) Data Gathering* for details).
 - Broadband Service Availability - Service Associated with a Specific Address (Deliverable #1 in section *I.(a) Data Gathering*)
 - Broadband Service Availability – Wireless Services (Deliverable #2 in section *I.(a) Data Gathering*)
 - Community Anchor Institutions (Deliverable #6 in section *I.(a) Data Gathering*)
- **Milestone #2 (November 15th, 2009):** The data delivered at Milestone#1 will be partially verified through the following survey verification activities.
 - CRS will complete its first 5-10 question survey to support verification of the deliverables listed under *Milestone #1*. The address-level survey will be compared to the address-level data to develop a statistically valid accuracy assessment of the data.
 - The Department of Public Service (DPS) will deliver results of the 60 question broadband survey of residents and businesses. The survey will also include the 5-10

¹⁵ Including all deliverables listed in Appendix A (Technical Appendix) of the NTIA State Broadband Data and Development Grant program NOFA. These deliverables are also described in more detail in section *I.(a) Data Gathering* of this proposal.

¹⁶ As defined in section III-DEFINITIONS of the NTIA State Broadband Data and Development Grant program NOFA.

questions asked by CRS in its survey (Milestone #2 above) in support of data verification requirements.

- **Milestone #3 (February 1st, 2010):** A second “substantially complete set of availability data” will be delivered to the NTIA on February 1st, 2010. The package will include the following deliverables (refer to section *I.(a) Data Gathering* for details).
 - Broadband Service Availability - Service Associated with a Specific Address (Deliverable #1 in section *I.(a) Data Gathering*)
 - Broadband Service Availability – Wireless Services (Deliverable #2 in section *I.(a) Data Gathering*)
 - Residential Broadband Service Pricing (Deliverable #3 in section *I.(a) Data Gathering*)
 - Broadband Service Infrastructure - Last-Mile Connection Points (Deliverable #4 in section *I.(a) Data Gathering*)
 - Broadband Service Infrastructure - Middle-mile and Backbone Interconnection Points (Deliverable #5 in section *I.(a) Data Gathering*)
 - Community Anchor Institutions (Deliverable #6 in section *I.(a) Data Gathering*)
- **Milestone #4 (March 1st, 2010):** A complete and verified set of availability data will be delivered to the NTIA on March 1st, 2010. The package will include the following deliverables (refer to section *I.(a) Data Gathering* for details).
 - Broadband Service Availability - Service Associated with a Specific Address (Deliverable #1 in section *I.(a) Data Gathering*)
 - Broadband Service Availability – Wireless Services (Deliverable #2 in section *I.(a) Data Gathering*)
 - Residential Broadband Service Pricing (Deliverable #3 in section *I.(a) Data Gathering*)
 - Broadband Service Infrastructure - Last-Mile Connection Points (Deliverable #4 in section *I.(a) Data Gathering*)
 - Broadband Service Infrastructure - Middle-mile and Backbone Interconnection Points (Deliverable #5 in section *I.(a) Data Gathering*)
 - Community Anchor Institutions (Deliverable #6 in section *I.(a) Data Gathering*)
 - User-friendly online maps as defined in section *I.(c) Accessibility* of this proposal.
- **Milestone #5 (September 1st, 2010):** Updated versions of the deliverables listed above, excluding DPS’s survey. CRS’s 5-10 question survey will be delivered instead, and used to verify the data. The data will be accurate as of both December 31st, 2009 and June 30th, 2010. Online maps (static and interactive) will be updated as well.
- **Milestone #6→13 (March 1st and September 1st, 2011-2014):** Updated versions of the deliverables listed in *Milestone #4* above (excluding DPS survey). March 1st updates will include data accurate as of both December 31st of the previous years. September 1st updates

will include data accurate June 30th of the current year. Online maps (static and interactive) will be updated semi-annually as well. DPS will complete and deliver the 60 question broadband survey in 2013.

