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

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| **Submitted Date:** 3/25/2010 9:10:51 PM | **Easygrants ID: 5786** |
| **Funding Opportunity:** Broadband Technology Opportunities Program | **Applicant Organization:** UNIVERSITY OF HAWAII SYSTEMS |
| **Task:** Submit Application - BTOP | **Applicant Name:** Dr. David Lassner |

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# A. General Application Information

| **Applicant Information** | |
|---|---|
| **Name and Federal ID for Applicant** | |
| **DUNS Number** | 965088057 |
| **CCR # (CAGE)** | 0W411 |
| **Legal Business Name** | UNIVERSITY OF HAWAII SYSTEMS |
| **Point of Contact (POC)** | MICHAEL MORIMOTO<br>8089564908<br>Ext.<br>mcmorimo@hawaii.edu |
| **Alternate POC** | MICHAEL MORIMOTO<br>8089564908<br>Ext.<br>mcmorimo@hawaii.edu |
| **Electronic Business POC** | MICHAEL MORIMOTO<br>8089567800<br>Ext.<br>mcmorimo@hawaii.edu |
| **Alternate Electronic Business POC** | YAA-YIN FONG<br>8089567800<br>Ext.<br>yaayin@hawaii.edu |

| **Name and Contact Information of Person to be Contacted on Matters Involving this Application:** | |
|---|---|
| **Prefix** | Dr. |
| **First Name** | David |
| **Middle Name** | |
| **Last Name** | Lassner |
| **Suffix** | |
| **Telephone Number** | 808-956-3501 |


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|---|---|
| **Fax Number** | 808-956-5025 |
| **Email** | david@hawaii.edu |
| **Title** | VP for Information Technology and CIO |

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

| Project Role | Name | Phone | Email |
|---|---|---|---|
| Secondary Point of Contact | Mr.<br>Chris , Zane | 8089560974 | czane@hawaii.edu |

**Environmental Point of Contact**

Prefix: Dr.
Name: Lassner, David
Suffix:
Telephone Number: 808-956-3501
Title: VP for Information Technology and CIO

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

| **Authorized Organizational Representative** | |
|---|---|
| **AOR Name** | FONG, YAA-YIN |


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|---|---|
| **Result** | Notify |

## Project Title and Project Description

**Project Title**: Ke Ala 'Ike: Connecting Hawaii's Community Colleges, Universities, Schools and Libraries

**Project Description**: The Ke Ala 'Ike ("The Path to Knowledge") project takes a unique and extraordinarily cost-effective approach to provision gigabit or faster direct fiber connectivity at 388 community anchor sites including every community college and remote education center, every public school, every public library and every public university on every island throughout the State of Hawaii.

## CCI Priority Checklist

**The following items were selected from the CCI Priority Checklist:**

1. This project will deploy Middle Mile broadband infrastructure to community anchor institutions.

2. The project will deploy Middle Mile broadband infrastructure and has incorporated a public-private partnership among government, non-profit and for-profits entities, and other key community stakeholders.

3. This project will deploy Middle Mile broadband infrastructure in economically distressed areas.

4. This project will deploy Middle Mile broadband infrastructure to community colleges.

## Comprehensive Community Infrastructure Components

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

Middle Mile

## BIP Applicants

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

- No

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If Yes, please provide the project title and Easygrants ID number:
Title of Joint BIP Application:
Easygrants ID:

**Other Applications**

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

- Yes

| Easygrants ID | Project Title |
|---|---|
| 5595 | Access for All: Hawaii Statewide Public Computer Centers |

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

This proposal is not dependent on, but supports the complementary "Access for All: Hawaii Statewide Public Computer Centers" proposal. "Access for All" will leverage this infrastructure proposal to provide 693 new public access broadband-connected computers in 66 of the community anchor institutions included in "Ke Ala 'Ike", including community colleges, on 6 islands throughout the entire State of Hawaii.

The "Access for All" public computing center proposal would broaden the impact of this proposed community infrastructure by the dramatic increase in computers with high-speed broadband capabilities that would be available to the public.

**Individual Background Screening**

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

- Yes, Applicant is exempt because it is an accredited college or university

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

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| Name | Title | Employer |
|---|---|---|
| | | |

# B. Executive Summary, Project Purpose and Benefits

**Essay Question**

**Executive Summary of the proposed project:**

Submitted by the community anchors themselves, and with the support of the Governor, this project will ensure gigabit or higher direct fiber optic connectivity at 388 community anchor locations throughout Hawaii including every community college and remote education center, every public school, every public library and every public university in the State.

This project will literally serve every community on every island. It will provide 10Gbps connections to all 7 accredited community colleges in Hawaii as well as to their remote education centers on 6 islands along with Hawaii's 3 public universities and key related anchor locations. All of Hawaii's community colleges and public universities are Hawaiian-serving Institutions as defined in federal statute. The project will also provide 1Gbps connectivity to all 302 public schools and public education sites in Hawaii, including the public charter schools, as well as to all 51 of Hawaii's public libraries.

While focusing on community anchor institutions, the infrastructure proposed will also enhance the availability of fiber middle mile capacity for some of our most underconnected towns: Hana on Maui and Lanai City on the island of Lanai, both of which are connected by microwave only.

The 2008 Hawaii Broadband Task Force Report recommended that "Government lead by example in demonstrating the value of broadband to our citizenry, deploying broadband services to the public, and ensuring that we do not leave behind the economically disadvantaged members of our communities who may be inhibited from full participation in the 21st century." Our public partners, the University of Hawaii and its Community Colleges, the Hawaii State Public

Library System and the Hawaii Department of Education are all fully committed to this objective.

The University of Hawaii (UH) System comprises all of public higher education in the State of Hawaii, from open door community colleges to an R1 research university. As applicant for the partnership, UH has the most experience of any entity in the State in administering federal contracts and grants. In addition, the University will continue to lead the planning, deployment, and support for the technical efforts of all partners. For the community colleges and universities, the upgraded network will be used to support almost every element of education, research and public service. The University of Hawaii System has long been a national leader in distance learning as a means of providing equitable access to high quality education in all communities on all islands. Each community college and remote education center serves as a local gateway into the wider array of program offerings available from other campuses on other islands. This is supported by a single student information system, a single library management system, and all the consolidated support services and policies to enable rich transfer and articulation capabilities, all of which also require high-speed access.

A signature new broadband application will be the implementation of a new interactive high-definition distance learning capability at every community college and their remote education centers throughout the State. Upgrading the current unsupported proprietary legacy equipment to standardized high-definition interactivity across the State will not only provide many citizens with access to education to enhance their ability to compete for jobs, but will showcase a major broadband application in all communities and help stimulate greater understanding of and demand for advanced broadband services in homes and businesses throughout the State. Video, and in particular high definition video, has been identified as a "killer app" and primary driver for broadband growth and demand. This signature interactive application, which will reach remote locations on all six islands, will not only provide critical direct educational services but also educate the public, providers and policy-makers about the importance of planning not only for high-bandwidth but for bi-directional services.

