Close Form | Next | int Page | About

OMB Number: 4040-0004
Expiration Date: 01/31/2009

## Application for Federal Assistance SF-424

Version 02

* 1. Type of Submission:
- [ ] Preapplication
- [x] Application
- [ ] Changed/Corrected Application

* 2. Type of Application:
- [x] 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: Hawaii Department of Commerce and Consumer Affairs

* b. Employer/Taxpayer Identification Number (EIN/TIN): 99-0319357

* c. Organizational DUNS: 809935406

**d. Address:**

* Street1: 335 Merchant Street
Street2:
* City: Honolulu
County:
* State: HI: Hawaii
Province:
* Country: USA: UNITED STATES
* Zip / Postal Code: 96813-2921

**e. Organizational Unit:**

Department Name:

Division Name:

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

Prefix: Mr.
* First Name: Clyde
Middle Name:
* Last Name: Sonobe
Suffix:

Title:

Organizational Affiliation:

* Telephone Number: 808-586-8395
Fax Number:

* Email: Clyde.Sonobe@dcca.hawaii.gov

OMB Number: 4040-0004
Expiration Date: 01/31/2009

## Application for Federal Assistance SF-424

Version 02

**9. Type of Applicant 1: Select Applicant Type:**

A: State Government

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:

State Broadband Data and Development Grant Program

**13. Competition Identification Number:**

Title:

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

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

State of Hawaii Broadband Data Mapping and Development Project

Attach supporting documents as specified in agency instructions.

Add Attachments | Delete Attachments | View Attachments

Close Form | Previous | Next | t Page | About

OMB Number: 4040-0004
Expiration Date: 01/31/2009

## Application for Federal Assistance SF-424

Version 02

**16. Congressional Districts Of:**

* a. Applicant: 1

* b. Program/Project: 1 & 2

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

Add Attachment | Delete Attachment | View Attachment

**17. Proposed Project:**

* a. Start Date: 09/15/2009

* b. End Date: 09/15/2014

**18. Estimated Funding ($):**

| | |
|---|---|
| * a. Federal | 2,909,743.00 |
| * b. Applicant | 196,000.00 |
| * c. State | 519,309.00 |
| * d. Local | 0.00 |
| * e. Other | 566,000.00 |
| * f. Program Income | 0.00 |
| * g. TOTAL | 4,191,052.00 |

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

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

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

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

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

☐ Yes ☒ No Explanation

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

☒ ** I AGREE

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

**Authorized Representative:**

Prefix: Mr. * First Name: Clyde

Middle Name:

* Last Name: Sonobe

Suffix:

* Title: Administrator, DCCA

* Telephone Number: 808-586-8395 Fax Number:

* Email: Clyde.Sonobe@dcca.hawaii.gov

* Signature of Authorized Representative: Clyde Sonobe * Date Signed: 08/14/2009

Authorized for Local Reproduction

Standard Form 424 (Revised 10/2005)
Prescribed by OMB Circular A-102

OMB Number: 4040-0004
Expiration Date: 01/31/2009

**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.

**State of Hawaii Broadband Data and Development: Project Abstract**

On behalf of the State of Hawaii, the Department of Commerce and Consumer Affairs (DCCA) has assembled a balanced team of local and national experts, along with public-private collaborators to implement the State's Broadband Data Mapping and Development Program (the Program). The objectives of the Program are to:

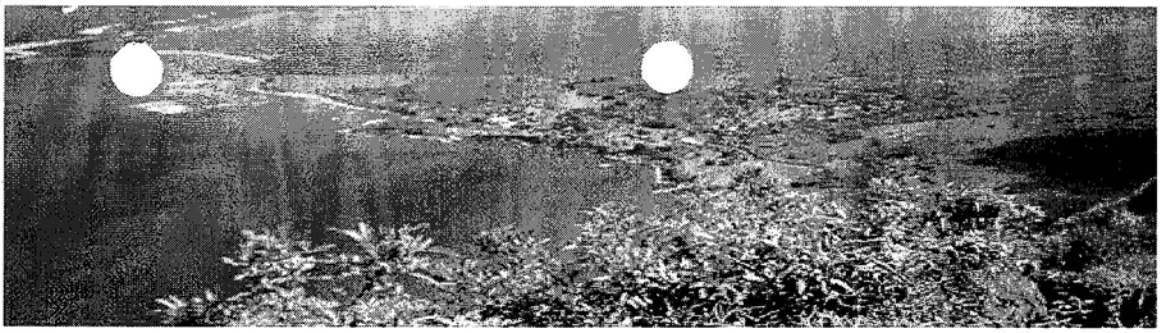
- Gather comprehensive, statewide broadband data on a detailed and disaggregated basis;
- Process, map, and inventory the information into a Geographic Information Systems (GIS) system;
- Provide means to aggregate the results for a comprehensive broadband map for the State, and provide means for public access to the information;
- Provide data to the National Telecommunications and Information Administration (NTIA) for use as part of a comprehensive nationwide broadband mapping effort;
- Identify unserved/underserved areas, as well as possible gaps in Emergency Services' and Community Anchors' access to broadband;
- Investigate constraints (policy, cost, investment gaps, etc.) impeding wider coverage; and
- Plan for adoption of appropriate broadband technologies, given the State's unique island geography and terrain, and its diverse climate, nature, and population.

Beyond the initial data collection, mapping, and analysis, the effort further involves developing means to keep the information continually updated, to provide easy yet secure access to confidential information, and to provide means to sustain the effort beyond the period of performance.

The core implementation team is led by the University of Hawaii's Vice President for Information Technology and Chief Information Officer, Dr. David Lassner, who also recently served as the head of the State Broadband Initiative Task Force. The team also includes the University's Pacific Disaster Center (PDC) program, which provides GIS expertise and has a large inventory of baseline information; the coalition of BroadMap, One Economy, and New America Foundation, which provides broadband domain and broadband adoption planning expertise; and a group of local experts and solution engineering firms represented by RHD Consulting, Akimeka, and Referentia, which will all contribute toward the implementation of the related information system architecture and the data control and access services.

Key collaborators and stakeholders in this effort include (among others) various broadband service providers; the Department of Business, Economic Development & Tourism, Office of Planning; NAVTEQ; county and State Disaster Management communities and GIS offices.

The team will follow best practices in project management to plan, execute, and measure the effectiveness of the Program and to meet the high quality standards required by NTIA. The Program is expected to run for a period of five (5) years after the grant approval before it is transitioned to DCCA (or a designated State agency) to ensure continuity and sustainability.




# *STATE OF HAWAII*

## *Broadband Data & Development Program*

***Prepared by***

## *Hawaii Department of Commerce and Consumer Affairs (DCCA)*

***In Response to***

## *DEPARTMENT OF COMMERCE*

***State Broadband Data and Development Grant Program:***

***RIN 0660-ZA29***

***August 13, 2009***

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# I. Introduction

## *Executive Summary*

Under the administrative oversight of the State of Hawaii Department of Commerce and Consumer Affairs (DCCA) as the applicant, the University of Hawaii (UH) has assembled a multi-disciplinary and cross-domain team of local and national experts to lead the implementation of the State Broadband Data and Development Program (the Program).

Recognizing the Grant's requirements, the objectives of the effort are to gather comprehensive, statewide broadband data on a detailed and disaggregated basis (address level), process and map the information into a Geographic Information System (GIS), inventory the data, and provide means to aggregate the results for a comprehensive broadband map for the State of Hawaii. The effort further involves developing continual means to keep the information updated, providing effective public access to the data, and supporting data services and reports to the National Telecommunications and Information Administration (NTIA) where the data can be used to form a comprehensive nation-wide broadband mapping platform. In this effort, the team has provisioned resources and solutions to ensure the security of sensitive data by using data-guard solutions, and to also provide for automated data access, maintenance, and update.

**Objectives:**

- Gather and map comprehensive, statewide detailed broadband data;
- Create a composite GIS inventory, accessible to public, constrained by confidentiality agreements;
- Provide data to the NTIA for nation-wide broadband mapping;
- Identify unserved/underserved;
- Provide means for aggregate reporting and public access, considering confidentiality of the service provider data;
- Identify gaps in Emergency Service and Community Anchor's access;
- Investigate constraints impeding wider coverage; and
- Plan for appropriate solutions considering Hawaii's unique geography and terrain, diverse climate, nature, and population.

Beyond the stated objectives, however, the state recognizes the importance of the effort in promotion of business opportunities, public access applications for education, health, and commerce, and extending the reach of remote communities to a wider range of services. As such, other notable objectives of the Program include activities that would guide identification of gaps and constraints that prevent wider coverage, and assist in determining tactical and short-term solutions to close the gaps. These objectives will help to form the basis for evidence-based and data-driven strategic planning and investments in the State's infrastructure and/or policies aimed at promoting broadband coverage and related services. These objectives include (but are not limited to):

- Identify unserved/underserved areas: the State currently does not have accurate information regarding unserved or underserved communities. Therefore, one of the main objectives (and early targets) of the Program is to determine these areas using dasymetric (sub-census) population maps;
- Identify possible gaps in Emergency Services' and Community Anchors' access to broadband, especially as it pertains to reaching dispersed and sparse populations;
- Investigate constraints (policy, cost, investment gaps, etc.) impeding wider coverage; and
- Given the State's unique geography and terrain, and its diverse climate, nature, and population, consider broadband technologies appropriate to the Hawaiian Islands.

Detailed resource planning was done using the project planning process, considering work breakdown structure, identifying technical resources and equipment required to complete the tasks, and analyzing the optimal number of parallel tasks that can be employed to meet the deliverable timelines. In order to ensure effective and efficient delivery of the data required by NTIA according to the stated timelines, about 55% of the resources will be allocated within the first year of the project (with about 45% allocated within the first three quarters). This ensures that the team's full extended capacities are utilized to meet the expedited timeline required. Yearly resource allocation estimates for the Mapping effort are depicted in Figure 1. A detailed schedule and budget are provided in the subsequent sections.

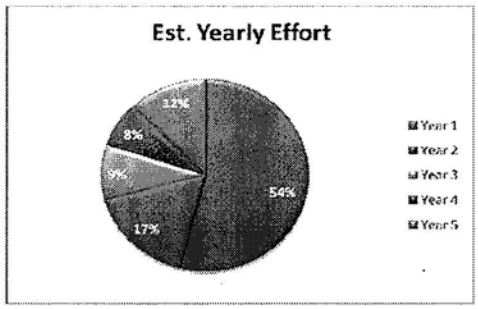


**Figure 1** –Effort Allocations Per Year

In order to meet the most immediate data delivery requirements, the team will use existing GIS infrastructure from the members. Given the resource allocation and the existing development environment, the team will plan to provide the initial delivery of a "Substantially Complete Data Set" on November 1, 2009, followed by a more thorough broadband serviceability on or before February 1, 2010, and the "Complete Data Set" by March 1, 2010. Additionally, the team expects to produce preliminary analyses for unserved/underserved areas, dasymetric (sub-census) analysis of the areas, and Emergency Services' and Community Anchors' access to broadband analysis between November 2009 and June 2010, respectively.

Following the initial effort, resource allocation is balanced throughout the project to address incremental service offerings, public application access, web-based interfaces, and data update and maintenance. Lastly, a slight increase in resource allocation is provisioned toward the last three quarters in order to account for sustained transition of the processes and the platform.

## Qualifications and Approach to Meet the Requirements

The implementation team (Team) represents a balanced public-private partnership composed of distinguished individuals, UH programs, private industry experts and organizations with vast capabilities in broadband and telecommunications technologies, GIS and data mapping, information systems engineering and implementation, and web-based software and enterprise data management applications. The Team also has existing relationships with, and access to, a wide range of collaborating state agencies, and holds a considerable inventory of detailed state-wide data necessary to accomplish the tasks.

The team has vast and immediately available capacities in GIS, broadband, data processing and automation, systems engineering, and secure public access application and data services to address all Grant requirements within the stated timelines.

In order to ensure quality and comprehensive treatment of all tasks, including those involving cross-domain expertise required for the implementation, the technical Team will assemble a small group of Subject Matter Experts (SMEs) across the major technical areas to advise DCCA and work with the data providers regarding specific technical issues. Initially, SMEs will customize data surveys according to the providers' inventories, will help with the data mapping, and will provide an overall gap analysis of the existing data and resources, and of Program objectives. During the course of the project, the SMEs will design solutions, provide on-going reviews of the progress, and advise on technical implementation tasks.

To ensure timely ***Data Gathering***, DCCA has already communicated the purpose of the Program and its requirements to the major service providers within the state, and has received encouraging and supportive responses. DCCA will make requests to the service providers on behalf of the Program immediately after the Grant signing. SMEs, in turn, will assist DCCA to work with the providers regarding any issues involving broadband-specific data mapping and data (content and format) compliance.

The technical Team has an extensive inventory of and/or has secured access to detailed data sets relevant to the Program. The Team has substantial existing relationships that facilitate ***Collaboration*** with many state and county agencies, such as the Hawaii Department of Business, Economic Development and Tourism - Office of Planning and the county GIS and Economic Development Boards, which can assist the data gathering process.

To ensure information ***Accuracy and Verification***, the SME group will review sample representative data from each provider, and will continually review the collected data to ensure compliance and completeness. Wherever applicable, the Team will also employ broadband technology-specific algorithms to uncover possible discrepancies, such as comparing aggregated data with the inter-connected network capacities. Finally, where possible, spot-checks will be performed manually.

Regarding data ***Accessibility***, the Team has a variety of existing web-accessible, public facing, easy-to-use and to operate, GIS Internet applications which allow users to find, visualize and fuse a variety of layered information for viewing or printing purposes. Furthermore, the Team has extensive experience in providing a variety of standard web-based "feature" and "map" services that enable easy access and consumption of data by other open-source or user-custom GIS applications. Finally, the Team is already operating a large network of "metadata" search and discovery services, data and metadata automated ingest and production functions, and rapid but quality controlled (secured) data publication capabilities. All of these capabilities will be used to support a variety of access, publishing, and data discovery methods in the Program.

To address data ***Security and Confidentiality***, the Team will be using the security, access-control, authentication, and authorization services built into many of the applications described above. If necessary, the Team will utilize data guards similar to what currently is in use by various U.S. Government agencies to protect their classified information, thus minimizing any data provider concerns related to unauthorized access to company confidential information. It is also helpful that in our approach, a state (public) agency and a non-profit state university are the lead administrator and implementer of the Program.

Wide spectrum of ***Applicant Capabilities*** as well as ***Capacity, Knowledge, and Experience*** are best demonstrated by the public-private partnership composure of the Team's collective capabilities, depth of technical capacities, and reach. The Team offers extensive cross-domain expertise and experience in related technologies and processes, as well as a wide range of affiliated collaborators, existing applications, and relevant inventory of detailed data sets to address all Program requirements.

***Expedient Data Delivery*** requirements are addressed by the Team's readily-available capacities, knowledge, and experience in data collection, automated processing, and existing applications and methods for data publications which are actively being used to support a number of critical and emergency services. The same experiences will be used to offer optimal data delivery options for this Program.

Similarly, the Team's expertise in engineering systems and networks for automated data processing, its experience involving broadband data interfaces and modules, and its distributed data network architecture, all offer optimal solutions to address ***Repeated Data Updating***.

Finally, for the ***Planning Phase,*** the Team has provisioned a solution for bridging the gap between the broadband map and the subsequent policy and consumer-focused decisions that are needed to ensure statewide broadband adoption. To accomplish this, the Team will place emphasis on: a) developing a baseline assessment on broadband deployment; b) identifying and tracking areas of low broadband penetration along with suppliers who could assist in increasing adoption; c) identifying barriers of adoption; d) creating regional and local Digital Connector programs to manage planning teams; e) establishing internet and computer ownership programs;

f) collecting broadband market data to incorporate into the core broadband database; and g) facilitating exchange of information between the private and public sector partners.

## The Team, Expertise, and Roles

Under the administrative oversight of the Hawaii State Department of Commerce and Consumer Affairs (DCCA) as the applicant, the University of Hawaii (UH) will take the leadership in implementation of the State Broadband Data and Development Grant Program (the Program). To accomplish this, UH has assembled a multi-disciplinary and cross-domain team of local and national experts, hereinafter the Team, to address all aspects of the requirements for the Program. The Team will include the following participants:

- State Department of Commerce and Consumer Affairs (DCCA) – Applicant and Lead Administrator;
- University of Hawaii/Pacific Disaster Center (UH/PDC) – Project Lead, Broadband Task Force Members, GIS Expertise and Implementation;
- BroadMap, One Economy, New America – Broadband Experts and Broadband-Planning Implementation; and
- Akimeka, Referentia Systems, and RDH Consulting, LLC – System/Network/Security Engineering, GIS Resources, and Implementation surge capacities.