- **Reporting:** Quarterly status reports will be submitted to the NTIA. The reports will document
 - expenditure of grant funds and how much of the award remains;
 - amount of non-federal cash or in-kind investment that is being added to complete the project; and
 - whether the project is on schedule to provide broadband-related data in accordance with the mapping project timeline.

IV. Process for Repeating Data Updating

Vermont's Broadband Mapping Initiative incorporates a robust maintenance strategy that will ensure the long-term accuracy of Vermont's broadband inventory. The Mapping Team (Team) understands the importance of long-term data maintenance. VCGI (a member of the Mapping Team) has extensive experience maintaining large complex datasets over a multi-year period. As the state designated maintainer and distributor of Vermont's geospatial data assets, VCGI's technical personnel have extensive experience with the requirements of data maintenance, update, and dissemination.

The Mapping Team (Team) will utilize the following tools and strategies to maintain the accuracy of the State's broadband inventory over a 5-year period*¹⁷. Updates will be submitted to the NTIA on a semi-annual basis (March 1st and September 1st of each year) as stipulated in the NTIA State Broadband and Data Development Program (SBDD).

1. **Online Broadband Data Update and Verification by Providers:** This online tool will allow authorized users (eg: broadband providers) to identify changes impacting the geographic extent, type, and speed of their broadband services. The Mapping Team will evaluate online submissions and ensure that the data meets high-quality standards. If so, the data will be used to update the statewide broadband inventory. For wireless providers, new or modified wireless facilities (towers/antennae) will be used to generate updated wireless propagation maps.
2. **Offline Data Submitted by Providers:** Broadband providers will be given the option of submitting digital updates offline. The Mapping Team will ensure that the data meets established standards and specifications. If so, the data will be used to update the statewide broadband inventory. For wireless providers, new or modified wireless facilities (towers/antennae) will be used to generate updated wireless propagation maps.

¹⁷ The NTIA State Broadband Data Program requires that the recipient of NTIA grant funds agree to update the broadband data semi-annually over a 5-year timeframe.

3. **Online Feedback by the Public:** This user-friendly online tool (hosted on the BroadbandVT website) will allow the public to identify and flag errors on the broadband map. Users will be given the option of verifying data or flagging errors down to the address-level (eg: home or business). They will also be able to test their broadband speed and report that back at the address-level, helping to verify “typical” broadband speed information. Users will also have the option of specifying how much they pay for broadband service. The Mapping Team will evaluate online submissions by the public to determine if they can be used to update or correct the master broadband inventory. If so, the feedback will be used to update the statewide broadband inventory. Address-level submission will be used to update the statewide address list outlined in deliverable #1 (Broadband Service Availability - Service Associated with a Specific Address) under section *I.(a) Data Gathering*.
4. **Ongoing Survey of Anchor Institutions:** CRS will conduct an annual phone and/or online survey of community anchor institutions to verify and update broadband information for each institution.
5. **“On the Ground” Data Collection:** When necessary, the Mapping Team will utilize “on the ground” data collection and mapping techniques (GPS) to update or verify certain broadband datasets. In some cases this may involve going to the offices of the broadband providers to validate information against internal documents. In other cases, it may involve going out “into the field” with line workers to verify or update information.
6. **Close Collaboration:** In all cases, the Mapping Team will work in close collaboration with broadband providers, partners, and anchor institutions to ensure the ongoing accuracy of the State’s broadband inventory.

The Broadband Mapping Team will utilize one or more of the verifications methodologies outlined in section I.(b) to verify data updates on a semi-annual basis.

The Department of Public Service (DPS) and the Center for Rural Studies (CRS) will conduct periodic surveys. CRS will conduct it’s a 5-10 question survey semi-annually (every 6 months) to support verification of semi-annual data updates. The Department of Public Service will conduct a broader survey of telecommunications needs and uses twice during the 5 year period.

V. Collaboration and Planning

The Vermont Broadband Mapping Team includes most of the primary state entities responsible for the oversight and promotion of telecommunications and broadband services in Vermont. Specifically, the VT Department of Public Service and the VT Telecommunications Authority have existing relationships with the provider community and local authorities. Also, as previously mentioned, the Mapping Team partners have a previous history of working together on telecommunications mapping work and other mapping initiatives for several years. These existing relationships are a key strength of our Team approach.

