

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:

Virgin Islands Public Finance Authority

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

660450278

* c. Organizational DUNS:

789438293

d. Address:

* Street1:

32-33 Kongens Gade

Street2:

* City:

St Thomas

County:

* State:

VI: Virgin Islands of the U.S.

Province:

* Country:

USA: UNITED STATES

* Zip / Postal Code:

00802-0000

e. Organizational Unit:

Department Name:

Office of Economic Opportunity

Division Name:

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

Prefix:

Mr.

* First Name:

Julito

Middle Name:

* Last Name:

Francis

Suffix:

Title:

Director of Finance and Administration

Organizational Affiliation:

* Telephone Number:

340-714-1635

Fax Number:

340-714-1636

* Email:

"Francis, Julito A." <jafrancis@usvipfa.com>

Application for Federal Assistance SF-424

Version 02

9. Type of Applicant 1: Select Applicant Type:

F: U.S. Territory or Possession

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

*** 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.):

US Virgin Islands

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

State Broadband Data and Development Grant Program for the United States Virgin Islands

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 * b. Program/Project

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

17. Proposed Project:

* a. Start Date: * b. End Date:

18. Estimated Funding (\$):

* a. Federal	<input type="text" value="2,886,416.00"/>
* b. Applicant	<input type="text" value="0.00"/>
* c. State	<input type="text" value="0.00"/>
* d. Local	<input type="text" value="0.00"/>
* e. Other	<input type="text" value="0.00"/>
* f. Program Income	<input type="text" value="0.00"/>
* g. TOTAL	<input type="text" value="2,886,416.00"/>

* 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

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: * First Name:

Middle Name:

* Last Name:

Suffix:

* Title: * Telephone Number: Fax Number: * Email: * Signature of Authorized Representative: * Date Signed:

Application for Federal Assistance SF-424

Version 02

*** 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.

SBDD Grant Program for US Virgin Islands – Program Abstract

This program will perform broadband mapping and planning for the U.S. Virgin Islands as part of the State Broadband Data and Development Grant Program. The data will provide the NTIA with the mapping data for the National Broadband Map at the appointed times, and will support the USVI BTOP grant proposal. The data will also be part of the ongoing engineering process for the rollout of the new broadband facilities in the USVI, as well as part of the support system for the ongoing operation of the new broadband capability. The program has been developed with widespread participation from Territory agencies and service providers.

The objectives of the project are to do the following:

- Support the National Broadband Map data layer input from the USVI
- Plan for projects to build up the middle mile capacity in the USVI to support:
 - High-speed open access broadband to all anchor tenant locations
 - Expanded last mile open access broadband service using a combination of high-speed wireless services and wired technologies
- Promote transparency of process while maintaining confidentiality of service provider proprietary data

The program focuses on gathering, verifying, and disseminating data that will be used to support broadband development and the roles of its various participants. The verified data inventory will be used for the following:

- To evaluate broadband needs, determining where broadband is unavailable, and the quality of what is available
- For expansion and capacity planning
- For cost analysis for building the infrastructure for unserved areas and expanding capacity in underserved areas

The sources of data include not only the service providers, but also information about anchor tenants obtained by direct inspection. As a general strategy for validating and purifying data extracted from the various origins, the data will all go through either verification or a scrubbing process using the official location and address data housed in the project geospatial database as the authoritative reference. The USVI will conduct performance tests on a statistically valid sample set of user locations to determine the actual broadband speeds during busy hour periods of congestion. Semiannual survey information of other users will also be gathered.

The methods for planning begin with a market analysis to determine the needs of the various communities within the USVI. The analysis will include extensions to the mapping and associated tools for not only analyzing the areas of unserved and underserved constituents, but also for the engineering activity that must precede the BTOP grant application. The process follows the engineering methodology of listening to the stakeholders, assessing capability and needs, forming a technology team to prepare a conceptual approach, and preparing a business plan for initial review. This iterative approach using community engagement will provide a quality understanding of the requirements and result in a strong basis for future broadband development.



United States Virgin Islands
Office of Economic Opportunity

SF-424 Narrative
for
State Broadband Data and Development
Grant Program
for the
United States Virgin Islands

CFDA 11.558

August 14, 2009

Submitted by:
United States Virgin Islands
Public Finance Authority
Office of Economic Opportunity
St. Thomas, VI



Executive Summary

The Virgin Islands Public Finance Authority - Office of Economic Opportunity (OEO) is pleased to submit this grant proposal on behalf of the U. S. Virgin Islands (USVI). The OEO considers the broadband mapping and planning effort a key initiative in bringing economic growth infrastructure to the territory.

Governor John P. de Jongh hosted all the existing service providers on May 21, 2009 to initiate the beginning of this effort. A second meeting was held on July 31st to review the specifics of the State Broadband Data and Development (SBDD) Grant Program with all the stakeholders and to initiate signing of non-disclosure agreements. The following service providers participated in the meetings, with the exception of Sprint.

Service Provider	Type	Service	Advertised Speed
Innovative Communications Group	ILEC Cellular/PCS/SMR	DSL	512 Kbps (Down) 128 Kbps (Up)
CHOICE Communications	Wireless Data	WiMax	768 Kbps (Down) 512 Kbps (Up)
Broadband VI	Wireless Data	WiFi	512 Kbps (Down) 512 Kbps (Up)
Clear Signal Network Solutions	Reseller (ATI)	—	—
ADM Wireless	Reseller (AT&T)	—	—
AT&T	Cellular	HSPA	700 Kbps (Down) 200 Kbps (Up)
Sprint	Cellular	EVDO	700 Kbps (Down) 200 Kbps (Up)

Table 1. Service Providers in the U.S. Virgin Islands

This grant application proposes to perform broadband mapping and planning in line with the guidelines established for the grant program. In addition to providing National Telecommunications Information Administration (NTIA) with the mapping data for the National Broadband Map at the appointed times, the data will also support the USVI Broadband Technologies Opportunity Program (BTOP) grant proposal scheduled for submission in Round Two of the BTOP



program. The data will also be part of the ongoing engineering process for the rollout of the new facilities in the USVI, as well as part of the support system for the ongoing operation of the new broadband capability.

To accomplish the goals of the SBDD Grant, the OEO has put together the *USVI Broadband Mapping Team* (BMT), which is sponsored and led by the OEO. Each BMT member is listed below with its specific goals:

- *USVI Public Service Commission* will provide regulatory support.
- *USVI Bureau of Information Technology* will provide support from the E-911 address information database.
- *USVI Lieutenant's Governors Office* will provide interagency GIS coordination.
- *USVI Water and Power Authority (WAPA)* will provide right-of-way, mapping and infrastructure assessment support.
- *University of Virgin Islands (UVI)* will support ongoing geospatial analysis, surveys and data verification.
- *Fountains Spatial* will create and verify the initial broadband service maps and the public facing portal.
- *Stratum Broadband* will provide strategic infrastructure insight, technology planning expertise, data aggregation expertise, and overall project management.

The BMT, as outlined above, is composed of significant expertise to meet the mission and objectives set forth in the SBDD Grant. Individuals on the BMT have worked together on other projects (E-911) and on work for USVI organizations strongly tied to serving the public good.

Using the definition of underserved as provided in the SBDD Grant Program, the three islands are largely underserved relative to broadband. No fixed or mobile broadband service provider advertises access to broadband transmission speeds of at least three megabits per second in the area. "Access" is defined as households being able to subscribe to broadband service upon request with a 7-10 business day typical service interval without an extraordinary commitment of resources. (This is meant to be a normal ordering interval.)

The middle mile is only supported by the incumbent carrier Innovative. Innovative is the incumbent local exchange carrier (ILEC) for the USVI and is the primary source of wire-line backhaul on the islands. For wireless last mile reach all other carriers attach to towers. All off-island connections are from the undersea landing cable sites or by satellite communications.



The highest priority for allocating grant funds within the USVI for projects is to build up the middle mile capacity to

1. Support global competitiveness;
2. Provide high-speed open access broadband to all anchor tenant locations; and
3. Expand last mile residential open access broadband service using a combination of high-speed wireless services and wired technologies.

The USVI Water and Power Authority (WAPA) will participate in the infrastructure build-out, allocating a certain capacity of the new infrastructure to smart grid use and the remaining capacity to the open access wholesale arrangements supporting all registered retail service providers in the islands.

The program focuses on gathering, verifying, and disseminating data that will be used to support broadband development and the roles of its various participants. The verified data inventory will be used

- To evaluate broadband needs, determining where it is unavailable, and the quality of what is available;
- For expansion and capacity planning; and
- For cost analysis for building the infrastructure for unserved areas and expanding capacity in underserved areas

The following diagram shows the overall approach to gathering the required data from the necessary sources, verifying the data, and delivering the data to federal destinations as well as the local website managed in the USVI.

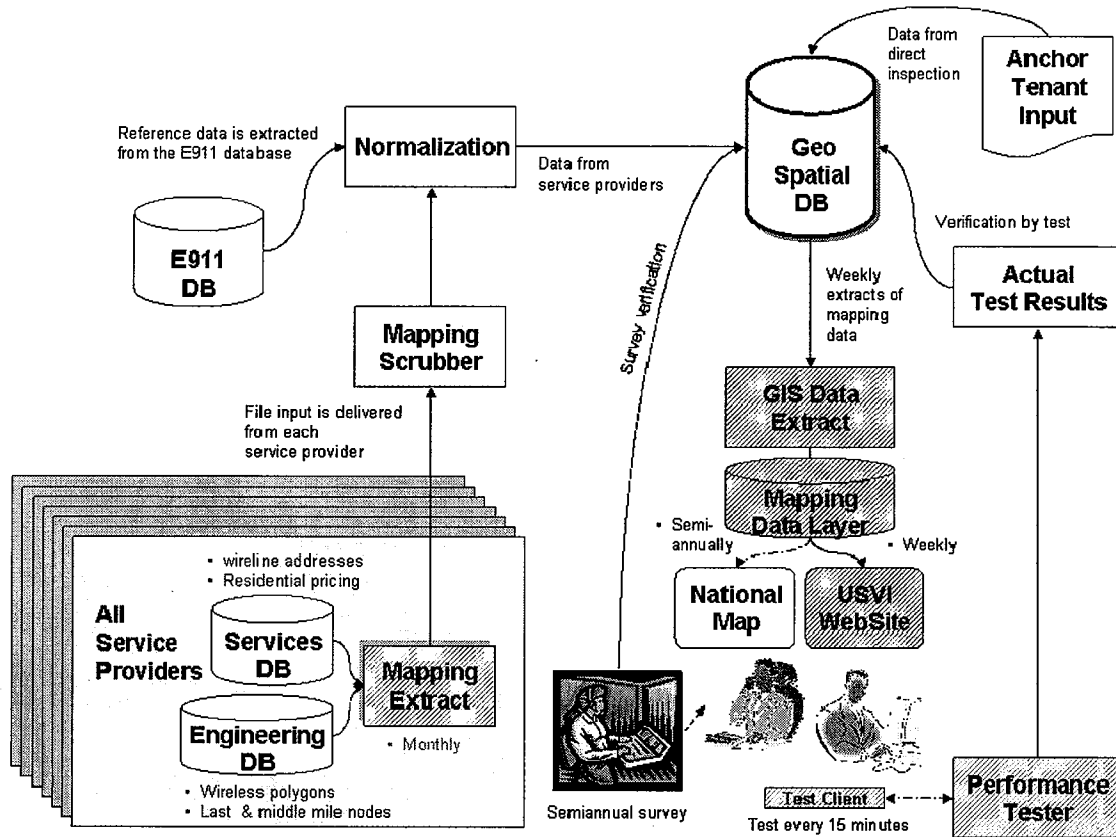


Figure 1. Overall Approach to Data Capture and Verification

The sources of data include not only the service providers, but also information on anchor tenants obtained by ground truthing using direct inspection. As a general strategy for validating and purifying data extracted from the various origins, the data will all go through either a verification or a scrubbing process using the official location and address data housed in the project geospatial database as the authoritative reference. The data in the geospatial database is drawn from the new E911 database as a further cross reference and correlation of validated address data.

In addition to capturing and verifying data received from the service providers themselves, the USVI will conduct performance tests on a statistically valid sample set of user locations to determine the actual broadband speeds during busy hour periods of congestion. The performance information will be updated in summary fashion as required, but also available in more detail on the USVI website for those who want to verify the measured performance from test sites. Semiannual survey information of test users will also be gathered.

The Danish format for the addresses in the USVI is rather non-standard compared to the rest of the United States. The differences in format will create challenges



when trying to create deliverables that depend on standardized address structures. (This postal address anomaly will be resolved by normalizing the addresses using the U.S. standard NENA 2.1 formats used by the E911 database.)

Broadband Planning

The OEO previously convened all service providers that operate in the USVI to collaborate on a master strategy for expansion of the USVI broadband capability while maintaining the benefits of competitive retail offerings. This group also met to discuss the details of this grant program and has shaped the approach to the program being described in this application. The USVI has retained Stratum Broadband of Boston, Massachusetts to facilitate the process and bring the project the up-to-the-minute knowledge of approaches being used in other states' programs. Under this proposal, the current team is being expanded to include all the major stakeholders in the government agencies, the anchor tenant groups, commercial interests, and residential interests.

The methods for planning begin with a market analysis to determine the needs of the various communities within the USVI. The analysis will include extensions to the mapping and associated tools for not only analyzing the areas of unserved and underserved constituents, but also for the engineering activity that must precede the BTOP grant application.

The BMT's process follows the engineering methodology of listening to the stakeholders, assessing capability and needs, and preparing a conceptual approach with accompanying business plan for initial review. Based on the approved direction, the BMT will then provide a more detailed engineering plan for drafting the BTOP grant proposal, based on the specifics of the research developed by the business planning and engineering efforts performed during this planning activity.

This iterative approach using community engagement not only provides a quality understanding of the requirements, but allows the buy-in and viral expansion of the common knowledge to become the most significant tool of the adoption program once new facilities are in place.

The activities are designed to fit with the requirements mandated by the SBDD process.

We are poised and ready to deliver on the requirements. The challenges notwithstanding are understood and the team assembled by the OEO has the required experience. The USVI agencies, instrumentalities, and in kind support services are an important aspect of the complete engagement of the Territory in the solution.



1. Data:

This first section describes the broadband mapping project in the sequence requested in the NOFA.

Broadband Mapping

(a) Data Gathering

The USVI broadband mapping initiative focuses on developing and maintaining an accurate broadband inventory map of the U.S. Virgin Islands. The goal is to gather, maintain, and disseminate a robust broadband dataset to support the NTIA's State Broadband Data Program. This initiative will establish innovative partnerships with Territory-level agencies, Territory authorities, broadband providers, and others who can assist with developing, verifying, and maintaining a territory-wide broadband inventory.

The full Broadband Mapping Team (BMT) will include representatives from the public, private, and non-profit sectors. The BMT will leverage the ideas, capabilities, and resources of each sector to ensure that the USVI broadband mapping initiative is successful and sustainable.

The OEO assembled the USVI BMT and engaged the service provider community to partner in creating the necessary data for this initiative. The joint planning sessions resulted in the working plan offered in this grant proposal.

Data Gathering 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 (SBDD) Grant Program, including, but not limited to, the following:
 - 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, and spectrum (wireless).



- c. Provide online access of clearly presented broadband maps to the public, government, and others without unduly compromising confidential information*¹.
- d. Establish innovative partnerships with Territory-level agencies, Territory authorities, broadband providers, and others who can assist with developing, verifying, and maintaining a territory-wide broadband inventory over a five-year time frame.

Methodology and Deliverables:

The BMT will use the strategies and methods outlined below to produce the deliverables necessary to meet the NTIA's SBDD Program requirements.*² Much of this data is obtained from the service providers and is covered by nondisclosure agreements described later providing the USVI with legal authority for submission of the data under this grant program.

Verification Methodology:

The BMT will use the following methods to verify the accuracy and completeness of these deliverables.

- Verification by survey
- Verification by direct inspection
- Verification by automated probe measurement

A complete description of each verification method is outlined in *Section I.b, Accuracy and Verification* below.

1. Broadband Service Availability -- Service Associated with a Specific Address

The process for acquiring and processing address data is most intensive in this first activity relative to the other types of data structures required.

¹ "Confidential Information" is defined in section "III. DEFINITIONS" of the NTIA's State Broadband Data and Development Grant Program NOFA.

² The preference is for all deliverables to 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. However, as determined by addressing anomalies and confidentiality requirements imposed by the service providers, the *Notice of Funds Availability; clarification* dated August 7, 2009 will prevail.



Acquire Broadband Service Provider Data

The BMT will acquire data from Innovative, the sole provider of “wireline” service (for example, cable, DSL, and T1) in the USVI. Specific data elements to be provided will include customer name, address, type of service, and other relevant variables.

It is understood that the quality of the address information will be limited. In many cases, a city style address (that is, house number and road name) is not used and therefore not included in the broadband customer data record.

Acquire Supporting Data Sets

As summarized in the table below, a number of other data sets will be acquired for use in developing this deliverable.

Data Set	Key Characteristics	Known Limitations
<i>E911</i>	NENA 2.1 formats with lat/long/elev	Data is ready but not in production on all islands.
<i>Road Centerlines</i>	<ul style="list-style-type: none"> ▪ TIGER/Line file available in GIS format 	<ul style="list-style-type: none"> ▪ Missing road names for many segments. ▪ No address range information.
<i>High-resolution Aerial Photography (1:1250 or 1:5000 scale orthophotography)</i>	<ul style="list-style-type: none"> ▪ Aerial views for both public and engineering 	<ul style="list-style-type: none"> ▪ Use only if available and current.

Readily available GIS data layers (for example, census boundaries, hydrography, and administrative boundaries) and hardcopy maps will also be acquired for general reference and other purposes.

When acquiring this data, strong emphasis will be placed on utilizing procedural and technical techniques to protect the broadband service providers’ intellectual property rights and trade secrets.

As each data set is acquired, metadata will be recorded for key characteristics such as geographic extent, format, coordinate system, update cycle, attribute descriptions, and source organizations. Procedures will also be put in place to



incorporate updated data sets into this process to ensure that the most recent information is being used.

Each data set will be assessed for data quality in terms of accuracy, completeness, consistency, and other characteristics. Particular attention will be paid to identify opportunities to cross-reference and otherwise link the broadband provider data with one or more of the other supporting data sets (for example, E911 records)

Build and Populate Broadband Geodatabase

In this task, the BMT will design the broadband data model. This will consist of the physical data structure to store and access the GIS data layers, along with a database schema which supports all data elements and required linkages. The model will also incorporate techniques to help ensure data integrity and quality.

A technical architecture will also be developed for the related computer hardware. This will address requirements for storage capacity, access speed, redundancy, versioning, and processing speed.

The final element of this design will be the software configuration. This will be comprised primarily of GIS software from industry leader ESRI. It will include desktop, server, and database management products. Additional database management and other software will also be factored in, as needed.

A geospatial database, or “geodatabase,” will then be created, based on the data model described above. This geodatabase will serve as the centralized data repository and will be populated with source data acquired. All subsequent processing and analysis will be conducted within this environment, and the final deliverables will be extracted from this geodatabase.

Implement Processing Methodology

NOTE: The nature of the available source data (that is, which use a Danish address style given the origin of the USVI) presents significant challenges when trying to create all project deliverables that depend on standardized address structures. (This postal address anomaly will be resolved by normalizing the addresses using the U.S. standard NENA 2.1 formats used by the E911 database.)

In this task, geospatial and other processing will be conducted to identify specific addresses that have broadband access available from a wireline service provider. As noted earlier, the nature of the available source data presents significant challenges.



The process:

1. Flag Road Centerline Segments Containing One or More Broadband Customers

Using GIS proximity analysis, we will flag road segments with buildings where broadband customers are located. A cross-referenced ID will be stored in both the building footprint and road centerline layers.

2. Flag All Building Footprints Along Road Segments with Broadband Customers

All building footprints along these road segments will be selected. This will include buildings matched to the broadband customer data as well as other buildings along the same road segment that were not identified as broadband customers. The assumption is that neighbors of broadband customers are likely to have access to this service, even if they do not currently subscribe.

A considerable amount of automated and interactive operator-assisted matching will be required between the broadband customer data and one or more of the supporting data sets. The BMT will develop a collection of custom GIS and database software utilities for use in this process. These tools will contain features to facilitate the matching process, track progress, and validate results.

The typical data speeds will also be researched. Although in the beginning, the service providers will all estimate their typical downstream and upstream speeds, many do not know for sure what these statistics are at the busy hour other than spot checks in general. As a part of the project, the USVI will be implementing a test measurement system to determine the performance at 15-minute intervals from a statistically valid sample population of end-user sites.

This information will be used to exponentially smooth the service providers' estimates against actual test results. Over time this feedback process will produce very accurate statistical measurements. Although the data is only required twice a year for this grant program, the actual quality process will be run weekly in the USVI. The weekly update for the service providers is deemed to be more useful for operations than just a semi-annual report. Also, by making the measurement process part of the daily routine, the potential for errors in the semi-annual federal extract will dramatically drop.



Deliverables:

- A single tab-delimited plain text file (address_availability_VI.txt) listing all addresses in the USVI that have broadband service available to end-users for each of the facilities-based providers (DSL, fiber, cable, and terrestrial fixed wireless).
- Detailed documentation outlining the sources and methods used to create the deliverables noted above. This will include Federal Geographic Data Committee (FGDC) compliant metadata for every GIS-compatible layer.

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

To support the requirements of this deliverable, the BMT 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.

The BMT will work collaboratively with project partners (for example, broadband providers and Territory government) to compile the mobile wireless and satellite-based broadband GIS layers outlined above. The BMT will also work with the broadband service providers to obtain any existing appropriate digital data they may have, especially detailed wireless propagation maps based on well documented sources and methods. The BMT 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 territory wide broadband geodatabase. Otherwise the BMT's mapping specialist will work with wireless and satellite providers to generate high-quality wireless propagation maps depicting the strength and geographic extent of wireless broadband services. The 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 (for example, new wireless towers or antennae).

As with the wire-line records, the USVI automated measurement system will measure and smooth the typical speeds, then feed them back to the service providers for the quality feedback process.

This data structure requires collection of ESRI GIS polygon data from the wireless service providers from their engineering database data. The polygons will be designed by the carrier to be closed with no overlapping polygons. The BMT will use the WGS 1984 geographic coordinate standard. The actual deliverable will be a zipped file of the component files, including a readme file



explaining the methodology used to generate the map layer and an assessment of the accuracy of the data.

Deliverables:

- The BMT will provide a robust set of GIS-compatible layers (shape files) depicting the extent of terrestrial mobile wireless and satellite-based broadband service availability, including the technology, spectrum, and speed available from each provider.
- 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 Service Broadband Pricing

Residential service broadband pricing data will come from the service providers extracted from their services database. This data will be covered by the nondisclosure agreements discussed below.

