HCR 189 Participants and Broadband Assistance Advisory Council (BAAC)

Report on

House Concurrent Resolution No. 189, H.D. 1, S.D. 1

Prepared by

Cable Television Division
Department of Commerce and Consumer Affairs
State of Hawaii

December 2015

HCR 189
Broadband Assistance Advisory Council and Participants

Chair:
Catherine Awakuni Colón
Director, DCCA

Senator Rosalyn Baker
Senator Gilbert Keith-Agaran
Representative Derek Kawakami
Representative Kyle Yamashita
Donald Jacobs
County of Hawaii
James Miwa, OIMT
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City & County of Honolulu
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Karen Wataru-Nakaoka,
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Marc Togashi
Hawaii Tourism Authority
Jon Okudara (for)
Verizon Wireless
Rudy Tamayo
Hawaiian Electric Company
Tracy Ban, B&F
Mary Alice Evans, DBEDT
Victoria Garcia, DOD
Arnold Kishi, ETS

December 2015

Chair's Message

Aloha,

We are pleased to submit this Report as requested by House Concurrent Resolution Number 189, H.D. 1, S.D. 1 (HCR 189) of the 2015 Legislature on behalf of the Broadband Assistance Advisory Council (BAAC) and participants. It is our hope that the report includes findings and recommendations that may help to guide future actions to promote and facilitate broadband infrastructure deployment across the State.

I would like to extend my gratitude to the BAAC, and the additional stakeholders who participated, for their contributions to and review of this Report and the attached Broadband Assessment. A special thanks goes to the Hawaii Lodging & Tourism Association and the Hawaii Tourism Authority for their assistance in distributing the Resort Area Broadband Survey to businesses in the resort areas named in HCR 189. I would also like to extend my gratitude to the broadband providers who responded to requests to review their respective coverage maps that are attached to the Broadband Assessment. Because of the assistance received, we have been able to finish this Report on time and to provide a strong base of information for the stakeholders identified in the Broadband Assessment who may best carry planning forward for the named resort areas.

I would also like to express our appreciation to the Department of Transportation and the Department of Education for their ready response to our request for information on their broadband planning efforts for inclusion in the Broadband Assessment.

The Department of Commerce and Consumer Affairs (DCCA) looks forward to continuing its collaborative work with both public and private stakeholders on policies and programs to facilitate and expand broadband access across the State. This includes work towards the best practices identified in the Broadband Assessment, as well as the development of a comprehensive plan, to best utilize and leverage the Department's resources to facilitate access for those residents in the unserved and underserved rural areas across the State who remain without high speed access.

Catherine P. Awakuni Colón

CATHERINE P. AWAKUNI COLÓN, CHAIR
Broadband Assistance Advisory Council

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Broadband Assistance Advisory Council

Senator Rosalyn Baker, State Senate
Senator Gilbert Keith-Agaran, State Senate
Representative Derek Kawakami, State House of Representatives
Representative Kyle Yamashita, State House of Representatives
Ms. Catherine Awakuni Colón, Director, Department of Commerce and Consumer Affairs (Chair)
Mr. Donald Jacobs, Director of Information Technology, County of Hawaii
Mr. James Miwa, IT Service Operations Officer, Office of Enterprise Technology Services, State of Hawaii (for Mr. Todd Nacapuy, State Chief Information Officer, Office of Enterprise Technology Services, State of Hawaii)
Mr. Tony Velasco, Systems Analyst, City & County of Honolulu
Mr. Garret Yoshimi, Vice President and Chief Information Officer, University of Hawaii
Mr. Kiman Wong, Director – Wireless, Home Phone, IntelligentHome and Government Relations, Oceanic Time Warner Cable (for Mr. Gregg Fujimoto, President, Oceanic Time Warner Cable)
Mr. Ian Kitajima, Director, Oceanit
Ms. Sharene Urakami-Oyama, District Sales Manager, AT&T
Mr. Jason Fujita, Vice President – Consumer Sales & Product Marketing, Hawaiian Telcom (for Mr. Scott Barber, President and Chief Executive Officer, Hawaiian Telcom)

Additional Participants

Mr. Brandon Raines, Information Technology Manager, County of Kauai
Ms. Karen Wataru-Nakaoka, Executive Director, Hawaii Lodging & Tourism Association
Mr. Marc Togashi, Vice President - Finance, Hawaii Tourism Authority
Mr. Jon Okudara (for Verizon Wireless)
Mr. Rudy Tamayo, Principal Electrical Engineer, Hawaiian Electric Company
Mr. Tracy Ban, Administrative Services Officer, Dept. of Budget & Finance, State of Hawaii
Ms. Mary Alice Evans, Deputy Director, Dept. of Business, Economic Development & Tourism, State of Hawaii
Ms. Victoria Garcia, Statewide Interoperability Coordinator, Office of Enterprise Technology Services and Dept. of Defense, State of Hawaii
Mr. Arnold Kishi, Program Advisor, Office of Enterprise Technology Services, State of Hawaii

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I. Introduction and Background

The 2015 Legislature adopted House Concurrent Resolution Number 189, House Draft 1, Senate Draft 1 (HCR 189), which requests broadband planning activities by the Broadband Assistance Advisory Council (BAAC), an advisory board to the Department of Commerce and Consumer Affairs (DCCA), and additional representatives from (1) the Department of Business, Economic Development & Tourism; (2) the Hawaii Tourism Authority (HTA); (3) the Department of Budget and Finance; (4) each of the Mayor's offices for the County of Hawaii, County of Maui, County of Kauai, and the City and County of Honolulu; (5) a nonprofit organization that represents the interests of the Hawaii hotel industry; and (6) Hawaiian Electric Company.[1]

Specifically, HCR 189 requests that the BAAC and additionally named participants:

1. Create a master plan to provide universal high speed broadband access in resort areas and other areas of importance throughout Hawaii including, but not limited to, Honolulu International Airport and Hawaii public schools;

2. Develop specific strategies for the establishment of universal high speed broadband access throughout Waikiki, resort areas, and other areas of importance throughout the State, including but not limited to Kaanapali, Maui; Kohala, Hawaii; Hanalei, Kauai; Honolulu International Airport; and Hawaii public schools; and

3. Identify best practices to establish a database that identifies current and prospective projects for deploying broadband.

HCR 189 further requests that the BAAC provide a written report of its findings and recommendations, including any proposed legislation, to the Legislature no later than twenty (20) days before the convening of the Regular Session of 2016.

In May 2015, DCCA invited the Hawaii Lodging & Tourism Association (HLTA) to represent the interests of the Hawaii hotel industry, and requested that the remaining named agencies and entities in HCR 189 designate representatives for participation

[1] HCR 189 specifically requested that the BAAC membership be expanded to include these representatives and directs that their necessary expenses be reimbursed. However, DCCA is without authority to provide reimbursement for members not appointed by statute.

under HCR 189. DCCA then convened the BAAC and the additional participants[2] (HCR 189 Participants and BAAC) for two meetings held on July 23, 2015 and August 19, 2015. Copies of the minutes of the meetings are attached to this Report as Appendix 1.

For the kick-off meeting held on July 23, DCCA provided the group with a Broadband Assessment work plan. To address the various issues raised in HCR 189 in the timeframe allowed, the HCR 189 Participants and BAAC were requested to assist with the creation of a Broadband Assessment for the four (4) resort areas named in HCR 189. Also as part of the Broadband Assessment, DCCA would reach out to the Department of Transportation (DOT) and the Department of Education (DOE) regarding broadband inventory and planning for the Honolulu International Airport and the Hawaii public schools, respectively, and would research best practices related to establishment of a broadband projects database for review by the HCR 189 Participants and BAAC.

This Broadband Assessment and the initial work completed towards a Broadband Master Plan is discussed in the following sections, and the DCCA-prepared Broadband Assessment is attached to this Report as Appendix 2 on behalf of the HCR 189 Participants and BAAC. Having provided the contents of the report to the HCR 189 Participants and BAAC for review and comment, DCCA submits the following findings and recommendations, which incorporates discussion and comments provided by the HCR 189 Participants and BAAC.

II. Findings and Recommendations

- State Broadband Master Plan: For creation of a State Broadband Master Plan, the Legislature should allow approximately two (2) years for completion and additional staffing for the lead agency or additional funding for the retention of an outside consultant.

- Identified resort areas: The Broadband Assessment provides a base inventory and roadmap based upon information gathered to date. Additional, follow on planning is required. Local planning teams should be formed to lead and carry data gathering, planning, and implementation efforts forward.

- Honolulu International Airport: For the Honolulu International Airport and the four (4) other major airports, planning for free WiFi services has been completed by DOT, with a projected start date for concession of May 1, 2016.

[2] Additional government stakeholders, included on the participant list at the beginning of this Report, also chose to participate.

- Hawaii public schools: All schools have Internet access, WiFi access in instructional areas, and all but two (2) of the schools have fiber optic Institutional Network (INET) connections. DOE is working on plans to upgrade their network to provide increased bandwidth to each of the schools.

- Broadband Projects Database: Identified best practices to create, support and enhance a broadband projects database should be further reviewed by the BAAC and other stakeholders for future recommendation or implementation.

A. Broadband Master Plan/Roadmap Development

As noted above, the HCR 189 Participants and BAAC, along with DCCA, have taken initial steps to address the request to create a master plan to provide universal high speed broadband access in various target areas of the State. It was recognized early on in the process that putting together a complete Broadband Master Plan would take longer than the several months between the adoption of HCR 189 and the start of the 2016 legislative session. DCCA thus prepared a Broadband Master Plan Roadmap that proposed a process and framework for developing a Broadband Master Plan, and requested that the HCR 189 Participants and BAAC specifically assist with the creation of a Broadband Assessment for the four (4) resort areas named in HCR 189, a material component of a Master Plan. Given that communications infrastructure in the HCR 189 target areas has traditionally been handled by different agencies with authority over their respective areas, i.e., DOT for the airports, DOE for the Hawaii public schools, and the counties for resort areas, DCCA reached out to DOT and DOE regarding their broadband inventory and planning for the airports and the State's public schools, respectively, and, going forward, recommends local planning groups lead resort area broadband planning for their respective communities.

DCCA, with the assistance of the HCR 189 Participants and BAAC, then undertook the initial and intermediate steps identified in the master plan process, including: 1) providing a background and understanding of broadband; 2) collecting data on the existing broadband availability in the target areas ("what we have today"); and 3) collecting inputs from the BAAC and on service gaps and improvements to broadband service and availability in the future ("what we want to have and where we want to be in terms of broadband in the future"). DCCA also researched best practices related to establishment of a broadband projects database, for review and comment by the HCR 189 Participants and BAAC. The resulting Broadband Assessment completed, attached to this Report as Appendix 2, contains a Master Plan Roadmap with work to date on the

inventory of current broadband supply and infrastructure, identification of existing plans to meet broadband needs, and identification of remaining gaps and lead agencies for future planning work. To complete a report for timely submission prior to the start of the 2016 legislative session, DCCA prepared and circulated a draft of this Report to the HCR 189 Participants and BAAC on November 24, 2015, and requested that comments be submitted on a Report Comment Form for attachment to this Report. Because DCCA was not able to convene a meeting of the HCR 189 Participants and BAAC before submission of this Report, DCCA submits the following findings, conclusions and recommendations, which incorporates discussion and comments provided by the HCR 189 Participants and BAAC.

B. Specific Areas for Broadband Infrastructure Deployment

1. Resort Areas

The consensus of the HCR 189 Participants and BAAC was that wireline, cellular, and WiFi access should be reviewed for the named resort areas, and that the best source of information on broadband service coverage and issues would be the providers and the local area businesses. Based upon discussions at the HCR 189 Participants and BAAC July 23 meeting and follow up with County of Kauai representatives, the areas investigated also included non-resort areas around South Kohala and Hanalei.

For the Waikiki resort area, Ms. Catherine Awakuni Colón (Chair) noted the June 5, 2015 presentation made to the BAAC by Mark Wong, Information and Technology Director for the City & County of Honolulu (City), on the City's Waikiki WiFi pilot project being undertaken with Oceanic Time Warner Cable. Mr. Kiman Wong of Oceanic Time Warner Cable was asked to share general details of the project. The Chair noted that the City's pilot project could be used to create a model that could be used by the other counties to similarly provide WiFi access in their resort areas.
Information for the resort areas was sought and received through the following approaches:

(1) Requests to the HCR 189 Participants and BAAC through Data Collection Form

The HCR 189 Participants and BAAC were sent available coverage maps for the resort areas, and asked to (1) review and investigate coverages shown in maps for each type of service (i.e., wireline, cellular and WiFi), utilizing their personal knowledge and experience and their contacts with users in the target areas; (2) provide additional

coverage information, and known gaps in service or any known infrastructure needs to provide access for each type of service; (3) investigate and report back on any existing broadband plans for the target areas for each type of service to be addressed; (4) provide comment on whether a project like the City's Waikiki WiFi pilot project is one that should be considered for use in the other target areas; and (5) provide input on stakeholders, including private landowners and hotels in the respective target areas, who should be included to carry planning forward. *See* Broadband Assessment at Section 3.4 and Appendix F.

(2) Requests to the wireline and wireless providers for coverage information

Coverage maps or verification of information was sought from wireline and wireless providers. *See* Broadband Assessment at Section 3.2.1 and Appendix B.

(3) Resort Area Broadband Survey to hotels and other resort area businesses

Based upon the discussions of the HCR 189 Participants and BAAC, a survey was developed with their input to collect data from the resort areas about Internet service provided, and to identify interest and issues related to a government sponsored WiFi program like the City's Waikiki WiFi pilot program (Resort Area Broadband Survey).

A key objective of the survey identified was to understand current infrastructure and the impact to revenue streams from a public WiFi program, and to give businesses the opportunity to voice concerns so that any program implemented could achieve a balance between providing a desired service and not impacting the revenue streams of businesses in the area. A suggested balance was to provide a base, limited capacity service that could benefit small businesses while still allowing businesses to offer a higher service to create a revenue stream leveraged off of that base service. This and all other comments and concerns raised by the HCR 189 Participants and BAAC are noted for consideration by the Legislature if a free universal WiFi service is desired, or by the eventual government agency implementing such a system. *See* Broadband Assessment at Section 3.3.1.

The Resort Areas Survey was sent to hotels and businesses identified by HCR189 Participants and BAAC, the HLTA membership list, and the HTA's contact list. HLTA and HTA volunteered to send out a letter from DCCA requesting participation in the survey and the Broadband Resort Area Survey link. The Broadband Resort Area Survey remained open for a two-week period from September 22, 2015 to October 7, 2015. *See* Broadband Assessment at Section 3.2.1.3 and Appendix C, D.

Findings and Recommendations

The Broadband Assessment contains a broadband inventory for the resort areas. *See* Broadband Assessment at Section 3.2.1. Wireline and Wireless Broadband Coverage maps reviewed by providers, as noted, are attached to the Broadband Assessment as Appendix B. HCR 189 Participants and BAAC's responses to the coverage maps and Broadband Service Availability, Gaps, and Plans Data Collection Form are attached to the Broadband Assessment as Appendix F. Results of the Resort Area Broadband Survey are attached to the Broadband Assessment as Appendix C and Appendix D.

It is recommended that local planning teams (with stakeholders suggested in the Broadband Assessment) be used to identify remaining gaps and to carry broadband planning forward for each of the respective resort areas led by a county official selected by the county in which the resort area is located. *See* Broadband Assessment at Section 3.4.1. These local planning teams would be the best armed to gather more granular information, assess options, gain local participation and buy-in, identify and respond to local concerns, and determine the best solutions and course of action to be taken to address the issues in their respective communities. Such planning may include a government-sponsored WiFi program similar to the City's Waikiki WiFi model set out in Section 3.3.1 of the Broadband Assessment, if such a program is desired by the stakeholders in a specific resort area and supported by the county in which the resort area is located. Other considerations suggested by the HCR 189 Participants and BAAC for such a program are included in that same section.

The Broadband Assessment may be circulated to the appropriate county officials in each county for consideration and action in accordance with their county priorities.

2. Honolulu International Airport

DCCA reached out to DOT with respect to broadband needs for the Honolulu International Airport. At the time of DCCA's initial contact, DOT informed DCCA that it was currently working on a Request for Proposals (RFP) to identify a contractor/provider to provide needed Wi-Fi services for the five (5) major airports of the State, including the Honolulu International Airport. DOT subsequently informed DCCA of issuance of the RFP on September 15, 2015.

Findings and Recommendations

DOT issued a RFP to operate its planned Wi-Fi system for the State's five (5) major airports. As more fully described at Section 3.3.2 of the Broadband Assessment, DOT is in the process of seeking a "Wi-Fi System Concession" that will offer free Wi-Fi services to the public at a minimum of 5 megabits per second (Mbps) download speed

and for a minimum of thirty (30) minutes, sufficient for web browsing and email access. Current projected start date for the concession is May 1, 2016.

DCCA will assist with future broadband planning, where requested and consistent with DCCA's duties and authority, and will continue to engage with DOT on other possible State broadband advancement activities, such as the Broadband Utilities Project Coordinator best practice discussed further below.

3. Hawaii Public Schools

DCCA reached out to DOE with respect to its current broadband supply and infrastructure and future broadband planning for the Hawaii public schools. DOE responded by providing its current broadband availability and future plans.

Findings and Recommendations

As more fully described at Sections 3.2.2 and 3.3.3 of the Broadband Assessment, all Hawaii public schools have Internet access and all schools also have WiFi access in instructional areas. DOE is working on plans to upgrade parts of the State's INET that comprise part of the DOE network to allow it to provide increased bandwidth to each of the schools. Some of these plans involve the State's other INET Partners (DCCA, the University of Hawaii, and the Department of Accounting and General Services, Information and Communication Services Division).

C. Broadband Projects Database Best Practices

HCR 189 requested identification of best practices to establish a broadband projects database of current and prospective projects. Based upon its research of federal and nationwide practices, DCCA identified six (6) complementary best practices to create, support and enhance a broadband projects database, which may reduce deployment time for broadband infrastructure and maximize state and county resources. Most of these recommendations had been previously made in the Capacity Building Project Plan prepared by DCCA in 2013, with review and input by the BAAC. The HCR 189 Participants and BAAC were sent information on the identified best practices for their review on October 22, 2015. No comments have been submitted to date.

DCCA, thus, recommends that these best practices be further reviewed by the BAAC and other stakeholders at the next BAAC meeting. If supported in concept, these best practices will be more fully explored and developed for future recommendation or implementation. This could include setting priorities in implementation, assessments on

statutory amendments or additional funding that may be required, and other details such as leads on implementation.

The identified best practices, more fully described in Section 3.5.1 of the Broadband Assessment, are:

Best Practice 1: Infrastructure Projects Database and Dashboard
Develop an online deployment and coordination system database to provide advance notice of state and local infrastructure projects and to allow coordination of broadband infrastructure deployment requiring access to underground rights-of-way. Create a publicly viewable online dashboard that includes project descriptions, project schedules and project status.

Best Practice 2: Permit Inventory
Create a publicly viewable Permitting Inventory to provide an online searchable database of permitting and review information.

Best Practice 3: Broadband Inventory
Create a Broadband Inventory to provide a database of State agency documentation related to broadband deployment.

Best Practice 4: "Dig Once" Policies and Practices
Identify, communicate, coordinate and promote successful state and local policies and practices that minimize the number and scale of excavations when installing telecommunications infrastructure in rights-of-way to facilitate the deployment of broadband.

Best Practice 5: Online Project Notification System
Utilize an established national online notification system for infrastructure projects requiring pole attachments and related infrastructure and facilities.

Best Practice 6: Broadband Utilities and Projects Coordinator
Establish a broadband utilities coordinator position to facilitate and coordinate broadband infrastructure projects utilizing government roadways and rights-of-way.

III. Conclusion

Should the counties desire to undertake broadband infrastructure initiatives within their respective resort areas, including those steps recommended in this report, DCCA is

willing to provide appropriate assistance to facilitate the deployment of communications infrastructure throughout the various counties. In addition, DCCA continues to be available to assist both the DOT and DOE, where appropriate, with their ongoing work to improve broadband infrastructure in the State's airport facilities and Hawaii's public schools.

DCCA thanks the HCR 189 Participants and BAAC, as well as its own staff, for the time and attention dedicated to reviewing and contributing to both this Report and the Broadband Assessment (Appendix 2).

APPENDIX 1

HCR 189 Planning Group Meeting Minutes

HCR 189 PLANNING GROUP MEETING
BROADBAND ASSISTANCE ADVISORY COUNCIL (BAAC)
DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS (DCCA)
STATE OF HAWAII

MINUTES OF MEETING

Date:	Thursday, July 23, 2015
Time:	9:00 a.m. – 10:00 a.m.
Place:	King Kalakaua Building, 335 Merchant Street, Queen Liliuokalani Conference Room, Honolulu, Hawaii 96813
BAAC Members Present:	Chair Catherine Awakuni Colón – DCCA Representative Kyle Yamashita James Miwa (for Todd Nacapuy) – Office of Information Management and Technology (OIMT) Don Jacobs – County of Hawaii Tony Velasco – City & County of Honolulu Garret Yoshimi – University of Hawaii (UH) Sharene Urakami-Oyama (via call-in) – AT&T Mobility Kiman Wong (for Gregg Fujimoto) – Oceanic Time Warner Cable (OTWC) Shannon Sandry (for Scott Barber) – Hawaiian Telcom Ian Kitajima – Oceanit
HCR 189 Participants Present:	Mary Alice Evans (for Luis Salaveria) – Dept. of Economic Development and Tourism Marc Togashi – Hawaii Tourism Authority Tracy Ban – Dept. of Budget and Finance Elton Ushio – County of Kauai, Civil Defense Karen Wataru Nakaoka – Hawaii Lodging and Tourism Assoc. (HLTA) Norman Nakagawa (for Rudy Tamayo) – Hawaiian Electric Company
Other Participants Present:	Victoria Garcia – Dept. of Defense (DOD) Dolores Cook – DOD Arnold Kishi – OIMT Jon Okudara – Verizon Wireless
DCCA Members Present:	Ji Sook Kim, Cable Television Administrator Cathy Takase, Broadband Program Specialist Debby Shin, Broadband Program Specialist

I. Call to Order

Chair Catherine Awakuni Colón (Chair) called the meeting to order at 9:05 a.m.

Attendee introductions were made. Attendees included BAAC members, identified additional BAAC participants under House Concurrent Resolution No. 189 and other invited stakeholders who would be able to assist in the planning process.

II. House Concurrent Resolution No. 189 (HCR 189) Overview

The Chair presented an overview of HCR 189: The Legislature asked the BAAC and other identified participants to look at the deployment of affordable and accessible broadband services in Hawaii, and specifically to look into developing strategies for the establishment of high speed broadband access through resort areas and other identified areas, including the Honolulu International Airport and the Hawaii public schools. A report is due to legislature prior to 2016 Legislative Session, which will be prepared with the assistance of the HCR 189 Planning Group and utilizing DCCA staff.

A. Deliverables identified in HCR 189

HCR 189 contains specific deliverables:

1. Create a master plan to provide universal high speed broadband access in resort areas, including identified areas, the Honolulu International Airport and Hawaii public schools;

2. Develop specific strategies for the establishment of universal high speed broadband access throughout those same identified areas;

3. Identify best practices to establish a database that identifies current and prospective projects for deploying broadband; and

4. Submit a written report to legislature with findings and recommendations, including any proposed legislation.

B. Approach to be taken

The Chair summarized DCCA's proposed approach to meet these deliverables:

1. DCCA will work directly with the Department of Transportation (DOT) and the Department of Education (DOE) to learn about the agencies' broadband needs and to incorporate their plans into the final report. DCCA has already contacted DOT and has been informed that they plan to issue a Request for Interest (RFI) shortly relating to WiFi concessions at the Honolulu International Airport, Kahului Airport, Lihue Airport, Kona International Airport and the Hilo International Airport. DCCA will

continue to keep the HCR 189 Planning Group apprised of the DOT plans as they progress. DCCA will similarly advise the group on the DOE's broadband plans and incorporate them into the report.

2. The HCR 189 Planning Group is asked to focus on the resort areas planning and strategies. Participants with contacts in resort areas, such as hotels, will be asked to reach out to gather more information on the different resort areas and their needs.

3. DCCA will research best practices to establish a database that identifies current and prospective projects for deploying broadband.

III. Overview of Work Plan to Create Broadband Assessment for Identified Resort Areas

The Chair presented an overview of the Broadband Assessment Outline, which had been provided to the participants in advance of the meeting. The Chair noted that DCCA welcomed feedback on this work plan.

A. Introduction

DCCA will draft this section of the Broadband Assessment. The Chair noted that for purposes of working on the Broadband Assessment, DCCA proposed to define "Universal Broadband Access" as access to wired or wireless broadband by all consumers everywhere at reasonable and affordable rates. The Chair invited feedback on this definition. No comments were offered.

B. Background

DCCA will draft this section of the Assessment

C. Master Plan Roadmap for Resort Areas

1. Subtarget Areas Identified.

The Chair discussed seriatim the subtarget areas named within HCR 189.

Waikiki

The Chair noted that the BAAC had received a presentation at its last meeting by Mark Wong, the Information and Technology Director for the City, on the City & County of Honolulu's Waikiki WiFi project. The Chair noted that DCCA was working on a summary of that project for the Assessment.

Because the City is working with OTWC on this project, the Chair asked Kiman Wong (OTWC) to share general details on the project. Mr. Wong stated that this is a pilot project to try and provide outdoor WiFi coverage in Waikiki. The project area is on Kalakaua Street from the Police Station down to the tennis courts at Kapiolani Park (approximately 7 blocks), and includes the street and the beach area.

The pilot project consists of a combination of different types of WiFi offerings, which includes the City's desired WiFi offering of free WiFi for anyone under the "Waikiki WiFi" name. At present, the City's intent is to launch the pilot program at one hour free per day per device and to collect data on usage to determine the appropriateness of this time period.

Mr. Wong noted that Waikiki presents a particular challenge to installing WiFi systems because the infrastructure there is placed underground. One challenge was to find places to safely mount the devices to cover the project area. Phase one of the installation is complete and the second phase installation target completion date is September. The Project completion date is November 2015 in order to launch the WiFi system in time for the Honolulu Marathon. OTWC is using some of its own existing broadband infrastructure, but is also installing new infrastructure to provide the service. Devices are being mounted on traffic light poles, rest pavilions, and comfort stations.

The pilot project includes testing to see if the speed, which is consistent with OTWC's WiFi offering "TWC WiFi", is fast enough or whether it needs to be augmented. This determination will be based upon the usage and the load they see. The Chair noted her understanding that the City intended to provide some WiFi access for the casual user visiting the area, rather than for the heavy duty user or for public safety use. The Chair also noted that Mr. Wong mentioned in his presentation to the BAAC that the City was being careful to direct coverage to avoid interference with the revenue streams of private owners, such as hotels that offered WiFi services to its guests for a fee. This would also need to be considered if this type of project was to be applied to other resort areas across the State.

DCCA's intent is to use the City's pilot project to create a model that could be used by other counties to similarly provide WiFi access in their resort areas.

Other Subtarget Areas

The Chair noted the other subtarget areas identified in HCR 189 and asked for any comment by those familiar with those areas on known gaps in service or specific challenges.

Kohala, Hawaii

Don Jacobs (County of Hawaii) questioned the identification of Kohala because the resort area is in the Waikoloa area and down to Kailua-Kona, although noting that a consortium of the hotels used the place descriptor of Kohala. He suggested that DCCA obtain clarification on this area.

Garret Yoshimi (UH) concurred, noting that the areas of Kohala and Hanalei had been raised previously in discussions of underserved areas so that the identified areas might be intended as a mix of resort and underserved areas. He also suggested contacting the property owners in the resort areas for information on what they cover so that the maps could include that information also.

Kaanapali, Maui

No comments offered on any service gaps.

Hanalei, Kauai

Elton Ushio (County of Kauai) noted that Hanalei may also be more likely characterized as an underserved area because there are no resorts in Hanalei proper. Located in the vicinity are the Bluffs at Princeville and the Hanalei Colony Resort, which is in the more secluded area of Haena. He noted the intermittent cell phone signals in that area and the loss of signal in every valley along the coastline. Mr. Ushio said that the Mayor's Office can check with Representative Kawakami and Representative Tokioka about the reason for identifying Hanalei.

2. Identify type of service gap in broadband access

The Chair asked the participants for input on what types of service and service gaps need to be focused on for each of the subtarget areas -- WiFi, Cellular, Wireline, or all of these. Kiman Wong (OTWC) suggested that it should be all because the desire for resort areas is to get visitors at least one type of access. For example, U.S. tourists will likely have cellular access while foreign tourists may not. He also noted that WiFi is more universal and wireless is more convenient to access. He added that OTWC provides at least wireline access to the property of the hotels in most of the resort areas. He asked whether the assessment should be looking at whether service is available in public areas or both public and private properties.

Garret Yoshimi (UH) noted that universal access usually does not place a limit, but suggested limiting the report to whether service is available to the private property because it is then up to the property owner to choose the type of service to provide. He suggested that we provide overlays to show which property owners have made provision for services.

3. Verify current broadband coverage and infrastructure and identify service and infrastructure gaps

Coverage Maps

The Chair informed the attendees that DCCA will be sending out broadband coverage maps to the HCR 189 Planning Group for feedback. Reviewers will be asked to (1) review and investigate coverages shown in maps for each type of service (Wi-Fi, cellular, wireline), utilizing their personal knowledge and experience and their contacts with users in the subtarget areas; and (2) report back on service gaps. The Chair noted that the maps utilize existing, publicly accessible data, which is known to overstate service availability for certain census blocks. DCCA will also be asking providers for assistance in verifying their service availability.

Existing Broadband Plans

The HCR 189 Planning Group will also be asked to (1) investigate and report back on any existing broadband plans for the subtarget areas for each type of service to be addressed; and (2) provide comment on whether a project like the City & County of Honolulu's Waikiki WiFi pilot is one that should be considered for use in the other subtarget areas.

Infrastructure Gaps

The HCR 189 Planning Group will be asked to investigate and report back on any known infrastructure needs to provide access for each type of service.

Identify Stakeholders to Carry Planning Forward for Resort Areas

The HCR 189 Planning Group will be asked for input on identifying all stakeholders that should be included for each subtarget area, including private landowners and hotels in the area, to carry planning forward. The Chair also welcomed the formation of subgroups by the participants for the respective subtarget areas.

Next Steps for Planning

The Chair stated that "next steps" would be discussed at later meetings. Next steps may include identifying needed legislation and developing specific recommendations for the target areas.

IV. Key Milestones

A. HCR 189 Planning Group is being asked to provide comments on the Draft Broadband Assessment Outline by July 27, 2015.

B. DCCA will send out meeting notes, available coverage maps and a request for information on coverages and gaps by the end of July.

C. HCR 189 Planning Group will be asked to provide comment on coverage maps and to report back on any existing plans, additional coverage information, and known gaps in service or infrastructure by about mid-August.

D. HCR 189 Planning Group will be asked to review Final Draft of Report to Legislature about early November.

E. Report is to be submitted to Legislature by the end of December.

V. Additional Comments and Announcements

A. The Chair asked attendees to reserve following dates and times for future meetings, if needed:

August 19, 2015 @ 9:00 a.m.
October 19, 2015 @ 9:00 a.m.

B. The Chair welcomed any assistance that the participants could provide in gathering information and providing input, and asked for timely review and comment for circulated material given the tight timeframe to finalize the report.

C. The DCCA Point of Contact will be the Cable Television Administrator, Ji Sook “Lisa” Kim (808-586-2620).

D. Additional comments were offered by participants:

1. Karen Wataru Nakaoka (HTLA) suggested creation of a survey that may be sent out to their contacts to collect information regarding service in the resort areas. The Chair noted that this was something that DCCA had hoped to do and welcomed the assistance of HTLA in reaching the hotel owners.

2. Victoria Garcia (OIMT) asked about the type of broadband data that might be drawn from, including data available from the National Telecommunications & Information Administration (NTIA). DCCA staff noted that the NTIA data, which was obtained through a mapping grant awarded to DCCA, is comprised of data voluntarily provided by providers generally on the census block level. DCCA staff noted that this data was being used as a starting point and that further detail was sought to refine the data because it may in part overstate coverage. The intent is also to gather more information on other broadband services, such as wireless coverage and WiFi. To obtain further detail, it is very helpful to have participation of the counties, which may have actual knowledge regarding broadband access in the resort areas.

3. Representative Yamashita stressed the importance of this effort in getting as many agencies and other parties to the table to communicate on broadband. He said that would include the DOE, noting the $30M set aside in the past budget to complete covered network infrastructure for the schools, which infrastructure might be used to extend coverage. DCCA noted that it would be meeting with the DOE separately to obtain information for the Assessment, but would also invite DOE to future HCR 189 meetings.

4. Victoria Garcia (OIMT) added that this effort and the FirstNet effort are different but may complement each other in terms of bringing information together on coverage across the State.

VI. Adjournment

The meeting was adjourned at 10:05 a.m.

HCR 189 PLANNING GROUP MEETING
BROADBAND ASSISTANCE ADVISORY COUNCIL (BAAC)
DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS (DCCA)
STATE OF HAWAII

MINUTES OF MEETING

Date:	Wednesday, August 19, 2015
Time:	9:00 a.m. – 10:00 a.m.
Place:	King Kalakaua Building, 335 Merchant Street, Queen Liliuokalani Conference Room, Honolulu, Hawaii 96813
Present:	
BAAC Members :	Chair Catherine Awakuni Colón – DCCA James Miwa (for Todd Nacapuy) – Office of Information Management and Technology (OIMT) Don Jacobs (via call-in) – County of Hawaii
HCR 189 Participants:	Marc Togashi – Hawaii Tourism Authority Elton Ushio (via call-in) – County of Kauai, Civil Defense Karen Wataru-Nakaoka – Hawaii Lodging & Tourism Assoc. (HLTA) Rudy Tamayo – Hawaiian Electric Company
Other Participant:	Arnold Kishi – OIMT
DCCA Staff:	Ji Sook Kim, Cable Television Administrator Cathy Takase, Broadband Program Specialist Todd Ogasawara, Broadband Program Specialist

I. Call to Order

Chair Catherine Awakuni Colón (Chair) called the meeting to order at 9:00 a.m.

The Chair noted that primary focus of the meeting was to get input on the development of a questionnaire to collect data from the resort areas about internet service provided, and identifying issues such as that addressed by the City and County of Honolulu (City) in its Waikiki WiFi pilot project in ensuring that its service would not compete with hotels that offer WiFi as a source of revenue.

II. Resort Area Broadband Survey

A. Objective

1. Identify goal of survey

Mr. Marc Togashi expressed his personal thought that the key objective of the survey would be to understand what current infrastructure is provided and any impact to revenue streams from a public WiFi program, and to give businesses the opportunity to voice any concerns so that any program implemented could achieve a balance between providing a desired service and not impacting revenue streams. He suggested that a balance could be struck by providing a base, limited capacity broadband experience that could be packaged as a revenue opportunity. If guests wanted an increase in capacity, the hotels would have the opportunity to offer a higher service to create a revenue stream leveraged off of that base service.

Ms. Karen Wataru-Nakaoka agreed. She also noted that lodging includes the smaller independents that may not currently have a wireless service available, so this would be a benefit for them.

2. Identify target participants

Following discussion, the consensus of the group was to focus on hotels and to include restaurants, tour companies, and other resort-related businesses in the target areas listed in HCR 189. The HLTA has contact with some of these other businesses as HLTA members as well as through organizations, such as the Waikiki Beach Walk businesses through Outrigger and the restaurant association. Mr. Togashi also suggested contact with the Waikiki Improvement Association, with whom both the HTA and the HLTA have a relationship. It was also suggested that contact be made with the Waikiki Community Center, a non-profit organization, and the Waikiki Health Center.

The group discussed the presence of Oceanic Time Warner Cable (OTWC) WiFi hotspots in the resort areas, and the current limitation of the City's Waikiki WiFi project to a specific area of the beach because of some of the restrictions encountered (e.g., hotels that did not want coverage, Kapiolani Park trust restrictions). The group also discussed the availability of OTWC's WiFi hotspots to customers of the cable Wifi Consortium as well as the believed plan for access on an hourly service basis for visitors. Mr. Elton Ushio sent a link to OTWC's WiFi coverage maps (http://coverage.twcwifi.com/#/#c=21.3136151,-

157.8480364&z=12&term=Honolulu,%20HI%2096813). It was noted that OTWC has over 1,200 access points throughout the State and that Hawaiian Telcom also offers more limited access to hotspots.

Mr. Arnold Kishi noted that, at the public safety communications meeting attended last week by some of the state and county participants, similar questions to those on the draft survey were raised as part of their data gathering efforts also from resort operators. The participants who had attended noted that FirstNet had an interest in finding out what kind of wireless services the resort operators have and which providers they have worked with because FirstNet is looking to utilizing existing LTE cellular data service infrastructure where available and partnering with providers where they would need to build out the FirstNet network. Although the infrastructure would be built for emergency uses, the infrastructure might also be made available for routine use, which would be preempted during emergency situations.

After discussion, it was decided that DCCA, HLTA and HTA would meet and utilize HLTA and HTA culled contact lists of businesses and organizations to identify appropriate persons for dissemination of the survey for the hotels and resort-related businesses in the areas identified in HCR 189.

Mr. Ushio later noted that their visitor's bureau has a good list of resorts and condos, and vacation rentals. Mr. Don Jacobs also mentioned the Kohala Coast Resort Association (kohalacoastresorts.com), which includes resorts from Hapuna to Waikoloa and might also be used as a resource for distribution. The Chair suggested that the list of the target areas be sent out to the HCR 189 Participants to seek identification of businesses in the target areas. The lists could then be compared to eliminate overlap.

Action Items:

(1) DCCA to send list of target areas to HCR 189 Participants with request to identify businesses in the target areas.
(2) HLTA and HTA to cull their respective lists of hotels, businesses and organizations to create a master list.
(3) DCCA to meet & work with HLTA and HTA to finalize list for survey dissemination.

To address comments made at the HCR 189 Kick Off meeting (held on July 23, 2015) about the inclusion of non-resort areas in the named locations (in HCR 189), DCCA noted that it provided maps of South Kohala and Hanalei that encompassed areas beyond the

resorts so that information could also be gathered on infrastructure and availability of services in the some of the adjoining non-resort areas.

3. Identify contact persons (for each target resort area)

Because of their local knowledge, County participants were asked to serve as the main contact person to field inquiries on surveys for entities surveyed in their respective counties. Mr. Jacobs expressed his willingness to serve as the main contact on Hawaii Island and to assist in coordination to ensure dissemination to the appropriate parties. He noted as an example a person with whom he had a recent conversation who was preparing to stand up an internet service for the movie industry and who would eventually want to provide retail services for others. Mr. Ushio noted that it was a reasonable approach, but indicated that he could not commit to serving as the contact for the County of Kauai because he would likely be replaced in the near future by the County's IT Director, Brandon Raines.

Action Item: DCCA to check with the County of Maui and the City and County of Honolulu on possible points of contact.

B. Process

1. Determine form of survey

After discussion, the consensus was to utilize Survey Monkey because it was easily accessible, which would encourage participation, and provided easily tracked results.

2. Method of circulation

Both HLTA and HTA agreed to be the medium for circulation. It was suggested that a higher response would be received if people were called and asked to respond, and that individual relationships would be helpful for this.

3. HCR 189 cover letter to accompany survey

Mr. Rudy Tamayo noted the importance of including a cover letter to explain the reason for the survey and how it might benefit their business.

Action Item: DCCA to prepare cover letter to accompany survey.

4. Response period

The consensus was to keep the length of the response period short to get a better response.

C. Draft Survey Questions

The Chair asked for comments on the draft survey questions prepared and circulated by DCCA in advance of the meeting, including suggested revisions or additions to get other information that would be helpful.

The following suggestions were provided:

- Question 1: Change "resort/hotel" to "business" given the group's consensus to also survey resort-related businesses. Break up question and provide options.

- Use more pre-populated answers instead of free form boxes to make it easier to respond with "other" as another option to allow responses other than the pre-populated choices.

- Question 8: Provide specific time periods as options. Provide example conditions such as band limitations on public WiFi or guest WiFi.

- Question 10: Provide for "yes" or "no" answer and provide box for "why."

- Question 12: Simplify to "How would free WiFi access impact your business?" Suggested answers could include "positive", "negative", "no effect", "interfere with revenue generation", and "encourage loiterers."

The group again discussed the importance of not having a government sponsored free service that would compete with hotels offering service as a source of revenue. Support was expressed for the idea of providing a more limited bandwidth service for free, with guests having the option to use the hotel's higher speed service for a charge. It was noted that limited coverage may be desired because it may take some of the burden off of the hotel's network, and that this would alleviate the difficult issues raised by the need to direct free WiFi coverage away from hotel properties. It may also address challenge where a business that would like the free service is imbedded in or near a hotel that does not want the service.