Our proposed Vermont Broadband Mapping Initiative includes no request for funding for Planning activities. This is not because planning will not be done, but because the Vermont State Legislature already requires the Department of Public Service to create a yearly Telecommunications Plan. The mapping data and survey information that is created from this Initiative will be used by DPS to create a plan that is considerably more robust, defensible and in line with national plans. The yearly planning activities that Vermont DPS will do are already part of their mission and will not be funded through this grant.

Appendix B - 5 Year Budget Breakdown

Year One	TIME ESTIMATE	COST ESTIMATE
Personnel Budget Elements		
Project Management	132	\$12,882
Central Administration		\$4,502
Data - Gathering	4900	\$330,036
Data - Verification	370	\$25,572
Data - Accessibility	700	\$66,361
Data - Updating		\$0
TOTAL ESTIMATE	6102	\$439,353
Partner Contractual		
VT Dept. of Public Service		\$150,965
Center for Rural Studies - Univ. of VT		\$44,404
Enhanced 9-1-1- Board		\$24,750
VT Telecommunications Authority		\$0
Contract Services		
Supplies & Software		\$233,720
Travel		\$15,700
Equipment		\$1,000
Other Direct Costs		\$4,000
		\$0
TOTAL OTHER DIRECT COSTS		\$474,539
TOTAL BUDGETED COSTS (Year 1)		\$913,892

Year Two	TIME ESTIMATE	COST ESTIMATE
Personnel Budget Elements		
Project Management	67	\$6,539
Central Administration		\$1,442
Data - Gathering		
Data - Verification	188	\$12,786
Data - Accessibility		\$0
Data - Updating	630	\$50,864
TOTAL ESTIMATE	885	\$71,631
Partner Contractual		
VT Dept. of Public Service		\$116,840
Center for Rural Studies - Univ. of VT		\$36,338
Enhanced 9-1-1- Board		\$5,000
VT Telecommunications Authority		\$0
Contract Services		
Supplies & Software		\$47,720
Travel		\$5,075
Equipment		\$1,000
Other Direct Costs		\$0
		\$0
TOTAL OTHER DIRECT COSTS		\$211,973
TOTAL BUDGETED COSTS (Year 2)		\$283,604

Year Three	TIME ESTIMATE	COST ESTIMATE
Personnel Budget Elements		
Project Management	67	\$6,539
Central Administration		\$1,434
Data - Gathering		
Data - Verification	187	\$12,786
Data - Accessibility		\$0
Data - Updating	630	\$50,864
TOTAL ESTIMATE	884	\$71,622
Partner Contractual		
VT Dept. of Public Service		\$116,840
Center for Rural Studies - Univ. of VT		\$35,599
Enhanced 9-1-1- Board		\$5,000

Year Four	TIME ESTIMATE	COST ESTIMATE
Personnel Budget Elements		
Project Management	67	\$6,539
Central Administration		\$1,457
Data - Gathering		
Data - Verification	188	\$12,786
Data - Accessibility		\$0
Data - Updating	630	\$50,864
TOTAL ESTIMATE	885	\$71,646
Partner Contractual		
VT Dept. of Public Service		\$116,840
Center for Rural Studies - Univ. of VT		\$38,956
Enhanced 9-1-1- Board		\$5,000

**Vermont's Broadband Mapping Initiative
Project Proposal**



VT Telecommunications Authority		\$0
Contract Services		\$47,720
Supplies & Software		\$5,075
Travel		\$0
Equipment		\$0
Other Direct Costs		\$0
TOTAL OTHER DIRECT COSTS		\$210,234
TOTAL BUDGETED COSTS (Year 3)		\$281,857

VT Telecommunications Authority		\$0
Contract Services		\$47,720
Supplies & Software		\$5,075
Travel		\$1,000
Equipment		\$0
Other Direct Costs		\$0
TOTAL OTHER DIRECT COSTS		\$214,591
TOTAL BUDGETED COSTS (Year 4)		\$286,236