### Department of Commerce and Consumer Affairs (DCCA)

DCCA will provide the oversight and will serve as the main interface to the broadband service providers in the state for collecting the data and negotiating the terms of access, as necessary. DCCA will also be the main agency to select a state institution that can house the data, host the solution, and sustain the program beyond the scope of the Grant.

### University of Hawaii/Pacific Disaster Center (UH/PDC)

The implementation Team is led by UH Vice President for Information Technology and Chief Information Officer, Dr. David Lassner, who also recently served as the head of the State Broadband Initiative Task Force. Expertise in GIS, data mapping and processing, and public applications access will be provided by the University's Pacific Disaster Center (PDC) program. PDC has proven and extensive capabilities in data management and GIS, and operates a vast inventory of baseline data, such as sub-census population data, parcel-level tax maps, Community Anchor Institution, and other data sets critical to the success of the Program. PDC also has expertise in handling large volumes of data, managing sensitive information access, and a wide range of web-based GIS solutions for public access to baseline and near real-time information for user-generated product automation.

### BroadMap, One Economy, and New America Foundation

Broadband specific expertise will be supplied by ***BroadMap*** and its national coalition (including One Economy and New America Foundation). BroadMap has extensive experience in digital mapping and broadband serviceability. Its leadership has more than 150 person-years of prior experience in the digital mapping business working for market leaders including Etak, GDT and TeleAtlas. Its capabilities are far reaching in the area of GIS, with expertise in geocoding, GIS tools, mapping, spatial and relational databases, and quality control.

BroadMap has extensive experience in the development of state mapping solutions. Its team was the first to launch a national broadband serviceability engine in 2000 that aggregated all of the major broadband carriers into a single, web based engine that was utilized by major retailers including Circuit City and CompUSA. This serviceability data included critical attribution such as availability, type of service, and speed of connection, pricing, and promotional data.

***One Economy*** plays a major role in the supply and demand-side "Planning" phase for this Program, bringing resources of 90 full-time employees at 10 offices worldwide. One Economy uses innovative approaches to deliver the power of technology and information to rural and low-income people. In these efforts, One Economy has worked with a wide range of partners including CTIA, NCTA, Microsoft, Google, Cisco, Allstate, the Ford Foundation, and others.

In addition to involvement in broadband access programs, One Economy has a track record of delivering programs that result in broadband adoption. The resulting effort will be a comprehensive supply and demand side solution that contains the most comprehensive and verifiable broadband data set and map available for the State of Hawaii.

***The New America Foundation*** is a nonprofit, nonpartisan public policy institute. Through its Wireless Future Program and Open Technology Initiative, New America pursues a mission of ubiquitous and affordable broadband connectivity for all. New America will manage all the surveys and crowd-sourcing applications.

### RHD Consulting, LLC

Mr. Bob Doeringer of RHD Consulting, LLC will act as the main technical interface to the service providers and perform the general quality control over the project and deliverables. Mr. Doeringer provided consultancy to the State's Broadband Task Force for more than two years.

### Akimeka

Akimeka, a Native Hawaiian and Service Disabled Veteran Owned Small Business with expertise in enterprise architecture of large systems, will provide system architecture, information assurance, and Geographic Information System services. Akimeka most recently

implemented a statewide E911 system for the state, and along with its expertise in GIS and Master Street Address Guide, will be an important partner in the implementation of the Program.

### Referentia Systems

Finally, Referentia Systems, a Small (8A) technology firm with expertise in network engineering and system architecture will provide data guards and security solutions as required (and as necessary) to control access to sensitive data. Referentia is a premier provider of data-guard solutions to the U.S. Department of Defense for securing access to highly sensitive data.

Together, the above team of UH/PDC, BroadMap, Akimeka, RHD Consulting and Referentia Systems offer vast and immediately-available capacities in GIS, broadband domain expertise, data processing and automation, systems engineering, and secure (but open) public access application and data services expertise for the implementation of a comprehensive solution that meets or exceeds the Grant requirements within the stated timelines.

## II. Project Management and Implementation Overview

In order to accurately estimate project feasibility, and to effectively manage implementation, the Team utilizes a "best practices" approach to project management outlined here. This approach helps to accurately estimate the level of resources required for, and milestones and timelines associated with the project, and will set the stage for overall implementation and effective monitoring of the project.

In this approach, the Team recognizes the following five major stages during the course of a project: (a) Project Initiation, (b) Project Planning, (c) Project Execution, (d) Project Monitoring and Controlling Systems, and (e) Project Completion.

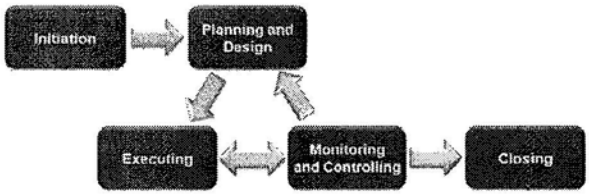


**Figure 2** - Project Planning & Management Stages

The relationships among the components are depicted here. This section provides an overview of the process, and then describes their relationships in more detail.

**Project Initiation** involves finalizing contractual agreements, gathering of the Subject Matter Experts (SME) for a detailed review, determination of the scope and nature of the broadband mapping effort, and detailed tactical and strategic planning. Focus elements of this stage are:

- Analyzing the business needs in measurable goals;
- Conceptual design of the operation of the final products;
- Equipment and contracting requirements including an assessment of "long-lead" items;
- Financial analysis;
- Stakeholder analysis, and support personnel for the project; and

- Project charter including costs, tasks, deliverables, and schedule.

During the **Project Planning and Design Stage**, the system design is completed; a prototype system is built and configured; the data model is established; and the initial database with licensed data and a control broadband service provider dataset is tested. Controls are created to ensure that the final product will meet the specifications of the NTIA Technical Appendix. The results of this stage should include a product design that:

- Satisfies the state, NTIA, broadband service providers and the end users;
- Functions as it was intended;
- Can be produced within quality standards; and
- Can be produced within time and budget constraints.

**Project Execution Stage** involves implementation of the processes to complete the work and accomplish the project's requirements. This includes – among other tasks – data collection, processing, automation of data ingest, testing and quality control. The Team will coordinate people and resources, as well as integrate and perform the activities of the project in accordance with the project management plan. The deliverables are produced as outputs from the processes performed as defined in the project management plan.

During this stage, the Team will also plan for the "transition" by identifying the permanent owner of the platform, training the support personnel, and preparing for transfer of licenses. This process is critical to the ***Sustainability*** of the platform beyond the project's period of performance.

**Monitoring and Controlling Systems** consists of processes performed to observe and measure progress during the project execution so that potential problems can be identified in a timely manner and corrective action can be taken, when necessary. The Broadband Mapping performance will be observed and measured regularly to identify variances from the project management plan:

- Measuring the ongoing project activities (where we are);
- Monitoring the project variables (cost, effort, etc.) against the project plan and the project performance baseline (where we should be);
- Identify corrective actions to properly address issues and risks (how can we get on track); and
- Influencing the factors that could circumvent integrated change control so only approved changes are implemented.

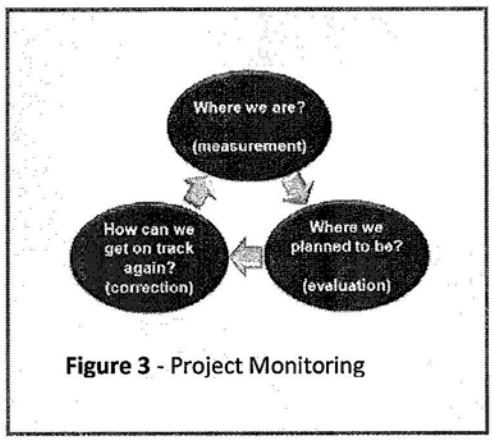


**Figure 3** - Project Monitoring

**Project Completion Stage** will encompass formal closing and acceptance of the tasks and the deliverables, including administrative functions, archiving of the files, and documenting lessons learned. Additionally, the hand-off and transition of the platform to the eventually responsible agency will be completed during this stage, assuring ***Sustainability*** beyond the period of performance. Activities include:

- Project closure: to finalize all activities across all of the processes and formal acceptance;
- Transition completion: to finalize transfer of all functions to the state agency; and
- Contract closure: to complete contract and settle any open issues, and final reporting.

## Implementation Process Overview

Early activities regarding the ***Project Initiation Stage*** have already commenced. DCCA has started (a) gathering an inventory of wired/wireless broadband service providers within the state, (b) communicating the purpose of the Program and its requirements to the major service providers to secure their collaboration during the implementation phase, and (c) identified the implementation team.

Additionally, the Team has reviewed the project scope, evaluated the needs and requirements, and has developed the initial Work Breakdown Structure (WBS) and associated project plan. Shortly after the Grant signing, the Team will proceed to formalize contractual and administrative processes required for the project *Planning* and *Execution*.

The project ***Planning and Design Stage*** will require a group effort from all involved state agencies and private partnerships with participation from all stakeholders. Shortly after the Grant signing and *Project Initiation*, the technical Team will assemble a small group of Subject Matter Experts (SMEs) across the major technical domains: GIS and data mapping, broadband, data inventory, systems architecture, and data guards. The SME group will work with DCCA and the service providers to, among other tasks:

- Customize the surveys listed in Technical Appendix A of the Grant application according to the provider, and as necessary, ensure full compliance in data requests;
- Assist in the matching or "mapping" of the requested data elements to the data elements contained within the service providers' inventory;
- Assess the optimal process of obtaining the data, including any possible opportunities for automation of data mapping and inventory ingest processes;
- Assess the volume of the initial data, as well as long-term updates, and start revising the detailed system and network architectures;
- Review and assess existing data inventories available to the Team, including baseline statewide data, their accuracy, and any licensing/ownership rights for continual update;
- Assess data sensitivity and access requirements for proper data guard solutions; and
- Revise and customize information assurance and quality control processes, and decide on measuring metrics required for the project *Monitoring and Controlling*, to ensure full satisfaction of the Grant requirements for submittal of the data to NTIA.

A gap analysis will then be performed of the Grant requirements, available data and resources, and the time constraints for the deliverables. Necessary adjustments to the execution plan will be

considered to ensure optimal balancing of the tasks and resources against the requirements and the deliverables to NTIA.

Next, the ***Project Execution Stage*** will commence with the data gathering process. DCCA will make requests to the service providers based on established working relationships with each provider.

During this stage, the GIS and system engineer SMEs will review the requirements for data automation, processing and management, including automated processing of the related metadata for each data set. System hardware and software licenses necessary to support the Program will be acquired, installed, and configured at this time.

As the relationships with the service providers are solidified and the base data processing and management components are put in place, data collection steps will start in earnest. This will include collecting and automating data from the broadband service providers, and preparing other GIS data to support both the processing of the broadband data as well as mapping the Community Anchor Institutions. Next, the data processing and analysis will start—utilizing a combination of manual and automated processing techniques of the collected data and the related metadata—advancing toward preparation of a "substantially complete" data set. As the broadband data inventory is processed, analysis regarding unserved/underserved areas will also be performed.

Quality Control (QC) processes will be employed to ensure maximum accuracy of processing and data ingest into the inventory. All data records will be geocoded, as necessary, at this stage.

Built into the processes above will be steps to verify the accuracy of the data, including verification of service provider data versus actual serviceability, and testing of the automated data processing and ingest.

Following the processing and validation steps, data sets will be delivered to NTIA as identified in Appendix A. Additionally, non-proprietary and non-confidential data will be transferred to a public access service and incorporated into web-based map viewers to create the "Hawaii Broadband Atlas" for public consumption and analysis.

The ***data updates and maintenance phase*** will start as soon as the data inventory is built, and will increase as the platform matures. Several approaches will be taken to ensure that the data is continually updated and remains accurate.

For baseline data, the Team will leverage existing processes for periodic updates, such as the information-exchange GIS services and the web-based applications. Additionally, the Team will take maximum advantage of data services from the original sources (such as obtaining the transportation network from commercial mapping partners, such as NAVTEQ, DOT, demographic data from U.S. Census, and base imagery from Google, Yahoo!, or Bing, etc.).

For the broadband data sets, the Team will work to the maximum extent possible and according to predetermined specifications to establish bi-lateral data exchange agreements between the State's broadband service providers and DCCA (or a designated state agency) as the trusted owner of the platform and the data providers. The data specifications will then be used to periodically automate processing and ingest of data and metadata. The processing will also include error report generation that can be used to identify inaccurate or incomplete data sets.

A web-based data access tool will be provided so that data providers may evaluate and sample their serviceability data, and ensure that their data are accurate and up-to-date.

Although mapping all available service provider data and other serviceability data will be the initial and immediate priority, a second phase of data collection can cost-effectively supplement and verify this data with survey data collected directly from consumers. The collection and layering of consumer experience data will be done in two basic ways: First, and most cost-effectively, it will be done in volume online by "crowd-sourcing" data from automated "speed tests" that individual users can run and receive immediate feedback for their own use as an incentive. Viral outreach efforts can encourage tens of thousands of users to "take the test," receive a "report card," and as a byproduct add to the automated aggregation of consumer experience data. Second, surveys of small business, residential and Community Anchor tenant broadband users will be used to collect richer profiles of actual user experience and preferences.

During the implementation, the Team will address the sustainability of the platform and the project. This process will commence after the first year of production and will continue beyond Grant completion. During this phase, the Team will develop the necessary documents describing the platform, data processing, technical specifications of applications, system architecture, and system maintenance. These documents will be used to provide training over the course of the project to DCAA (or a designated state agency).

Project ***Monitoring and Controlling Stage*** starts concurrently with the project *Planning and Design*, and will continue through the *Project Completion Stage*. During this stage, progress and status of all tasks and milestones are checked against the benchmarks that were established during the earlier *Planning and Design*. Periodic status reports will capture the results. Variations from the planned benchmarks will be promptly identified and reported so that corrective measures can be taken, when necessary.

Finally, the ***Project Completion Stage*** will mark formal closure of the project and the contract signified by the completion of all tasks, and acceptance of the deliverables by the constituents, and the hand-off of the platform and all associated hardware, software, and data licenses to the agency eventually responsible for hosting the project, as identified by DCCA.

# III. Technical Narrative and Approach

## *Data Gathering, Verification, Processing, Access, and Security*

The Team is committed to implementing systems, processes and applications which will efficiently and repeatedly produce the requested data for NTIA. The narrative that follows illustrates our experience-based approach to satisfy the requirements as outlined in the NTIA's Notice of Funds Availability (NOFA).

### Data Gathering

Data gathering involves an interrelated series of steps, or ***tasks***, which collectively result in preparation of comprehensive and high-quality datasets required by NTIA, meeting the four major areas outlined in Appendix A of the solicitation, including:

1. Broadband Service Availability in Provider's Service Area, for each Provider
    a. Service availability by address
    b. GIS-based (for wireless service)
2. Residential Broadband Service Pricing in Provider's Service Area, for each Provider
3. Broadband Service Infrastructure, for each Provider
    a. Last mile connection points
    b. Middle mile and backbone interconnection points
4. Community Anchor Institutions

Each of the ***data gathering tasks***, detailed below, are organized to support both the expedient initial delivery and the semi-annual updates required by NTIA, as well as to support efficient public access to service area maps. The tasks also consider security and confidentiality for data access as described in the ***Accessibility*** and ***Security and Confidentiality*** sections, respectively. These tasks include establishing a working relationship with Hawaii's broadband service providers, establishing the data processing and management environment, collecting and automating data from the service providers, preparing other GIS data, and processing these data to a unified schema in order to support necessary updates and reports for NTIA and the public.

#### *Establishing a Working Relationship with Hawaii's Broadband Service Providers*

Even before this Grant application has been submitted, DCCA began dialogs with the key broadband providers in Hawaii in an effort to help them understand this program, our approach, our information needs, and the opportunities and associated benefit to them of a successful program. In anticipation of a favorable review by NTIA, DCCA and the Team will continue our engagement to expedite timely, accurate and comprehensive data collection from each service provider. These steps will also help to accelerate and optimize the development of an appropriate data model, the first task to be initiated following contract award (described later).

### *Establishing the Data Processing and Managing Environment*

In order to accelerate data delivery to NTIA, an existing PDC GIS environment will be used to process the collected data. In the mean time, to support the eventual processing and management of the data collected under this Program, appropriate system hardware and software licenses will be acquired, installed, and configured. The hardware platform will be sized to assure sufficient storage and optimal performance given the volume of data and usage, as well as maximizing reliability and availability. The software applications include a host of enterprise and scalable solutions, such as Oracle or other similar Relational Databases extendible for GIS, ESRI server products (e.g., ArcGIS, ArcIMS, ArcCatalog for metadata, etc.), and a variety of other (mostly open-source) Internet and Application Server (stock) products.

Initially, a fully configured GIS system will be deployed, and associated data models will be implemented to provide the baseline inventory system for the collected data. Incrementally, other services will be built on the system to address:

- Data and metadata automation processing that may require systems engineering and software development;
- Definition and implementation of GIS data services (and data standards), based on standard industry services (e.g., WFS, WMS, KML, XML, etc.), required for data exchange and information sharing and distribution; and
- Automated broadband data update processes and ingest (as feasible).