The Hawaii State Public Library System (HSPLS) is the centrally-administered statewide system that operates all public libraries in Hawaii, currently 51 spread across the 6 major islands of the State. HSPLS provides overall support for their network planning, deployment, integration, monitoring, educational and training services, staff, outreach and facilities. A central library information system and shared public Internet access provides the libraries with highly leveraged

efficiencies and economies of scale. Their connectivity is needed to meet both internal requirements as well as to provide public Internet access. For the many public libraries relying on sub-megabit frame relay connections, the upgrade to gigabit connectivity will be truly transformational. The public libraries will also have access to Internet2 through the University System.

The Hawaii State Department of Education, is a unique single statewide school district with responsibility for all public schools consolidated under a single Superintendent and Board of Education. For the public school system, there are a number of key applications driving the need for more bandwidth. The Department is dramatically increasing the use of online learning, particularly to reach at-risk students and those in smaller schools without a full range of course offerings. Distance learning via interactive video is used both for students as well as for professional development for teachers, particularly to address increasing accountability requirements at the state and federal level. And a new application, that is challenging some of the schools' current cable modem connections, is moving high-stakes student testing from paper to online to reduce costs and improve performance through greater flexibility (e.g. retakes within the rules). And like the community colleges, universities and public libraries, the public schools also rely on centralized administrative and support systems to contain operational costs. All of these systems rely on high-speed connectivity among the public school system. The public schools will also have access to Internet2 through the University System.

The individual fiber pairs deployed on each island will be under the direct control of the community anchor institutions for their internal connectivity. Each of the three partners acquires public Internet (ISP) services on the competitive marketplace and provides non-discriminatory access Layer 3 (Internet) access to all sites on their networks, subject only to legal requirements associated with content filtering, e.g. as a provision of accepting E-Rate support.

The proposed technology approach is driven by a unique opportunity to obtain dark fiber among all these community anchor institutions. Hawaii currently has one Cable TV provider, which under Hawaii law is issued its franchise by the State Dept of Commerce and Consumer Affairs (DCCA). DCCA requires that the cable provider provision dedicated dark fiber for an institutional network for the State. This is a remarkable capability that enables extremely cost-effective access for the State's community anchor institutions. By equipping this fiber with WDM technology, we can scalably extend broadband access to every public library, public school, community college and public higher education site on every island. Each enterprise will

operate its own IP-layer network over this optical infrastructure, with interconnectivity between organizations to meet common purposes and share services where appropriate.

The community colleges and university and DOE have successfully worked together, with the State Executive branch, to design, provision and support a current WDM network using the same approaches and technologies proposed. This project will enable a dramatic statewide expansion to many more locations and with higher speeds. All of the technologies and public-private partnerships are in place and well-proven, which will ensure project success.

The total cost of the project is $42,466,000, including the required 20% matching funds. This is an extraordinary value to provide gigabit or higher connectivity to every community college and their remote education centers, every public school and every public library in an entire state, particularly one with the challenges of Hawaii's island geography. The constituency directly served is over 300,000 students, faculty, teachers and staff – roughly 25% of the state's population. Using the federal government's methodology, it is estimated that 430 job-years would be created by this project including 275 indirect and 155 induced. In addition, the project partners are the key institutions in the State responsible for elevating educational achievement and creating new jobs and workers for a new economy.

**Project purpose:**

Hawaii is geographically challenged by having its population spread across 6 major islands and being separated by over 2000 miles from the rest of the country. This makes broadband communications more critical than in almost any other state; it not only links our 1.2m people between islands, but connects us to the rest of the United States.

This "Ke Ala 'Ike: Connecting Hawaii's Community Colleges, Universities, Schools and Libraries" project will connect 388 community anchor sites with dark fiber and provision them with gigabit or higher connectivity. This will include all of the State's community colleges and their remote education centers, every public school, every public library and every public university on every island in the State. It leverages what we believe to be a unique-in-the-nation opportunity to take advantage of proven statewide public-private partnerships and a unique regulatory environment to provide pervasive cost-effective world-class "future-proof" connectivity to the most critical community anchor institutions in the State.

The project exemplifies a number of best practices that are applicable to other states and jurisdictions. These include:
1) Strong proactive cable franchising by government, in this case the State of Hawaii, that provides high value for the public right-of-way access granted.
2) Deep, meaningful and proven collaboration among higher education (including community colleges), K12 education, public libraries, and state government.
3) Scalable cost-effective future-proof use of WDM technology over fiber optics.
4) Use of anchor institutions to publicize and promote throughout a State next generation "killer applications," in this case high-definition videoconferencing for distance learning.

A related companion project will leverage this infrastructure with 693 new public access computers at 66 sites including Hawaii's community colleges and their education centers and all public libraries to extend public access to general broadband services in all communities on every island of the State. Broadband-enabled education, awareness, and training would be provided to students and the general public through the public schools and public access terminals at the public libraries. Outreach services provided by the community colleges at public computing centers in the libraries and community colleges will foster increased awareness to the possibilities that broadband access can offer.

These community anchor institutions, including the public libraries, are where the education of the next generation of innovators, workers, consumers and leaders are developed. By investing in their infrastructure today, our students' experience with high bandwidth connectivity will drive the future adoption of broadband and develop the knowledge and skills needed to thrive in tomorrow's increasingly interconnected global communities and workplaces. In reaching out with this capability to every community on every island, this project addresses Hawaii's most economically distressed communities that are underserved by most public services. The community anchor institutions in these communities will be provided with the same level of connectivity as their counterparts in more urban and well-served communities. This is a rare opportunity to provide the capabilities in those places where broadband services are most needed to compensate for the lack of physical services.

This project will address all the statutory purposes of BTOP either directly or indirectly, as follows:

* To provide access to broadband service to consumers residing in unserved and underserved areas of the country;

The formal criteria do not place any public school, public library, community college or remote education center in a location defined as unserved or underserved. Nonetheless, many of Hawaii's consumers are not well-served. This project will provide access for consumers without financial means through investment in public community anchor institutions with clear and firm public service missions and commitments.

* To provide broadband education, awareness, training, access, equipment, and support to a variety of community anchor institutions;

This is the statutory purpose most directly addressed by the project. This project will provide complete coverage of all community colleges and their remote education centers, public universities, public schools and public libraries in the State and enable them to provide outreach, access and support services for the most vulnerable in our communities, including the most remote regions. In addition, some of the university sites will include Hawaii's most strategic job-creating locations such as incubation centers and research facilities.

d. To improve access to, and use of, broadband service by public safety agencies;

While not focused on the public safety agencies of the State or counties, some of the public anchor institutions included in this proposal are formally designated as evacuation sites or for other roles in the State's emergency operations plans. The availability of high-speed broadband will assist them in fulfilling their roles before and possibly during emergencies.

e. To stimulate the demand for broadband, economic growth, and job creation.