Deliverables:

- A single tab-delimited plain text file (pricing_VI.txt) listing the data specified by the most recent requirements for end user data by county aggregated at the census block level for each broadband service provider in the Territory.
- Detailed documentation outlining the sources and methods used to create the deliverables noted above.

4. Broadband Service Infrastructure -- Last-Mile Connection Points

This class of data is the “first points of aggregation” (last mile connection points³) in the networks (serving facilities) used by facilities-based broadband providers in the USVI. To support the requirements of this deliverable, the BMT will develop a robust GIS-compatible layer which identifies the location of all last mile connection points (“first point of aggregation”) used by facilities-based broadband providers in the Territory. Examples of “first points of aggregation” include central offices and remote terminals locations, cable head-end locations, and wireless tower 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.

³ “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. Examples of first points of aggregation include central office or remote terminal (incumbent local carriers), cable head-end (cable), wireless tower or base station, etc. Refer to section “Appendix A: Technical Appendix” of the NTIA’s State Broadband Data and Development Grant Program NOFA for additional details.



The BMT will work collaboratively with project partners (for example, broadband providers and the Territory government) to map “first points of aggregation” locations. They will ask broadband service providers and others who manage such locations to share any existing digital data they may have, especially latitude/longitude information. The BMT 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 territory-wide “first points of aggregation” database. Otherwise the BMT’s mapping specialist 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 (for example, new points of aggregation).

Each service provider that has last mile connection points will provide data for each point primarily from their engineering databases.

The count of the number of end users served will include information derived from the service provider’s services database. The count of the number of end users served for fixed wireless arrangements will be a computation of the number of service addresses that fall within the polygon that surrounds the base station associated with the particular last mile connection point.

Deliverables:

- A single tab-delimited plain text file (lastmile_VI.txt) listing all “first points of aggregation” for each broadband service provider in the Territory. The file will identify the location (latitude/longitude), transmission technology, backhaul capacity, backhaul type, number of end-users served, and elevation above grade.
- 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 Internet Backhaul Connection Points

The interconnection points of facilities in the USVI 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 are collectively “middle-mile and backbone interconnection points.” Examples include points of interconnection which enable communications between an incumbent local exchange carrier central office and the Internet, between a cable aggregation point (head-end) and the Internet, or between a wireless base station and the provider’s core network elements that connect to other networks including the Internet.



To support the requirements of this deliverable, the BMT will develop a robust GIS-compatible layer which identifies the location of all middle-mile and backbone interconnection points used by broadband providers in the Territory. 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 (for example, fiber, copper, wireless, etc.), and elevation above grade.

The BMT will work collaboratively with project partners (for example, broadband providers and the Territory government) to map all middle-mile and backbone interconnection point locations. The BMT will ask broadband service providers and others who manage such locations to share any existing digital data they may have, especially latitude/longitude information. The BMT 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 territory-wide "middle-mile and backbone interconnection points" database. Otherwise the BMT's mapping specialist 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 (for example, new "middle-mile and backbone interconnection points").

Deliverables:

- A single tab-delimited plain text file (middlemile_VI.txt) listing all "middle-mile and backbone interconnection points" in the Territory. The file will identify the location (latitude/longitude), ownership status (owned vs. leased), bandwidth capacity, type of transport facility (for example, fiber, copper, wireless), and elevation above grade.
- Detailed documentation outlining the sources and methods used to identify and map all "middle-mile and backbone interconnection points" locations.

6. Community Anchor Institutions

This deliverable is a list of community anchor institutions in the Territory, including schools, libraries, medical and healthcare providers, public safety entities, institutions of higher education (UVI), and other community support organizations and entities.

To support the requirements of this deliverable, the BMT will develop a robust GIS-compatible layer which identifies the location of all community anchor institutions in the Territory. 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 BMT will work collaboratively with project partners to map community anchor institutions locations, and to characterize the availability and nature of broadband services. The mapping specialist will map the location of all anchor institutions. All locations will be geocoded, GPS-located, or mapped using high-resolution aerial photography (1:1250 or 1:5000 scale orthophotography). The BMT will ask community anchor institutions (for example, school, library, government) who manage such locations to share any information characterizing the type of broadband service available at the institution. Phone surveys will be used to collect information from the remaining institutions. Online tools will also allow community anchor institutions to review their information online, and give them the option of reporting corrections or additions (for example, new public facility with broadband access).

Deliverables:

- A single tab-delimited plain text file (anchorinstitutions_VI.txt) listing all community anchor institutions in the Territory. 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.
- Detailed documentation outlining the sources and methods used to identify, map, and characterize all community anchor institution locations.

(b) Accuracy and Verification.

To ensure independent verification of data accuracy for data supplied by the providers the BMT is proposing several verification methodologies. The initial cumulative results of the broadband access effort proposed in *Section I.a) Data Gathering* will be independently verified for accuracy by the following, depending on the type of data being collected.

- Verification by survey
- Verification by direct inspection
- Verification by automated probe measurement

The data received from the service providers will first be validated by extract scrubbers using edit validation tables. Next, the data will go through the geospatial bulk data transformation and cleansing process to ensure that the data is parsed and broken into the correct data elements for inclusion. Next, the data will be checked for matching data already in the database to see if there are eccentricities or duplicates in the submitted data. This capture and scrubbing



process will be repeated until the number of errors is sufficiently low that hand correction of the anomalies will be sufficiently quick.

At the point that service provider data is ready for use, the scrubbed data will be used to bulk update the data in the geospatial database.

Verification by Surveying

The University of the Virgin Islands (UVI) maintains responsibility for the census in the Territory. As such, it is the ideal BMT member to assist with verification by surveying for the Broadband Mapping Initiative. UVI will implement telephone polls of random sample of Territory households and businesses to ascertain respondent broadband connectivity and coverage. The results of these polls will be linked to a broadband service map by address. For each address point covered by the poll, the respondent's 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.

Phase One – Developing the Telephone Poll Sample

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 island. If it is determined that low numbers of addresses in certain areas of the Territory 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 polls 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 USVI to the highest degree possible regionally and rurally and for the confidence interval to be as rigorous as possible.

After this preliminary analysis, UVI will select a random sample of hundreds of household and business phone numbers from a professional service that maintains and verifies such registries regularly. The number of numbers purchased will depend on estimates of what is necessary to result in a response that will result in 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 Territory.



Phase Two – Developing the Survey Instrument

UVI will work with project partners to develop a list of questions to be asked of poll respondents. UVI 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
- 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 to be optimal for overall response rate and quality of information.

Phase Three – Conducting the Telephone Poll

From the Broadband Mapping Initiative offices on the UVI 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 ineligibility⁴. All respondents will be informed of the source and purpose of the survey and that it is entirely voluntary and confidential.

UVI estimates that a total of 200 responses will meet the needs of both geographic representation and the desired confidence interval. Once the target number is reached, UVI will close the survey operation.

Phase Four – Poll Data Analysis

UVI 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.

UVI, 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 Territory-wide, for rural areas only, and for any regions of the Territory that require stratification or oversampling.

⁴ One aspect of eligibility will be that a survey respondent must be 18 years of age or older.



Survey Verification Deliverables

- A 5-10 question USVI-wide telephone survey implemented by UVI
- 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 data set in Excel or SPSS format
- Comparison of the survey data to the broadband service map and a determination and explanation of accuracy
- A PowerPoint presentation of the results
- Up to two meetings to present results

Verification by Direct Inspection

To verify the accuracy of the data gathered, a set of on-site verifications by direct inspection will be accomplished for both the middle and last mile connection points. Since there exists only a small subset of these middle and last mile connection points, the “ground truthing” process will be the primary verification tool used.

- **Middle Mile**

A physical visit will be made to each major fiber aggregation point as determined in the high-level engineering plan. These site visits will be used to gather the latitude, longitude, and elevation of each aggregation point to validate the data. In addition, a visual survey of the general area will determine if there exists any access to existing facilities such as fiber or microwave.

- **Last Mile**

A physical visit will be made to each of the following facilities, which will be determined to be primary last mile anchor tenants:

- Hospitals
- Libraries
- Public schools – grammar, middle, and high schools
- The University of the Virgin Islands (UVI)

These site visits will be used to gather the latitude, longitude, and elevation of each of the last mile connection points. Interviews will also be scheduled with



primary personnel onsite to determine and validate broadband services currently available at each location.

Verification by Automated Probe Measurement

The automated probe technique provides a performance test process to verify or otherwise improve any estimates the service providers have made on their “typical” performance. By selecting a statistically significant sample size, the performance probe process will determine the exact performance of the test locations initially in 15-minute intervals. Specialized calculations will determine the real busy hours and congestion perhaps more accurately than the service providers currently measure. Even though the BMT will be using less than 100% of the end user locations for the test, it will be quite accurate over time. Using exponential smoothing will derive a correction factor to apply against the service providers’ estimates. The sample size for each island will be chosen in the first week of the process. Initial estimates indicate that with even as few as 200 well-positioned test participants, the sample size will be statistically significant.

Verification Summary

The table below provides a comprehensive view of the verification method proposed for each broadband information type requested.

	<i>Address Specific Service</i>	<i>Wireless Service</i>	<i>Residential Service Pricing</i>	<i>Last Mile Connection Points</i>	<i>Middle Mile and Backbone Inter-connections</i>	<i>Community Anchor Institutions</i>
UVI Surveying	X	X	X			X
Probe	X	X				X
Direct Inspection		X		X	X	

Table 2. Broadband Information Type and Verification Matrix

(c) Accessibility

The BMT will make the broadband data accessible via the Internet using custom browser based map-centric applications. These applications will serve two specific user types including a general access audience (general public, governmental, and research organizations) and an authorized user audience (provider, authorized entity, and data maintainers). Both applications will provide search capabilities using address information as well as point and click capabilities for discovering broadband information at specific locations. Users will be presented with the broadband information in a clean and well formatted display. Supporting functionality will include the ability to turn on and off



individual and grouped map layers, and map navigation via a suite of pan and zoom functions.

The general access application will be designed to provide immediate value to a wide range of user capabilities by providing information on broadband access in specific geographic areas in an intuitive and easy to use interface. It will provide access to the broadband availability including the type and speed of wireline and wireless broadband services at the address level. This will include information on technologies, wireless spectrum, access speeds, and anchor institution information. Additional service provider information (ARPU, type, technical specifications, and infrastructure attributes and location) may be provided as directed by specific provider agreements and executed non-disclosure agreements. As with the National Broadband map, these maps may provide a range of additional, economic, and demographic data derived from other sources. In addition to the dynamic web-based applications, simple data (vector and graphic) download may be made available for interested constituents

The authorized access application will also be designed to provide immediate value to a wide range of user capabilities. It will also provide access to the same suite of broadband information as the general access application. However, it will be enhanced with additional utilities specific to engaging in the feedback loop for data maintenance, quality control, and update activities. These utilities may incur a nominal learning curve associated with using them. User authorities will orchestrate available data ensuring sensitive provider data is exposed only to the properly authorized users.

The underlying architecture will be developed using open well-documented standards-driven development practices and will leverage modern design and deployment tools. Every effort will be made to balance development and deployment costs by using open source programming interfaces and utilities while maintaining an appropriate level of end-user functionality. In addition, consideration will be given to deploying well-documented service-based solutions as part of the architecture to make the information as accessible as possible to a range of constituents with the ultimate goal of facilitating identification of areas for broadband investment.

(d) Security and Confidentiality.

This section provides a description of the methods the project uses to provide transparency of process and protection of confidential information.



Transparency

The BMT sees transparency of process as a priority. Process transparency allows others the opportunity to assess and provide comment to the approach and the methods employed in creating the broadband mapping data. The ability to improve methodologies through feedback is an important self improvement goal of the effort. While the BMT is interested in improving the methods through feedback, they are also aware that they need to retain the focus on the primary goals of the effort as established at the 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. Geographically defined temporal change analysis of the unserved and underserved populations in the USVI is critical to understanding the success of future broadband infrastructure deployment. Only consistent methodologies will support that analysis.

The BMT's approach will ensure transparency through:

- Fully documenting the BMT approach
- Providing documentation online on a dedicated publicly accessible web page

The project BMT places a high value on communication and each team member has already been working with other team members on developing methodologies to accomplish all elements of the broadband mapping effort in accordance with the defined requirements. Each BMT member will contribute to project documentation information to define 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 USVI broadband mapping effort.

Confidentiality

The BMT will establish nondisclosure agreements (NDAs) with those broadband service providers that wish to keep their name or pricing data restricted from public access and distribution. The mapping data collection NDAs are consistent with the NOFA requirements.

Confidentiality will also be achieved through aggregation of service 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 territory-wide availability of wireless services in the USVI from all providers as a single map layer, the individual service areas of each provider are not discernable and yet the understanding of wireless coverage availability is not diminished. The BMT will work with the data providers to be



sure that they are comfortable with the methods being used to represent publicly available data.

Another important aspect of maintaining confidentiality is proprietary data control. The plan for collection of provider service coverage information calls for sending that information to a single point of collection, Stratum Broadband. Stratum Broadband will be the single point of data control for proprietary data used in the project, and as the data aggregator Stratum Broadband will then be able to take the provided data, aggregate it according to the defined processes, and provide it to the public.

The BMT intends, by implementing the processes mentioned above, to ensure that they provide open access and transparency of the methods employed in the work, while also ensuring that proprietary data from providers and Territory entities is controlled and distributed without disclosing identifying or distinguishing information.

2. Project Feasibility:

(e) Applicant Capabilities

This section provides the detailed budget description for the proposed project costs. The first discussion is for the broadband mapping portion and the second is for the planning portion.

Broadband Mapping Budget Narrative

This budget narrative provides an explanation of each budget category to establish the need for the funds in each category and the basis for figures used.

The budget narrative is also accompanied by a spreadsheet supporting how the budget request was calculated.

Personnel

This project uses the PFA to provide management service for the project. The personnel costs are estimated to be \$94,500.

Fringe Benefits

This project uses the PFA to provide management service for the project. The fringe benefits costs are estimated to be \$40,500.



Travel

The travel budget of \$100,185 planned for this project is for Stratum Broadband of Boston to participate in the various aspects of the project that must be done in the USVI. The following trips are planned:

- The initial internal kickoff meeting held to plan the grant proposal: 2 people for three days.
- The first workshop that draws together all the service providers, the major stakeholders that have a role in verification and production, and the GIS experts assigned to the team: 8 people for the week.
- Direct inspection site reviews: 1 person for 10 days.
- The second workshop supporting service providers: 3 people for one week.
- The training for the staff at the USVI GIS group will be for the tools to be used going forward for the 5 year plan.
- The design review workshop and corrections: 6 people for 5 days.
- The readiness review and corrections: 4 people for three days
- Monthly project management reviews prior to initial production delivery not part of other trips: 3 trips, 2 people, and two days.
- Five year support arrangement for problem management, financial audits, and any required NTIA support: 2 people, 10 times, 3 days each. Plus one person, two days for audit support, once each year.
- Inter-island travel during the project will occur throughout the 5 year period.

Equipment

The equipment budget of \$49,000 required for the project is for three server sets:

- The server and related hardware for the web application
- The computer and related hardware for geoprocessing and storage
- The probe servers for verifying the actual performance of the broadband network over time

The longer term devices include bundled maintenance for the life of the project.

For direct inspection purposes and original location verification, the project will use 4 mapping grade GPS devices.



Supplies

There are a limited amount of supplies needed for this project. The need is for the following:

- Heavy weight plotter paper
- Laminating paper

The estimate for these materials is \$2,350.

Contractual

The contractual portions of the project are for professional services amounting to \$1,998,112. This is for the following development, deployment, and continuation team roles:

- Project manager
- GIS team lead
- GIS programmer
- GIS analyst
- GIS technician
- RF engineer
- Computer systems administrator
- Survey statistician
- Survey caller
- Performance specialist
- Project accounting and compliance support

These are not full-time positions. Instead, these skills will be used at various times during the project to produce the various deliverables.

The activities of the team surround the acquisition and transformation of the service provider and subscriber data, and building and populating the broadband geodatabase. Activities include the work with the reference data groups to gather and build the verification reference data. Also included is the work to develop the GIS layers depicting the wireless availability.

This work includes working with each of the service providers to extract accurate data from their service records and engineering databases.



The work also provides for the conduct of verification activities.

- Verification activities include the survey work with a statistically sufficient number of calls to residents, businesses, and anchor tenants.
- Verification also requires the establishment of a test server to sample the actual speed performance of an adequate number of test subjects. This automated test tool requires configuration, execution, and analysis and reporting of results. 200 test subjects must be recruited and configured.
- Verification also requires on-site, direct inspection for ground truthing the data collected on the various connection points and other middle mile measurement locations.

Finally, the deliverables must be generated. The website must be developed for the testing process, but also for the eventual use for housing the Territory broadband map. This will be the website that is referenced by the national broadband map through the use of the required hyperlink.

Finally, the advance team that develops the initial deliverables will perform a technology transfer to the selected GIS team in the Virgin Islands for handling the subsequent years' distribution cycles.

Semiannually for the next five years, the production team will provide a recycle of this same process for refreshing the data in the national broadband database.

The work entails initially preparing and distributing alternative data for November 1, 2009.

The work entails initially preparing and distributing substantially complete data for February 1, 2010 along with the hyperlink to the [Territory] Broadband Map.

The work entails initially preparing and distributing complete data for March 1, 2010.

The recycle and refresh operations require deliveries on the following schedule:

- Fall 2010
- Spring 2011
- Fall 2011
- Spring 2012
- Fall 2012
- Spring 2013
- Fall 2013
- Spring 2014
- Fall 2014



The project manager will maintain monthly accounts of both time and finances for the project in addition to the chronology of events and lessons learned. The project manager will also establish and operate the issue management and change management processes.

The compliance manager will report accounting and programmatic summaries to both the ARRA as well as the SBDD offices. The compliance manager will participate in the annual audits of the project.

The project manager will support ongoing NTIA adjustments.

Construction

There are no plans for construction during this project.

Other

The hosting center arrangements for 5 years and all the software required for the project will be \$141,190.

Software for the project is required for three purposes:

- The Territory Broadband Map web server – ArcGIS Server and supporting software
- ArcGIS system test server
- The performance probe server (Visualware MyConnection) and 200 MySpeed test clients using Red Hat Linux + Sun MySQL

In addition to software, the Virgin Islands production site for both website and performance measurement will be hosted at a colocation center for five years. This cost includes the facility cost, surveillance, and 1 MB access burstable to 100 MB.

Program Income

There is no program income associated with this project.



Summary of Mapping Budget:

a. Personnel	\$94,500
b. Fringe Benefits	\$40,500
c. Travel	\$100,185
d. Equipment	\$49,000
e. Supplies	\$2,350
f. Contractual	\$1,998,112
g. Construction	\$0
h. Other	\$141,190
i. Total Direct Charges	\$2,425,837
j Indirect Charges	\$0
k. Totals	\$2,425,837
7. Program Income	\$0

Table 3. Budget Spreadsheet for Mapping

Broadband Planning Budget Narrative

The Broadband Planning activities are more fully described in the last section of the Narrative: *Section 5. Planning and Collaboration*. Please refer to that section for programmatic details related to the items in this separate Broadband Planning Budget Narrative.

Personnel

This is a consulting assignment and there are no expenses directly attributed to salaried personnel.

Fringe Benefits

This is a consulting assignment and there are no expenses directly attributed to salaried personnel.

Travel

The total travel for this project is estimated to be \$13,375. Travel to the USVI occurs during two trips:

- Workshop week – Sept 21
- Technology and planning meeting – Oct 12

In addition to the travel to the USVI from Boston, the inter-island travel component is estimated to be \$7,450 by itself for the various meetings and data gathering.

Equipment

There is no special equipment required for this project.



Supplies

There are no special supplies required for this project.

Contractual

The contractual expenses of \$447,204 for this project are for the consultants that will perform the studies and make the recommendations. There will be three principal consultants used for the project, each working in parallel to produce the results of the planning in time for Round Two of the BTOP program. The consultants assigned to this project will perform three main groups of activities:

- Perform a market demand analysis study. This effort entails establishment of the Community Stakeholder Collaboration Team, a series of interviews with all, analysis and go-back sessions, interpreting the study into a deliverable, and presenting the results to the assigned group of stakeholders.
- Creating a conceptual design of the needed broadband environment. This effort entails establishing a technology planning team, the analysis of requirements, direct inspection of current facilities, analysis of technologies, level 2 engineering design of fiber and RF possibilities, analysis of open services wholesale accounting and operations, analysis of environmental and permitting requirements, preparation of a summary of barriers to broadband, and preparation and presentation of the group's conceptual design.
- Creating a broadband business plan. This entails expanding the results of the market analysis and the conceptual design into a fully balanced business plan for the recommended broadband initiative for the Territory. It culminates with a public presentation of the recommended broadband business plan.

Construction

There is no special construction required for this project.

Other

There are no other expenses for this project.

Program Income

There is no program income for this project.



Summary of Planning Budget

a. Personnel	\$0
b. Fringe Benefits	\$0
c. Travel	\$13,375
d. Equipment	\$0
e. Supplies	\$0
f. Contractual	\$447,204
g. Construction	\$0
h. Other	\$0
i. Total Direct Charges	\$460,579
j. Indirect Charges	\$0
k. Totals	\$460,579
7. Program Income	\$0

Table 4. Planning Budget Spreadsheet

In Kind Matching Calculations

In the NOFA, as provided for in 48 U.S.C. – 1469a, the requirement for local matching funds under \$200,000 is waived for the Territorial governments of the U.S. Virgin Islands and three other territories.

The amount being requested is a total of \$2,886,416

The 20% matching requirement is therefore: \$577,283.

The U.S. Virgin Islands exemption is \$200,000 as per NOFA.

Therefore the requirement for in kind match is \$377,283.

But previously paid WAPA GIS measurements for area maps were \$288,144.

And the PFA participation is to be: \$90,000 in In Kind Service.

Therefore, the excess in kind matching funds provided by the U.S. Virgin Islands over and above the minimum will be: \$861.

Pre-Award Expenses Request

In order to meet the aggressive schedules set forth for the deliverables, the early activities must begin prior to award. The USVI has requested in writing that pre-award expenses (not to exceed 5% of the total project) that are part of this plan remain included. This request is therefore for \$144,321. This is not a request for additional funds, but more a recognition of when the work is to be performed.



(f) Applicant Capacity, Knowledge and Experience.

The specific BMT for the mapping project consists of the following personnel:

- USVI Public Finance Authority
 - Julito Francis – Director of Finance and Administration
 - Marian Prescod – Financial Reporting
- Stratum Broadband
 - John Foresto – Principal Consultant
 - John Reynolds – Principal Consultant
 - Gene Currie – RF Engineering
 - John Stenquist – Statistical Measures
 - Frank Truscott – Performance probe
 - Austin Fisher – GIS SME
 - Steve Sharp – GIS Specialist
- USVI BIT
 - John George – Director – Bureau of Information Technology
- USVI LGO
 - Theresa Parris – GIS Coordinator
- UVI
 - Steve Henry – Virgin Islands Geospatial Information Council
 - Frank Miller -- Surveying
- WAPA
 - Dalma Simon – Network Manager
- Service Provider Data Specialists Team
 - Innovative
 - Choice
 - AT&T
 - Sprint
 - Broadband VI
 - St. Croix Fiber
 - Global Crossing

Because of the nature of the project's duration and timing, the BMT has expert broadband engineers with prior experience which will enable them to meet the initial dates. The team has local subject matter experts with knowledge of service provider records. The team also has experience with the E911 data base and the geospatial database location data needed for operational verification of the data.