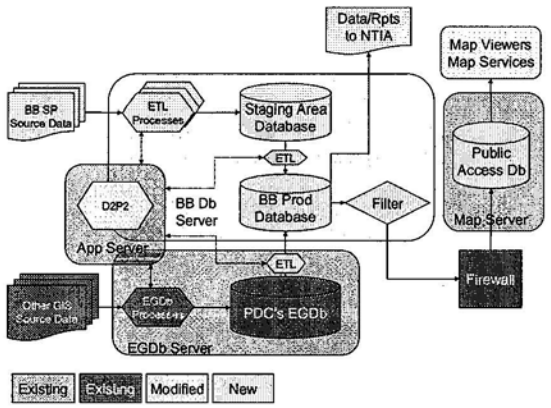


**Figure 4** - Proposed to Process & Safeguard Broadband Data

Over time, and as standard services are defined and deployed, the Team will develop, deploy, and release the following services:

- Automated applications and/or processes employed by DCCA (or designated state agency) that will generate reports required by NTIA and according to the specifications provided in the Grant Solicitation Appendix A, from the GIS inventory;
- Web-based standard OGC-compliant metadata search, discovery, and download (as applicable according to licensing agreements and confidentiality governing the data);

- Web-accessible standard data exchange services, such as WFS, WMS, KML, XML, etc. (constrained by the licensing agreements and confidentiality governing particular); and
- Web-based accessible, password-protected as well as open access GIS viewer application(s) to allow public user access and product generation. The application will include printing capabilities of generated products, place-name gazetteers and address lookup search, and allow for fusion of other baseline GIS data sets.

The system components necessary to accomplish these tasks and the associated data flow are illustrated in Figure 4. As noted, some of the components and processes are already in place within PDC's data processing facility and can be used without modification. These include significant hardware, GIS software, applications, and data as well as other network and internet servers and services. Other components – equipment and processes – will be acquired and developed under this Grant to specifically receive, process, safeguard, and deliver required datasets to NTIA and to the public.

### *Collecting and Automating Data from Broadband Service Providers*

This task will begin immediately upon award notification with DCCA making requests to the service providers for subscriber, service area and infrastructure data. The SME group will utilize a representative sample of this data to develop a data model to efficiently store data from each provider and create a database schema.

It is anticipated that each service provider will provide the requested information in different formats and schemas. The Team will not attempt to harmonize all sources into a single unified data model/schema at this point, but will perform some pre-processing to standardize storage of common elements across all provider schemas (e.g., names, addresses, etc.). The resulting data tables can be considered a "Staging Area" designed to both effectively accommodate future inputs (i.e., updates) and outputs (further described below).

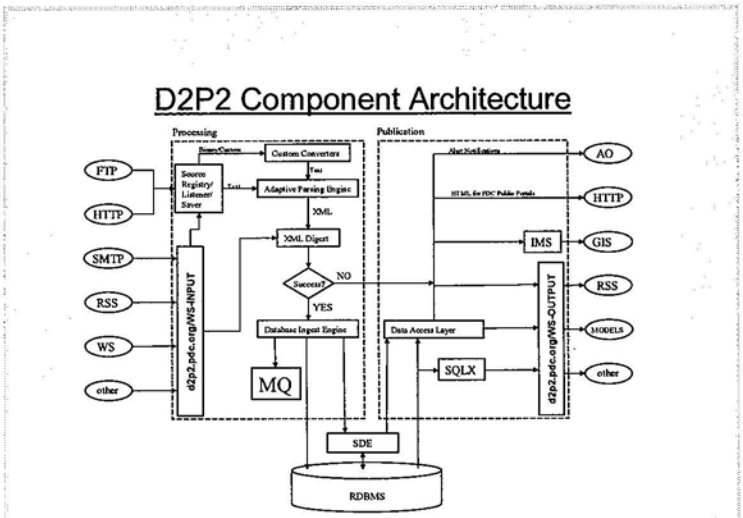


**Figure 5 -** Dynamic Data Processing and Publication (D2P2) Designed for Automated Processing

To populate the Staging Area

Database, automated scripts will be developed to Extract, Transform and Load (ETL) data from each provider into appropriate database tables. Depending upon available data transfer mechanisms and anticipated data update procedures, a unique script/process is likely required for each data type (1–3 listed under Data Gathering section above) from each service provider. These ETL processes will be automated based on the PDC's Dynamic Data Processing and Publication (D2P2) service which presently receives hazard and warning data from a wide range of U.S. and International agencies in varying formats via protocols which include FTP, HTTP, XML and RSS. D2P2 extracts key parameters from the original source documents/data services, transforms them into geospatially-referenced data sets, and loads the resulting records into PDC's Enterprise Geospatial Database (EGDb). Metadata (information which describes the underlying data) is also captured and/or updated at this point in the processing sequence. D2P2 is designed to process dynamic data from a wide range of data types from multiple sources using a diverse set of protocols and methods, as sampled in Table 1.

| Automated Hazard Data Sources | | | |
|---|---|---|---|
| Name | Source | Method | Automation Highlights |
| Hurricanes | NWS, JTWC | Text via HTTP | Parsed from complex, unformatted text. |
| Tsunami | PTWC | HTTP and e-mail | Multi-source for redundancy. |
| Earthquakes | USGS | GIS & XML via HTTP | Includes GIS via ESRI Shapefile (SHP). |
| Volcanoes | IVRC, GVP | HTML & CAP via HTTP | Common Alerting Protocol is XML. |
| Wildfires | UH, NASA | Text via HTTP | UH Processed data. |
| Floods | DFO, NASA | GIS, XLS via FTP | GIS via MapInfo table file (TAB) format. |

**Table 1**- Automated Hazard Data Sources

In addition to automated parsing using D2P2, the Team will aggressively work with every small to mid-tier service provider to integrate our open Application Programming Interfaces (API) into their billing and/or serviceability engine. BroadMap has extensive experience undertaking similar integration efforts using its messaging platform (depicted in Figure 6, below). There will be some cases where service providers do not have the core expertise or infrastructure to build these interfaces. In those cases, the Team will determine whether integration of open APIs is feasible, and if not, will provide additional options based upon the situation. These options include:

- Secured FTP site – Allows service providers to send their data to us in a standardized format;
- Email Interface – For service providers that are less sophisticated, the Team has a conflation tool that converts various file formats and integrates the data into our pre-production engine; and/or

- Fax Interface – To serve the lowest common denominator.

BroadMap and its partners have used the above options in projects involving major broadband service providers, and have negotiated national agreements to provide serviceability data collected using these options to consumers through protective terminals and online. This experience includes the development of integrated tools to provide for dynamic display of serviceability data including attributes such as speed (upload and download), price, plan detail, promotions and bundled offerings. BroadMap's efforts produced the first ever nationwide assemblage of carrier serviceability. This experience will be used to gather serviceability information from service providers in Hawaii.

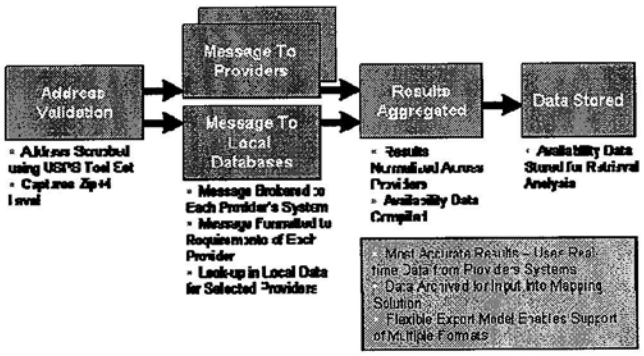


**Figure 6** - Overview of the Messaging Platform

Whether the ETL scripts or any combination of the above options are used, the Team follows a formal testing process that includes establishment of test case scenarios and documentation of all required inputs and anticipated outputs. Test cases typically include several designed to fail to observe error handling capabilities and ensure data accuracies.

In other words, the testing step will ensure that the data contained within the Staging Area Database are consistent with what was originally obtained from each Provider (i.e., that the ETL process did not introduce errors). Additionally, as the data are compiled from each service provider they will be verified for consistency and completeness (i.e., the Team will review the data to assure that they are correct representations of the service that is actually provided). This second mode of verification/validation will include utilizing broadband technology-specific algorithms to uncover possible discrepancies, such as comparing aggregated data with the inter-connect network capacities. Spot-checks will be performed manually as well. At the conclusion of this task, the Team will have:

- Established data sharing relationships with all key broadband service providers;
- Implemented mechanisms to automate receipt of necessary service area, service pricing and infrastructure data; and
- Populated a Staging Area Database with an initial snapshot of data sufficient to address the NTIA requirements for items 1 - 3 as outlined in Appendix A of the solicitation.

### *Preparing other GIS Data*

***Data Gathering*** also involves collection and processing of additional GIS "framework" and Community Anchor Institution data to fulfill the NTIA requirements (i.e., item 4 in Appendix A). These data are also needed to effectively fulfill the public-accessibility/state map requirement. Presently, PDC holds a significant number of these necessary datasets, many of which have been provided by the de facto "GIS agency" within Hawaii, the Department of Business Development and Tourism's Office of Planning. The table below highlights key framework and Anchor Institution data, their source and main attributes:

| GIS Framework Layers | | |
|---|---|---|
| **Name** | **Source(s)** | **Key Features / Characteristics** |
| Demography | US Census, Hawaii State GIS** | Cities, Place Names, Populated Places, CensusSF1 and SF3, Population Density |
| Transportation | State & County GIS | Airports, Seaports, Heliports, Roads, Bridges |
| Hydrography | USGS NHD | Streams, Wetlands, Dams, Rivers, Reservoirs |
| Cadastral | County GIS | Land Parcels (aka TMK) |
| Business Loc | InfoUSA | Hotels, Financial Institutions, Ice Production Facilities, Fuel Supply |
| Boundaries | Hawaii State GIS | Coastlines, ZIP codes, Census Tracts and Blocks |
| Land Use | NOAA, USGS, State | Land cover, Land use, Fed Lands, Parks, Reserves, Zoning |
| Terrain | USGS | Digital Elevation Model (DEM), contours, Radar-derived DEM (IfSAR), shaded relief, LIDAR, topographic maps (DRG's) |
| Imagery | USG, PDC | Satellite (Landsat, SPOT, IKONS, QuickBird), air photos |
| **Community Anchor Institution Layers** | | |
| Emergency Services | Hawaii State GIS, PDC | Police & Fire Stations, Fire Response Zones, Emergency Shelters, Emergency Operations Centers, Siren Locations |
| Health Care Svc | InfoUSA, PDC | Hospitals, Health Clinics, Assisted Living, Skilled Nursing Fac |
| Public Facilities | InfoUSA | Public schools, Government buildings |
| Other | InfoUSA | Cemeteries, Places of Worship |

**Table 2** – Sample of Existing Data Inventory ** Managed by DBEDT's Office of Planning

These data have all been processed and quality controlled for high accuracy according to the PDC's "EGDb Best Practices" procedures. Key components of this process include the establishment of defined staff roles and responsibilities including: a) Processing Manager, responsible for prioritizing, scheduling, resourcing and tracking data automation processing; b) Geospatial Data Manager, responsible for overall data content and quality for EGDb resources; c) Metadata Manager, responsible for ensuring quality and integrity of metadata describing the contents within EGDb; and d) Analysts, who create (and utilize) data according the diagram below. Each is assigned specific database roles and permissions commensurate with their duties. Other components of the EGDb processes include acquisition planning, processing, validation,

metadata authoring, data and metadata loading, and symbology file creation. A versioned geospatial database is used to support multi-user editing and review of new/revised data prior to them being committed to a production service.

### *Data Processing and Analysis*

The next step in the data gathering process involves additional processing of data within the Staging Area and EGDb to populate the Broadband Production Database. In a sense, this moves, transforms and conditions all necessary data from assorted data providers, including broadband service providers, DBEDT, etc., into a unified and controlled data environment.[1] It also captures data processing steps and other information required to update metadata. These steps will be automated to the extent possible, especially for re-occurring steps such "mapping" provider data to the data model developed by the team during the previous step. Loading of those data sets that are less frequently changed, such as Community Anchor Institution data, may be done manually.

Priority processing will be given to "*Substantially Complete*" data set.

Priority Analysis will be given to the State's "*unserved/underserved*"

Initially, during this phase, the greatest emphasis will be placed on:

- Meeting the broadband mapping requirements for the "substantially complete" data set. All possible capacities at the disposal of the entire Team will be utilized here to ensure the most realistic delivery of the data sets for the Grant's deliverable timelines.
- Aggregation of the broadband data to determine the State's "unserved" and "underserved" areas. These data sets are not currently available with sufficient accuracy.

Priority will also be given to an initial analysis of the information above in correlation to the identification of possible unserved/underserved vulnerable/disadvantage population and emergency services. Among other benefits, this will help identify important "hot spots" for the broadband planning process.

Data processing and analysis tasks will include a combination of automated and manual (or manually assisted) steps to harmonize and insure quality and integrity of data required to address all items in Appendix A. These steps will include combinations of:

- **geocoding** - providing address-based records with spatial coordinates;
- **reverse geocoding** - assigning an address to data containing geospatial coordinates;
- **conflation** - combining and aggregating different sources of information for the same feature – e.g., two street maps – to provide a single representation of the feature by using the best available information from all sources;

[1] The Staging Area Database is physically on the Broadband Data Server for security and confidentiality purposes.

- **feature editing/clean-up** - manual editing to resolve errors or discrepancies associated with automated processing steps – e.g., polygon "sliver" and "dangling nodes" removal to construct valid topology;
- **spatial overlay** - mathematically compositing information from two or more feature categories into a single data source – e.g., assigning available broadband service levels from one GIS layer to addresses in a parcel database layer or combining individual wireless service area maps into a composite map; and
- **spatial analysis** - implementing spatial algorithms to derive new/additional information – e.g., validating or estimating service availability by modeling wireless propagation over terrain or estimating wireline service boundary from infrastructure data layers.

Under this task, data will be processed and transferred from the Staging Area Database and from EGDb into the Broadband Production Database such that:

- all address-based provider data are geocoded and loaded into the same geodatabase schema;
- all shape-based provider data are composited into the same geodata schema;
- all broadband service infrastructure data are reverse geocoded (if/as necessary) and loaded into the same schema; and
- all Community Anchor Institution data are geocoded (as necessary) and loaded into the same geodatabase schema. (As noted above, many of the required Community Anchor data are already available and geocode.)

Data required to fulfill item 2 in Technical Appendix A of the solicitation (average revenue and average speed), is not anticipated to require extensive processing or automation. It will, however, be computed and loaded in appropriate tables in the Broadband Production Database so that it can be conveniently packaged along with the other required information elements and transmitted efficiently to NTIA.

Quality Control (QC) and metadata preparation processes described above will be utilized in this phase as well to ensure consistently high-quality data standards.

PDC/UH and its Team members have significant experiences and resources to accomplish these tasks. Highlights include:

***Geocoding/Reverse Geocoding***

The Team has multiple means available for geocoding addresses within the State of Hawaii. The ESRI StreetMap which is a national dataset with an 85-90 percent accuracy is often used as the starting point. Through the use of custom address locators, other datasets within PDC's EGDb that contain address range information can then be used to complete the geocoding process. These include national databases such as the National Transportation Atlas Database, NAVTEQ,

and TIGER, as well as local data resources, such as county centerline datasets and Tax Map Key (TMK) parcel datasets (available via our arrangements with state agencies such as DBEDT's Office of Planning and the GIS agencies within each of the four Hawaii counties. Recent geocoding tasks by Team members include:

- Master Street Address Guide (MSAG) and GIS mapping in support of E911 Call Center and Pubic Service Access Point (PSAP) operations in Hawaii;
- State of Hawaii Department of Heath elderly care centers mapping (Assisted Living Communities, Adult Day Care, Skilled Nursing Facilities, etc.);
- Hawaii State Department of Human Services Benefit Employment and Support Services Division locations; and
- Damage Assessment and Recovery Teams (DART) spreadsheets for flooding events on Oahu and Kauai; and Hurricane exercise damage assessment reports for the counties.

***Dasymetric Mapping***

PDC has refined and applied methods to disaggregate census data to estimate the distribution of population and socio-economic characteristics.