It was noted that another factor considered by the City in its pilot project to provide free WiFi was the need to place time restrictions on access to

avoid having people camped out on beach for extended periods of time. The City plan is to limit access to 1 hour per device per day.

Mr. Togashi asked how the group would address fairness in terms of where the hotspots would be located to ensure fair benefit to all hotels given the use of public funds. The Chair noted that the mission of this group was not to actually deploy a network, but that this would be an issue to highlight in the report to the Legislature. Other information that would be helpful to report to the Legislature would be areas where there is already a high concentration of services and infrastructure, areas where businesses are open to having state or county provide additional infrastructure to enhance what is already there, areas where there is resistance by businesses to a WiFi service that may cover their property.

Mr. Tamayo noted that the first deliverable would be to get the facts and data, then to set the criteria to move forward to the next phase of deployment.

Other issues related to the offering of free public WiFi that were raised for consideration included the following:

- Liability where service is offered without content filtering
- Security
- User experience – need to create a good user experience for visitors
- Setting level of expectations – need to set expectations on what the level of service may be used for based upon speed to be offered (i.e., identifying specific uses such as locating businesses, transportation, etc. versus video streaming such as Netflix)
- Effect on or enabling of illegal business activity, such as human trafficking and other issues being dealt with in Waikiki
- Difficulty and cost in providing ubiquitous service versus service in a very defined location, such as airports, large conference center, and hotels
- Higher demands for ubiquitous service because carriers have begun offering cell phone devices with no cellular data (i.e., voice only) so people must use WiFi for data service
- Need for foreign visitors without cellular service to access WiFi to use alternative services like Line for VOIP and messaging

- Alternative options of offering a “communications pass” to get access to various networks at a weekly cost

The Chair noted that these concerns would be included in the report as issues to be considered by the Legislature if a free universal WiFi service was desired and by the eventual implementer of such a system.

Action Items:

(1) Group meeting participants to send any additional survey comments or suggested revisions to DCCA in 1 week.
(2) DCCA to send 2nd draft of survey to HCR 189 Participants after revisions made per discussion at the meeting and additional comments submitted.
(3) Ms. Wataru-Nakaoka will have discussions with her contacts and will use those discussions to provide comment and feedback on the 2nd draft of the survey questions.

III. Additional Comments and Announcements

None

IV. Adjournment

The meeting was adjourned at 10:00 a.m.

APPENDIX 2

Broadband Assessment

HCR 189 Participants and Broadband Assistance Advisory Council (BAAC)

Broadband Assessment

For House Concurrent Resolution No. 189, H.D. 1, S.D. 1

Prepared By

Cable Television Division
Department of Commerce and Consumer Affairs
State of Hawaii

December 2015

Broadband Assessment

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1 INTRODUCTION

1.1 The Importance of Broadband

> *Like electricity a century ago, broadband is a foundation for economic growth, job creation, global competitiveness and a better way of life. It is enabling entire new industries and unlocking vast new possibilities for existing ones. It is changing how we educate children, deliver health care, manage energy, ensure public safety, engage government, and access, organize and disseminate knowledge.*

The National Broadband Plan[1]

Although not always easy to quantify, the impacts of broadband on our daily lives, and the social and economic welfare of our state and our country would seem today to be without question. Access to the Internet is an essential tool for "citizens to conduct commerce, communicate, educate, entertain, and engage in the world around them."[2] New technologies and services being offered today and being developed for tomorrow are pushing the demand for higher broadband speeds to allow our citizens the ability to take advantage of those technologies and services, such as bandwidth-intensive streaming high definition video used for, among other things, real-time distance learning, business teleconferencing and applications, telemedicine, and entertainment.[3] For the average household, the demand for higher speed is also pushed by the often multiple, simultaneous users in the household.

It is critical, thus, that communities continue to work to provide every citizen access to the Internet and sufficient broadband capability, which "is a necessity in today's world for jobs, education, civic engagement and economic competitiveness"[4] and that "can erase the distance to high-quality health care and education, bring the world into homes and schools, drive American economic growth, and improve the nation's global competitiveness."[5] Recognition that broadband is a necessity to modern life is the foundation of all government broadband planning and policies:

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[1] Omnibus Broadband Initiative (OBI), Federal Communications Commission, Connecting America: The National Broadband Plan, GN Docket No. 09-51 at 3-5, 129 (2010) (National Broadband Plan) at xi.

[2] Federal Communications Commission, *Protecting and Promoting the Open Internet*, GN Docket No. 14-28, Report and Order, FCC 15-24 (February 26, 2015) (Open Internet Order) at ¶ 1.

[3] *Id.* at ¶ 2.

[4] Federal Communications Commission, *Broadband Availability in America* (January 30, 2015) (Broadband Availability in America), *available at* https://apps.fcc.gov/edocs_public/attachmatch/DOC-331734A1.pdf.

[5] Federal Communications Commission, *2015 Broadband Progress Report and Notice of Inquiry* (January 29, 2015) (2015 Broadband Progress Report) at ¶ 1, *available at* https://www.fcc.gov/reports/2015-broadband-progress-report.

High-speed Internet access has become fundamental to modern life, whether we are on the job, at home, or going to school. Broadband connectivity can overcome geographic isolation and put a world of information and economic opportunity at the fingertips of citizens in even the most remote communities.

Tom Wheeler, Chairman
Federal Communications Commission

As shown from the Broadband Task Force to the Hawaii Broadband Initiative (HBI)[6] to establishment of the Broadband Assistance Advisory Council (BAAC) and other State actions taken, broadband has come to be recognized by the State as critical and essential infrastructure to advance Hawaii's economy and society in the 21st century.

1.2 Broadband Deployment Challenges

*Broadband is **the** great infrastructure challenge of the early 21st century.*

The National Broadband Plan

As recognized by the Federal Communications Commission (FCC), "[a]lthough public – and private – sector initiatives continue to advance deployment, these advances are not occurring broadly enough or quickly enough."[7] This is especially true for rural areas where a gaping disparity between urban and rural areas access to broadband and the Internet - the "digital divide" - persists.[8]

Hawaii faces this same monumental challenge to bridge the digital divide between urban and rural communities. Additionally, Hawaii faces unique challenges as a young, volcanic island state with "the most isolated population center on Earth"[9] in constructing and maintaining broadband infrastructure and providing affordable broadband service across the islands.

Hawaii has perhaps the most diverse conditions in the world that create deployment and maintenance challenges rarely faced elsewhere: soaring mountains; mountain ranges that run to the ocean, creating numerous deep gulches and valleys; dense tropical forests; extremely dense lava rock (blue rock) that requires expensive drilling and

[6] The HBI is an initiative of the State launched in 2011 that directed State officials and agencies to work together and with other levels of government, the University of Hawaii (UH), broadband providers, and other stakeholders to create and implement plans, policies, and programs to achieve the goal of ubiquitous and affordable gigabit (1 Gigabit per second) connectivity throughout Hawaii by 2018.

[7] 2015 Broadband Progress Report at ¶ 4.

[8] *Id.* at ¶ 5; see also ¶ 63 et seq.

[9] *See* Hawaii Broadband Strategic Plan, Dept. of Commerce and Consumer Affairs, State of Hawaii (Dec. 2012) (citing 2010 Census Hawaii Profile, U.S. Census Bureau, *available at* http://www.census.gov/geo/www/guidestloc/st15_hi.html).

blasting techniques; salt water exposure requiring more costly stainless steel equipment; threats from tsunami, earthquake and lava flows; and worksites on mountain ridges or in valleys that have limited vehicular access and sometimes no commercial electricity.[10] Insufficient broadband deployment, thus, persists in the sparsely populated, rural, and remote areas of the State because distances and the often extreme topography raise infrastructure costs to levels that eliminate the business case for providing broadband access, or even low speed access, by the State's wireline broadband providers.

An additional challenge for the State is the need to ensure both interisland and transpacific submarine fiber connectivity. Transpacific submarine fiber optic cable connectivity is Hawaii's broadband lifeline to the rest of the world. Although transpacific telecommunications cables once needed to land in Hawaii as a technological necessity -- making Hawaii a crossroad for transpacific telecommunications between Asia and North America -- advancements in submarine fiber optic technology now allow transpacific crossings to bypass Hawaii. For this reason, the Department of Business, Economic Development & Tourism (DBEDT) is continuing efforts to encourage new fiber system landings in Hawaii.

1.3 Historical Overview of State Actions

In 2007, the Hawaii State Legislature (Legislature) created the Hawaii Broadband Task Force to provide recommendations on how to advance the State's broadband capabilities and use.[11] Specifically, the Hawaii Broadband Task Force was charged with removing barriers to broadband access, identifying opportunities for increased broadband development and adoption, and enabling the creation and deployment of new advanced communications technologies in Hawaii. The Hawaii Broadband Task Force issued its final report in December 2008, which outlined four recommendations to achieve world-class broadband capability in the State as follows:

(1) Establish a forward-looking vision to make Hawaii globally competitive
(2) Create a one-stop broadband advancement authority
(3) Welcome trans-pacific submarine fiber to Hawaii
(4) Stimulate demand for broadband

Since that time, legislation has been introduced seeking to advance these recommendations. Of particular relevance here, legislation to create a one-stop broadband advancement type of authority was introduced in the 2009, 2010, and 2012 legislative sessions. The various bills introduced generally had a common purpose: to establish an agency/division or a commissioner under which all telecommunications regulation would be consolidated and with duties to advance the growth and development of broadband infrastructure and services.

[10] *See also id.* at 71-73.

[11] Act 2, First Special Session Laws of Hawaii 2007.

Administration companion bills introduced during the 2009 legislative session[12] sought to establish the Hawaii Communications Commission (HCC) in DCCA. Under these bills, functions relating to cable services would fall under the HCC and functions relating to telecommunications would be transferred from the Public Utilities Commission (PUC) to the HCC. The HCC would also be tasked with investigating, promoting, and ensuring the growth and development of broadband infrastructure within the State. Specifically, the HCC, among other things, would: (1) "champion" the State's broadband, telecommunications, and video interests; (2) develop state policies relating to broadband communication services and facilities; (3) be responsible for the consolidated regulation of telecommunications carriers and cable operators; and (4) expedite the availability of communications services to the residents of Hawaii. Administration bills introduced during the 2012 legislative session[13] again sought to create a communications division within DCCA to regulate telecommunications and cable television services; to promote the development of broadband infrastructure; and to advance the provision of broadband, telecommunications, and video programming services.

None of the bills proposing a comprehensive consolidation of telecommunications regulation and expansion of broadband-related duties were enacted. Instead, Act 199, Session Laws of Hawaii 2010 (Act 199), became law, which charged DCCA with duties related to the expansion of broadband services and created the BAAC as an advisory board to DCCA to bring various stakeholders' perspectives into the strategic planning process. Among other things, the BAAC is charged with advising the Director of DCCA "on policy and funding priorities to promote and encourage use of telework alternatives for public and private employees, and expedit[ing] deployment of affordable and accessible broadband services in Hawaii."

Pursuant to Act 199, as amended,[14] the BAAC is currently composed of the Director of DCCA, as chair, and six (6) members appointed by the President of the Senate and six (6) members appointed by the Speaker of the House of Representatives. Of these twelve (12) members, four (4) members are to be representatives of the State legislature, four (4) members are to be representatives of "federal, state, and county government entities having a role in infrastructure deployment; management of public rights-of-way, regulation, and franchising; information technology; and economic development;" and four (4) members are to be representatives of the State's private sector technology, telecommunications, and investment industries.

Act 199 also provided for the establishment of a permitting work group (the Act 199 Permitting Work Group) "to develop procedures for streamlined permitting functions that are applicable to the development of broadband services and broadband technology that are normally available to state and local governments for the use or development of broadband service or broadband technology" and to report to the 2011 Legislature on

[12] *See* House Bill Number 1077 (2009) and companion Senate Bill Number 895 (2009).

[13] *See* House Bill Number 2524 (2012) and companion Senate Bill Number 2786 (2012).

[14] Act 199, Session Laws of Hawaii 2010, was amended by Act 264, Session Laws of Hawaii 2013.

those procedures. DCCA convened the Act 199 Permitting Work Group and a Pole Attachment Subgroup, comprised of the following members:

Main Committee Members

David Lassner	University of Hawaii
Gordon Bruce	City & County of Honolulu
Wallace Rezentes	Office of the Mayor, County of Kauai
Bert Tsuchiya	Office of the Mayor, County of Hawaii
Ralph Nagamine	Office of the Mayor, County of Maui
David Shimokawa	Department of Transportation
Morris M. Atta	Department of Land and Natural Resources
Sen. Carol Fukunaga	Senate, Hawaii State Legislature
Rep. Kyle Yamashita	House of Representatives, Hawaii State Legislature

Subcommittee Members

John Komeiji	Hawaiian Telcom
Cliff Miyake	tw telecom
Oscar Libed	Clearwire
Norman Santos	Oceanic Time Warner Cable
William Lum	Waimana
Millie Gilmore	tw telecom
Les Young	Clearwire
Lance Uno	Oceanic Time Warner Cable

Pole Attachment Sub-work Group

Steve Nagata	Hawaiian Electric Company
Paul Nakagawa	Hawaiian Electric Company
Lance Miyahara	Hawaiian Electric Company
Tracy Nishibun	Hawaiian Electric Company
Ralph Nagamine	Office of the Mayor, County of Maui
David Shimokawa	Department of Transportation
Morris M. Atta	Department of Land and Natural Resources
Chris Zane	University of Hawaii
Lance Uno	Oceanic Time Warner Cable
Steve Golden	Hawaiian Telcom
Lynette Yoshida	Hawaiian Telcom
Ken Hiraki	Hawaiian Telcom
Norman Santos	Oceanic Time Warner Cable

The Act 199 Permitting Work Group Report submitted to the Legislature identified the current requirements related to the ability of providers to attach new fiber cables to existing utility poles as the major obstacle to expediting deployment of infrastructure.

During the 2011 legislative session, House Bill Number 1342 (HB 1342) and Senate Bill Number 1161 were introduced to provide a permitting exemption from state and county permitting requirements for the installation, improvement, construction, or development of infrastructure relating to broadband service or broadband technology, as provided in Act 199. The Legislature noted that the legislation resulted from the discussions of the

Act 199 Permitting Work Group, its Pole Attachment Subgroup, and other interested parties:

> The legislature finds that the broadband work group has recommended the creation of an exemption from various permitting requirements for the installation of new or upgraded broadband infrastructure along existing poles and conduits that are already used for telecommunications. Another discussion item of the broadband work group is the streamlining of the processing of pole conduit, and duct applications.

Act 151, Session Laws of Hawaii 2011 (Act 151), at § 1.

At the request of the Legislature, DCCA reconvened the Act 199 Permitting Work Group to address concerns raised and obtain consensus on the language of HB 1342. In addition, DCCA invited the following interested parties to participate:

Alvin Sunahara	Information Technology, City & County of Honolulu
David Tanoue	Planning & Permitting, City & County of Honolulu
Richard Lim	Department of Business, Economic Development & Tourism
William Aila	Department of Land & Natural Resources
Hermina Morita	Public Utilities Commission
Eric Yeaman	Hawaiian Telcom
Bob Barlow	Oceanic Time Warner Cable
Lyndall Nipps	tw telecom
Richard Rosenblum	Hawaiian Electric Company
Steve Yoshida	Hawaiian Electric Company
Dean Yogi	Department of Transportation
Jadine Urasaki	Department of Transportation
Glenn Okimoto	Department of Transportation
Pratt Kinimaka	Department of Transportation
Jamie Ho	Department of Transportation

Certain changes requested by stakeholders were incorporated into the bill, which was enacted as Act 151, but complete consensus could not be achieved. Among other things, Act 151 specifically provided that providers would not be required to upgrade or replace an existing utility pole for new telecommunications cable installations or improvements so long as the installation or improvement did not (1) increase the overall weight load on the pole or increase the size of the provider's attachment on the pole; and (2) the pole was not damaged or made less safe or reliable because of the installation or attachment.

During the 2013 legislative session, House Bill Number 635, later enacted as Act 264, Session Laws of Hawaii 2013 (Act 264), was introduced with the intent of expediting the approval process for broadband-related permits to facilitate broadband infrastructure deployment. Act 264 requires the State and the counties to take action within sixty (60) days for broadband-related permit applications and within one hundred forty-five (145) days for use applications for broadband facilities within a conservation district. If no

action is taken within the required timeframe, the permit is deemed approved. This type of legislation is commonly referred to as "shot-clock" legislation.

Act 264 also amended Act 151 to again make all new telecommunications cable installations or improvements on utility poles subject to approval of the PUC with respect to the weight load capacities established by the FCC and PUC. Because a substantial percentage of the existing utility poles in the State had been grandfathered under previous safe weight capacities set, the amendment in most instances will require a provider who makes any installation or improvement to replace all affected poles that do not meet the current pole standards even where the net effect is no increased load being placed on the existing poles.

Over the years, the Legislature has also provided general or supplemental appropriations related to the Hawaii Broadband Task Force's recommendation to welcome transpacific submarine fiber to Hawaii. Specifically, funding has been provided towards the creation of privately managed, shared open-access submarine fiber optic cable landing stations statewide.[15] DBEDT is continuing efforts to encourage the landing of transpacific submarine fiber, including work related to landing stations.

Broadband Assistance Advisory Council Permitting Work Group

The full BAAC was officially appointed and convened by DCCA in 2011. In addition to the twelve (12) BAAC members appointed by law, DCCA has invited other public and private stakeholders to be participants on the BAAC and its two work groups (permitting and adoption). Stakeholder participants include, or have previously included, representatives of Hawaiian Electric Company, Hawaiian Telcom, tw telecom, Verizon Wireless, the Hawaii State Public Library System, Sandwich Isles Communications, and DBEDT.

As one of two functional work groups, the BAAC Permitting Work Group was formed to examine the permit process related to broadband infrastructure deployment and to make recommendations on how it may be streamlined or improved. Additionally, this group has met regularly to provide input on various proposed methods and legislation to expedite broadband deployment.

The Permitting Work Group has to date worked on some of the following seven (7) recommendations it made to expedite deployment:

- Create a centralized database that includes all pole calculations and life expectancies.

[15] *See* Act 106, Session Laws of Hawaii 2012, (Supplemental Appropriations Act of 2012) ($2,200 in planning funds to DBEDT for plans to create landing stations); Act 134, Session Laws of Hawaii 2013, (General Appropriations Act of 2013) ($20,000 in construction funding to the Department of Defense (DOD) related to the provision of submarine transpacific cable landing stations); Act 122, Session Laws of Hawaii 2014, (Supplemental Appropriations Act of 2014) ($1,000 in construction funding to DOD); and Act 143, Session Laws of Hawaii 2015, (appropriated $25M in General Obligation Reimbursable (GOR) bonds for the HBI to DBEDT).

- ❖ "Make ready" existing underground infrastructure, including consolidation of cables to free up space in conduits, and place inventory into a database.
- ❖ Create a new alternate path as an option for providers. The process, funding, and rules for this will evolve over time.
- ❖ Streamline City & County of Honolulu easement process.
- ❖ Streamline Department of Transportation (DOT) Use and Occupancy process by use of a standard form and fee structure.
- ❖ Streamline City & County of Honolulu permitting process. Once a design is approved, subsequent permit requests using the same design should receive cookie cutter approval through an electronic filing.
- ❖ Create a fee/fund to pay for shared database for poles. Incorporation of all pole load information (existing, proposed, reserved) into database will allow for load calculation in advance.

Work related to the BAAC Permitting Work Group's recommendations has included the compilation of procedure flowcharts and timelines documenting the various processes and procedures for broadband infrastructure deployment; discussions related to the creation of a pole database; review of a proposal to streamline the City and County of Honolulu easement process; and submittals of examples of broadband projects on various islands in which the permitting process was either generally reasonable or prolonged, to be used to identify model processes. However, given the enactment of Act 264[16] requiring a 60-day review process of broadband permits, the Permitting Work Group agreed to first evaluate the effectiveness of Act 264 to determine what other steps, if any, needed to be taken to streamline broadband permit approvals. Provider Permitting Work Group members were asked to share their experiences with any submissions made under Act 264. To date, the providers have reported that no application for approval subject to Act 264 had yet been submitted by their respective companies.

Based on the Permitting Work Group's recommendation to streamline the DOT Use and Occupancy process, DCCA has engaged in discussions with DOT on the impact of this process on broadband infrastructure deployment and possible means to streamline the process. Based on these initial discussions, DCCA has prepared a draft scope of work for a Broadband Utilities and Project Coordinator to facilitate and coordinate broadband infrastructure projects utilizing government roadways and rights-of-way. Duties of the Broadband Utilities and Project Coordinator position would include review of broadband projects for compliance with DOT right-of-way and use and occupancy requirements, liaison between the broadband applicant and DOT, and coordination among projects to promote the "dig once" concept. The objective is to improve the efficiency and turnaround time for these types of approvals in exchange for providing the State with a "big picture" view that could allow for strategic cooperation between government, utility companies, and communications companies.

[16] Act 264 became effective January 1, 2014.

2 BACKGROUND

2.1 Understanding Broadband Access

For the purposes of this Assessment, "Universal Broadband Access" is defined as access to wired or wireless broadband by all consumers everywhere at reasonable and affordable rates.

The terms "Broadband" and the "Internet" are often used interchangeably, but they are not the same. Broadband infrastructure is often likened broadly to an "information highway." All data traffic flows on this information highway to reach and interconnect other communication networks, such as the Internet. Examples of other networks that travel this same information highway and operate separately from the Internet (i.e., do not connect to the Internet), are government networks, such as the State Institutional Network (INET), and private networks, such as private corporate networks.

Thus, the challenge for the State is to ensure that broadband infrastructure is available to provide the increasing bandwidth needed and expected for homes and businesses into the future for use of the Internet, as well as other networks that demand it.

2.2 Broadband Speed Benchmark

Section 706 of the Telecommunications Act of 1996 (Telecommunications Act), as amended, requires the FCC to report annually to Congress on the availability and deployment of "advanced telecommunications capability to all Americans."[17] In so doing, the FCC has over the years set increasing speed thresholds to define "broadband" Internet service for purposes of its annual reports to Congress.

In 2010, the FCC increased its broadband benchmark speed from 200 kilobits per second (kbps) in both directions to 4 megabits per second (Mbps) download and 1 Mbps upload (4 Mbps/1 Mbps). The FCC continued to use this benchmark for its reports to Congress until 2015. It should be noted that the FCC has adopted different speed thresholds in other contexts. For example, the FCC in 2014 set a benchmark speed of 10 Mbps download and 1 Mbps upload (10 Mbps/1 Mbps) to provide funding support for the extension of services in high-cost locations under its Connect America Fund (CAF) program.[18]

[17] 2015 Broadband Progress Report at ¶ 1.

[18] CAF is being phased in to replace the Universal Services Fund, High Cost Program. *See* http://www.usac.org/hc/caf/default.aspx. The FCC explained that the lower benchmark standard for CAF program funding was set to ensure provision of a "basic level of service" available to all Americans. 2015 Broadband Progress Report at ¶ 54.

In its 2015 Broadband Progress Report to Congress, the FCC sharply raised its broadband benchmark speed, finding that "having 'advanced telecommunications capability' requires access to actual download speeds of at least 25 Mbps and upload speeds of at least 3 Mbps (25 Mbps/3 Mbps)."[19] The FCC explained that this benchmark speed was necessary to accommodate the current, increasingly bandwidth-intensive demands of homes and businesses:

> …In today's world, bandwidth-intensive video is the dominant broadband application. Indeed, streaming video and audio comprises 63 percent of downstream traffic with each video stream typically requiring from 5 to 25 Mbps.
>
> Today's users need more than 10 Mbps to, for example, participate in online class, download files, and stream a movie at the same time within one household; to view two high definition videos on separate devices at the same time; or to stream one 4K (aka UltraHD) television service. The average American household with children has more than four people living in it and using seven Internet-connected devices on a shared, broadband network.[20]

It is expected that this benchmark will continue to increase as new technology, services, and applications drive demand for higher broadband speeds.

2.3 Broadband Regulatory Landscape

Broadband is almost exclusively regulated at the federal level, and is within the jurisdiction of the FCC. At the state level, limited authority related to broadband is held by DCCA pursuant to Chapters 440G and 440J, Hawaii Revised Statutes (HRS), and the PUC pursuant to Chapter 269, HRS. However, by federal law, no state regulation is allowed that would be in conflict with or otherwise frustrate federal laws, rules and policies to promote and protect an open Internet.

FCC

To protect an open Internet, the FCC in February 2015 issued an order (FCC Open Internet Order) adopting rules that would protect the Internet from harmful practices such as blocking, throttling, and paid prioritization, and amending its transparency rule "to ensure that consumers are fully informed as to whether the services they purchase are delivering what they expect" (Open Internet rules).[21] The Open Internet rules adopted apply to both fixed and mobile broadband Internet access service, and govern the consumer-facing service that broadband networks provide (broadband Internet

[19] 2015 Broadband Progress Report at ¶ 3.

[20] Broadband Availability in America at 1.

[21] Open Internet Order at ¶ 4.

access service).[22] In so doing, the FCC, among other things, found that broadband Internet access service is a "telecommunications service" within the scope of Title II of the Telecommunications Act, while specifically forbearing application of many provisions of that Act and FCC rules and regulation, including the future use of prescriptive, industry-wide rate regulation.[23] In addition, the FCC reaffirmed its longstanding conclusion that broadband Internet access service is jurisdictionally interstate (i.e., federal) for regulatory purposes.[24]

In the FCC Open Internet Order, the FCC also expressly preempted any state regulation from imposing obligations on broadband service in conflict with or that would otherwise frustrate the FCC's order and other federal rules and policies.[25] This would include any new state Universal Service Fund (USF) contribution requirements on broadband (absent further FCC rules allowing such contributions), and any state certification requirements, regulation of rates, or taxes.[26] The FCC has thus made clear that state regulation related to broadband Internet access service is very limited and also noted that its preemption authority would be strictly interpreted and enforced. The FCC did not, however, foreclose any possible state action, recognizing that states have a role with respect to broadband, such as in broadband data collection.[27]

DCCA

The Director of DCCA, through the Cable Television Division, issues cable television franchises and regulates cable television operators as provided under Chapter 440G, HRS. This regulation does not extend to broadband services that may be offered by the cable operators. However, DCCA has broadband-related duties under section 440G-11.5, HRS, that include supporting public and private efforts to facilitate deployment of, and access to, competitively priced broadband and Internet access services; facilitating broadband application development to bolster usage and demand for broadband level communications; and facilitating implementation of Hawaii Broadband Task Force recommendations. DCCA was further authorized in 2012 to receive confidential annual reports from cable operators, telecommunication carriers and telecommunication common carriers regarding broadband service availability and pricing for use in DCCA's broadband expansion duties. Given the nature of these duties, it appears unlikely that they would be found to be in conflict with the federal regulatory framework or to otherwise conflict with federal policies.

PUC

The PUC has general supervision authority over telecommunications providers pursuant to Chapter 269, HRS, but may, in the public interest, exempt a telecommunications

[22] *Id.* at ¶ 25.

[23] *Id.* at ¶ 5.

[24] *See id*. at ¶ 432.

[25] *Id.* at ¶ 431-433.

[26] *Id.* at ¶ 430, 433.

[27] *Id.* at ¶ 431 and n.1276.

provider or service from requirements of that chapter, except for provisions under section 269-34, HRS, that are designed to facilitate new competition into the State's telecommunications marketplace.[28] Among other things, these provisions provide requirements to ensure, to the extent possible, nondiscriminatory and reasonable access to services or information services for new providers to the State. Again, however, any PUC regulation in that area must not conflict with or otherwise frustrate the FCC Open Internet Order and other federal rules and policies.

2.4 Components of Broadband Infrastructure

There are many components of broadband infrastructure -- fixed and mobile infrastructure on land, fiber optic infrastructure both between the Hawaiian Islands (interisland) and between Hawaii and other parts of the world (transpacific fiber), and satellite systems.

2.4.1 Fixed Terrestrial Infrastructure

Fixed terrestrial infrastructure consists of both wireline and wireless infrastructure, and is designed to connect devices that remain in one place (such as home or office desktop computers) rather than devices that are mobile.

2.4.1.1 Wireline Infrastructure

Copper cable and fiber optic cable are components of fixed wireline infrastructure. The wireline component is also typically the highest-speed portion of a communications network that includes a wireless/mobile component; in that type of network, wireline communications provide the backbone between key network locations and the interface with the wireless network (i.e., the base stations or cell sites).

2.4.1.2 Wireless Infrastructure

Microwave radios are components of fixed wireless infrastructure because they require endpoints that are fixed in one location.

[28] The PUC has general supervision over public utilities in the State pursuant to section 269-6, HRS. Under Chapter 269, HRS, a public utility may not include a telecommunications provider to the extent determined by the PUC pursuant to section 269-16.9. That section authorizes the PUC in the public interest to exempt a telecommunications provider or a telecommunications service from any or all provisions of Chapter 269, HRS, except for section 269-34.

2.4.2 Transpacific Submarine Fiber

Hawaii's broadband "lifeline" is transpacific connectivity, achieved primarily through the use of costly submarine fiber optic cable to the mainland U.S. and Asia.[29] While transpacific telecommunications cables once needed to land in Hawaii as a technological necessity, making Hawaii a crossroad for transpacific telecommunications,[30] advancements in submarine fiber optic technology now allow transpacific crossings to bypass Hawaii and connect Asia and North America directly. Primarily because of this, the only new general use transpacific fiber system that has landed in Hawaii since 2001 is the Asia America Gateway, which came into service in 2009.[31] Concerns regarding the adequacy of bandwidth available for out-of-state connectivity led the Broadband Task Force to recommend that the State take steps to encourage new fiber system landings in Hawaii.

It should be noted that, although Hawaii exhausted available capacity on the older transpacific cables at the end of the last century, the competitive market for transpacific connectivity, combined with advances in technology, has provided increased capacity on the existing modern transpacific fiber systems. These advancements, which have occurred within the last few years, have allowed providers to use existing cables to provide bandwidth many times greater than their initial design capacities. In fact, all of the primary fiber cables connecting Hawaii to Asia and to the U.S. mainland have in the past few years been upgraded with advanced laser technology to allow greater amounts of data to be transmitted over the existing cables. For example, Southern Cross Cables announced that it had completed installing 100G transmission equipment in July 2013 that increased its total capacity to 2.6 terabit per second (Tbps) capacity. The company had previously updated its network from 10 gigabits per second (Gbps) to 40 Gbps transmission equipment.[32]

Because current technology allows new transpacific fibers crossings to bypass Hawaii, and given the State's relatively small market, transpacific cable operators will likely require independent justification to include Hawaii landings in future transpacific fiber projects. Access to affordable, high-capacity broadband in the State is no longer discretionary. Hawaii is reliant on transpacific subsea fiber connectivity which is approaching capacity and end-of-life issues. To address this challenge, the 2015 Legislature passed Senate Bill Number 892, which the Governor signed into law as Act 143, Session Laws of Hawaii 2015 (Act 143). Act 143 appropriated $25.0M in GOR

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[29] *See* Hawaii Broadband Task Force Final Report at 9-10.

[30] Prior to the introduction of optical fiber technology, telecommunications signals were relayed over copper-based wires. Hawaii benefitted from the technical limitations on the distance that signals could be sent over copper wire, because transpacific copper wire cables connecting the mainland U.S. with Asia and the South Pacific had to be routed through Hawaii to provide a power connection to allow the signals to be regenerated before being sent on to its destination across the Pacific Ocean. New optical fiber technology does not have this distance limitation, allowing transpacific fiber cables to be routed directly between the mainland U.S. and Asia or the South Pacific, bypassing Hawaii.

[31] Additionally, new systems were installed from Australia and French Polynesia to Hawaii.

[32] *See* http://www.southerncrosscables.com/Home/Company/SXPress/100g-upgrade-complete.

bonds for the HBI. DBEDT is exploring the creation of a public-private partnership to finance an open access broadband network, including a new cable landing site, to attract transpacific cable developers to bring new cables to Hawaii.

There are currently three (3) submarine fiber-optic cable projects in construction or financing stages that plan to land in Hawaii:

1. SEA-US Cable System began construction in March 2015.[33] It will link five areas and territories of Manado in Indonesia; Davao in the southern Philippines; Piti in the territory of Guam; as well as Honolulu, Hawaii; and Los Angeles, California. The system will initially provide 20 Tbps capacity. Its completion is planned for the fourth quarter of 2016.[34] Hawaiian Telcom is one of the companies in the global consortium funding this project.

2. The South America Pacific Link (SAPL) submarine cable system project is designed to link Jacksonville, Florida; Balboa, Panama; Oahu, Hawaii; and Valparaiso, Chile.[35] There are plans to provide future connectivity to Manta, Ecuador; Lima, Peru; Arica, Chile; and Hawaii Island. The planned system will have at least 10 Tbps of capacity on each of its six (6) fiber pairs. The project's submarine cable installation company announced plans to proceed in August 2015.[36] Project completion is planned for the fourth quarter of 2017.

3. The Hawaiki submarine cable project is designed to link California, Hawaii, New Zealand, and Australia.[37] The project site reports projected completion in 2017 "subject to funding plan."

2.4.3 Interisland Submarine Fiber

Unlike mainland U.S. states that can easily extend broadband infrastructure on poles or in conduits both intra-state and interstate, Hawaii must cross ocean channels to connect its islands. Microwave systems provide limited capacity where a provider does not have access to submarine fiber connectivity, or in some cases purposely for path resilience, but submarine fiber is currently and for the foreseeable future the only practical technology to enable reliable, high-speed broadband access to broadband subscribers across the islands.

Information on specific capacities and utilization of existing interisland cables is often considered proprietary by owners. Based upon inquiries made to various providers, it

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[33] *See* https://www.globe.com.ph/press-room/global-consortium.

[34] *See* http://globenewswire.com/news-release/2015/03/31/720369/10126980/en/Global-Consortium-NEC-Begin-Construction-of-250M-SEA-US-Cable-System.html.

[35] *See* http://www.oceannetworks.com/.

[36] *See* https://www.alcatel-lucent.com/press/2015/alcatel-lucent-and-ocean-networks-extend-south-america-pacific-link-submarine-cable-system-panama.

[37] *See* http://www.hawaikicable.co.nz/index.php/about-us.

appears that there is sufficient interisland capacity for the near future. This is supported by the fact that the total interisland fiber count exceeds what is currently available on all the transpacific cables from the U.S. West Coast to Hawaii combined.

However, access to existing interisland cables, the cost of connection, and meeting future interisland connectivity needs are issues that have been raised and should be reviewed. At present, it does not appear that the current market has provided interisland cable operators with the incentive to upgrade equipment in order to supply anything beyond current capacity levels.

2.4.4 Satellite

Satellite systems use communications satellites for broadband transmissions. The primary advantage to satellite technology is that it may reach certain remote areas in Hawaii that do not currently have access to any other type of service. However, satellite service at comparable bandwidths is expensive and requires subscribers to purchase costly equipment in order to receive service. Moreover, satellite service performance in Hawaii is limited because, similar to microwave systems, a direct line of sight is required between the communications satellite and the dish antenna on the ground. Because most of the satellites are currently positioned primarily for coverage over the continents, the line of sight to these satellites is often low on the horizon and, thus, may be blocked by mountains and structures. In addition, the distance signals must travel to and from the satellite creates inherent delays (latency) in the delivery of the signals.[38] This latency may often result in data loss during transmission; the inability to establish a secure connection, such as a "Virtual Private Network" (VPN connection); or the inability to maintain a connection. Because of these current limitations, satellite is not a viable option to provide widespread affordable, secure, reliable, high-speed broadband service in Hawaii at this time.[39]

2.5 Available Broadband Technologies

The prior section describes the components of the broadband infrastructure. This section explains all the different ways that a user can access the information highway to connect to the Internet.

[38] For comparison, satellite signals must travel over 44,000 miles to Hawaii, while signals need only travel approximately 2,500 miles over fiber to the west coast of the U.S. mainland.

[39] Direct-to-home (DTH) broadband Internet satellite services in Hawaii continue to be limited and substantially inferior to the services available to consumers in the rest of the United States. Direct broadcast satellite (DBS) video services are less affected by these limitations, but do require specialized equipment not required on the U.S. mainland.

2.5.1 Wireline Access

The majority of homes and businesses nationwide are connected via wireline communications – which, as the name suggests, means that a physical "wire" connects a user's home or business to a broadband provider's network. The role of the wireline connection has evolved to provide users' most intensive needs – high definition television, telecommuting applications, telemedicine, gaming, data backup, digital media storage and transport, and "cloud" applications.

There are three primary modes of wireline communications: (1) fiber-to-the-premises (FTTP), (2) hybrid fiber-coaxial (HFC), and (3) digital subscriber line (DSL).

2.5.1.1 Fiber-to-the Premises (FTTP)

Fiber-to-the-Home (FTTH) or FTTP is a form of fiber-optic communication delivery in which an optical fiber is run directly onto the customer's home or premises to deliver very high speed broadband service and other services such as cable television.

2.5.1.2 Hybrid Fiber/Coax (HFC)[40]

HFC is an outside plant distribution cabling concept employing both fiber optic and coaxial cable. Fiber is deployed as the backbone distribution medium, terminating in a remote unit where optoelectric conversion takes place. At that remote unit, the signal is then passed on to coax cables which carry the data the last leg to the individual business, residence, dormitory room, etc.

2.5.1.3 Digital Subscriber Lines (DSL)

DSL is a family of technologies that provides digital data transmission over the copper wires of a local telephone network. This technology is used by the telephone companies to provide Internet services.

2.5.2 Wireless Access

A user can access the Internet via wireless technologies, either on a communications link managed by a wireless service provider (i.e., a cellular data plan), on local infrastructure typically managed at a home or business (i.e., a WiFi hotspot), or through a mixture of those two approaches, in which an entity such as a service provider, municipality, landlord, or homeowners association operates a hotspot-oriented infrastructure. Wireless Internet Service Providers (WISPs) also offer Internet service

[40] Newton's Telecom Dictionary, Harry Newton with Steve Schoen (28th ed. 2014).

over wireless infrastructure. Satellite service providers offer wireless Internet and data services as well.

2.5.2.1 Mobile Access via Cellular

Mobile access is for devices that typically do not remain in fixed locations, such as cellular phones, laptops, and tablets. Users can obtain wireless access from their mobile devices to the information highway via a data plan offered by wireless cellular providers. Cellular communications towers provide service over a specific coverage area, allowing users in that area to connect their mobile devices to the cellular network. From the cell towers, the user traffic is then connected to the information highway via fixed terrestrial infrastructure.

2.5.2.2 Hotspots to Extend Broadband Service

Hotspots are devices used to extend broadband service from the service delivery point to other users in the specified range of the hotspot. Users should note that when using hotspots, the bandwidth at the service delivery point is shared by all users who are connected to that hotspot at a given point in time.

2.5.2.2.1 WiFi Hotspots

WiFi is a wireless technology that operates over unlicensed spectrum frequencies. It is commonly used in homes and offices for wireless local area networks, allowing a wireline Internet connection to be available to any device within range of a wireless router installed in the building.

WiFi is also used by public and private organizations to provide broadband access to the public at a low or no charge. Some cities have developed public WiFi access points for their downtown areas, and many businesses offer free WiFi to customers.

WiFi's broadcast range is relatively low; it typically serves only to extend a wireline connection within a building or limited area. Nevertheless, it is the way many people connect to the Internet, and it provides an easy way for businesses and others to provide access to a large number of people without licenses, permits, or complicated network maintenance.

2.5.2.2.2 Mobile Cellular Hotspots

A mobile cellular hotspot (such as a MiFi device) is a portable broadband device that allows multiple end users and mobile devices to share a cellular data connection and create an ad-hoc network.

A mobile cellular hotspot is similar to a WiFi device in that it extends broadband service to users in a limited radius. However, WiFi devices are connected to a fixed broadband service drop (e.g., modem provided by your Internet Service Provider), whereas a mobile cellular hotspot connects to a cellular network.

3 MASTER PLAN ROADMAP

To address HCR 189's request for a complete Broadband Master Plan for the target areas, DCCA prepared a Broadband Master Plan Roadmap during the several months following HCR 189's adoption that proposed a process and framework for developing a Broadband Master Plan. In addition, DCCA also proceeded with the initial and intermediate steps identified in the Broadband Master Plan Roadmap, which were to: 1) provide a background and understanding of broadband; 2) collect data on the existing broadband availability in the target areas ("what we have today"); and 3) collect inputs from the HCR 189 Participants and BAAC on service gaps and improvements to improve broadband service and availability in the future ("what we want to have and where we want to be in terms of broadband, in the future").