Finally, the verification team is expert in performance data systems and analysis needed for the ongoing measurement of the actual performance of the broadband delivery.

The project's team members have extensive experience in dealing with broadband and telecommunications technology. The team members also have approximately 20 years in projects that collect or otherwise manage broadband and telecommunications-related data.

Stratum Broadband was formed for the specific purpose of providing engineering and business management consultation for the emerging broadband needs of both the public and private sectors. Stratum customers include state and local governments, public/private partnerships engaged in delivering open access broadband services, universities seeking state of the art communications capability needed to carry out their missions, research parks that are communications and technology intensive, large hospitals that require intricate communications to carry out advanced treatments and operation, public safety groups seeking advanced emergency management and notification communications, and private enterprise expanding national networks of internal and external multimedia services.

Some of Stratum Broadband's recent projects include the following:

- Vermont Telecommunications Authority
- Rhode Island Wireless Innovation Network System (RI-WINs)
- CBN Connect: the open access fiber and wireless network operating in the Adirondack region of New York State

The specific team members creating the initial GIS maps have done this exact project in Vermont, not only for the broadband map to be used for these same purposes, but also for the extended use of the maps and planning tools to be used for detailed engineering design and operational support for the production network in Vermont.

The primary mapping subject matter expert for the project will be Austin Fisher. Previously, he served as the Director of Data Products for MapInfo Corporation, where he was responsible for the initial nation-wide development of many of MapInfo's data products, including what has now become StreetPro. He also has served as the Manager of Computer Mapping for the New York City Planning Department. Mr. Fisher also currently serves as a member (and past Chairman) of the Private Sector Advisory Group for the New York Governor's IRM Task Force on GIS.

The primary GIS specialist for will be Stephen Sharp. Mr. In 2008 Mr. Sharp facilitated the development of Vermont's Enterprise GIS Strategic Plan, which led



to the formation of the State's Enterprise GIS Consortium. Mr. Sharp is currently leading the effort to develop the SBDD broadband maps for the State of Vermont. The broadband maps identify "unserved and underserved" areas of the state. This information will allow the state to successfully leverage Federal stimulus funds targeted toward the build-out of broadband services in these areas.

All the members of the various Virgin Islands government groups are the stewards for the various data needed for verification purposes. The University of the Virgin Islands is responsible for supporting the U.S. Census efforts and other statistical data gathering activities locally. The service provider team is made up of the data management personnel responsible for providing the requested data.



3. Expedient Data Delivery:

This section provides a timeline for major project goals, including anticipated dates of data delivery. This timeline is ambitious and designed to facilitate the delivery of all data required by the *Technical Appendix*. **The USVI cannot provide a substantially complete set of availability data by November 1, 2009, and is proposing to provide an alternative data set by that date.** The process to be employed to produce the data and the team assembled from the sources of that data demonstrate that the USVI has the ability to complete the project requirements within the proposed timeline, including the requirements to provide a substantially complete set of all broadband mapping data on or before February 1, 2010 and to complete such data collection by March 1, 2010. All data provided in the first collection will be accurate as of June 30, 2009.

The following table describes the various internal and external project milestones and deliverables.

Milestone Schedule		
Milestone	Date	Deliverable
Execute nondisclosures with all service providers	10-Aug-09	Nondisclosures
Complete the requirements spreadsheet	22-Aug-09	Requirements Spreadsheet
Conceptual mapping design review	11-Sep-09	Mapping Design Presentation
Create Conceptual Design	31-Oct-09	Conceptual Broadband Design Presentation
Perform Market Demand Analysis Study	31-Oct-09	Market Demand Analysis Study
Detailed Design Review	19-Oct-09	DDR Presentation
Work with service providers to get initial files	16-Oct-09	Initial SP Files
Create Broadband Business Plan	30-Nov-09	Broadband Business Plan
Semi-annual survey	15-Oct-09	Survey
Conduct site surveys for direct inspection	9-Oct-09	Site Surveys
Collect and analyze probe data	22-Oct-09	Probe Analysis
Deliver first test distribution containing alternative data set	1-Nov-09	First Test Distribution
Deliver second test distribution containing substantially complete data	1-Feb-10	Second Test Distribution
Deliver first distribution for record containing complete data	1-Mar-10	Record Distribution
Deliver Fall 2010	1-Sep-10	Record Distribution
Deliver Spring 2011	1-Mar-11	Record Distribution
Deliver Fall 2011	1-Sep-11	Record Distribution
Deliver Spring 2012	1-Mar-12	Record Distribution
Deliver Fall 2012	1-Sep-12	Record Distribution
Deliver Spring 2013	1-Mar-13	Record Distribution
Deliver Fall 2013	1-Sep-13	Record Distribution
Deliver Spring 2014	1-Mar-14	Record Distribution
Deliver Fall 2014	1-Sep-14	Record Distribution
Report accounting summary - ARRA	Quarterly	Quarterly ARRA Accounting
Report accounting summary - SBDD	Quarterly	Quarterly SBDD Summary
Financial audit support	On Going	Audit Submission
Support for NTIA ongoing adjustments	On Going	Change Requests

Table 3. Milestones and Deliverables



The deliverables identified in blue in the above list are internal project deliverables that are necessary for our programmatic process of data creation. These internal deliverables will not be delivered to the NTIA. They are only listed to provide an understanding of the quality process leading up to the first actual NTIA deliverable which is the alternative data set delivered on November 1, 2009.

November 1, 2009 – The BMT proposes to submit an alternative data set. It will include data representing all service providers, but the verification steps will not have taken place, so the data submitted must be regarded as an alpha release. The risk associated with this first deliverable is that the grant funding commitments and approval processes proposed in the NOFA may not occur until after this first deliverable is due. Therefore, the data released must be regarded as suitable for testing purposes, but not substantially complete as defined and therefore should not be used for public viewing. Nevertheless, this delivery will be useful in the overall data integration process for both national and Territory purposes.

February 1, 2010 – The second deliverable will be substantially complete data, subject to the ongoing data verification processes outlined in this proposal.

March 1, 2010 – The final initial deliverable will provide complete data.

Each subsequent semiannual distribution will be part of the regularly scheduled automation and verification process described above. The deliverables correspond to the delivery dates provided in the NOFA. The first delivery is of course the hardest to produce in the compressed timeframes. But the subsequent deliverables are the products of weekly, monthly, and semiannual steps that will be institutionalized in the official Territorial data management activity.



4. Process for Repeated Data Updating:

This section provides a description of what methods the USVI intends to use to provide repeated updating of data on at least a semi-annual basis, continuing for at least five (5) years after the date of the initial collection.

The USVI broadband mapping initiative will incorporate a robust maintenance strategy, ensuring the long-term accuracy of USVI's broadband inventory. The BMT understands the importance of long-term data maintenance. UVI (a member of the team) has extensive experience maintaining large complex datasets over a multi-year period. As the Territory-designated maintainer and distributor of geospatial data assets, UVI's technical personnel have extensive experience with the requirements of data maintenance, update, and dissemination.

The BMT will use the following tools and strategies to maintain the accuracy of the Territory's broadband inventory over a 5-year period⁵.

1. **Offline Data Submitted by Service Providers:** Broadband providers will be submitting digital updates offline. The BMT will ensure that the data meets established standards and specifications. If so, the data will be used to update the territory-wide broadband inventory. For wireless providers, new or modified wireless facilities (towers/base stations) will be used to generate updated wireless propagation maps.
2. **Ongoing Survey of Anchor Institutions:** An annual phone and/or online survey of community anchor institutions will allow the BMT to verify and update broadband information for each institution.
3. **Direct Inspection Data Collection:** The BMT will use "on the ground" site survey 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.
4. **Close Collaboration:** In all cases the BMT will work in close collaboration with broadband providers, partners, and anchor institutions to ensure the ongoing accuracy of the USVI's broadband inventory.

⁵ 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. The UVI Broadband Mapping Initiative will provide updates to the NTIA on a semi-annual basis.



5. Planning and Collaboration:

The USVI broadband initiative intends to collaborate with Territory-level agencies and Territory authorities in carrying out both the mapping effort and the broadband planning project. This section provides a description and justification on how well the proposed broadband planning process will address one or more of the projects identified earlier in the BDIA.

Broadband Planning Project

The USVI broadband planning team is composed of most primary Territory entities that are involved with telecommunications and broadband in the Territory. Specifically this includes the Public Finance Authority, the Water and Power Authority, the Bureau of Information Technology, the University of the Virgin Islands, the Research Technology Park, and the Geospatial Information Council. Also a part of the Planning team is all the service providers registered in the USGI. This existing connection by team members to the broad community is a key strength of our team approach.

The approach to facilitating the launch of broadband communications capability in the USVI is envisioned to be a well established pattern. The pattern takes the following three movements:



Figure 2. Process Sequence

The initiative is currently in the planning phase, and the purpose of the planning is to prepare sufficiently for the next two phases. The approach to planning includes those steps needed to formulate the vision, develop the strategies, allocate the strategies into 24 month tactics, and then set in motion various programs that will actualize the tactics.

Our general groupings of major activities are as follows:

- ***The kickoff*** – Where the stakeholders rally to understand the approach, find out what to do, and the relationships begin to start
- ***Market demand analysis*** – To provide a basis for the business sustainability for the new broadband capability rooted in the satisfaction of human needs



- **Conceptual design for open access** – To envision the wholesale solution required by the statutes of the ARRA and to provide a technical guideline for all the activities to follow
- **Broadband business planning** – To provide the actual living business plan that will direct the scope of efforts in all three phases

Project Kickoff

The initial meeting occurred with the service providers, the Water and Power Authority, and the Public Finance Authority on May 21, 2009. The subsequent kickoff of the actual mapping and planning activity has taken place with an expanded group of stakeholders on July 31, 2009.

The kickoff meeting was held at the VIPFA headquarters. The purpose of this meeting was to meet the management and key stakeholders of OEO stimulus program and to begin the process of establishing the interpersonal relationships necessary to a successful engagement. Also important were discussions with other important stakeholders within the Virgin Islands that will have responsibilities in the success of the grant proposal processes in general and the engineering steps that will follow.

The focus of this meeting was to:

- Introduce the involved parties from each participating organization
- Review project management protocol
- Review project objectives, methodology, and schedule
- Identify the key stakeholder organizations (for example, existing broadband service providers) that will contribute to this initiative
- Discuss options for encouraging participation by these stakeholders

Immediately following the kickoff meeting were structured interviews in person or by telephone with important stakeholders. The interviews collected various artifacts that contain requirements needed for the analysis.

Market Demand Analysis

In parallel with the initial broadband mapping leading up to the ARRA grant request, the teams will provide a market demand analysis of such services that are recommended. The information will be used for the needs analysis portion of the BTOP grant proposal and is critical to the business case for sustainability. The analysis will be used for the actual business planning associated with the operational phase.



The subtasks within this activity include the following:

- Collect and analyze market data.
- Identify barriers to adoption.
- Identify estimates of service expenditures.
- Estimate demand for services and market share.
- Develop the plan for information exchange for demand for broadband services between public and private sectors.

During these subtasks, the Planning team will collect and analyze detailed market data concerning the use and demand for broadband service and related information technology services. The team will identify barriers to the adoption by individuals and businesses of broadband service and related technology information services, including whether or not the demand for services is absent or the supply for such services is capable of meeting the demand for such services. The Planning team will identify to the greatest extent possible, the current telephone, video, and Internet expenditures of organizations in the service area, both wire line and wireless. The team will project the statistically significant levels of interest, probable market share, customer expectations, and potential consumer demand for advanced telecommunications services, including applications desired by end users, and possible revenue streams from each of the desired services over a five year timeline. The team will develop a plan to facilitate information exchange between public and private sectors regarding the use and demand for broadband services between public and private sectors.

Develop the Conceptual Design for Open Access

The conceptual approach activity prepares a deliverable to serve as the definitive technical guideline for those engineering and deployment activities to follow.

Using the market demand analysis, the business assessment, the technology evaluations, and the overall desires as expressed by the various stakeholders and communities, the Technology and Planning (T&P) teams will produce a Conceptual Design Document to synthesize an optimal solution for the open access broadband facilities for the USVI.

The T&P team will produce the initial draft of this concept, review it with the other teams for adjustments, review it with the potential retail service providers for comment and extensions, and then review it with the community for proper community engagement in the process local participation.

Once vetted by the community, the document will be baselined for use by the more detailed engineering steps to follow.



Broadband Business Planning

The T&P team will provide an array of support for the planning, deployment, and use of advanced open access broadband services.

The subtasks include the following:

- Develop a tactical business plan for achieving the USVI goals.
- Provide specific recommendations for online application development and demand creation.
- Create or facilitate, in accordance with the BDIA concept, a local technology planning team to benchmark technology use across relevant community sectors.
- Recommend goals for improved technology use within each sector.
- Establish a plan to work collaboratively with broadband service providers and information technology companies to encourage deployment and use, especially in unserved areas and areas in which broadband penetration is significantly below the national average, through the use of local demand aggregation, mapping analysis, and the creation of market intelligence to improve the business case for providers to deploy.
- Establish a plan to improve computer ownership and Internet access for unserved areas and areas in which broadband penetration is significantly below the national and global averages.

These subtasks will be conducted in parallel. The output of these plans will drive two purposes:

1. They are required to prepare the needs and methodology portions of the BTOP grant proposal with sufficient detail to score well in the competitive bidding process.
2. These plans are necessary to operate the proposed wholesale open access broadband entity.

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. State Broadband Data and Development Grant Program - Mapping	11.558	\$	\$	\$ 2,425,837.00	\$	\$ 2,425,837.00
2. State Broadband Data and Development Grant Program - Planning	11.558			460,579.00		460,579.00
3.						
4.						
5. Totals		\$	\$	\$ 2,886,416.00	\$	\$ 2,886,416.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total (5)
	(1)	(2)	(3)	(4)	
	State Broadband Data and Development Grant Program - Mapping	State Broadband Data and Development Grant Program - Planning			
a. Personnel	\$ 94,500.00	\$ 0.00	\$	\$	\$ 94,500.00
b. Fringe Benefits	40,500.00	0.00			40,500.00
c. Travel	100,185.00	13,375.00			113,560.00
d. Equipment	49,000.00	0.00			49,000.00
e. Supplies	2,350.00	0.00			2,350.00
f. Contractual	1,998,112.00	447,204.00			2,445,316.00
g. Construction	0.00	0.00			
h. Other	141,190.00	0.00			141,190.00
i. Total Direct Charges (sum of 6a-6h)	2,425,837.00	460,579.00			\$ 2,886,416.00
j. Indirect Charges	0.00	0.00			\$
k. TOTALS (sum of 6i and 6j)	\$ 2,425,837.00	\$ 460,579.00	\$	\$	\$ 2,886,416.00
7. Program Income	\$ 0.00	\$ 0.00	\$	\$	\$

Authorized for Local Reproduction

Standard Form 424A (Rev. 7-97)
Prescribed by OMB (Circular A-102) Page 1A

SECTION C - NON-FEDERAL RESOURCES					
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS	
8. State Broadband Data and Development Grant Program - Mapping	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	
9. State Broadband Data and Development Grant Program - Planning	0.00	0.00	0.00	0.00	
10.					
11.					
12. TOTAL (sum of lines 8-11)	\$	\$	\$	\$	
SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	\$ 1,548,100.00	\$ 1,393,712.00	\$ 42,236.00	\$ 69,916.00	\$ 42,236.00
14. Non-Federal	\$	0.00	0.00	0.00	0.00
15. TOTAL (sum of lines 13 and 14)	\$ 1,548,100.00	\$ 1,393,712.00	\$ 42,236.00	\$ 69,916.00	\$ 42,236.00
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. State Broadband Data and Development Grant Program - Mapping	\$ 224,304.00	\$ 224,304.00	\$ 224,304.00	\$ 224,304.00	
17. State Broadband Data and Development Grant Program - Planning	0.00	0.00	0.00	0.00	
18.					
19.					
20. TOTAL (sum of lines 16 - 19)	\$ 224,304.00	\$ 224,304.00	\$ 224,304.00	\$ 224,304.00	
SECTION F - OTHER BUDGET INFORMATION					
21. Direct Charges: <input style="width: 300px;" type="text"/>		22. Indirect Charges: <input style="width: 300px;" type="text"/>			
23. Remarks: <input style="width: 100%; height: 20px;" type="text" value="All non-federal amounts are for in-kind services and none are in cash."/>					

Authorized for Local Reproduction

Standard Form 424A (Rev. 7-97)
Prescribed by OMB (Circular A -102) Page 2



United States Virgin Islands
Public Finance Authority
Office of Economic Opportunity

SF-424 Budget Narrative
for
State Broadband Data and Development
Grant Program
for the
United States Virgin Islands

CFDA 11.558

August 14, 2009

Submitted by:
United States Virgin Islands
Public Finance Authority
Office of Economic Opportunity
St. Thomas, VI



Note: This budget narrative is also embedded within the overall Narrative attached as an Other Attachment File as inferred from the NOFA. The two copies contain identical information.

Broadband Mapping Budget Narrative

This budget narrative provides an explanation of each budget category to establish the need for the funds in each category and the basis for figures used.

The budget narrative is also accompanied by a spreadsheet supporting how the budget request was calculated.

Personnel

This project uses the PFA to provide management service for the project. The personnel costs are estimated to be \$94,500.

Fringe Benefits

This project uses the PFA to provide management service for the project. The fringe benefits costs are estimated to be \$40,500.

Travel

The travel budget of \$100,185 planned for this project is for Stratum Broadband of Boston to participate in the various aspects of the project that must be done in the USVI. The following trips are planned:

- The initial internal kickoff meeting held to plan the grant proposal: 2 people for three days.
- The first workshop that draws together all the service providers, the major stakeholders that have a role in verification and production, and the GIS experts assigned to the team: 8 people for the week.
- Direct inspection site reviews: 1 person for 10 days.
- The second workshop supporting service providers: 3 people for one week.
- The training for the staff at the USVI GIS group will be for the tools to be used going forward for the 5 year plan.
- The design review workshop and corrections: 6 people for 5 days.
- The readiness review and corrections: 4 people for three days
- Monthly project management reviews prior to initial production delivery not part of other trips: 3 trips, 2 people, and two days.



- Five year support arrangement for problem management, financial audits, and any required NTIA support: 2 people, 10 times, 3 days each. Plus one person, two days for audit support, once each year.
- Inter-island travel during the project will occur throughout the 5 year period.

Equipment

The equipment budget of \$49,000 required for the project is for three server sets:

- The server and related hardware for the web application
- The computer and related hardware for geoprocessing and storage
- The probe servers for verifying the actual performance of the broadband network over time

The longer term devices include bundled maintenance for the life of the project.

For direct inspection purposes and original location verification, the project will use 4 mapping grade GPS devices.

Supplies

There are a limited amount of supplies needed for this project. The need is for the following:

- Heavy weight plotter paper
- Laminating paper

The estimate for these materials is \$2,350.

Contractual

The contractual portions of the project are for professional services amounting to \$1,998,112. This is for the following development, deployment, and continuation team roles:

- Project manager
- GIS team lead
- GIS programmer
- GIS analyst
- GIS technician
- RF engineer
- Computer systems administrator
- Survey statistician



- Survey caller
- Performance specialist
- Project accounting and compliance support

These are not full-time positions. Instead, these skills will be used at various times during the project to produce the various deliverables.

The activities of the team surround the acquisition and transformation of the service provider and subscriber data, and building and populating the broadband geodatabase. Activities include the work with the reference data groups to gather and build the verification reference data. Also included is the work to develop the GIS layers depicting the wireless availability.

This work includes working with each of the service providers to extract accurate data from their service records and engineering databases.

The work also provides for the conduct of verification activities.

- Verification activities include the survey work with a statistically sufficient number of calls to residents, businesses, and anchor tenants.
- Verification also requires the establishment of a test server to sample the actual speed performance of an adequate number of test subjects. This automated test tool requires configuration, execution, and analysis and reporting of results. 200 test subjects must be recruited and configured.
- Verification also requires on-site, direct inspection for ground truthing the data collected on the various connection points and other middle mile measurement locations.

Finally, the deliverables must be generated. The website must be developed for the testing process, but also for the eventual use for housing the Territory broadband map. This will be the website that is referenced by the national broadband map through the use of the required hyperlink.

Finally, the advance team that develops the initial deliverables will perform a technology transfer to the selected GIS team in the Virgin Islands for handling the subsequent years' distribution cycles.

Semiannually for the next five years, the production team will provide a recycle of this same process for refreshing the data in the national broadband database.

The work entails initially preparing and distributing alternative data for November 1, 2009.

The work entails initially preparing and distributing substantially complete data for February 1, 2010 along with the hyperlink to the [Territory] Broadband Map.

The work entails initially preparing and distributing complete data for March 1, 2010.



The recycle and refresh operations require deliveries on the following schedule:

- Fall 2010
- Spring 2011
- Fall 2011
- Spring 2012
- Fall 2012
- Spring 2013
- Fall 2013
- Spring 2014
- Fall 2014

The project manager will maintain monthly accounts of both time and finances for the project in addition to the chronology of events and lessons learned. The project manager will also establish and operate the issue management and change management processes.

The compliance manager will report accounting and programmatic summaries to both the ARRA as well as the SBDD offices. The compliance manager will participate in the annual audits of the project.

The project manager will support ongoing NTIA adjustments.

Construction

There are no plans for construction during this project.

Other

The hosting center arrangements for 5 years and all the software required for the project will be \$141,190.

Software for the project is required for three purposes:

- The Territory Broadband Map web server – ArcGIS Server and supporting software
- ArcGIS system test server
- The performance probe server (Visualware MyConnection) and 200 MySpeed test clients using Red Hat Linux + Sun MySQL

In addition to software, the Virgin Islands production site for both website and performance measurement will be hosted at a colocation center for five years. This cost includes the facility cost, surveillance, and 1 MB access burstable to 100 MB.

Program Income



There is no program income associated with this project.

Summary of Mapping Budget:

a. Personnel	\$94,500
b. Fringe Benefits	\$40,500
c. Travel	\$100,185
d. Equipment	\$49,000
e. Supplies	\$2,350
f. Contractual	\$1,998,112
g. Construction	\$0
h. Other	\$141,190
i. Total Direct Charges	\$2,425,837
j Indirect Charges	\$0
k. Totals	\$2,425,837
7. Program Income	\$0

Table 3. Budget Spreadsheet for Mapping

Broadband Planning Budget Narrative

The Broadband Planning activities are more fully described in the last section of the Narrative: *Section 5. Planning and Collaboration*. Please refer to that section for programmatic details related to the items in this separate Broadband Planning Budget Narrative.