Since many libraries and schools are located in the most remote, rural and disadvantaged locations in the State of Hawaii where residents may not have the financial means to subscribe to whatever broadband access may be available. Students may have broadband access only at school, and the public primarily through public libraries and community colleges. These BTOP initiatives will help build support and demand for future higher bandwidth connections in homes and businesses.

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**Recovery Act and Other Governmental Collaboration:**

A fully complementary $10m NSF ARI-R2 proposal has been submitted and is under review that would provide high-speed connectivity between Hawaii and the U.S. mainland for connectivity to the national cyberinfrastructure in support of research. All participants in the Ke Ala ʻIke project would have access to the extent such uses are consistent with the NSF program objectives and applicable policies.

**Fit with BTOP CCI Priorities:**

1. This project will deploy Middle Mile broadband infrastructure to community anchor institutions.

This project will have immense impact on community anchor institutions by directly serving every community college, every community college remote education center, every public school, every public library and every public university on every island throughout the State of Hawaii. All infrastructure will be fiber to the premise, thereby providing a level of "future-proofing" unavailable with other technologies. While there are additional anchor institutions that may be involved in the future, it would be impossible to imagine a CCI proposal that could have greater impact on Hawaii's community anchor institutions throughout the State.

2. The project will deploy Middle Mile broadband infrastructure and has incorporated a public-private partnership among government, non-profit and for-profits entities, and other key community stakeholders.

This proposal is primarily focused on the deployment and activation of middle mile fiber-to-the-premise broadband infrastructure to 388 anchor locations. While the applicant is Hawaii's public university, which is the lead on many statewide initiatives of this type, the fiber will be deployed and maintained by our private for-profit partners, who will then be able to leverage this infrastructure to improve their service capabilities. These private partners include both the primary broadband provider in the State, Oceanic Time-Warner, and one of the major facilities-based CLECs, Wavecom Solutions.

3. This project will deploy Middle Mile broadband infrastructure in economically distressed areas.

By directly serving every community college and their remote learning centers, every public library, every public school and every public university on every island of the State, this project will include all the most economically distressed areas of Hawaii. Islands and regions with the highest unemployment rates and lowest educational attainment will have their first access to nearly unconstrained broadband for economic, social and educational advancement.

4. This project will deploy Middle Mile broadband infrastructure to community colleges.

Every community college and every one of their remote education centers on every island throughout the State of Hawaii is a direct participant and beneficiary of this project. We believe that the proposed 10Gbps connections for these higher education sites will provide a national model for community colleges.

5. This project will deploy Middle Mile broadband infrastructure to public safety entities.

THE PUBLIC SAFETY BOX WAS NOT CHECKED. However, we wish to note indirect benefits to public safety and public safety entities. First, the architecture of the Institutional Network on Oahu will be dramatically improved to support the proposed service to community colleges, universities, schools and libraries. This will allow the State Executive Branch to improve connectivity for Hawaii State Civil Defense, the lead agency for public safety in Hawaii. In addition, some of the public anchor institutions included in this proposal are formally designated as evacuation sites or for other roles in the State's emergency operations plans. The availability of high-speed broadband will assist them in fulfilling their roles before and possibly during emergencies.

6. This project will deploy Middle Mile broadband infrastructure and either includes a Last Mile infrastructure component in unserved or underserved areas or has received commitments from one or more Last Mile broadband service providers to utilize the Middle Mile components.

THIS BOX WAS NOT CHECKED. However, there are three major elements proposed that will represent the first fiber optic connectivity to remote underconnected communities. On the island of Maui, the remote community of Hana is only connected by microwave. We have proposed fiber optic connectivity to the community anchor institutions of Hana: the community college remote education center, and the public school and library. This fiber will be used by Oceanic Time Warner to improve broadband access for all subscribers in the community. In addition, the

islands of Lanai and Molokai have only one provider of interisland fiber optic capability: Wavecom Solutions. We have proposed a substantial build to bring their capability on Lanai (pop. ~3200) from the beach landing to the heart of the community in order to serve the community college remote education center and the public school and library. This build, which is not justified from a pure business perspective, will enable the provision of enhanced last mile services. Residents on Lanai are currently served only by microwave and complain of very low broadband speeds, particularly in the evenings when contention is greatest.

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

- No

**Is the applicant deliquent on any federal debt?**

- No

If Yes, justification for deliquency:

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

- No

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

- No

## C. Partners

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

- Yes

If YES, key partners are listed below:

Project Role: Other
Name: Burns, Richard
Phone: 8085863404
Email: richard@librarieshawaii.org
Address 1: 44 Merchant St.
Address 2:
Address 3:

| | |
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City: Honolulu
State: Hawaii
Zip Code: 96813
Organization: hawaii State Public Library System
Organization Type: State or State Agency
Small business: No
Socially and economically disadvantaged small business concern: No

Project Role: Other
Name: Matayoshi, Kathryn
Phone: 8085863404
Email: kathryn_matayoshi@notes.k12.hi.us
Address 1: P.O. Box 2360
Address 2:
Address 3:
City: Honolulu
State: Hawaii
Zip Code: 96804
Organization: State of Hawaii Department of Education
Organization Type: State or State Agency
Small business: No
Socially and economically disadvantaged small business concern: No

Project Role: Contractor
Name: Uno, Lance
Phone: 8086258370
Email: lance.uno@twcable.com
Address 1: 200 Akamainui St.
Address 2:
Address 3:
City: Mililani
State: Hawaii
Zip Code: 96789
Organization: Oceanic Time Warner Cable
Organization Type: For-profit Entity
Small business: No
Socially and economically disadvantaged small business concern: No

Project Role: Other
Name: Sonobe, Clyde
Phone: 8085868395
Email: clyde.sonobe@dcca.hawaii.gov

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Address 1: P.O. Box 541
Address 2:
Address 3:
City: Honolulu
State: Hawaii
Zip Code: 96809
Organization: State of Hawaii Executive Branch
Organization Type: State or State Agency
Small business: No
Socially and economically disadvantaged small business concern: No

Project Role: Contractor
Name: Hensarling, Ken
Phone: 8087911000
Email: ken.hensarling@wavecomsolutions.com
Address 1: 1132 Bishop St.
Address 2: Suite 800
Address 3:
City: Honolulu
State: Hawaii
Zip Code: 96813
Organization: Wavecom Solutions
Organization Type: For-profit Entity
Small business: Yes
Socially and economically disadvantaged small business concern: No

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

By agreement of all partners, the Hawaii Governor's Office and Executive Branch, and in accord with Congressional Office discussions, the University of Hawaii System is the lead institution for Hawaii's educational broadband initiatives. The proposed applicant also Chaired the State of Hawaii Broadband Task Force. The University works closely with the key partners to ensure a comprehensive yet cost-effective statewide approach that serves all communities.