3.1 Identify the Target Areas

This master plan roadmap focuses on the areas specifically named in HCR 189 (the HCR 189 target areas). These areas are the Honolulu International Airport, the Hawaii public schools, and the following four (4) resort areas:

1. Hanalei, Kauai (Actual area targeted includes Hanalei town, as well as the resort area to the east and the coastal area to the west.)

2. Waikiki, Oahu

3. Kaanapali, Maui

4. South Kohala, Hawaii (Actual area targeted includes the coastline resort area from the Mauna Kea Beach Hotel to the Waikoloa Beach Villas and the Waikoloa area.)

3.2 Inventory the Current Broadband Supply and Infrastructure

DCCA implemented several methods to collect information on the current broadband supply and infrastructure in the HCR 189 target areas. The methods and results of the data collection are provided in this Section 3.2.

3.2.1 Resort Areas

In August 2015, DCCA sent requests to the four (4) largest wireless broadband service providers (AT&T Mobility, Sprint, T-Mobile, and Verizon Wireless) and the three (3) largest wireline broadband service providers (Hawaiian Telcom, Level 3, and Oceanic Time Warner Cable) for comment on broadband coverage maps provided for their respective companies for the four resort areas identified in HCR 189: Hanalei, Kauai; Kaanapali, Maui; Waikiki, Oahu; and South Kohala, Hawaii. These maps were extracts from the National Broadband Map, created by the National Telecommunications & Information Administration (NTIA) and the FCC utilizing data collected from the states as part of the NTIA State Broadband Initiative (SBI) mapping grant program and utilizing NTIA Data as of June 2014 (NTIA Data). Responses were received from all providers except for Level 3 (formerly tw telecom), which recently closed its local office to which the request was sent.

It should be noted that coverage shown based upon the NTIA Data may overstate coverage availability because, among other things, it relied on self-reporting by providers and was collected at the census block level with no threshold set to report a block as served; thus a census block may be shown on the map as served even in instances where only one household within that census block is served.[41]

Appendix B to this Broadband Assessment contains the coverage maps for each of the wireline and wireless broadband providers noted above, revised where appropriate based upon comments received from the respective providers. The maps show that, in general, all four (4) target resort areas have access to wired and wireless broadband services by one or more of the major service providers, although there remain some areas without access. Again, the attached maps show coverage only for the broadband providers listed above and are based upon the NTIA Data and additional data supplied by the respective broadband providers, as noted for each map.

3.2.1.1 Wireline

3.2.1.1.1 HawaiianTelcom

Coverage maps are provided for Hawaiian Telcom Internet service at Appendix B to this Broadband Assessment. *See* maps for additional notes to those coverage maps.

[41] *See* Federal Communications Commission, "Seventh Broadband Progress Report," (May 2011) at ¶ 24 and App. F (recognizing limitations of SBI data collected by census block and with advertised speeds, resulting in imperfect deployment estimates) and at ¶ 7, n.26 ("It is unclear whether grantees (or broadband providers who submitted data to the grantees) relied on the threshold in the definition of "unserved areas" in deciding whether a block is one in which broadband service is available to end users. Thus, different grantees could report a block as served if: anyone in that block is served; only everyone in that block is served; the fraction of unserved is below 90% as specified in the definition of "unserved areas;" or something else."), *available at* https://apps.fcc.gov/edocs_public/attachmatch/FCC-11-78A1.pdf.

3.2.1.1.2 Level 3

Coverage maps are provided for Level 3 Internet service at Appendix B to this Broadband Assessment. *See* maps for additional notes to those coverage maps.

3.2.1.1.3 Oceanic Time Warner Cable

Coverage maps are provided for Oceanic Time Warner Cable Internet service at Appendix B to this Broadband Assessment. *See* maps for additional notes to those coverage maps.

3.2.1.2 Wireless

3.2.1.2.1 AT&T Mobility

Coverage maps are provided for AT&T Mobility Internet service at Appendix B to this Broadband Assessment. *See* maps for additional notes to those coverage maps.

3.2.1.2.2 Sprint

Coverage maps are provided for Sprint Internet service at Appendix B to this Broadband Assessment. *See* maps for additional notes to those coverage maps.

3.2.1.2.3 T-Mobile

Coverage maps are provided for T-Mobile Internet service at Appendix B to this Broadband Assessment. *See* maps for additional notes to those coverage maps.

3.2.1.2.4 Verizon Wireless

Coverage maps are provided for Verizon Wireless Internet service at Appendix B to this Broadband Assessment. *See* maps for additional notes to those coverage maps.

3.2.1.3 Resort Areas Survey

In addition to collecting information on the current broadband supply and infrastructure from the wireline and wireless Internet service providers (Sections 3.2.1.1 and 3.2.1.2), information was also sought from business customers in the four (4) target resort areas.

With input from the HCR 189 Participants and BAAC, DCCA created an online "State Resort Area Internet and WiFi Access Survey" to gather feedback related to broadband access and use from businesses, which included hotels, retail stores, restaurants, and other service businesses. The survey link was distributed by the Hawaii Lodging and Tourism Association (HLTA) and the Hawaii Tourism Authority (HTA). Survey responses were collected from September 22, 2015 through October 7, 2015.

The key objective of the survey was to collect information from local businesses on the current broadband infrastructure provided in the target resort areas, WiFi availability, and the positive and negative impacts of a public WiFi program to their businesses.

Thirty-seven (37) survey responses were received. The survey responses, with business names and contact information redacted, are attached to this Broadband Assessment as Appendix C (with graphics and summaries grouped by question) and Appendix D (individual survey responses grouped by target area).

3.2.2 Hawaii Public Schools

DCCA met with the Department of Education (DOE) regarding its current broadband supply and infrastructure. DOE provided the following information that is valid as of May 2015. DOE continues to improve and grow its network.

Presently, all Hawaii public schools have Internet access. DOE procures broadband services from local carriers for primary access to the Internet. Attached to this Broadband Assessment as Appendix E is a complete list of the Hawaii public schools and the type of service connection used by each.[42]

With respect to the provision of WiFi, DOE noted the following:

a. DOE provides a wireless overlay network at all of the schools. The wireless network provides access points in instructional areas.

b. WiFi access is primarily for students, teachers, and staff. Guest wireless access is available for the school's use where and when appropriate.

c. Each WiFi access point has an upper end connection bandwidth of 100 Mbps. Therefore, the bandwidth available is dependent on the number of devices concurrently accessing an access point at any given time.

[42] Appendix E shows that there may be one or two connections to each location – an INET 2Gbps fiber connection and/or a DOE procured connection with the connection rate specified in the Connect Rate Mbps column.

3.3 Identify Existing Plans to Meet Identified Broadband Needs

3.3.1 Resort Areas – C&C of Honolulu Waikiki WiFi Pilot Program Plan

A government-sponsored WiFi program may be desired in resort areas to provide tourists with at least limited free WiFi services to promote tourism-related businesses and to compete with the many world class resort areas around the world that offer free WiFi services. Such service may be used to perform basic functions, such as checking emails and locating visitor services.

For Waikiki, one of the target resort areas in this Broadband Assessment, the City & County of Honolulu (City) is implementing a pilot program, Waikiki WiFi, to offer such a service. Waikiki WiFi service was launched on November 23, 2015. This pilot program may serve as a model for other government-sponsored WiFi programs in resort areas across the State, if such a program is desired by the stakeholders in a specific resort area and supported by the county in which the resort area is located.

The following model is based upon the presentation made on the City & County of Honolulu's Broadband Plan to the BAAC at its June 5, 2015 meeting by Mark Wong, the City's Director of Information Technology, and the Notice & Request for Sole Source for the Waikiki WiFi pilot project.

Waikiki WiFi Pilot Project Model

I. Service to Be Provided

A. Free public WiFi with time limit.
Free WiFi service will be provided to the general public that will be limited to one (1) hour per device per day.

B. Unlimited WiFi through high speed Internet service subscription.
The WiFi service selected is part of Cable WiFi® Internet access, a national WiFi coverage network that is a collaboration of U.S. Internet service providers, Bright House Networks, Cox Communications, Optimum, Time Warner Cable, and XFINITY. This will allow high speed Internet customers of these providers to use the City's hotspots provided under the Waikiki WiFi program to gain seamless entry to unlimited WiFi access by signing into their customer accounts.

II. Network Coverage Area

A. Coverage not to compete with other paid services.
Network coverage will generally be designed to service only City property extending from the Waikiki Police Station to the Diamond

Head end of Kapiolani Park to avoid competing with other carriers and private owners, such as hotels, that offer WiFi to guests for a fee.

B. Optional coverage for adjoining properties.
The State and private owners of adjoining properties may be given the option to have Waikiki WiFi coverage under the program service terms described above.

III. Network Deployment and Management

A. Third party deployment and management.
The Network is to be deployed and operated by a carrier (Oceanic Time Warner Cable) rather than the City.

B. Utilize proven technology for large scale deployment.
The Network is to be deployed utilizing proven WiFi technology for large scale deployment. The WiFi broadband solution is to be implemented using HFC cable. The HFC WiFi network will be able to provide Internet access for up to 4,000 users at once within the Waikiki Beach coverage area. It will allow over 300 WiFi connected users per access point and at least 100 simultaneous active users per access point without diminishment in service speed and quality.

C. Locate equipment on City facilities.
The network equipment will be attached to City facilities thereby precluding the need for private facilities agreements.

D. Provide for public safety use.
The system will allow public safety agencies access to Internet without sacrificing speed, connection and quality.

In planning a government-sponsored WiFi program in other resort areas around the State, careful consideration must be given, as was given to the City's Waikiki WiFi pilot project, to the potential impacts of any public WiFi program, such as any unintended competition with fee generating services of private entities. At its August 19, 2015 meeting, the HCR 189 Participants and BAAC raised the following additional considerations for the entity planning and implementing a free public WiFi program:

- Liability where service is offered without content filtering
- Security
- User experience – need to create a good user experience for visitors
- Setting level of expectations – need to set expectations on what the level of service may be used for based upon speed to be offered (i.e.,

identifying specific uses such as locating businesses, transportation, etc. versus video streaming such as Netflix)

- Effect on or enabling of illegal business activity, such as human trafficking and other issues being dealt with in Waikiki

- Difficulty and cost in providing ubiquitous service versus service in a very defined location, such as airports, large conference center, and hotels

- Higher demands for ubiquitous service because carriers have begun offering cell phone devices with no cellular data (i.e., voice only) so people must use WiFi for data service

- Need for foreign visitors without cellular service to access WiFi to use alternative services like Line for VOIP and messaging

- Alternative options of offering a "communications pass" to get access to various networks at a weekly cost

3.3.2 Honolulu International Airport Wi-Fi Plan

The Honolulu International Airport along with the State's other four major airports have access to wireline and wireless service. This Broadband Assessment, thus, focuses on the provision of Wi-Fi services at the five (5) major airports currently being addressed by DOT, Airports Division.

On September 15, 2015, DOT, Airports Division, issued a Request for Proposals (RFP) "for the installation, operation and maintenance of a Wi-Fi System Concession at Honolulu International Airport, Kahului Airport, Kona International Airport at Keahole, Lihue Airport, and Hilo International Airport)" (Wi-Fi System Concession).[43] Based upon this RFP, DOT is seeking a Wi-Fi System Concession that will offer free Wi-Fi services to the public at a minimum of 5 Mbps download speed and for a minimum of thirty (30) minutes, sufficient for web browsing and email access. The concessionaire will be allowed to offset costs through DOT approved revenue sources including approved advertisements and the offering of paid higher-speed service tiers at rates generally consistent with those at other large hub U.S. airports and as approved by DOT.

The scope of the Wi-Fi System Concession (and possible operation of a Distributed Antenna System (DAS) to improve seamless wireless voice and data service within the terminal buildings) is set forth in full in the Instructions to Proposers[44] as follows:

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[43] DOT Airports Wi-Fi System Concession solicitation, *available at* http://hidot.hawaii.gov/airports/major-hawaii-airports-seek-entity-for-wi-fi-concession-operation/.

[44] *See* Instruction to Proposers, Addendum 1, Revised 10-12-15, at IP-3, *available at* http://hidot.hawaii.gov/airports/files/2012/12/Wi-Fi-System-Concession-Notice-Instructions-to-Proposers-add01-20151012.pdf.

The STATE envisions a public Wi-Fi system available to passengers and visitors that provides free Internet access suitable for web browsing and email application and supported from various revenue sources approved by the STATE including advertising or sponsorship, and a faster service offered on a fee basis capable of supporting such applications as streaming video.

The free Wi-Fi service must be available to all users offering connect speed of 5 megabits per second (Mbps), and with a free connect time of at least 30 minutes. The free service may also be renewable for two additional thirty minute periods by users.

The Concessionaire's cost of providing the free service may be offset by revenue sources including those earned for each separate log-on from the sale of sponsorships, by advertising revenue on the initial screen after log-in, or by requiring the user to watch a video advertisement of no longer than 30 seconds. No pop-up advertising will be allowed unless agreed by STATE in writing. The Concessionaire may offer other services including one or two additional higher-speed service tiers on a paid basis at speeds and rates generally consistent with those charged at other large hub U.S. airports subject to the approval of the STATE. All such services are subject to STATE's written approval.

The Concessionaire may require users to agree to reasonable terms and conditions, but it may not require users to submit personal or other information such as email addresses, phone numbers, nationality, passport numbers or any other information, except for the minimum information required to process payments for faster paid tiers of service.

The Concessionaire may provide service to its roaming partners without advertising, provided that a fee for roaming is charged and payable as a Gross Revenue of the Concession (as defined in the Concession Agreement) at rates to be approved by the STATE.

The STATE is considering allowing the Concessionaire to operate a Distributed Antenna System ("DAS") capable of providing services including improved seamless wireless voice and data service within the terminal buildings with connectivity to wireless carriers and others through roaming agreements. The STATE is seeking and will consider proposals on whether to include DAS within the Concession through the Questionnaire required in the Proposal Intent Package as described in Section 4 of this IP.

Key project schedule dates (subject to change) for the Wi-Fi System Concession are:

- September 15, 2015 Publication of the Notice to Proposers; Issuance of the Instructions to Proposers
- December 30, 2015 Deadline for Submitting Proposal Packages

- February 11, 2016 Notification of the Successful Proposer Award
- May 1, 2016 Concession begins

3.3.3 Department of Education Broadband Plan for Schools

DOE is planning to upgrade part of the State's INET from 2 Gbps to 10 Gbps and 100 Gbps where possible. These upgrades would be funded with DOE funds. The upgrade is anticipated to occur between 2016 and 2019. Increasing the capacity of the INET infrastructure will allow for increased bandwidth to each of the schools.

DOE is also coordinating with the other State INET Partners (Information and Communications Services Division of the Department of Accounting and General Services and UH) on upgrades to the INET interisland connections.

DOE has awarded an E-rate based broadband circuit procurement to Hawaiian Telcom for Direct Internet Access (DIA) as a managed Internet service. Hawaiian Telcom's installation of these connections is limited by the availability of fiber optic cables reaching DOE schools.

3.4 Identify Remaining Gaps and Lead Agencies for Future Planning

Going forward, the HCR 189 Participants and BAAC recommend that identification of remaining gaps and future planning for the areas named in HCR 189 should be undertaken by the appropriate stakeholders for the respective target areas.

To assist in those efforts for the four (4) target resort areas, DCCA asked the HCR 189 Participants and BAAC to share any known information and to comment on service availability, infrastructure gaps, existing and future broadband plans and projects, and key planning stakeholders. A Broadband Service Availability, Gaps, and Plans Data Collection Form was sent to each for that purpose. DCCA received responses from the County of Hawaii, the County of Kauai, and Hawaiian Telcom. The County of Kauai stated that it did not have access to most of the information requested, but did note a reported service gap in the Haena area past Hanalei Town. The County also offered to assist by providing a list of businesses and associations through their Office of Economic Development, and by providing relevant stakeholders for future planning (listed below). Copies of the responses received from the County of Hawaii and Hawaiian Telcom on the Broadband Service Availability, Gaps, and Plans Data Collection Form are attached to this Broadband Assessment as Appendix F.

3.4.1 Resort Areas: Local Planning Teams

For specific locations in the State, successful planning and execution require recruiting the right team of individuals or agencies with a clear stake in the broadband environment of that community, with local knowledge and contacts, and with the

authority and access to funding necessary to carry out the steps to implement their plans. These local technology planning teams would be the best armed to gather more granular information, assess options, gain local participation and buy-in, identify and respond to local concerns, and determine the best solutions and course of action to be taken to address the issues in their respective communities.

Planning efforts for each resort area should, thus, be undertaken by local planning teams led by a county official selected by the county in which the resort area is located. Members of these local planning teams should include the providers that service the resort area in question and local stakeholders, including representatives that can reflect the interest of affected businesses and any local residents.

Respondents to the Broadband Service Availability, Gaps, and Plans Data Collection Form provided suggested local stakeholders that should be included in future planning for the respective resort areas. The County of Kauai suggested for inclusion the wireline and wireless providers, the businesses and associations on their Office of Economic Development list, the County Council, the Chamber of Commerce, their Kauai legislative representatives, and a representative of the Office of the Mayor. Suggested stakeholders were also provided by the County of Hawaii and Hawaiian Telcom in their submitted forms (*see* Appendix F).

3.4.2 Honolulu International Airport: DOT

DOT leads all broadband planning efforts for the Honolulu International Airport and all other State owned airports, consistent with its statutory jurisdiction and authority. As discussed above, DOT has already issued its RFP to implement its plan to provide free WiFi services at the five (5) major airports across the State. Where requested, DCCA will assist with DOT's future broadband planning, consistent with DCCA's broadband duties and using its authority with respect to the State's INET.

3.4.3 Hawaii Public Schools: DOE

DOE leads all existing and future broadband planning efforts for the State's public schools, consistent with its statutory jurisdiction and authority. Where requested, DCCA will assist with DOE's broadband activities, consistent with DCCA's broadband duties and using its authority with respect to the State's INET.

Currently, most public schools have fiber optic connections for access to the INET. The following schools have Internet access via cable modem and digital microwave radio:

Hana Elementary
Hana High School

** Note that Appendix E shows that there may be one or two connections to each location – an INET 2Gbps fiber connection and/or a DOE procured connection with the connection rate specified in the Connect Rate Mbps column.

The following schools have Internet access only via cable modem:

Iliahi Elementary School
Aina Haina Elementary School

DOE plans to be able to connect Iliahi and Aina Haina Elementary Schools with fiber optic connections by December 2015.

DOE is focused on improving the INET infrastructure to increase the capacity of the system from 2 Gbps to 100 Gbps where possible. The main challenge is improving the fiber optic cable routing and configurations of the existing INET infrastructure.

3.5 Identify Applicable Best Practices and Develop Specific Strategies to Establish Universal High Speed Broadband Access Database

3.5.1 Best Practices

HCR 189 requested identification of best practices to establish a database that identifies current and prospective projects for deploying broadband. Based upon its research of federal and nationwide practices, DCCA identified six (6) complementary best practices, summarized below, to create, support and enhance a broadband projects database, which may reduce deployment time for broadband infrastructure and maximize state and county resources. Most of these recommendations had been previously made in the Capacity Building Project Plan[45] prepared by DCCA in 2013, with review and input by the BAAC.

3.5.1.1 Infrastructure Deployment Best Practices

To ensure that his administration took action to modernize the federal permitting and review processes for 21st century infrastructure projects, President Obama has issued various Executive Orders and Presidential Memoranda on accelerating infrastructure deployment.[46] These Executive Orders and Memoranda launched a Federal government-wide initiative led by an interagency Steering Committee representing

[45] *See* http://cca.hawaii.gov/broadband/files/2013/05/CapacityBuildingProjectPlan2013.pdf.

[46] *See* Presidential Memorandum on Speeding Infrastructure Development Through More Efficient and Effective Permitting and Environmental Reviews (August 2011); Executive Order 13604, *Improving Performance of Federal Permitting and Review of Infrastructure Projects* (March 22, 2012); Executive Order to facilitate the deployment of broadband on Federal lands, buildings, rights of way, federally-assisted highways and tribal lands (June 14, 2012); Presidential Memorandum to Modernize Infrastructure Permitting (May 17, 2013).

twelve (12) federal agencies to review government processes, identify best practices and modern reforms, and implement plans to improve broadband deployment. As a result, various tools, systems and processes were developed, and are being developed, to improve efficiency in infrastructure deployment.

In 2013, DCCA published the Capacity Building Project Plan prepared under the NTIA's SBI grant awarded to DCCA, which summarized many of the federal government actions and reports and federal and state best practices for broadband infrastructure deployment.[47] Based on those activities and identified best practices, the Capacity Building Project Plan included, among others, the following recommendations to reduce deployment time for broadband infrastructure and to maximize state and county resources:

A. Reduce Deployment Time

1. Increase Available Information

a) Aggregate Data on State and County Assets

- *To improve the collection and availability of information regarding the location and availability of poles, ducts, conduits and rights-of-way, coordinate consistent online sharing of detailed information on state and local routes and conduit locations. Include contact information and weblinks.*
- *Create an ArcGIS online map to display government owned inventory modeled after federal Government Services Administration (GSA) ArcGIS map*

b) Create Online Library of Agency Information

- *Coordinate consistent online sharing of information on agency policies and practices, and permitting and other review information, through creation of a searchable database. Include contact information and weblinks.*

c) Develop Online Deployment Coordination System

- *Develop web-based system that will provide advance notice of state and local infrastructure projects to allow coordination of broadband infrastructure deployment requiring access to underground rights of way with all required agencies.*
  - *Create a publicly viewable State Infrastructure Projects Permitting Dashboard, modeled after the DOT sponsored Federal Infrastructure Projects Permitting Dashboard or adapt calendar notification system developed by DCCA for Act 151 permit exemption notice.*
  - *Consider development of a Fiber Collaboration database modeled after ones developed in Minnesota and California. These databases allow broadband providers to view upcoming construction projects, notify the state transportation department of their interest in including broadband*

[47] *See* http://cca.hawaii.gov/broadband/files/2013/05/CapacityBuildingProjectPlan2013.pdf.

infrastructure, and provides opportunities for joint trenching collaboration among providers.

* * *

B. Maximize State and County Resources

1. Shared Resources and Shared Access

a) Establish Dig Once and Joint Build Policies

- *Create "dig once" and joint use of trenches practices or legislation for coordination and collaboration in the use of rights-of-way (including sewers, power transmission facilities, rail, pipelines, bridges, tunnels and roads). For example, State financing of roadway and other relevant infrastructure projects could be made contingent on allowing joint deployment of conduits by qualified parties.*
- *Utilize SDOT-FHWA policies and procedures, and information made available, that support installation practices that minimize excavation; and promote practices and technologies that align with the dig once concept.*
- *Encourage coordination between the State and local agencies to identify opportunities for development of new fiber facilities and other critical broadband infrastructure in conjunction with planned State and local capital improvement projects.*
- *Consider City of Boston type "joint build" policy, which mandates that all telecoms install their underground conduits in the same trench at the same time on a shared-cost basis.*
- *Work with county agencies to develop plans to close physical infrastructure gaps to provide broadband access for remote and difficult to reach areas in the State.*
- *Align and leverage State and county broadband infrastructure related projects and activities.*
- *Work collaboratively with service providers on joint highways and utility planning and development.*
- *Establish a utilities coordinator/review position in conjunction with the State Department of Transportation office to facilitate and coordinate broadband infrastructure projects utilizing government roadways and rights of way.*

The Capacity Building Project Plan was circulated for input and supported by the BAAC in 2013.

On October 22, 2015, the HCR 189 Participants and BAAC were sent information for review on the six (6) best practices identified by DCCA. Because DCCA was not able to convene a meeting of the HCR 189 Participants and BAAC before submission of these best practices, DCCA recommends that these best practices be further reviewed by the BAAC and other relevant stakeholders at the next BAAC meeting. If supported in concept, these best practices will be more fully explored and developed for future recommendation or implementation. This could include setting priorities in

implementation, assessments on statutory amendments or additional funding that may be required, and other details, such as leads on implementation.

3.5.1.1.1 Infrastructure Projects Databases and Dashboard

Best Practice 1: Infrastructure Projects Database and Dashboard
Develop an online deployment and coordination system database to provide advance notice of state and local infrastructure projects and to allow coordination of broadband infrastructure deployment requiring access to underground rights-of-way. Create a publicly viewable online dashboard that includes project descriptions, project schedules, and project status.

To increase available information and thereby reduce deployment time, Item A.1.c. of the State Capacity Building Plan recommended the development of an online deployment coordination system with a publicly viewable Permitting Dashboard modeled after the Federal Infrastructure Project Permitting Dashboard (Federal Permitting Dashboard).[48] Among other things, the Federal Permitting Dashboard supports coordination and synchronization of projects among federal agencies, can help create a more predictable process for project applicants, allows interested parties notice of upcoming projects, and tracks progress on projects throughout their review.[49]

The Federal Permitting Dashboard was launched in October 2011 and is hosted at the federal Department of Transportation. Future plans for the Federal Permitting Dashboard include further development of both the internal and external sites "to institutionalize the Dashboard as a tool to facilitate interagency coordination and create accountability, transparency, and predictability for project schedules."[50]

[48] *See* http://www.permits.performance.gov/projects.

[49] *See* http://www.permits.performance.gov/sites/permits.performance.gov/files/docs/pm-implementation-plan-2014-fact-sheet.pdf.

[50] Steering Committee on Federal Infrastructure Permitting and Review Process Improvement, *Implementation Plan for the Presidential Memorandum on Modernizing Infrastructure Permitting,* (May 2014) at 18-19, *available at* https://www.permits.performance.gov/tools/implementation-plan.

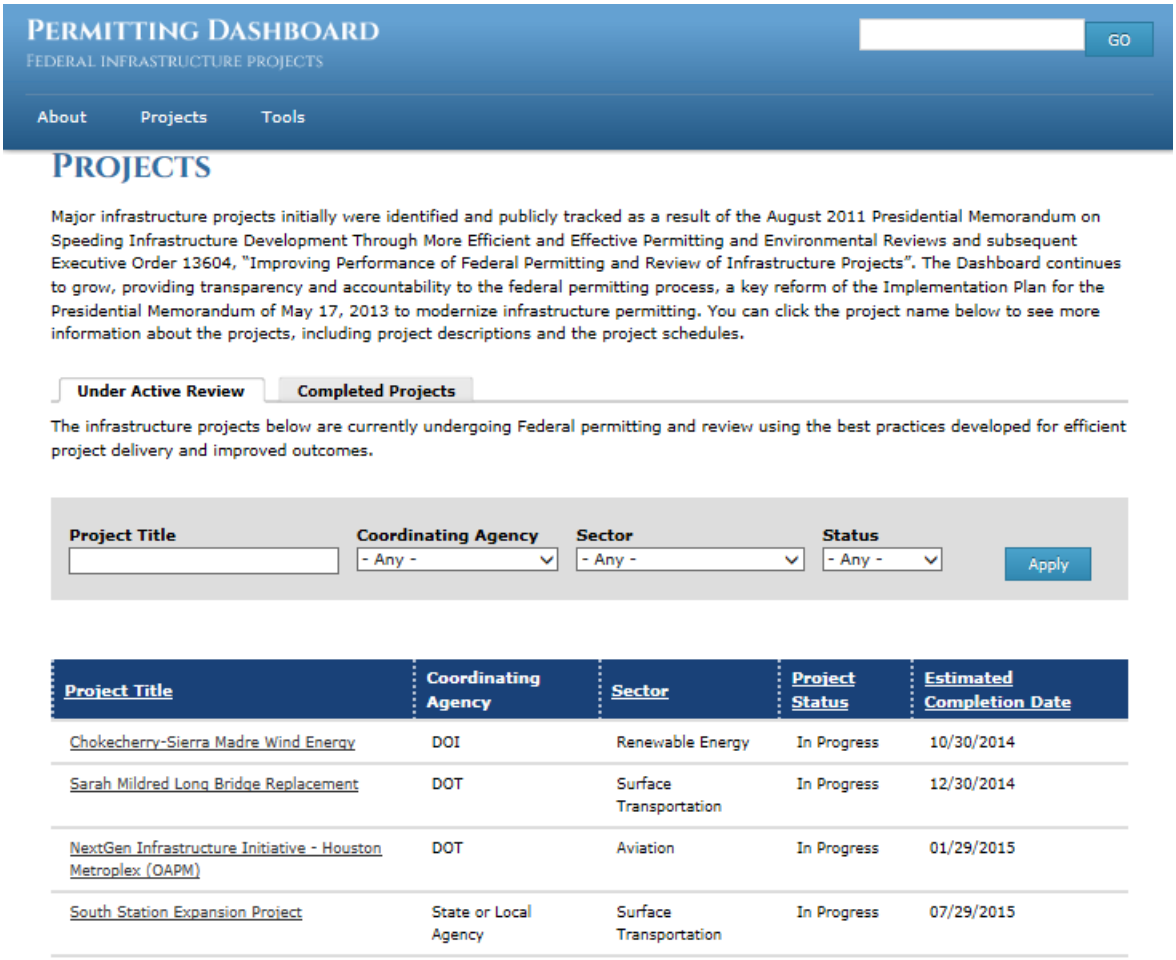

Figure 1. Screenshot of the Federal Infrastructure Projects Permitting Dashboard

Best Practice 2: Permit Inventory

Create a publicly viewable permit inventory to provide an online searchable database of permitting and review information.

To increase available information and thereby reduce deployment time, Item A.1.b. of the State Capacity Building Plan recommended the creation of an online library of agency information to coordinate consistent online sharing of information on agency policies and practices, and permitting and other review information through a searchable database that includes contact information and web links.

A permit inventory may be modeled after the federally created Permit Inventory. "As part of an overarching effort to improve timelines for permit decision-making and review and foster better outcomes for the environment and the affected communities, [federal] agencies with permitting and review responsibilities . . . created this searchable database of permitting and review information. This tool contains information on permits and approvals as well and NEPA and other reviews."[51]

[51] *See* http://www.permits.performance.gov/tools/permit-inventory.

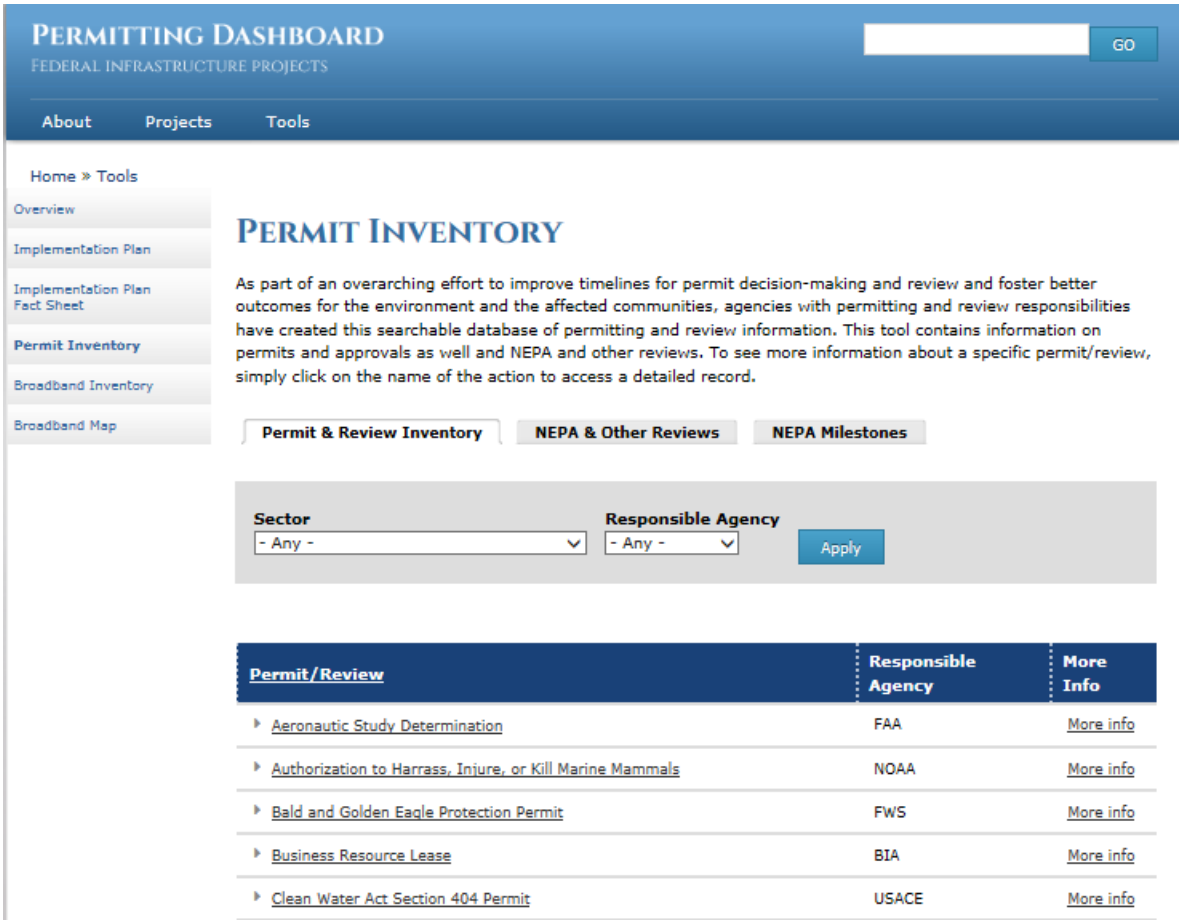

Figure 2. Screenshot of the Federal Infrastructure Projects Permit Inventory

Best Practice 3: Broadband Inventory

Create a broadband inventory to provide a database of State agency documentation related to broadband deployment.

Similar to the permit inventory, a State broadband inventory may be created, modeled after the federally created Broadband Inventory, to increase available information through an online library of agency information. Pursuant to the President's Executive Order calling for increased accessibility and usability of federal broadband documentation to promote and facilitate broadband deployment, fourteen (14) federal departments, agencies, and offices centralized its published federal broadband applications, forms, lease agreements, policies and procedures, and process documents. Although the majority of this documentation is also housed on agency-specific websites, this central document inventory is intended to ease the burden on wireless providers, public safety, and others who undergo federal reviews prior to broadband deployment.[52]

[52] *See* http://www.permits.performance.gov/tools/broadband-inventory.

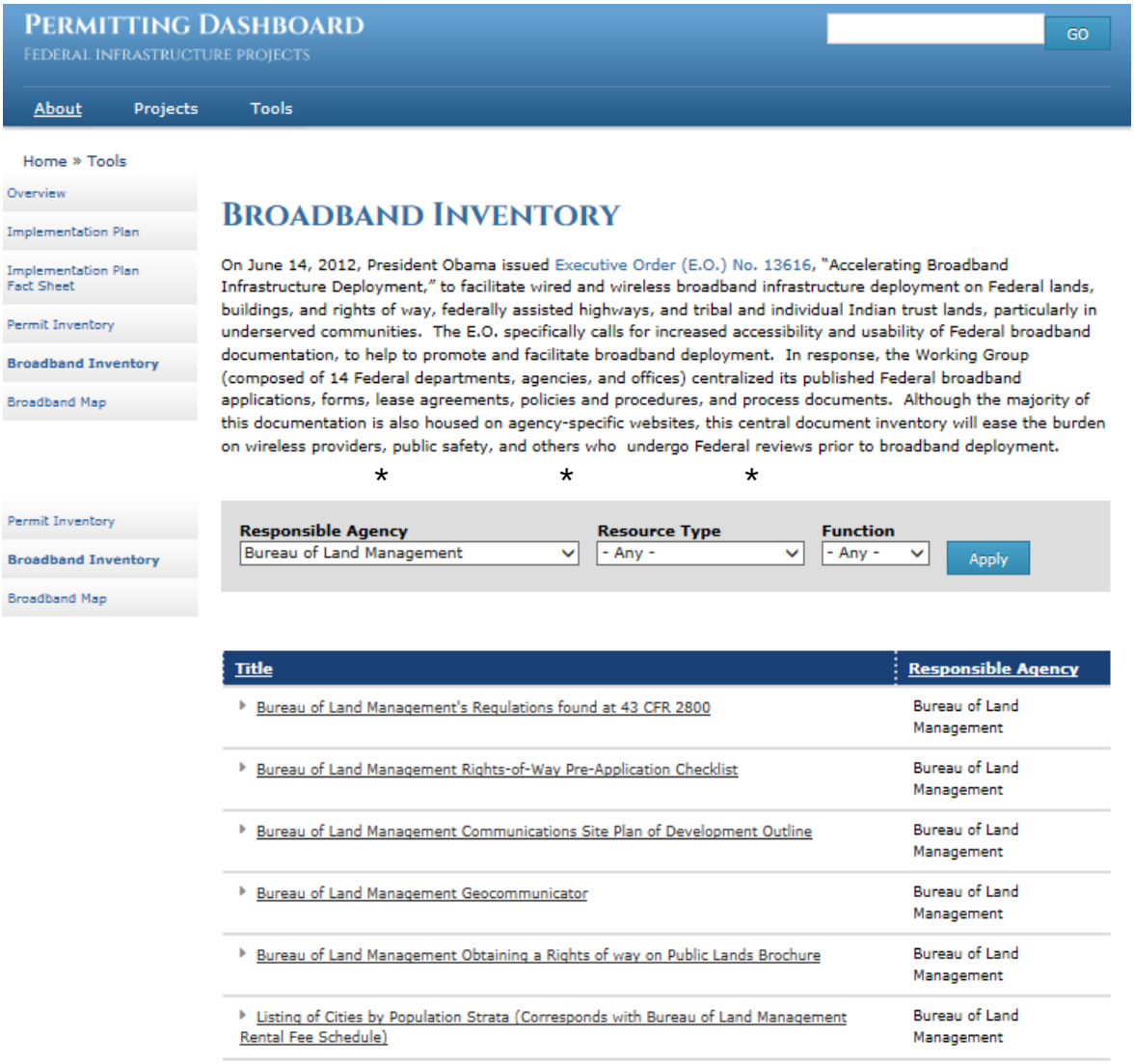

Figure 3. Screenshot of the Federal Infrastructure Projects Broadband Inventory

3.5.1.1.2 "Dig Once" Policies and Practices

Best Practice 4: "Dig Once" Policies and Practices
Identify, communicate, coordinate and promote successful state and local policies and practices that minimize the number and scale of excavations when installing telecommunications infrastructure in rights-of-way to facilitate the deployment of broadband.

To maximize state and county resources, Item B.1.a. of the State Capacity Building Plan recommended best practices based upon shared resources and shared access policies. One best practice recommended was the establishment of "dig once" and joint build policies and practices.

According to the FCC, the largest cost element for deploying broadband is burying fiber optic cables and conduit underground. Similarly, the Federal Highway Administration (FHWA) has indicated that 90% of the cost of deploying broadband is due to the cost incurred because the work requires significant excavation of the roadway.

Coordinating highway construction projects with the installation of broadband facilities may save on costs incurred by repeated excavation in areas where the entire right of way is paved or developed. Coordination also helps to reduce deployment time by preventing the need to acquire duplicative federal reviews and permits for work done at the same location.[53] The Federal Highway Administration Policy Brief (October 2013) provides more information on "dig once" policies.[54]

A proposed federal "dig once" bill has been introduced by California Congresswoman Anna G. Eshoo, ranking member of the Communications and Technology Subcommittee, and Oregon Congressman Greg Walden, Chairman of the Subcommittee. Titled the *Broadband Conduit Deployment Act of 2015,* this "dig once" legislation would mandate the inclusion of broadband conduit — plastic pipes which house fiber-optic communications cable — during the construction of any road receiving federal funding if there is a demonstrated need for broadband in the area within the next 15 years.[55]

The State could promote a "dig once" strategy when and where it makes sense, adding telecom conduit, handholes, and other basic infrastructure as part of other projects (e.g., private sector constructions, street rehabilitation, sidewalk repairs and construction, etc.).

3.5.1.1.3 Online Project Notification System

Best Practice 5: Online Project Notification System
Utilize established national online notification system for infrastructure projects requiring pole attachments and related infrastructure and facilities.

The National Joint Utilities Notification System (NJUNS) is a national, non-profit consortium that provides an online notification system to provide efficient communication and work coordination while promoting cooperation and partnering to manage pole transfers, joint trench construction, pole attachments, and project notification. A NJUNS System Overview PowerPoint is attached to this Broadband Assessment as Appendix G. The link to the NJUNS website is http://web.njuns.com.

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[53] Federal Highway Administration Policy Brief (October 2013), *available at* http://www.fhwa.dot.gov/policy/otps/policy_brief_dig_once.pdf.