Personnel

This is a consulting assignment and there are no expenses directly attributed to salaried personnel.

Fringe Benefits

This is a consulting assignment and there are no expenses directly attributed to salaried personnel.

Travel

The total travel for this project is estimated to be \$13,375. Travel to the USVI occurs during two trips:

- Workshop week – Sept 21
- Technology and planning meeting – Oct 12

In addition to the travel to the USVI from Boston, the inter-island travel component is estimated to be \$7,450 by itself for the various meetings and data gathering.

Equipment

There is no special equipment required for this project.



Supplies

There are no special supplies required for this project.

Contractual

The contractual expenses of \$447,204 for this project are for the consultants that will perform the studies and make the recommendations. There will be three principal consultants used for the project, each working in parallel to produce the results of the planning in time for Round Two of the BTOP program. The consultants assigned to this project will perform three main groups of activities:

- Perform a market demand analysis study. This effort entails establishment of the Community Stakeholder Collaboration Team, a series of interviews with all, analysis and go-back sessions, interpreting the study into a deliverable, and presenting the results to the assigned group of stakeholders.
- Creating a conceptual design of the needed broadband environment. This effort entails establishing a technology planning team, the analysis of requirements, direct inspection of current facilities, analysis of technologies, level 2 engineering design of fiber and RF possibilities, analysis of open services wholesale accounting and operations, analysis of environmental and permitting requirements, preparation of a summary of barriers to broadband, and preparation and presentation of the group's conceptual design.
- Creating a broadband business plan. This entails expanding the results of the market analysis and the conceptual design into a fully balanced business plan for the recommended broadband initiative for the Territory. It culminates with a public presentation of the recommended broadband business plan.

Construction

There is no special construction required for this project.

Other

There are no other expenses for this project.

Program Income

There is no program income for this project.



Summary of Planning Budget

a. Personnel	\$0
b. Fringe Benefits	\$0
c. Travel	\$13,375
d. Equipment	\$0
e. Supplies	\$0
f. Contractual	\$447,204
g. Construction	\$0
h. Other	\$0
i. Total Direct Charges	\$460,579
j Indirect Charges	\$0
k. Totals	\$460,579
7. Program Income	\$0

Table 4. Planning Budget Spreadsheet

In Kind Matching Calculations

In the NOFA, as provided for in 48 U.S.C. – 1469a, the requirement for local matching funds under \$200,000 is waived for the Territorial governments of the U.S. Virgin Islands and three other territories.

The amount being requested is a total of \$2,886,416

The 20% matching requirement is therefore: \$577,283.

The U.S. Virgin Islands exemption is \$200,000 as per NOFA.

Therefore the requirement for in kind match is \$377,283.

But previously paid WAPA GIS measurements for area maps were \$288,144.

And the PFA participation is to be: \$90,000 in In Kind Service.

Therefore, the excess in kind matching funds provided by the U.S. Virgin Islands over and above the minimum will be: \$861.

Pre-Award Expenses Request

In order to meet the aggressive schedules set forth for the deliverables, the early activities must begin prior to award. The USVI has requested in writing that pre-award expenses (not to exceed 5% of the total project) that are part of this plan remain included. This request is therefore for \$144,321. This is not a request for additional funds, but more a recognition of when the work is to be performed.



United States Virgin Islands
Office of Economic Opportunity

SF-424 Narrative
for
State Broadband Data and Development
Grant Program
for the
United States Virgin Islands

CFDA 11.558

August 14, 2009
Amended December 12, 2009

Submitted by:
United States Virgin Islands
Public Finance Authority
Office of Economic Opportunity
St. Thomas, VI



Executive Summary

The Virgin Islands Public Finance Authority - Office of Economic Opportunity (OEO) is pleased to submit this amended grant proposal on behalf of the U. S. Virgin Islands (USVI). The OEO considers the broadband mapping and planning effort a key initiative in bringing economic growth infrastructure to the territory.

Governor John P. de Jongh hosted all the existing service providers on May 21, 2009 to initiate the beginning of this effort. A second meeting was held on July 31st to review the specifics of the State Broadband Data and Development (SBDD) Grant Program with all the stakeholders and to initiate signing of non-disclosure agreements. The following service providers participated in the meetings, with the exception of Sprint.

Service Provider	Type	Service	Advertised Speed
Innovative Communications Group	ILEC Cellular/PCS/SMR	DSL	512 Kbps (Down) 128 Kbps (Up)
CHOICE Communications	Wireless Data	WiMax	768 Kbps (Down) 512 Kbps (Up)
Broadband VI	Wireless Data	WiFi	512 Kbps (Down) 512 Kbps (Up)
Clear Signal Network Solutions	Reseller (ATI)	—	—
ADM Wireless	Reseller (AT&T)	—	—
AT&T	Cellular	HSPA	700 Kbps (Down) 200 Kbps (Up)
Sprint	Cellular	EVDO	700 Kbps (Down) 200 Kbps (Up)

Table 1. Service Providers in the U.S. Virgin Islands

This grant application proposes to perform broadband mapping and planning in line with the guidelines established for the grant program. In addition to providing National Telecommunications Information Administration (NTIA) with the mapping data for the National Broadband Map at the appointed times, the data will also support the USVI Broadband Technologies Opportunity Program (BTOP) grant proposal scheduled for submission in Round Two of the BTOP



program. The data will also be part of the ongoing engineering process for the rollout of the new facilities in the USVI, as well as part of the support system for the ongoing operation of the new broadband capability.

To accomplish the goals of the SBDD Grant, the OEO has put together the *USVI Broadband Mapping Team (BMT)*, which is sponsored and led by the OEO. Each BMT member is listed below with its specific goals:

- *USVI Water and Power Authority (WAPA)* will provide right-of-way, mapping and infrastructure assessment support.
- *University of Virgin Islands (UVI)* will support ongoing geospatial analysis, surveys and data verification.
- *Stratum Broadband* will provide strategic infrastructure insight, technology planning expertise, data aggregation expertise, and overall project management.

Using the definition of underserved as provided in the SBDD Grant Program, the three islands are largely underserved relative to broadband. No fixed or mobile broadband service provider advertises access to broadband transmission speeds of at least three megabits per second in the area. "Access" is defined as households being able to subscribe to broadband service upon request with a 7-10 business day typical service interval without an extraordinary commitment of resources. (This is meant to be a normal ordering interval.)

The middle mile is only supported by the incumbent carrier Innovative Communications Corporation. Innovative is the incumbent local exchange carrier (ILEC) for the USVI and is the primary source of wire-line backhaul on the islands. For wireless last mile reach all other carriers attach to towers. All off-island connections are from the undersea landing cable sites or by satellite communications.

The highest priority for allocating grant funds within the USVI for projects is to build up the middle mile capacity to

1. Support global competitiveness;
2. Provide high-speed open access broadband to all anchor tenant locations; and
3. Expand last mile residential open access broadband service using a combination of high-speed wireless services and wired technologies.

The USVI Water and Power Authority (WAPA) will participate in the infrastructure build-out, allocating a certain capacity of the new infrastructure to



smart grid use and the remaining capacity to the open access wholesale arrangements supporting all registered retail service providers in the islands.

The program focuses on gathering, verifying, and disseminating data that will be used to support broadband development and the roles of its various participants. The verified data inventory will be used

- To evaluate broadband needs, determining where it is unavailable, and the quality of what is available;
- For expansion and capacity planning; and
- For cost analysis for building the infrastructure for unserved areas and expanding capacity in underserved areas

The following diagram shows the overall approach to gathering the required data from the necessary sources, verifying the data, and delivering the data to federal destinations as well as the local website managed in the USVI.

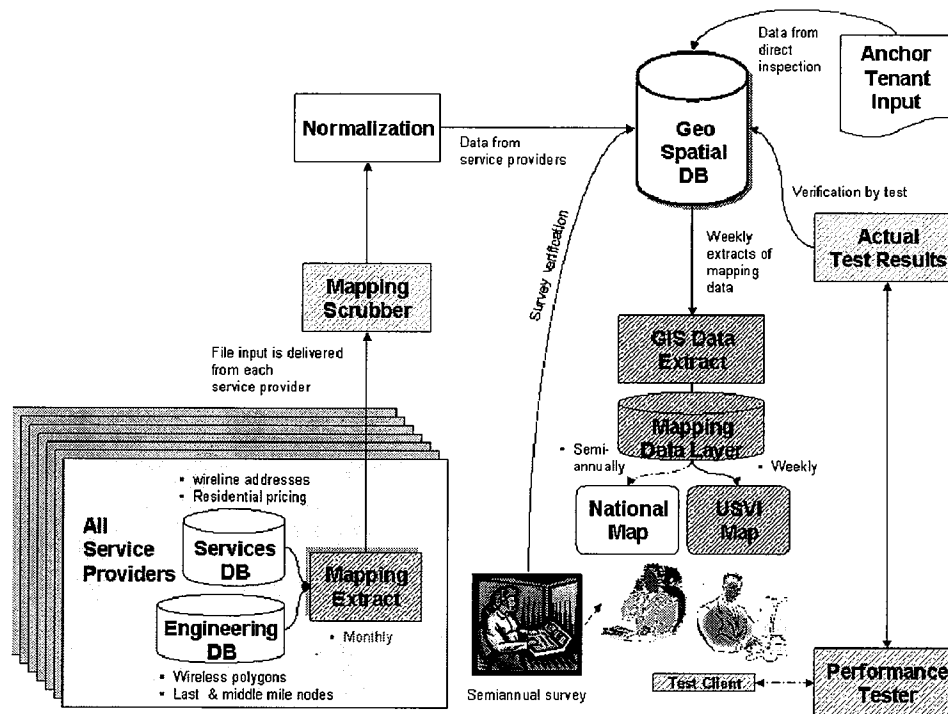


Figure 1. Overall Approach to Data Capture and Verification

The sources of data include not only the service providers, but also information on anchor tenants obtained by ground truthing using direct inspection. As a general strategy for validating and purifying data extracted from the various origins, the data will all go through either a verification or a scrubbing process using the



official location and address data housed in the project geospatial database as the authoritative reference.

In addition to capturing and verifying data received from the service providers themselves, the USVI will conduct performance tests on a statistically valid sample set of user locations to determine the actual broadband speeds during busy hour periods of congestion. The performance information will be updated in summary fashion as required, but also available in more detail on a USVI website for those who want to verify the measured performance from test sites. Semiannual survey information of test users will also be gathered.

Broadband Planning

The OEO previously convened all service providers that operate in the USVI to collaborate on a master strategy for expansion of the USVI broadband capability while maintaining the benefits of competitive retail offerings. This group also met to discuss the details of this grant program and has shaped the approach to the program being described in this application. The USVI has retained Stratum Broadband of Boston, Massachusetts to facilitate the process and bring the project the up-to-the-minute knowledge of approaches being used in other states' programs. Under this proposal, the current team is being expanded to include all the major stakeholders in the government agencies, the anchor tenant groups, commercial interests, and residential interests.

The methods for planning begin with a market analysis to determine the needs of the various communities within the USVI. The analysis will include extensions to the mapping and associated tools for not only analyzing the areas of unserved and underserved constituents, but also for the engineering activity that must precede the BTOP grant application.

The BMT's process follows the engineering methodology of listening to the stakeholders, assessing capability and needs, and preparing a conceptual approach with accompanying business plan for initial review. Based on the approved direction, the BMT will then provide a more detailed engineering plan for drafting the BTOP grant proposal, based on the specifics of the research developed by the business planning and engineering efforts performed during this planning activity.

This iterative approach using community engagement not only provides a quality understanding of the requirements, but allows the buy-in and viral expansion of the common knowledge to become the most significant tool of the adoption program once new facilities are in place.

The activities are designed to fit with the requirements mandated by the SBDD process.

We are poised and ready to deliver on the requirements. The challenges notwithstanding are understood and the team assembled by the OEO has the



required experience. The USVI agencies, instrumentalities, and in kind support services are an important aspect of the complete engagement of the Territory in the solution.



1. Data:

This first section describes the broadband mapping project in the sequence requested in the NOFA.

Broadband Mapping

(a) Data Gathering

The USVI broadband mapping initiative focuses on developing and maintaining an accurate broadband inventory map of the U.S. Virgin Islands. The goal is to gather, maintain, and disseminate a robust broadband dataset to support the NTIA's State Broadband Data Program. This initiative will establish innovative partnerships with Territory-level agencies, Territory authorities, broadband providers, and others who can assist with developing, verifying, and maintaining a territory-wide broadband inventory.

The full Broadband Mapping Team (BMT) will include representatives from the public, private, and non-profit sectors. The BMT will leverage the ideas, capabilities, and resources of each sector to ensure that the USVI broadband mapping initiative is successful and sustainable.

The OEO assembled the USVI BMT and engaged the service provider community to partner in creating the necessary data for this initiative. The joint planning sessions resulted in the working plan offered in this grant proposal.

Data Gathering 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 (SBDD) Grant Program, including, but not limited to, the following:
 - 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, and spectrum (wireless).



- c. Provide online access of clearly presented broadband maps to the public, government, and others without unduly compromising confidential information*¹.
- d. Establish innovative partnerships with Territory-level agencies, Territory authorities, broadband providers, and others who can assist with developing, verifying, and maintaining a territory-wide broadband inventory over a two-year time frame.

Methodology and Deliverables:

The BMT will use the strategies and methods outlined below to produce the deliverables necessary to meet the NTIA's SBDD Program requirements.*² Much of this data is obtained from the service providers and is covered by nondisclosure agreements described later providing the USVI with legal authority for submission of the data under this grant program.

Verification Methodology:

The BMT will use the following methods to verify the accuracy and completeness of these deliverables.

- Verification by survey
- Verification by direct inspection
- Verification by automated probe measurement

A complete description of each verification method is outlined in *Section I.b, Accuracy and Verification* below.

1. Broadband Service Availability -- Service Associated with a Specific Address

The process for acquiring and processing address data is most intensive in this first activity relative to the other types of data structures required.

¹ "Confidential Information" is defined in section "III. DEFINITIONS" of the NTIA's State Broadband Data and Development Grant Program NOFA.

² The preference is for all deliverables to 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. However, as determined by addressing anomalies and confidentiality requirements imposed by the service providers, the *Notice of Funds Availability; clarification* dated August 7, 2009 will prevail.



Acquire Broadband Service Provider Data

The BMT will acquire data from Innovative, the sole provider of “wireline” service (for example, cable, DSL, and T1) in the USVI. Specific data elements to be provided will include DSL connection points, latitude and longitude, type of service, and other relevant variables. Individual street-level addresses will not be provided on individual customers, but instead census block reporting will be derived from the connection points using a 12,000 foot attenuation radius surrounding each last mile connection point.

Acquire Supporting Data Sets

As summarized in the table below, a number of other data sets will be acquired for use in developing this deliverable.

Data Set	Key Characteristics	Known Limitations
<i>WAPA Engineering KMZ files</i>	Roads, underground conduit, utility poles, optical fiber routes, homes receiving electrical power.	Data is good for St. Croix and St. John, but incomplete for St. Thomas as of the initial reporting dates..
<i>Census block shape files</i>	<ul style="list-style-type: none"> ▪ TIGER/Line file available in GIS format 	<ul style="list-style-type: none"> ▪ Missing road names for many segments. ▪ No address range information.
<i>Google Earth</i>	<ul style="list-style-type: none"> ▪ Aerial views for both public and engineering 	Although not accurate down to the meter as other measurements will be, this tool provides excellent visual location information.

When acquiring this data, strong emphasis will be placed on utilizing procedural and technical techniques to protect the broadband service providers’ intellectual property rights and trade secrets.

As each data set is acquired, metadata will be recorded for key characteristics such as geographic extent, format, coordinate system, update cycle, attribute descriptions, and source organizations. Procedures will also be put in place to incorporate updated data sets into this process to ensure that the most recent information is being used.



Each data set will be assessed for data quality in terms of accuracy, completeness, consistency, and other characteristics. Particular attention will be paid to identify opportunities to cross-reference and otherwise link the broadband provider data with one or more of the other supporting data sets (for example, WAPA records)

Build and Populate Broadband Geodatabase

In this task, the BMT will design the broadband data model. This will consist of the physical data structure to store and access the GIS data layers, along with a database schema which supports all data elements and required linkages. The model will also incorporate techniques to help ensure data integrity and quality.

A technical architecture will also be developed for the related computer hardware. This will address requirements for storage capacity, access speed, redundancy, versioning, and processing speed.

The final element of this design will be the software configuration. This will be comprised primarily of Google Earth Pro. It will include desktop, server, and database management products. Additional database management and other software will also be factored in, as needed.

A geospatial database, or “geodatabase,” will then be created, based on the data model described above. This geodatabase will serve as the centralized data repository and will be populated with source data acquired. All subsequent processing and analysis will be conducted within this environment, and the final deliverables will be extracted from this geodatabase.

The process:

The BMT will develop a collection of custom GIS and database software utilities for use in this process. These tools will contain features to facilitate the matching process, track progress, and validate results.

The typical data speeds will also be researched. Although in the beginning, the service providers will all estimate their typical downstream and upstream speeds, many do not know for sure what these statistics are at the busy hour other than spot checks in general. As a part of the project, the USVI will be implementing a test measurement system to determine the performance at periodic intervals from a statistically valid sample population of end-user sites.

This information will be used to exponentially smooth the service providers’ estimates against actual test results. Over time this feedback process will produce very accurate statistical measurements. Although the data is only required twice a year for this grant program, the actual quality process will be run weekly in the USVI. The weekly update for the service providers is deemed to be more useful for operations than just a semi-annual report. Also, by making the measurement process part of the daily routine, the potential for errors in the semi-annual federal extract will dramatically drop.



Deliverables:

- A single tab-delimited plain text file (address_availability_VI.txt) listing all census blocks in the USVI that have broadband service available to end-users for each of the facilities-based providers (DSL, fiber, cable, and terrestrial fixed wireless).
- Detailed documentation outlining the sources and methods used to create the deliverables noted above. This will include Federal Geographic Data Committee (FGDC) compliant metadata for every GIS-compatible layer.

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

To support the requirements of this deliverable, the BMT 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.

The BMT will work collaboratively with project partners (for example, broadband providers and Territory government) to compile the mobile wireless and satellite-based broadband GIS layers outlined above. The BMT will also work with the broadband service providers to obtain any existing appropriate digital data they may have, especially detailed wireless propagation maps based on well documented sources and methods. The BMT 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 territory wide broadband geodatabase. Otherwise the BMT's mapping specialist will work with wireless providers to generate high-quality wireless propagation maps depicting the strength and geographic extent of wireless broadband services. The mapping specialist will crosscheck the results against the best available information from broadband providers. The Google Earth 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 (for example, new wireless towers or antennae).

As with the wire-line records, the USVI automated measurement system will measure and smooth the typical speeds, then feed them back to the service providers for the quality feedback process.

This data structure requires collection of ESRI GIS polygon data from the wireless service providers from their engineering database data. If this data is not directly available from the service providers, the BMT Team will assist in creating the coverage mapping for the DSL and RF services. The polygons will be designed by the carrier to be closed with no overlapping polygons. The BMT



will use the WGS 1984 geographic coordinate standard. The actual deliverable will be a zipped file of the component files, including a readme file explaining the methodology used to generate the map layer and an assessment of the accuracy of the data.

Deliverables:

- The BMT will provide a robust set of GIS-compatible layers (shape files) depicting the extent of terrestrial mobile wireless broadband service availability, including the technology, spectrum, and speed available from each provider.
- 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 Service Broadband Pricing

Residential service broadband pricing data will come from the service providers extracted from their services database. Based on the the latest guidance in the *Notice of Funds Availability; clarification* dated August 7, 2009, the ARPU data will not be reported. This data will be covered by the nondisclosure agreements discussed below.

Deliverables:

- A single tab-delimited plain text file (pricing_VI.txt) listing the data specified by the most recent requirements for end user data by county aggregated at the county level for each broadband service provider in the Territory.
- Detailed documentation outlining the sources and methods used to create the deliverables noted above.

4. Broadband Service Infrastructure -- Last-Mile Connection Points

This class of data is the “first points of aggregation” (last mile connection points³) in the networks (serving facilities) used by facilities-based broadband providers in the USVI. To support the requirements of this deliverable, the BMT will develop a robust GIS-compatible layer which identifies the location of all last mile connection points (“first point of aggregation”) used by facilities-based broadband providers in the Territory. Examples of “first points of aggregation” include central offices and remote terminals locations, cable head-end locations,

³ “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. Examples of first points of aggregation include central office or remote terminal (incumbent local carriers), cable head-end (cable), wireless tower or base station, etc. Refer to section “Appendix A: Technical Appendix” of the NTIA’s State Broadband Data and Development Grant Program NOFA for additional details.



and wireless tower 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.

The BMT will work collaboratively with project partners (for example, broadband providers and the Territory government) to map “first points of aggregation” locations. They will ask broadband service providers and others who manage such locations to share any existing digital data they may have, especially latitude/longitude information. The BMT 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 territory-wide “first points of aggregation” database. Otherwise the BMT’s mapping specialist will work with providers to locate and map “first points of aggregation.” All locations will be mapped using Google Earth. 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 (for example, new points of aggregation).

Each service provider that has last mile connection points will provide data for each point primarily from their engineering databases.

Deliverables:

- A single tab-delimited plain text file (lastmile_VI.txt) listing all “first points of aggregation” for each broadband service provider in the Territory. The file will identify the location (latitude/longitude), transmission technology, backhaul capacity, backhaul type, and elevation above grade.
- 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 Internet Backhaul Connection Points

The interconnection points of facilities in the USVI 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 are collectively “middle-mile and backbone interconnection points.” Examples include points of interconnection which enable communications between an incumbent local exchange carrier central office and the Internet, between a cable aggregation point (head-end) and the Internet, or between a wireless base station and the provider’s core network elements that connect to other networks including the Internet.

To support the requirements of this deliverable, the BMT will develop a robust GIS-compatible layer which identifies the location of all middle-mile and



backbone interconnection points used by broadband providers in the Territory. 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 (for example, fiber, copper, wireless, etc.), and elevation above grade.

The BMT will work collaboratively with project partners (for example, broadband providers and the Territory government) to map all middle-mile and backbone interconnection point locations. The BMT will ask broadband service providers and others who manage such locations to share any existing digital data they may have, especially latitude/longitude information. The BMT 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 territory-wide "middle-mile and backbone interconnection points" database. Otherwise the BMT's mapping specialist will work with providers and partners to locate and map these locations. All locations will be mapped using Google Earth. 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 (for example, new "middle-mile and backbone interconnection points").

Deliverables:

- A single tab-delimited plain text file (middlemile_VI.txt) listing all "middle-mile and backbone interconnection points" in the Territory. The file will identify the location (latitude/longitude), ownership status (owned vs. leased), bandwidth capacity, type of transport facility (for example, fiber, copper, wireless), and elevation above grade.
- Detailed documentation outlining the sources and methods used to identify and map all "middle-mile and backbone interconnection points" locations.