In Hawaii, the census geography, even at the most detailed census block level, varies significantly in both area and population size. On Oahu, for example, the population within a census block can range from a few people to over 5,000 people and the area of a census block can vary up to 50 square miles. This discourse in the census geography is especially important in rural areas where census units are large and population density is not homogeneous. In Hawaii, for example, rural census units can stretch from the shoreline to the top of the mountain; the population, however, is typically clustered along the coastal area as is illustrated in Figure 7. Ancillary data sets, such as land use/land cover, can be used to more accurately distribute the demographic data associated with the population, to better identify

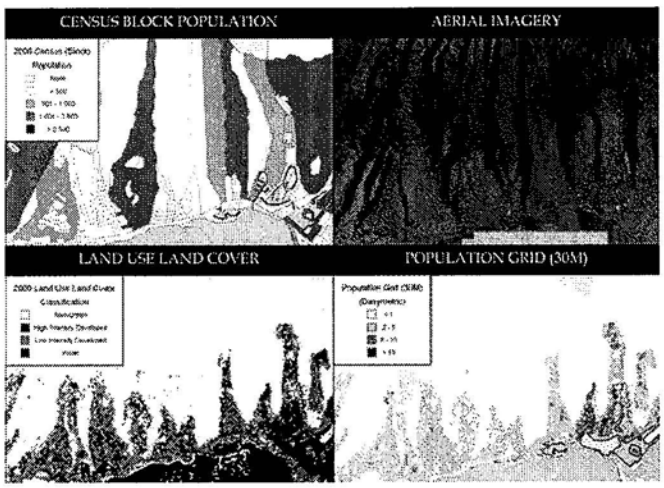


**Figure 7** – Dasymetric Mapping: population density estimates are refined for census non-homogeneous census blocks

segments of the population requiring specific services, whether they are emergency management services or broadband telecommunications services.

***Spatial Modeling and Analysis***

Spatial modeling and analysis techniques will be used to transform information provided by service providers into informative and easy-to-interpret coverage area maps. The underlying spatial data used to create this map will be combined with parcel (TMK) and master address files and used to populate the publicly accessible Hawaii Broadband Atlas and associated map services to produce address-based broadband availability data required by NTIA.

## Accuracy and Verification

To ensure information ***Accuracy and Verification***, the SME group will review "sample representative" data from each provider, and will continually review the collected data to assure compliance and completeness. Wherever applicable, the Team will also employ broadband technology-specific algorithms to uncover possible discrepancies, such as comparing aggregated data with the inter-connect network capacities. Finally, where possible, spot-checks will be performed manually. The Team will utilize multiple methods to determine data accuracy and validation. These methods include the components described below.

**Data Comparison** - Our approach is to develop a dynamic and updateable map database based on the capability of multiple technologies that allow for conflation of data from multiple sources. The mapping solution is capable of being both a data accuracy tool as well as a data verification tool. The data platform evaluates all the data that is contained in the database and produces exception reports based upon the anomalies from the data. The digital mapping technicians evaluate all the exceptions produced by the platform and make determinations based upon data that is available to them. If the digital map technicians cannot make a thorough determination, they will refer the exception to the Quality Control team who will do one of the following:

- Call Service Provider(s) in specified area for verification;
- Enlist the Digital Connector team to visit the area and survey users;
- Contact DCCA for further verification of data;
- Contact data partners to ask for verification; or
- Employ available conference center partner to call businesses and consumers in the surrounding area to inquire about their broadband service options.

**Surveying**: In order to validate service provider information on coverage and to create a baseline for assessing broadband access demand, the Team will initiate and manage several survey/sampling efforts in the state. First, the Team will initiate a preliminary survey/sampling effort to assess demand for and access to – both statewide (as baseline) and in unserved or underserved areas – broadband connectivity. This process is as follows:

- Create state-specific poll to ask consumers to identify their current broadband status:

- connectivity offerings, and pricing options (if known)
- interest in and willingness to pay for broadband service
- is broadband is a luxury, nice-to-have, or a needed service?
- where does the consumer access the Internet?
- are consumers properly trained and comfortable with using the Internet?
- is broadband content relevant to consumers?

- Poll 300-1000 (statistically significant sample) in areas where anomalies exist statewide to establish a baseline of consumer knowledge and statewide broadband availability
- Poll 300-1000 rural citizens to quantify consumer knowledge and rural broadband availability as a baseline.

**Provider Verification** – The Team's web-based data access tool provides the capability to service providers to evaluate and sample their serviceability data and to ensure accuracy.

**Speed Testing** - While mapping all available carrier data and other serviceability data will be our initial and immediate priority, a second phase of data collection can cost-effectively supplement and verify this data with survey data collected directly from consumers. Data on consumers' actual online user experience can serve a number of important policy objectives, including the verification of carrier-provided data (such as "advertised" speeds) and the identification of bottlenecks due to under-provisioning. Concerning the speeds (throughput) provisioned to the State's residences, businesses and Community Anchor Institutions, the NTIA's NOFA requires not only the mapping of the "maximum advertised downstream (and upstream) speeds," but also the "typical downstream (and upstream) speeds" experienced in practice by consumers. While the accurate collection of actual consumer experience data requires additional collection efforts, it provides an opportunity to simultaneously survey consumers concerning other aspects of the service they receive.

The collection and layering of consumer experience data can be done in two basic ways: First, and most cost-effectively, it can be done in volume online by "crowd-sourcing" data from automated "speed tests" that individual users can run in a minute or two – and receive immediate feedback for their own use as an incentive. Viral outreach efforts can encourage tens of thousands of users to "take the test," receive a "report card," and as a byproduct add to the automated aggregation of consumer experience data. Second, resources permitting, surveys of small business, residential and Community Anchor tenant broadband users can collect richer profiles of actual user experience and preferences.

**Crowd-sourcing user data online using the NAF/Google Measurement-Lab (Speed Tool) -** The New America Foundation (NAF) will be the primary partner in deploying tools online that consumers will use to measure and report actual measurements of the speeds (upstream and downstream), as well as (simultaneously) other diagnostic data on the quality of their broadband connections and actual user experience, including latency (packet delay), jitter (variability in latency), and routing or packet degradation discrepancies. As large numbers of broadband users

access these tools for their own benefit, their data will be "crowd sourced" (aggregated) into the state map, improving its overall quality at an extremely low cost.

Through its MeasurementLab (M-Lab) platform, NAF provides consumers and researchers with real-time feedback on the speed and quality of their Internet connections. M-Lab was founded by New America's Open Technology Institute (OTI), Google Inc., the PlanetLab Consortium at Princeton University, and other academic researchers to enhance Internet transparency and to sustain a healthy, innovative Internet. M-Lab provides the consumer with immediate feedback, provides Internet researchers with aggregate data to discern patterns and, in the context of broadband mapping, M-Lab can add geographically specific queries in order to generate views and reports that reveal the actual user experience in discrete local areas. The national scope of M-Lab's data on broadband connection speed and quality will promote the comparability of State of Hawaii data with data gathered from other states. Google and other companies will contribute data hosting capacity. All data collected via M-Lab will be openly available to the academic researchers.

## Accessibility

PDC has developed and operates several easy-to-use, web-based GIS applications, allowing public users to find, visualize and assess geospatial information for general hazard awareness and early warning. Additionally, PDC has extensive experience in serving geospatial data to its users and clients via standards-based web services, including the Open Geospatial Consortium's (OGC) Web Map Service (WMS) and Web Feature Service (WFS) widely-adopted standards. The WMS and WFS services can be easily consumed within open-source and commercial-off-the-shelf GIS applications such as ArcGIS and MapInfo. Finally, PDC hosts and operates a large network of distributed data and data services, supported by metadata search and discovery services, all aimed at supporting a variety of access,

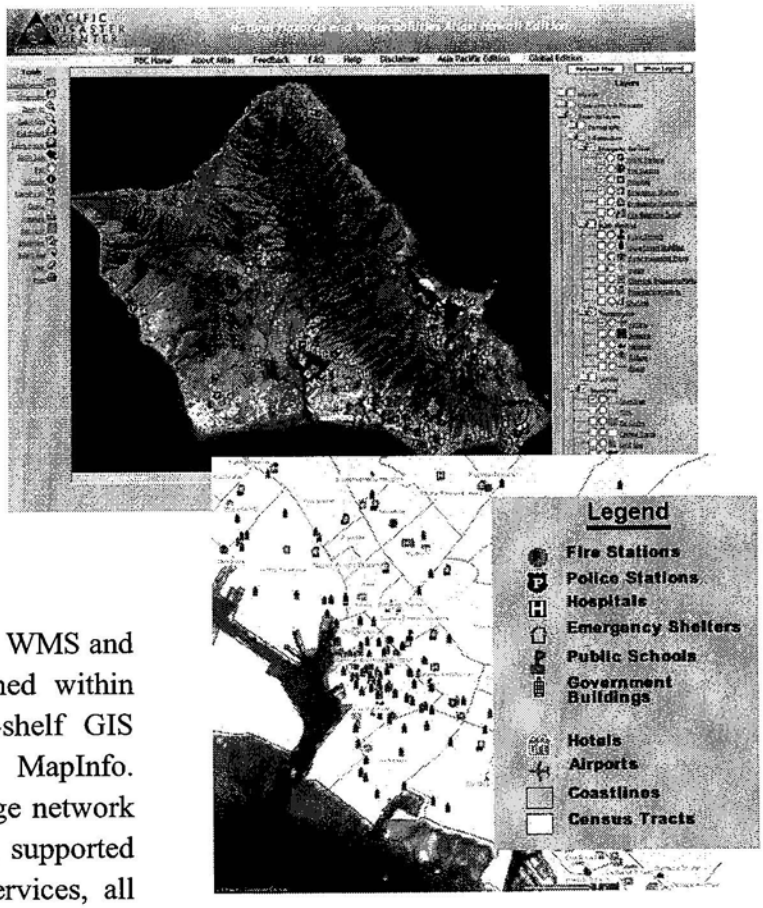


**Figure 8** -Hawaii Hazards Atlas as the foundation for development of a Hawaii Broadband Atlas.

publishing, and data discovery methods.

These capabilities can be easily customized to support the information access requirements of this project. Specifically, it is proposed that the Hawaii Edition of PDC's popular Natural Hazards and Vulnerabilities Atlas, shown in Figure 8, be used as a starting point for deployment of a "Hawaii Broadband Atlas." It already includes many of the Community Anchor Institutions required by NTIA. The Broadband Atlas application would allow public citizens, agencies and businesses to view the availability of wireline and wireless broadband services for their place of residence, business, education, etc. via simple-to-navigate tools.

### Security and Confidentiality

To address data ***Security and Confidentiality***, the Team will be using the security, access-control, authentication, and authorization services built into many of the applications described above. Further, public access will be provided via a map and data server hosted outside of the firewall. The data accessed by the public, either from the Atlas or one of the public web services (i.e., WMS or WFS) will be stored within the Public Access Database. This database will be populated via an automated process, including appropriate filters, to prevent any company propriety data from being transferred from the Production Database to the Public Access Database.

In order to support flexible and secured information exchange to and from the non-public data repositories that will constitute the backbone of the system, the Team will deploy data guard appliances comparable to what currently is in use by various U.S. government agencies to protect classified information. These guards will provide the data streams' obfuscation, conditioning, and pedigree labeling mechanisms to ensure data control policies compliance between and among data domains. The guards will include a graphical user interface to enable the implementation of data control policies into business rules to be applied on the data streams, thus providing a way for non-technical users to easily configure the data-level modifications required to ensure security, confidentiality, and information pedigree.

During this phase, and before any data services are released, requirements for data security and confidentiality (as stated by the service providers) will undergo a detailed review in order to develop the architecture and deploy the necessary data guards.

## *Project Feasibility*

To ensure feasibility, the Team prepared a budget based on a detailed analysis of the resources required to accomplish the tasks over the performance period, considering timeline delivery requirements, and the 20 percent non-federal matching contributions. A summary of the budget is presented here while details are provided in a separate budget narrative, accompanied by a spreadsheet supporting how the budget was calculated. This section also provides an overview

of the budgeting process, explanation of how the financial figures were determined, and how the allocations of resources were provisioned to assure project feasibility.

## Budget Summary

The overall cost of the project was determined based on (a) human resources required to accomplish tasks in terms of "Personnel" and/or "Contractors", and associated Fringe benefits (30%), when applicable; (b) "Equipment," including hardware, and software for the data environment and associated annual maintenance fees (20%) for five years; (c) "Travel" costs; and (d) "Indirect" cost, when applicable. Table below summarizes the Program budget.

| Category | Year 1 | Years 2 thru 5 | Total | Match |
|---|---|---|---|---|
| Personnel | $ 109,516 | $ 368,122 | $ 477,638 | $ 196,000 |
| Fringe | 32,854 | 110,437 | 143,291 | - |
| Contractual | 755,109 | 268,112 | 1,023,221 | - |
| **Labor Subtotal** | **$ 897,479** | **$ 746,671** | **$ 1,644,150** | **$ 196,000** |
| Travel | 22,750 | 26,000 | 48,750 | - |
| Equipment | 178,780 | 143,024 | 321,804 | - |
| Other | - | - | - | $ 1,085,309 |
| Sub-total Direct | $ 1,099,009 | $ 915,695 | $ 2,014,704 | $ 1,281,309 |
| Indirect | 209,137 | 188,632 | 397,769 | - |
| **Mapping Budget** | **$ 1,308,146** | **$ 1,104,327** | **$ 2,412,473** | **-** |
| **Planning Budget** | **-** | **-** | **$ 497,270** | **-** |
| **Total** | **-** | **-** | **$ 2,909,743** | **$ 1,281,309** |
| Match % | | | 70% | 30% |

**Table 3** - Budget Summary

To ensure feasibility for meeting the broadband mapping initial deliverables, more than 45% of the resources were allocated within the first three quarters of the project. Figure 9 depicts the estimated distribution of the broadband mapping effort and cost per quarter, through the duration of the project. A slight increase of the resources toward the end of the project accounts for anticipated higher effort for project transition and "sustainability", as described in the previous sections.

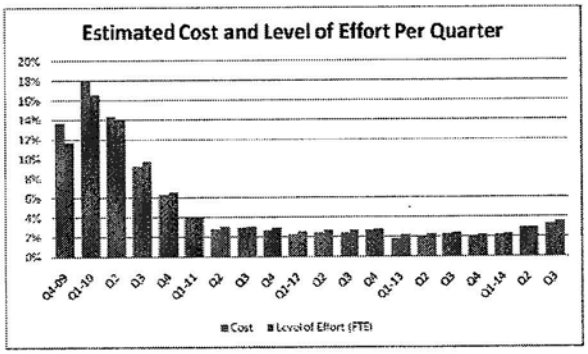


**Figure 9** - Est. Distribution of Cost and Effort Per Quarter

## Budgeting Process and Resource Planning

Budget determination was established using a detailed resource planning process. A detailed spreadsheet accompanying this application supports how the overall estimates were derived. This section provides a summary of the process and the overall structure of the budget.

***Human Resources Cost*** was determined based on the technical experts' estimation of Full Time Equivalent (FTE) resources needed to accomplish the tasks and any interdependencies among the tasks. This information was then checked against the timeline constraints imposed on the deliverables to identify optimal number of parallel resources required to meet the deadlines.

Resources were then mapped to the level of skills required for each task and to the cost for each skill set (including sub-contractors). A fringe benefit rate of 30% was used, where applicable.

***Hardware and Software Cost*** was determined based on experienced experts' analysis of a platform required for the project. This analysis was then used to determine estimated hardware and software cost, using the manufacturers' published costs. Annual maintenance fees (20%) for five years were also calculated for years 2 through 5. Summary of the cost is provided below.

| Description | Specifications | Qty | Total |
|---|---|---|---|
| Hardware Server | Database, Storage, Map, Web, & Application | 4 | $ 83,780 |
| Software | [redacted] | N/A | $ 95,000 |
| **Hardware and Software (Acquisition) Cost (Year 1)** | | | **$ 178,780** |
| **Maintenance Cost (Year 2 – 5) at 20%** | | | **$ 143,024** |

**Table 4 -** Summary Hardware and Software Cost

***Travel Cost*** was determined based on the number and frequency of travel estimated by the Project Plan, and is based on the federal government's published rules and regulations.

| Type | Description | Qty | Qty | Total |
|---|---|---|---|---|
| Intrastate | Partner meetings between the islands | 15 | $ 250 | $ 3,750 |
| Domestic | Trips between Washington DC and Hawaii | 15 | $ 3,000 | $ 45,000 |
| **Travel Cost** | | | | **$ 48,750** |

**Table 5 -** Summary Travel Cost

***Indirect Costs*** were calculated at a federally negotiated rate of 20.6% of Modified Total Direct Costs (MTDC), applicable to various expenses and the first $25,000 of each subcontract.