The University of Hawaii System comprises all of public higher education in the State of Hawaii -- on all islands -- from our open door community colleges to an R1 research university. The University of Hawaii System serves almost 60,000 students on 6 islands through its 10

accredited campuses and the community colleges' remote education centers in remote communities on all islands.

The University has the most experience of any entity in the State in administering federal contracts and grants and will serve as the direct applicant with primary responsibility for administration and compliance. By taking on this role, the University contributes to the projects and cost match. In addition, the University has the most experience in wide area WDM optical network planning, deployment, and support, and serves as the lead among the project partners. At the University System level the applicant works directly with the University Vice President for Community Colleges, who has direct oversight of all community colleges in Hawaii and whose letter of support is attached.

The Hawaii State Public Library System (HSPLS) is the centrally administered statewide system that operates all public libraries in Hawaii, currently 51 spread across the 6 major islands of the State. HSPLS provides overall support for their network planning, deployment, integration, monitoring, educational and training services, staff, outreach and facilities. A central library information system and shared public Internet access provides the libraries with highly leveraged efficiencies and economies of scale. HSPLS will manage its inter-library network at the IP layer and all aspects of the deployment and support of the computers provided and their support in all public libraries.

The Hawaii State Department of Education (DOE) is Hawaii's statewide school district with responsibility for all public schools in Hawaii, including public charter schools. As with HSPLS, the DOE's Network Support Services Branch independently manages its network at the IP layer.

The State of Hawaii Executive Branch, headed by the Governor, partners primarily through the State Department of Commerce and Consumer Affairs (DCCA), which has been identified as the lead State agency for all aspects of advancing broadband in Hawaii. DCCA has statutory authority for the franchising of Cable TV in Hawaii and requires that the cable provider (which serves all islands) provide the State with dark fiber for an institutional network with a small number of free sites and others provided at cost. This is a remarkable capability that enables extremely cost-effective access to dark fiber for the State's community anchor institutions. Using WDM technology, this fiber network capability will be scalably extended to every public library, public school, community college and public higher education site with high-speed

connections on every island. Franchise fee funds provided by DCCA are also a critical element of the overall cost match for the Ke Ala 'Ike comprehensive community infrastructure proposal.

The major private partner for this project is Oceanic Time-Warner, the statewide Cable TV franchise. As a condition of their franchise from the State, Oceanic is required to provide direct fiber optic connections to community anchor institutions at cost, which ensures an extraordinarily cost effective anchor network on each island.

In addition, Wavecom Solutions, a private facilities-based CLEC, has partnered with the Ke Ala 'Ike project to provide connectivity to the least populated islands: Molokai (pop. 7400) and Lanai (pop. 3200). Wavecom owns the only interisland fiber to these islands, and extension of their infrastructure to serve the community anchor institutions will provide dramatic improvements in capability and we expect will promote improved last-mile access as well.

## D. Congressional Districts

**Applicant Headquarters**

- Hawaii

**Project Service States**

Hawaii

**Project Service Areas**

Hawaii - 1

Hawaii - 2

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

- No

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

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

- No

# E. Service Area Details

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

- No

**Project Details**

**Service Area Type:** Middle Mile
**Service Area Name:** 00-State-Of-Hawaii
**Rural Classification of the Last Mile Service Area:** Non-Rural
**Service Status of the Last Mile Service Area:** Served

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

**Total Square Miles in Service Area:** 6,422
**Total Population in Proposed Service Area:** 1,288,198
**Total Number of Households in Service Area:** 403,240
**Total Number of Businesses in Service Area:** 99,224
**Total Number of Community Anchor Institutions and Public Safety Entities in Proposed Funded Service Area:** 365
**Unemployment Rate in the Service Area:** 7
**Median Income in the Service Area:** 66,701
**Estimated Percentage of Households with Access to Broadband:** 80
**Estimated Percentage of Households Subscribing to Broadband:** 60

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# F. Community Anchor Summary

| Community Anchor Summary | |
|---|---|
| **Schools (k-12)** | 302 |
| **Libraries** | 51 |
| **Medical and Healthcare Providers** | 0 |
| **Public Safety Entities** | 0 |
| **Community Colleges** | 7 |
| **Public Housing** | 0 |
| **Other Institutions of Higher Education** | 20 |
| **Other Community Support Organization** | 2 |
| **Other Government Facilities** | 6 |
| **TOTAL COMMUNITY ANCHOR INSTITUTIONS** | **388** |
| | |
| **Historically Black colleges and Universities** | 0 |
| **Tribal Colleges and Universities** | 0 |
| **Alaska Native Serving Institutions** | 0 |
| **Hispanic Serving Institutions** | 0 |
| **Native Hawaiian Serving Institutions** | 10 |
| **TOTAL MINORITY SERVING INSTITUTIONS** | **10** |

| | |
|---|---|
| **Submitted Date:** 3/25/2010 9:10:51 PM | **Easygrants ID: 5786** |
| **Funding Opportunity:** Broadband Technology Opportunities Program | **Applicant Organization:** UNIVERSITY OF HAWAII SYSTEMS |
| **Task:** Submit Application - BTOP | **Applicant Name:** Dr. David Lassner |

# G. Project Benefits

**Demographics**

| **Jobs** | |
|---|---|
| **How many direct jobs-years will be created from this project?** | 430 |
| **How many indirect jobs will be created from this project?** | 275 |
| **How many jobs will be induced from this project?** | 155 |

**Methodology used to estimate jobs:**
To determine the estimates of job creations, the project used the values defined by the Council of Economic Adviser's as detailed in the Estimates of Job Creation from the American Recovery and Reinvestment Act of 2009 document. (http://www.whitehouse.gov/administration/eop/cea/Estimate-of-job-creation). Specifically the values from Table 5 which indicate:

1 Direct Job-Year for every $92,000 of government spending
64% of job-years represent direct and indirect benefits
36% of the job-years are induced effects

Thus, for the project budget of approximately $40 million, there would be approximately 430 job-years created. 275 indirect jobs, and 155 induced jobs.

**Project Impact:**
This proposal is fully focused on community anchor institutions in every community on every island throughout the State of Hawaii. It will provide gigabit or higher connectivity at every one of Hawaii's community colleges and their education centers, public universities, public schools and public libraries. This far exceeds the FCC proposal for 1Gbps connection to one anchor institution in each community by 2020; it would comprehensively meet not only today's needs, but also provide for substantial future expansion requirements.

A more complete discussion of the competitive landscape is provided in the "Level of Need" section of this application. We acknowledge limited direct impact on residential and business services, with several notable and important exceptions. A substantial and disproportionate commitment of resources is being made to extend fiber to the least connected and most difficult to reach community anchor institutions in our State: the community college remote education

centers and the public schools and libraries in Hana on Maui, on the island of Molokai and the island of Lanai. These locations are only served by microwave today, as are most of these communities.