6. Community Anchor Institutions

This deliverable is a list of community anchor institutions in the Territory, including schools, libraries, medical and healthcare providers, public safety entities, institutions of higher education (UVI), and other community support organizations and entities.

To support the requirements of this deliverable, the BMT will develop a robust GIS-compatible layer which identifies the location of all community anchor institutions in the Territory. 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 BMT will work collaboratively with project partners to map community anchor institutions locations, and to characterize the availability and nature of broadband services. The mapping specialist will map the location of all anchor institutions. All locations will be mapped using Google Earth. The BMT will ask community anchor institutions (for example, school, library, government) who manage such locations to share any information characterizing the type of broadband service available at the institution. Phone surveys will be used to collect information from the remaining institutions. Online tools will also allow community anchor institutions to review their information online, and give them the option of reporting corrections or additions (for example, new public facility with broadband access).

Deliverables:

- A single tab-delimited plain text file (anchorinstitutions_VI.txt) listing all community anchor institutions in the Territory. 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.
- Detailed documentation outlining the sources and methods used to identify, map, and characterize all community anchor institution locations.

(b) Accuracy and Verification.

To ensure independent verification of data accuracy for data supplied by the providers the BMT is proposing several verification methodologies. The initial cumulative results of the broadband access effort proposed in *Section I.a) Data Gathering* will be independently verified for accuracy by the following, depending on the type of data being collected.

- Verification by survey
- Verification by direct inspection
- Verification by automated probe measurement

The data received from the service providers will first be validated by extract scrubbers using edit validation tables. Next, the data will go through the geospatial bulk data transformation and cleansing process to ensure that the data is parsed and broken into the correct data elements for inclusion. Next, the data will be checked for matching data already in the database to see if there are eccentricities or duplicates in the submitted data. This capture and scrubbing process will be repeated until the number of errors is sufficiently low that hand correction of the anomalies will be sufficiently quick.



At the point that service provider data is ready for use, the scrubbed data will be used to bulk update the data in the geospatial database.

Verification by Surveying

The University of the Virgin Islands (UVI) maintains responsibility for the census in the Territory. As such, it is the ideal BMT member to assist with verification by surveying for the Broadband Mapping Initiative. UVI will implement telephone polls of random sample of Territory households and businesses to ascertain respondent broadband connectivity and coverage. The results of these polls will be linked to a broadband service map by location. For each address point covered by the poll, the respondent's 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.

Phase One – Developing the Telephone Poll Sample

This project will begin with an analysis of the broadband service map. The goal is for the telephone poll to represent all of the USVI to the highest degree possible regionally and rurally and for the confidence interval to be as rigorous as possible.

After this preliminary analysis, UVI will select a random sample of hundreds of household and business phone numbers from a professional service that maintains and verifies such registries regularly. The number of numbers selected will depend on estimates of what is necessary to result in a response that will result in 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 Territory.

Phase Two – Developing the Survey Instrument

UVI will work with project partners to develop a list of questions to be asked of poll respondents. As the agent for the U.S. Census in the region, UVI 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
- 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 to be optimal for overall response rate and quality of information.

Phase Three – Conducting the Telephone Poll

From the Broadband Mapping Initiative offices on the UVI campus, specially trained interviewers will begin calling the assembled list of telephone numbers and either conducting the survey with respondents or coding reasons for refusal or ineligibility⁴. All respondents will be informed of the source and purpose of the survey and that it is entirely voluntary and confidential.

UVI estimates that a total of 200 responses will meet the needs of both geographic representation and the desired confidence interval. Once the target number is reached, UVI will close the survey operation.

Phase Four – Poll Data Analysis

UVI 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.

UVI, 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 Territory-wide, for rural areas only, and for any regions of the Territory that require stratification or oversampling.

Survey Verification Deliverables

- A 5-10 question USVI-wide telephone survey implemented by UVI
- 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 data set in Excel or SPSS format
- Comparison of the survey data to the broadband service map and a determination and explanation of accuracy
- A PowerPoint presentation of the results
- Up to two meetings to present results

⁴ One aspect of eligibility will be that a survey respondent must be 18 years of age or older.



Verification by Direct Inspection

To verify the accuracy of the data gathered, a set of on-site verifications by direct inspection will be accomplished for both the middle and last mile connection points. Since there exists only a small subset of these middle and last mile connection points, the “ground truthing” process will be the primary verification tool used.

- **Middle Mile**

A physical visit will be made to each major fiber aggregation point as determined in the high-level engineering plan. These site visits will be used to gather the latitude, longitude, and elevation of each aggregation point to validate the data. In addition, a visual survey of the general area will determine if there exists any access to existing facilities such as fiber or microwave.

- **Last Mile**

A physical visit will be made to each of the following facilities, which will be determined to be primary last mile anchor tenants:

- Hospitals
- Libraries
- Public schools – grammar, middle, and high schools
- The University of the Virgin Islands (UVI)

These site visits will be used to gather the latitude, longitude, and elevation of each of the last mile connection points. Interviews will also be scheduled with primary personnel onsite to determine and validate broadband services currently available at each location.

Verification by Automated Probe Measurement

The automated probe technique provides a performance test process to verify or otherwise improve any estimates the service providers have made on their “typical” performance. By selecting a statistically significant sample size, the performance probe process will determine the exact performance of the test locations initially in periodic intervals. Specialized calculations will determine the real busy hours and congestion perhaps more accurately than the service providers currently measure. Even though the BMT will be using less than 100% of the end user locations for the test, it will be quite accurate over time. Using exponential smoothing will derive a correction factor to apply against the service providers’ estimates. The sample size for each island will be chosen in the first week of the process. Initial estimates indicate that with even as few as 200 well-positioned test participants, the sample size will be statistically significant.



Verification Summary

The table below provides a comprehensive view of the verification method proposed for each broadband information type requested.

	<i>Address Specific Service</i>	<i>Wireless Service</i>	<i>Residential Service Pricing</i>	<i>Last Mile Connection Points</i>	<i>Middle Mile and Backbone Inter-connections</i>	<i>Community Anchor Institutions</i>
UVI Surveying	X	X	X			X
Probe	X	X				X
Direct Inspection		X		X	X	

Table 2. Broadband Information Type and Verification Matrix

(c) Accessibility

The BMT will make the broadband data accessible via the Internet using custom browser based map-centric applications. These applications will serve two specific user types including a general access audience (general public, governmental, and research organizations) and an authorized user audience (provider, authorized entity, and data maintainers). Both applications will provide search capabilities using address information as well as point and click capabilities for discovering broadband information at specific locations. Users will be presented with the broadband information in a clean and well formatted display. Supporting functionality will include the ability to turn on and off individual and grouped map layers, and map navigation via a suite of pan and zoom functions.

The general access application will be designed to provide immediate value to a wide range of user capabilities by providing information on broadband access in specific geographic areas in an intuitive and easy to use interface. It will provide access to the broadband availability including the type and speed of wireline and wireless broadband services at the address level. This will include information on technologies, wireless spectrum, access speeds, and anchor institution information. Additional service provider information (type, technical specifications, and infrastructure attributes and location) may be provided as directed by specific provider agreements and executed non-disclosure agreements. As with the National Broadband map, these maps may provide a range of additional, economic, and demographic data derived from other sources. In addition to the dynamic web-based applications, simple data (vector and graphic) download may be made available for interested constituents



The authorized access application will also be designed to provide immediate value to a wide range of user capabilities. It will also provide access to the same suite of broadband information as the general access application. However, it will be enhanced with additional utilities specific to engaging in the feedback loop for data maintenance, quality control, and update activities. These utilities may incur a nominal learning curve associated with using them. User authorities will orchestrate available data ensuring sensitive provider data is exposed only to the properly authorized users.

The underlying architecture will be developed using open well-documented standards-driven development practices and will leverage modern design and deployment tools. Every effort will be made to balance development and deployment costs by using open source programming interfaces and utilities while maintaining an appropriate level of end-user functionality. In addition, consideration will be given to deploying well-documented service-based solutions as part of the architecture to make the information as accessible as possible to a range of constituents with the ultimate goal of facilitating identification of areas for broadband investment.

(d) Security and Confidentiality.

This section provides a description of the methods the project uses to provide transparency of process and protection of confidential information.

Transparency

The BMT sees transparency of process as a priority. Process transparency allows others the opportunity to assess and provide comment to the approach and the methods employed in creating the broadband mapping data. The ability to improve methodologies through feedback is an important self improvement goal of the effort. While the BMT is interested in improving the methods through feedback, they are also aware that they need to retain the focus on the primary goals of the effort as established at the 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. Geographically defined temporal change analysis of the unserved and underserved populations in the USVI is critical to understanding the success of future broadband infrastructure deployment. Only consistent methodologies will support that analysis.

The BMT's approach will ensure transparency through:

- Fully documenting the BMT approach
- Providing documentation online on a dedicated publicly accessible web page



The project BMT places a high value on communication and each team member has already been working with other team members on developing methodologies to accomplish all elements of the broadband mapping effort in accordance with the defined requirements. Each BMT member will contribute to project documentation information to define 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 USVI broadband mapping effort.

Confidentiality

The BMT will establish nondisclosure agreements (NDAs) with those broadband service providers that wish to keep their name or pricing data restricted from public access and distribution. The mapping data collection NDAs are consistent with the NOFA requirements.

Confidentiality will also be achieved through aggregation of service 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 territory-wide availability of wireless services in the USVI from all providers as a single map layer, the individual service areas of each provider are not discernable and yet the understanding of wireless coverage availability is not diminished. The BMT will work with the data providers to be sure that they are comfortable with the methods being used to represent publicly available data.

Another important aspect of maintaining confidentiality is proprietary data control. The plan for collection of provider service coverage information calls for sending that information to a single point of collection, Stratum Broadband. Stratum Broadband will be the single point of data control for proprietary data used in the project, and as the data aggregator Stratum Broadband will then be able to take the provided data, aggregate it according to the defined processes, and provide it to the public.

The BMT intends, by implementing the processes mentioned above, to ensure that they provide open access and transparency of the methods employed in the work, while also ensuring that proprietary data from providers and Territory entities is controlled and distributed without disclosing identifying or distinguishing information.



2. Project Feasibility:

(e) Applicant Capabilities

This section provides the detailed budget description for the proposed project costs. The first discussion is for the broadband mapping portion and the second is for the planning portion.

Broadband Mapping Budget Narrative

This budget narrative provides an explanation of each budget category to establish the need for the funds in each category and the basis for figures used.

The budget narrative is also accompanied by a spreadsheet supporting how the budget request was calculated.

Personnel

This project uses no management service for the project as only contract services are approved. The personnel costs are thus \$0.00.

Fringe Benefits

This project uses no management service for the project as only contract services are approved. The fringe benefit costs are thus \$0.00.

Travel

There is no travel budget planned for this project. All travel required for this project is paid for as an in kind match. All project management reviews are planned to be conducted by telephone.

Equipment

There is no equipment budget planned for the project. All required equipment is provided by the participating contracting entities.

Supplies

There is no supplies budget planned for the project.

Contractual

The contractual portions of the project are for professional services amounting to \$834,276. This is for the following development, deployment, and continuation team roles:

- Principal Project Consultant
- Lead Engineer
- Systems Integration Lead



- Performance specialist
- Planning and Controls
- GIS Mapping Lead
- GIS Software Specialist
- GIS RF Engineer
- Survey Specialist
- Survey Outbound Caller
- Professional Services
- Mapping Support (e.g., Water and Power Authority)

These are not full-time positions. Instead, these skills will be used at various times during the project to produce the various deliverables.

The activities of the team surround the acquisition and transformation of the service provider and subscriber data, and building and populating the broadband geodatabase. Activities include the work with the reference data groups to gather and build the verification reference data. Also included is the work to develop the GIS layers depicting the wireless availability.

This work includes working with each of the service providers to extract accurate data from their service records and engineering databases.

The work also provides for the conduct of verification activities.

- Verification activities include the survey work with a statistically sufficient number of calls to residents, businesses, and anchor tenants.
- Verification also requires the establishment of a test server to sample the actual speed performance of an adequate number of test subjects. This automated test tool requires configuration, execution, and analysis and reporting of results. 200 test subjects must be recruited and configured.
- Verification also requires on-site, direct inspection for ground truthing the data collected on the various connection points and other middle mile measurement locations.

Finally, the deliverables must be generated. The website must be developed for the testing process, but also for the eventual use for housing the Territory broadband map. This will be the website that is referenced by the national broadband map through the use of the required hyperlink.

Finally, the advance team that develops the initial deliverables will perform a technology transfer to the selected GIS team in the Virgin Islands for handling the subsequent years' distribution cycles.



Semiannually for the next five years, the production team will provide a recycle of this same process for refreshing the data in the national broadband database.

The work entails initially preparing and distributing alternative data for November 1, 2009.

The work entails initially preparing and distributing substantially complete data for February 1, 2010 along with the hyperlink to the [Territory] Broadband Map.

The work entails initially preparing and distributing complete data for March 1, 2010.

The recycle and refresh operations require deliveries on the following schedule:

- Fall 2010
- Spring 2011
- Fall 2011

The plans and controls specialist will maintain monthly accounts of both time and finances for the project in addition to the chronology of events and lessons learned. The Principal Project Consultant will also establish and operate the issue management and change management processes.

The plans and controls specialist will report accounting and programmatic summaries to both the ARRA as well as the SBDD offices. The compliance manager will participate in the annual audits of the project.

Construction

There are no plans for construction during this project.

Other

The hosting center arrangements for the website and all the software required for the project will be made by the OEO as part of the matching grant \$0.00.

In addition to software, the Virgin Islands production site for both website and performance measurement will be hosted at a colocation center for two years. This cost includes the facility cost, surveillance, and 1 MB access burstable to 100 MB. This facility is provided by the OEO as part of the matching grant.

Program Income

There is no program income associated with this project.



Summary of Mapping Budget:

a. Personnel	\$0
b. Fringe Benefits	\$0
c. Travel	\$0
d. Equipment	\$0
e. Supplies	\$0
f. Contractual	\$834,276
g. Construction	\$0
h. Other	\$0
i. Total Direct Charges	\$834,276
j Indirect Charges	\$0
k. Totals	\$834,276
7. Program Income	\$0

Table 3. Budget Spreadsheet for Mapping

Broadband Planning Budget Narrative

The Broadband Planning activities are more fully described in the last section of the Narrative: *Section 5. Planning and Collaboration*. Please refer to that section for programmatic details related to the items in this separate Broadband Planning Budget Narrative.

Personnel

This is a consulting assignment and there are no expenses directly attributed to salaried personnel.

Fringe Benefits

This is a consulting assignment and there are no expenses directly attributed to salaried personnel.

Travel

The total travel for this project is provided as part of the matching grant. The travel budget is therefore \$0.00.

Equipment

There is no special equipment required for this project.

Supplies

There are no special supplies required for this project.

Contractual

The contractual expenses of \$460,578 for this project are for the consultants that will perform the studies and make the recommendations. There will be three principal consultants used for the project, each working in parallel to produce the



results of the planning in time for Round Two of the BTOP program. The consultants assigned to this project will perform three main groups of activities:

- Perform a market demand analysis study. This effort entails establishment of the USVI Broadband Coalition, a series of interviews with all, analysis and go-back sessions, interpreting the study into a deliverable, and presenting the results to the assigned group of stakeholders.
- Creating a conceptual design of the needed broadband environment. This effort entails establishing a technology planning team, the analysis of requirements, direct inspection of current facilities, analysis of technologies, analysis of open services wholesale accounting and operations, analysis of environmental and permitting requirements, preparation of a summary of barriers to broadband, and preparation and presentation of the group's conceptual design.
- Creating a broadband business plan. This entails expanding the results of the market analysis and the conceptual design into a fully balanced business plan for the recommended broadband initiative for the Territory. It culminates with a public presentation of the recommended broadband business plan.

Construction

There is no special construction required for this project.

Other

There are no other expenses for this project.

Program Income

There is no program income for this project.



Summary of Planning Budget

a. Personnel	\$0
b. Fringe Benefits	\$0
c. Travel	\$0
d. Equipment	\$0
e. Supplies	\$0
f. Contractual	\$460,578
g. Construction	\$0
h. Other	\$0
i. Total Direct Charges	\$460,578
j Indirect Charges	\$0
k. Totals	\$460,578
7. Program Income	\$0

Table 4. Planning Budget Spreadsheet

In Kind Matching Calculations

In the NOFA, as provided for in 48 U.S.C. – 1469a, the requirement for local matching funds under \$200,000 is waived for the Territorial governments of the U.S. Virgin Islands and three other territories.

The amount being requested from the Federal Government is a total of \$1,294,854.

The 20% matching requirement is therefore: \$258,971.

The U.S. Virgin Islands exemption is \$200,000 as per NOFA.

Therefore the requirement for in kind match is \$58,971.

But previously paid WAPA GIS measurements for area maps were \$288,144.

Therefore, the excess in kind matching funds provided by the U.S. Virgin Islands over and above the minimum will be: \$229,173.

Pre-Award Expenses Request

In order to meet the aggressive schedules set forth for the deliverables, the early activities must begin prior to award. The USVI has requested in writing that pre-award expenses that are part of this plan remain included. The amount of funds that are pre-award amounts will be calculated when the written notice of award is announced. This is not a request for additional funds, but more a recognition of when the work is to be performed.



(f) Applicant Capacity, Knowledge and Experience.

The specific BMT for the mapping project consists of the following personnel:

- USVI Public Finance Authority
 - Julito Francis – Director of Finance and Administration
 - Marian Prescod – Financial Reporting
- Stratum Broadband
 - John Reynolds – Principal Project Consultant
 - John Foresto – Principal Consultant
 - Bob Panoff – Principal Consultant
 - Gene Currie – RF Engineering
 - John Stenquist – Statistical Measures
 - Frank Truscott – Performance probe
 - Steve Sharp – GIS Specialist
- USVI BIT
 - Dave Arnold – Director – Bureau of Information Technology
- UVI
 - Steve Henry – Virgin Islands Geospatial Information Council
 - Frank Miller – Survey Specialist
 - Sylvia Susnjic – Research Statistical
 - Kay Cooper - Verification
- WAPA
 - Dalma Simon – Network Manager
 - Neil Vanterpool – Engineering Specialist
- Service Provider Data Specialists Team
 - Innovative
 - Choice
 - Broadband VI
 - St. Croix Fiber
 - AT&T
 - Global Crossing

Because of the nature of the project's duration and timing, the BMT has expert broadband engineers with prior experience which will enable them to meet the initial dates. The team has local subject matter experts with knowledge of service provider records. Finally, the verification team is expert in performance data



systems and analysis needed for the ongoing measurement of the actual performance of the broadband delivery.

The project's team members have extensive experience in dealing with broadband and telecommunications technology. The team members also have approximately 20 years in projects that collect or otherwise manage broadband and telecommunications-related data.

Stratum Broadband was formed for the specific purpose of providing engineering and business management consultation for the emerging broadband needs of both the public and private sectors. Stratum customers include state and local governments, public/private partnerships engaged in delivering open access broadband services, universities seeking state of the art communications capability needed to carry out their missions, research parks that are communications and technology intensive, large hospitals that require intricate communications to carry out advanced treatments and operation, public safety groups seeking advanced emergency management and notification communications, and private enterprise expanding national networks of internal and external multimedia services.

Some of Stratum Broadband's recent projects include the following:

- Vermont Telecommunications Authority
- Rhode Island Wireless Innovation Network System (RI-WINs)
- CBN Connect: the open access fiber and wireless network operating in the Adirondack region of New York State

The specific team members creating the initial GIS maps have done this exact project in Vermont, not only for the broadband map to be used for these same purposes, but also for the extended use of the maps and planning tools to be used for detailed engineering design and operational support for the production network in Vermont.

The primary GIS specialist for will be Stephen Sharp. Mr. In 2008 Mr. Sharp facilitated the development of Vermont's Enterprise GIS Strategic Plan, which led to the formation of the State's Enterprise GIS Consortium. Mr. Sharp is currently leading the effort to develop the SBDD broadband maps for the State of Vermont. The broadband maps identify "unserved and underserved" areas of the state. This information will allow the state to successfully leverage Federal stimulus funds targeted toward the build-out of broadband services in these areas.

All the members of the various Virgin Islands government groups are the stewards for the various data needed for verification purposes. The University of the Virgin Islands is responsible for supporting the U.S. Census efforts and other



statistical data gathering activities locally. The service provider team is made up of the data management personnel responsible for providing the requested data.



3. Expedient Data Delivery:

This section provides a timeline for major project goals, including anticipated dates of data delivery. This timeline is ambitious and designed to facilitate the delivery of all data required by the *Technical Appendix*. **The USVI cannot provide a substantially complete set of availability data by November 1, 2009, and is proposing to provide an alternative data set and delivery date.** The process to be employed to produce the data and the team assembled from the sources of that data demonstrate that the USVI has the ability to complete the project requirements within the proposed timeline, including the requirements to provide a substantially complete set of all broadband mapping data on or before February 1, 2010 and to complete such data collection by March 1, 2010. All data provided in the first collection will be accurate as of June 30, 2009.

The following table describes the various internal and external project milestones and deliverables.

Milestone Schedule		
Milestone	Date	Deliverable
Execute nondisclosures with all service providers	10-Aug-09	Nondisclosures
Create Conceptual Design	31-Dec-09	Conceptual Broadband Design Presentation
Perform Market Demand Analysis Study	31-Dec-09	Market Demand Analysis Study
Work with service providers to get initial files	31-Dec-09	Initial SP Files
Create Broadband Business Plan	31-Jan-10	Broadband Business Plan
Semi-annual survey	31-Jan-10	Survey
Conduct site surveys for direct inspection	22-Jan-10	Site Surveys
Collect and analyze probe data	22-Jan-10	Probe Analysis
Deliver first test distribution containing alternative data set	15-Jan-10	First Test Distribution
Deliver second test distribution containing substantially complete data	1-Feb-10	Second Test Distribution
Deliver first distribution for record containing complete data	1-Mar-10	Record Distribution
Deliver Fall 2010	1-Sep-10	Record Distribution
Deliver Spring 2011	1-Mar-11	Record Distribution
Deliver Fall 2011	1-Sep-11	Record Distribution
Report accounting summary - ARRA	Quarterly	Quarterly ARRA Accounting
Report accounting summary - SBDD	Quarterly	Quarterly SBDD Summary
Financial audit support	On Going	Audit Submission

Table 3. Milestones and Deliverables

The deliverables identified in blue in the above list are internal project deliverables that are necessary for our programmatic process of data creation. These internal deliverables will not be delivered to the NTIA. They are only listed to provide an understanding of the quality process leading up to the first actual NTIA deliverable which is the alternative data set delivered on January 1, 2009.