Year Five	TIME ESTIMATE	COST ESTIMATE
Personnel Budget Elements		
Project Management	67	\$6,539
Central Administration		\$903
Data - Gathering		
Data - Verification	187	\$12,786
Data - Accessibility		\$0
Data - Updating	630	\$50,864
TOTAL ESTIMATE	884	\$71,092
Partner Contractual		
VT Dept. of Public Service		\$17,062
Center for Rural Studies - Univ. of VT		\$45,217
Enhanced 9-1-1- Board		\$5,000
VT Telecommunications Authority		\$0
Contract Services		\$47,720
Supplies & Software		\$5,075
Travel		\$1,000
Equipment		\$0
Other Direct Costs		\$0
TOTAL OTHER DIRECT COSTS		\$121,074
TOTAL BUDGETED COSTS (Year 5)		\$192,165

JAMES H. DOUGLAS
Governor



State of Vermont
OFFICE OF THE GOVERNOR

August 12, 2009

The Honorable Lawrence E. Strickling, Assistant Secretary
National Telecommunications and Information Administration
U.S. Department of Commerce
1401 Constitution Avenue, NW
Washington, DC 20230

RE: Broadband Data Improvement Act
Designation of Single Eligible Entity

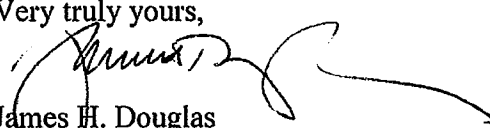
Dear Assistant Secretary Strickling:

For purposes of Section 106 of the Broadband Data Improvement Act, I hereby designate the Vermont Center for Geographic Information ("VCGI") to be the single eligible entity in the State of Vermont to receive a grant under the State Broadband Data Development Grant Program pursuant to the Notice of Funds Availability published in the Federal Register by the National Telecommunications and Information Administration (NTIA) on July 8, 2009.

VCGI is established in state law as a nonprofit public corporation "as a body corporate and politic and a public instrumentality of the state." 10 V.S.A. § 122(a). Among its statutory purposes is to "promote the efficient development and use of geographic information by agencies of the state, its political subdivisions, Vermont businesses and citizens." 10 V.S.A. § 123(b)(3). One of its statutory duties is to provide information and services to the federal government within the limits of available resources. 10 V.S.A. § 123(c) (1).

VCGI is governed by a twelve-member Board of Directors – ten are appointed by the Governor and two by legislative leadership. VCGI is the appropriate organization to carry out the purposes of the Broadband Data Improvement Act in the State of Vermont.

Very truly yours,



James H. Douglas
Governor

JHD/sry

Appendix A - Letter of State Designation from the Governor

JAMES H. DOUGLAS
Governor



State of Vermont
OFFICE OF THE GOVERNOR

August 12, 2009

The Honorable Lawrence E. Strickling, Assistant Secretary
National Telecommunications and Information Administration
U.S. Department of Commerce
1401 Constitution Avenue, NW
Washington, DC 20230

RE: Broadband Data Improvement Act
Designation of Single Eligible Entity

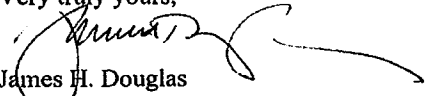
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VCGI is governed by a twelve-member Board of Directors – ten are appointed by the Governor and two by legislative leadership. VCGI is the appropriate organization to carry out the purposes of the Broadband Data Improvement Act in the State of Vermont.