In addition, we believe that establishing gigabit and higher connectivity at these 388 community anchor locations in every community throughout the State may be the best lever available at this time to influence the statewide public and policymakers to understand the importance of broadband to our future health, education, social services and economic development. The broad availability of gigabit services in every community will enable transformation possibilities that have been unattainable. And the signature statewide broadband application, the implementation of standard-based high-definition interactive video in every community college, education center and public university will demonstrate in every community on every island how dramatic the impact of high-speed broadband can be.

The 2008 Hawaii Broadband Task Force Report recommended that "Government lead by example in demonstrating the value of broadband to our citizenry, deploying broadband services to the public, and ensuring that we do not leave behind the economically disadvantaged members of our communities who may be inhibited from full participation in the 21st century." Our public partners, the University of Hawaii and its Community Colleges, the Hawaii State Public Library System and the Hawaii Department of Education are all fully committed to this objective. This project may well represent Hawaii's best opportunity to take the necessary steps to show the way forward.

**Vulnerable Populations:**
The service area for this project is the entire State of Hawaii. Hawaii's public schools serve the most vulnerable members of our communities throughout the State: children in the lowest economic sectors, from immigrant families where English is not the first language or even spoken, and from socially dysfunctional families. Hawaii's community colleges have an open-door admissions policy that accepts anyone who has a high school diploma or is over the age of 18. The community college campuses and their remote education centers are the most affordable and accessible sources of education and training to "bootstrap" adults for full participation in the workforce and modern society. Hawaii's public libraries located throughout the State, have been a primary source of Internet access for the vulnerable, including the homeless. These community anchor institutions are Hawaii's well-established and highly-appreciated safety nets for the vulnerable and underserved throughout every island and region of Hawaii. These are organizations for which education, training and outreach to vulnerable populations are core

activities rather than add-on obligations. All the proposed centers have not only embraced, but relish this opportunity to leverage advanced broadband achieve their core missions of improved access to education, information and public services for all.

**Level of Need:**
We realize this is a unique proposal that does not fit well into the BTOP CCI model. Hawaii is a unique and challenging environment, as can be noted from the failure of nearly all the State's proposals in Round 1. We appreciate this opportunity to provide context for the nature of the proposal in light of the environment.

From the perspective of the formal definitions used, Hawaii is generally considered to be fairly well served. One local and four national wireless providers provide 3G (or 4G) services to much of the State. DSL and cable modem services are available to as much as 95% of the population through a duopolistic market controlled by the statewide cable company and the statewide incumbent LEC. Neither is particularly motivated to move beyond single-digit megabit services since they don't have to, although premium services in the teens of megabits (downstream) are available. After a highly leveraged buyout, the incumbent telco is currently in bankruptcy and has limited capability to invest. The local cable franchise of a major national cable company is highly successful simply sticking with basic approaches. There are two facilities-based CLECs with a focus on large enterprises and the federal market, with little impact on consumers. And there is one unusual telco with a narrow mission to serve specific regions defined as "Hawaiian Homelands" using a very large RUS loan (pre-ARRA) that is supported by some of the largest per-household USF payments in the country. Based on a recent NECA ruling, Moody's has reported them to be at risk of bankruptcy as well. The regulatory environment is disjointed at both the State and County levels. Pole ownership and conduit access is commonly wielded as an anti-competitive tool with limited oversight by the PUC. There is literally no carrier in the State of Hawaii that will provide market-based access to dark fiber for enterprises or customers. Even the kinds of "swapping" of fiber between competitors is very unusual in Hawaii, and pricing for high-speed circuits is therefore elevated because of the lack of options and real competition in the marketplace.

The primary applicant chaired the Hawaii Broadband Task Force, which was created by the Hawaii State Legislature in 2007 to recommend how to advance the entire State. With a mix of public and private members, including the dominant providers, legislators and congressional representation, the Task Force proposed a bold vision for world-class services and advanced applications. The first step recommended was to create a consolidated and proactive regulatory

environment that would streamline the current byzantine regulatory environment, advocate for private providers and investment, improve access to and use of public rights-of-way and more. The full report is available at www.hbtf.org, and the Hawaii State Legislature may enact a form of these recommendations this Spring.

Hawaii does enjoy one element of exemplary public policy leadership supporting advanced services: the Cable TV franchise agreements issued by the State Department of Commerce and Consumer Affairs. For nearly two decades, DCCA has taken an expansive view of the "Institutional Network" (INET) provisions of federal law and applied them to support the public sector in Hawaii with direct access to dark fiber. The cable company is required to provide this capability for an institutional network serving the State as well as each County. At the statewide level, this has enabled the University of Hawaii and its community colleges, the statewide Department of Education serving all public K12 education, and the State Executive Branch to collaboratively develop institutional networks using dark fiber on each island. These began with a SONET network on Oahu and, with the University's technical leadership nearly a decade ago, has transitioned to far more capable and expandable WDM networks of varying sizes, speeds and complexities on the four major islands as funding has permitted.

In this environment it was difficult if not impossible to develop a high-quality community anchor institution proposal with another private partner, much less one that could offer the extraordinary cost-effectiveness and low risk of extending the proven INET approach of connecting community anchors through collaboration among the statewide public and public-private partnerships. The re-engineering of the complex INET on Oahu and the extension on all islands to every public school and every public library and every community college site in the State is an incredibly cost-effective and attainable approach to large-scale connectivity of community anchor institutions. We believe we can also work with the Health Care community, subject to the INET provisions, once they develop some sense of their broadband requirements to support Health IT, planning for which is now underway.

We have therefore chosen to propose this unusual approach that recognizes and leverages our unique environment. The requested CCI funding will have an incredible positive impact in every community of the State. While admittedly not exemplary in its impact on consumer services, we believe it will show national leadership in collaboration among community anchor institutions to meet and even exceed the FCC's proposed 2020 goals for community anchor connectivity. And we should note that a substantial and disproportionate commitment of resources is being made

for the least connected and most difficult to reach communities in our State: Hana on Maui and the islands of Molokai and Lanai. We believe that establishing gigabit and higher connectivity at these 388 community anchor locations in every community throughout the State may be the best lever available at this time to influence the statewide public and policymakers to understand the importance of broadband to our future health, education, social services and economic development.

Again, we appreciate NTIA's consideration of this proposal, which we know is unlike the models that have been supported through Round 1 in many other states. Unfortunately, lack of a bold broad vision and the insularity of the market made it impossible for us to find reasonable private partners willing to move in this direction. (One carrier with interisland fiber proposed lease costs of [redacted] per circuit per month AFTER we covered the cost of connecting to our endpoints.) We have therefore focused on what we believe is a world-class community anchor institution proposal that will have immense positive impact on Hawaii. We believe the modest costs represent an extraordinarily high value to the BTOP program with extremely low risk. Ke Ala 'Ike may well have more impact on an entire State than any other proposal before you.