January 1, 2009 – The BMT proposes to submit an alternative data set. It will include data representing all service providers, but the verification steps will not have taken place, so the data submitted must be regarded as an alpha release. The risk associated with this first deliverable is that the grant funding commitments and approval processes proposed in the NOFA may not occur until after this first deliverable is due. Therefore, the data released must be regarded as suitable for testing purposes, but not substantially complete as defined and therefore should not be used for public viewing. Nevertheless, this delivery will be useful in the overall data integration process for both national and Territory purposes.

February 1, 2010 – The second deliverable will be substantially complete data, subject to the ongoing data verification processes outlined in this proposal.

March 1, 2010 – The final initial deliverable will provide complete data.

Each subsequent semiannual distribution will be part of the regularly scheduled automation and verification process described above. The deliverables correspond to the delivery dates provided in the NOFA. The first delivery is of course the hardest to produce in the compressed timeframes. But the subsequent deliverables are the products of weekly, monthly, and semiannual steps that will be institutionalized in the official Territorial data management activity.



4. Process for Repeated Data Updating:

This section provides a description of what methods the USVI intends to use to provide repeated updating of data on at least a semi-annual basis, continuing for at least three (3) deliveries after the date of the initial collection.

The USVI broadband mapping initiative will incorporate a robust maintenance strategy, ensuring the long-term accuracy of USVI's broadband inventory. The BMT understands the importance of long-term data maintenance. UVI (a member of the team) has extensive experience maintaining large complex datasets over a multi-year period. As the Territory-designated maintainer and distributor of geospatial data assets, UVI's technical personnel have extensive experience with the requirements of data maintenance, update, and dissemination.

The BMT will use the following tools and strategies to maintain the accuracy of the Territory's broadband inventory over a 2-year period⁵.

1. **Offline Data Submitted by Service Providers:** Broadband providers will be submitting digital updates offline. The BMT will ensure that the data meets established standards and specifications. If so, the data will be used to update the territory-wide broadband inventory. For wireless providers, new or modified wireless facilities (towers/base stations) will be used to generate updated wireless propagation maps.
2. **Ongoing Survey of Anchor Institutions:** An annual phone and/or online survey of community anchor institutions will allow the BMT to verify and update broadband information for each institution.
3. **Direct Inspection Data Collection:** The BMT will use "on the ground" site survey 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.
4. **Close Collaboration:** In all cases the BMT will work in close collaboration with broadband providers, partners, and anchor institutions to ensure the ongoing accuracy of the USVI's broadband inventory.

⁵ 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. The UVI Broadband Mapping Initiative will provide updates to the NTIA on a semi-annual basis.



5. Planning and Collaboration:

The USVI broadband initiative intends to collaborate with Territory-level agencies and Territory authorities in carrying out both the mapping effort and the broadband planning project. This section provides a description and justification on how well the proposed broadband planning process will address one or more of the projects identified earlier in the BDIA.

Broadband Planning Project

The USVI broadband planning team is composed of most primary Territory entities that are involved with telecommunications and broadband in the Territory. Specifically this includes the Public Finance Authority, the Water and Power Authority, the Bureau of Information Technology, the University of the Virgin Islands, the Research Technology Park, and the Geospatial Information Council. Also a part of the Planning team is all the service providers registered in the USGI. This existing connection by team members to the broad community is a key strength of our team approach.

The approach to facilitating the launch of broadband communications capability in the USVI is envisioned to be a well established pattern. The pattern takes the following three movements:

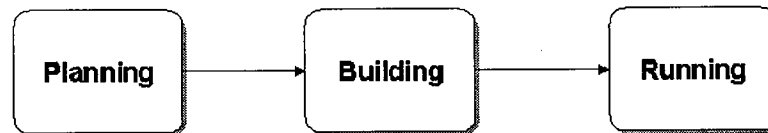


Figure 2. Process Sequence

The initiative is currently in the planning phase, and the purpose of the planning is to prepare sufficiently for the next two phases. The approach to planning includes those steps needed to formulate the vision, develop the strategies, allocate the strategies into 24 month tactics, and then set in motion various programs that will actualize the tactics.

Our general groupings of major activities are as follows:

- ***The kickoff*** – Where the stakeholders rally to understand the approach, find out what to do, and the relationships begin to start
- ***Market demand analysis*** – To provide a basis for the business sustainability for the new broadband capability rooted in the satisfaction of human needs



- **Conceptual design for open access** – To envision the wholesale solution required by the statutes of the ARRA and to provide a technical guideline for all the activities to follow
- **Broadband business planning** – To provide the actual living business plan that will direct the scope of efforts in all three phases

Project Kickoff

The initial meeting occurred with the service providers, the Water and Power Authority, and the Public Finance Authority on May 21, 2009. The subsequent kickoff of the actual mapping and planning activity has taken place with an expanded group of stakeholders on July 31, 2009.

The kickoff meeting was held at the VIPFA headquarters. The purpose of this meeting was to meet the management and key stakeholders of OEO stimulus program and to begin the process of establishing the interpersonal relationships necessary to a successful engagement. Also important were discussions with other important stakeholders within the Virgin Islands that will have responsibilities in the success of the grant proposal processes in general and the engineering steps that will follow.

The focus of this meeting was to:

- Introduce the involved parties from each participating organization
- Review project management protocol
- Review project objectives, methodology, and schedule
- Identify the key stakeholder organizations (for example, existing broadband service providers) that will contribute to this initiative
- Discuss options for encouraging participation by these stakeholders

Immediately following the kickoff meeting were structured interviews in person or by telephone with important stakeholders. The interviews collected various artifacts that contain requirements needed for the analysis.

Market Demand Analysis

In parallel with the initial broadband mapping leading up to the ARRA grant request, the teams will provide a market demand analysis of such services that are recommended. The information will be used for the needs analysis portion of the BTOP grant proposal and is critical to the business case for sustainability. The analysis will be used for the actual business planning associated with the operational phase.



The subtasks within this activity include the following:

- Collect and analyze market data.
- Identify barriers to adoption.
- Identify estimates of service expenditures.
- Estimate demand for services and market share.
- Develop the plan for information exchange for demand for broadband services between public and private sectors.

During these subtasks, the Planning team will collect and analyze detailed market data concerning the use and demand for broadband service and related information technology services. The team will identify barriers to the adoption by individuals and businesses of broadband service and related technology information services, including whether or not the demand for services is absent or the supply for such services is capable of meeting the demand for such services. The Planning team will identify to the greatest extent possible, the current telephone, video, and Internet expenditures of organizations in the service area, both wire line and wireless. The team will project the statistically significant levels of interest, probable market share, customer expectations, and potential consumer demand for advanced telecommunications services, including applications desired by end users, and possible revenue streams from each of the desired services over a five year timeline. The team will develop a plan to facilitate information exchange between public and private sectors regarding the use and demand for broadband services between public and private sectors.

Develop the Conceptual Design for Open Access

The conceptual approach activity prepares a deliverable to serve as the definitive technical guideline for those engineering and deployment activities to follow.

Using the market demand analysis, the business assessment, the technology evaluations, and the overall desires as expressed by the various stakeholders and communities, the Technology and Planning (T&P) teams will produce a Conceptual Design Document to synthesize an optimal solution for the open access broadband facilities for the USVI.

The T&P team will produce the initial draft of this concept, review it with the other teams for adjustments, review it with the potential retail service providers for comment and extensions, and then review it with the community for proper community engagement in the process local participation.

Once vetted by the community, the document will be baselined for use by the more detailed engineering steps to follow.



Broadband Business Planning

The Technology Planning Team will provide an array of support for the planning, deployment, and use of advanced open access broadband services.

The subtasks include the following:

- Develop a tactical business plan for achieving the USVI goals.
- Provide specific recommendations for online application development and demand creation.
- Create or facilitate, in accordance with the BDIA concept, a local technology planning team to benchmark technology use across relevant community sectors.
- Recommend goals for improved technology use within each sector.
- Establish a plan to work collaboratively with broadband service providers and information technology companies to encourage deployment and use, especially in unserved areas and areas in which broadband penetration is significantly below the national average, through the use of local demand aggregation, mapping analysis, and the creation of market intelligence to improve the business case for providers to deploy.
- Establish a plan to improve computer ownership and Internet access for unserved areas and areas in which broadband penetration is significantly below the national and global averages.

These subtasks will be conducted in parallel. The output of these plans will drive two purposes:

1. They are required to prepare the needs and methodology portions of the BTOP grant proposal with sufficient detail to score well in the competitive bidding process.
2. These plans are necessary to operate the proposed wholesale open access broadband entity.



THE UNITED STATES VIRGIN ISLANDS

OFFICE OF THE GOVERNOR
GOVERNMENT HOUSE

Charlotte Amalie, V.I. 00802
340-774-0001

August 13, 2009

Broadband Technology Opportunities Program
National Telecommunications and Information Administration
U.S. Department of Commerce – Room 4898
1401 Constitution Avenue, N.W.
Washington, DC 20230

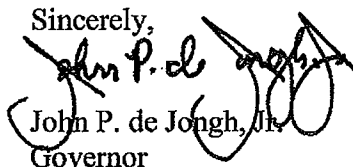
**Re: United States Virgin Islands
Letter of State Designation
State Broadband Data and Development Grant Program**

Dear Sir or Madam:

As Governor of the U.S. Virgin Islands, I hereby affirm that the Virgin Islands Public Finance Authority's Office of Economic Opportunities is the single eligible entity in the U.S. Virgin Islands that has been designated by the U.S. Virgin Islands to receive a grant under the State Broadband Data and Development Grant Program.

If you have any questions, please do not hesitate to contact Mr. Julito Francis, Director of Finance and Administration at (340) 714-1635.

Sincerely,


John P. de Jongh, Jr.
Governor

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.

Statement for Loan Guarantees and Loan Insurance

The undersigned states, to the best of his or her knowledge and belief, that:

In any 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 commitment providing for the United States to insure or guarantee a loan, the undersigned shall complete and submit Standard Form-LLL, 'Disclosure Form to Report Lobbying,' in accordance with its instructions.

Submission of this statement 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 statement 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.

* NAME OF APPLICANT

Virgin Islands Public Finance Authority

* AWARD NUMBER

To Be Determined

* PROJECT NAME

USVI_SBDD_Grant_Program

Prefix:

Mr.

* First Name:

Julito

Middle Name:

* Last Name:

Francis

Suffix:

* Title: Director of Finance and Administration

* SIGNATURE:

Julito Francis

* 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:

Prime SubAwardee

* Name:

* Street 1: Street 2:

* City: State: Zip:

Congressional District, if known:

5. If Reporting Entity in No.4 is Subawardee, Enter Name and Address of Prime:

6. * Federal Department/Agency: <input type="text" value="Department of Commerce"/>	7. * Federal Program Name/Description: <input type="text"/> CFDA Number, if applicable: <input type="text"/>
---	---

8. Federal Action Number, if known: <input type="text"/>	9. Award Amount, if known: \$ <input type="text"/>
--	--

10. a. Name and Address of Lobbying Registrant:

Prefix * First Name Middle Name

* Last Name Suffix

* Street 1: Street 2:

* City: State: Zip:

b. Individual Performing Services (including address if different from No. 10a)

Prefix * First Name Middle Name

* Last Name 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:

* Name: Prefix * First Name Middle Name

* Last Name Suffix

Title: Telephone No.: Date:

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>Julito Francis</p>	<p>* TITLE</p> <p>Director of Finance and Administration</p>
<p>* APPLICANT ORGANIZATION</p> <p>Virgin Islands Public Finance Authority</p>	<p>* DATE SUBMITTED</p> <p>08/14/2009</p>

Standard Form 424B (Rev. 7-97) Back

US Virgin Islands
Overview

Confidential

Combined Two Year Broadband Planning and Mapping Budget, Federal funds and Match				
	Applicant Share	Federal Share	Total	Notes
Personnel Salaries	\$0	\$0	\$0	
Personnel Fringe Benefits	-	-	-	
Travel	-	-	-	
Equipment	-	-	-	
Materials/Supplies	-	-	-	
Subcontracts	-	1,294,854	1,294,854	
Construction	-	-	-	
Other	288,144	-	288,144	
Total Direct Costs	288,144	1,294,854	1,582,998	
Total Indirect Costs	-	-		
Total Costs	\$288,144	\$1,294,854	\$1,582,998	

US Virgin Islands
Detailed Mapping Budget

Confidential

Detailed Mapping Budget									
	Cost	YEAR 1			YEAR 2			Total	Notes
		Applicant Share	Federal Share	Total	Applicant Share	Federal Share	Total		
Personnel Salaries									
Total		-	-	-	-	-	-	-	
Personnel Fringe Benefits									
Total		-	-	-	-	-	-	-	
Travel									
Total		-	-	-	-	-	-	-	
Equipment									
Total		-	-	-	-	-	-	-	
Materials/Supplies									
Total		-	-	-	-	-	-	-	
Subcontracts									
Stratum Broadband			659,780	659,780		92,896	92,896	752,676	
Professional Services			44,400	44,400		18,000	18,000	62,400	
Water & Power Authority			12,800	12,800		6,400	6,400	19,200	
Total		-	716,980	716,980	-	117,296	117,296	834,276	
Construction									
Total		-	-	-	-	-	-	-	
Other									
WAPA Maps		242,041		242,041				242,041	
Total		242,041	-	242,041	-	-	-	242,041	
Total Direct Costs		242,041	716,980	959,021	-	117,296	117,296	1,076,317	
Total Indirect Costs		-			-		-	-	
Total Costs		\$0 242,041	716,980	959,021	-	117,296	117,296	1,076,317	

US Virgin Islands
Detailed Planning Budget

Confidential

SUB-FUNDS Budget	FUND			FUND			Total	Notes
	Cost	Applicant Share	Federal Share	Total	Applicant Share	Federal Share		
Personnel Salaries								
Total		-	-	-			-	
Personnel Fringe Benefits								
Total		-	-	-			-	
Travel								
Total		-	-	-			-	
Equipment								
Total		-	-	-			-	
Materials/Supplies								
Total			-	-			-	
Subcontracts								
Stratum Broadband		0	448,578	448,578			0	448,578
Professional Services		0	12,000	12,000			0	12,000
Total		-	460,578	460,578				460,578
Construction								
Total			-	-				-
Other								
WAPA Maps		46,103		46,103				46,103
Total		46,103	-	46,103				46,103
Total Direct Costs	\$0	46,103	460,578	506,681				506,681
Total Indirect Costs								-
Total Costs	\$0	46,103	460,578	506,681				506,681

US Virgin Islands
Data Mapping Contracts Budget

Cost	YEAR 1			YEAR 2			Total	Total	Notes	Days - Year 1	Days - Year 2	Rate
	Applicant Share	Federal Share	Total	Applicant Share	Federal Share	Total						
Personnel Salaries												
Stratum / Principal Project Consultant	0	91,800	91,800	0	18,576	18,576	110,376	85		17.2		\$1,080
Stratum / Lead Engineer	0	27,000	27,000	0	0	0	27,000	25				\$1,080
Stratum / Systems Integration Lead	0	115,020	115,020	0	0	0	115,020	106.5				\$1,080
Stratum / Performance Specialist	0	88,560	88,560	0	10,800	10,800	99,360	82		10		\$1,080
Stratum / Planning and Controls	0	72,900	72,900	0	21,600	21,600	94,500	67.5		20		\$1,080
Stratum / GIS Mapping Lead	0	76,800	76,800	0	6,000	6,000	82,800	64		5		\$1,200
Stratum / GIS Software Specialist	0	77,000	77,000	0	0	0	77,000	77				\$1,000
Stratum / GIS RF Engineer	0	67,500	67,500	0	10,000	10,000	77,500	67.5		10		\$1,000
Stratum / Survey Specialist	0	19,200	19,200	0	11,520	11,520	30,720	30		18		\$640
Stratum / Survey Outbound Caller	0	24,000	24,000	0	14,400	14,400	38,400	50		30		\$480
Stratum Total	0	659,780	659,780	0	92,896	92,896	752,676					
Professional Services	0	44,400	44,400	0	18,000	18,000	62,400	37		15		\$1,200
Water & Power Authority	0	12,800	12,800	0	6,400	6,400	19,200	20		10		\$640
							0					
Total	0	716,980	716,980	0	117,296	117,296	834,276					
Personnel Fringe Benefits							0					
							0					
Total		0	0				0					
Travel							0					
							0					
Total		0	0				0					
Equipment							0					
							0					
Total		0	0				0					
Materials/Supplies							0					
							0					
Total		0	0				0					
Subcontracts							0					
							0					
Total		0	0				0					
Construction							0					
							0					
Total		0	0				0					
Other							0					
							0					
Total		0	0				0					
Total Direct Costs	\$0	716,980	716,980	0	117,296	117,296	834,276					
Total Indirect Costs							0					
							0					
Total Costs	\$0	716,980	716,980	0	117,296	117,296	834,276					

US Virgin Islands
Planning Contracts Budget

Confidential

Cost	YEAR 1			YEAR 2			Total	Total	Notes	
	Applicant Share	Federal Share	Total	Applicant Share	Federal Share	Total			Days	Rate
	Personnel Salaries									
Stratum / Principal Project Consultant	0	79,920	79,920			0	79,920	74	\$1,080	
Stratum / Principal Consultant		190,080	190,080				190,080	176	\$1,080	
Stratum / Lead Engineer		162,000	162,000				162,000	150	\$1,080	
Stratum / Planning and Controls		16,578	16,578				16,578	15.35	\$1,080	
Stratum Totals	0	448,578	448,578							
Professional Services	0	12,000	12,000			0	12,000	10	\$1,200	
Total	0	460,578	460,578			0	460,578			
Personnel Fringe Benefits							0			
							0			
Total		0	0				0			
Travel							0			
Total		0	0				0			
Equipment							0			
Total		0	0				0			
Materials/Supplies							0			
Total		0	0				0			
Subcontracts							0			
Total		0	0				0			
Construction							0			
Total		0	0				0			
Other							0			
Total		0	0				0			
Total Direct Costs	\$0	460,578	460,578				460,578			
Total Indirect Costs							0			
Total Costs	\$0	460,578	460,578				460,578			

Virgin Islands - Follow-Up Questions

Responses embedded in BLUE.

Data Collection:

Methodology:

1. In developing the overall data collection methodology, were all broadband providers in the Virgin Islands included in the process?
 - All broadband providers who meet the definition of broadband as of the recording date of record were included in the process.
2. Please clarify the “procedural and technical techniques” used to protect broadband providers’ intellectual property rights and trade secrets.
 - The procedure for protecting broadband providers’ intellectual property rights and trade secrets is to first arrange for a third party external to the Virgin Islands to handle all data so that no accidental leaks can occur within the Territory by government or other stakeholder involvement. The contract with Stratum Broadband specifically outlines the nondisclosure arrangements relative to service provider data that is protected. All nondisclosure agreements are between Stratum and the individual service providers.
 - Data analysis will only occur on the service provider’s premises with designated service provider personnel present and assisting, or it will occur at Stratum offices in New England and not within any other area within the Territory. This means that no other government personnel, including the OEO, will have access to the service providers’ sensitive data at any time.
 - Data transmission of sensitive data will be by secure file transfer directly from the service provider’s designated personnel in the Virgin Islands to the Stratum work area without going through any intermediary hands. (Please refer to the security arrangements below for how all data is protected in the project.)
 - Stratum will assist service providers on their own premises with the extract and geocoding if the service provider requests help.
 - Service provider sensitive data will be housed on servers specifically procured and reserved for this project. There will be no commingling of sensitive data on other servers.

- The Stratum personnel working on the mapping project will have met the designated service provider personnel in person, so any telephone discussions will be between people who know each other and whose credentials and authorization have already been authenticated and authorized by the service provider.
3. Do the Virgin Islands intend to develop a unique geospatial data model to support data collection activities?
- Yes. We refer to this database as the geodatabase. This database with its schema customized for this activity has two major components:
 1. A relational database that keeps captured data, data in process, and released data such that its state can be recreated as of any point in time. The data is segmented by source and also as to the promotion level in the quality assurance process.
 2. The data store also includes a directory of all sequential files that have been received, delivered, or used during the quality assurance process. Configuration management will be used to keep the multiple submissions from a service provider straight. This is very analogous to a software development configuration management process.
 - The Virgin Islands has unique aspects to its European style addressing that requires special handling. The data model takes these differences into consideration in the quality assurance and transformation processes.
4. Is there an alternate data collection methodology if broadband providers do not provide all required datasets?
- The service providers have the important data for both mobile, nomadic subscriptions as well as fixed location subscriptions. The quality of some of the data may be suspect as was identified in the NOFA as the perennial problem to be handled through quality control methods. However, some service providers are still skittish about reporting even the relaxed data. We know for a fact that they are reporting data on the FCC Form 477 that is procedurally quite similar to what is being requested by the SBDD program for geospatial location. It is this reluctance that poses the only risk to be mitigated.
- The Governor is prepared to intervene if necessary as a risk mitigation step. The first event that will take place if a service provider fails to support the SBDD program in a timely fashion is that the Governor will discuss the Territory's needs with the Public Service Commission (that is independent but appointed by the Governor). The Public Service Commission is very aware of the needs of the Territory. The next step will be for the Governor to convene a meeting with the CEO of the service provider that is not with the program. (In one case, one of the service providers is in bankruptcy, and the

meeting will be with the trustees of the one service provider that is into receivership.) The Governor and the PSC will try to persuade the reluctant service provider to participate, based on their already evident current participation with the FCC 477 process. The Territory has been quite successful in matters such as this in the past.

The process for gaining service provider participation is well known in the Virgin Islands. Dealing with the bankruptcy trustee is the area that must be done efficiently. The persuasion factor in the discussion is that the service provider in question desperately needs capital for modernizing its offerings, and the stimulus program seems ideal in terms of adding value to the prospects of this one service provider. It is not just the capital that is important to each of the service providers. Their revenues and their profits on their broadband services will expand with the catalyst of the stimulus investment.

All other service providers are eager to participate.

5. Please provide additional detail about how you will assess the quality of data collected from external entities.

- The locations of anchor tenants and connection points have already been identified to the USVI Broadband Coalition which represents all the major stakeholders making up the anchor tenants. All locations have already been plotted on a Google Earth for general location. The navigation methods will be used to plot a “most direct course” for a direct site inspection of each location. The direct inspection drive will be planned for each of the three major islands. The addresses will be verified at each stop. Mapping grade GPS instruments will be used at each location to verify the latitude and longitude of the location. Engineering support for each type of location in addition to the service providers themselves will be available to verify the service provider used, and the type and speed of the current broadband connection.

This also includes the connection points. Some of the submarine landing points have massive broadband capacity. However, only the capacity that is made available to service providers in the Virgin Islands will be counted in this exercise. The site surveys will include a witnessing of the actual equipment used by each service provider.

- A number of individual subscribers will be polled by telephone survey to verify the service provider they have and the advertised speeds of their broadband connection. We will limit the questions to 5-6 so that the process will not be tedious for the called person. We will limit the questions to those relevant to the data to be collected for the SBDD program and refrain from other types of interesting questions. We will call enough subscribers to determine within a statistical confidence interval of 95% how accurate the service providers’ submissions are. The selection of subjects will not be totally random, but instead they will be stratified by census block by service provider.