***Matching Contributions*** were determined base on: (a) pledged funding from non-governmental entities, (b) market value of tangible data sets, and/or hardware/software contributions from the state GIS agency and/or Team member, and (c) state employees' time involved with the project.

| In-Kind Category | Descriptions | 5 Year Costs |
|---|---|---|
| Baseline data from non-state agency | NAVTEQ; Digital Glob, InfoUSA, Google | $119,000 |
| Baseline data from DBEDT | IKONOS Consortium, LiDAR, and DOQQ's | $519,309 |
| Broadband data from non-state | ComSearch, Media Prints, Crowd-Src data & platform | $90,000 |
| GIS Software | [redacted] | $57,000 |
| Other Contributions Pledged | BroadMap, Google, One Economy, etc. | $300,000 |
| State [redacted] Personnel | Project oversight & Admin | $196,000 |
| | **Total In-Kind and Foundation Funding** | **$1,281,309** |

**Table 6** - Summary of In-Kind Matching Contributions

### Technical Team Composition, Knowledge, and Capabilities

The Team's expertise and roles are described in detail in the previous sections. Beyond what is described, Team members also have extended reach to other affiliated members that can greatly enhance project feasibility. This section summarizes the Team's core composition. Further details regarding the personnel skill sets are provided within the separate Budget Narratives.

- **Principal Investigator** - is the primary point of contact, coordinator, and administrator for the Program, and functions as the main interface with service providers.
- **Sub-Principal Investigator** - will direct the implementation team is and responsible for the overall administration of the sub-awardees.
- **Project Manager**- will focus on managing the day-to-day details of the technical execution, control, reporting, and ensuring high-quality deliveries.
- **Subject Matter Experts (SME)** - will be the technical experts in each of the technical subject matters, providing advice on the design, and overseeing the implementation.
- **Engineers** - will be the lead implementer and/or lead developers for the system, to include Software Engineers, Database Administrators, Network and Security Engineers, etc.
- **GIS Analyst** - will provide GIS analysis, associated reporting, and assists with processing.
- **Data Processor** - will process and ingest data.
- **Programmer** - will develop and implement required automated applications and processes.

## *Expedited Data Delivery*

***Expedient Data Delivery*** requirements are addressed by the Team's immediately-available capacities, knowledge, and experience in data collection, automated processing, and existing applications and methods for data publications that are currently in use supporting a number of critical and emergency services. Similarly, the Team's expertise in engineering automated

processing of data, broadband data interface modules, and distributed data architecture, all offer optimal solutions to address the ***Process for Repeated Data Updating***.

The State of Hawaii and its contractors have the ability to comply with the timelines set forth by the NTIA. The plan is to utilize a three stage process to launch multiple versions of the solution, as summarized in Table 7. In order to meet the timelines, our Team has allocated considerable resources within the first three quarters of the project. These resources can assist with data collection, processing, and automation, as applicable.

| Tasks | Time frame |
|---|---|
| Initial configuration, integration, implementation, data ETL, output definition | 30 Days |
| Stage 1 –Generation of initial analysis and results | 45 Days |
| Stage 2 -Refinement of analysis and results, integration of additional sources & capabilities | 4 Months |
| Stage 3 –Completion of the development of dynamic mapping platform. Full integration of all carrier serviceability data and third party source data. | 7 Months |

**Table 7** - Project Timeline and Stages for Expedited Data Delivery

Additionally, our Team has over 150 years of digital mapping and serviceability experience, including development of core platforms that allow for automatic and manual conflation of data from over 50,000 sources nationwide. These sources of data included large imports from the Department of Transportation and InfoUSA (Geo-referenced Points of Interest Data) and others to individual user street geometry corrections. The ability to manage such diverse input mechanisms (including other diverse sources of data explained earlier) attest to the strength of our solution. Broadband serviceability will be managed in the same manner.

### Substantially Complete Set of Data By November 1, 2009

In order to meet this deadline, PDC's existing and extensive GIS environment may be used to acquire and process licensable data while the acquisition of hardware and software are taking place. The initial configuration, integration, implementation, data ETL and output definition will be completed in 30 days. Within a 45-day period we will generate the results of the initial survey. The key to this first release is:

- The Ingestion of the Raw Form 477 Data;
- All Licensable Data Sources;
- Integration of Core Digital Mapping;
- Ingestion of Demographic Data; and
- Core Points of Interest and Anchor Institution Data.

The Team will then be able to assist the State in developing its initial assessment of unserved and underserved broadband areas and their ranking based upon agreeable demographical attributes. During this period, the Team will also begin to dynamically integrate into the carrier systems.

### Substantially Complete Set of Data By February 1, 2010

Our secondary release will be a more thorough perspective of broadband serviceability. Along with the data that was ingested in the first release, additional data sources will be incorporated into this release. Those sources include:

- First Generation of Real-time Broadband Provider Data;
- Quality Control Release of Initial Anomaly Batch of Data;
- Digital Connector Survey Data Ingestion;
- Broadband Data Sampling interface will be launched to allow service providers data sampling;
- Ingestion of first release of wireless spectrum data;
- Speed Test Ingestions; and
- Release of First Generation of State, Regional and Municipal Data Ingestion.

### Complete Set of Data By March 1, 2010

The Broadband Serviceability final release will include all of the elements mentioned above in a fully automated solution. All ingestion will be done on in an automated or semi-automated process with the exception of the following:

- Anomaly Data Management; and
- Small Provider Data Ingestion – Some of these providers will still require us to accept their data via facsimile, excel spreadsheet, email and FTP.

This final launch will include the completion of the following areas of development:

- Launch of All Broadband Provider Data;
- Finalization of Development of Ingestion Process to Manage All State, Regional and Municipal Data;
- Full Automation of Wireless Spectrum and Serviceability Data; and
- Crowd Sourcing Ingestion Tool Completed.

### Access Applications Going Forward

Finally, our Team's experience in automated processing, ingest, and publishing data will be used during the course of the project to ensure timely access to accurate and updated information for various constituents (and according to the security guidelines). Activities here will include:

- Continual fine-tuning of the automated data processing and ingest;
- Developing web-enabled and web-accessible applications based on existing models;
- Defining and releasing standard web-enabled "feature" and "map" services; and
- Developing automated processes for data export and reporting, including those required to meet the "updatability" (and associated periodic reporting) requirements by NTIA.

## Process for Repeated Data Updating

The production and updating process of the database is an ongoing process that provides the latest and freshest content. The frequency of map/content updates varies depending on the type of source. For example, the detailed street network shall be updated on a monthly basis. Broadband coverage and serviceability updates can range from daily for user-generated content to semi-annual for FCC Form 477 data.

Our dynamic map database architecture allows for a "LIVE" product server to be utilized for product generation and on-demand query access by any entity at anytime producing results and user experience similar to Google Maps and/or Microsoft BING. The product server shall be refreshed on a daily basis from content updates made to the core database.

To the extent possible, the procedures developed for initially populating the broadband database will be automated and scripted such that they can be run repeatedly throughout the 5-year grant period and beyond. The update process will involve:

- Obtaining updates from the service provider (including secured service-based processes);
- Using XTL processes to transform Service Provider data into the Staging Area Database, performing basic pre-processing data consistency checks, basic data normalization, etc.;
- Periodically updating data layers associated with Community Anchor Institutions, a task which is already part of PDC's standard EGDb processes;
- Processing and transforming Staging Area and EGDb-stored data into the Broadband Production database, performing necessary geocoding, conflation, spatial editing and spatial overlay/analysis tasks as outlined above;
- Running scripts to prepare updated reports and datasets for NTIA; and
- Running scripts to prepare public access data, passed through appropriate filtering steps to strip-off proprietary and confidential data.

Furthermore, the Team will ensure updateability by including the elements below:

- All data licenses are annual licenses and will be renewed each year;
- Our data sourcing and quality control teams will continue to work to expand our core data sourcing list to include newly licensable data as they become available;
- Our relationship with NAVTEQ provides us with quarterly updates of our core digital maps, allowing for additions and deletions in an automated process;
- Agreements will be made with the State, Regional and Municipal agencies to supply the Team with relevant data updates on a monthly or quarterly basis;

- Key demographic information will be ingested as additions and deletions to provide a simple format to update Anchor Institutions, small, medium and large sized businesses, health care facilities and educational institutions;
- Budgeting includes ongoing surveying to allow for verification of data throughout the five years; and
- All non-disclosure agreements with the service providers will extend for the period of the agreement and will be transferable to the State of Hawaii.

A dedicated team including a Specialist, an Account Manager, multiple technical support reps, and an Executive sponsor will manage this effort for the duration of this agreement.

## *Collaboration and Planning*

DCCA and UH already have working relationships with the broadband service providers, have communicated the Program objectives to the major providers, and are working to obtain their commitment to the process. Similarly, UH/PDC have existing data sharing agreements with many of the state and county agencies named above. And finally, a coalition represented by BroadMap has access to a wide range of national resources that can augment the Team's capacities and collaborative circle. The Team will also be extending and formalizing new partnerships with the service providers and other key stakeholders, as appropriate. These collaborators will all be engaged in the mapping process.

### Collaborators and Key Stakeholders

The Team has a very wide reach and existing relationships with important stakeholders and collaborators across the state. It will be critically important to build consensus for the initiative. Our project Team will include the following stakeholders within and outside of the State of Hawaii:

  - Service Provider Member(s);
  - Department of Business, Economic Development and Tourism - Office of Planning;
  - NAVTEQ;
  - Schools, Health and Libraries Coalition Representative(s);
  - Emergency and Disaster Management communities; and
  - County GIS, Land and Cartographer Office, plus

- Other state officials and stakeholders, as appropriate, to include:
  - Department of Commerce, including the Real Estate Division;
  - Department of Education;
  - Public Utilities Commission; and
  - Departments of Transportation; Taxation; Health, etc.

## Broadband Planning Phase

The broadband planning program creates a solution for bridging the gap between the broadband map and the subsequent policy and consumer-focused decisions that are needed to ensure statewide broadband adoption. Broadband adoption helps people as well as businesses enter the economic mainstream and be active participants in the digital space.

Well designed and well-executed broadband adoption programs are vital for Hawaii to make significant progress in realizing the economic, educational, and personal benefits of universal broadband adoption by all segments of the population. Our planning program will place emphasis on: a) developing a baseline assessment on broadband deployment; b) identifying and tracking areas of low broadband penetration along with suppliers who can assist in increasing adoption; c) identifying barriers of adoption; d) creating regional and local Digital Connector programs to manage planning teams; e) establishing internet and computer ownership programs; f) collecting broadband market data to incorporate into the core broadband database; and g) facilitating exchange of information between the private and public sector partners.

To achieve these goals, DCCA is proposing to make best use of the broadband planning funds available through combining the macro-level data with on the ground demand-side data, as planned by One Economy's Digital Connector program for Hawaii. Digital Connectors are a task force of youth ages 14-21, who live in underserved areas and are exposed to the benefits of information technology through a comprehensive curriculum. They are trained to be technology ambassadors in their communities. Their primary role is to aggregate survey data at the street level, conduct and gather data through town hall meetings, and to manage and promote the affordable hardware acquisition program. The Digital Connectors provide a community with a passion for technology and a commitment to train and assist underserved populations on the benefits of broadband and technology. The proposed solution includes:

***Broadband Availability Determination:*** The project will utilize the supply-side data collected from the overall mapping project to identify highly underserved/unserved areas and focus on those communities with the most need.

***Identification of Barriers to Broadband Adoption:*** The broadband planning efforts will focus on collecting demand-side data and insight from the unserved and underserved communities to identify and understand the barriers to broadband adoption. A comprehensive Broadband Planning Report will include highly localized short, medium, and long term recommendations for increasing broadband adoption and utilization throughout the state. Based upon that report, an action plan will be developed and implemented and will be continuously monitored and adjusted as necessary.

***Increased Computer Ownership and Access Programs:*** One Economy has extensive experience in creating programs to increase broadband adoption and computer access among unserved and disadvantaged communities. One objective will be to establish an affordable hardware acquisition program through the assistance of hardware OEM partners for the underserved and unserved communities in Hawaii.

***Increased Community Anchor Institutions Broadband Availability:*** The Broadband Mapping program will assist One Economy in identifying the Anchor Institutions that do not have ubiquitous broadband service. Once identified Anchor Institutions are identified, a strategy will be developed to deliver broadband hardware and service to those locations.

***Promotion of Local Community Engagement:*** One Economy will work with community stakeholders and enlist the support of its Broadband Opportunities Coalition, which consists of the National Association for the Advancement of Colored People, League of United Latin American Citizens, National Urban League, National Council of La Raza, and the Asian American Justice Center, to coordinate resources and planning efforts to promote broadband awareness and adoption.

The primary objective of the Planning initiative will be to:

- Lower the price of broadband via creative public/private partnerships that offset the cost;
- Increase the awareness of the benefits of broadband;
- Promote digital literacy to increase the ability to utilize broadband;
- Provide relevant content; and
- Facilitate the acquisition of affordable hardware.

## Reporting

As the applicant and administrator, DCCA and its partners recognize that pursuant to OMB Memorandum M-09-21, it is responsible for the reporting of all data required. The sub-awardees and contractors also acknowledge and will comply with the guidelines and requirements set forth by the Federal Funding Accountability and Transparency Act of 2006 and OMB Requirements for Implementing Sections 1512, 1605 and 1606 of the Recovery Act, and provisions regarding "Buy American," wage rate, and separate identification of funds requirements.

The State of Hawaii shall complete reporting functions per the NOFA requirements.

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

# BUDGET INFORMATION - Non-Construction Programs

## 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 | 11.558 | $ 0.00 | $ 0.00 | $ 2,909,743.00 | $ 1,281,309.00 | $ 4,191,052.00 |
| 2. Non-Federal | | | | | | |
| 3. Planning | | | | | | |
| 4. | | | | | | |
| 5. Totals | | $ | $ | $ 2,909,743.00 | $ 1,281,309.00 | $ 4,191,052.00 |

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## SECTION B - BUDGET CATEGORIES

| 6. Object Class Categories | GRANT PROGRAM, FUNCTION OR ACTIVITY (1) State Broadband Data and Development Grant Program | (2) Non-Federal | (3) Planning | (4) | Total (5) |
|---|---|---|---|---|---|
| a. Personnel | $ 477,638.00 | $ 196,000.00 | $ 164,061.00 | $ | $ 837,699.00 |
| b. Fringe Benefits | 143,291.00 | 0.00 | 32,813.00 | | 176,104.00 |
| c. Travel | 48,750.00 | 0.00 | 8,000.00 | | 56,750.00 |
| d. Equipment | 321,804.00 | 0.00 | 0.00 | | 321,804.00 |
| e. Supplies | 0.00 | 0.00 | 60,000.00 | | 60,000.00 |
| f. Contractual | 1,023,221.00 | 0.00 | 40,000.00 | | 1,063,221.00 |
| g. Construction | 0.00 | 0.00 | 0.00 | | |
| h. Other | 0.00 | 1,085,309.00 | 113,000.00 | | 1,198,309.00 |
| i. Total Direct Charges (sum of 6a-6h) | 2,014,704.00 | 1,281,309.00 | 417,874.00 | | $ 3,713,887.00 |
| j. Indirect Charges | 397,769.00 | 0.00 | 79,396.00 | | $ 477,165.00 |
| k. TOTALS (sum of 6i and 6j) | $ 2,412,473.00 | $ 1,281,309.00 | $ 497,270.00 | $ | $ 4,191,052.00 |
| 7. Program Income | $ | $ | $ | $ | $ |

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## SECTION C - NON-FEDERAL RESOURCES

| (a) Grant Program | (b) Applicant | (c) State | (d) Other Sources | (e)TOTALS |
|---|---|---|---|---|
| 8. State Broadband Data and Development Grant Program | $ 196,000.00 | $ 519,309.00 | $ 566,000.00 | $ 1,281,309.00 |
| 9. Non-Federal | | | | |
| 10. Planning | | | | |
| 11. | | | | |
| 12. TOTAL (sum of lines 8-11) | $ 196,000.00 | $ 519,309.00 | $ 566,000.00 | $ 1,281,309.00 |

## SECTION D - FORECASTED CASH NEEDS

| | Total for 1st Year | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter |
|---|---|---|---|---|---|
| 13. Federal | $ 1,556,781.00 | $ 363,724.00 | $ 436,651.00 | $ 523,182.00 | $ 233,224.00 |
| 14. Non-Federal | $ | | | | |
| 15. TOTAL (sum of lines 13 and 14) | $ 1,556,781.00 | $ 363,724.00 | $ 436,651.00 | $ 523,182.00 | $ 233,224.00 |

## 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 | $ 601,256.00 | $ 225,111.00 | $ 204,128.00 | $ 322,467.00 |
| 17. Non-Federal | | | | |
| 18. Planning | | | | |
| 19. | | | | |
| 20. TOTAL (sum of lines 16 - 19) | $ 601,256.00 | $ 225,111.00 | $ 204,128.00 | $ 322,467.00 |

## SECTION F - OTHER BUDGET INFORMATION

21. Direct Charges:

22. Indirect Charges: See "Remarks" below

23. Remarks: Indirect charges for Mapping: 20.6% fixed; $1,930,924 base; $397,769 amount. Indirect Charges for Planning: 19% fixed; $417,874 base; $79,396 amount

## Budget Narrative – Broadband Planning

Similar budgeting processes utilized in the Mapping effort were followed to determine the scope of the Planning Stage. The overall budget breakdown is as follows.