[54] *See id*.

[55] *See* http://eshoo.house.gov/issues/economy/eshoo-walden-introduce-dig-once-broadband-deployment-bill/.

Membership to NJUNS is on a state-by-state basis. There are currently twenty-eight (28) member states and over twelve thousand (12,000) users of the NJUNS system. To join NJUNS, a consortium of sponsoring companies generally agree to sponsor and pay the fees for the use of the NJUNS system for the entire state. Pole owners are usually a part of the consortium. There is an initial membership fee and an annual membership fee. The fee allows the state to have as many member companies and users as desired.

NJUNS provides a method of obtaining up-to-date information on a variety of shared concerns, including pole transfers, joint trenching and permits for new attachments to poles, and a service that allows its members to communicate and track field workflow regarding joint utility ventures: joint pole administration, joint trench coordination, oversize load move coordination, and large project notification.

Hawaii may become a member state of NJUNS through a state agency and could encourage use by all impacted stakeholders of the online project information and communication system NJUNS provides.

3.5.1.1.4 Broadband Utilities and Projects Coordinator

Best Practice 6: Broadband Utilities and Projects Coordinator
Establish a broadband utilities coordinator position in conjunction with DOT to facilitate and coordinate broadband infrastructure projects utilizing government roadways and rights-of-way.

To maximize state and county resources, Item B.1.a. of the State Capacity Building Plan recommended best practices based upon shares resources and shared access policies. One best practice recommended was the establishment of a utilities coordinator/review position in conjunction with DOT to facilitate and coordinate broadband infrastructure projects utilizing government roadways and rights-of-way.

The broadband utilities coordinator would perform a liaison role between DOT, utilities, and broadband providers; identify opportunities and coordinate government and private construction projects to promote the “dig once” concept; and coordinate solutions to facilitate the design and development of project construction plans to expedite the deployment of broadband infrastructure and to promote the efficient, shared use of resources, including state and county rights-of-way. After discussions with DOT, DCCA prepared a draft scope of work for a broadband utilities coordinator position. The objective is to improve the efficiency and turnaround time for approvals for construction projects in exchange for project information that provides the State with a “big picture” view that could allow for strategic cooperation between government, utility companies and communications companies. DCCA has provided DOT with the draft scope of work for review and further discussion.

APPENDIX A

Project Glossary

HCR 189 Project Glossary

Contents

3G

Third generation of loosely defined mobile standards and wireless technologies which enables network operators to offer users a wider range of more advanced services including wide-area wireless voice telephony, video calls, and broadband wireless data.

4G

Fourth generation of mobile wireless standards and technology which enables network operators to provide a comprehensive IP solution where voice, data and streamed multimedia can be delivered users on a stationary or mobile basis, and at higher data rates than previous generations. The ITU (International Telecommunications Union) designates ITM-Advanced (4G) target transmission rates, for research purposes, at 100 Mbps when in a high mobility environment (e.g., in a moving vehicle) and 1 Gbps when stationary.

Advanced Broadband

The FCC uses this term to describe broadband capabilities needed to meet the requirements to deliver services defined as "advanced telecommunications capability" in Section 706 of the Telecommunications Act of 1996 (see "Broadband" below). Example of usage by the FCC: *The 4 Mbps/1 Mbps standard set in 2010 is dated and inadequate for evaluating whether advanced broadband is being deployed to all Americans in a timely way, the FCC found. Using this updated service benchmark, the 2015 report finds that 55 million Americans – 17 percent of the population – lack access to* ***advanced broadband****. Moreover, a significant digital divide remains between urban and rural America: Over half of all rural Americans lack access to 25 Mbps/3 Mbps service*.

Bandwidth

In this document the word refers to channel capacity or data throughput in terms of bit rate.

Broadband

This term is broadly defined as high-capacity transmission using a wide range of frequencies which allows large numbers of messages to be simultaneously transmitted and received.

The U.S. Congress used the term broadband in Section 706 of the Telecommunications Act of 1996 as part of the definition of "advanced telecommunications capabilities": *The term `advanced telecommunications capability' is defined, without regard to any transmission media or technology, as high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology*.[1]

[1] Section 706 of the Telecommunications Act of 1996. http://transition.fcc.gov/Reports/tcom1996.pdf

Broadband Benchmark Speeds (FCC)

The FCC redefined the broadband benchmark speeds on January 29, 2015.[2] Previously, the broadband benchmark had been defined in 2010 as 4 megabits per second (Mbps) for downloads and 1 Mbps for uploads. The current benchmarks speeds defined by the FCC are 25 Mbps for downloads and 3 Mbps for uploads.

Census Block

The smallest geographic area for which census data is collected by the Bureau of the Census. No socio-economic data is reported for census blocks.[3]

Census Tract

A census tract is an aggregation of census blocks groups (which, in turn, is an aggregation of census blocks). The population of a tract ranges from 1200 to 8000 people. The geographic size of census tract varies depending on population density. It is the smallest geographic area for which socio-economic data is made available. [4]

Coaxial or Coax Cable

A wire surrounded by insulating material which is then surrounded by a grounded shield of thin metal and/or braided wire usually protected by an outer plastic or rubber sheath. This type of cabling is normally used to carry high frequency signals such as those used for video and data services.

Community Anchor Institutions

Schools, libraries, medical and healthcare providers, public safety entities, community colleges and other institutions of higher education, and other community support organizations and entities that can provide additional computer and Internet access.

Digital Divide

The division between people who have those who do not have access to the Internet, and also referring to the limitations of accessing information and services by those who do not have Internet access.

DOCSIS

Data Over Cable Service Interface Specification is an international standard developed by CableLabs that defines the communications and operation support interface requirements for a data over existing cable TV wiring systems. The latest version, DOCSIS 3.1[5], is capable of providing a theoretical maximum of 10 Gbps downstream and 1 Gbps upstream speeds.

Downstream or Downlink

Refers to the flow of data from a remote source to a local computer from the end-user's perspective.

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[2] FCC Finds U.S. Broadband Deployment Not Keeping Pace. https://www.fcc.gov/document/fcc-finds-us-broadband-deployment-not-keeping-pace

[3] Census Blocks and Block Groups. http://www.census.gov/geo/www/GARM/Ch11GARM.pdf.

[4] 2010 Census Summary File 1 http://www.census.gov/prod/cen2010/doc/sf1.pdf#page=474.

[5] CableLabs DOCSIS 3.1. http://www.cablelabs.com/innovations/featured-technology/

DSL
Digital Subscriber Line is a family of technologies that provides digital data transmission over the copper wires of a local telephone network. This technology is used by the telephone companies to provide Internet services.

FCC
Acronym for Federal Communications Commission.

FTTH or FTTP
Fiber-to-the-Home or Fiber-to-the-Premise is a form of fiber-optic communication delivery in which an optical fiber is run directly onto the customers' homes or premises to deliver very high speed broadband service and other services such as cable television.

Gbps
Gigabit per second or billions of bits per second is a unit of data transfer rate equal to a billion bits per second.

GIS
Geographic Information System is an information system that captures, stores, analyzes, manages, and presents data that refers to or is linked to physical locations.

Internet
"The Federal Networking Council (FNC) agrees that the following language reflects our definition of the term "Internet".[6]

"Internet" refers to the global information system that --

(i) is logically linked together by a globally unique address space based on the Internet Protocol (IP) or its subsequent extensions/follow-ons;

(ii) is able to support communications using the Transmission Control Protocol/Internet Protocol (TCP/IP) suite or its subsequent extensions/follow-ons, and/or other IP-compatible protocols; and

(iii) provides, uses or makes accessible, either publicly or privately, high level services layered on the communications and related infrastructure described herein."

IP
An abbreviation for Internet Protocol as described in DARPA RFC791. It is the protocol used for sending, receiving, addressing, and routing data across a packet-switched network.

kbps
kilobits per second is a unit of data transfer rate equal to 1,000 bits per second.

LAN
Acronym for Local Area Network.

[6] *See* https://www.nitrd.gov/fnc/Internet_res.aspx

Last Mile
The phrase describes the infrastructure segment that provides the final connection from a provider's central distribution point (e.g., neighborhood nodes or CO facility) to the subscriber's premises. The distance this "last mile" covers may be less than 100 feet in urban areas, while in rural and remote areas it may actually represent many miles.

LTE
An abbreviation for "Long Term Evolution". It is a wireless data technology with theoretical speeds of up to 170Mbps upstream and 300Mbps downstream. It has been deployed by the major U.S. carriers including AT&T, Sprint, T-Mobile, and Verizon.

Mbps
Megabits per second is a unit of data transfer rate equal to one million bits per second

MHz
One million hertz. A hertz is a frequency unit defined in cycles per second.

Microwave
Radio Frequency wavelengths, with frequencies between 300 MHz (100 cm) and 300 GHz (0.1 cm), commonly used for point-to-point communications systems.

Middle Mile
The interconnection of core networks (backbone) to local network plants such as central offices, headends, and mobile switching centers.

POTS
An acronym for Plain Old Telephone Service. It refers to voice-grade telephone service using analog transmission technology on copper wire networks.

Tbps
Terabits per second or trillions of bits per second is a unit of data transfer rate equal to a trillion bits per second.

Universal Broadband Access
The DCCA and the BAAC will define this term in a way similar to the FCC's definition of "Universal Access."[7] Universal Broadband Access is defined as wired or wireless broadband access within a reasonable distance to everyone at affordable rates.

Universal Access
FCC: *…universal access is the term often used to describe the initial stages of telecommunications buildout. The emphasis of universal access policies is to increase access to telephones or telecommunications services on a community-wide level. Universal access programs often seek to foster installation of public payphones or public call centers in rural villages or low-income urban areas with the goal of providing a basic and initial connection to the network. Public payphones or call centers are used in some instances to ensure that even the most remote or sparsely populated area has some access to communication services*.

[7] FCC Universal Service. https://transition.fcc.gov/connectglobe/sec6.html

Universal Service

FCC: *Universal service policies are typically aimed at either providing telephone or telecommunications services to all households within a country, including those in remote and hard-to-serve locations, or increasing the number of individuals with telecommunications services. Universal service programs tend to focus on making the cost of obtaining and maintaining telephone service more affordable to individual users or to targeted groups of users such as low-income consumers and residents of high-cost and rural areas.*

The services supported by universal service mechanisms range from basic telephone service to advanced services. Some countries with well-developed telecommunications infrastructure have expanded their universal service support programs to include advanced services such as Internet access in schools and libraries and affordable access to rural health care providers.

Universal High Speed Broadband Access

This phrase in HCR 189 is interpreted by the DCCA as a union of the definitions of "advanced broadband" (as used by the FCC to define broadband benchmarks) and "Universal Broadband Access" (see definition above). Together, then, the definition for Universal High Speed Broadband Access is: *wired or wireless broadband access within a reasonable distance to everyone at affordable rates and meeting the FCC's current broadband benchmark speeds*. The FCC's Broadband Benchmark speeds (as defined earlier in this glossary) are 25 Mbps downlink and 3 Mbps uplink as of January 29, 2015.

Upstream or Uplink

Refers to the flow of data from a local computer to a remote destination from the end-user's perspective.

WDM and DWDM

Abbreviations for Wave Division Multiplexing and Dense Wave Division Multiplexing. These technologies combines outputs from multiple optical sources and combines them to allow transmission into a single fiber optic strand. This allows a single fiber cable to carry multiple independent sources of data simultaneously.

Wi-Fi

A widely used wireless LAN telecommunications technology based on the Institute of Electrical and Electronics Engineers (IEEE) 802.11 standards that provides for the wireless transmission of data over a short range network, utilizing unlicensed radio spectrum to provide access to a network. Speeds usually range from 11 Mbps to 1 Gbps. The term WiFi without the hyphen is also often used to refer to wireless LAN technology.

WiMAX

WiMAX is shorthand for Worldwide Interoperability for Microwave Access. The WiMAX Forum defines it as: *technology is based upon the IEEE 802.16 standard enabling the delivery of wireless broadband services anytime, anywhere. WiMAX products can accommodate fixed and mobile usage models across a range of applications. The IEEE 802.16 standard was developed to deliver non-line-of-sight (NLoS) connectivity between a subscriber station and base station*.[8]

[8] *See* http://www.wimaxforum.org/resources/technical-specifications

Wireless Broadband

FCC: *Wireless broadband connects a home or business to the Internet using a radio link between the customer's location and the service provider's facility. Wireless broadband can be mobile or fixed*.[9] The FCC considers wireless broadband services to include Wireless Internet Service Providers (WISPs), Wi-Fi, and mobile wireless broadband services. Note that satellite broadband service is considered as a separate category of broadband access.

[9] FCC – Types of Broadband Connections. https://www.fcc.gov/encyclopedia/types-broadband-connections

APPENDIX B

Broadband Coverage Maps

Appendix B: Wireline and Wireless Broadband Coverage Maps

The following are coverage maps for the three (3) largest wireline (Hawaiian Telcom, Level 3, and Oceanic Time Warner Cable) and the four (4) largest wireless (AT&T Mobility, Sprint, T-Mobile, and Verizon Wireless) broadband service providers. As noted in the body of this Report at Section 3.2.1, each service provider was sent a set of maps indicating its reported service coverage for the four (4) target resort areas: Hanalei, Kauai; Kaanapali, Maui; Waikiki, Oahu; and South Kohala, Hawaii; which were generated using data from the National Telecommunications & Information Administration (NTIA) collected as part of the NTIA State Broadband Initiative (SBI) mapping grant program as of June 2014 (NTIA Data).[1] The SBI program collected data voluntarily submitted by the participating providers through a state grantee. Note that coverage based upon the NTIA Data may in certain instances show a census block on the map as served even where only one household within that census block may be served.[2]

Providers were asked to verify the coverage shown for their service on the maps provided. Provider responses and any revisions made to the coverage maps based upon those responses are noted for the respective coverage maps below. In some cases as noted, maps included below are provider maps or maps produced with additional provider data submitted.

[1] NTIA map data is available for download from http://www.broadbandmap.gov/data-download.

[2] *See* Federal Communications Commission, "Seventh Broadband Progress Report," (May 2011) at ¶ 24 and App. F (recognizing limitations of SBI data collected by census block and with advertised speeds, resulting in imperfect deployment estimates) and at ¶ 7, n.26 ("It is unclear whether grantees (or broadband providers who submitted data to the grantees) relied on the threshold in the definition of "unserved areas" in deciding whether a block is one in which broadband service is available to end users. Thus, different grantees could report a block as served if: anyone in that block is served; only everyone in that block is serve; the fraction of unserved is below 90% as specified in the definition of "unserved areas;" or something else."), available at https://apps.fcc.gov/edocs_public/attachmatch/FCC-11-78A1.pdf.

A note about line and color artifacts in the maps

Coverage maps line alignments
The broadband service coverage data derived from the NTIA Data are approximations. Thus, a close visual inspection may reveal unusually small areas (relative to the rest of the map) where coverage is not indicated. These areas may accurately reflect areas of no service by a specific provider. However, they may also be a data artifact caused by slight differences in the way the map projections for the various data layers used to build the map line up when layered or, in other cases, it may result from an error in the NTIA Data obtained from the provider.

Blocky regions visible in some wireless coverage maps
Some of the wireless (cellular) provider maps may have a blocky look reminiscent of topographic maps. This is a result of the way the data is interpreted for visualization of the wireless data spectrum ranges licensed to and used by a specific provider. These ranges are listed below next to the number code used by the NTIA Data to identify bands.

1 Cellular spectrum (824-849 MHz; 869-894)
2 700 MHz spectrum (698-758 MHz; 775-788 MHz; 775-788 MHz)
3 Broadband Personal Communications Services spectrum (1850-1915 MHz; 1930-1995)
4 Advanced Wireless Services spectrum (1710-1755 MHz; 2100-2155) used to provide service

Color transparencies interactions
Color complexity may exist in some maps because of multiple map layers, such as where coverage of the 3G and 4G wireless services overlap each other and underlying land geography and bodies of water, etc. Please note also that visual complexity in printed copies of the maps may be caused by the printer used (printers may interpret or print colors differently) or in viewed copies of the maps on monitors by the type of display used (LCD and CRT color displays).

Wireline Broadband Providers

Hawaiian Telcom

The coverage maps for Hawaiian Telcom below were created from the NTIA Data. The census blocks shaded in gray indicate Hawaiian Telcom coverage.

In response to DCCA's request to verify coverage, Hawaiian Telcom responded that 75-100% of the Waikiki area locations can be served at speeds of 10 Mbps downstream and 1 Mbps upstream, and that it is able to serve 50-75% of locations for each of the three (3) other identified resort areas (Kaanapali, Mau; South Kohala, Hawaii; and Hanalei, Kauai).

Figure 1. Hawaiian Telcom service, Hanalei, Kauai.

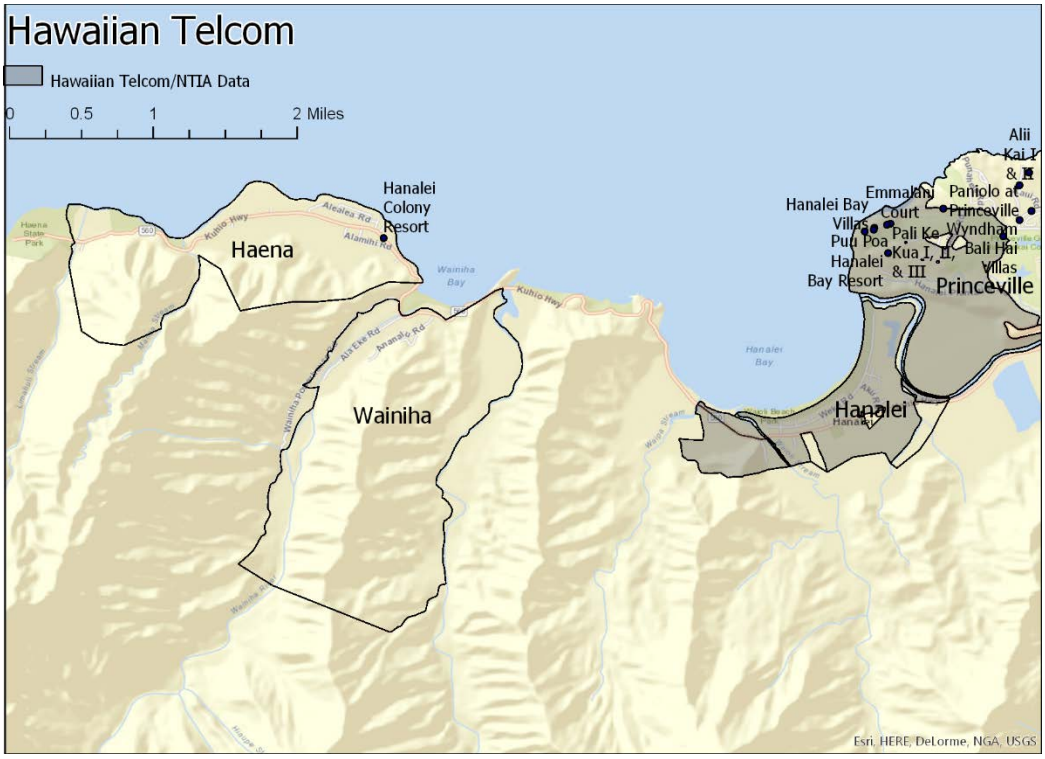


Figure 2. Hawaiian Telcom service, Kaanapali, Maui.

Figure 3. Hawaiian Telcom service, South Kohala, Hawaii Island.

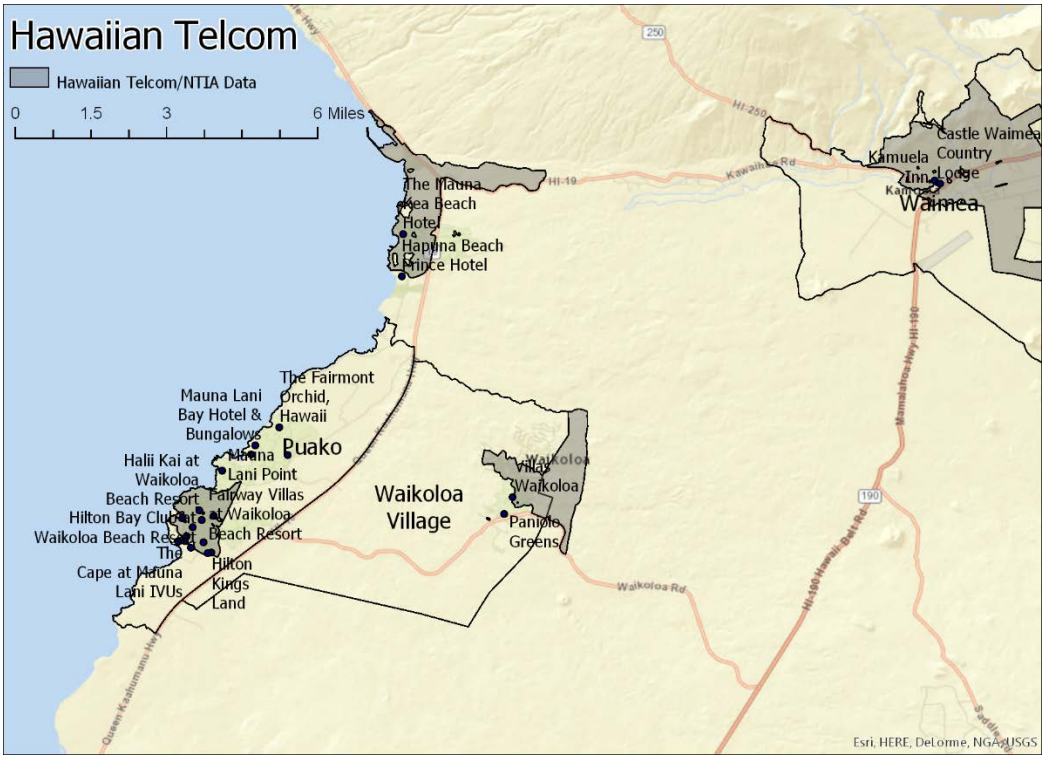
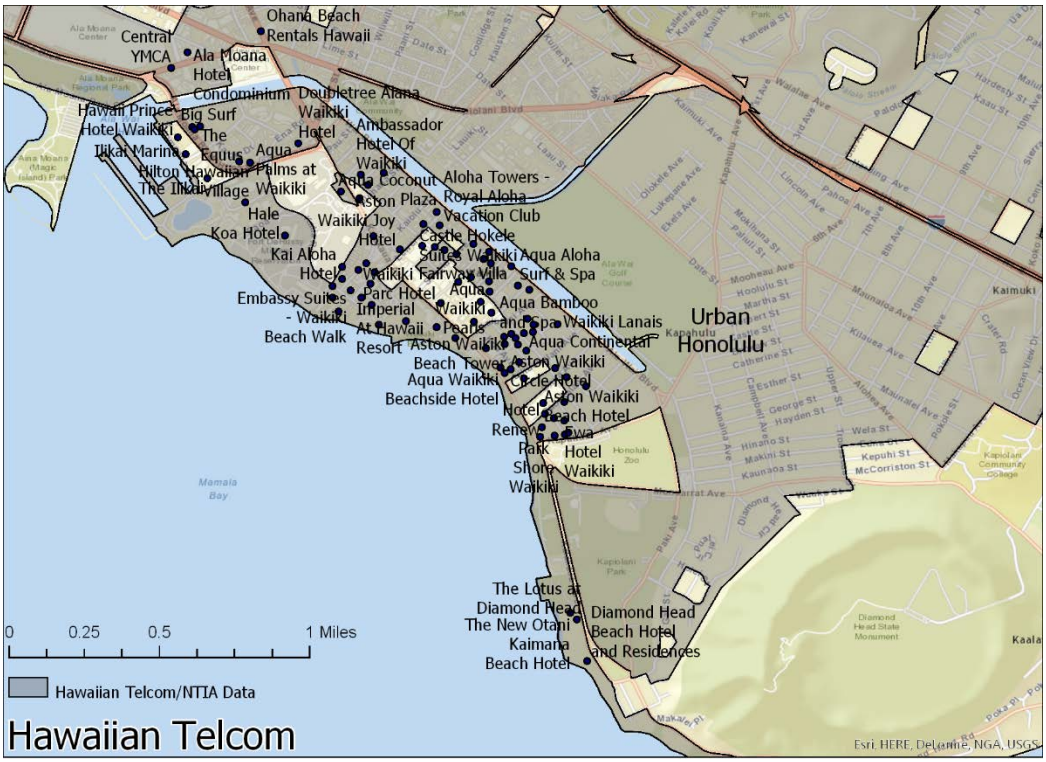


Figure 4. Hawaiian Telcom service, Waikiki, Oahu.



Level 3

The attached coverage maps for this service provider reflect the NTIA Data because no additional data was received from Level 3 as of the date of this Broadband Assessment. Level 3 coverage areas are shaded in gray. Note that no map was created for Hanalei, Kauai, because the NTIA Data shows no Level 3 service for that area.

Figure 5. Level 3 service, Kaanapali, Maui.

Figure 6. Level 3 service, South Kohala, Hawaii Island.

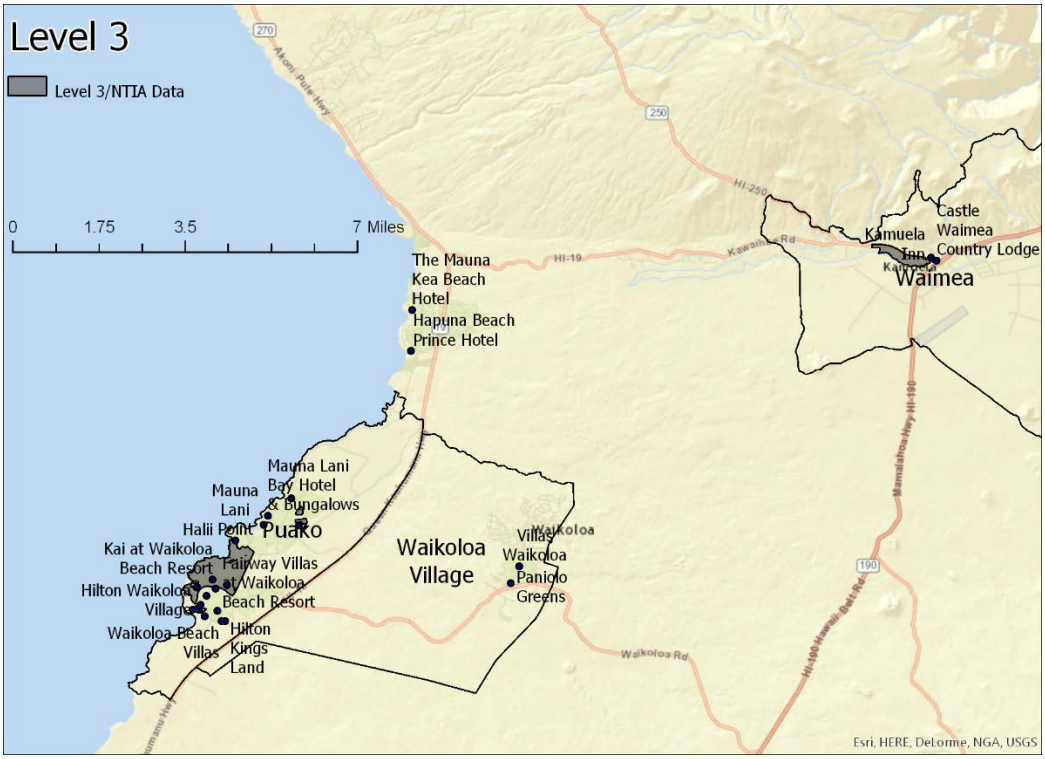


Figure 7. Level 3 service, Waikiki, Oahu.

Oceanic Time Warner Cable

Oceanic Time Warner Cable (Oceanic TWC) delivered map layers that were used to create the maps below.

The census blocks shaded in gray indicate service areas according to the NTIA Data. The census blocks shaded with hatched lines (for Hanalei, Kauai and South Kohala, Hawaii) indicate census blocks that have coverage based upon data provided by Oceanic TWC.

Figure 8. Oceanic Time Warner Cable service, Hanalei, Kauai.

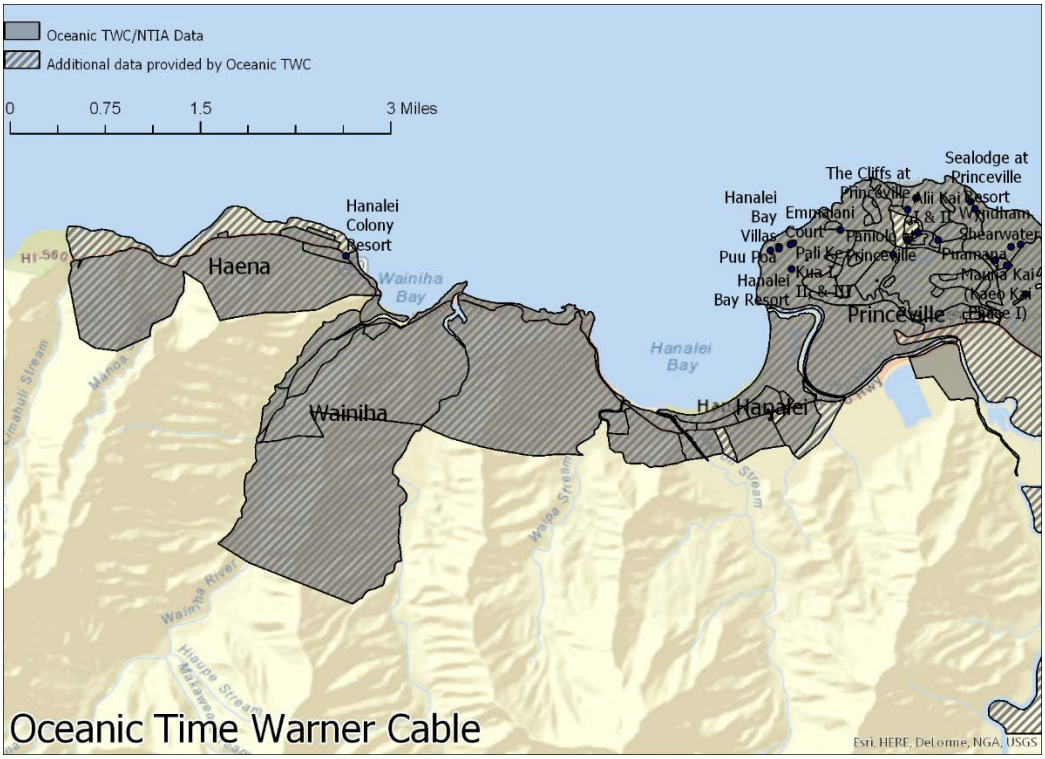


Figure 9. Oceanic Time Warner Cable service, Kaanapali, Maui.

Figure 10. Oceanic Time Warner Cable service, South Kohala, Hawaii Island.

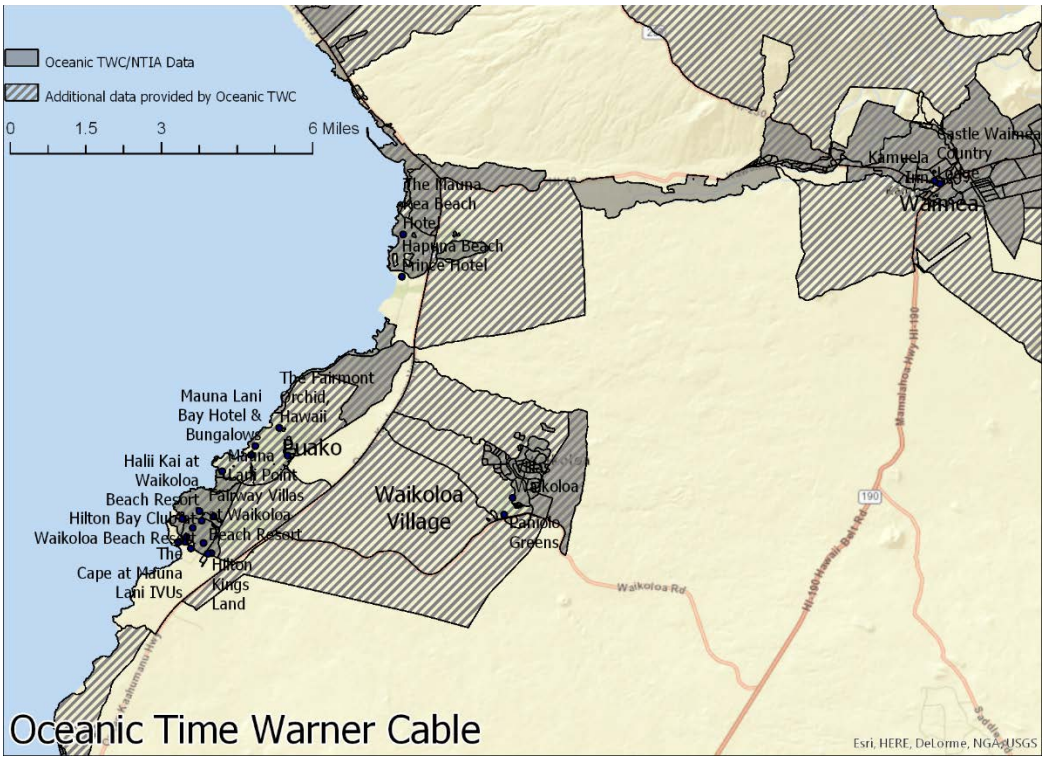
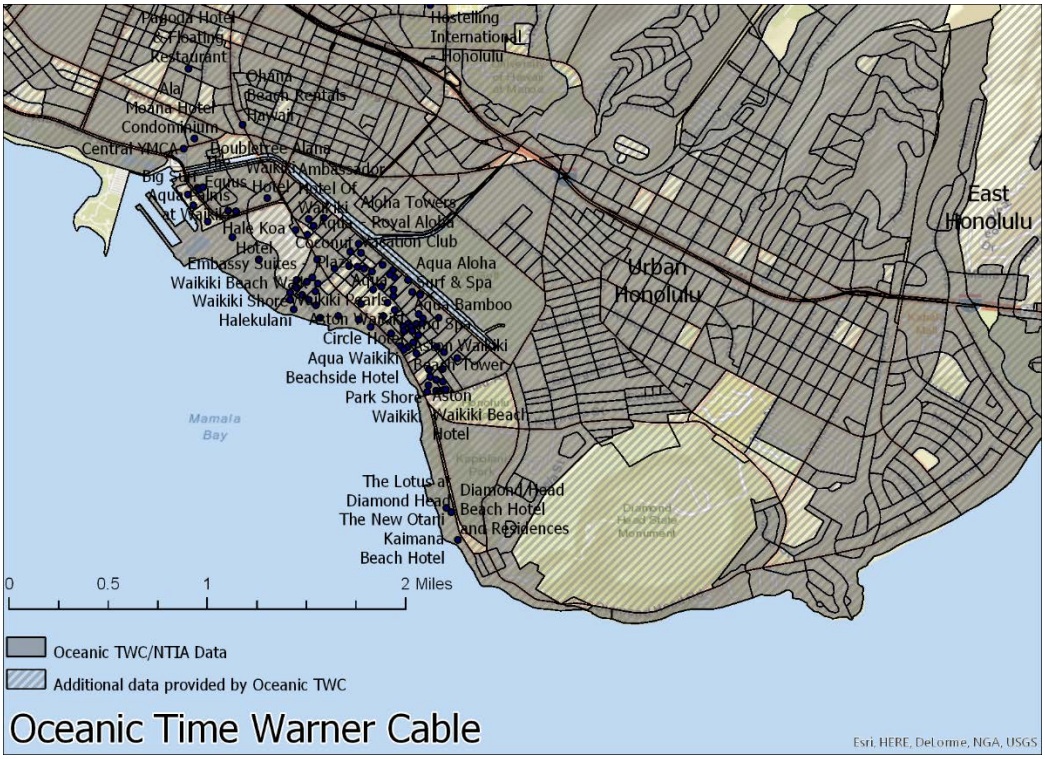


Figure 11. Oceanic Time Warner Cable service, Waikiki, Oahu.



Wireless Broadband Providers

AT&T Mobility

AT&T Mobility (AT&T) stated that they were unable to access the maps DCCA placed in a commercial cloud storage service possibly due to network security configuration for their employees. However, they reviewed the NTIA Data and identified census blocks where actual service availability is less than 50% in the four (4) identified resort areas.

DCCA created maps using a combination of the NTIA Data and the list of census blocks with less than 50% service that was provided by AT&T. In the maps below, census block areas shaded in gray are derived from the NTIA Data as served. Upon inquiry, AT&T confirmed that the areas shaded in gray are fully covered by AT&T service. Census blocks shaded with hatched lines indicate areas identified by AT&T as areas with less than 50% service.

AT&T also noted that it operates WiFi hotspots in the 96815 (Waikiki), 96761 (Kaanapali), and 96738 (South Kohala) areas.

Figure 12. AT&T Mobility, Hanalei, Kauai.

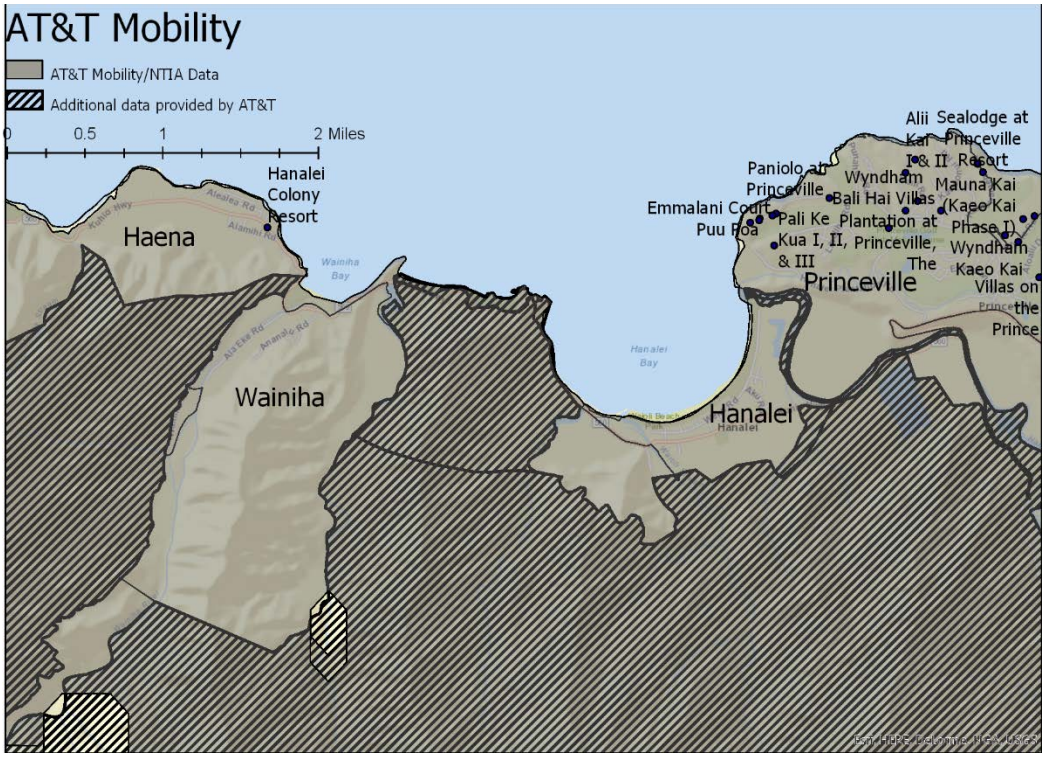


Figure 13. AT&T Mobility, Kaanapali, Maui.