Very truly yours,


James H. Douglas
Governor

JHD/sry

109 STATE STREET • THE PAVILION • MONTPELIER, VT 05609-0101 • WWW.VERMONT.GOV
TELEPHONE: 802.828.3333 • FAX: 802.828.3339 • TDD: 802.828.3345

Vermont Broadband Mapping Initiative - Project Abstract

In response to NTIA's State Broadband Data and Development Grant Program Notice of Funds availability Vermont is proposing the Broadband Mapping Initiative. The Vermont Broadband Mapping Team will initiate the development of a **comprehensive and verified** geographic inventory of broadband service availability in the State of Vermont. Landline and wireless services (fixed and mobile) will be mapped, including wireless voice and data with information from the providers and other sources. The broadband mapping information collected and verified through this proposed effort will then support the broadband development objectives identified in the RUS Broadband Initiatives Program (BIP) and NTIA's Broadband Technology Opportunities Program (BTOP) in Vermont. Most importantly, the geographic inventory will further refine our understanding of the location of "unserved" and "underserved" areas, supporting targeted investments in these areas.

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 4040-0006
Expiration Date 07/30/2010

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. 0660-ZA29	11.558	\$ []	\$ []	\$ 1,957,754.00	\$ 400,000.00	\$ 2,357,754.00
2.	[]	[]	[]	[]	[]	[]
3.	[]	[]	[]	[]	[]	[]
4.	[]	[]	[]	[]	[]	[]
5. Totals		\$ []	\$ []	\$ 1,957,754.00	\$ 400,000.00	\$ 2,357,754.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total (5)
	(1)	(2)	(3)	(4)	
	0660-ZA29				
a. Personnel	\$ 230,487.45	\$	\$	\$	\$ 230,487.45
b. Fringe Benefits	172,865.59				172,865.59
c. Travel	4,000.00				4,000.00
d. Equipment	4,000.00				4,000.00
e. Supplies	36,000.00				36,000.00
f. Contractual	1,188,410.00				1,188,410.00
g. Construction					
h. Other					
i. Total Direct Charges (sum of 6a-6h)	1,635,763.04				\$ 1,635,763.04
j. Indirect Charges	321,990.96				\$ 321,990.96
k. TOTALS (sum of 6i and 6j)	\$ 1,957,754.00	\$	\$	\$	\$ 1,957,754.00
7. Program Income	\$	\$	\$	\$	\$

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SECTION C - NON-FEDERAL RESOURCES

(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8. 0660-ZA29	\$ 400,000.00	\$ 22.00		\$ 400,022.00
9.				
10.				
11.				
12. TOTAL (sum of lines 8-11)	\$ 400,000.00	\$ 22.00		\$ 400,022.00

SECTION D - FORECASTED CASH NEEDS

	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	\$ 913,892.00	\$ 228,473.00	\$ 228,473.00	\$ 228,473.00	\$ 228,473.00
14. Non-Federal					
15. TOTAL (sum of lines 13 and 14)	\$ 913,892.00	\$ 228,473.00	\$ 228,473.00	\$ 228,473.00	\$ 228,473.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT

(a) Grant Program	FUTURE FUNDING PERIODS (YEARS)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16. 660-ZA29	\$ 913,892.00	\$ 283,604.00	\$ 281,857.00	\$ 478,401.00
17.				
18.				
19.				
20. TOTAL (sum of lines 16 - 19)	\$ 913,892.00	\$ 283,604.00	\$ 281,857.00	\$ 478,401.00

SECTION F - OTHER BUDGET INFORMATION

21. Direct Charges:	<input type="text"/>	22. Indirect Charges:	<input type="text"/>
23. Remarks: <input type="text"/>			

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Applicants should also review the instructions for certification included in the regulations before completing this form. Signature on this form provides for compliance with certification requirements under 15 CFR Part 28, 'New Restrictions on Lobbying.' The certifications shall be treated as a material representation of fact upon which reliance will be placed when the Department of Commerce determines to award the covered transaction, grant, or cooperative agreement.

LOBBYING

As required by Section 1352, Title 31 of the U.S. Code, and implemented at 15 CFR Part 28, for persons entering into a grant, cooperative agreement or contract over \$100,000 or a loan or loan guarantee over \$150,000 as defined at 15 CFR Part 28, Sections 28.105 and 28.110, the applicant certifies that to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, 'Disclosure Form to Report Lobbying,' in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure occurring on or before October 23, 1996, and of not less than \$11,000 and not more than \$110,000 for each such failure occurring after October 23, 1996.