# H. Technology

**Technology Type**

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

Wireline - Fiber-optic Cable

Other:

**Technology Questions**

**Methodology for Area Status:**

All service areas are formally classified as served under the definitions provided. This is of course not particularly relevant when considering the needs of community anchor institutions.

The Hawaii State Department of Education is the only statewide public education system in the United States. The DOE oversees all public schools and public libraries in the State of Hawaii. As it provides public education to all residents of Hawaii, almost all census tracts throughout the

State of Hawaii are served by the schools and libraries. The remaining census tracts that are not served by DOE are those that have no population.

The University of Hawaii system is also the only public community college and university in the State of Hawaii, and thus serves all census tracts throughout the State.

As such, a single service area has been defined as the entire State of Hawaii, excluding specific census tracts that have no population. The only populated portion of the State omitted is the privately owned island of Niihau.

**Description of Network Openness:**

The on-island fiber network infrastructure and direct inter-island circuit connections that will be deployed through this project will remain under the direct management and control of the end-users: the Hawaii State Department of Education, which oversees all the public schools, the Hawaii State Public Library System which oversees all public libraries, and the University of Hawaii, which oversees all the community college, university and related sites. Only traffic to and from these entities will be traverse the network and the network will only connect their sites.

The final interconnection points to the public Internet will be at their respective core locations on Oahu. At this point, upstream connectivity to the Internet will be open to all qualified Internet Service Providers through normal State procurement methods. The public schools and libraries must abide by appropriate content filtering as required through their use of e-Rate opportunities. However all other traffic from any other source will be treated in a fully non-discriminatory manner and traverse the proposed network without interference. Appropriate network management policies are promulgated by each partner to their users.

**System Design:**

The network was designed to provide direct user-managed fiber to every location with scalable WDM equipment initially providing 1Gbps of connectivity to every public school and every public library in the State of Hawaii and 10Gbps to every University of Hawaii campus, including community colleges. Priorities were to ensure scalability as well as equal access to the more remote sites, which are usually short-changed but may be more reliant on connectivity than urban sites.

All K12 public school traffic will be aggregated at the Department of Education's main data center located on Oahu and all public library traffic will be aggregated at their main data center on Oahu. All community college, university and related traffic will be aggregated at the University of Hawaii at Manoa, the main hub for the State's education and research networking activities. Each of these three organizational hubs has its own connection to the public Internet, and the University provides Internet2 connectivity for all.

On-Island Network Design

The UH and DOE project partners, along with the State Executive Branch, currently operate an Institutional Network (INET) fiber ring based on a single pair of dark fiber on each of the four main islands - Kauai, Oahu, Maui and the Big island. This is provided as a requirement of the Cable TV franchise issued by the State to Oceanic Time Warner. The INET currently reaches a small number of schools on each island, most community colleges, public university and related sites and a number of State of Hawaii executive branch locations. No public libraries are currently connected via fiber. The proposed network design leverages this existing infrastructure by expanding access to all remaining public schools, community college and public university sites, and to all public libraries on every island. On Kauai, Maui and the Big Island, which have a modest total number of community anchor institutions, all new sites can be added to the existing single fiber pair ring. On Oahu however, which has many more sites than all the other islands, two new pairs of INET fiber will be deployed - one for the public schools and libraries and the second for the community college, university and related sites. The existing Oahu INET ring will then be able to be expanded by the State Executive Branch to serve additional departmental sites including locations of Hawaii State Civil Defense, the lead agency for public safety in Hawaii. New shared rings will be constructed on Molokai and Lanai, which have very few sites.

The INET currently uses Sorrento Gigamux 3200 series of Wave Division Multiplexors. To reduce costs, ease sparing and maximize the ability to interchange cards and filters, the proposed networks will continue to use this equipment. The 3200 series supports both 1Gbps and 10Gbps channels on the standard 16-channel (DWDM) filter set, allowing easy upgrading. The 3200 series also supports an 8-channel CWDM filter set, which will be used to support spur sites on the network. As needs grow, the 3200 series also supports a 40-channel wavelength plan, allowing for significant future growth in density, and both 40Gbps and 100Gbps channels can

traverse these units, so network-wide equipment changes will not be required to upgrade some sites to next-generation speeds.

At each site, routers will connect to the agency's optical waves in each direction to provide redundant Layer 3 routing over diverse optical paths. This will create a highly resilient network. Additionally, VLANs across the network will allow each entity to split their networks as needed – even or potentially support multi-agency sites. The community colleges, university and public libraries will continue to use Cisco switches and routers to match their currently installed base of equipment. The public schools will continue to utilize 3Com switches and routers to match their installed base of equipment. All agencies will continue to interconnect at Layer 3.

Interisland Network Design

The University currently operates an OC3 (155Mbps) interisland microwave network, which is clearly inadequate for the requirements of the upgraded network. Oceanic Time Warner has only one pair of fiber connecting the four main islands. The project partners were unsuccessful in obtaining direct access to interisland dark fiber. However, under the terms of their cable franchise Oceanic is required to share the use of their interisland pair with the State for INET purposes. This can be provisioned for the INET as 10Gbps Ethernet circuits.

The inter-island design calls for the installation of an additional two 10Gbps Ethernet circuits by Oceanic between Oahu and each major island. The public schools and libraries will share a 10Gbps circuit, and the community colleges, university and related sites will utilize the other circuit for most connections. At each of these key interisland hub locations a 10Gbps switch will internet connect the on island INET network to the inter-island circuits.

The only fiber to the less-populated islands of Molokai and Lanai is owned by Wavecom Solutions, a facilities-based CLEC. They have agreed to build out fiber to the INET hubs on each island and provision 10Gbps Ethernet circuits for shared use by the Ke Ala 'Ike partners.

Network Design Conclusion

By installing dark fiber to all locations around the State and running both 1Gbps and 10Gbps circuit over the fiber pairs, the proposed network is designed to be flexible and scalable. Leveraging existing equipment and expertise reduces the cost of deployment and reduces project

risks. Reliability and redundancy are provided through the fiber ring configuration and redundant Layer3 routing. The dramatically increase bandwidth and pervasive reach will enable the deployment of new services and applications for all residents of all islands in the State of Hawaii.