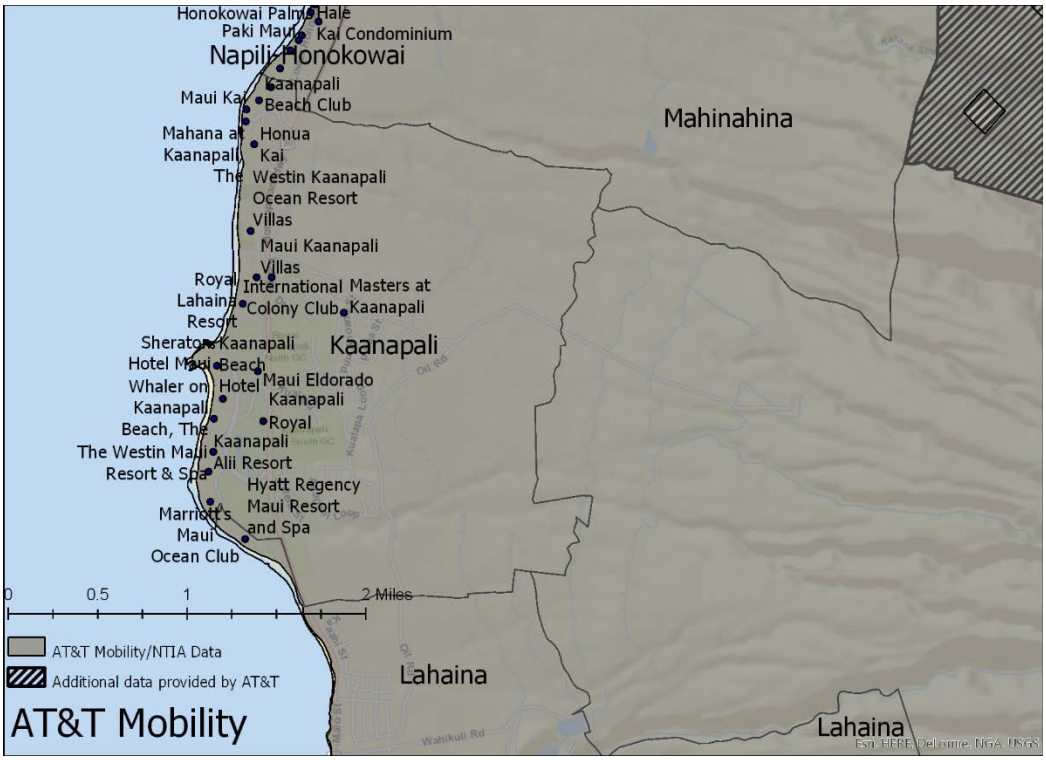


Figure 14. AT&T Mobility, South Kohala, Hawaii Island.

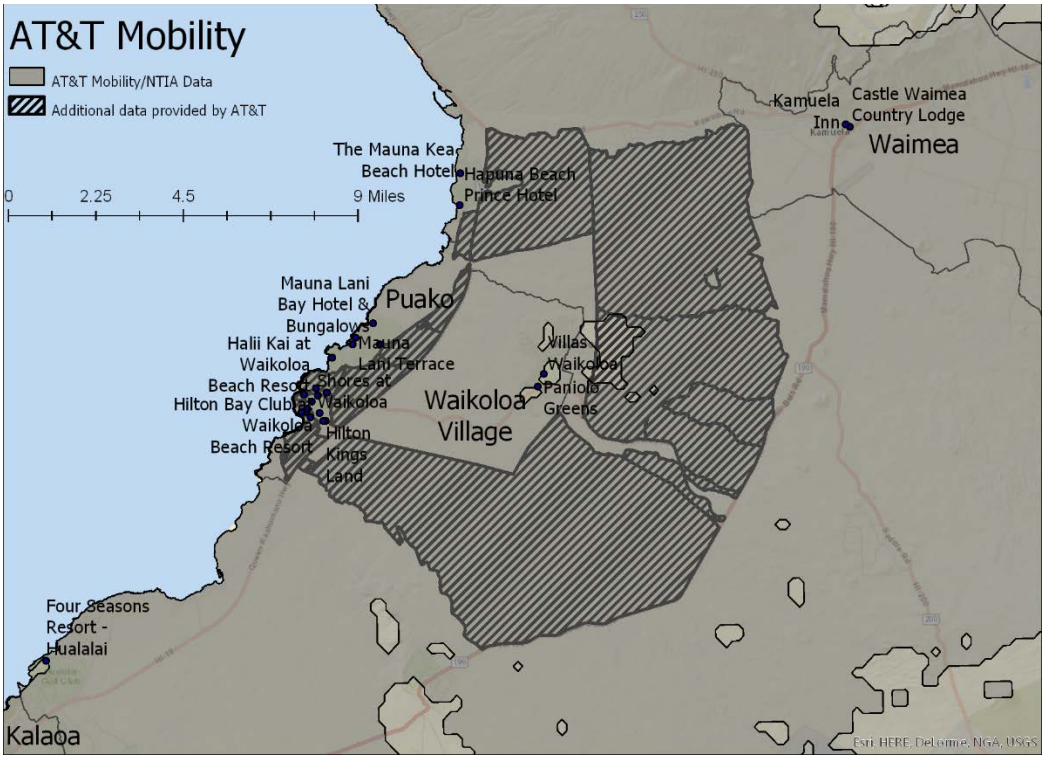
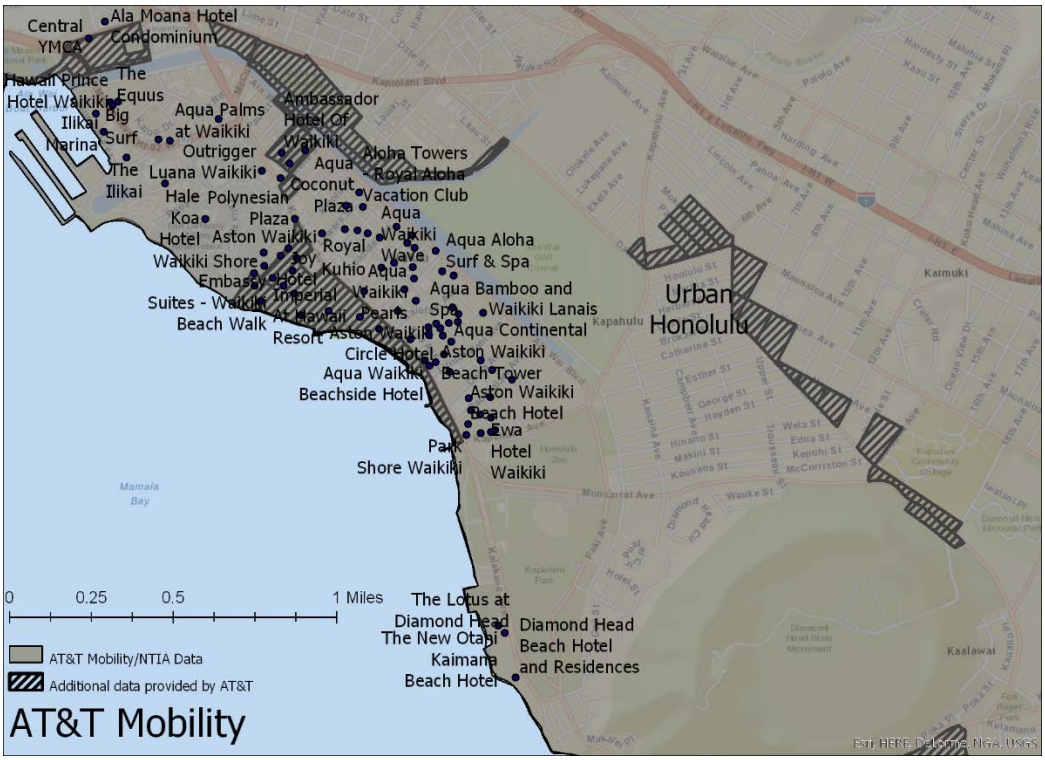


Figure 15. AT&T Mobility, Waikiki, Oahu.



Sprint

Sprint provided its own statewide coverage map layers for its three (3) wireless data technologies: EVDO, LTE, and WiMAX. DCCA used these layers to create the maps below and added labels and legends.

To reduce visual complexity, a separate map has been created for WiMAX coverage because WiMAX is not commonly used by smartphones for wireless data. Sprint had planned to shut down its WiMAX (Worldwide Interoperability for Microwave Access) network in November 2015. However, on November 4, 2015, a judge in the Superior Court of Massachusetts ordered Sprint to continue operating the network.[3] Due to the uncertain future of this component of Sprint's wireless Internet access service, separate maps for Sprint WiMAX coverage areas were created. The Sprint provided coverage data indicates that WiMAX service is provided in two (2) of the identified resort areas: Kaanapali, Maui and Waikiki, Oahu. In the maps for these areas, WiMAX coverage is indicated by areas shaded in gray.

Maps layers for Sprint EVDO (3G) and LTE (4G) networks are displayed together on a single map to provide a better overall visual indication of where Sprint data service (regardless of speed) is available. Note that this does create a number of color interactions because of the use of transparency levels to allow the viewer to see underlying map details for a frame of reference.

Areas shaded in light red are areas with coverage using the older 3G data standard for CDMA voice networks referred to as EVDO (Evolution-Data Optimized). Areas shaded in gray indicate coverage by Sprint's LTE 1900 MHz higher speed wireless data network.

[3] *See* http://www.theverge.com/2015/11/5/9676970/judge-sprint-wimax-shutdown-stopped and http://voqal.org/wp-content/uploads/2015/11/Injunction-Granted.pdf.

Figure 16. Sprint EVDO (no LTE) coverage, Hanalei, Kauai.

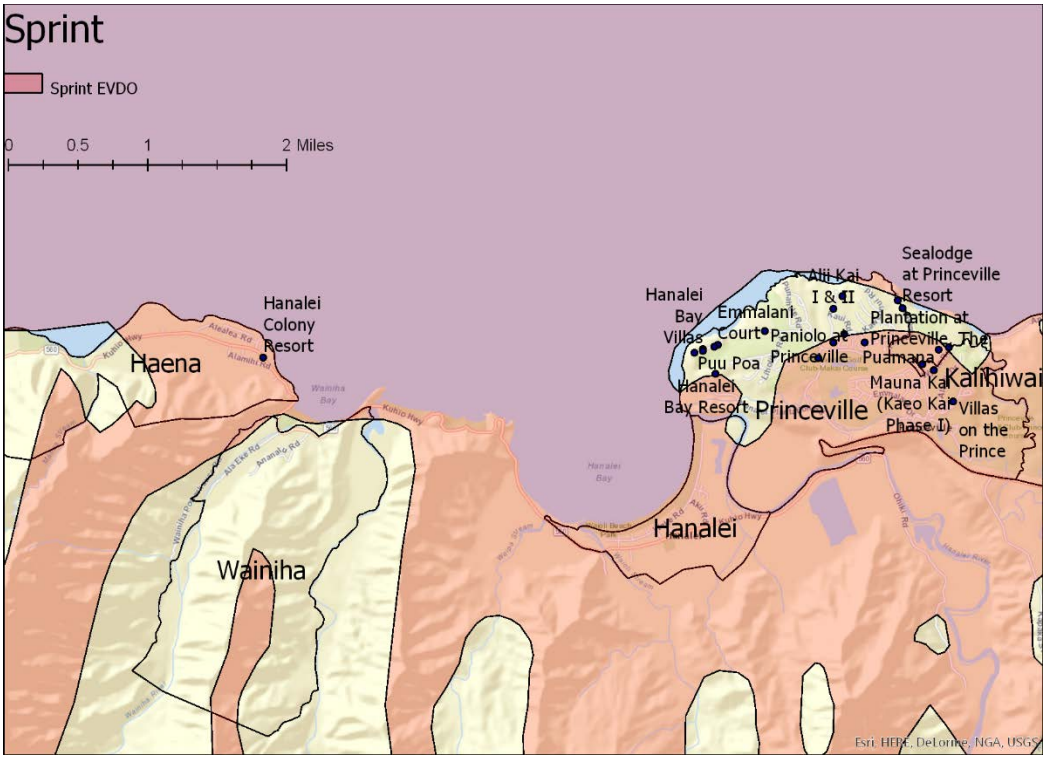


Figure 17. Sprint LTE & EVDO coverage, Kaanapali, Maui. (Sprint EVDO coverage is reflected by purple and light red shaded areas.)

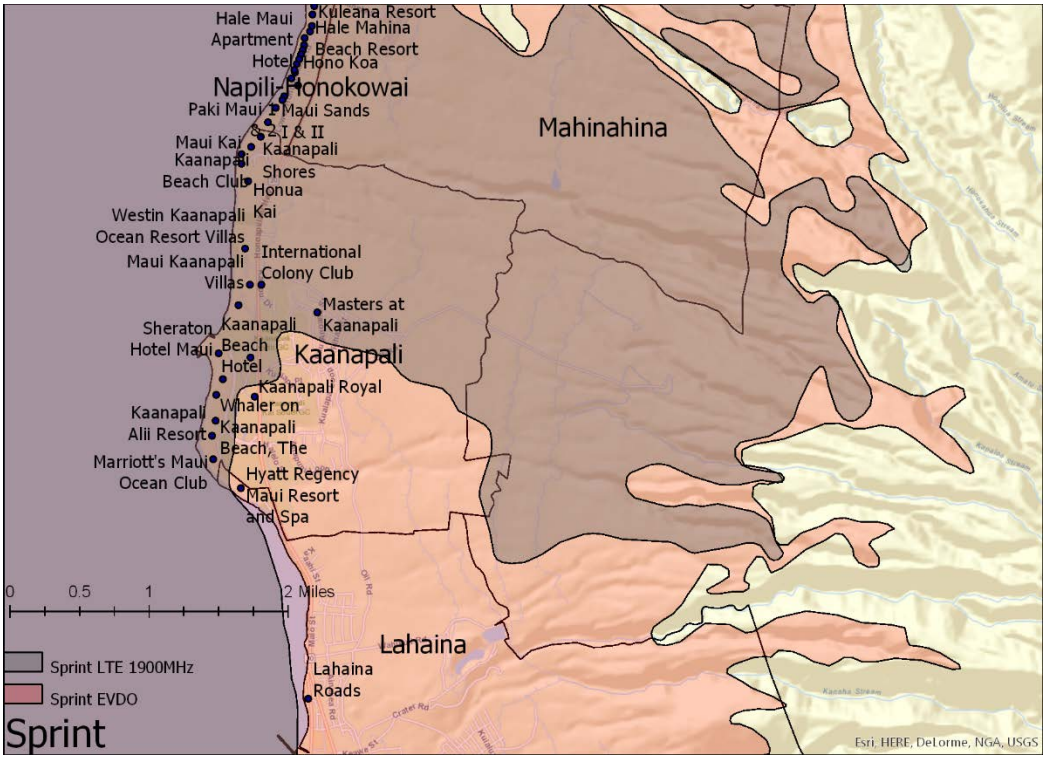


Figure 18. Sprint WiMAX coverage, Kaanapali, Maui.

Figure 19. Sprint EVDO (no LTE) coverage, South Kohala, Hawaii Island. (Sprint EVDO coverage is reflected by purple and light red shaded areas.)

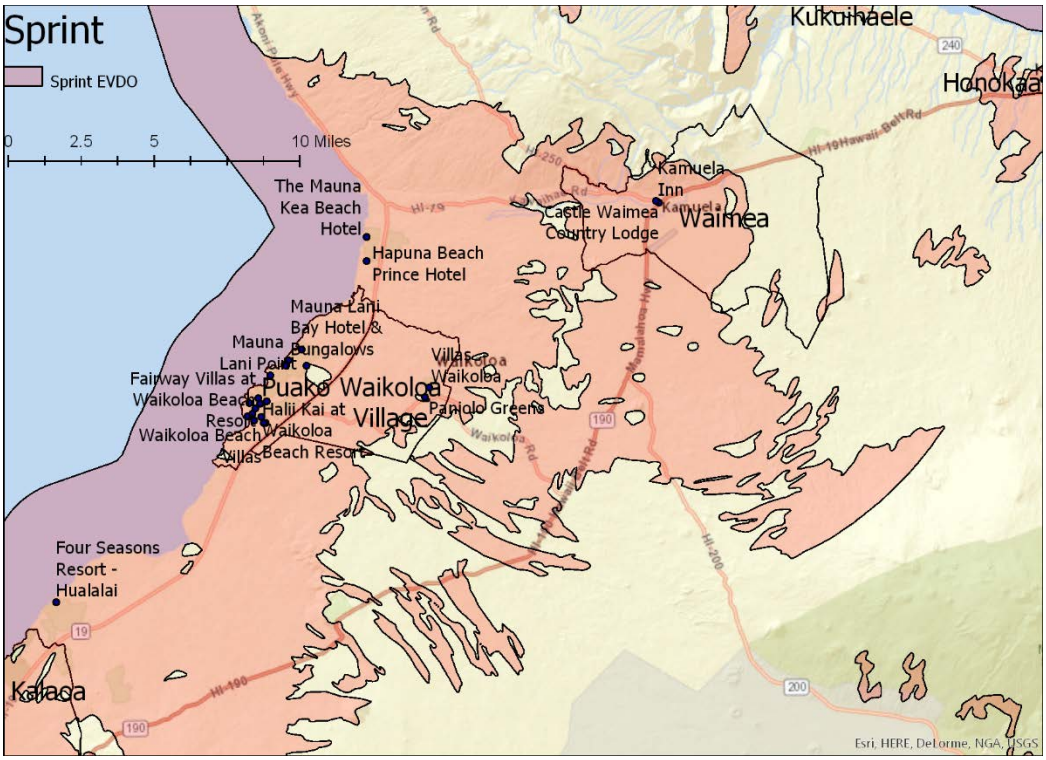


Figure 20. Sprint LTE & EVDO coverage, Waikiki, Oahu. LTE & EVDO coverage completely overlap in this region. Therefore, only the LTE coverage is shown in this map.

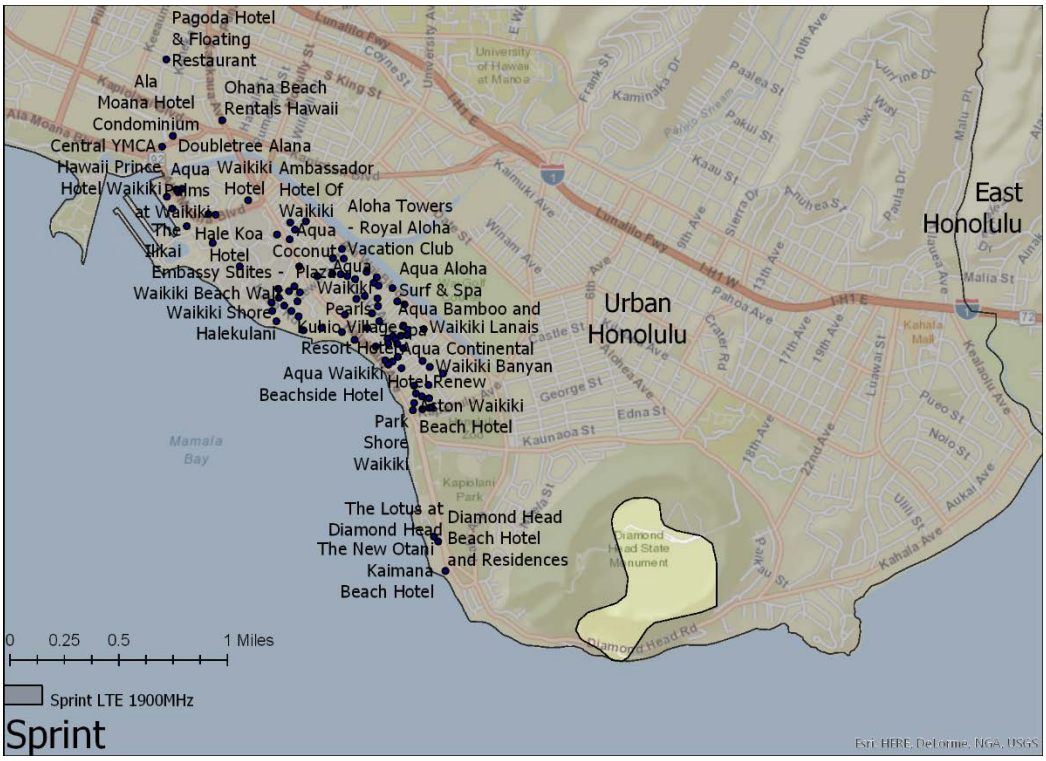
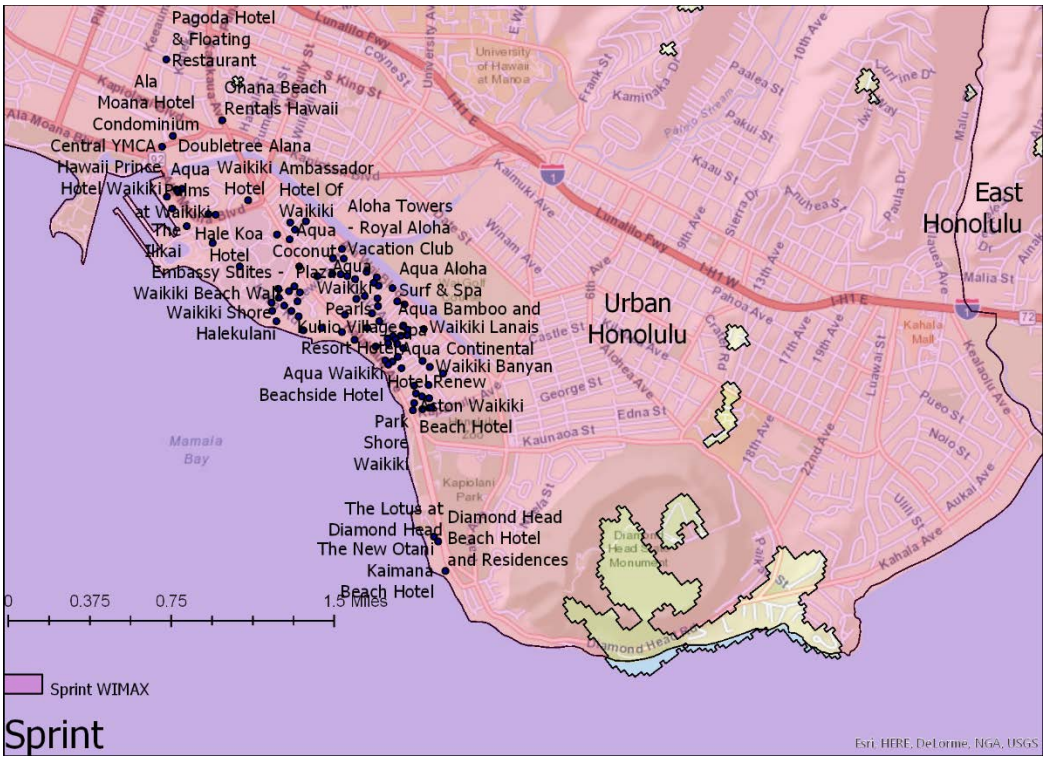


Figure 21. Sprint WiMAX coverage, Waikiki, Oahu.



T-Mobile

T-Mobile recommended use of its coverage map tool, available at http://www.t-mobile.com/coverage.html. Thus, the coverage maps below were taken from the T-Mobile website.

Regions (not census blocks) in shades of gray indicate either partner coverage (light gray) or older generation 2G or 3G wireless data availability (hatched magenta lines). Areas in shades of magenta indicate fair, good, or excellent 4G LTE coverage. Areas in white indicate no coverage.

Figure 22. T-Mobile coverage, Hanalei, Kauai.

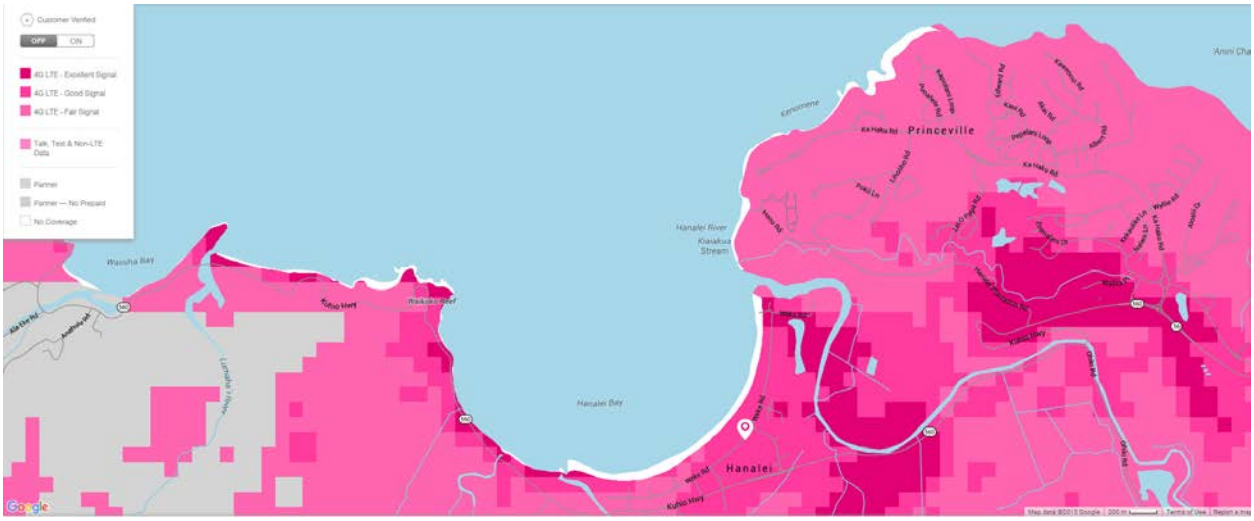


Figure 23. T-Mobile coverage, Kaanapali, Maui.

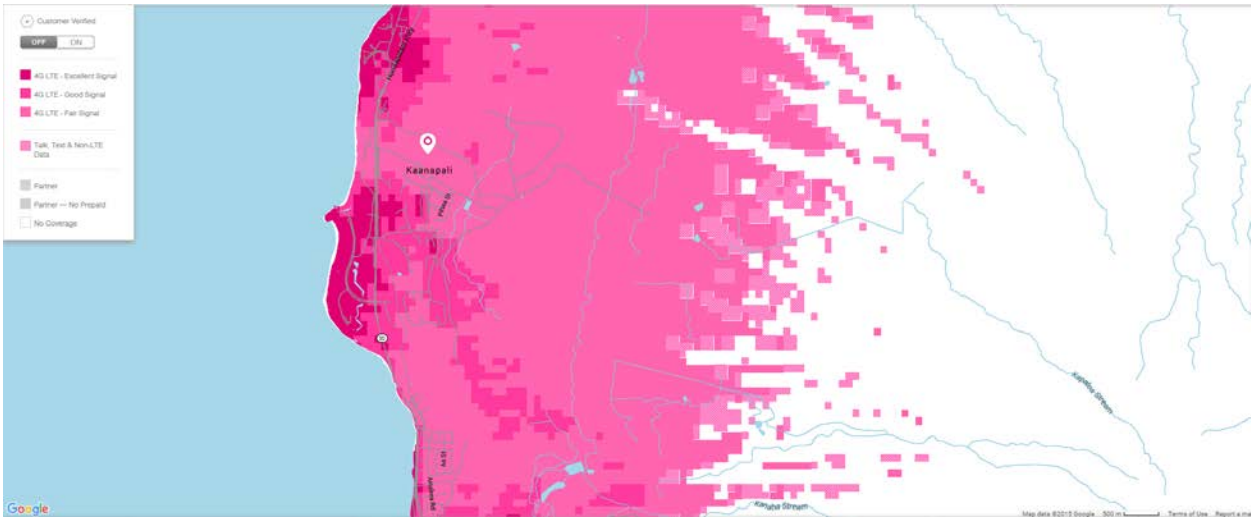


Figure 24. T-Mobile coverage, South Kohala, Hawaii Island.

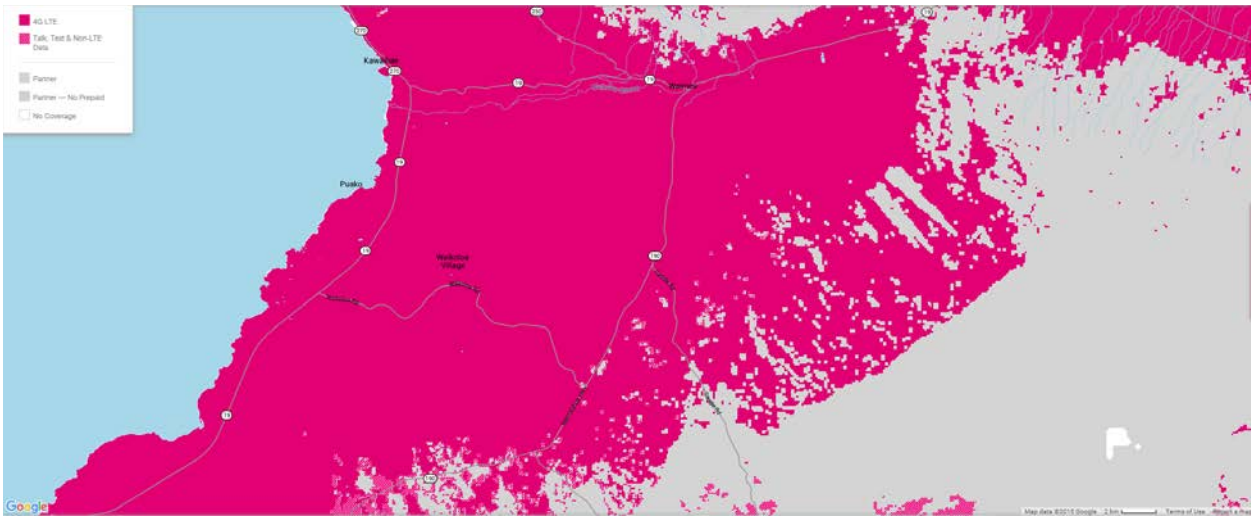
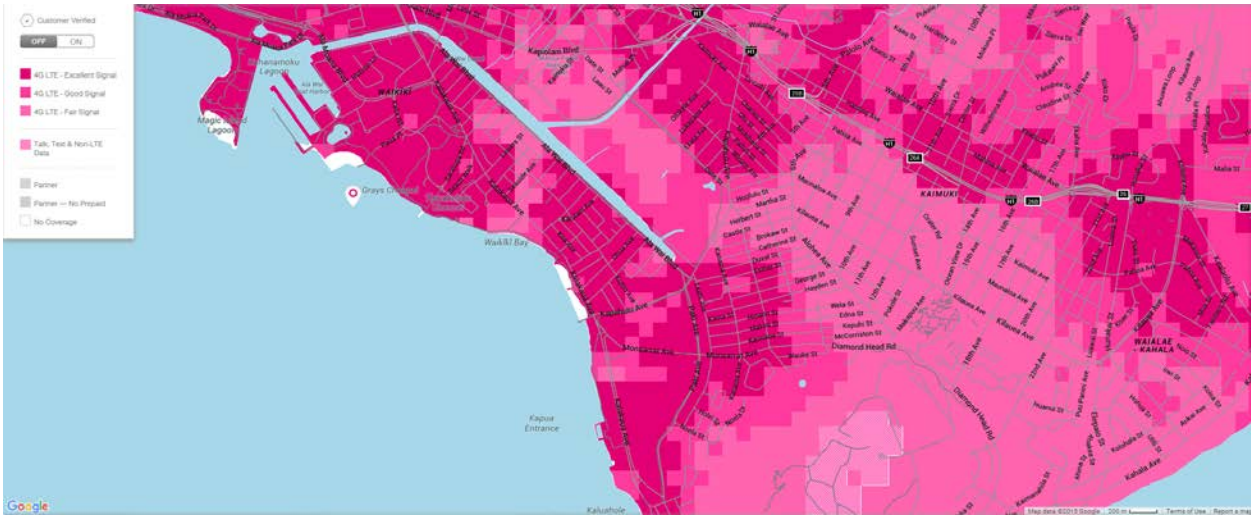


Figure 25. T-Mobile coverage, Waikiki, Oahu.

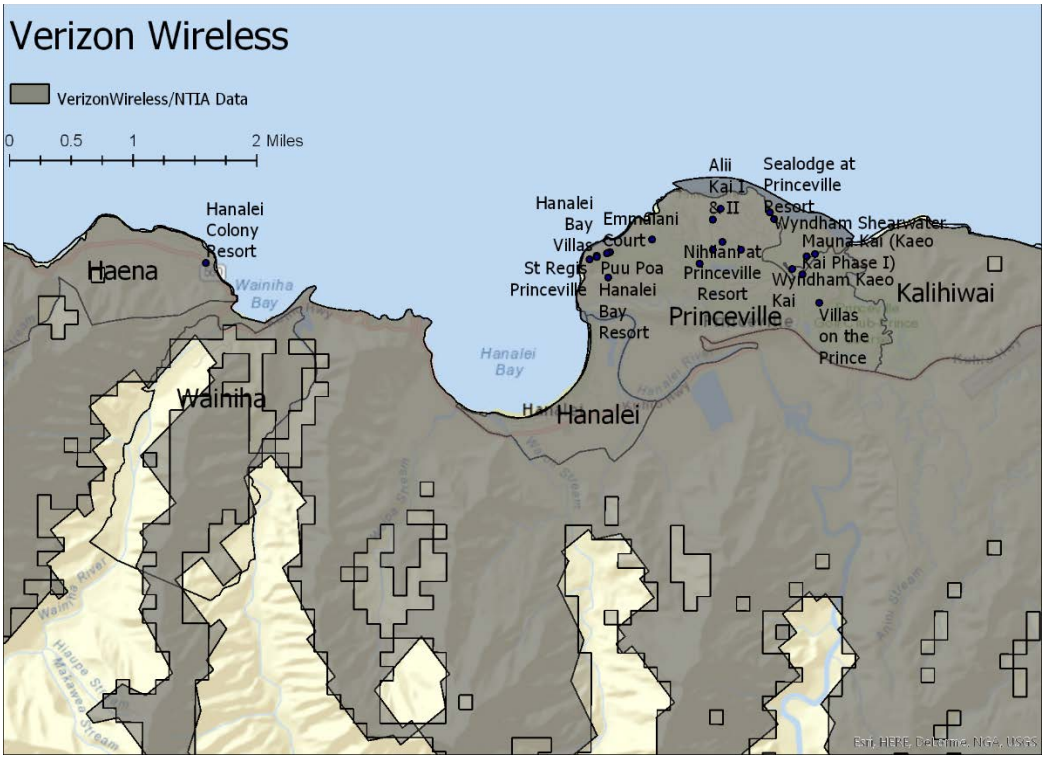


Verizon Wireless

Verizon Wireless, after review of the NTIA Data coverage maps for its service, stated: "[We] believe they accurately reflect our wireless broadband deployment, including service availability and speed data, as of June 30, 2014, in accordance with the requirements of the National Broadband Mapping Program administered at that time by the NTIA. We have no changes or updates to our service in the census blocks in the target areas. Also, please be advised that Verizon Wireless does not currently offer a public WiFi access service."[4]

Census blocks shaded in gray indicate areas where Verizon Wireless broadband service is available based on the NTIA Data.

Figure 26. Verizon Wireless coverage, Hanalei, Kauai. Blocky regions result from coverage at different wireless data spectrum ranges.



[4] Letter from Joyce Masamitsu, Verizon Wireless Director of Public Policy, West Area to the Honorable Catherine P. Awakuni Colon, Director of the Department of Commerce and Consumer Affairs of the State of Hawaii, dated August 19, 2015.

Figure 27. Verizon Wireless coverage, Kaanapali, Maui.

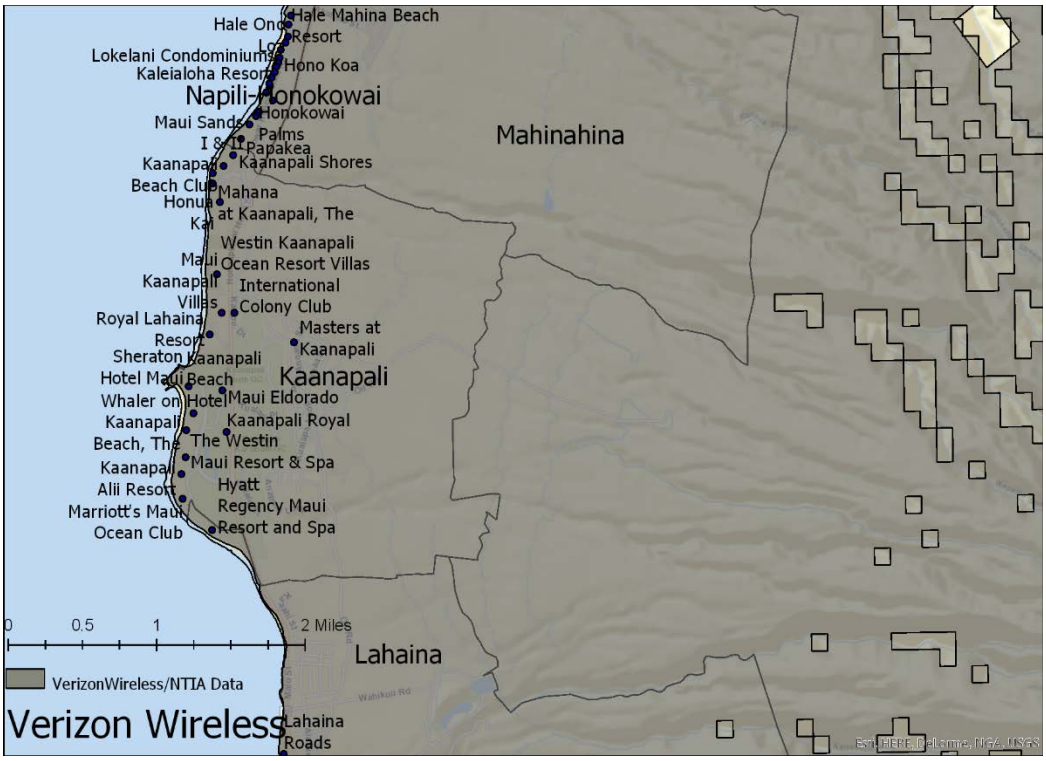


Figure 28. Verizon Wireless coverage. South Kohala, Hawaii Island.

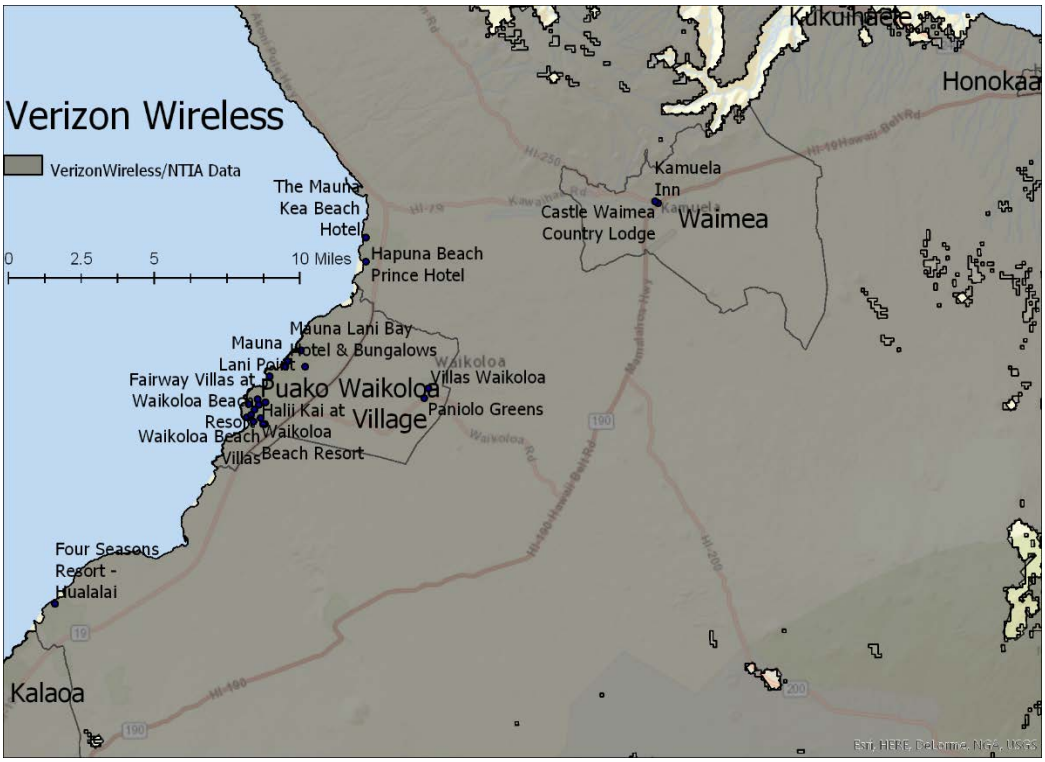
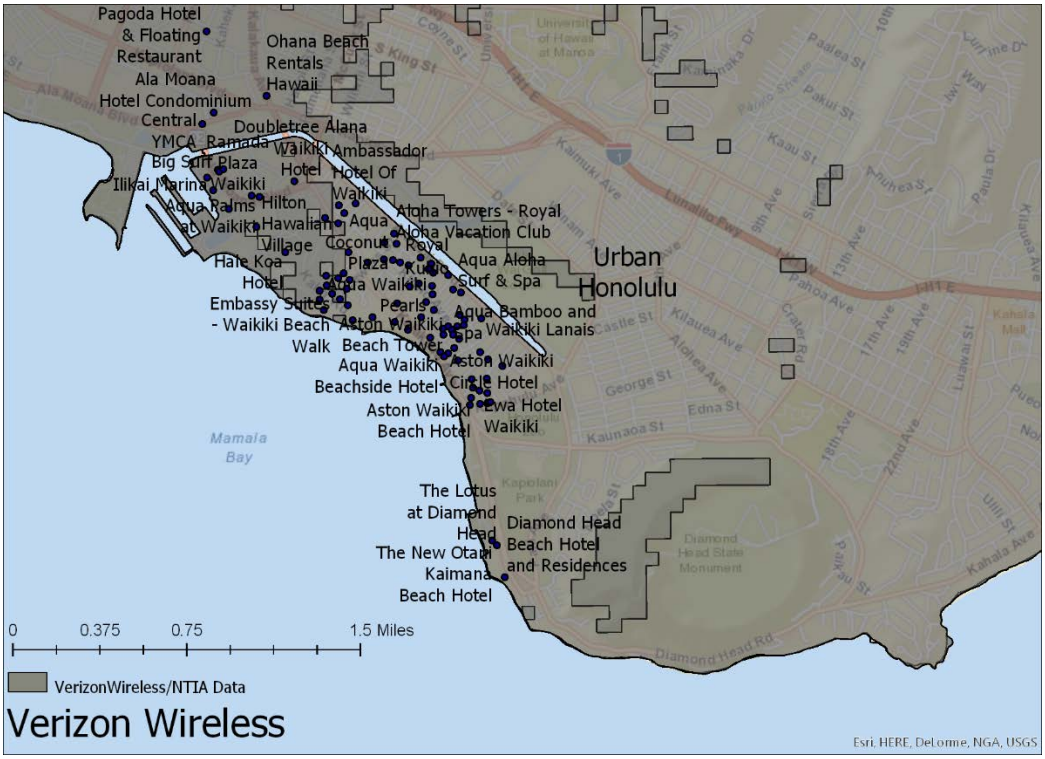


Figure 29. Verizon Wireless coverage, Waikiki, Oahu.