As the duly authorized representative of the applicant, I hereby certify that the applicant will comply with the above applicable certification.

*** NAME OF APPLICANT**

Vermont Center for Geographic Information, Inc.

*** AWARD NUMBER***** PROJECT NAME**

Vermont's Broadband Mapping Initiative

Prefix:

Mr.

*** First Name:**

David

Middle Name:

F.

*** Last Name:**

Brotzman

Suffix:*** Title:** Executive Director*** SIGNATURE:**

Linda Ladd

*** DATE:**

08/14/2009

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C.1352

Approved by OMB
0348-0046

1. * Type of Federal Action: <input type="checkbox"/> a. contract <input checked="" type="checkbox"/> b. grant <input type="checkbox"/> c. cooperative agreement <input type="checkbox"/> d. loan <input type="checkbox"/> e. loan guarantee <input type="checkbox"/> f. loan insurance	2. * Status of Federal Action: <input type="checkbox"/> a. bid/offer/application <input checked="" type="checkbox"/> b. initial award <input type="checkbox"/> c. post-award	3. * Report Type: <input checked="" type="checkbox"/> a. initial filing <input type="checkbox"/> b. material change
4. Name and Address of Reporting Entity: <input checked="" type="checkbox"/> Prime <input type="checkbox"/> SubAwardee * Name: Vermont Center for Geographic Information, Inc. * Street 1: 58 South Main Street, Suite 2 Street 2: _____ * City: Waterbury State: VT: Vermont Zip: 05676 Congressional District, if known: 1		
5. If Reporting Entity in No.4 is Subawardee, Enter Name and Address of Prime: _____		
6. * Federal Department/Agency: Department of Commerce	7. * Federal Program Name/Description: _____ CFDA Number, if applicable: _____	
8. Federal Action Number, if known: 0660-ZA29	9. Award Amount, if known: \$ _____	
10. a. Name and Address of Lobbying Registrant: Prefix: _____ * First Name: No Lobbying Activities Middle Name: _____ * Last Name: No Lobbying Activities Suffix: _____ * Street 1: _____ Street 2: _____ * City: _____ State: _____ Zip: _____		
b. Individual Performing Services (including address if different from No. 10a) Prefix: _____ * First Name: No Lobbying Activities Middle Name: _____ * Last Name: No Lobbying Activities Suffix: _____ * Street 1: _____ Street 2: _____ * City: _____ State: _____ Zip: _____		
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when the transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.		
* Signature: Linda Ladd * Name: Prefix: Mr. * First Name: David Middle Name: F. * Last Name: Brotzman Suffix: _____ Title: Executive Director Telephone No.: 802-882-3003 Date: 08/14/2009		

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ASSURANCES - NON-CONSTRUCTION PROGRAMS

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0040), Washington, DC 20503.

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET. SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.

NOTE: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the awarding agency. Further, certain Federal awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant, I certify that the applicant:

1. Has the legal authority to apply for Federal assistance and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project cost) to ensure proper planning, management and completion of the project described in this application.
2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the award; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.
4. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.
5. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards for merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).
6. Will comply with all Federal statutes relating to nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee-3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and, (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.
7. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.
8. Will comply, as applicable, with provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

9. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333), regarding labor standards for federally-assisted construction subagreements.
10. Will comply, if applicable, with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is \$10,000 or more.
11. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).
12. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.
13. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a-1 et seq.).
14. Will comply with P.L. 93-348 regarding the protection of human subjects involved in research, development, and related activities supported by this award of assistance.
15. Will comply with the Laboratory Animal Welfare Act of 1966 (P.L. 89-544, as amended, 7 U.S.C. §§2131 et seq.) pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by this award of assistance.
16. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.
17. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."
18. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.

<p>* SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL</p> <p>Linda Ladd</p>	<p>* TITLE</p> <p>Executive Director</p>
<p>* APPLICANT ORGANIZATION</p> <p>Vermont Center for Geographic Information, Inc.</p>	<p>* DATE SUBMITTED</p> <p>08/14/2009</p>

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