| Category | Year 1 | Year 2 | Total |
|---|---|---|---|
| Personnel | $ 82,031 | $ 82,030 | $ 164,061 |
| Fringe | 16,407 | 16,406 | 32,813 |
| Contractual | 20,000 | 20,000 | 40,000 |
| Travel | 4,000 | 4,000 | 8,000 |
| Supplies | 30,000 | 30,000 | 60,000 |
| Other | 56,500 | 56,500 | 113,000 |
| Sub-total Direct | $ 208,938 | $ 208,936 | $ 417,874 |
| Indirect | 39,698 | 39,698 | 79,396 |
| **Planning Budget** | **$ 248,636** | **$ 248,634** | **$ 497,270** |

***Project Management:*** Management of the deployment of team members, data analysis, and report delivery. Managed by the Regional Director - $75,000

***Digital Connectors Training and Deployment Costs:*** The Digital Connectors will be chosen, trained, and focused on gathering data. Equipped with laptops and a custom application, they will have the most efficient means to aggregate and transmit data. Their training will involve the necessary knowledge and skills to conduct these surveys, but more importantly, it will prepare participants to provide leadership and inspire interest in the project. The costs associated include the costs for their training sessions, as well as for their "supplies," including netbook/portable data aggregation devices and a Digital Connector t-shirt. The Digital Connectors also receive a cash stipend in addition to the free hardware that they use during the program. The program is specified for 200 Digital Connectors, but can be scaled down to a smaller number, with each Connector receiving a greater stipend. This number can be reassessed at the identification of the initial map highlighting need areas. - $200,000

***Regional Staff for Community Outreach and Hardware Acquisition:*** A staff member will be deployed to work with the Broadband Opportunities Coalition and community organizations to setup town hall meetings, meet with community stakeholders and aggregate data. In addition, this staff member will coordinate the affordable hardware acquisition program. - $56,374

***Digital Connector On the Ground Support and Supplemental Training:*** Mid-level staff members will be working with Digital Connectors in the field to ensure that the program is being run effectively and properly. - $25,000

***Report Development and Creation:*** This effort will focus intensely on ensuring that the data collected is efficiently ingested into the core Broadband Mapping dataset and that specific outputs are generated to provide data analysis, to create strategies and develop recommendations, and to track success. In addition to the writers, this includes Senior One Economy Staff time. - $40,000

***Operating Expenses and Travel Costs:*** These costs are to facilitate the general operating expenses for the One Economy full- and part-time regional staff members, including expenses for traveling with the youth in and among the islands and expenses for taking the data from the portable devices and uploading those sets to the BroadMap/One Economy server. – $21,500

***Indirect Rate:*** One Economy calculated its indirect costs using a federally negotiated and agreed rate of 19%. The total costs ($417,874) were multiplied by 19% to achieve an indirect cost of $79,396.

# Budget Narrative – Broadband Mapping

The overall cost of the project was determined based on (a) human resources required to accomplish tasks in terms of "Personnel" and/or "Contractors", and associated Fringe benefits (30%), when applicable; (b) "Equipment," including hardware, and software for the data environment and associated annual maintenance fees (20%) for five years; (c) "Travel" costs; and (d) "Indirect" costs, when applicable. Table 1 below summarizes the Program budget.

| Category | Year 1 | Years 2 thru 5 | Total | Match |
|---|---|---|---|---|
| Personnel | $ 109,516 | $ 368,122 | $ 477,638 | $ 196,000 |
| Fringe | 32,854 | 110,437 | 143,291 | - |
| Contractual | 755,109 | 268,112 | 1,023,221 | - |
| Travel | 22,750 | 26,000 | 48,750 | - |
| Equipment | 178,780 | 143,024 | 321,804 | - |
| Other | - | - | - | 1,085,309 |
| Sub-total Direct | $ 1,099,009 | $ 915,695 | $ 2,014,704 | $ 1,281,309 |
| Indirect | 209,137 | 188,632 | 397,769 | - |
| **Mapping Budget** | **$ 1,308,146** | **$ 1,104,327** | **$ 2,412,473** | **$ 1,281,309** |

**Table 1** - Budget Summary

Significant resources were allocated during the first year of the project in order to ensure timelines for the broadband mapping project deliverables are met. More specifically, around 55% of resources are allocated within the first four quarters, and about 45% within the first three quarters. Figure 1 depicts estimated distribution of the broadband Mapping effort and cost per quarter, during the duration of the project.

The sections below describe the budgeting process and explain how the financial estimates were determined.

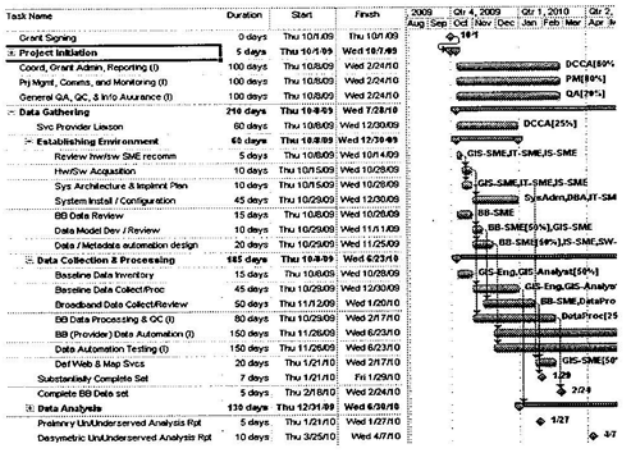
## *Budgeting Process*

Budget determination was done using a detailed resource planning process. A detailed spreadsheet accompanying this document supports how the overall estimates were derived. This section provides a summary of the process and the overall structure of the budget.

***Human Resources Cost:*** First, technical requirements to accomplish each task were examined by the team experts. Each expert then provided a detailed Work Break Structure (WBS), along with the Full Time Equivalent (FTE) resources needed to accomplish the tasks and any inter-dependencies among the tasks.

Next, the information from all experts was compiled into a comprehensive plan, and cross referenced again for inter-dependencies. As a result, a detailed comprehensive WBS was developed.

The comprehensive WBS was then checked against the timeline constraints imposed on the deliverables to identify an optimal number of parallel resources required to meet the deadlines. As a result, an overall Project Plan was developed to identify the project's ***Critical Path*** and derive concurrent human resources needed to meet the project milestones. These resources were then mapped to the level of skills required for each task and to the cost for each skill set (including sub-contract personnel cost) to devise the budget for the human resources. A fringe benefit rate of 30% was used, where applicable, to include healthcare, social security, workers compensation, vacation, and retirement.



| Task Name | Duration | Start | Finish |
|---|---|---|---|
| Grant Signing | 0 days | Thu 10/1/09 | Thu 10/1/09 |
| Project Initiation | 5 days | Thu 10/1/09 | Wed 10/7/09 |
| Coord, Grant Admin, Reporting (I) | 100 days | Thu 10/8/09 | Wed 2/24/10 |
| Prj Mgmt, Comms, and Monitoring (I) | 100 days | Thu 10/8/09 | Wed 2/24/10 |
| General QA, QC, & Info Assurance (I) | 100 days | Thu 10/8/09 | Wed 2/24/10 |
| Data Gathering | 210 days | Thu 10/8/09 | Wed 7/28/10 |
| Svc Provider Liason | 60 days | Thu 10/8/09 | Wed 12/30/09 |
| Establishing Environment | 60 days | Thu 10/8/09 | Wed 12/30/09 |
| Review hw/sw SME recomm | 5 days | Thu 10/8/09 | Wed 10/14/09 |
| Hw/Sw Acquistion | 10 days | Thu 10/15/09 | Wed 10/28/09 |
| Sys Architecture & Implmnt Plan | 10 days | Thu 10/15/09 | Wed 10/28/09 |
| System Install / Configuration | 45 days | Thu 10/29/09 | Wed 12/30/09 |
| BB Data Review | 15 days | Thu 10/8/09 | Wed 10/28/09 |
| Data Model Dev / Review | 10 days | Thu 10/29/09 | Wed 11/11/09 |
| Data / Metadata automation design | 20 days | Thu 10/29/09 | Wed 11/25/09 |
| Data Collection & Processing | 165 days | Thu 10/8/09 | Wed 6/23/10 |
| Baseline Data Inventory | 15 days | Thu 10/8/09 | Wed 10/28/09 |
| Baseline Data Collect/Proc | 45 days | Thu 10/29/09 | Wed 12/30/09 |
| Broadband Data Collect/Review | 50 days | Thu 11/12/09 | Wed 1/20/10 |
| BB Data Processing & QC (I) | 80 days | Thu 10/29/09 | Wed 2/17/10 |
| BB (Provider) Data Automation (I) | 150 days | Thu 11/26/09 | Wed 6/23/10 |
| Data Automation Testing (I) | 150 days | Thu 11/26/09 | Wed 6/23/10 |
| Def Web & Map Svcs | 20 days | Thu 1/21/10 | Wed 2/17/10 |
| Substantially Complete Set | 7 days | Thu 1/21/10 | Fri 1/29/10 |
| Complete BB Data set | 5 days | Thu 2/18/10 | Wed 2/24/10 |
| Data Analysis | 130 days | Thu 12/31/09 | Wed 6/30/10 |
| Preliminry Un/Underserved Analysis Rpt | 5 days | Thu 1/21/10 | Wed 1/27/10 |
| Desymetric Un/Underserved Analysis Rpt | 10 days | Thu 3/25/10 | Wed 4/7/10 |



Partial Project Plan

## Personnel - Skill Set Descriptions

- **Principal Investigator** - is the primary point of contact, coordinator, and administrator for the applicant, and functions as the main interface with service providers.
- **Sub-Principal Investigator** - will direct the implementation team and is responsible for the overall administration of the sub-awardees.
- **Project Manager**- will focus on managing the day-to-day details of the technical execution and is also specifically tasked with ensuring high-quality standards are met.
- **Information Technology Subject Matter Expert (SME)** - is the technical expert providing advice on the appropriate computer and communication technologies for the project.
- **Geographical Information System (GIS) Data SME** - will be the technical expert that will provide advice on the design of and oversee the implementation of GIS project applications.
- **Information System SME** - will be the technical expert that will provide advice on the system design and oversee the software development for the project.
- **GIS Engineer** - will be the lead implementer of the project's GIS applications.
- **Software Engineer** - will lead software development for automated processes.
- **System Administrator** - will manage and administer use of systems.
- **Database Administrator** - will manage and coordinate project database services.

- **Test Engineer** - will be responsible for testing and related documentation.
- **GIS Analyst** - will provide GIS analysis and help with data processing and ingest.
- **Data Processor** - will perform data processing and ingest.
- **Programmer** - will be developing automated applications and processes.

## Contractual Support

Existing personnel will provide main or baseline levels of effort for all skill set categories and contractual support will be utilized in cases where project requirements exceed the available resources. This arrangement will provide a flexible solution to meet "peak" demand for the deliverables and milestones. This support will be obtained from the following partners.

- **BroadMap, One Economy, and New America Foundation**

Broadband specific expertise will be supplied by ***BroadMap*** and its national coalition (including One Economy and New America Foundation). BroadMap capabilities are also far reaching in the GIS space with expertise in geo-coding, mapping, and spatial and relational databases.

***One Economy*** plays a major role in the supply and demand-side "Planning" phase for this Program, bringing resources of 90 full-time employees at 10 offices worldwide. In addition to involvement in broadband access programs, One Economy will provide a comprehensive supply and demand side broadband data set and maps for the state of Hawaii.

***The New America Foundation*** will manage all the surveys and crowd-sourcing applications through its Wireless Future Program and Open Technology Initiative.

- **RHD Consulting**

Mr. Bob Doeringer of RHD Consulting, LLC will act as the main technical interface to the service providers and perform the general quality control over the project and deliverables.

- **Akimeka**

Akimeka, a Native Hawaiian and Service Disabled Veteran Owned Small Business with expertise in enterprise architecture of large systems, will provide system architecture, information assurance, and Geographic Information System services.

- **Referentia Systems**

Finally, Referentia Systems, a Small (8A) technology firm with expertise in network engineering and system architecture will provide data guards and security solutions as required (and as necessary) to control access to sensitive data.

***Hardware and Software Cost:*** Estimating computer hardware and software costs was performed using skilled and experienced GIS experts, and network and security engineers. The team examined the data requirements (expected volume, update frequency, etc.), public access and reporting requirements, and the security and access control mechanisms, and estimated a platform that can accommodate tactical needs but that can also scale up in the future. Similarly, the team used existing GIS architecture deployed by the team to identify the server and client

software components. Based on this analysis, the team estimated the hardware and software costs for the platform using the manufacturers' published costs. Annual maintenance fees (20%) for five years were also calculated for years 2 through 5.

For this project, one database server with Direct Attached Storage disk array, one [redacted] map server, one Application Server, and one Web Server were provisioned. Software licenses for [redacted] software were estimated based on the hardware. Detail is provided below.

| Server | Specifications | | Qty | Price | Total |
|---|---|---|---|---|---|
| Database Server | [redacted] | | 1 | $ 28,000.00 | $ 28,000.00 |
| | 8 Core / 64 Threads @1.4 GHz Sparc T2 | | | | |
| Accessories | SG-XPCIE1FC-EM4 FC-AL HBA | | 2 | $ 1,000.00 | $ 2,000.00 |
| | SESX3G11Z 300GB SAS 10K Hard Drive | | 4 | $ 625.00 | $ 2,500.00 |
| | 9733A-Z Optical Cables | | 4 | $ 45.00 | $ 180.00 |
| Storage | [redacted] | | 1 | $ 16,850.00 | $ 16,850.00 |
| | 3.6 Terabytes 12 x 300GB 15K SAS | | 12 | incl | |
| Map & App Server | [redacted] | | 2 | $ 15,000.00 | $ 30,000.00 |
| | 4 Core / 32 Threads @1.2Ghz Sparc T2 | | | | |
| Web Server | [redacted] | | 1 | $3,200.00 | $ 3,200.00 |
| | 500 GB SATA Drive | | 2 | $300.00 | $ 600.00 |
| Shipping for Above | | | | | $ 450.00 |
| | **Hardware Subtotal** | | | | **$ 83,780.00** |
| | **Software** | | **Qty** | **Price** | **Total** |
| DRBMS | [redacted] | | 2 | $40,000 | $ 80,000.00 |
| Map Server | | | 1 | 15000 | $ 15,000.00 |
| | **Software Subtotal** | | | | **$ 95,000.00** |
| **Hardware and Software (Acquisition) Cost** | | | | | **$ 178,780.00** |
| **Maintenance Cost (Year 2 – 5) at 20%** | | | | | **$ 143,024.00** |

***Travel Cost:*** Similarly, travel costs were estimated based on the Project Plan and were derived based on the federal government's published rules and regulations.

- **Intra-State -** Monthly partner meetings are planned during the 1st quarter after project initiation. Trips from Maui to Oahu will be taken on a quarterly basis for the 2nd through 4th quarters and once every 2 quarters for the balance of the project. Estimated number of trips for partner meetings: 15 trips @ $250 per tip = $3,750
- **Domestic -** Monthly partner meetings are planned during the 1st quarter after project initiation. Trips from Washington D.C. to Oahu will be taken on a quarterly basis for the 2nd through 4th quarters and once every 2 quarters for the balance of the project. Estimated number of trips for partner meetings: 15 trips @ $3,000 per tip = $45,000.

***Indirect Costs***: Indirect costs were calculated at a federally negotiated rate of 20.6% of Modified Total Direct Costs (MTDC). MTDC consists of all salaries and wages, fringe benefits, materials and supplies, services, travel, and the first $25,000 of each subgrant or subcontract.