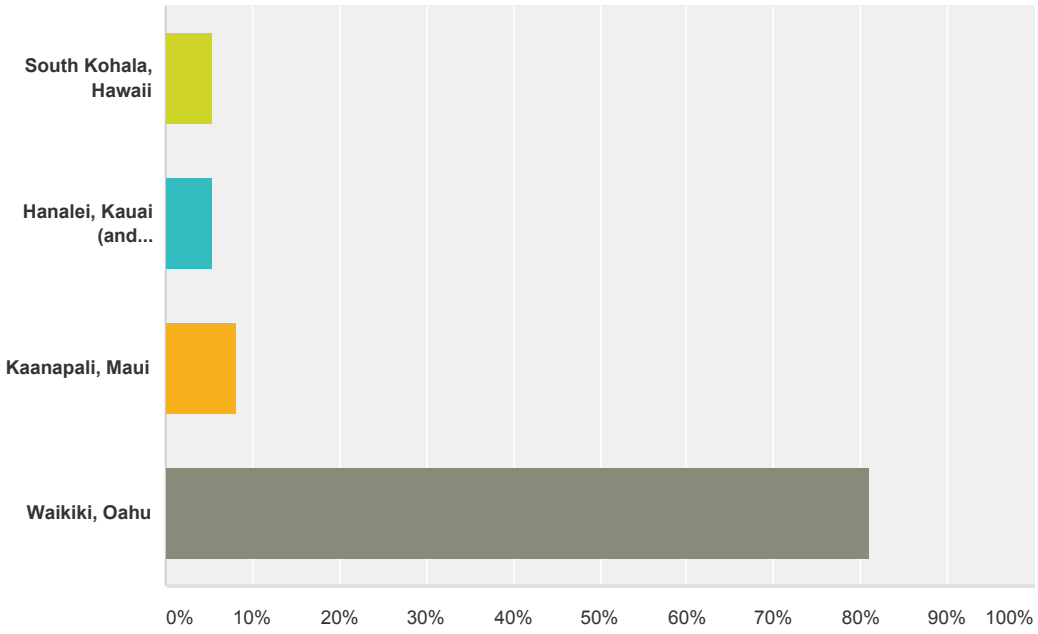
APPENDIX C

Resort Survey

Summaries Grouped by Question

Q1 Where is your business located? (This question requires an answer)

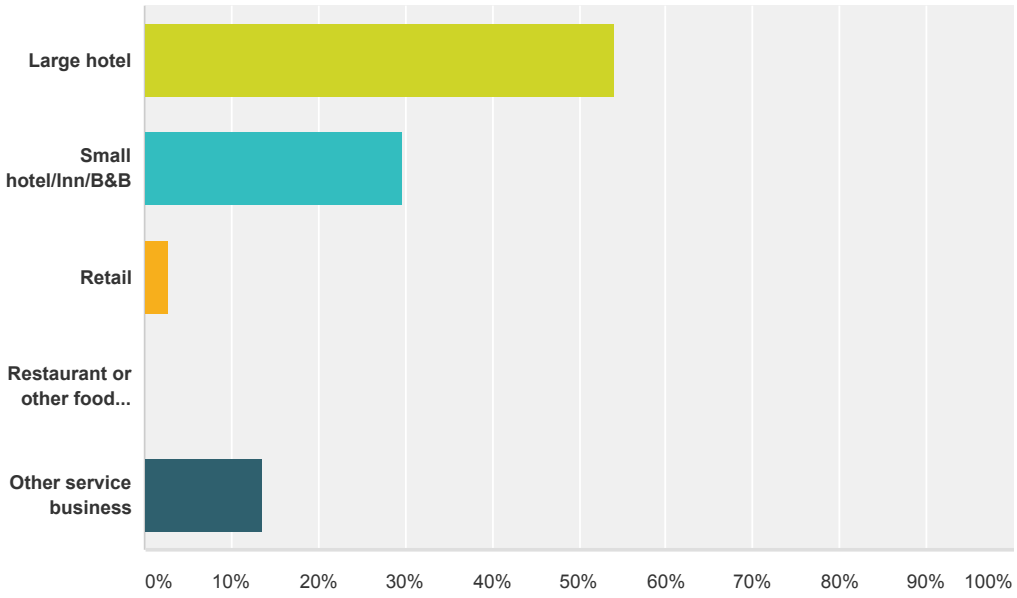
Answered: 37 Skipped: 0



Answer Choices	Responses	
South Kohala, Hawaii	**5.41%**	2
Hanalei, Kauai (and surrounding area)	**5.41%**	2
Kaanapali, Maui	**8.11%**	3
Waikiki, Oahu	**81.08%**	30
Total		**37**

Q3 Please indicate your type of business. (This question requires an answer)

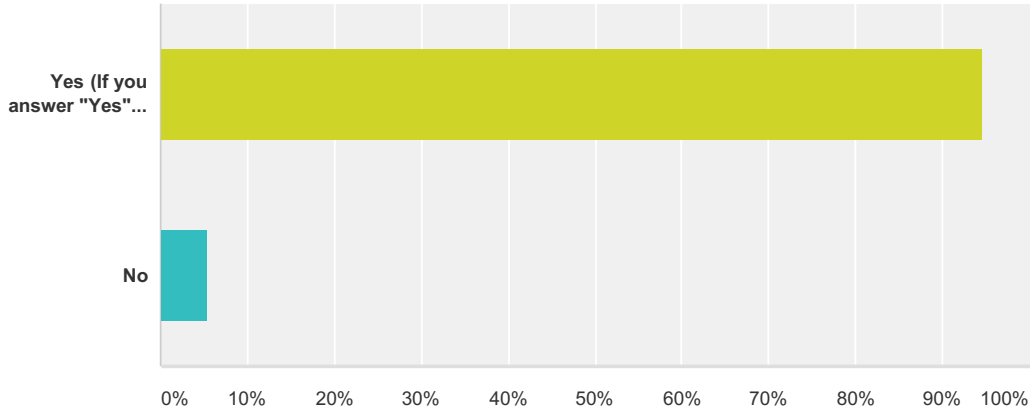
Answered: 37 Skipped: 0



Answer Choices	Responses	
Large hotel	**54.05%**	20
Small hotel/Inn/B&B	**29.73%**	11
Retail	**2.70%**	1
Restaurant or other food service business	**0.00%**	0
Other service business	**13.51%**	5
Total		**37**

Q4 Does your business have Internet service?

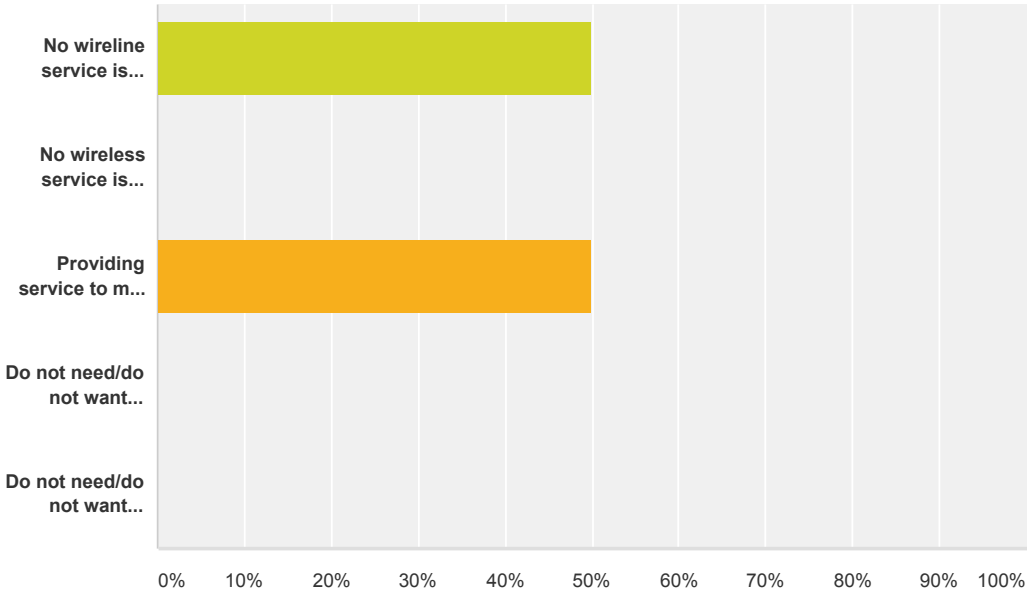
Answered: 37 Skipped: 0



Answer Choices	Responses	
Yes (If you answer "Yes", go to Question 6)	**94.59%**	35
No	**5.41%**	2
Total		**37**

Q5 If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)

Answered: 2 Skipped: 35

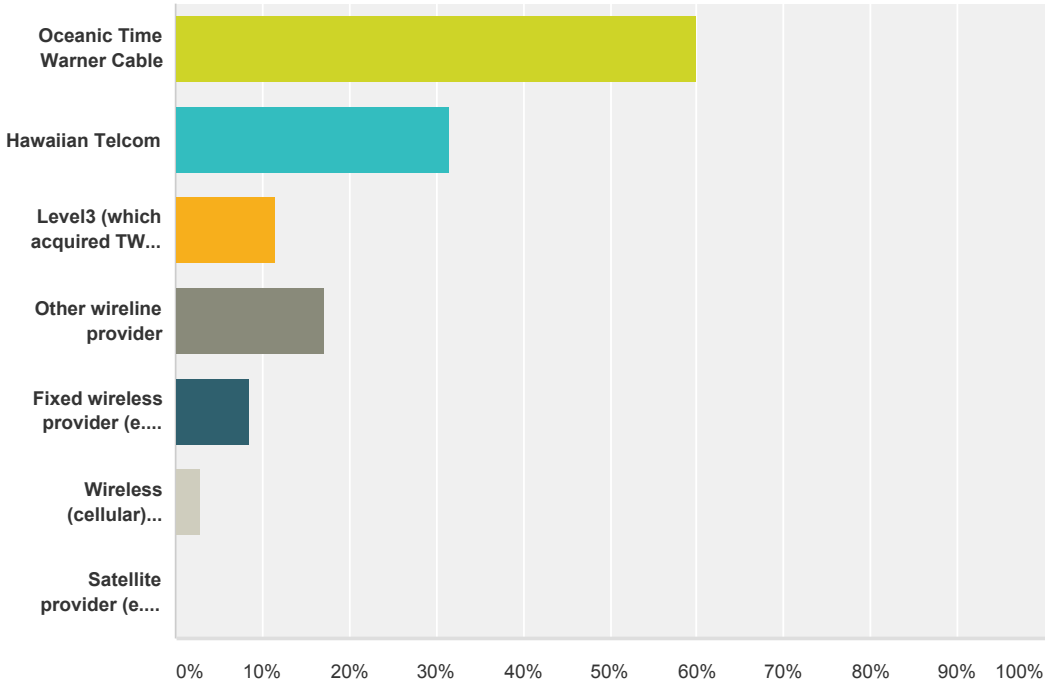


Answer Choices	Responses
No wireline service is available to my property (e.g., Oceanic Time Warner Cable Internet Service, Hawaiian Telcom Internet Service, Level3/TW Telecom, etc.)	50.00% 1
No wireless service is available to my property (e.g., Verizon, AT&T, Sprint, T-Mobile, Aloha Broadband, satellite, etc.)	0.00% 0
Providing service to my property is too expensive	50.00% 1
Do not need/do not want wireline service (please provide detail in the text box below)	0.00% 0
Do not need/do not want wireless service (please provide detail in the text box below)	0.00% 0
Total Respondents: 2	

#	Why do you not need or not want wireline and/or wireless Internet service for your business?	Date
1	We are an online service only.	

Q6 Which Internet service provider services your business? (Check all that apply)

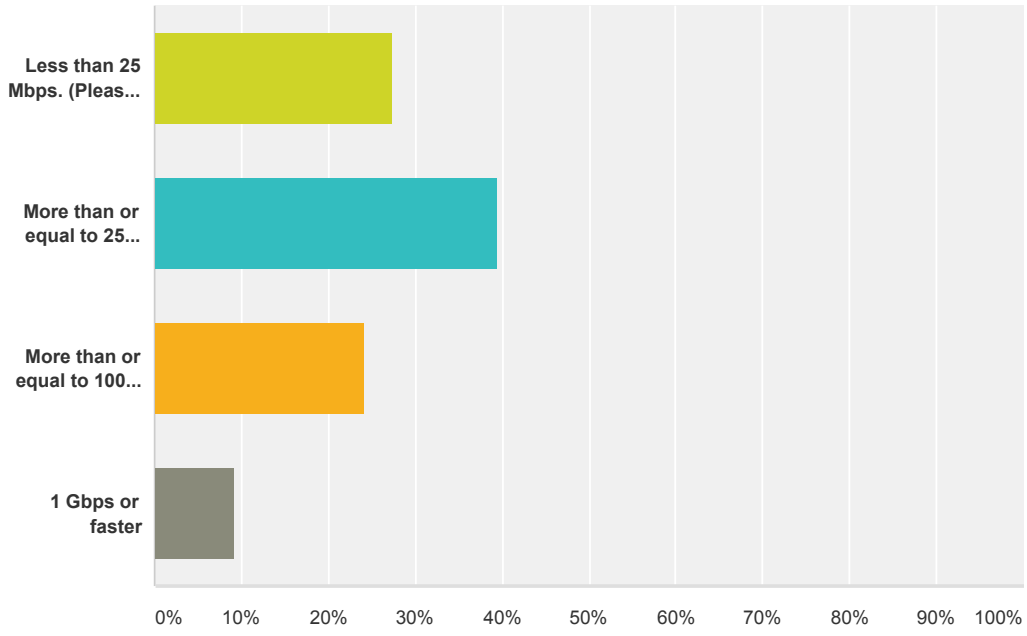
Answered: 35 Skipped: 2



Answer Choices	Responses	
Oceanic Time Warner Cable	**60.00%**	21
Hawaiian Telcom	**31.43%**	11
Level3 (which acquired TW Telecom)	**11.43%**	4
Other wireline provider	**17.14%**	6
Fixed wireless provider (e.g., Aloha Broadband, Hawaii Broadband, etc.)	**8.57%**	3
Wireless (cellular) provider (e.g., AT&T Wireless, Sprint, T-Mobile, Verizon Wireless)	**2.86%**	1
Satellite provider (e.g., Dish, Exede, etc.)	**0.00%**	0
Total Respondents: 35		

Q7 What is the advertised download speed of your service?

Answered: 33 Skipped: 4

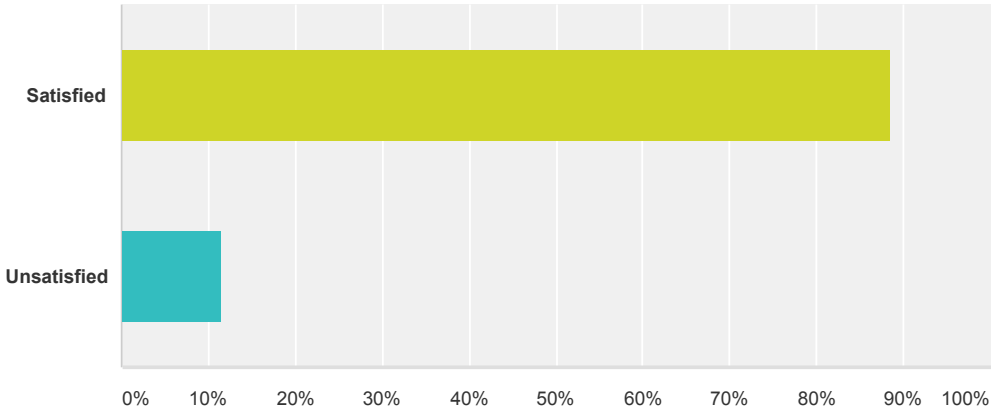


Answer Choices	Responses	
Less than 25 Mbps. (Please indicate subscribed speed, if known, in the text box below)	**27.27%**	9
More than or equal to 25 Mbps, but less than 100 Mbps	**39.39%**	13
More than or equal to 100 Mbps, but less than 1Gbps	**24.24%**	8
1 Gbps or faster	**9.09%**	3
Total		**33**

#	Specific subscribed speed if less than 25 Mbps	Date
1	5M x 1M	
2	Hawaiian Telcom DSL	
3	3 Mbps	
4	20Mbps	
5	5Mbps	
6	3 Mbps	
7	20Mbps but upgrading to 100Mbps in November	
8	10Mb/s	

Q8 If your business has wireline Internet service, how satisfied are you with that service?

Answered: 26 Skipped: 11

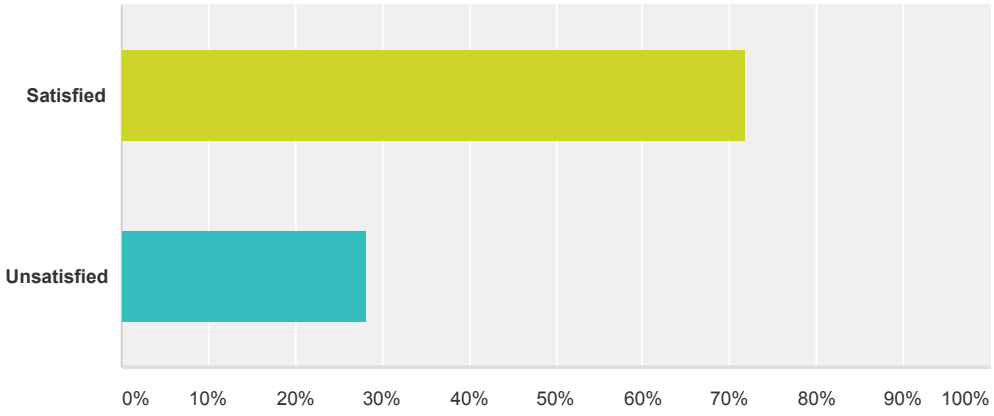


Answer Choices	Responses	
Satisfied	**88.46%**	23
Unsatisfied	**11.54%**	3
Total		**26**

#	Please explain why you are unsatisfied	Date
1	No matter how much we upgrade we do not get the speed or signal strength we need. Also multiple outages recently due to Oceanic Time Warner We recently lost three computers due to their sudden outages.	
2	Slow	
3	Amount of speed deters guests from consistent internet service.	
4	We have a 300 Mbps fiber optic line for guest use and a 20 Mbps fiber optic line for admin use.	
5	Satisfied but we would like to see "Bursting" bandwidth so we can dynamically increase our bandwidth in real time based on need without having to place a request for more bandwidth 30 days in advance for an entire billing cycle.	

Q9 If your business has wireless Internet service, how satisfied are you with that service?

Answered: 32 Skipped: 5



Answer Choices	Responses	
Satisfied	**71.88%**	23
Unsatisfied	**28.13%**	9
Total		**32**

#	Please explain why you are unsatisfied	Date
1	We will be upgrading to a higher speed	
2	Same as above	
3	Slow	
4	Amount of speed deters guests from consistent internet service.	
5	Complaints from our guest on various internet related services.	
6	Guest demand increasing; unable to keep up with guest needs; provider service level needs improvement.	
7	Daily issues with guest not being able to connect or intermittent disconnects while connected.	
8	Connectivity issues.	

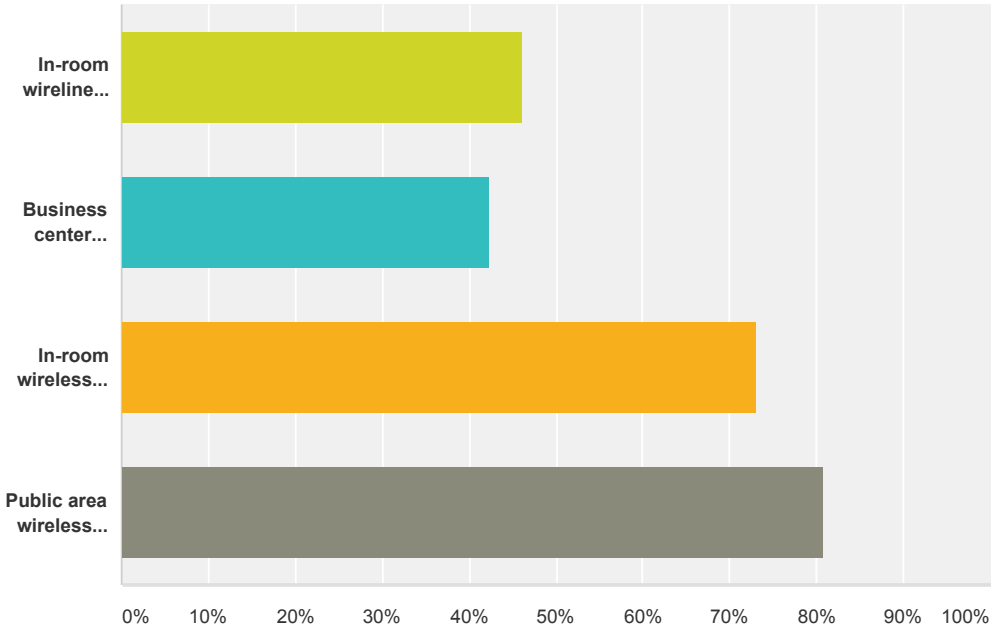
Q10 Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.

Answered: 12 Skipped: 25

#	Responses	Date
1	Wainiha and Haean are both poor reception for phone and any wireless device. This is very dangerous in we sometimes don't get emergency alerts. We also are cut off from communication if we sustain any type of real emergency.	
2	From what we have been advised, there is one trunk from Oceanic that runs down Paoakalani and it splits between the Sunset and Banyan. Sunset has 435 units and Banyan has 872 units and the drop in speed in sharing this trunk between both properties is very evident. Please note that this does not include residential road runner service that certain residents have obtained through OTW.	
3	We have very good Verizon and AT&T cellular coverage. All other cellular service providers are not adequate.	
4	Basement of the hotel	
5	Basement of our building.	
6	Within each of our hotels, we cover all guest rooms and all public spaces. Require login and password (registered guest or conference participant). This is not a public service for non-guests.	
7	Wireless (Cellular) Service is not ubiquitous throughout our hotels. Most notably service is not 100% available in hardened areas (places with considerable concrete, steel, earth, etc.) E.g. Basement, stairwells, etc.	
8	basement, corners of buildings, public bathrooms	
9	Poor cellular service north shore of Kaua'i. Verizon Wireless is ok and all other cellular carriers have spotty coverage at best	
10	Outdoor spaces away from main hotel buildings. Basement area with no coverage.	
11	N/A.	
12	N/A	

Q12 Does your business offer any of the services listed below free of charge? (Check all that apply)

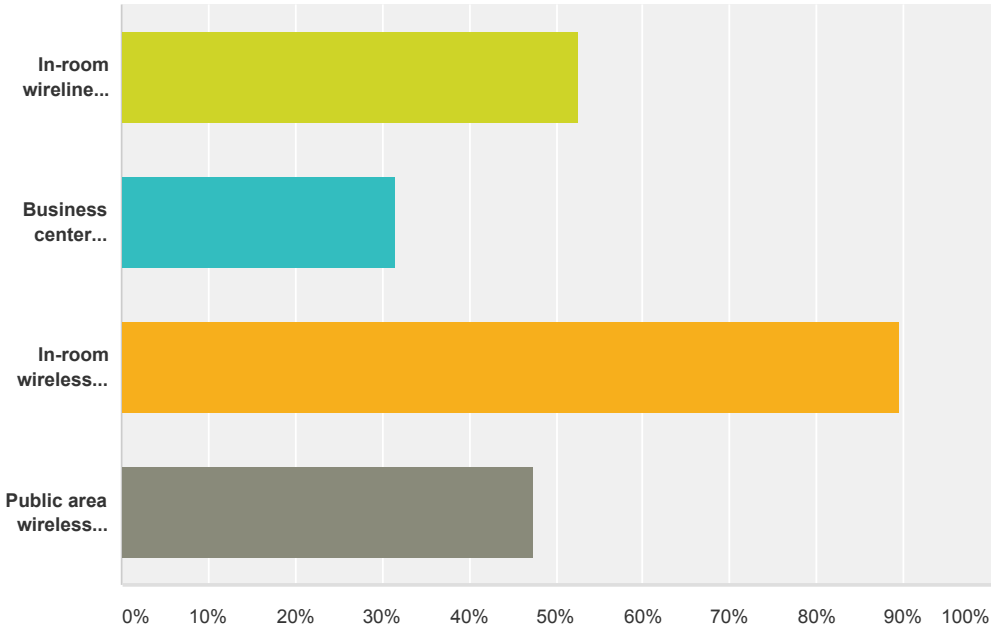
Answered: 26 Skipped: 11



Answer Choices	Responses	
In-room wireline service (Ethernet)	**46.15%**	12
Business center (Ethernet)	**42.31%**	11
In-room wireless service (WiFi)	**73.08%**	19
Public area wireless service (WiFi)	**80.77%**	21
Total Respondents: 26		

Q13 Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)

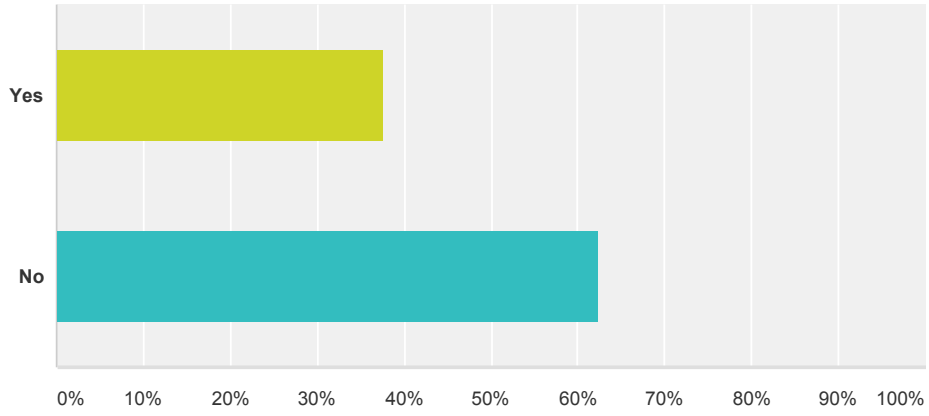
Answered: 19 Skipped: 18



Answer Choices	Responses	
In-room wireline service (Ethernet)	**52.63%**	10
Business center (Ethernet)	**31.58%**	6
In-room wireless service (WiFi)	**89.47%**	17
Public area wireless service (WiFi)	**47.37%**	9
Total Respondents: 19		

Q14 If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?

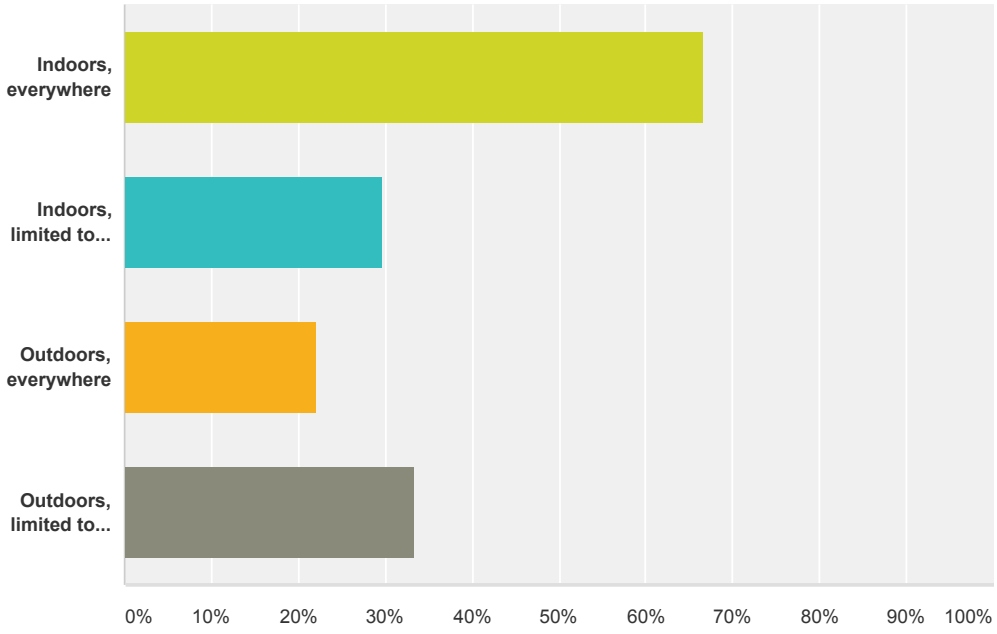
Answered: 8 Skipped: 29



Answer Choices	Responses	
Yes	**37.50%**	3
No	**62.50%**	5
Total		**8**

Q15 If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)

Answered: 27 Skipped: 10



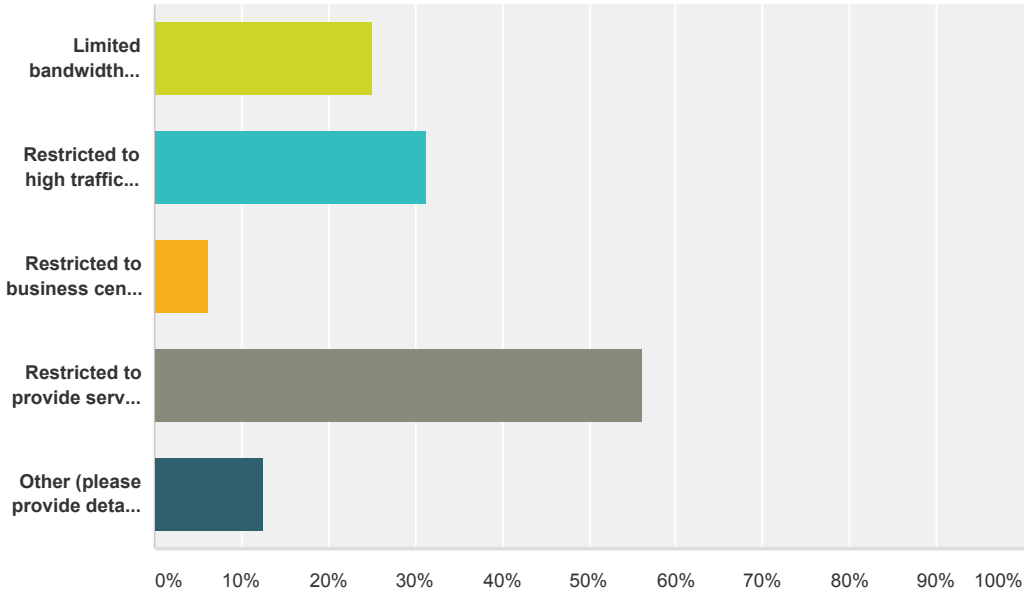
Answer Choices	Responses	
Indoors, everywhere	**66.67%**	18
Indoors, limited to certain areas (please provide detail in the text box below)	**29.63%**	8
Outdoors, everywhere	**22.22%**	6
Outdoors, limited to certain areas (please provide detail in the text box below)	**33.33%**	9
Total Respondents: 27		

#	If WiFi is limited to certain indoor and/or outdoor areas, please name or describe those areas	Date
1	Just in our lobby and poolside area.	
2	Guest rooms and offices and owners lounge	
3	Lobby area	
4	lobby area	
5	Lobby	
6	Pool area is inconsistent	
7	Guest room balconies, public spaces of restaurants and meeting areas within resort premises.	
8	Outdoor area is function space, ocean lawn, and bar areas	
9	not strong enough to access in retail shops, certain restaurants.	
10	Lobby and conference center	

11	Parts of the lobby and the coffee shop.	
12	In room, function rooms, in restaurants, pool.	
13	Lobby.	
14	Wifi in all guestrooms, portions of restaurants and lobby. Wifi in 4-acre outdoors courtyard area.	

Q16 If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)

Answered: 16 Skipped: 21

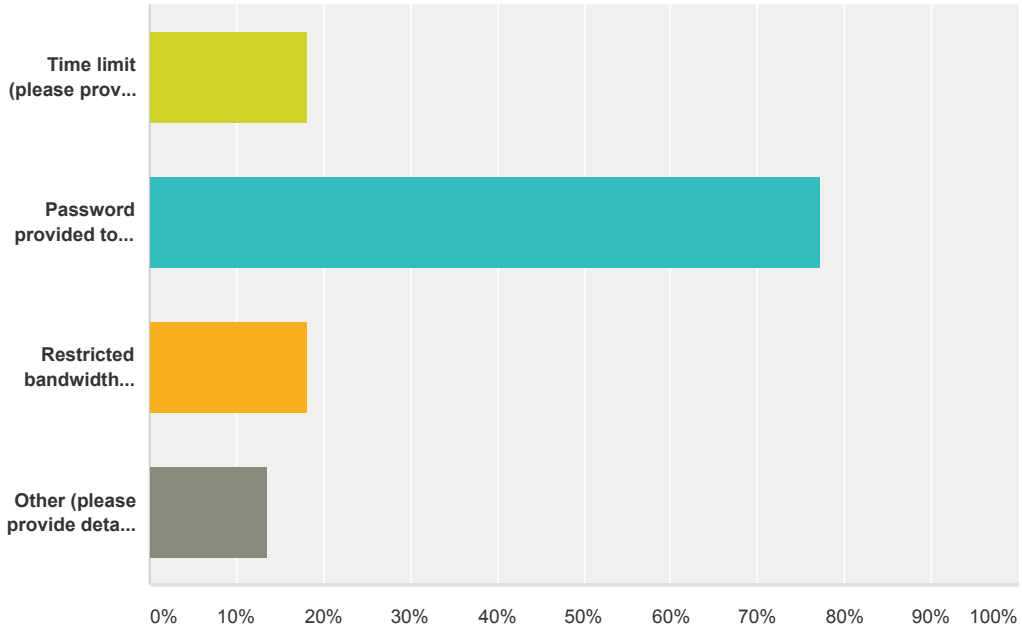


Answer Choices	Responses	
Limited bandwidth available for WiFi	**25.00%**	4
Restricted to high traffic area	**31.25%**	5
Restricted to business center (for hotels)	**6.25%**	1
Restricted to provide service only to guests/customers	**56.25%**	9
Other (please provide detail in the text box below)	**12.50%**	2
Total Respondents: 16		

#	Details:	Date
1	We do not provide service at the pool and lobby	
2	Convenient location for our guest.	
3	Within each of our hotels, we cover all guest rooms and all public spaces. Require login and password (registered guest or conference participant). This is not a public service for non-guests.	
4	location of access points	
5	Will be wireless throughout the building in the future.	

Q17 If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)

Answered: 22 Skipped: 15

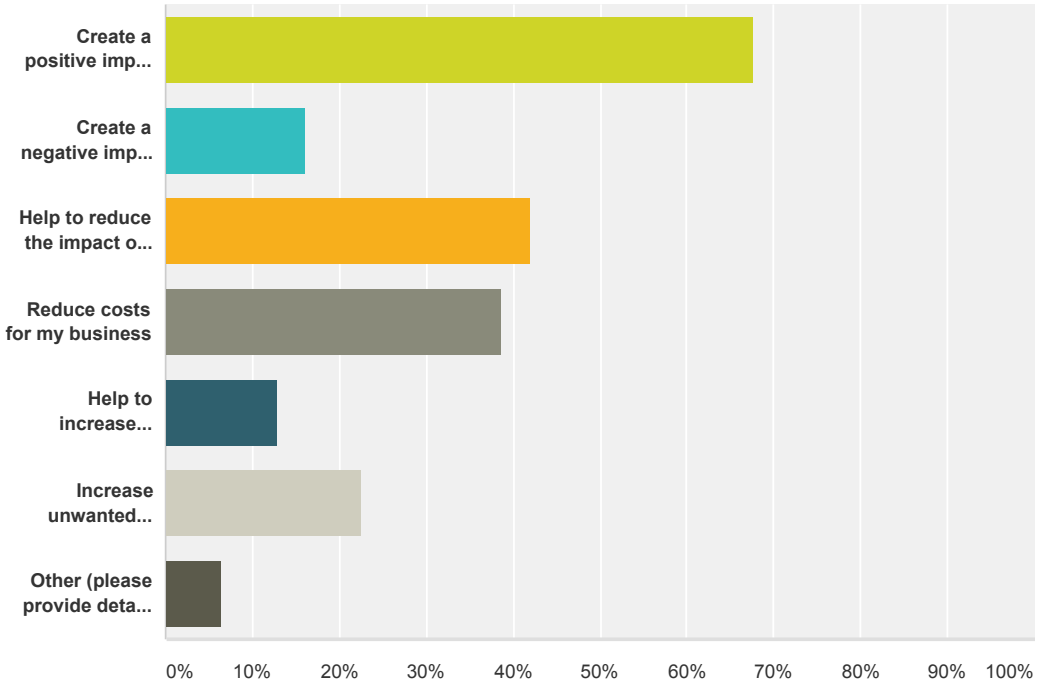


Answer Choices	Responses	
Time limit (please provide detail in the text box below)	**18.18%**	4
Password provided to eligible guests/customers (e.g., minimum purchase, VIP, etc.)	**77.27%**	17
Restricted bandwidth (slower speed)	**18.18%**	4
Other (please provide detail in the text box below)	**13.64%**	3
Total Respondents: 22		

#	Please specify time limits or other limits placed on guest/customer WiFi access	Date
1	24 Hours 2 Mbps basic service Registered guests may upgrade for a fee to 7 Mbps	
2	Specific locations	
3	Each registered guest is limited to 3-MB (up and down), maximum of 3 devices.	
4	Guest name and room number is used	
5	24 hour	
6	Access as long as they want with room number and name	

Q18 How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)

Answered: 31 Skipped: 6



Answer Choices	Responses	
Create a positive impact on my business by providing an added benefit for my guests/customers	**67.74%**	21
Create a negative impact on my business (please provide detail in the text box below)	**16.13%**	5
Help to reduce the impact of guest/customer WiFi access on my network	**41.94%**	13
Reduce costs for my business	**38.71%**	12
Help to increase customer foot traffic on my property	**12.90%**	4
Increase unwanted loitering on my property	**22.58%**	7
Other (please provide detail in the text box below)	**6.45%**	2
Total Respondents: 31		

#	Please provide additional information related to your responses to this question	Date
1	High Quality Wireless internet service is a key component of our Resort Fee. If we were unable to charge for this inside the building, then we would have a significant loss of revenue.	
2	Impacts perceived value of in-room wifi services which is included and helps to justify our resort fees.	
3	We have invested significant dollars to achieve a great product, free internet that might not be as good could cause guests to complain about slow or bad bandwidth. We also include this service in our resort charge and having the city or state offer free would impact the benefits and revenue from this opportunity.	

4	In brief, we anticipate the following regarding free WiFi offered by a 3rd party: Pros • Reduces CapX/OpX related to WiFi infrastructure and support. Cons • Siphons revenues related to internet sales. • Eliminates an important resort charge inclusion. • Less control or inability to maintain quality assurance. • Less control or inability to maintain support levels to meet our customer expectations.	
5	This depends. If the state were to provide 500Mbps then it would be ok.	
6	This would be subject to speed, security, etc.	