This stratified and finer grained selection will yield much better results than a totally random survey.

- The telephone survey stratified by census block has a double purpose. We will also be asking for volunteers for being performance testers for each service provider for each census block where they have service. We want to run performance testing as there really seems to be no other valid way of determining the actual speed during periods of congestion. (Although all service providers could perform these tests for themselves, our experience is that they do not do this in any form of scientific way right now... they have spot checked a few locations, and then they guess at their actual speeds.) We will compute these test subjects by grading each of the subscribers based on their distance from the median distance to the last mile connection point. This will give preference to a "typical" subscriber as opposed to one under a tower or out at the outer limits of coverage. We will continue to call and request until we have at least one test point in each census block for each service provider... or until we have determined that there is no one else that could volunteer to be a tester in a census block where we need a tester.

The called person who volunteers to be a performance subject will be asked for their email address so that instructions can be mailed to them. Instructions will then be emailed to them with their secure identifying token as well as the link to the performance testing website. By clicking on the link to the performance site and providing their secure identifying token, the subject will be led through the registration process and receive the testing client application. Once installed through the wizard, this test program will wake up once per hour (or what ever other schedule is deemed desirable) and run a quick speed test. The test server collects all the results in its database. Periodically we will summarize the results to determine when the busy hour really is, and then rate each service provider as to the actual performance as opposed to the guessed performance. With a little exponential smoothing, the actual performance will become very accurate. These results can then be used to tune all the subscribers' locations through extrapolation.

Some additional tuning can be performed based on the distance from the connection point and the technology used. By using attenuation curves, we can predict what the service is like at both the extremes of the outer limits as well as the under the tower locations. This tuning will probably be sufficient for the purposes of the reporting.

The other area of quality assurance that will be useful will be that of direct inspection of the data received from the service providers. With only 19,000 subscribers, just looking at the data with the analog processes of the human mind will reveal anomalies that would be very difficult to foresee through a totally rules-based system. Through using pattern recognition such as this, our GIS team will derive many rules that can be used to identify suspect data. These suspects can then be reviewed with the specific service

provider to determine the root cause of the anomaly. It is the correction of root causes by the service providers themselves that will produce the higher quality results over time. If there were a system error that caused the problem, many times the problem can be rectified and the data resubmitted so that it can re-matriculate through the promotion process. If there is an error cause by a blank data field because the data does not exist, the service provider can then institute a correction process by calling the subscriber or other appropriate procedure.

The correction of address data or performance data is really more important to the service provider than might first be recognized. Damaged address information for ADSL service may mean that a 911 call from the subscriber's telephone may be unsuccessful at the PSAP and someone may die. Lack of speed data is not as serious, but it may result in the subscriber not being billed for service. So there will be probable cause for attention to repairing data that is missing.

Not all errors will be caught by the verification process right away. But a root cause analysis is key to any quality assurance program, and this program is no exception.

In keeping with the need for confidentiality of service providers' data, all verification and repair of faulty data will be private to each service provider and not subject to public or competitive scrutiny as the data becomes purified.

6. Please provide additional detail as to how the WAPA GIS measurements, used as in-kind, will be utilized in this project.

- The Water and Power Authority (WAPA) is the electric company for the Virgin Islands. As such, the GIS systems are perhaps more complete and more accurate than any other source in the Territory. All homes and buildings that use electricity are in the WAPA database. WAPA uses a number of licensed GIS navigation data sets from firms such as TeleAtlas that are much more accurate than Census data in the Tiger/line files. The correlation value of the WAPA data is immensely important when verifying and correcting erroneous address data that currently exists in the incumbent telephone company's database.
- The reasons for these errors can be attributed to many causes, many related to the unique customs of the Virgin Islands colonial Danish style of rapidly evolving street addresses, but the electric company cannot bill for meters it cannot find each month. The continuous perfection of the street addresses is best done through using the data layers of the licensed and custom developed GIS location data that WAPA has commissioned and is willing to let us use in our verification process. This data turns out to be much more accurate than that of the retail communications service providers. This important local difference that exists in the Virgin Islands is rare within the rest of the United States.

- The partial costs for this commissioned data for the route and location data layers are what are contributed by WAPA. The data will be used in the quality assurance process of purifying the geocoding of the addresses so they can be used to identify the census blocks for the service providers. Several sources will be used to validate addresses, but this is a very important one.
- The data from WAPA is doubly useful in that WAPA will be one of the wholesale transmission providers for the middle mile in the Virgin Islands. By leveraging both the broadband program and the smart grid program, the resulting deployment of hurricane resilient fiber plant will be a very efficient use of taxpayers' money in that half of the fiber for the middle mile will be for the broadband supporting the latency intensive smart grid and the other half will be used to support Carrier Ethernet communications service for all the retail service providers who need it in the Territory. The engineering of the broadband middle mile that supports both the smart grid projects and the communications backbone (separate fibers, same bundle) will reach every substation in the territory. From there each neighborhood will be served by fiber second mile access at facility access points. And from these points, we are examining using fiber to each of the premises, not only for electric control purposes, but also to allow open access services for any retail service provider that wishes to offer high performance broadband services to the premises (100MB). So the WAPA spatial data is very useful for the broadband planning as well as the broadband mapping portion of the project. This is to plan where service needs to be as opposed to where it is now. Both the marketing and the engineering perspectives are important for the planning process.

Type of Data to be Collected:

1. Please provide more detailed information on how the Virgin Islands intend to collect community anchor institutions.
 - We have convened the first meeting of the USVI Broadband Coalition. This group was formed by the Office of Economic Opportunity (OEO) and supported broadly by the Governor in his public communications. The group is made up of the Commissioners or Directors of every group that is defined as an anchor tenant by the ARRA statutes. The kickoff and orientation of all anchor tenants has already occurred at the headquarters of the Public Finance Authority that operates the OEO. The members are the heads of the organizations assisted by their key technical persons. The technical persons selected by this group make up the vast majority of the SBDD Technology Team for the Coalition.
 - All of the heads of the anchor institutions and their key technical people have been briefed (both as a group and as individuals) on the approach being proposed by the Virgin Islands for the Mapping and Planning projects. All understand what must be done.

- All teams have been provided with starter kits of location data drawn from telephone and electric company data and are individually working on the data to complete their type of anchor tenant locations. The commissioners seem to be able to verify the existence of the locations quickly on their lists. Their functionaries and technical staff are completing the detail information for the initial submission.
- Once the initial lists have been gathered (many are ready right now), they will be desk checked by the electric company for completeness of locations.
- Then the drive verification will schedule a visit in an optimal sequence of every anchor tenant location as described above. Each site will participate, and the GPS coordinates will be recorded or corrected by an on site mapping grade GPS instrument by the Stratum field team.
- Because the anchor tenant locations are numbered in the hundreds as opposed to thousands, the Excel spreadsheet used to capture and review the draft submission will be converted into both a tab delimited sequential file for upload to the geodatabase data store as a file, and then transformed into relational data within the overall relational database component of the repository.
- Subject to any further data verification, then data is then available for controlled export to both the NTIA as well as the local Virgin Islands Territory Map Website created specifically for this SBDD program.

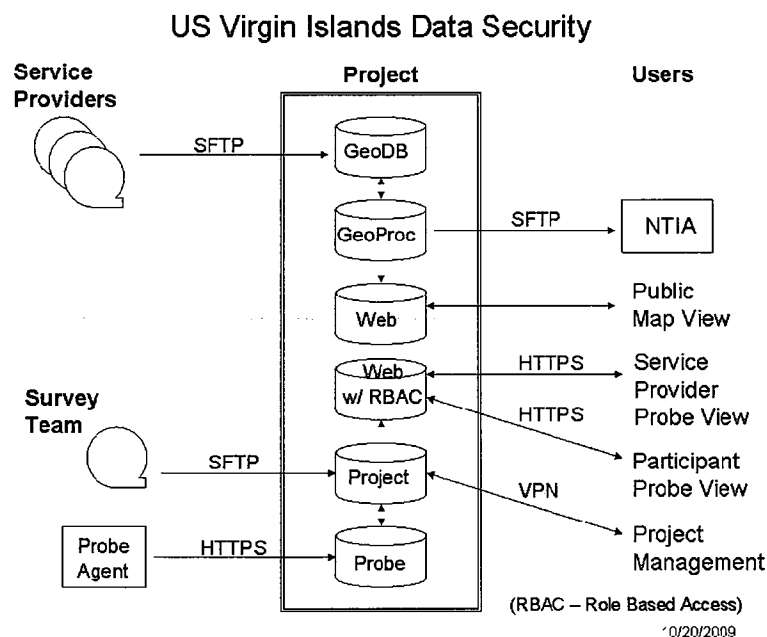
Confidentiality and Non-Disclosure:

1. What is the intended schedule for finalizing NDAs with the broadband providers?
 - Most important NDAs are in place now. We expect all NDAs to be in place by November 1.

Security:

1. What specific security procedures and protocols will be used to protect collected data and IT infrastructure used to support the program?
 - In general, the primary mechanism for securing external access to data will be through the use of secure access methods such as HTTPS and SFTP.
 - With the exception of public access to the map, all other access is controlled by authenticated user id and password at a URL specific to the purpose.
 - Domain registrations will be private.
 - All data transfers between project systems will be encrypted and transmitted using VPN connections.

- Any service provider data input to the Geodatabase will be transmitted by SFTP to the Geodatabase input queue. The data analysis team will pick up the files from the queue for processing. We will be responsible for protecting service provider data in the Geodatabase. It is understood that any proprietary data will remain in the Geodatabase. Data available for website access will be extracted from the Geodatabase periodically and stored in extracted form into the website database where it may be queried via web site access.
- The probe system will be hosted on server(s) behind firewall protection and implemented with sufficient OS hardening and port control to limit unauthorized access.
- Web site access to Geodatabase maps or Performance Probe databases will be secured by programmatic controls based on authenticated user or application identity.
 - Individual probe site analysts will have access to probe results for their own site.
 - Service Providers will have access to aggregated probe results for their own customers only.
 - Periodic aggregated probe results will be passed to the Geodatabase via SFTP. The ultimate results of the probe verification processing will be the verified actual speed figures reported to the NTIA in the various official releases.
- Data collected in the user survey process will input to the Geodatabase and available to the project via HTTPS access.
- The overall diagram that describes the security approaches for data access is depicted in the illustration below:



Project Feasibility:

Applicant Capabilities:

Budget:

1. Please provide a detailed budget spreadsheet used to generate Mapping costs.
 - Budget spreadsheet included separately.
2. Please provide a detailed budget spreadsheet used to generate Planning costs.
 - Budget spreadsheet included separately.
3. Please provide a more detailed explanation of how travel related costs were developed.
 - In general, the travel is to cover the costs of travel of the consulting team located in New England to the Virgin Islands when it is necessary to work directly with people in the Virgin Islands or to do drive verification to locations within the Virgin Islands. A limited amount of the travel budget is used for inter-island flights while in the Territory.
 - The planned travel is as follows:
 - Travel is composed of essentially 6 subcategories:
 1. Airfare
 2. Hotel rooms
 3. Meals
 4. Mileage
 5. Parking
 6. Taxis

- The travel is further broken down as it applies to Mapping or Planning in the following spreadsheet (embedded here in miniature, but attached separately for readability).

Travel Plan		Stratum Broadband										Stratum GIS Contractors			Total			
Trip	Purpose	Duration In Days	Airline Tickets	Hotel Nights	Meals Per Diem	Mileage	Parking	Taxi	JF	JR	GC	JS	FT	AC	MH	AF	SS	People
Kickoff Meeting	Initial introductions and orientation for service providers	3	2	6	6	\$188	6	12	1	1								2
	Total Kickoff Meeting								\$4,025									
Workshop Week	Workshop - Orientation	4	7	28	28	630	140	112	1	1	1	1	1		1	1		7
	Total Orientation Workshop Meetings								\$21,742									
	Requirements spreadsheet																	
	Conceptual design presentation																	
	Develop site survey plan																	
	Planning w/BI - E911 extract																	
	Planning w/WAPA - Location verification using navigation data layers																	
	Planning w/LVI - Telephone poll design																	
	Establishment of Probe Server																	
	Planning with each service provider																	
Site Direct Inspections	Site Reviews #1 - Direct Inspection	5	1	5	5	90	5	20			1							1
	Total Site Reviews #1								\$2,961									
	First hundred locations																	
	Site Reviews #2 - Direct Inspection	5	1	5	5	90	5	20			1							1
	Total Site Reviews #2								\$2,961									
	Second hundred locations																	
Workshop Week	Workshop - Development Assistance	5	4	20	20	360	20	40			1	1		1	1			4
	Total Development Workshop Meetings								\$11,044									
	Implementation assistance with each group																	
GIS Update	Training for continuation team	5	4	20	20	360	20	40			1		1		1	1		4
	Total Training Meetings								\$11,044									
	Inter-Island Travel to interact with the various teams located on different islands - Initial mapping	9	15					18	1	1	1	1	1		1	1		7
	Total Inter-Island Travel Meetings								\$5,235									
	Inter-Island Seaplane Airfare is \$325.																	
	Taxi is actually a rental vehicle.																	
	All other costs are represented above.																	
Review Week	Design Review	5	6	30	30	540	30	120			1		1	1	1	1	1	6
	Total Workshop Meeting								\$17,766									
	Detailed design review																	
	Work with service providers to get initial files perfected																	
	Iterative rapid prototyping of portal GIS subsystem using service provider extract files																	
Service Provider Review Week	Readiness Review	2	4	8	8	360	8	32			1		1			1	1	4
	Total Readiness Review Meeting								\$6,864									
Monthly Reviews	September																	0
	October																	0
	November - Management Review	2	2	4	4	180	4	16	1	1								2
	Total Nov 9 Management Review								\$3,432									
	December	2	2	4	4	180	4	16	1	1								2
	Total Dec 8 Management Review								\$3,432									
	January - Post Distribution Review	2	2	4	4	180	4	16	1	1								2
	Total Jan 10 Management Review								\$3,432									
	February - Post Distribution Review	2	2	4	4	180	4	16	1	1								2
	Total Feb 10 Management Review								\$3,432									
Over 5 years	Inter-Island Direct Inspection	27	7					27										
	Total Subsequent Semi-Annual Direct Inspections on St. Croix								\$2,815									
Total Mapping Costs	Unit Totals	61	62	138	138	3,338	250	605			11	5	2	6	2	5	5	2
	Rates		\$850	\$200	\$100	\$0.40	\$35	\$20										
	Total Costs		\$38,000	\$27,800	\$13,900	\$1,335	\$8,750	\$10,100										
	Grand Total - Mapping Travel Costs		\$100,185						\$170,161									
Planning Kickoff	Interviews - Stakeholders	5	3	3	9	270	15	12	1	1	1							3
	Total Stakeholder Meetings								\$4,623									
Business Plan	Reviewing Broadband Business Plan	3	2	6	6	180	6	12	1	1								
	Total Bus Plan Review Meeting								\$4,622									
Inter-Island	Inter-Island Travel to interact with the various teams	3	10					69										
	Total Planning Inter-Island Travel								\$4,430									
	Inter-Island Seaplane Airfare is \$325.																	
	Taxi is actually a rental vehicle.																	
	All other costs are represented above.																	
Total Mapping Costs	Unit Totals	11	15	9	15	460	21	83										
	Rates		\$850	\$200	\$100	\$0.40	\$35	\$20										
	Total Costs		\$7,500	\$1,800	\$1,500	\$180	\$735	\$1,660										
	Grand Total - Mapping Travel Costs		\$107,715						\$174,591									

4. Please provide a more detailed explanation for the calculation of pre-award costs.

- Pre-award costs were computed assuming that award date was going to be in the mid September timeframe as opposed to the end of October timeframe. The project has been delayed to stay within the guidelines required in the NOFA relative to pre-award costs.
- Separate from the discussion of the budget, the Virgin Islands would like to have a respectful conversation on synchronizing the due date of the first deliverable on November 1. This is due to our error in assumption on the due date for the award announcement being September 15 in the interests of providing more complete data on the first deliverable submission. We would like for the pre-award percentage to expand to cover the period between September 15 and November 1. We would also recommend adjusting the due date for the first deliverable until December 1 as opposed to November 1 to allow for the contracted work to re-commence and to complete.
- The plans for pre-award costs at the time of the original submission are as follows:
 - The pre-award funds requested assuming that the award date was September 15, 2009 was \$144,321 which is 5% of the overall request. This percentage we believed was the limit of pre-award expenses that would have been reimbursable. We have thus limited pre-award activity to this amount and await the award date before resuming the project. These pre-award expenses are being applied to travel expense and contracting expense for Stratum Broadband to conduct the startup activities for the project.

Pre-Award Expenses

Specific Expense	Days	Rate	Amount	Limit	Delta
Mapping					
Travel					
SP Kickoff Meeting			\$4,025		
Consulting					
SP Kickoff Meeting	6	\$1,080	\$6,480		
GIS Planning	10	\$1,080	\$10,800		
Anchor Tenant Data Capture	15	\$1,080	\$16,200		
NDA Design and Discussions	7	\$1,080	\$7,560		
Connection Point Research	15	\$1,080	\$16,200		
Performance Probe Testing	30.5	\$1,080	\$32,940		
Survey System Planning	15	\$1,080	\$16,200		
Drive Inspection Planning	5	\$1,080	\$5,400		
Control System Planning	5	\$1,080	\$5,400		
Total Consulting - Mapping			\$117,180		
Total Mapping			\$121,205	\$121,292	\$87
Planning					
Travel					
Stakeholder Kickoff Meeting			\$4,923		
Consulting					
Stakeholder Kickoff Meeting	9	\$1,080	\$9,720		
Stakeholder Telephone Interviews	7.75	\$1,080	\$8,370		
Total Consulting - Planning			\$18,090		
Total Planning			\$23,013	\$23,029	\$16
Total Mapping and Planning			\$144,218	\$144,321	\$103

- The amounts of pre-award expenses assuming that September 15 was the award date are thus as follows:
 - Mapping Travel: \$4,025
 - Mapping Consulting: \$117,180
 - Planning Travel: \$4,923
 - Planning Consulting: \$18,090
- If the pre-award percentage can be expanded to include the amounts that would have been spent between September 15 and November 1, then the pre-award percentage would be calculated as follows:
 - Projected progress payments due out by November 1 for contracting and travel expenses: \$1,040,807.
 - Prior limit through September 15: \$144,218.
 - Difference: \$896,589 (or an additional 31%)
- The recommendation at this point would be to raise the NOT TO EXCEED pre-award percentage to 36%.
- Thank you for your consideration of the situation.

Budget Descriptions:

1. General Guidance for BB Planning and Mapping Budgets and Narratives:

Please provide additional detail to the budget spreadsheets and narratives such that the information below is completed for the first two years of your proposed budget. Please retain a separate budget narrative and spreadsheet for mapping and planning.

Your budget narrative should provide narrative detail (such as description of position or calculation of travel costs), while your revised spreadsheet should include detail for all budget areas. Please ensure that you continue to detail the differences in costs between years one and two. A sample budget template is attached.

Mapping Budget Narrative

Preface to the budget narrative relative to the allocation of In Kind Contributions:

- If the amount of federal funds to be requested for both projects is \$2,886,416, then the In Kind Match is computed to be 25% of the federal funds (which is 20% of the gross). The overall gross amount is thus \$3,608,020 which is composed of the \$2,886,416 in federal funds plus \$721,604 as the “20%” In Kind Match. Our original submission had erroneously assumed that the 20% Match meant 20% of the federal funds requested as opposed to 25% of the federal funds requested. We therefore are correcting that mistake in computing the matching funds required and adding additional matching funds up to the level of 25% of the federal funds requested. ***This does not alter the overall federal funds requested, but it does require an adjustment to our original Form 424A to clarify the increase in the In Kind Match.***
- The In Kind Match will be spread proportionately over the Mapping and the Planning Projects based on overall project costs. The split between the two projects is as follows:
 - Mapping: $2,425,837/2,886,416 = 84\%$
 - Planning: $460,579/2,886,416 = 16\%$
- These proportions will be used as appropriate in the explanations below referencing this computation.
- Also, as per the NOFA, the Virgin Islands are exempt from the first \$200,000 of In Kind Match because of being a Territory. This amount has been subtracted from the In Kind Match computation as follows:
 - Total amount of the two projects: \$2,886,416
 - 20% Match computation: $\$2,886,416 \times 25\% = \$721,604$
 - Less \$200,000 exemption = \$521,604
- Therefore, the total In Kind Match required for each of the two projects is as follows:
 - Mapping: $84\% \times \$521,604 = \$438,147$
 - Planning: $16\% \times \$521,604 = \$83,457$

- For the Mapping Project (this narrative), look for the following In Kind Matches:
 - Salary: \$147,840
 - Fringe Benefits: \$75,130
 - Other: \$242,041
 - Total: \$465,011 (which is \$31,668 in excess of what is required)

Personnel Salaries: For each position allocated to the projects, provide a description of the position responsibilities, annual salary, and percentage of time dedicated to this project for Year 1 and Year 2. Please ensure that costs are clear for both Years 1 and 2, as opposed to both years cumulatively. Be sure to clearly indicate if a portion of time is paid through an in-kind match (i.e. clear federal vs. match distinction). If UVI staff will be used, they should be included as non-federal match.

- Federal funds: \$94,500
- In Kind Match: \$147,840
- The description of the position responsibilities for the non-contract staff is as follows:
 - OEO project staff (federal funds):
 - Description

The OEO project staff person is responsible for the management of the project team facilities at the OEO headquarters building. This includes security, support of the videoconference and teleconference equipment, all computers and printers used in the facility. This position also coordinates all communications with the service providers and stakeholders in the USVI Broadband Coalition for the Mapping Project.
 - Annual Salary: \$85,000
 - % of time dedicated to this project:
 - Year one: 55%
 - Year two: 55%
 - Amount Budgeted: \$94,500
 - Director, OEO (In Kind Contribution)
 - Description

The Director, OEO, is the administrative head of all stimulus programs for the Virgin Islands. As such, the Director participates in the planning, delegation, and control of all stimulus programs. This responsibility runs throughout the life of the project.
 - Annual Salary: \$160,000

- % of time dedicated to this project:
 - Year one: 10%
 - Year two: 10%
 - Amount Budgeted: \$26,880
 - Technical Support (In Kind Contribution)
 - Description

Technical Support provides technical assistance on all communications technologies matters and locations in the Virgin Islands and supports the OEO Director on the project in his absence.
 - Annual Salary: \$120,000
 - % of time dedicated to this project:
 - Year one: 60%
 - Year two: 60%
 - Amount Budgeted: \$120,960
 - UVI staff will operate as a subcontractor to our primary subcontractor, Stratum Broadband. As such, UVI staff is included under the subcontract section and as non-federal match.

Personnel Fringe Benefits: For each position allocated to the projects, provide the cost for fringe benefits, if available.