***Matching Contributions:*** Finally, three separate methods were used to determine the true and accurate value of the non-federal matching contributions. First and most straight forward, the team secured funding allocations from non-governmental foundations. Second, each team member as well as the State GIS Agency provided a list of tangible data set, imagery, and hardware and software that will be donated to the Program. Data set values and other costs were estimated based on the current market value. Finally, State employees' time involved with the project were estimated to complete calculations for the required matching funds.

| Map, Imagery, Business and 3D Data, Software, ... | Descriptions | Five Year Costs |
|---|---|---|
| Navteq | Complete Digital Mapping for the State of Hawaii | $39,000 |
| Digital Globe | Satellite I+B4magery Server by State, Unlimited Use | $25,000 |
| InfoUSA | Anchor Institution, Business and Household POIs | $23,000 |
| Google | 3D Building Data, Imagery | $32,000 |
| **State Provided Data** | | |
| LiDAR | Lanai, Oahu North Shore Kahuku area, Oahu North Shore Mokuleia area, Oahu Honolulu Harbor, Big Island Waimea area, Big Island Kilauea Crater area, Big Island Kona area, Maui Kihei area | $165,074 |
| DOQQ's | DigitalGlobe DOQQ's, First Delivery of DOQQ's, DOQQ's for Kauai, Second Delivery of DOQQ's | $68,200 |
| IKONOS | IKONOS Consortium | $262,550 |
| Re-cast USGS quads from Old Hawaiian Datum to NAD 83 | State Share of Co-op Agreement | $23,485 |
| **Broadband Data:** | | |
| ComSearch | Spectrum Holdings, Teleco, Microwave and Antenna Db, License Information, Classification of Spectrum ... | $50,000 |
| Media Prints | Geographic Boundary for All Cable Systems in the U.S. | $20,000 |
| Crowd-Src Platform and Data | Application for Importing User Generated Data | $20,000 |
| **Software & Platform:** | | |
| [redacted] | GIS Development Platform | $18,000 |
| | GIS Server Platform to Serve Maps to Web. | $20,000 |
| [redacted] Business Analyst Ex | GIS Tools for Demographic Analysis | $14,000 |
| [redacted] | PC GIS Viewer to Deliver to the State. | $5,000 |
| | Total Product In-Kind | $785,309 |
| **Foundation Support** | | |
| Other Contributions Pledged | BroadMap, Google, One Economy, etc. | $300,000 |
| **State Support (Personnel)** | | |
| DCCA | Project oversight & Admin | $196,000 |
| | Total Foundation / State Funding | $496,000 |
| | **Total In-Kind and Foundation Funding** | **$1,281,309** |

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# BUDGET INFORMATION - Non- Construction Programs

## 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 | 11.558 | $ 0 | $ 0 | $ 2,412,473 | $ 1,281,309 | $ 3,693,782 |
| 2. | | $ | $ | $ | $ | $ 0 |
| 3. | | $ | $ | $ | $ | $ 0 |
| 4. | | $ | $ | $ | $ | $ 0 |
| 5. TOTALS | | $ 0 | $ 0 | $ 2,412,473 | $ 1,281,309 | $ 3,693,782 |

## SECTION B - BUDGET CATEGORIES

| 6. Object Class Categories | GRANT PROGRAM, FUNCTION OR ACTIVITY | | | | Total (5) |
|---|---|---|---|---|---|
| | (1) State Broadband Data and Development Grant Program | (2) Non- Federal | (3) | (4) | |
| a. Personnel | $ 477,638 | $ 196,000 | $ | $ | $ 673,638 |
| b. Fringe Benefits | $ 143,291 | $ 0 | $ | $ | $ 143,291 |
| c. Travel | $ 48,750 | $ 0 | $ | $ | $ 48,750 |
| d. Equipment | $ 321,804 | $ 0 | $ | $ | $ 321,804 |
| e. Supplies | $ 0 | $ 0 | $ | $ | $ 0 |
| f. Contractual | $ 1,023,221 | $ 0 | $ | $ | $ 1,023,221 |
| g. Construction | $ 0 | $ 0 | $ | $ | $ 0 |
| h. Other | $ 0 | $ 1,085,309 | $ | $ | $ 1,085,309 |
| i. Total Direct Charges *(sum of 6a -6h)* | $ 2,014,704 | $ 1,281,309 | $ 0 | $ 0 | $ 3,296,013 |
| j. Indirect Charges | $ 397,769 | $ 0 | $ 0 | $ 0 | $ 397,769 |
| k. TOTALS *(sum of 6i and 6j)* | $ 2,412,473 | $ 1,281,309 | $ 0 | $ 0 | $ 3,693,782 |
| | | | | | |
| 7. Program Income | $ | $ | $ | $ | $ 0.00 |

## 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 | $ 196,000 | $ 519,309 | $ 566,000 | $ 1,281,309 |
| 9. | $ | $ | $ | $ 0 |
| 10. | $ | $ | $ | $ 0 |
| 11. | $ | $ | $ | $ 0 |
| 12. TOTALS *(sum of lines 8 and 11)* | $ 196,000 | $ 519,309 | $ 566,000 | $ 1,281,309 |

## SECTION D - FORECASTED CASH NEEDS

| | Total for 1st Year | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter |
|---|---|---|---|---|---|
| 13. Federal | $ 1,308,146 | $ 301,565 | $ 374,492 | $ 461,023 | $ 171,066 |
| 14. Non- Federal | $ 0 | $ | $ | $ | $ |
| 15. TOTAL *(sum of lines 13 and 14)* | $ 1,308,146 | $ 301,565 | $ 374,492 | $ 461,023 | $ 171,066 |

## 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 | $ 352,621 | $ 225,111 | $ 204,128 | $ 322,467 |
| 17. | $ 0 | $ 0 | $ 0 | $ 0 |
| 18. | $ 0 | $ 0 | $ 0 | $ 0 |
| 19. | $ 0 | $ 0 | $ 0 | $ 0 |
| 20. TOTALS *(sum of lines 16 -19)* | $ 352,621 | $ 225,111 | $ 204,128 | $ 322,467 |

## SECTION F - OTHER BUDGET INFORMATION

21. Direct Charges:

22. Indirect Charges:
20.6% fixed, $1,930,924 base, $397,769 amount

23. Remarks

| Category | Q1 | Q2 | Q3 | Q4 | Year 1 | Years 2 thru 5 | Total | | Match | Total including Match |
|---|---|---|---|---|---|---|---|---|---|---|
| Personnel | 56,954 | 20,928 | 17,714 | 13,920 | $ 109,516 | $ 368,122 | $ 477,638 | | $ 196,000 | $ 673,638 |
| Fringe | 17,086 | 6,278 | 5,314 | 4,176 | 32,854 | 110,437 | 143,291 | | - | 143,291 |
| Travel | 13,000 | 3,250 | 3,250 | 3,250 | 22,750 | 26,000 | 48,750 | | - | 48,750 |
| Equipment | - | - | 178,780 | - | 178,780 | 143,024 | 321,804 | | - | 321,804 |
| Contractual | 163,014 | 280,068 | 191,527 | 120,500 | 755,109 | 268,112 | 1,023,221 | | - | 1,023,221 |
| Other | - | - | - | - | - | - | - | | 1,085,309 | 1,085,309 |
| Sub-total Direct | 250,054 | 310,524 | 396,585 | 141,846 | $ 1,099,009 | $ 915,695 | $ 2,014,704 | | $ 1,281,309 | $ 3,296,013 |
| Indirect | 51,511 | 63,968 | 64,438 | 29,220 | 209,137 | 188,632 | 397,769 | | - | 397,769 |
| Total | 301,565 | 374,492 | 461,023 | 171,066 | $ 1,308,146 | $ 1,104,327 | $ 2,412,473 | | $ 1,281,309 | $ 3,693,782 |
| Match % | | | | | | | 65% | | 35% | 100% |

**FTE 450 Hrs per Q**

| | 2009 | 2010 | | | | 2011 | | | | 2012 | | | | 2013 | | | | 2014 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Role/Skill | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Hours | Rate | Budget | Cost % |
| DCCA | 0.75 | 1 | 0.75 | 0.5 | 0.5 | 0.5 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.5 | 0.5 | 1 | 3937.5 | $ 50.00 | $ 196,875.00 | 14% |
| PI | 0.25 | 0.1 | 0.1 | 0.1 | 0.1 | 0 | 0.1 | 0 | 0.1 | 0 | 0.1 | 0 | 0.1 | 0 | 0.1 | 0 | 0.1 | 0 | 0.1 | 0.2 | 697.5 | $ 110.00 | $ 76,725.00 | 5% |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| PrjMgr | 0.75 | 1 | 0.5 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.5 | 2452.5 | $ 47.84 | $ 117,327.60 | 8% |
| BB SME | 0.75 | 0.75 | 0.2 | 0.1 | 0 | 0.1 | 0 | 0 | 0 | 0.1 | 0 | 0 | 0.1 | 0 | 0 | 0.1 | 0 | 0 | 0.1 | 0.1 | 1080 | $ 89.30 | $ 96,444.00 | 7% |
| GIS/Data SME | 0.75 | 0.75 | 0.5 | 0.2 | 0.1 | 0 | 0.1 | 0 | 0.1 | 0 | 0 | 0.1 | 0 | 0 | 0.1 | 0 | 0 | 0.1 | 0 | 0.1 | 1305 | $ 55.49 | $ 72,414.45 | 5% |
| IT SME | 0.5 | 0.5 | 0.2 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0.1 | 0 | 0 | 720 | $ 57.41 | $ 41,335.20 | 3% |
| IS SME | 0.75 | 0.75 | 0.5 | 0 | 0.1 | 0.1 | 0 | 0.1 | 0 | 0 | 0 | 0.1 | 0 | 0.1 | 0 | 0 | 0 | 0.1 | 0 | 0 | 1170 | $ 60.59 | $ 70,890.30 | 5% |
| QA/IA | 0.1 | 0.5 | 0.2 | 0 | 0.1 | 0 | 0.1 | 0 | 0.1 | 0 | 0.1 | 0 | 0.1 | 0 | 0.1 | 0 | 0.1 | 0 | 0.1 | 0.1 | 765 | $ 66.97 | $ 51,232.05 | 4% |
| GIS Eng | 0.75 | 1 | 1 | 0.75 | 0.5 | 0.2 | 0.1 | 0.1 | 0 | 0.1 | 0 | 0.1 | 0 | 0 | 0.1 | 0.1 | 0 | 0.1 | 0.1 | 0.1 | 2295 | $ 44.65 | $ 102,471.75 | 7% |
| SW Eng | 0.75 | 1 | 1 | 0.75 | 0.5 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0 | 0.2 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 2295 | $ 54.22 | $ 124,434.90 | 9% |
| Sys Adm | 0.75 | 1 | 0.75 | 0.5 | 0.2 | 0.1 | 0.1 | 0.1 | 0 | 0.1 | 0 | 0.1 | 0.1 | 0 | 0.1 | 0 | 0.1 | 0.1 | 0.2 | 0.2 | 2025 | $ 44.65 | $ 90,416.25 | 6% |
| DBA | 0.25 | 0.5 | 0.25 | 0.2 | 0.2 | 0 | 0 | 0.2 | 0 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0 | 0.2 | 0 | 945 | $ 54.22 | $ 51,237.90 | 4% |
| Test Eng | 0.25 | 0.5 | 0.5 | 0.5 | 0.25 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 1800 | $ 41.46 | $ 74,628.00 | 5% |
| GIS Analyst | 0.5 | 1 | 1 | 0.5 | 0.2 | 0 | 0.2 | 0 | 0.2 | 0 | 0.1 | 0 | 0.1 | 0 | 0.1 | 0 | 0.2 | 0 | 0.2 | 0.2 | 2025 | $ 41.46 | $ 83,956.50 | 6% |
| Data Proc | 2 | 4 | 3 | 2 | 2 | 1 | 0.75 | 0.75 | 0.75 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 1 | 10012.5 | $ 28.70 | $ 287,358.75 | 20% |
| Programmer | 0.75 | 1 | 1 | 1 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.25 | 0.25 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.25 | 0.5 | 0.5 | 0.5 | 4275 | $ 35.08 | $ 149,967.00 | 11% |
| **Total FTE/Qtr** | **9.60** | **14.25** | **10.60** | **6.80** | **4.85** | **2.60** | **2.35** | **2.05** | **2.05** | **1.35** | **1.45** | **1.50** | **1.50** | **1.00** | **1.50** | **1.40** | **1.45** | **1.90** | **2.50** | **3.00** | **18.425** | | **$ 1,414,114.65** | **100%** |
| **FTE/Yr** | **2.40** | **9.13** | | | | **2.26** | | | | **1.45** | | | | **1.34** | | | | **1.85** | | | **18.425** | | | |
| **FTE % / Qtr** | **13%** | **19%** | **14%** | **9%** | **7%** | **4%** | **3%** | **3%** | **3%** | **2%** | **2%** | **2%** | **2%** | **1%** | **2%** | **2%** | **2%** | **3%** | **3%** | **4%** | **56%** | | | |
| **FTE % / Yr** | **13%** | **50%** | | | | **12%** | | | | **8%** | | | | **7%** | | | | **10%** | | | **100%** | | | |

| | |
|---|---|
| | 31.89 |
| | 70.16 |
| ROM v3 | Unloaded |
| 75 | 47.84 |
| 140 | 89.3 |
| 87 | 55.49 |
| 90 | 57.41 |
| 95 | 60 |
| 105 | 6 |
| 70 | 44.65 |
| 85 | 54.22 |
| 70 | 44 |
| 85 | 54 |
| 65 | 41.46 |
| 65 | 41.46 |
| 45 | 28.7 |
| 55 | 35.08 |

| | 2009 | | 2010 | | | | 2011 | | | | 2012 | | | | 2013 | | | | 2014 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Budget | Rate |
| DCCA | 16.875 | 22.5 | 16.875 | 11.25 | 11.25 | 11.25 | 5.625 | 5.625 | 5.625 | 5.625 | 5.625 | 5.625 | 5.625 | 5.625 | 5.625 | 5.625 | 5.625 | 11.25 | 11.25 | 22.5 | 0 | $ 50.00 |
| PI | 12.375 | 4.95 | 4.95 | 4.95 | 4.95 | 0 | 4.95 | 0 | 4.95 | 0 | 4.95 | 0 | 4.95 | 0 | 4.95 | 0 | 4.95 | 0 | 4.95 | 9.9 | 0 | $ 120.00 |
| PrjMgr | $ 16.15 | $ 21.53 | $ 10.76 | $ 4.31 | $ 4.31 | $ 4.31 | $ 4.31 | $ 2.15 | $ 4.31 | $ 2.15 | $ 4.31 | $ 2.15 | $ 4.31 | $ 2.15 | $ 4.31 | $ 2.15 | $ 4.31 | $ 4.31 | $ 4.31 | $ 10.76 | $ 117.33 | $ 60.00 |
| BB SME | $ 30.14 | $ 30.14 | $ 8.04 | $ 4.02 | $ - | $ 4.02 | $ - | $ - | $ - | $ 4.02 | $ - | $ - | $ 4.02 | $ - | $ - | $ 4.02 | $ - | $ - | $ 4.02 | $ 4.02 | $ 96.44 | $ 125.00 |
| GIS/Data SME | $ 18.73 | $ 18.73 | $ 12.49 | $ 4.99 | $ 2.50 | $ - | $ 2.50 | $ - | $ 2.50 | $ - | $ - | $ - | $ 2.50 | $ - | $ - | $ 2.50 | $ - | $ - | $ 2.50 | $ 2.50 | $ 72.41 | $ 90.00 |
| IT SME | $ 12.92 | $ 12.92 | $ 5.17 | $ 2.58 | $ - | $ - | $ - | $ - | $ - | $ - | $ - | $ 2.58 | $ - | $ - | $ - | $ - | $ - | $ - | $ 2.58 | $ - | $ - | $ 41.34 | $ 90.00 |
| IS SME | $ 20.45 | $ 20.45 | $ 13.63 | $ - | $ 2.73 | $ 2.73 | $ - | $ 2.73 | $ - | $ - | $ - | $ 2.73 | $ - | $ 2.73 | $ - | $ - | $ - | $ - | $ 2.73 | $ - | $ - | $ 70.89 | $ 110.00 |
| QA/IA | $ 3.01 | $ 15.07 | $ 6.03 | $ - | $ 3.01 | $ - | $ 3.01 | $ - | $ 3.01 | $ - | $ 3.01 | $ - | $ 3.01 | $ - | $ 3.01 | $ - | $ 3.01 | $ - | $ 3.01 | $ 3.01 | $ 51.23 | $ 100.00 |
| GIS Eng | $ 15.07 | $ 20.09 | $ 20.09 | $ 15.07 | $ 10.05 | $ 4.02 | $ 2.01 | $ 2.01 | $ - | $ 2.01 | $ - | $ 2.01 | $ - | $ - | $ 2.01 | $ 2.01 | $ - | $ 2.01 | $ 2.01 | $ 2.01 | $ 102.47 | $ 70.00 |
| SW Eng | $ 18.30 | $ 24.40 | $ 24.40 | $ 18.30 | $ 12.20 | $ 4.88 | $ 2.44 | $ 2.44 | $ 2.44 | $ 2.44 | $ - | $ 4.88 | $ 2.44 | $ - | $ - | $ - | $ - | $ - | $ 4.88 | $ - | $ 124.43 | $ 80.0 |
| Sys Adm | $ 15.07 | $ 20.09 | $ 15.07 | $ 10.05 | $ 4.02 | $ 2.01 | $ 2.01 | $ 2.01 | $ - | $ 2.01 | $ - | $ 2.01 | $ 2.01 | $ - | $ 2.01 | $ - | $ 2.01 | $ 2.01 | $ 4.02 | $ 4.02 | $ 90.42 | $ 70.00 |
| DBA | $ 6.10 | $ 12.20 | $ 6.10 | $ 4.88 | $ 4.88 | $ - | $ - | $ 4.88 | $ - | $ - | $ 2.44 | $ - | $ - | $ - | $ - | $ - | $ 4.88 | $ - | $ - | $ 4.88 | $ - | $ 51.24 | $ 100.00 |
| Test Eng | $ 4.66 | $ 9.33 | $ 9.33 | $ 9.33 | $ 4.66 | $ 3.73 | $ 3.73 | $ 1.87 | $ 1.87 | $ 1.87 | $ 1.87 | $ 1.87 | $ 1.87 | $ 1.87 | $ 1.87 | $ 1.87 | $ 1.87 | $ 3.73 | $ 3.73 | $ 3.73 | $ 74.63 | $ 50.00 |
| GIS Analyst | $ 9.33 | $ 18.66 | $ 18.66 | $ 9.33 | $ 3.73 | $ - | $ 3.73 | $ - | $ 3.73 | $ - | $ 1.87 | $ - | $ 1.87 | $ - | $ 1.87 | $ - | $ 3.73 | $ - | $ 3.73 | $ 3.73 | $ 83.96 | $ 70.0 |
| Data Proc | $ 25.83 | $ 51.66 | $ 38.75 | $ 25.83 | $ 25.83 | $ 12.92 | $ 9.69 | $ 9.69 | $ 9.69 | $ 6.46 | $ 6.46 | $ 6.46 | $ 6.46 | $ 6.46 | $ 6.46 | $ 6.46 | $ 6.46 | $ 6.46 | $ 6.46 | $ 12.92 | $ 287.36 | $ 45.00 |
| Programmer | $ 11.84 | $ 15.79 | $ 15.79 | $ 15.79 | $ 7.89 | $ 7.89 | $ 7.89 | $ 7.89 | $ 7.89 | $ 3.95 | $ 3.95 | $ 3.16 | $ 3.16 | $ 3.16 | $ 3.16 | $ 3.16 | $ 3.95 | $ 7.89 | $ 7.89 | $ 7.89 | $ 149.97 | $ 50.00 |
| Total Cost/Qtr | $ 207.59 | $ 291.04 | $ 204.29 | $ 124.47 | $ 85.81 | $ 46.50 | $ 41.32 | $ 35.66 | $ 35.43 | $ 24.90 | $ 26.48 | $ 27.76 | $ 29.13 | $ 16.36 | $ 27.18 | $ 27.12 | $ 25.33 | $ 34.21 | $ 48.94 | $ 54.59 | $ 1,414.11 | |
| Cost/Yr | $ 207.59 | $ | | | 705.61 | $ | | | 158.91 | $ | | | 108.27 | $ | | | 95.99 | $ | | 137.74 | $ 1,414.11 | |
| Cost % / Qtr | 15% | 21% | 14% | 9% | 6% | 3% | 3% | 3% | 3% | 2% | 2% | 2% | 2% | 1% | 2% | 2% | 2% | 2% | 3% | 4% | 100% | |
| Cost % / Yr | 15% | | 50% | | | | 11% | | | | 8% | | | | 7% | | | | 10% | | 100% | |