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

No

# I. Project Budget

| **Project Budget** | | |
|---|---|---|
| | **Federal Grant Request** | **Match** |
| **Last Mile** | 0 | 0 |
| **Middle Mile** | 33,972,800 | 8,493,200 |
| **Total** | 33,972,800 | 8,493,200 |

**Project Budget Total:** $42,466,000

**Match Percent:** 20.0%

**Projects Outside Recommended Funding Range:**

- 

| **Outside Leverage** | |
|---|---|
| **Applicant is providing matching funds of at least 20% towards the total eligible project costs?** | Yes |
| **Matching cost detail** | A full 20% of matching funds, $8,493,200, will be provided on a cash basis. This will include $4m from the State of Hawaii from fees associated with the cable franchise agreement, $3.67m from the University of Hawaii from non-federal funding dedicated to Hawaii institutional network development, and $823,200 from the Hawaii |

| | |
|---|---|
| | State Public Library System from private philanthropy for networking and public access. |
| **Unjust enrichment** | This project has not received and has not applied for any Federal support for non-recurring costs in the service area that is being applied for. |
| **Disclosure of federal and/or state funding sources** | A companion Public Computer Center proposal, "Access for All: Hawaii Statewide Public Computer Centers" (Easygrants #5595) has been submitted: $2,436,700 (including 20% match)<br><br>An NSF ARI-R2 proposal for connectivity between Hawaii's Research & Education Network and the national cyberinfrastructure has been submitted: $10m<br><br>An NSF EPSCoR RII-C2 proposal for intra-state research network connections has been submitted: $1m |
| **Budget reasonableness** | The project budget includes provisioning direct fiber connectivity at gigabit speeds or higher to every public school, every public library, every community college and education center, and every public university in the entire State of Hawaii and implementation of a signature high bandwidth broadband application. The overall project cost of under $43m (including the 20% match) to provide this world-class connectivity to 388 community anchor locations is a remarkable bargain given the impact this project will have on an entire state with its population spread across 6 islands.<br><br>Most of the fiber will be installed by Oceanic Time Warner "at cost," as required by their franchise agreement and enforced by the State DCCA, which oversees their operation. Specific fiber segments on the islands of Molokai and Lanai will be installed by Wavecom Solutions to interconnect the on-island INETs with their existing interisland fiber, the only such capability available to those islands. Prices have been compared against past practice to ensure budget reasonableness.<br><br>All existing WDM equipment will be re-used, which will result in a substantial reduction of costs (and risks) over a complete "Greenfield" implementation. In support of the current lower-speed and less |

| | |
|---|---|
| | pervasive INETs, some locations may have a chassis and some may have a subset of the cards needed (DWDM filters and CPE. A limited number of "spur" locations serving only a single entity will not initially be deployed with WDM for connectivity, but will be implemented with simpler 1000Base-LX fiber transceivers to reduce costs.<br><br>Currently, the public libraries all have T1 or slower connections and lack the modern routers and switch ports needed to terminate the new gigabit Ethernet circuits, so at each public library Location a new router will be installed to accept the gigabit Ethernet connections from the WDM equipment.. Similarly, as the community college, education center, university and related sites currently use 1Gpbs connections or less, or lack available slots, 10Gbps Ethernet routers and line cards will be required to enable use of the new 10Gbps Ethernet links. All DOE schools except for those on Molokai and Lanai currently have routers with the ability to terminate the gigabit Ethernet connectivity so only Molokai and Lanai schools will require new routers. High definition interactive videoconferencing equipment (cameras, monitors, etc) will be installed at all community college, education center and university sites to support the signature application, high definition interactive video for distance learning, in order to drive and promote broadband and its benefits across the state<br><br>Heavily discounted State price list costs were used for the WDM equipment, and all router and videoconferencing equipment prices are based on the substantial discounts available via educational discounts, large volume discounts and state price lists. |
| **Demonstration of need** | The federal assistance requested is just under $34m, the most we could request given the matching funds available. The State's current financial crisis is driving hundreds of millions of dollars in cuts to the project partners, which translates into operating budget reductions of 10%-30%, pay cuts for employees and layoffs in every agency. There is absolutely no possibility of this project being funded in the foreseeable future without federal or other extramural assistance. |

| | |
|---|---|
| | The partners are willing and able to support the operating costs of this project – in some cases by using funds currently allocated for more costly and less capable services. But without the infusion of one-time ARRA funding we would simply continue to make incremental and opportunistic improvements where possible, with less urgency and over a longer period of time. The disadvantages of that approach would be that we would not be able to include all sites for many many years, if at all. We would have to leave lower speed connections in place at many locations and would not be able to provide the leadership and support our communities need from their anchor institutions. And we would have to omit the most underconnected areas -- Hana, Molokai and Lanai -- since those are the most expensive to reach with fiber. (The private sector providers have indicated they do not see a business case even for the 20% match that would be required if they were to apply directly for funding.) It is only the public service mission of the project partners that makes this project feasible at all.<br><br>The requested federal support would allow the entire State of Hawaii to make a dramatic leap forward. We believe Hawaii would be the first state in the nation to provision gigabit capability to every community college and education center, every public university, every public school and every public library. This would be even more remarkable given Hawaii's unique geographic and market challenges. |

**Funds to States/Territories**

| States | Amount of Federal Grant Request |
|---|---|
| Hawaii | 33,972,800 |

**Funds to States/Territories Total:** $33,972,800

| | |
|---|---|
| **Submitted Date:** 3/25/2010 9:10:51 PM | **Easygrants ID: 5786** |
| **Funding Opportunity:** Broadband Technology Opportunities Program | **Applicant Organization:** UNIVERSITY OF HAWAII SYSTEMS |
| **Task:** Submit Application - BTOP | **Applicant Name:** Dr. David Lassner |

# J. Historical Financials

| Matching Funds | | | |
|---|---|---|---|
| | **2007** | **2008** | **2009** |
| **Revenue** | 1,396,990,000 | 1,461,432,000 | 1,495,134,000 |
| **Expenditures** | 1,184,094,000 | 1,350,459,000 | 1,457,728,000 |
| **Net Assets** | 1,578,270,000 | 1,689,243,000 | 1,726,649,000 |
| **Change in Net Assets from Prior Year** | 212,896,000 | 110,973,000 | 37,406,000 |
| **Bond Rating (if applicable)** | A+ | A+ | AA- |

# K. Project Readiness

**BTOP Organizational Readiness**

Each of the University of Hawaii (UH) System, including all community colleges in Hawaii, the Hawaii State Department of Education (DOE) and the Hawaii State Public Library System (HSPLS) already manages a statewide network connecting all of their respective locations. The UH and DOE have worked together for decades to optimize their networking capabilities, and the relationships are close and mature at both technical and executive levels. The HSPLS is a relatively new partner, but is highly motivated at the highest level to join the UH and DOE as they attempt the quantum leap from T1 and kilobit networking to pervasive gigabit. Both the UH and DOE technical staff are committed to assist the HSPLS staff in implementing and operating their new network. From a technical, administrative and project management perspective, the University is often the lead among the participating institutions on large statewide projects. As can be seen from the letters of support, both the operational partners and the Governor are grateful for the University's leadership in this attempt to dramatically move the entire State forward.