APPENDIX D

Resort Survey

Responses by Target Area

DCCA
Department of Commerce and Consumer Affairs
Cable Television Division

State Resort Area Internet and WiFi Access Survey

STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Thank you for participating in this State Broadband Survey! Your responses will help the State in its efforts to facilitate access to high speed Internet across the State. The primary focus of this survey is to collect information on access to the Internet in the following resort areas:

- South Kohala, Hawaii
- Kaanapali, Maui
- Hanalei, Kauai
- Waikiki, Oahu

Provide information only for the area in which your business is located or operates.

* 1. Where is your business located? (This question requires an answer)

- ◯ South Kohala, Hawaii
- ◯ Hanalei, Kauai (and surrounding area)
- ◯ Kaanapali, Maui
- ◯ Waikiki, Oahu

2. Please provide the name of your business or the business you represent. (Optional)

* 3. Please indicate your type of business. (This question requires an answer)

- ◯ Large hotel
- ◯ Small hotel/Inn/B&B
- ◯ Retail
- ◯ Restaurant or other food service business
- ◯ Other service business

4. Does your business have Internet service?

- ◯ Yes (If you answer "Yes", go to Question 6)
- ◯ No

5. If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)

- ☐ No wireline service is available to my property (e.g., Oceanic Time Warner Cable Internet Service, Hawaiian Telcom Internet Service, Level3/TW Telecom, etc.)
- ☐ No wireless service is available to my property (e.g., Verizon, AT&T, Sprint, T-Mobile, Aloha Broadband, satellite, etc.)
- ☐ Providing service to my property is too expensive
- ☐ Do not need/do not want wireline service (please provide detail in the text box below)
- ☐ Do not need/do not want wireless service (please provide detail in the text box below)

Why do you not need or not want wireline and/or wireless Internet service for your business?

6. Which Internet service provider services your business? (Check all that apply)

- ☐ Oceanic Time Warner Cable
- ☐ Hawaiian Telcom
- ☐ Level3 (which acquired TW Telecom)
- ☐ Other wireline provider
- ☐ Fixed wireless provider (e.g., Aloha Broadband, Hawaii Broadband, etc.)
- ☐ Wireless (cellular) provider (e.g., AT&T Wireless, Sprint, T-Mobile, Verizon Wireless)
- ☐ Satellite provider (e.g., Dish, Exede, etc.)

7. What is the advertised download speed of your service?

- ◯ Less than 25 Mbps. (Please indicate subscribed speed, if known, in the text box below)
- ◯ More than or equal to 25 Mbps, but less than 100 Mbps
- ◯ More than or equal to 100 Mbps, but less than 1Gbps
- ◯ 1 Gbps or faster

Specific subscribed speed if less than 25 Mbps

8. If your business has wireline Internet service, how satisfied are you with that service?

- ◯ Satisfied
- ◯ Unsatisfied

Please explain why you are unsatisfied

9. If your business has wireless Internet service, how satisfied are you with that service?

- ◯ Satisfied
- ◯ Unsatisfied

Please explain why you are unsatisfied

10. Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.

11. May we contact you for additional information?

- ◯ No
- ◯ Yes

Please provide your contact information here

If you do not have Internet service, please stop here. You have completed the survey. Thank you for your input!

12. Does your business offer any of the services listed below<u>free of charge</u>? (Check all that apply)

- ☐ In-room wireline service (Ethernet)
- ☐ Business center (Ethernet)
- ☐ In-room wireless service (WiFi)
- ☐ Public area wireless service (WiFi)

13. Does your business offer any of the services listed below<u>for a fee</u> (including if the service is offered through a "resort fee")? (Check all that apply)

- ☐ In-room wireline service (Ethernet)
- ☐ Business center (Ethernet)
- ☐ In-room wireless service (WiFi)
- ☐ Public area wireless service (WiFi)

14. If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?

- ◯ Yes
- ◯ No

15. If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)

- ☐ Indoors, everywhere
- ☐ Indoors, limited to certain areas (please provide detail in the text box below)
- ☐ Outdoors, everywhere
- ☐ Outdoors, limited to certain areas (please provide detail in the text box below)

If WiFi is limited to certain indoor and/or outdoor areas, please name or describe those areas

16. If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)

- ☐ Limited bandwidth available for WiFi
- ☐ Restricted to high traffic area
- ☐ Restricted to business center (for hotels)
- ☐ Restricted to provide service only to guests/customers
- ☐ Other (please provide detail in the text box below)

Details:

17. If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)

- [ ] Time limit (please provide detail in the text box below)
- [ ] Password provided to eligible guests/customers (e.g., minimum purchase, VIP, etc.)
- [ ] Restricted bandwidth (slower speed)
- [ ] Other (please provide detail in the text box below)

Please specify time limits or other limits placed on guest/customer WiFi access

18. How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)

- [ ] Create a positive impact on my business by providing an added benefit for my guests/customers
- [ ] Create a negative impact on my business (please provide detail in the text box below)
- [ ] Help to reduce the impact of guest/customer WiFi access on my network
- [ ] Reduce costs for my business
- [ ] Help to increase customer foot traffic on my property
- [ ] Increase unwanted loitering on my property
- [ ] Other (please provide detail in the text box below)

Please provide additional information related to your responses to this question

#15 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Hanalei, Kauai (and surrounding area)
Q2: **Please provide the name of your business or the business you represent. (Optional)**	
Q3: **Please indicate your type of business. (This question requires an answer)**	Large hotel
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Oceanic Time Warner Cable , Hawaiian Telcom
Q7: **What is the advertised download speed of your service?**	More than or equal to 100 Mbps, but less than 1Gbps
Q8: **If your business has wireline Internet service, how satisfied are you with that service?**	Satisfied
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Satisfied
Q10: **Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.**	**Poor cellular service north shore of Kaua'i. Verizon Wireless is ok and all other cellular carriers have spotty coverage at best**
Q11: **May we contact you for additional information?**	
Q12: **Does your business offer any of the services listed below free of charge? (Check all that apply)**	In-room wireline service (Ethernet), In-room wireless service (WiFi), Public area wireless service (WiFi)

Q13: **Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)**	Business center (Ethernet)
Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*
Q15: **If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)**	Indoors, everywhere, Outdoors, everywhere
Q16: If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)	*Respondent skipped this question*
Q17: **If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)**	Password provided to eligible guests/customers (e.g., minimum purchase, VIP, etc.)
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Create a positive impact on my business by providing an added benefit for my guests/customers , Help to reduce the impact of guest/customer WiFi access on my network , Help to increase customer foot traffic on my property , Increase unwanted loitering on my property

#28 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Hanalei, Kauai (and surrounding area)
Q2: **Please provide the name of your business or the business you represent. (Optional)**	
Q3: **Please indicate your type of business. (This question requires an answer)**	Small hotel/Inn/B&B
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Oceanic Time Warner Cable
Q7: **What is the advertised download speed of your service?**	More than or equal to 25 Mbps, but less than 100 Mbps
Q8: **If your business has wireline Internet service, how satisfied are you with that service?**	Unsatisfied, Please explain why you are unsatisfied No matter how much we upgrade we do not get the speed or signal strength we need. Also multiple outages recently due to Oceanic Time Warner We recently lost three computers due to their sudden outages.
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Unsatisfied, Please explain why you are unsatisfied Same as above
Q10: **Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.**	Wainiha and Haean are both poor reception for phone and any wireless device. This is very dangerous in we sometimes don't get emergency alerts. We also are cut off from communication if we sustain any type of real emergency

Q11: **May we contact you for additional information?**	
Q12: **Does your business offer any of the services listed below free of charge? (Check all that apply)**	Business center (Ethernet), In-room wireless service (WiFi)
Q13: Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)	*Respondent skipped this question*
Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*
Q15: **If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)**	Indoors, everywhere, Outdoors, everywhere
Q16: **If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)**	Limited bandwidth available for WiFi
Q17: **If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)**	Password provided to eligible guests/customers (e.g., minimum purchase, VIP, etc.)
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Create a positive impact on my business by providing an added benefit for my guests/customers , Help to reduce the impact of guest/customer WiFi access on my network , Reduce costs for my business, Help to increase customer foot traffic on my property

#1 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Kaanapali, Maui
Q2: **Please provide the name of your business or the business you represent. (Optional)**	
Q3: **Please indicate your type of business. (This question requires an answer)**	Large hotel
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Oceanic Time Warner Cable , Hawaiian Telcom
Q7: **What is the advertised download speed of your service?**	More than or equal to 25 Mbps, but less than 100 Mbps
Q8: **If your business has wireline Internet service, how satisfied are you with that service?**	Satisfied
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Satisfied
Q10: Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.	*Respondent skipped this question*
Q11: **May we contact you for additional information?**	
Q12: **Does your business offer any of the services listed below free of charge? (Check all that apply)**	In-room wireless service (WiFi), Public area wireless service (WiFi)

Q13: Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)	*Respondent skipped this question*
Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*
Q15: **If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)**	Outdoors, limited to certain areas (please provide detail in the text box below) , Indoors, limited to certain areas (please provide detail in the text box below) , If WiFi is limited to certain indoor and/or outdoor areas, please name or describe those areas Wifi in all guestrooms, portions of restaurants and lobby. Wifi in 4-acre outdoors courtyard area.
Q16: **If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)**	Restricted to high traffic area
Q17: **If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)**	Password provided to eligible guests/customers (e.g., minimum purchase, VIP, etc.)
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Reduce costs for my business, Help to reduce the impact of guest/customer WiFi access on my network , Create a positive impact on my business by providing an added benefit for my guests/customers

#19 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: Where is your business located? (This question requires an answer)	Kaanapali, Maui
Q2: Please provide the name of your business or the business you represent. (Optional)	
Q3: Please indicate your type of business. (This question requires an answer)	Large hotel
Q4: Does your business have Internet service?	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: Which Internet service provider services your business? (Check all that apply)	Wireless (cellular) provider (e.g., AT&T Wireless, Sprint, T-Mobile, Verizon Wireless)
Q7: What is the advertised download speed of your service?	*Respondent skipped this question*
Q8: If your business has wireline Internet service, how satisfied are you with that service?	Satisfied
Q9: If your business has wireless Internet service, how satisfied are you with that service?	Satisfied
Q10: Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.	*Respondent skipped this question*
Q11: May we contact you for additional information?	
Q12: Does your business offer any of the services listed below free of charge? (Check all that apply)	In-room wireline service (Ethernet), Business center (Ethernet), In-room wireless service (WiFi), Public area wireless service (WiFi)

Q13: Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)	In-room wireline service (Ethernet), Business center (Ethernet), In-room wireless service (WiFi), Public area wireless service (WiFi)
Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	Yes
Q15: If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)	Indoors, everywhere, Outdoors, limited to certain areas (please provide detail in the text box below) , If WiFi is limited to certain indoor and/or outdoor areas, please name or describe those areas Outdoor area is function space, ocean lawn, and bar areas
Q16: If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)	Restricted to high traffic area, Restricted to provide service only to guests/customers , Details: location of access points
Q17: If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)	Password provided to eligible guests/customers (e.g., minimum purchase, VIP, etc.) , Please specify time limits or other limits placed on guest/customer WiFi access Guest name and room number is used
Q18: How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)	Create a positive impact on my business by providing an added benefit for my guests/customers , Create a negative impact on my business (please provide detail in the text box below) , Reduce costs for my business, Increase unwanted loitering on my property

#25 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Kaanapali, Maui
Q2: Please provide the name of your business or the business you represent. (Optional)	*Respondent skipped this question*
Q3: **Please indicate your type of business. (This question requires an answer)**	Large hotel
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Oceanic Time Warner Cable
Q7: **What is the advertised download speed of your service?**	More than or equal to 100 Mbps, but less than 1Gbps
Q8: If your business has wireline Internet service, how satisfied are you with that service?	*Respondent skipped this question*
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Satisfied
Q10: Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.	*Respondent skipped this question*
Q11: May we contact you for additional information?	*Respondent skipped this question*
Q12: **Does your business offer any of the services listed below free of charge? (Check all that apply)**	In-room wireline service (Ethernet), Business center (Ethernet), In-room wireless service (WiFi), Public area wireless service (WiFi)

Q13: **Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)**	In-room wireless service (WiFi)
Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*
Q15: If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)	*Respondent skipped this question*
Q16: If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)	*Respondent skipped this question*
Q17: **If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)**	Password provided to eligible guests/customers (e.g., minimum purchase, VIP, etc.)
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Create a positive impact on my business by providing an added benefit for my guests/customers , Help to reduce the impact of guest/customer WiFi access on my network , Reduce costs for my business

#11 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	South Kohala, Hawaii
Q2: **Please provide the name of your business or the business you represent. (Optional)**	
Q3: **Please indicate your type of business. (This question requires an answer)**	Large hotel
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Oceanic Time Warner Cable , Hawaiian Telcom
Q7: **What is the advertised download speed of your service?**	Less than 25 Mbps. (Please indicate subscribed speed, if known, in the text box below) , Specific subscribed speed if less than 25 Mbps 20Mbps but upgrading to 100Mbps in November
Q8: **If your business has wireline Internet service, how satisfied are you with that service?**	Satisfied, Please explain why you are unsatisfied Satisfied but we would like to see "Bursting" bandwidth so we can dynamically increase our bandwidth in real time based on need without having to place a request for more bandwidth 30 days in advance for an entire billing cycle.
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Satisfied
Q10: Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.	*Respondent skipped this question*

Q11: **May we contact you for additional information?**	Please provide your contact information here
Q12: Does your business offer any of the services listed below free of charge? (Check all that apply)	*Respondent skipped this question*
Q13: **Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)**	In-room wireline service (Ethernet), In-room wireless service (WiFi), Public area wireless service (WiFi)
Q14: **If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?**	No
Q15: **If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)**	Indoors, limited to certain areas (please provide detail in the text box below) , Outdoors, limited to certain areas (please provide detail in the text box below) , If WiFi is limited to certain indoor and/or outdoor areas, please name or describe those areas Parts of the lobby and the coffee shop.
Q16: **If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)**	Restricted to high traffic area, Restricted to provide service only to guests/customers
Q17: **If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)**	Password provided to eligible guests/customers (e.g., minimum purchase, VIP, etc.)
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Create a positive impact on my business by providing an added benefit for my guests/customers , Help to reduce the impact of guest/customer WiFi access on my network , Reduce costs for my business

#24 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	South Kohala, Hawaii
Q2: **Please provide the name of your business or the business you represent. (Optional)**	
Q3: **Please indicate your type of business. (This question requires an answer)**	Large hotel
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Oceanic Time Warner Cable
Q7: **What is the advertised download speed of your service?**	Less than 25 Mbps. (Please indicate subscribed speed, if known, in the text box below) , Specific subscribed speed if less than 25 Mbps 20Mbps
Q8: **If your business has wireline Internet service, how satisfied are you with that service?**	Satisfied, Please explain why you are unsatisfied We have a 300 Mbps fiber optic line for guest use and a 20 Mbps fiber optic line for admin use.
Q9: If your business has wireless Internet service, how satisfied are you with that service?	*Respondent skipped this question*
Q10: **Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.**	We have very good Verizon and AT&T cellular coverage. All other cellular service providers are not adequate. ?
Q11: **May we contact you for additional information?**	

Q12: Does your business offer any of the services listed below free of charge? (Check all that apply)	*Respondent skipped this question*
Q13: **Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)**	In-room wireline service (Ethernet), Business center (Ethernet), In-room wireless service (WiFi), Public area wireless service (WiFi)
Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*
Q15: **If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)**	Indoors, everywhere, Outdoors, everywhere
Q16: If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)	*Respondent skipped this question*
Q17: **If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)**	Time limit (please provide detail in the text box below), Restricted bandwidth (slower speed), Please specify time limits or other limits placed on guest/customer WiFi access 24 Hours 2 Mbps basic service Registered guests may upgrade for a fee to 7 Mbps
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Create a positive impact on my business by providing an added benefit for my guests/customers, Help to reduce the impact of guest/customer WiFi access on my network

#2 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: **Please provide the name of your business or the business you represent. (Optional)**	
Q3: **Please indicate your type of business. (This question requires an answer)**	Other service business
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Oceanic Time Warner Cable
Q7: **What is the advertised download speed of your service?**	More than or equal to 25 Mbps, but less than 100 Mbps
Q8: **If your business has wireline Internet service, how satisfied are you with that service?**	Satisfied
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Satisfied
Q10: Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.	*Respondent skipped this question*

Q11: **May we contact you for additional information?**

Q12: Does your business offer any of the services listed below free of charge? (Check all that apply)	*Respondent skipped this question*
Q13: Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)	*Respondent skipped this question*
Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*
Q15: If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)	*Respondent skipped this question*
Q16: If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)	*Respondent skipped this question*
Q17: If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)	*Respondent skipped this question*
Q18: How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)	*Respondent skipped this question*

#3 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: Please provide the name of your business or the business you represent. (Optional)	*Respondent skipped this question*
Q3: **Please indicate your type of business. (This question requires an answer)**	Small hotel/Inn/B&B
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Oceanic Time Warner Cable
Q7: **What is the advertised download speed of your service?**	Less than 25 Mbps. (Please indicate subscribed speed, if known, in the text box below)
Q8: If your business has wireline Internet service, how satisfied are you with that service?	*Respondent skipped this question*
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Satisfied
Q10: **Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.**	N/A
Q11: **May we contact you for additional information?**	
Q12: **Does your business offer any of the services listed below free of charge? (Check all that apply)**	In-room wireless service (WiFi), Public area wireless service (WiFi)
Q13: Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)	*Respondent skipped this question*

Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*
Q15: **If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)**	Outdoors, everywhere, Indoors, everywhere
Q16: If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)	*Respondent skipped this question*
Q17: If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)	*Respondent skipped this question*
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Reduce costs for my business, Create a positive impact on my business by providing an added benefit for my guests/customers

#4 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: Please provide the name of your business or the business you represent. (Optional)	*Respondent skipped this question*
Q3: **Please indicate your type of business. (This question requires an answer)**	Small hotel/Inn/B&B
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Oceanic Time Warner Cable
Q7: **What is the advertised download speed of your service?**	More than or equal to 25 Mbps, but less than 100 Mbps
Q8: If your business has wireline Internet service, how satisfied are you with that service?	*Respondent skipped this question*
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Unsatisfied, Please explain why you are unsatisfied Connectivity issues.
Q10: **Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.**	N/A.
Q11: **May we contact you for additional information?**	
Q12: **Does your business offer any of the services listed below free of charge? (Check all that apply)**	In-room wireline service (Ethernet), In-room wireless service (WiFi)

Q13: Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)	*Respondent skipped this question*
Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*
Q15: **If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)**	Outdoors, limited to certain areas (please provide detail in the text box below) , If WiFi is limited to certain indoor and/or outdoor areas, please name or describe those areas Lobby.
Q16: **If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)**	Details: Will be wireless throughout the building in the future.
Q17: **If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)**	Password provided to eligible guests/customers (e.g., minimum purchase, VIP, etc.)
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Other (please provide detail in the text box below) , Please provide additional information related to your responses to this question This would be subject to speed, security, etc.

#5 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: **Please provide the name of your business or the business you represent. (Optional)**	
Q3: **Please indicate your type of business. (This question requires an answer)**	Small hotel/Inn/B&B
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Oceanic Time Warner Cable
Q7: **What is the advertised download speed of your service?**	More than or equal to 25 Mbps, but less than 100 Mbps
Q8: **If your business has wireline Internet service, how satisfied are you with that service?**	Satisfied
Q9: If your business has wireless Internet service, how satisfied are you with that service?	*Respondent skipped this question*
Q10: Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.	*Respondent skipped this question*
Q11: **May we contact you for additional information?**	
Q12: **Does your business offer any of the services listed below free of charge? (Check all that apply)**	**In-room wireless service (WiFi)**

Q13: Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)	*Respondent skipped this question*
Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*
Q15: If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)	*Respondent skipped this question*
Q16: If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)	*Respondent skipped this question*
Q17: If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)	*Respondent skipped this question*
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Create a positive impact on my business by providing an added benefit for my guests/customers

#6 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: **Please provide the name of your business or the business you represent. (Optional)**	
Q3: **Please indicate your type of business. (This question requires an answer)**	Retail
Q4: **Does your business have Internet service?**	No
Q5: **If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)**	No wireline service is available to my property (e.g., Oceanic Time Warner Cable Internet Service, Hawaiian Telcom Internet Service, Level3/TW Telecom, etc.)
Q6: Which Internet service provider services your business? (Check all that apply)	*Respondent skipped this question*
Q7: What is the advertised download speed of your service?	*Respondent skipped this question*
Q8: If your business has wireline Internet service, how satisfied are you with that service?	*Respondent skipped this question*
Q9: If your business has wireless Internet service, how satisfied are you with that service?	*Respondent skipped this question*
Q10: Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.	*Respondent skipped this question*
Q11: **May we contact you for additional information?**	Please provide your contact information here
Q12: Does your business offer any of the services listed below free of charge? (Check all that apply)	*Respondent skipped this question*

Q13: Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)	*Respondent skipped this question*
Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*
Q15: If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)	*Respondent skipped this question*
Q16: If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)	*Respondent skipped this question*
Q17: If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)	*Respondent skipped this question*
Q18: How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)	*Respondent skipped this question*

#7 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: **Please provide the name of your business or the business you represent. (Optional)**	
Q3: **Please indicate your type of business. (This question requires an answer)**	Large hotel
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Other wireline provider
Q7: **What is the advertised download speed of your service?**	More than or equal to 100 Mbps, but less than 1Gbps
Q8: **If your business has wireline Internet service, how satisfied are you with that service?**	Satisfied
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Satisfied
Q10: Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.	*Respondent skipped this question*
Q11: May we contact you for additional information?	*Respondent skipped this question*
Q12: **Does your business offer any of the services listed below free of charge? (Check all that apply)**	In-room wireline service (Ethernet), Business center (Ethernet), In-room wireless service (WiFi), Public area wireless service (WiFi)
Q13: Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)	*Respondent skipped this question*

	No
Q14: **If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?**	
Q15: **If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)**	Indoors, limited to certain areas (please provide detail in the text box below) , If WiFi is limited to certain indoor and/or outdoor areas, please name or describe those areas In room, function rooms, in restaurants, pool.
Q16: **If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)**	Restricted to high traffic area , Restricted to provide service only to guests/customers
Q17: **If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)**	Other (please provide detail in the text box below)
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Other (please provide detail in the text box below) , Please provide additional information related to your responses to this question This depends. If the state were to provide 500Mbps then it would be ok.

#8 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: **Please provide the name of your business or the business you represent. (Optional)**	
Q3: **Please indicate your type of business. (This question requires an answer)**	Large hotel
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Oceanic Time Warner Cable
Q7: **What is the advertised download speed of your service?**	More than or equal to 100 Mbps, but less than 1Gbps
Q8: If your business has wireline Internet service, how satisfied are you with that service?	*Respondent skipped this question*
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Satisfied
Q10: Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.	*Respondent skipped this question*
Q11: **May we contact you for additional information?**	
Q12: **Does your business offer any of the services listed below free of charge? (Check all that apply)**	In-room wireline service (Ethernet), Business center (Ethernet), In-room wireless service (WiFi), Public area wireless service (WiFi)

Q13: **Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)**	Public area wireless service (WiFi), In-room wireless service (WiFi), Business center (Ethernet), In-room wireline service (Ethernet)
Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*
Q15: **If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)**	Indoors, everywhere
Q16: If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)	*Respondent skipped this question*
Q17: **If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)**	Other (please provide detail in the text box below), Please specify time limits or other limits placed on guest/customer WiFi access Access as long as they want with room number and name
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Create a positive impact on my business by providing an added benefit for my guests/customers

#9 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: **Please provide the name of your business or the business you represent. (Optional)**	
Q3: **Please indicate your type of business. (This question requires an answer)**	Large hotel
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Hawaiian Telcom, Fixed wireless provider (e.g., Aloha Broadband, Hawaii Broadband, etc.)
Q7: **What is the advertised download speed of your service?**	1 Gbps or faster
Q8: If your business has wireline Internet service, how satisfied are you with that service?	*Respondent skipped this question*
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Satisfied
Q10: Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.	*Respondent skipped this question*
Q11: **May we contact you for additional information?**	
Q12: **Does your business offer any of the services listed below free of charge? (Check all that apply)**	In-room wireline service (Ethernet), Business center (Ethernet), In-room wireless service (WiFi), Public area wireless service (WiFi)

Q13: Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)	*Respondent skipped this question*
Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*
Q15: **If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)**	Indoors, everywhere
Q16: If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)	*Respondent skipped this question*
Q17: **If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)**	Password provided to eligible guests/customers (e.g., minimum purchase, VIP, etc.)
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Create a positive impact on my business by providing an added benefit for my guests/customers , Reduce costs for my business

#10 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: **Please provide the name of your business or the business you represent. (Optional)**	
Q3: **Please indicate your type of business. (This question requires an answer)**	Other service business
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Other wireline provider
Q7: **What is the advertised download speed of your service?**	Less than 25 Mbps. (Please indicate subscribed speed, if known, in the text box below) , Specific subscribed speed if less than 25 Mbps 10Mb/s
Q8: **If your business has wireline Internet service, how satisfied are you with that service?**	Satisfied
Q9: If your business has wireless Internet service, how satisfied are you with that service?	*Respondent skipped this question*
Q10: Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.	*Respondent skipped this question*
Q11: **May we contact you for additional information?**	
Q12: Does your business offer any of the services listed below free of charge? (Check all that apply)	*Respondent skipped this question*
Q13: Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)	*Respondent skipped this question*

	Yes
Q14: **If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?**	
Q15: If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)	*Respondent skipped this question*
Q16: If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)	*Respondent skipped this question*
Q17: If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)	*Respondent skipped this question*
Q18: How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)	*Respondent skipped this question*

#12 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: **Please provide the name of your business or the business you represent. (Optional)**	
Q3: **Please indicate your type of business. (This question requires an answer)**	Other service business
Q4: **Does your business have Internet service?**	No
Q5: **If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)**	Providing service to my property is too expensive , Why do you not need or not want wireline and/or wireless Internet service for your business? We are an online service only.
Q6: **Which Internet service provider services your business? (Check all that apply)**	Hawaiian Telcom
Q7: **What is the advertised download speed of your service?**	More than or equal to 25 Mbps, but less than 100 Mbps
Q8: If your business has wireline Internet service, how satisfied are you with that service?	*Respondent skipped this question*
Q9: If your business has wireless Internet service, how satisfied are you with that service?	*Respondent skipped this question*
Q10: Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.	*Respondent skipped this question*
Q11: **May we contact you for additional information?**	
Q12: Does your business offer any of the services listed below free of charge? (Check all that apply)	*Respondent skipped this question*
Q13: Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)	*Respondent skipped this question*

14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*
Q15: If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)	*Respondent skipped this question*
Q16: If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)	*Respondent skipped this question*
Q17: If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)	*Respondent skipped this question*
Q18: How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)	*Respondent skipped this question*

#13 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: **Please provide the name of your business or the business you represent. (Optional)**	
Q3: **Please indicate your type of business. (This question requires an answer)**	Small hotel/Inn/B&B
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Oceanic Time Warner Cable
Q7: **What is the advertised download speed of your service?**	Less than 25 Mbps. (Please indicate subscribed speed, if known, in the text box below) , Specific subscribed speed if less than 25 Mbps 3 Mbps
Q8: **If your business has wireline Internet service, how satisfied are you with that service?**	Satisfied
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Satisfied
Q10: Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.	*Respondent skipped this question*
Q11: **May we contact you for additional information?**	

Q12: **Does your business offer any of the services listed below free of charge? (Check all that apply)**	In-room wireline service (Ethernet), In-room wireless service (WiFi), Public area wireless service (WiFi)
Q13: **Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)**	In-room wireline service (Ethernet), In-room wireless service (WiFi)
Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*
Q15: **If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)**	Indoors, limited to certain areas (please provide detail in the text box below) , If WiFi is limited to certain indoor and/or outdoor areas, please name or describe those areas Lobby and conference center
Q16: **If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)**	Restricted to provide service only to guests/customers
Q17: **If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)**	Time limit (please provide detail in the text box below) , Please specify time limits or other limits placed on guest/customer WiFi access 24 hour
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Reduce costs for my business

#14 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: **Please provide the name of your business or the business you represent. (Optional)**	
Q3: **Please indicate your type of business. (This question requires an answer)**	Large hotel
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Oceanic Time Warner Cable
Q7: **What is the advertised download speed of your service?**	Less than 25 Mbps. (Please indicate subscribed speed, if known, in the text box below) , Specific subscribed speed if less than 25 Mbps 5Mbps
Q8: **If your business has wireline Internet service, how satisfied are you with that service?**	Satisfied
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Unsatisfied, Please explain why you are unsatisfied Daily issues with guest not being able to connect or intermittent disconnects while connected.
Q10: **Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular)** service, and any explanation you may have been given.	Outdoor **spaces away from main hotel buildings. Basement area with no coverage.**
Q11: **May we contact you for additional information?**	
Q12: Does your business offer any of the services listed below free of charge? (Check all that apply)	*Respondent skipped this question*

Q13: Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)	*Respondent skipped this question*
Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*
Q15: If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)	*Respondent skipped this question*
Q16: If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)	*Respondent skipped this question*
Q17: If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)	*Respondent skipped this question*
Q18: How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)	*Respondent skipped this question*

#16 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: Please provide the name of your business or the business you represent. (Optional)	*Respondent skipped this question*
Q3: **Please indicate your type of business. (This question requires an answer)**	Large hotel
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Other wireline provider
Q7: **What is the advertised download speed of your service?**	More than or equal to 100 Mbps, but less than 1Gbps
Q8: If your business has wireline Internet service, how satisfied are you with that service?	*Respondent skipped this question*
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Unsatisfied
Q10: Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.	*Respondent skipped this question*
Q11: May we contact you for additional information?	*Respondent skipped this question*
Q12: **Does your business offer any of the services listed below free of charge? (Check all that apply)**	Public area wireless service (WiFi)
Q13: **Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)**	In-room wireless service (WiFi)
Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*

Q15: **If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)**	Indoors, everywhere
Q16: If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)	*Respondent skipped this question*
Q17: If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)	*Respondent skipped this question*
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Create a positive impact on my business by providing an added benefit for my guests/customers

#17 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: Please provide the name of your business or the business you represent. (Optional)	*Respondent skipped this question*
Q3: **Please indicate your type of business. (This question requires an answer)**	Large hotel
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Hawaiian Telcom, Other wireline provider
Q7: **What is the advertised download speed of your service?**	More than or equal to 25 Mbps, but less than 100 Mbps
Q8: **If your business has wireline Internet service, how satisfied are you with that service?**	Satisfied
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Unsatisfied, Please explain why you are unsatisfied Guest demand increasing; unable to keep up with guest needs; provider service level needs improvement.
Q10: **Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.**	basement, corners of buildings, public bathrooms
Q11: **May we contact you for additional information?**	
Q12: **Does your business offer any of the services listed below free of charge? (Check all that apply)**	**In-room wireless service (WiFi)**

Q13: Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)	*Respondent skipped this question*
Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*
Q15: **If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)**	Indoors, everywhere, Outdoors, limited to certain areas (please provide detail in the text box below) , If WiFi is limited to certain indoor and/or outdoor areas, please name or describe those areas not strong enough to access in retail shops, certain restaurants.
Q16: **If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)**	Limited bandwidth available for WiFi, Restricted to provide service only to guests/customers
Q17: **If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)**	Time limit (please provide detail in the text box below) , Password provided to eligible guests/customers (e.g., minimum purchase, VIP, etc.) , Restricted bandwidth (slower speed)
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Create a positive impact on my business by providing an added benefit for my guests/customers , Help to reduce the impact of guest/customer WiFi access on my network

#18 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: **Please provide the name of your business or the business you represent. (Optional)**	
Q3: **Please indicate your type of business. (This question requires an answer)**	Large hotel
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Oceanic Time Warner Cable , Hawaiian Telcom, Level3 (which acquired TW Telecom)
Q7: **What is the advertised download speed of your service?**	1 Gbps or faster
Q8: **If your business has wireline Internet service, how satisfied are you with that service?**	Satisfied
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Satisfied

Q10: **Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.**

Wireless (Cellular) Service is not ubiquitous throughout our hotels. Most notably service is not 100% available in hardened areas (places with considerable concrete, steel, earth, etc.) E.g. Basement, stairwells, etc.

Q11: **May we contact you for additional information?**	
Q12: **Does your business offer any of the services listed below free of charge? (Check all that apply)**	Business center (Ethernet), Public area wireless service (WiFi)
Q13: **Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)**	In-room wireline service (Ethernet), Business center (Ethernet), In-room wireless service (WiFi), Public area wireless service (WiFi)
Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*
Q15: **If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)**	Indoors, everywhere, Outdoors, everywhere
Q16: If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)	*Respondent skipped this question*
Q17: **If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)**	Time limit (please provide detail in the text box below) , Password provided to eligible guests/customers (e.g., minimum purchase, VIP, etc.) , Restricted bandwidth (slower speed)
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Create a negative impact on my business (please provide detail in the text box below) , Help to reduce the impact of guest/customer WiFi access on my network , Reduce costs for my business, Increase unwanted loitering on my property, Please provide additional information related to your responses to this question In brief, we anticipate the following regarding free WiFi offered by a 3rd party: Pros • Reduces CapX/OpX related to WiFi infrastructure and support. Cons • Siphons revenues related to internet sales. • Eliminates an important resort charge inclusion. • Less control or inability to maintain quality assurance. • Less control or inability to maintain support levels to meet our customer expectations.

#20 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: **Please provide the name of your business or the business you represent. (Optional)**	
Q3: **Please indicate your type of business. (This question requires an answer)**	Large hotel
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Oceanic Time Warner Cable , Hawaiian Telcom, Level3 (which acquired TW Telecom)
Q7: **What is the advertised download speed of your service?**	More than or equal to 100 Mbps, but less than 1Gbps
Q8: **If your business has wireline Internet service, how satisfied are you with that service?**	Satisfied
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Satisfied
Q10: **Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.**	Within each of our hotels, we cover all guest rooms and all public spaces. Require login and password (registered guest or conference participant). This is not a public service for non-guests.
Q11: **May we contact you for additional information?**	

Q12: **Does your business offer any of the services listed below free of charge? (Check all that apply)**	In-room wireline service (Ethernet), Business center (Ethernet), In-room wireless service (WiFi), Public area wireless service (WiFi)
Q13: Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)	*Respondent skipped this question*
Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*
Q15: **If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)**	Indoors, everywhere, Outdoors, limited to certain areas (please provide detail in the text box below) , If WiFi is limited to certain indoor and/or outdoor areas, please name or describe those areas Guest room balconies, public spaces of restaurants and meeting areas within resort premises.
Q16: **If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)**	Restricted to provide service only to guests/customers , Details: Within each of our hotels, we cover all guest rooms and all public spaces. Require login and password (registered guest or conference participant). This is not a public service for non-guests.
Q17: **If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)**	Password provided to eligible guests/customers (e.g., minimum purchase, VIP, etc.) , Restricted bandwidth (slower speed), Please specify time limits or other limits placed on guest/customer WiFi access Each registered guest is limited to 3-MB (up and down), maximum of 3 devices.
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Help to reduce the impact of guest/customer WiFi access on my network , Increase unwanted loitering on my property

#21 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: Please provide the name of your business or the business you represent. (Optional)	*Respondent skipped this question*
Q3: **Please indicate your type of business. (This question requires an answer)**	Small hotel/Inn/B&B
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Level3 (which acquired TW Telecom)
Q7: **What is the advertised download speed of your service?**	More than or equal to 25 Mbps, but less than 100 Mbps
Q8: **If your business has wireline Internet service, how satisfied are you with that service?**	Satisfied
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Satisfied
Q10: **Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.**	Basement of our building.
Q11: **May we contact you for additional information?**	
Q12: Does your business offer any of the services listed below free of charge? (Check all that apply)	In-room wireline service (Ethernet), Business center (Ethernet), In-room wireless service (WiFi), Public area wireless service (WiFi)

Q13: Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)	*Respondent skipped this question*
Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*
Q15: **If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)**	Indoors, everywhere
Q16: If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)	*Respondent skipped this question*
Q17: **If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)**	Password provided to eligible guests/customers (e.g., minimum purchase, VIP, etc.)
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Create a positive impact on my business by providing an added benefit for my guests/customers Help to reduce the impact of guest/customer WiFi access on my network , Reduce costs for my business, Help to increase customer foot traffic on my property Increase unwanted loitering on my property

#22 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: Please provide the name of your business or the business you represent. (Optional)	*Respondent skipped this question*
Q3: **Please indicate your type of business. (This question requires an answer)**	Large hotel
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Oceanic Time Warner Cable
Q7: What is the advertised download speed of your service?	*Respondent skipped this question*
Q8: **If your business has wireline Internet service, how satisfied are you with that service?**	Satisfied
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Unsatisfied, Please explain why you are unsatisfied Complaints from our guest on various internet related services.
Q10: Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.	*Respondent skipped this question*
Q11: **May we contact you for additional information?**	
Q12: **Does your business offer any of the services listed below free of charge? (Check all that apply)**	Public area wireless service (WiFi)
Q13: Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)	In-room wireline service (Ethernet), In-room wireless service (WiFi)

Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*
Q15: If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)	Indoors, limited to certain areas (please provide detail in the text box below) , Outdoors, limited to certain areas (please provide detail in the text box below)
Q16: **If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)**	Other (please provide detail in the text box below) , Details: Convenient location for our guest.
Q17: **If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)**	Other (please provide detail in the text box below) , Please specify time limits or other limits placed on guest/customer WiFi access Specific locations
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Create a positive impact on my business by providing an added benefit for my guests/customers , Help to increase customer foot traffic on my property

#23 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: **Please provide the name of your business or the business you represent. (Optional)**	
Q3: **Please indicate your type of business. (This question requires an answer)**	Large hotel
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Other wireline provider
Q7: **What is the advertised download speed of your service?**	More than or equal to 100 Mbps, but less than 1Gbps
Q8: **If your business has wireline Internet service, how satisfied are you with that service?**	Satisfied
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Satisfied
Q10: **Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.**	Basement of the hotel
Q11: **May we contact you for additional information?**	
Q12: **Does your business offer any of the services listed below free of charge? (Check all that apply)**	Public area wireless service (WiFi)

Q13: **Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)**	In-room wireless service (WiFi), Public area wireless service (WiFi)
Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*
Q15: **If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)**	Indoors, everywhere, Outdoors, limited to certain areas (please provide detail in the text box below) , If WiFi is limited to certain indoor and/or outdoor areas, please name or describe those areas Pool area is inconsistent
Q16: **If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)**	Restricted to high traffic area
Q17: **If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)**	Password provided to eligible guests/customers (e.g., minimum purchase, VIP, etc.)
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Create a negative impact on my business (please provide detail in the text box below) , Please provide additional information related to your responses to this question We have invested significant dollars to achieve a great product, free internet that might not be as good could cause guests to complain about slow or bad bandwidth. We also include this service in our resort charge and having the city or state offer free would impact the benefits and revenue from this opportunity.

#26 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: **Please provide the name of your business or the business you represent. (Optional)**	
Q3: **Please indicate your type of business. (This question requires an answer)**	Large hotel
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Oceanic Time Warner Cable
Q7: **What is the advertised download speed of your service?**	More than or equal to 25 Mbps, but less than 100 Mbps
Q8: **If your business has wireline Internet service, how satisfied are you with that service?**	Unsatisfied, Please explain why you are unsatisfied Amount of speed deters guests from consistent internet service.
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Unsatisfied, Please explain why you are unsatisfied Amount of speed deters guests from consistent internet service.
Q10: **Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.**	From what we have been advised, there is one trunk from Oceanic that runs down Paoakalani and it splits between the Sunset and Banyan. Sunset has 435 units and Banyan has 872 units and the drop in speed in sharing this trunk between both properties is very evident. Please note that this does not include residential road runner service that certain residents have obtained through OTW.

Q11: **May we contact you for additional information?**	
Q12: Does your business offer any of the services listed below free of charge? (Check all that apply)	*Respondent skipped this question*
Q13: **Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)**	In-room wireline service (Ethernet), In-room wireless service (WiFi)
Q14: **If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?**	No
Q15: If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)	*Respondent skipped this question*
Q16: If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)	*Respondent skipped this question*
Q17: If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)	*Respondent skipped this question*
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Create a positive impact on my business by providing an added benefit for my guests/customers

#27 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: **Please provide the name of your business or the business you represent. (Optional)**	
Q3: **Please indicate your type of business. (This question requires an answer)**	Large hotel
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Oceanic Time Warner Cable
Q7: **What is the advertised download speed of your service?**	Less than 25 Mbps. (Please indicate subscribed speed, if known, in the text box below) , Specific subscribed speed if less than 25 Mbps 3 Mbps
Q8: **If your business has wireline Internet service, how satisfied are you with that service?**	Unsatisfied, Please explain why you are unsatisfied Slow
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Unsatisfied, Please explain why you are unsatisfied Slow
Q10: Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.	*Respondent skipped this question*
Q11: **May we contact you for additional information?**	
Q12: **Does your business offer any of the services listed below free of charge? (Check all that apply)**	Public area wireless service (WiFi)

Q13: **Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)**	In-room wireless service (WiFi)
Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*
Q15: **If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)**	Indoors, limited to certain areas (please provide detail in the text box below) , If WiFi is limited to certain indoor and/or outdoor areas, please name or describe those areas Lobby
Q16: **If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)**	Limited bandwidth available for WiFi
Q17: If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)	*Respondent skipped this question*
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Create a negative impact on my business (please provide detail in the text box below) , Please provide additional information related to your responses to this question Impacts perceived value of in-room wifi services which is included and helps to justify our resort fees.