| | | 2009 | 2010 | | | | 2011 | | | | | 2012 | | | | | 2013 | | | | | 2014 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | unit cost | Q1 | Q2 | Q3 | Q4 | Year 1 | Q1 | Q2 | Q3 | Q4 | Year 2 | Q1 | Q2 | Q3 | Q4 | Year 3 | Q1 | Q2 | Q3 | Q4 | Year 4 | Q1 | Q2 | Q3 | Q4 | Year 5 | Total |
| Intra-state | | | 4 | 1 | 1 | 1 | 7 | 1 | | 1 | | 2 | 1 | | 1 | | 2 | 1 | | 1 | | 2 | 1 | | 1 | | 2 | 15 |
| Domestic | 3000 | 12000 | 3000 | 3000 | 3000 | 21000 | 3000 | 0 | 3000 | 0 | 6000 | 3000 | 0 | 3000 | 0 | 6000 | 3000 | 0 | 3000 | 0 | 6000 | 3000 | 0 | 3000 | 0 | 6000 | 45000 |
| Intra-state | 250 | 1000 | 250 | 250 | 250 | 1750 | 250 | 0 | 250 | 0 | 500 | 250 | 0 | 250 | 0 | 500 | 250 | 0 | 250 | 0 | 500 | 250 | 0 | 250 | 0 | 500 | 3750 |
| Domestic | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | | 13000 | 3250 | 3250 | 3250 | 22750 | 3250 | 0 | 3250 | 0 | 6500 | 3250 | 0 | 3250 | 0 | 6500 | 3250 | 0 | 3250 | 0 | 6500 | 3250 | 0 | 3250 | 0 | 6500 | 487 |

| | 2009 | 2010 | | | | 2011 | | | | | 2012 | | | | | 2013 | | | | | 2014 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q3 | Q4 | Year 1 | Q1 | Q2 | Q3 | Q4 | Year 2 | Q1 | Q2 | Q3 | Q4 | Year 3 | Q1 | Q2 | Q3 | Q4 | Year 4 | Q1 | Q2 | Q3 | Q4 | Year 5 | Total |
| Hardware | - | - | 83,780 | - | 83780 | - | - | - | - | 0 | - | - | - | - | 0 | - | - | - | - | 0 | - | - | - | - | 0 | 83780 |
| Sofware | - | - | 95,000 | - | 95000 | 35,756 | - | - | - | 35756 | 35,756 | - | - | - | 35756 | 35,756 | - | - | - | 35756 | 35,756 | - | - | - | 35756 | 238024 |
| Total | 0 | 0 | 178780 | 0 | 178780 | 35756 | 0 | 0 | 0 | 35756 | 35756 | 0 | 0 | 0 | 35756 | 35756 | 0 | 0 | 0 | 35756 | 35756 | 0 | 0 | 0 | 35756 | 321804 |

| | 2009 | 2010 | | | | 2011 | | | | | 2012 | | | | | 2013 | | | | | 2014 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Labor** | Q1 | Q2 | Q3 | Q4 | Year 1 | Q1 | Q2 | Q3 | Q4 | Year 2 | Q1 | Q2 | Q3 | Q4 | Year 3 | Q1 | Q2 | Q3 | Q4 | Year 4 | Q1 | Q2 | Q3 | Q4 | Year 5 | Total |
| Consultants | 163014 | 270068 | 191527 | 120500 | 745109 | 30514 | 27500 | 30514 | 27500 | 116028 | 16014 | 13000 | 16014 | 13000 | 58028 | 14514 | 11500 | 14514 | 11500 | 52028 | 12014 | 9000 | 9000 | 12014 | 42028 | 1013221 |
| | | | | | 0 | | | | | | | | | | | | | | | | | | | | | |
| | | | | | 0 | | | | | 0 | | | | | 0 | | | | | 0 | | | | | 0 | 0 |
| | | | | | 0 | | | | | 0 | | | | | 0 | | | | | 0 | | | | | 0 | 0 |
| | | | | | 0 | | | | | 0 | | | | | 0 | | | | | 0 | | | | | 0 | 0 |
| Total | 163014 | 270068 | 191527 | 120500 | 745109 | 30514 | 27500 | 30514 | 27500 | 116028 | 16014 | 13000 | 16014 | 13000 | 58028 | 14514 | 11500 | 14514 | 11500 | 52028 | 12014 | 9000 | 9000 | 12014 | 42028 | 1013221 |

| | 2009 | 2010 | | | | 2011 | | | | | 2012 | | | | | 2013 | | | | | 2014 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Equipment / Data** | Q1 | Q2 | Q3 | Q4 | Year 1 | Q1 | Q2 | Q3 | Q4 | Year 2 | Q1 | Q2 | Q3 | Q4 | Year 3 | Q1 | Q2 | Q3 | Q4 | Year 4 | Q1 | Q2 | Q3 | Q4 | Year 5 | Total |
| | - | - | - | - | 0 | - | - | - | - | 0 | - | - | - | - | 0 | - | - | - | - | 0 | - | - | - | - | 0 | |
| | - | - | - | - | 0 | - | - | - | - | 0 | - | - | - | - | 0 | - | - | - | - | 0 | - | - | - | - | 0 | 0 |
| Consultants 2500 | - | 10,000 | - | - | 10000 | - | - | - | - | 0 | - | - | - | - | 0 | - | - | - | - | 0 | - | - | - | - | 0 | 10000 |
| | - | - | - | - | 0 | - | - | - | - | 0 | - | - | - | - | 0 | - | - | - | - | 0 | - | - | - | - | 0 | 0 |
| Total | 0 | 10000 | 0 | 0 | 10000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10000 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | 163,014 | 280,068 | 191,527 | 120,500 | 755109 | 30,514 | 27,500 | 30,514 | 27,500 | 116028 | 16,014 | 13,000 | 16,014 | 13,000 | 58028 | 14,514 | 11,500 | 14,514 | 11,500 | 52028 | 12014 | 9,000 | 9,000 | 12,014 | 42028 | 1023221 |

OMB Approval No. 0348-0044

# BUDGET INFORMATION - Non- Construction Programs

## 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 | 11.558 | $ 0 | $ 0 | $ 497,270 | $ 0 | $ 497,270 |
| 2. | | $ | $ | $ | $ | $ 0 |
| 3. | | $ | $ | $ | $ | $ 0 |
| 4. | | $ | $ | $ | $ | $ 0 |
| 5. TOTALS | | $ 0 | $ 0 | $ 497,270 | $ 0 | $ 497,270 |

## SECTION B - BUDGET CATEGORIES

| 6. Object Class Categories | GRANT PROGRAM, FUNCTION OR ACTIVITY | | | | Total (5) |
|---|---|---|---|---|---|
| | (1) State Broadband Data and Development Grant Program | (2) | (3) | (4) | |
| a. Personnel | $ 164,061 | $ 0 | $ | $ | $ 164,061 |
| b. Fringe Benefits | $ 32,813 | $ 0 | $ | $ | $ 32,813 |
| c. Travel | $ 8,000 | $ 0 | $ | $ | $ 8,000 |
| d. Equipment | $ 0 | $ 0 | $ | $ | $ 0 |
| e. Supplies | $ 60,000 | $ 0 | $ | $ | $ 60,000 |
| f. Contractual | $ 40,000 | $ 0 | $ | $ | $ 40,000 |
| g. Construction | $ 0 | $ 0 | $ | $ | $ 0 |
| h. Other | $ 113,000 | $ 0 | $ | $ | $ 113,000 |
| i. Total Direct Charges *(sum of 6a -6h)* | $ 417,874 | $ 0 | $ 0 | $ 0 | $ 417,874 |
| j. Indirect Charges | $ 79,396 | $ 0 | $ 0 | $ 0 | $ 79,396 |
| k. TOTALS *(sum of 6i and 6j)* | $ 497,270 | $ 0 | $ 0 | $ 0 | $ 497,270 |
| | | | | | |
| 7. Program Income | $ | $ | $ | $ | $ 0.00 |

## SECTION C - NON- FEDERAL RESOURCES

| (a) Grant Program | (b) Applicant | (c) State | (d) Other Sources | (e) TOTALS |
|---|---|---|---|---|
| 8. | $ 0 | $ 0 | $ 0 | $ 0 |
| 9. | $ | $ | $ | $ 0 |
| 10. | $ | $ | $ | $ 0 |
| 11. | $ | $ | $ | $ 0 |
| 12. TOTALS *(sum of lines 8 and 11)* | $ 0 | $ 0 | $ 0 | $ 0 |

## SECTION D - FORECASTED CASH NEEDS

| | Total for 1st Year | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter |
|---|---|---|---|---|---|
| 13. Federal | $ 248,635 | $ 62,159 | $ 62,159 | $ 62,159 | $ 62,158 |
| 14. Non- Federal | $ 0 | $ | $ | $ | $ |
| 15. TOTAL *(sum of lines 13 and 14)* | $ 248,635 | $ 62,159 | $ 62,159 | $ 62,159 | $ 62,158 |

## 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 | $ 248,635 | $ 0 | $ 0 | $ 0 |
| 17. | $ 0 | $ 0 | $ 0 | $ 0 |
| 18. | $ 0 | $ 0 | $ 0 | $ 0 |
| 19. | $ 0 | $ 0 | $ 0 | $ 0 |
| 20. TOTALS *(sum of lines 16 -19)* | $ 248,635 | $ 0 | $ 0 | $ 0 |

## SECTION F - OTHER BUDGET INFORMATION

21. Direct Charges:

22. Indirect Charges:
19% fixed, $417,874 base, $79,396 amount

23. Remarks

| Personnel | Hourly Rate | Initial | Update | Initial | Update | Year One | Year Two | Year Three | Year F |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| Senior Staff | 60 | 150 | | $10,800 | | $5,400 | $5,400 | | |
| Program Manager | 50 | 500 | | $25,000 | | $12,500 | $12,500 | | |
| Instructor | 40 | 375 | | $15,000 | | $7,500 | $7,500 | | |
| Digital Connectors | | 100 | | $101,000 | | $50,500 | $50,500 | | |
| Regional Director $75K | 36.1 | 2080 | 0 | $90,106 | $0 | $45,053 | $45,053 | $0 | $0 |
| Planning Director (PT $75K) | 65 | 400 | 0 | $31,200 | $0 | $15,600 | $15,600 | $0 | $0 |
| Planning Analyst (PT $58K) | 28 | 600 | | $20,160 | | $10,080 | $10,080 | | |
| Report writer (PT$50K) | 24 | 160 | | $4,608 | | $2,304 | $2,304 | | |

| | | Year One Costs | | | | | |
|---|---|---|---|---|---|---|---|
| Other Costs | | Initial | Update | Year One | Year Two | Year Three | Year F |
| Operating Expense | | $12,000 | $0 | $6,000 | $6,000 | $0 | $0 |
| Supplies for DC | | $60,000 | | $30,000 | $30,000 | | |
| DC Training | | $40,000 | | $20,000 | $20,000 | | |
| Travel | | $8,000 | | $4,000 | $4,000 | | |
| | | | | $0 | $0 | | |
| | Totals | $417,874 | $0 | $208,937 | $208,937 | $0 | $0 |
| Percentage in 1st Year | | | | 50% | | | |

$497,270

EXECUTIVE CHAMBERS

HONOLULU

LINDA LINGLE
GOVERNOR

July 31, 2009

State Broadband Data and Development Grant Program
National Telecommunications and
Information Administration
U.S. Department of Commerce
1401 Constitution Avenue, N.W., Room 4898
Washington, DC 20230

Attention: Mr. Edward "Smitty" Smith
Program Director

Dear Mr. Smith:

In accordance with the Broadband Data Improvement Act, Section 106(i)(2)(B), as Governor of the State of Hawaii, I hereby certify that the Hawaii Department of Commerce and Consumer Affairs (DUNS #809935406), dba Department of Commerce and Consumer Affairs, has been designated by the State of Hawaii as the single eligible entity in the State to receive a grant under the State Broadband Data and Development Grant Program.

Pursuant to Section 106(i)(2)(A) of the Broadband Data Improvement Act, the Department of Commerce and Consumer Affairs is a Government agency of the State of Hawaii. It is located at 335 Merchant Street, Honolulu, Hawaii 96813-2921. The point of contact for the Department is Mr. Clyde Sonobe, who may be reached at (808) 586-2620 should you have any questions.

Sincerely,

LINDA LINGLE

# 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:**
- [ ] a. contract
- [x] b. grant
- [ ] c. cooperative agreement
- [ ] d. loan
- [ ] e. loan guarantee
- [ ] f. loan insurance

**2. * Status of Federal Action:**
- [ ] a. bid/offer/application
- [x] b. initial award
- [ ] c. post-award

**3. * Report Type:**
- [x] a. initial filing
- [ ] b. material change

**4. Name and Address of Reporting Entity:**

[x] Prime [ ] SubAwardee

*Name: Not Applicable

*Street 1: Not Applicable Street 2:

*City: Not Applicable 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:**
Not Applicable

**7. * Federal Program Name/Description:**

CFDA Number, *if applicable:*

**8. Federal Action Number,** *if known:*

**9. Award Amount,** *if known:*
$

**10. a. Name and Address of Lobbying Registrant:**

Prefix: * First Name: Not Applicable Middle Name:

* Last Name: Not Applicable Suffix:

* Street 1: Street 2:

* City: State: Zip:

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

Prefix: * First Name: Not Applicable Middle Name:

* Last Name: Not Applicable 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:** Clyde Sonobe

***Name:** Prefix: * First Name: Not Applicable Middle Name:

* Last Name: Not Applicable Suffix:

**Title:** **Telephone No.:** **Date:** 08/14/2009

**Federal Use Only:**

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Standard Form - LLL (Rev. 7-97)

OMB Approval No.: 4040-0007
Expiration Date: 07/30/2010

## ASSURANCES - NON-CONSTRUCTION PROGRAMS



**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.

| * SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL | * TITLE |
|---|---|
| Clyde Sonobe | Administrator, DCCA |
| * APPLICANT ORGANIZATION | * DATE SUBMITTED |
| Hawaii Department of Commerce and Consumer Affairs | 08/14/2009 |

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