Similarly, the relationships with the core private partners are strong and mature. The UH and DOE have been working with Oceanic Time Warner and with the State of Hawaii on lower speed and less pervasive INET deployment for many years. All parties understand the others' needs and capabilities. UH has also worked with the predecessor corporations that are now

Wavecom Solutions for over a decade to implement unique educational partnerships and some of the very first high-speed network solutions in Hawaii through unique partnership arrangements.

The University of Hawaii Information Technology Services (ITS) unit will have primary responsibility for the overall design, engineering, planning and implementation of the new network, as is the case with the current INET. Major changes to shared portions of the INET are planned, scheduled and coordinated among all partners and this will continue on the dramatically expanded network. ITS currently manages the most complex (non-DoD) enterprise network in Hawaii, which uses a variety of technologies to span all 6 major Hawaiian Islands as well as direct high-speed connections to the U.S. mainland and Asia-Pacific, and to the commodity Internet. ITS also manages the only neutral Internet exchange in the State. ITS runs a 24x7 IT Operations Center (ITOC) that monitors all aspects of the network, creates trouble tickets and manages the problem resolution. The ITOC works closely with the DOE's technical staff as well as the State's to manage and run the shared INET infrastructure on all islands, and similarly collaborate with the HSPLS.

**Construction and Vendor Contracts**

Oceanic Time Warner will be contracted out to install and test the fiber connection to almost all sites and create the fiber ring/path around the islands. This is a requirement of their cable franchise agreement and the partners have extensive experience in contracting for these projects. A letter from Lance Uno, Director of OSP Engineering and Construction at Oceanic Time Warner cable is included in the upload section, detailing his readiness to assist in completing the network as proposed. As required by their cable franchise and instantiated in the past (at lower speeds), Oceanic will also provide interisland connectivity among Oahu, Kauai, Maui and the Big Island.

Wavecom Solutions will provide fiber connections from their interisland network serving Molokai and Lanai to the INET hubs on each of these islands. This will provide comparable connectivity for our smallest island populations, who are traditionally grossly underserved in this type of statewide project. Negotiations with the CEO of Wavecom are encapsulated in the uploaded letter from Ken Hensarling, their Head of Business Development.

All WDM and networking equipment will be installed, configured and managed by the respective IT staff of the Department of Education, Hawaii State Public Library System and University of Hawaii (including community colleges) in their organizational locations.

**Customer Base**

The Hawaii State Department of Education is a single statewide school district for all public schools, including public charter schools, in Hawaii. The University of Hawaii System is home of all community colleges and their education centers and public universities in Hawaii. These two institutions serve over 300,000 students, faculty and staff on a daily basis, about 25% of the State. And the Hawaii State Public Library System is responsible for every public library in Hawaii and provides public service throughout the State.

Through these three statewide anchors, the project will reach every community on all six islands. It is therefore not an exaggeration to claim that the customer base for this proposal encompasses the entire 1.2m residents of the State of Hawaii. They or their families are involved in public K12 education, access information and related services at their public library, or are served by the education, training, research and service of community colleges and public universities.

**Licenses, Regulatory Approvals and Agreements**

No Licenses or regulatory approvals are required for this network.

**SPIN Number**

# L. Environmental Questionnaire

**Project Description**

No construction activities will occur, other than running new fiber cables on existing utility poles (which may need reinforcement/replacement) and conduits to connect sites to the network. All work will be conducted in accord with applicable regulatory and environmental requirements and procedures, which the contractors understand and routinely follow on a daily basis.

**Property Changes**

No property will be cleared, excavated, fenced or disturbed by this project.

**Buildings**

No buildings or other structures will be constructed or modified.

**Wetlands**

No wetlands will be affected.

**Critical Habitats**

No threatened, endangered or candidate species will be impacted.

**Floodplain**

Existing sites (schools, libraries, colleges) are located within 100- or 500-year floodplains. However, no project-related "construction" activities will occur at any of the sites.

**Protected Land**

No such properties are affected.

**Coastal Area**

The entire State of Hawaii is within the Hawaii Coastal Zone Boundary.

**Brownfield**

None of the sites to be connected are located within brownfield sites.

| **Submitted Date:** 3/25/2010 9:10:51 PM | **Easygrants ID: 5786** |
|---|---|
| **Funding Opportunity:** Broadband Technology Opportunities Program | **Applicant Organization:** UNIVERSITY OF HAWAII SYSTEMS |
| **Task:** Submit Application - BTOP | **Applicant Name:** Dr. David Lassner |

## Uploads

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

| Upload Name | File Name | Uploaded By | Uploaded Date |
|---|---|---|---|
| Service Offerings and Competitor Data | CCI_Service_Offerings_Competitor_Data-20100325.xls | Lassner, David | 03/25/2010 |
| Network Diagram | BTOP-Submittal - Network Diagram - 20100317.pdf | Lassner, David | 03/17/2010 |
| Build Out Timeline | CCI_Build-out-Timeline-20100325.doc | Lassner, David | 03/25/2010 |
| List of Community Anchors and Points of Interest | CCI_Anchor-Detail-20100325.xls | Lassner, David | 03/25/2010 |
| Management Team Resumes and Organization Chart | CCI_Management-Team-and-Org-Chart-20100319.pdf | Lassner, David | 03/19/2010 |
| Government and Key Partnerships | CCI_Government-and-key-partnerships-20100325.pdf | Lassner, David | 03/25/2010 |
| Historical Financial Statements | CCI_UH-Consolidated-Financial-Statements-20100315.pdf | Lassner, David | 03/17/2010 |
| Budget Narrative | CCI_Budget-Narrative-20100325.doc | Lassner, David | 03/25/2010 |

| | | | |
|---|---|---|---|
| Detailed Budget | CCI_Detailed-Budget-20100324.xls | Lassner, David | 03/25/2010 |
| Pro-forma Forecast | CCI_Pro_Forma_Projections - 20100325.xls | Lassner, David | 03/25/2010 |
| Subscriber Estimates | CCI_Subscriber-Estimates-20100319.xls | Lassner, David | 03/19/2010 |
| Dashboard Metrics | CCI_Key-Metrics-Dashboard-20100325.doc | Lassner, David | 03/25/2010 |
| Service Area Data | CCI_Service-Areas-20100317.xls | Lassner, David | 03/18/2010 |
| Network Maps | BTOP-Network-Maps-20100319.pdf | Lassner, David | 03/19/2010 |
| BTOP Certifications | CCI_BTOP-Authentication-and-Certifications-20100315.pdf | Lassner, David | 03/17/2010 |
| SF-424 C and D | CCI_SF424C-D-Form-20100324.pdf | Lassner, David | 03/25/2010 |
| Supplemental Information | CCI_Attachment-1-UH-Indirect-Costs.pdf | Lassner, David | 03/18/2010 |