- Federal funds: \$40,205
- In Kind Match: \$75,130
- The specifics are as follows:
 - OEO.project staff (federal funds):
 - Personnel Fringe Benefits: \$40,205
 - % of time dedicated to this project:
 - Year one: 55%
 - Year two: 55%

- Amount Budgeted: \$40,500
- OEO Director (In Kind Contribution):
 - Personnel Fringe Benefits: \$68,800
 - % of time dedicated to this project:
 - Year one: 10%
 - Year two: 10%
 - Amount Budgeted: \$23,117
- Technical Support (In Kind Contribution):
 - Personnel Fringe Benefits: \$51,600
 - % of time dedicated to this project:
 - Year one: 60%
 - Year two: 60%
 - Amount Budgeted: \$52,013

Therefore, the allocation of the In Kind Match for the Mapping project for Fringe Benefits will be:

\$75,130

Travel: Provide additional information such that the basis for all figures is clear. For example, if assuming airplane travel, provide an estimated cost for each roundtrip ticket and how many trips are expected. For mileage, provide an estimate of how many miles are expected and how many trips, etc. Be sure to distinguish between federal funds and any matching funds. Please be sure to consider why travel costs are necessary rather than teleconferences in certain circumstances.

- Total travel for the Mapping Project is \$100,185.
- The pre-award expense outlined in the general questions above and with the assumptions specified is \$4,025.
- All travel costs are broken out and explained in more detail in the response to question #3 on the budget above. (For readability, the detailed spreadsheet isolating the detail for the travel expense alone is also attached with this response.)
- There are no matching funds used for the travel expenses. All travel uses federal funds.

- Travel costs are necessary for all meetings where relationships with the stakeholders, where activities must be conducted on service provider premises for security purposes, and where detailed reviews require illustrations and close conversation to fully understand the volume of technical materials and alternatives presented. Also, all drive tests and other GPS related verification has to be done from the locations under inspection.
- These onsite situations taken into consideration, teleconferences are to be used for the vast majority of group communications. Virtually all communications after the initial mapping and planning over the 5 year period take place by teleconference with the exception of drive tests to verify new locations built or leased in the subsequent years.

Equipment: For hardware costs, provide a detailed description of all equipment to be purchased, when it will be purchased in the first two years, and the basis for the figures used. Be sure to distinguish between federal funds and any matching funds.

- The total equipment budget for the Mapping Project is \$49,000.

- The equipment assets are as follows:

USVI Equipment Budget			
Description	Cost	Quantity	Total
Web Server set for Mapping Applications			\$14,750
Web Server/Application Server - Dell PowerEdge R710 Rackmount Server – 16GB RAM, Dual Intel Xeon 5570 CPUs, Windows Server 2008 Standard x64 (IIS Web Server), 2 250GB SATA Harddrives in RAID 1 mirrored configuration, High Output Redundant Power Supplies	\$7,200	1	\$7,200
Database Server – Dell PowerEdge R710 Rackmount Server – 16GB RAM, Dual Intel Xeon 5530 CPUs, Windows Server 2008 Standard x64 (IIS Web Server), 2 1TB SATA Harddrives in RAID 1 mirrored configuration, Energy Smart Redundant Power Supplies (570W), Dual Gi	\$6,200	1	\$6,200
1TB External USB Drives for backup/archive/offsite	\$150	3	\$450
Dell Rackmount 1920W Uninterrupted Power Supply	\$900	1	\$900
Server set for Geoprocessing and Storage			\$5,850
Dell Precision 7500 Workstation – Dual (2), Quad Core Processors, Windows 7 with optional Windows XP Downgrade, 4GB RAM, 256MB NVidia Graphics Card, 500GB SATA Harddrive, 24" Flat Screen Monitor	\$4,600	1	\$4,600
Buffalo TeraStation Pro II – 4TB Network Attached Storage Device for storage, backup and archive	\$1,000	1	\$1,000
1TB External USB Drives for backup/archive/offsite	\$150	1	\$150
Uninterrupted Power Supply	\$100	1	\$100
Server set for Performance Probe Application			\$8,600
Performance Probe and Web/SQL Servers - HP DL 160 w/ 2.0 GHz Quad core CPU, 4GB ECC RAM, RAID-1 Array Controller, 4 - 250GB SAS HDD, DVD RW Drive, Remote Management Module	\$2,900	2	\$5,800
5 Year Hardware warranty	\$800	2	\$1,600
Cisco ASA 5505 50 User Firewall - 6 Ethernet, IPSec, Fast Ethernet, SSL Ports	\$1,100	1	\$1,100
2 Year Warranty Extension	\$100	1	\$100
GPS Devices for Location Verification			\$19,800
Trimble GeoXT Handheld - 520MHz CPU, 128MB RAM, 1GB on-board store, SD Slot, Windows Mobile 6 OS, Hi-Res VGA display	\$4,500	4	\$18,000
2 Year Warranty Extension	\$450	4	\$1,800
Total Equipment			\$49,000

- The equipment will be purchased at the outset of the project. All production equipment will be housed at the staging center at Stratum Broadband for integration and integration testing before being moved to the production hosting center.

Materials/Supplies:

- For software costs, provide a detailed description of all equipment [??? see discussion below] to be purchased, when they will be purchased in the first two years, and the basis for the figures used. Be sure to distinguish between federal funds and any matching funds.

- The software licenses were budgeted as “Other” and are included below.
- For all supplies expected to be purchased, please provide the information such that the basis for figures is clear. Be sure to distinguish between federal funds and any matching funds.
 - The total supplies budgeted for the Mapping Project is \$2,350.
 - The supplies are as follows:

Estimate is for printer paper, toner, and other printing and copying costs for the duration of the project. This includes heavy weight plotter paper for engineering map drawings for group review. It also includes laminating paper for protective versions of maps for permanent review copies.
 - All other items of supplies are borne by the OEO.

Subcontracts: For any significant subcontract, please provide the cost allocation in a format similar to the one listed directly above. Your current contractor budget only allocates personnel hours. If the contractor will be purchasing any equipment, performing any travel, etc. that should be clearly delineated.

- The total contracted personnel for the Mapping Project is \$1,988,112.
- The pre-award expense outlined in the general questions above and with the assumptions specified is \$117,180.
- The primary subcontractor for the Mapping and Planning Projects is Stratum Broadband. A separately attached set of spreadsheets (one for mapping and one for planning) in the requested format are attached detailing the amount of work performed by Stratum Broadband.
- The descriptions of the positions are not on the accompanying spreadsheet. They are described below to supplement the information that is in the spreadsheets.
 - Description: Principal Project Consultant: John Reynolds

The Principal Project Consultant leads the Mapping Project and synchronizes the resources to meet the objectives of the project. The Principal Project Consultant also supervises the Mapping Development Team and the Verification Teams.
 - Description: Principal Consultant: John Foresto

The Principal Consultant is the lead consultant formulating the market analysis and business plan for the planning components. The Principal Consultant is also the lead interface to the service providers in terms of negotiating participation. The Principal Consultant is the lead conceptualizer of the overall service provider operation strategies and plans.

- Description: Lead Engineer: Gene Currie

The Lead Engineer is the overall lead on all technical matters surrounding the wired and wireless technologies with the service providers. The Lead Engineer supervises all activities surrounding the collection of anchor tenant submissions and the verification of those submissions through direct inspection and correction.

- Description: Systems Integration Lead: John Stenquist

The Systems Integration Lead is responsible for the acquisition and management of all systems technology needed for the Mapping Project. The Systems Integration Lead is responsible for the integration of the mapping development process with the verification process and the production website environment. The Systems Integration Lead is responsible for site selection of the performance probe and survey support system.

- Description: Performance Specialist: Frank Truscott

The Performance Specialist will select and implement the Performance Probe tool for the verification process. The Performance specialist will also devise the process for determining what measurements to make, the data recording method, the analysis and aggregation of performance data and the preparation and submission of performance verification and correction data to the Geodatabase. The Performance specialist is also responsible for developing the test subject selection system, monitoring the overall effectiveness of the data collection, and initiating corrective action and tuning where needed.

- Description: Planning and Controls: Anne Chagnon

The Planning and Controls specialist is responsible for preparing program budget releases. The Planning and Controls specialist develops the cost breakdown structure and tailors the cost collection system to contract requirements. The Planning and Controls specialist is

responsible for generating program performance data for analysis by the Principle Project Consultant.

- Description: GIS Mapping Lead: Austin Fisher

The GIS Mapping Lead will supervise all technical matters related to GIS support services for the initial creation of the mapping deliverables. This person will architect the Geodatabase and develop the overall process for data acquisition, transformation, and distribution.

- Description: GIS Software Specialist: Mark Haberle

The GIS Software Specialist will supervise all programming aspects of the mapping development. This includes the development of the basic Territorial interactive website using the GIS-specific tools and data layers.

- Description: GIS RF Engineer: Steve Sharp

The GIS RF Engineer provides coverage map analysis and development of wireless coverage shapefiles derived from topographical terrain data as well as tower, spectrum, power, and attenuation formulas.

- Description: GIS Data Analyst

The GIS Data Analyst determines the verification approach for service provider data using the available reference data from external sources. The GIS Data Analyst guides the GIS Data Technician in the iterative process of rules development and the scrubbing and correction of service provider submissions during the verification process.

- Description: GIS Data Technician

The GIS Data Technician in the iterative process of rules development and the scrubbing and correction of service provider submissions during the verification process.

- Description: Survey Specialist

The Survey Specialist designs the process for the outbound telemarketing style surveys used to verify service provider submissions for reasonableness and for recruiting the performance test subjects. The Survey Specialist also monitors the calling process for anomalies, takes corrective action, analyzes the results of the survey, and presents conclusions and opinions of the accuracy of the results.

- Description: Survey Outbound Caller

The Survey Outbound Caller calls the targeted test subjects and asks the survey questions from the automated subject selection system. The Survey Outbound Caller also recruits subjects to be performance testers and walks the subjects through the essence of process of installation of the test client on the subject's PC answering a limited number of technical questions.

- Description: Professional Services

Professional services supports the project audit and legal functions.

- All equipment (described above) to be used is purchased by Stratum for the OEO and not listed a second time on the subcontract spreadsheet.
- All travel (described above) is to be done by Stratum and paid for by the OEO and is not listed a second time on the subcontract spreadsheet.

Other: For training purposes not related to travel, please describe in detail and provide a calculation of the cost. For other activities or existing data sets, provide the value and calculation of such value. Be sure to distinguish between federal funds and any matching funds.

- The total budget for "Other" on the project breaks down into multiple areas:
 - Federal funds:
 - Software Licenses
 - Hosting Services
 - In Kind Contributions
 - Data sets from WAPA.
- The budget submissions for this category are thus the following:
 - Federal funds: \$141,190
 - Matching funds: (\$288,144 x84% allocation=) \$242,041

- The software licenses budgeted for the project are as described in the following table:

USVI Software Budget			
Description	Cost	Quantity	Total
ESRI ArcGIS Server Enterprise Standard Edition, includes Annual Support in year 1	\$16,500	2	\$33,000
ESRI ArcGIS Server - Annual Support (year 2 and beyond)	\$4,500	2	\$9,000
Microsoft SQL Server 2005 Standard Edition (connection based version)	\$2,000	2	\$4,000
QC Mapping Extension for ESRI ArcMap at UVI	\$4,000	1	\$4,000
Red Hat Linux Enterprise 5 Subscription	\$350	5	\$1,750
SUN MySQL Relational Database Subscription	\$600	5	\$3,000
Perpetual License for Visualware MyConnection Server Pro 1-Network Test with SQL API, Visualware MySpeed Test, and 200 CAT licenses	\$32,250.00	1	\$32,250
Visualware Annual Support	\$4,838.00	5	\$24,190
Total Software			\$111,190

- The hosting services budgeted for the project are as described in the following table:

USVI Hosting Budget			
Description	Annual Cost	Quantity	Total
Facility (Includes rack space, power, environmental)	\$2,400	5	\$12,000
1 MB Access (Burstable to 100MB)	\$2,400	5	\$12,000
Surveillance	\$1,200	5	\$6,000
Total			\$30,000

- The access to proprietary mapping data layers from WAPA that used an in kind federal match are in fact detailed in this description and further amplified in the specific answer in the general question list above.

The WAPA GIS system will be used in the mapping process as a source of reference data to be used in the verification process of data submitted by service providers. Although there is considerable cost associated with the licensed software used and some of the TeleAtlas licensed data used to perfect locations, the valuation of this resource made available to the Mapping and Planning Projects is based only on the expense used to deploy the GIS system that produces the reference data we will use.

For valuation purposes, the implementation cost of this system as documented on the August 8, 2009 invoice from R.W. Beck of Hendersonville, Tennessee is \$297,464.87. We are using \$288,144 of this one cost as a valuation of the system that produces the reference data we need.

We use this figure because it meets most of the requirements for matching funds needed for the project. If it were necessary to do so, we could also use

the costs associated with the licenses for the software, the equipment it runs on, and the TeleAtlas licensed data as an additional source of valuation. But such other additions would be excessive and not necessary to meet the matching requirements.

Indirect Cost: (Administrative Overhead) Please provide a clear description of the costs attributed to administrative overhead.

There are no indirect costs allocated to this project.

NOTE: Any requested pre-award costs should be allocated to the respective categories above. Be sure to indicate whether something is a pre-award cost.

Done.

Planning Budget Narrative

Preface to the budget narrative relative to the allocation of In Kind Contributions:

- If the amount of federal funds to be requested for both projects is \$2,886,416, then the In Kind Match is computed to be 25% of the federal funds (which is 20% of the gross). The overall gross amount is thus \$3,608,020 which is composed of the \$2,886,416 in federal funds plus \$721,604 as the “20%” In Kind Match. Our original submission had erroneously assumed that the 20% Match meant 20% of the federal funds requested as opposed to 25% of the federal funds requested. We therefore are correcting that mistake in computing the matching funds required and adding additional matching funds up to the level of 25% of the federal funds requested. ***This does not alter the overall federal funds requested, but it does require an adjustment to our original Form 424A to clarify the increase in the In Kind Match.***
- The In Kind Match will be spread proportionately over the Mapping and the Planning Projects based on overall project costs. The split between the two projects is as follows:
 - Mapping: $2,425,837/2,886,416 = 84\%$
 - Planning: $460,579/2,886,416 = 16\%$
- These proportions will be used as appropriate in the explanations below referencing this computation.
- Also, as per the NOFA, the Virgin Islands are exempt from the first \$200,000 of In Kind Match because of being a Territory. This amount has been subtracted from the In Kind Match computation as follows:
 - Total amount of the two projects: \$2,886,416
 - 20% Match computation: $\$2,886,416 \times 25\% = \$721,604$
 - Less \$200,000 exemption = \$521,604
- Therefore, the total In Kind Match required for each of the two projects is as follows:
 - Mapping: $84\% \times \$521,604 = \$438,147$
 - Planning: $16\% \times \$521,604 = \$83,457$
- For the Planning Project (this narrative), look for the following In Kind Matches:
 - Salary: \$28,160
 - Fringe Benefits: \$14,310

- Other: \$46,103
- Total: \$88,573 (which is \$5,116 in excess of what is required)

Personnel Salaries: For each position allocated to the projects, provide a description of the position responsibilities, annual salary, and percentage of time dedicated to this project for Year 1 and Year 2. Please ensure that costs are clear for both Years 1 and 2, as opposed to both years cumulatively. Be sure to clearly indicate if a portion of time is paid through an in-kind match (i.e. clear federal vs. match distinction). If UVI staff will be used, they should be included as non-federal match.

- In Kind Match: \$28,160
 - Director, OEO
 - Description

The Director, OEO, is the administrative head of all stimulus programs for the Virgin Islands. As such, the Director participates in the planning, delegation, and control of all stimulus programs. This responsibility runs throughout the life of the project.
 - Annual Salary: \$160,000
 - % of time dedicated to this project:
 - Year one: 10%
 - Year two: 10%
 - Amount Budgeted: \$5,120
 - Technical Support
 - Annual Salary: \$120,000
 - % of time dedicated to this project:
 - Year one: 60%
 - Year two: 60%
 - Amount Budgeted: \$23,040

Therefore, the allocation of the In Kind Match for the Mapping project will be:

\$28,160

Personnel Fringe Benefits: For each position allocated to the projects, provide the cost for fringe benefits, if available.

- In Kind Match: \$14,310

- Director, OEO
 - Personnel Fringe Benefits: \$68,800
 - % of time dedicated to this project:
 - Year one: 10%
 - Year two: 10%
 - Amount Budgeted: \$4,403
- Technical Support
 - Personnel Fringe Benefits: \$51,600
 - % of time dedicated to this project:
 - Year one: 60%
 - Year two: 60%
 - Amount Budgeted: \$9,907

Therefore, the allocation of the In Kind Match for the Mapping project will be:

\$14,310

Travel: Provide additional information such that the basis for all figures is clear. For example, if assuming airplane travel, provide an estimated cost for each roundtrip ticket and how many trips are expected. For mileage, provide an estimate of how many miles are expected and how many trips, etc. Be sure to distinguish between federal funds and any matching funds. Please be sure to consider why travel costs are necessary rather than teleconferences in certain circumstances.

- The travel budget for the Planning Project is \$13,375.
- The pre-award expense outlined in the general questions above and with the assumptions specified is \$4,923.
- All travel costs are broken out and explained in more detail in the response to question #3 on the budget above. (For readability, the detailed spreadsheet isolating the detail for the travel expense alone is also attached with this response.)
- There are no matching funds used for the travel expenses. All travel uses federal funds.
- Travel costs are necessary for all meetings where relationships with the stakeholders, where activities must be conducted on service provider premises for security purposes,

and where detailed reviews require illustrations and close conversation to fully understand the volume of technical materials and alternatives presented. Also, all drive tests and other GPS related verification has to be done from the locations under inspection.

- These onsite situations taken into consideration, teleconferences are to be used for the vast majority of group communications. Virtually all communications after the initial mapping and planning over the 5 year period take place by teleconference with the exception of drive tests to verify new locations built or leased in the subsequent years.

Equipment: For hardware costs, provide a detailed description of all equipment to be purchased, when it will be purchased in the first two years, and the basis for the figures used. Be sure to distinguish between federal funds and any matching funds.

- There is no equipment in the budget for the Planning Project.

Materials/Supplies:

- For software costs, provide a detailed description of all equipment to be purchased, when they will be purchased in the first two years, and the basis for the figures used. Be sure to distinguish between federal funds and any matching funds.
 - There is no software in the budget for the Planning Project.
- For all supplies expected to be purchased, please provide the information such that the basis for figures is clear. Be sure to distinguish between federal funds and any matching funds.
 - There are no materials/supplies in the budget for the Planning Project.

Subcontracts: For any significant subcontract, please provide the cost allocation in a format similar to the one listed directly above. Your current contractor budget only allocates personnel hours. If the contractor will be purchasing any equipment, performing any travel, etc. that should be clearly delineated.

- The budget for subcontractor support for the Planning Project is \$447,204.
- The pre-award expense outlined in the general questions above and with the assumptions specified is \$18,090.
- The work being performed is the market analysis, the conceptual design, and the business plan for broadband for the Territory.
- The primary subcontractor for the Mapping and Planning Projects is Stratum Broadband. A separately attached set of spreadsheets (one for mapping and

one for planning) in the requested format are attached detailing the amount of work performed by Stratum Broadband personnel.

- The descriptions of the positions are not on the accompanying spreadsheet. They are described below to supplement the information that is in the spreadsheets.
 - Description: Principal Project Consultant: John Foresto

The Principal Project Consultant leads the Planning Project and synchronizes the resources to meet the objectives of the project. The Principal Project Consultant is the lead consultant formulating the market analysis and business plan for the planning components.
 - Description: Principal Consultant: John Reynolds

The Principal Consultant is the lead interface to the Technology Team in terms of the logical network design portion of the Conceptual Design. The Principal Consultant is in charge of all aspects of “open access” as they apply to analysis of input from the Technology Team.
 - Description: Lead Engineer: Gene Currie

The Lead Engineer is the overall lead on all technical matters surrounding the wired and wireless transmission technologies with the service providers. The Lead Engineer supervises all aspects of the physical Layer One network matters and all outside plant considerations such as environmental and local permitting matters.
 - Description: Systems Design Lead: John Stenquist

The Systems Design Lead is responsible for supporting the Lead Engineer in terms of fiber and wireless active element designs. The System Design Lead is also responsible for costing relative to engineering estimates.
 - Description: Application Design Lead: Frank Truscott

The Application Design Lead is in charge of configuration planning for OSS/BSS systems that are part of the Conceptual Systems Design. The Application Design Lead is in charge of all security management of the Conceptual Design as well as all other network operations center planning. The Application Design Lead assists the Principal Consultant in the approach to all logical network design matters including “open access” controls.

- Description: Planning and Controls: Anne Chagnon

The Planning and Controls specialist is responsible for preparing program budget releases. The Planning and Controls specialist develops the cost breakdown structure and tailors the cost collection system to contract requirements. The Planning and Controls specialist is responsible for generating program performance data for analysis by the Principle Project Consultant.

- All travel (described above) is to be done by Stratum and paid for by the OEO and is not listed a second time on the subcontract spreadsheet but it is clearly delineated above.

Other: For training purposes not related to travel, please describe in detail and provide a calculation of the cost. For other activities or existing data sets, provide the value and calculation of such value. Be sure to distinguish between federal funds and any matching funds.

- There are no “Other” federal funds expenses in the budget for the Planning Project. However, there is an allocation of the In Kind Match from the WAPA GIS contributions that assist the Conceptual Design from an engineering standpoint. As stated in the preface to this budget narrative, this allocation percentage will be 16%.
- The access to proprietary mapping data layers from WAPA that used an in kind federal match are in fact detailed in this description and further amplified in the specific answer in the general question list above.

The WAPA GIS system will be used in the mapping process as a source of reference data to be used in the verification process of data submitted by service providers. Although there is considerable cost associated with the licensed software used and some of the TeleAtlas licensed data used to perfect locations, the valuation of this resource made available to the Mapping and Planning Projects is based only on the expense used to deploy the GIS system that produces the reference data we will use.

For valuation purposes, the implementation cost of this system as documented on the August 8, 2009 invoice from R.W. Beck of Hendersonville, Tennessee is \$297,464.87. We are using \$288,144 of this one cost as a valuation of the system that produces the reference data we need.

We use this figure because it meets most of the requirements for matching funds needed for the project. If it were necessary to do so, we could also use the costs associated with the licenses for the software, the equipment it runs on, and the TeleAtlas licensed data as an additional source of valuation. But

such other additions would be excessive and not necessary to meet the matching requirements.

- The In Kind Match relative to this category is thus $\$288,144 \times 16\% = \$46,103$.

Indirect Cost: (Administrative Overhead) Please provide a clear description of the costs attributed to administrative overhead.

There are no indirect costs allocated to this project.

NOTE: Any requested pre-award costs should be allocated to the respective categories above. Be sure to indicate whether something is a pre-award cost.

Done.