#29 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: **Please provide the name of your business or the business you represent. (Optional)**	
Q3: **Please indicate your type of business. (This question requires an answer)**	Small hotel/Inn/B&B
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Hawaiian Telcom
Q7: **What is the advertised download speed of your service?**	Specific subscribed speed if less than 25 Mbps Hawaiian Telcom DSL
Q8: **If your business has wireline Internet service, how satisfied are you with that service?**	Satisfied
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Satisfied
Q10: Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.	*Respondent skipped this question*
Q11: **May we contact you for additional information?**	
Q12: **Does your business offer any of the services listed below free of charge? (Check all that apply)**	Public area wireless service (WiFi)

Q13: **Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)**	Public area wireless service (WiFi)
Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*
Q15: **If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)**	Indoors, limited to certain areas (please provide detail in the text box below) , If WiFi is limited to certain indoor and/or outdoor areas, please name or describe those areas lobby area
Q16: **If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)**	Restricted to provide service only to guests/customers
Q17: **If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)**	Password provided to eligible guests/customers (e.g., minimum purchase, VIP, etc.)
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Create a positive impact on my business by providing an added benefit for my guests/customers , Help to reduce the impact of guest/customer WiFi access on my network , Increase unwanted loitering on my property

#30 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: Please provide the name of your business or the business you represent. (Optional)	*Respondent skipped this question*
Q3: **Please indicate your type of business. (This question requires an answer)**	Small hotel/Inn/B&B
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: Which Internet service provider services your business? (Check all that apply)	*Respondent skipped this question*
Q7: **What is the advertised download speed of your service?**	More than or equal to 100 Mbps, but less than 1Gbps
Q8: If your business has wireline Internet service, how satisfied are you with that service?	*Respondent skipped this question*
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Satisfied
Q10: Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.	*Respondent skipped this question*
Q11: **May we contact you for additional information?**	
Q12: **Does your business offer any of the services listed below free of charge? (Check all that apply)**	In-room wireless service (WiFi), Public area wireless service (WiFi)
Q13: Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)	*Respondent skipped this question*
Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*

Q15: **If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)**	Indoors, everywhere
Q16: If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)	*Respondent skipped this question*
Q17: If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)	*Respondent skipped this question*
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Create a positive impact on my business by providing an added benefit for my guests/customers , Help to reduce the impact of guest/customer WiFi access on my network , Reduce costs for my business

#31 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: Please provide the name of your business or the business you represent. (Optional)	*Respondent skipped this question*
Q3: **Please indicate your type of business. (This question requires an answer)**	Small hotel/Inn/B&B
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Fixed wireless provider (e.g., Aloha Broadband, Hawaii Broadband, etc.)
Q7: **What is the advertised download speed of your service?**	More than or equal to 25 Mbps, but less than 100 Mbps
Q8: If your business has wireline Internet service, how satisfied are you with that service?	*Respondent skipped this question*
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Satisfied
Q10: Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.	*Respondent skipped this question*
Q11: **May we contact you for additional information?**	
Q12: **Does your business offer any of the services listed below free of charge? (Check all that apply)**	Public area wireless service (WiFi)
Q13: **Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)**	In-room wireless service (WiFi)
Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*

Q15: **If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)**	Indoors, limited to certain areas (please provide detail in the text box below) , If WiFi is limited to certain indoor and/or outdoor areas, please name or describe those areas Lobby area
Q16: **If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)**	Restricted to business center (for hotels)
Q17: If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)	*Respondent skipped this question*
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Create a positive impact on my business by providing an added benefit for my guests/customers , Help to reduce the impact of guest/customer WiFi access on my network

#32 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: **Please provide the name of your business or the business you represent. (Optional)**	
Q3: **Please indicate your type of business. (This question requires an answer)**	Small hotel/Inn/B&B
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Other wireline provider
Q7: **What is the advertised download speed of your service?**	More than or equal to 25 Mbps, but less than 100 Mbps
Q8: **If your business has wireline Internet service, how satisfied are you with that service?**	Satisfied
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Satisfied
Q10: Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.	*Respondent skipped this question*
Q11: **May we contact you for additional information?**	
Q12: **Does your business offer any of the services listed below free of charge? (Check all that apply)**	In-room wireline service (Ethernet), Business center (Ethernet), In-room wireless service (WiFi), Public area wireless service (WiFi)

Q13: **Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)**	In-room wireline service (Ethernet), In-room wireless service (WiFi), Public area wireless service (WiFi)
Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*
Q15: **If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)**	Indoors, everywhere, Outdoors, everywhere
Q16: **If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)**	Limited bandwidth available for WiFi, Restricted to provide service only to guests/customers
Q17: **If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)**	Password provided to eligible guests/customers (e.g., minimum purchase, VIP, etc.)
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Create a positive impact on my business by providing an added benefit for my guests/customers

#33 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: **Please provide the name of your business or the business you represent. (Optional)**	
Q3: **Please indicate your type of business. (This question requires an answer)**	Other service business
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Oceanic Time Warner Cable
Q7: **What is the advertised download speed of your service?**	Less than 25 Mbps. (Please indicate subscribed speed, if known, in the text box below) , Specific subscribed speed if less than 25 Mbps 5M x 1M
Q8: If your business has wireline Internet service, how satisfied are you with that service?	*Respondent skipped this question*
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Unsatisfied, Please explain why you are unsatisfied We will be upgrading to a higher speed
Q10: Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.	*Respondent skipped this question*
Q11: **May we contact you for additional information?**	
Q12: **Does your business offer any of the services listed below free of charge? (Check all that apply)**	In-room wireless service (WiFi)

Q13: **Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)**	In-room wireless service (WiFi)
Q14: **If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?**	Yes
Q15: **If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)**	If WiFi is limited to certain indoor and/or outdoor areas, please name or describe those areas Guest rooms and offices and owners lounge
Q16: **If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)**	Other (please provide detail in the text box below) , Details: We do not provide service at the pool and lobby
Q17: If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)	*Respondent skipped this question*
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Create a positive impact on my business by providing an added benefit for my guests/customers

#34 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: **Please provide the name of your business or the business you represent. (Optional)**	
Q3: **Please indicate your type of business. (This question requires an answer)**	Small hotel/Inn/B&B
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Hawaiian Telcom, Level3 (which acquired TW Telecom)
Q7: **What is the advertised download speed of your service?**	More than or equal to 25 Mbps, but less than 100 Mbps
Q8: **If your business has wireline Internet service, how satisfied are you with that service?**	Satisfied
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Satisfied
Q10: Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.	*Respondent skipped this question*
Q11: **May we contact you for additional information?**	
Q12: **Does your business offer any of the services listed below free of charge? (Check all that apply)**	In-room wireline service (Ethernet), Business center (Ethernet), In-room wireless service (WiFi)

	Public area wireless service (WiFi)
Q13: Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)	*Respondent skipped this question*
Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*
Q15: **If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)**	Indoors, everywhere, Outdoors, limited to certain areas (please provide detail in the text box below) , If WiFi is limited to certain indoor and/or outdoor areas, please name or describe those areas Just in our lobby and poolside area.
Q16: **If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)**	Restricted to provide service only to guests/customers
Q17: **If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)**	Password provided to eligible guests/customers (e.g., minimum purchase, VIP, etc.)
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Reduce costs for my business

#35 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: Please provide the name of your business or the business you represent. (Optional)	*Respondent skipped this question*
Q3: **Please indicate your type of business. (This question requires an answer)**	Other service business
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Oceanic Time Warner Cable
Q7: **What is the advertised download speed of your service?**	1 Gbps or faster
Q8: **If your business has wireline Internet service, how satisfied are you with that service?**	Satisfied
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Satisfied
Q10: Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.	*Respondent skipped this question*
Q11: **May we contact you for additional information?**	
Q12: Does your business offer any of the services listed below free of charge? (Check all that apply)	*Respondent skipped this question*
Q13: Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)	*Respondent skipped this question*
Q14: If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?	*Respondent skipped this question*

Q15: If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)	*Respondent skipped this question*
Q16: If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)	*Respondent skipped this question*
Q17: If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)	*Respondent skipped this question*
Q18: How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)	*Respondent skipped this question*

#36 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: Please provide the name of your business or the business you represent. (Optional)	*Respondent skipped this question*
Q3: **Please indicate your type of business. (This question requires an answer)**	Large hotel
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Oceanic Time Warner Cable, Fixed wireless provider (e.g., Aloha Broadband, Hawaii Broadband, etc.)
Q7: **What is the advertised download speed of your service?**	More than or equal to 25 Mbps, but less than 100 Mbps
Q8: **If your business has wireline Internet service, how satisfied are you with that service?**	Satisfied
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Satisfied
Q10: Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.	*Respondent skipped this question*
Q11: **May we contact you for additional information?**	
Q12: Does your business offer any of the services listed below free of charge? (Check all that apply)	*Respondent skipped this question*
Q13: **Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)**	In-room wireline service Ethernet), Business center (Ethernet)

In-room wireless service (WiFi),

Public area wireless service (WiFi)

Q14: **If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?**	No
Q15: **If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)**	Indoors, everywhere
Q16: If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)	*Respondent skipped this question*
Q17: If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)	*Respondent skipped this question*
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Create a negative impact on my business (please provide detail in the text box below) , Please provide additional information related to your responses to this question High Quality Wireless internet service is a key component of our Resort Fee. If we were unable to charge for this inside the building, then we would have a significant loss of revenue.

#37 COMPLETE

PAGE 1: STATE RESORT AREA INTERNET AND WIFI ACCESS SURVEY

Q1: **Where is your business located? (This question requires an answer)**	Waikiki, Oahu
Q2: Please provide the name of your business or the business you represent. (Optional)	*Respondent skipped this question*
Q3: **Please indicate your type of business. (This question requires an answer)**	Large hotel
Q4: **Does your business have Internet service?**	Yes (If you answer "Yes", go to Question 6)
Q5: If your business does not have Internet service, please indicate the reason(s) below, then answer Questions 10 and 11 only. (Check all that apply)	*Respondent skipped this question*
Q6: **Which Internet service provider services your business? (Check all that apply)**	Hawaiian Telcom
Q7: **What is the advertised download speed of your service?**	Less than 25 Mbps. (Please indicate subscribed speed, if known, in the text box below)
Q8: **If your business has wireline Internet service, how satisfied are you with that service?**	Satisfied
Q9: **If your business has wireless Internet service, how satisfied are you with that service?**	Satisfied
Q10: Please provide any information you have on specific spots in your area where there is poor or no wireline or wireless (cellular) service, and any explanation you may have been given.	*Respondent skipped this question*
Q11: **May we contact you for additional information?**	
Q12: Does your business offer any of the services listed below free of charge? (Check all that apply)	***Respondent skipped this question***

Q13: **Does your business offer any of the services listed below for a fee (including if the service is offered through a "resort fee")? (Check all that apply)**	**In-room wireless service (WiFi**
Q14: **If your business does not offer WiFi in its public areas, do you have a WiFi network for your business operations only?**	**No**
Q15: **If your business offers WiFi in its public areas, please indicate the areas of your property where it is offered. (Check all that apply)**	Indoors, everywhere
Q16: If the WiFi your business offers is limited to certain areas, please indicate why. (Check all that apply)	*Respondent skipped this question*
Q17: **If your business offers free WiFi to your guests/customers, what are the conditions or restrictions of use? (Check all that apply)**	Password provided to eligible guests/customers (e.g., minimum purchase, VIP, etc.)
Q18: **How would access to free WiFi on your property, offered by a state or county program, impact your business? (Check all that apply)**	Increase unwanted loitering on my property

APPENDIX E

Department of Education

School Broadband Data

Oahu

School Name	DOE Managed Connections: INET 2Gbs Connection		DOE Procured Connections: Service Type	DOE Procured Connections: Connect Rate Mbs	Address Location	Notes
AHUIMANU ELEMENTARY	Yes		Fiber Optic	20	47470 HUI AEKO PLACE, KANEOHE 96744	
AIEA ELEMENTARY	Yes		Fiber Optic	20	99370 MOANALUA ROAD, AIEA 96701	
AIEA HIGH	Yes		Fiber Optic	100	981276 ULUNE ST, AIEA 96701	
AIEA INTERMEDIATE	Yes		Fiber Optic	20	99600 KUL;AWEA ST, AIEA 96701	
AIKAHI ELEMENTARY	Yes		Fiber Optic	20	261 ILIHAU STREET, KAILUA, 96734	
AINA HAINA ELEMENTARY	No		Cable Modem	10	801 HIND DRIVE, HONOLULU 96821	
ALA WAI ELEMENTARY	Yes		Fiber Optic	20	503 KAMOKU STREET. HONOLULU 96826	
ALIAMANU ELEMENTARY	Yes		Fiber Optic	20	3265 SALT LAKE BLVD. HONOLULU 96818	
ALIAMANU MIDDLE	Yes		Fiber Optic	20	3271 SALT LAKE BLVD. HONOLULU 96818	
ALIIOLANI ELEMENTARY	Yes		Fiber Optic	20	1240 7TH AVENUE, HONOLULU 96816	
ALVAH SCOTT ELEMENTARY	No		Cable Modem	10	981230 MOANALUA ROAD, AIEA 96701	
ANUENUE ELEMENTARY	Yes		Fiber Optic	20	28285 10TH AVENUE, HONOLULU 96816	
ATR	Yes		Cable Modem	10	475 22ND AVENUE, HONOLULU 96816	
AUGUST AHRENS ELEMENTARY	Yes		Fiber Optic	20	941170 WAIPAHU ST, WAIPAHU 96797	
BARBERS PT ELEMENTARY	Yes		Fiber Optic	20	3001 BOXER ROAD, EWA BEACH 96706	
CAMPBELL HIGH	Yes		Fiber Optic	100	91980 NORTH ROAD, EWA BEACH 96706	
CASTLE HIGH	Yes		Fiber Optic	100	45386 KANEOHE BAY DRIVE, KANEOHE 96744	
CENTRAL DISTRICT ANNEX	No		Cable Modem	10	1136 CALIFORNIA AVENUE, WAHIAWA 96786	
CENTRAL MIDDLE	Yes		Cable Modem	10	300 KAHELU AVENUE, MILILANI 96789	
DEAF & BLIND SCHOOL	Yes		Fiber Optic	20	3440 LEAHI AVENUE, HONOLULU 96815	
DOE DOLE OFFICE	No		Fiber Optic	100	650 IWILEI RD #300, HONOLULU, HAWAII 96817	
DOLE MIDDLE	Yes		Fiber Optic	20	1803 KAMEHAMEHA IV ROAD, HONOLULU, HAWAII 96819	
ENCHANTED LAKE ELEMENTARY	Yes		Cable Modem	10	770 KEOLU DRIVE, KAIILUA 96734	
EWA BEACH ELEMENTARY	Yes		Fiber Optic	20	91740 PAPIPI RD, EWA BEACH 96706	
EWA ELEMENTARY	Yes		Cable Modem	10	911280 RENTON ROAD, EWA BEACH, 96706	
EWA MAKAI MIDDLE	Yes		Fiber Optic	20	4218 HAMEHAME STREET, KAILUA 96734	
FARRINGTON HIGH SCHOOL	Yes		Fiber Optic	100	1564 KING STREET, HONOLULU 96817	
FERN ELEMENTARY	Yes		Fiber Optic	20	1121 MIDDLE STEET, HONOLULU 96819	
HAHAIONE ELEMENTARY	Yes		Fiber Optic	20	595 PAPEEKEO STREET, HONOLULU 96825	
HALE KULA ELEMENTARY	Yes		Fiber Optic	20	WAIANAE AND AYERS AVENUE, WAHIAWA 96786	
HALEIWA ELEMENTARY	Yes		Fiber Optic	20	66505 HALEIWA RD, HALEIWA 96712	
HAUULA ELEMENTARY	Yes		Fiber Optic	20	54046 KAMEHAMEHA HIGHWAY, HAUULA 96717	
HEEIA ELEMENTARY	Yes		Fiber Optic	20	46202 HAIKU ROAD, KANEOHE 96744	
HELEMANO ELEMENTARY	Yes		Fiber Optic	20	1001 IHIHI AVENUE, WAHIAWA 96786	
HI CORE	No		Cable Modem	10	801 CENTER STREET, WAHIAWA 96786	
HICKAM ELEMENTARY	Yes		Fiber Optic	20	MANZELMAN CIRCLE, HONOLULU 96818	
HIGHLANDS INTERMEDIATE	Yes		Fiber Optic	20	1460 HOOLAULEA ST, PEARL CITY 96782	

* Data provided by DOE, valid as of May 2015

Oahu

School Name	DOE Managed Connections: INET 2Gbs Connection		DOE Procured Connections: Service Type	DOE Procured Connections: Connect Rate Mbs	Address Location	Notes
HOKULANI ELEMENTARY	Yes		Fiber Optic	20	2490 KAMAKANI STREET, HONOLULU 96816	
HOLOMUA ELEMENTARY	Yes		Cable Modem	15	911561 KEAUNUI DRIVE, EWA BEACH, 96706	
HONOLULU DISTRIC OFFICE	Yes		Cable Modem	10	4967 KILAUEA AVENUE, HONOLULU 96816	
HONOWAI ELEMENTARY	Yes		Fiber Optic	20	94-600 HONOWAI STREET, WAIPAHU 96797	
ILIAHI ELEMENTARY	No		Cable Modem	15	2035 CALIFORNIA AVENUE, WAHIAWA 96786	
ILIMA INTERMEDIATE	Yes		Cable Modem	10	91-884 FT.WEAVER ROAD, EWA BEACH 96706	
IROQUOIS ELEMENTARY	Yes		Fiber Optic	20	5553 CORMORANT AVENUE, EWA BEACH 96706	
JARRETT MIDDLE	Yes		Fiber Optic	20	1903 PALOLO AVENUE, HONOLULU 96816	
JEFFERSON ELEMENTARY	Yes		Fiber Optic	20	324 KAPAHULU AVENUE, HONOLULU 96815	
JEFFERSON ORTHO SCHOOL	Yes		Cable Modem	10	324 KAPAHULU AVENUE, HONOLULU 96815	
JUVENILE DETENTION	No		Cable Modem	10	287 KAMOKILA BLVD. #122, KAKPOLEI, 96707-2081	
KAAAWA ELEMENTARY	Yes		Fiber Optic	20	51296 KAMEHAMEHA HIGHWAY, KAAAWA, 96730	
KAAHUMANU ELEMENTARY	Yes		Fiber Optic	20	1141 KINAU STREET, HONOLULU 96814	
KAALA ELEMENTARY	Yes		Fiber Optic	20	130 CALIFORNIA AVENUE, WAHIAWA 96786	
KAELEPULU ELEMENTARY	Yes		Fiber Optic	20	530 KEOLU DRIVE, KAILUA 96734	
KAEWAI ELEMENTARY	Yes		Fiber Optic	20	1929 KAMEHAMEHA IV ROAD, HONOLULU 96819	
KAHALA ELEMENTARY	Yes		Cable Modem	10	4559 KILAUEA AVENUE, HONOLULU 96816	
KAHALUU ELEMENTARY	Yes		Cable Modem	10	47280 WAIHEE ROAD, KANEOHE 96744	
KAHUKU ELEMENTARY	Yes		Fiber Optic	20	56170 PUALALEA STREET, KAHUKU 96731	
KAHUKU HIGH & INTERMEDIATE	Yes		Fiber Optic	100	56490 KAMEHAMEHA HIGHWAY, KAHUKU 96731	
KAILUA ELEMENTARY	Yes		Fiber Optic	20	315 KUULEI ROAD, KAILUA 96734	
KAILUA HIGH	Yes		Fiber Optic	100	451 ULUMANU DRIVE, KAILUA 96734	
KAILUA INTERMEDIATE	Yes		Fiber Optic	20	145 KAINALU DRIVE, KAILUA 96734	
KAIMILOA ELEMENTARY	Yes		Cable Modem	10	911028 KANOLU STREET, EWA BEACH, 96706	
KAIMUKI HIGH	Yes		Fiber Optic	100	2705 KAIMUKI AVENUE, HONOLULU, HAWAII 96816	
KAIMUKI MIDDLE	Yes		Cable Modem	10	631 18TH AVENUE, HONOLULU 96816	
KAINALU ELEMENTARY	Yes		Fiber Optic	20	165 KAIHOLU STREET, KAILUA 96734	
KAISER HIGH	Yes		Fiber Optic	100	511 LUNALIO HOME ROAD, HONOLULU 96825	
KAIULANI ELEMENTARY	Yes		Fiber Optic	20	783 KING STREET, HONOLULU 96817	
KALAHEO HIGH	Yes		Fiber Optic	100	730 ILIAINA STREET, KAILUA 96734	
KALAKAUA MIDDLE	Yes		Fiber Optic	20	821 KALIHI STREET, HONOLULU 96819	
KALANI HIGH	Yes		Fiber Optic	100		
KALEIOPUU ELEMENTARY	Yes		Fiber Optic	20		
KALIHI ELEMENTARY	Yes		Fiber Optic	20	2471 KULA KOLEA DRIVE, HONOLULU 96819	
KALIHI KAI ELEMENTARY	Yes		Fiber Optic	20	626 MCNEIL STREET, HONOLULU 96817	
KALIHI UKA ELEMENTARY	Yes		Fiber Optic	20	2411 KALIHI STREET, HONOLULU 96819	
KALIHI WAENA ELEMENTARY	Yes		Fiber Optic	20	1240 GULICK AVENUE, HONOLULU 96819	
KAMAILE ELEMENTARY	Yes		Fiber Optic	20	85180 ALA AKAU STREET WAIANAE 96792	

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Oahu

School Name	DOE Managed Connections: INET 2Gbs Connection		DOE Procured Connections: Service Type	DOE Procured Connections: Connect Rate Mbs	Address Location	Notes
KAMILOIKI ELEMENTARY	Yes		Fiber Optic	20	7788 HAWAII KAI DRIVE, HONOLULU 96825-1614	
KANEOHE ELEMENTARY	Yes		Cable Modem	10	45495 KAMEHAMEHA HIGHWAY, KANEOHE 96744	
KANOELANI ELEMENTARY	Yes		Fiber Optic	20		
KAPALAMA ELEMENTARY	Yes		Fiber Optic	20	1601 SCHOOL STREET, HONOLULU 96817	
KAPOLEI ELEMENTARY	Yes		Fiber Optic	20	911119 KAMAAHA LOOP, KAPOLEI 96707	
KAPOLEI HIGH	Yes		Fiber Optic	100		
KAPOLEI MIDDLE	Yes		Fiber Optic	20	915335 KAPOLEI PARKWAY, KAPOLEI 96707	
KAPOLEI STATE OFFC BLDG	Yes		Cable Modem	10	601 KAMOKILA BLVD. #409, KAPOLEI 96707	
KAPUNAHALA ELEMENTARY	Yes		Fiber Optic	20	45828 ANOI ROAD, KANEOHE 96744	
KAULUWELA ELEMENTARY	Yes		Fiber Optic	20	1486 AALA STREET, HONOLUL96817	
KAWANANAKOA MIDDLE	Yes		Fiber Optic	20	1521 ALEXANDER STREET, HONOLULU 96822	
KEOLU ELEMENTARY	Yes		Fiber Optic	20	1416 KEOLU DRIVE, HONOLULU 96734 -5908	
KEONEULA ELEMENTARY	Yes		Cable Modem	10	91970 KAILEOLEA DRIVE, EWA BEACH 96706	
KING INTERMEDIATE	Yes		Fiber Optic	20	46155 KAMEHAMEHA HIGHWAY, KANEOHE 96744	
KIPAPA ELEMENTARY	Yes		Fiber Optic	20	95076 KIPAPA DRIVE, MILILANI 96789	
KOKOHEAD ELEMENTARY	Yes		Cable Modem	10	189 LUNALILO HOME ROAD, HONOLULU 96825	
KUHIO ELEMENTARY	Yes		Fiber Optic	20	2759 KING STREET BLDG.C, HONOLULU 96826-3329	
LAIE ELEMENTARY	Yes		Fiber Optic	20	55109 KULANUI LANE, LAIE 96762	
LANAKILA SCHOOL	Yes		Fiber Optic	20	717 KUAKINI STREET, HONOLULU96817	
LANIKAI ELEMENTARY	Yes		Cable Modem	10	140 ALALA ROAD, KAILUA 96734	
LEEWARD DISTRICT OFFICE	Yes		Cable Modem	10	84521 FARRINGTON HIGHWAY, HONOLULU 96797-3013	
LEHUA ELEMENTARY	Yes		Fiber Optic	20	791 LEHUA AVENUE, PEARL CITY 96782	
LEIHOKU ELEMENTARY	Yes		Fiber Optic	20	86285 LEIHOUKU STREET, WAIANAE 96792	
LEILEHUA HIGH	Yes		Fiber Optic	100	1515 CALIFORNIA AVENUE, WAHIAWA 96786	
LIHOLIHO ELEMENTARY	Yes		Fiber Optic	20	3430 MAUNALOA AVENUE, HONOLULU 96816	
LIKELIKE ELEMENTARY	Yes		Fiber Optic	20	1618 PALAMA ST, HONOLULU 96817	
LILIUOKALANI ELEMENTARY	Yes		Cable Modem	10	3633 WAIALAE AVENUE, HONLULU 96816	
LINAPUNI ELEMENTARY	Yes		Fiber Optic	20	1434 LINAPUNI STREET, HONOLULU 96819	
LINCOLN ELEMENTARY	Yes		Fiber Optic	20	615 AUWAIOLIMU STREET, HONOLULU 96813	
LUNALILO ELEMENTARY	Yes		Fiber Optic	20	810 PUMEHANA STREET, HONOLU 96826	
MAEMAE ELEMENTARY	Yes		Fiber Optic	20	319 WYLLIE STREET, HONOLULU 96817	
MAILI ELEMENTARY	Yes		Fiber Optic	20	87360 KULAAUPUNI STREET, WAIANAE 96792	
MAKAHA ELEMENTARY	Yes		Fiber Optic	20	84200 ALA NAAUAO PLACE, WAIANAE 96792	
MAKAKILO ELEMENTARY	Yes		Cable Modem	10	92675 ANIPEAHI STREET, KAPOLEI 96707	
MAKALAPA ELEMENTARY	Yes		Cable Modem	10	4435 SALT LAKE BLVD. HONOLULU 96818	
MANANA ELEMENTARY	Yes		Fiber Optic	20		
MANOA ELEMENTARY	Yes		Fiber Optic	20	3155 MANOA ROAD, HONOLULU 96822	
MAUKA LANI ELEMENTARY	Yes		Fiber Optic	20	921300 PANANA STREET, KAPOLEI 96707	
MAUNAWILI ELEMENTARY	Yes		Fiber Optic	20	1465 ULUPII STREET, KAILUA 96734	

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Oahu

School Name	DOE Managed Connections: INET 2Gbs Connection		DOE Procured Connections: Service Type	DOE Procured Connections: Connect Rate Mbs	Address Location	Notes
MCKINLEY COMM. SCHOOL	Yes		Cable Modem	10	634 PENSACOLA STREET, HONOLULU 96814	
MCKINLEY HIGH	Yes		Fiber Optic	100	1039 SOUTH KING STREET, HONOLULU 96824	
MILILANI HIGH	Yes		Fiber Optic	100	951200 MEHEUALA PARKWAY, MILILANI 96789	
MILILANI IKE ELEMENTARY	Yes		Fiber Optic	20	951330 LEHIWA DRIVE, MILILANI 96789	
MILILANI MAUKA ELEMENTARY	Yes		Fiber Optic	100	951111 MAKAIKAI ST, MILILANI 96789	
MILILANI MIDDLE	Yes		Fiber Optic	20	951140 LEHIWA DR, MILILANI 96789	
MILILANI UKA ELEMENTARY	Yes		Fiber Optic	20	94380 KUAHELANI AVENUE, MILILANI 96789	
MILILANI WAENA ELEMENTARY	Yes		Fiber Optic	100	95502 KIPAPA DR, MILILANI 96789	
MOANALUA ELEMENTARY	Yes		Fiber Optic	20	1337 MAHIOLE STREET, HONOLULU 96819	
MOANALUA HIGH	Yes		Fiber Optic	100	2825 ALA ILIMA STREET, HONOLULU 96818	
MOANALUA MIDDLE	Yes		Fiber Optic	20	1289 MAHIOLE ST, HONOLULU, 96819	
MOKAPU ELEMENTARY	Yes		Cable Modem	10	1193 MOKAPU ROAD, KAILUA 96734	
MOKULELE ELEMETARY	Yes		Fiber Optic	20	250 AUPAKA STREET, HONOLULU 96818	
MOMILANI ELEMENTARY	Yes		Fiber Optic	20	2130 HOKIEKIE STREET, PEARL CITY 96782	
NANAIKAPONO ELEMENTARY	Yes		Fiber Optic	20	89513 MANO AVENUE, WAIANAE 96792	
NANAKULI ELEMENTARY	Yes		Fiber Optic	15	89778 HALEKALA AVENUE, WAIANAE, 96792	
NANAKULI HIGH & INTERMEDIATE	Yes		Fiber Optic	200	89980 NANAKULI AVENUE, WAIANAE 96792	
NIMITZ ELEMENTARY	Yes		Fiber Optic	20	520 MAIN STREET, HONOLULU 96818	
NIU VALLEY MIDDLE	Yes		Cable Modem	15	310 HALEMAUMAU PLACE, HONOLULU 96821	
NOELANI ELEMENTARY	Yes		Fiber Optic	20	2655 WOODLAWN DRIVE, HONOLULU 96822	
NUUANU ELEMENTARY	Yes		Cable Modem	10	3055 PUIWA LANE, HONOLULU 96817	
OLOMANA ELEMENTARY	Yes		Cable Modem	10	42471 KALANIANAOLE HIGHWAY, KAILUA 96734	
PALISADES ELEMENTARY	Yes		Fiber Optic	20		
PALOLO ELEMENTARY	Yes		Fiber Optic	20	2106 10TH AVENUE, HONOLULU 96816	
PARKER ELEMENTARY	Yes		Fiber Optic	20	45259 WAIKALUA ROAD, KANEOHE 96744	
PAUOA ELEMENTARY	Yes		Fiber Optic	20	2301 PAUOA ROAD, HONOLULU 96813	
PEARL CITY ELEMENTARY	Yes		Fiber Optic	20		
PEARL CITY HIGH	Yes		Fiber Optic	100	2100 HOOKIEKIE STREET, PEARL CITY 96782	
PEARL CITY HIGHLANDS ELEMENTARY	Yes		Fiber Optic	20		
PEARL HARBOR ELEMENTARY	Yes		Fiber Optic	20	1 MOANALUA RIDGE, HONOLULU 96818	
PEARL HARBOR KAI ELEMENTARY	Yes		Cable Modem	10	1 C AVENUE, HONOLULU 96818	
PEARLRIDGE ELEMENTARY	No		Cable Modem	10	98940 MOANALUA ROAD, AIEA 96701	
POHAKEA ELEMENTARY	Yes		Fiber Optic	20	91750 FT.WEAVER ROAD, EWA BEACH 96706	
POPE ELEMENTARY	Yes		Fiber Optic	20	41133 HULI STREET, WAIMANALO, 96795	
PROCUREMENT & DISTRIBUT	No		Cable Modem	10	94275 MOKUOLA STREET #200A, WAIPAHU, 96797	
PUOHALA ELEMENTARY	Yes		Fiber Optic	20	45233 KULAULI STREET, KANEOHE 96744	

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Oahu

School Name	DOE Managed Connections: INET 2Gbs Connection		DOE Procured Connections: Service Type	DOE Procured Connections: Connect Rate Mbs	Address Location	Notes
PUUHALE ELEMENTARY	Yes		Fiber Optic	20	345 PUUHALE ROAD, HONOLULU 96819	
QLC DATA CENTER	Yes		Fiber Optic	100	3633 WAIALAE AVE, HONOLULU 96816	
RADFORD HIGH	Yes		Fiber Optic	100	4341 SALT LAKE BOULEVARD, HONOLULU 96818	
RED HILL ELEMENTARY	Yes		Fiber Optic	20		
ROOSEVELT HIGH	Yes		Fiber Optic	100	1120 NEHOA STREET, HONOLULU 96822	
ROYAL ELEMENTARY	Yes		Fiber Optic	20	1519 QUEEN EMMA STREET 96813	
SALT LAKE ELEMENTARY	Yes		Fiber Optic	20	1131 ALA LILIKOI STREET, HONOLULU 96818	
SCHOOL FOOD SERVICE	No		Cable Modem	10	1106 KOKO HEAD AVENUE, HONOLULU 96816	
SHAFTER ELEMENTARY	Yes		Fiber Optic	20	MONTGOMERY DRIVE, HONOLULU 96819	
SOLOMON ELEMENTARY	Yes		Fiber Optic	20		
STEVENSON MIDDLE	Yes		Fiber Optic	20	1202 PROSPECT STREET, HONOLULU 96789	
STUDENT SUPPORT SERVICES	Yes		Cable Modem	10	631 18TH AVENUE, HONOLULU 96816	
SUNSET BEACH ELEMENTARY	Yes		Fiber Optic	20	59360 KAMEHAMEHA HIGHWAY, HALEIWA 96712	
WAHIAWA ELEMENTARY	Yes		Fiber Optic	20	1402 GLEN AVENUE, WAHIAWA 96786	
WAHIAWA MIDDLE	Yes		Fiber Optic	20	275 ROSE STREET, WAHIAWA 96786	
WAIAHOLE ELEMENTARY	Yes		Fiber Optic	20	48215 WAIAHOLE VALLEY ROAD, KANEOHE 96744	
WAIALAE ELEMENTARY	Yes		Cable Modem	10	1045 19TH AVENUE, HONOLULU 96816	
WAIALUA ELEMENTARY	Yes		Cable Modem	10	67020 WAIALUA BEACH ROAD, WAIALUA 96791	
WAIALUA HIGH & INTERMEDIATE	Yes		Fiber Optic	100	67-160 FARRINGTON HIGHWAY, WAIALUA 96791	
WAIANAE ELEMENTARY	Yes		Fiber Optic	20	85220 MCARTHUR STREET, WAIANAE 96792	
WAIANAE HIGH	Yes		Fiber Optic	100	85251 FARRINGTON HIGHWAY, WAIANAE 96792	
WAIANAE INTERMEDIATE	Yes		Fiber Optic	20	85626 FARRINGTON HIGHWAY, WAIANAE 96792	
WAIAU ELEMENTARY	Yes		Fiber Optic	20	98450 HOOKANIKE STREET, PEARL CIY 96782	
WAIKELE ELEMENTARY	Yes		Fiber Optic	20		
WAIKIKI ELEMENTARY	Yes		Fiber Optic	20	3710 LEAHI AVENUE, HONOLULU 96815	
WAIMALU ELEMENTARY	Yes		Cable Modem	10	98825 MOANALUA ROAD, AIEA 96701	
WAIMANALO ELEMENTARY	Yes		Cable Modem	10	411330 KALANIANAOLE HIGHWAY, WAIMANALO 96795	
WAIPAHU ELEMENTARY	Yes		Fiber Optic	20	94465 WAIPAHU STREET, WAIPAHU 96797	
WAIPAHU HIGH	Yes		Fiber Optic	100	941211 FARRINGTON HIGHWAY, WAIPAHU 96797	
WAIPAHU INTERMEDIATE	Yes		Fiber Optic	20		
WASHINGTON MIDDLE	Yes		Fiber Optic	20	1633 KING STREET, HONOLULU 96826	
WEBLING ELEMENTARY	Yes		Cable Modem	10	99370 PAIHI STREET, AIEA 96701	
WHEELER ELEMENTARY	Yes		Fiber Optic	20	1 WHEELER ARMY AIRFIELD, WAHIAWA 96786	
WHEELER MIDDLE	Yes		Fiber Optic	20		
WILSON ELEMENTARY	Yes		Cable Modem	10	4945 KILAUEA AVENUE, HONOLU 96789	
WINDWARD DISTRICT OFFICE	Yes		Cable Modem	10	46169 KAMEHAMEHA HIGHWAY, KANEOHE 96744	
WINDWARD SPECIAL EDUCATION	Yes		Cable Modem	10	46169 KAMEHAMEHA HIGHWAY, KANEOHE 96744	

* Data provided by DOE, valid as of May 2015

Neighbor Island

School Name	DOE Managed Connections: INET 2Gbs Connection		DOE Procured Connections: Service Type	Connect Rate Mbs	Address Location	Notes
BALDWIN HIGH	Yes		Fiber Optic	100	1650 KAAHUMANU AVENUE, WAILUKU 96793	
DESILVA ELEMENTARY	Yes		Cable Modem	10	278 AINAKO AVENUE, HILO 96720	
DISTRICT OFFICE KAUAI	No		Cable Modem	10	3060 EIWA STREET, LIHUE 96766	
ELEELE ELEMENTARY	Yes		Cable Modem	10	4750 ULIULI ROAD, ELEELE 96705	
HAAHEO ELEMENTARY	Yes		Fiber Optic	20	121 HAAHEO ROAD, HILO 96720	
HAIKU ELEMENTARY	Yes		Cable Modem	10	105 PAUWELA ROAD, HAIKU 96708	
HANA HIGH SCHOOL	No		Cable Modem	10	4111 HANA HIGHWAY, HANA 96713	
HANALEI ELEMENTARY	Yes		Cable Modem	10	55415 KUHIO HIGHWAY, HANALEI 96714	
HILO COMMUNITY (HILO DISTRICT ANNEX)	No		Cable Modem	10	450 WAIANUENUE AVENUE C, HILO 96720	
HILO DISTRICT OFFICE	No		Cable Modem	10	75 AUPUNI STREET #203, HILO 96720	
HILO DISTRICT OFFICE(ANNEX)	No		Cable Modem	10	450 WAIANUENUE AVENUE B, HILO 96720	
HILO HIGH	Yes		Fiber Optic	100	556 WAIANUENUE AVENUE, HILO 96720	
HILO INTERMEDIATE	Yes		Cable Modem	10	587 WAIANUENUE AVENU, HILO 96720	
HILO UNION ELEMENTARY	Yes		Cable Modem	10	506 WAIANUENUE AVENUE, HILO 96720	
HOLUALOA ELEMENTARY	Yes		Cable Modem	10	765957 MAMALAHOA HIGHWAY, HOLUALOA 96725	
HONAUNAU ELEMENTARY	Yes		Cable Modem	10	16 MAMALAHOA HIGHWAY, CAPTAIN COOK 96704	
HONOKAA ELEMENTARY	Yes		Cable Modem	10	45535 PAKALANA STREET, HONOKAA 96727	
HONOKAA HIGH SCHOOL (& INT)	Yes		Cable Modem	10	45527 PAKALANA STREET, HONOKAA 96727	
HOOKENA ELEMENTARY	Yes		Cable Modem	10	864355 MAMALAHOA HIGHWAY, CAPTAIN COOK 96704	
IAO INTER	Yes		Cable Modem	10	1910 KAOHU STREET, WAILUKU 96793	
KAHAKAI ELEMENTARY	Yes		Cable Modem	10	76147 ROYAL PAINCIANA, KAILUA KONA 96740	
KAHULUI ELEMENTARY	Yes		Cable Modem	10	410 HINA, KAHULUI 96732	
KALAHEO ELEMENTARY	Yes		Cable Modem	10	4400 MAKA ROAD, KALAHEO 96741	
KALAMA INTERMEDIATE	Yes		Cable Modem	10	MAKANI ROAD, MAKAWAO 96768	
KALANIANAOLE ELEM & INT	Yes		Cable Modem	10	27330 OLD MAMALAHOA HIGHWAY, PAPAIKOU 96781	
KAMAKAHELEI CHIEFESS	Yes		Cable Modem	10	4431 NUHOU ROAD, LIHUE 96766	
KAMALII ELEMENTARY	Yes		Cable Modem	10	180 KEALIIALANUI STREET, KIHEI 96753	
KAMEHAMEHA III ELEMENTARY	Yes		Fiber Optic	100	611 FRONT STREET, LAHAINA 96761	
KAPAA ELEMENTARY	Yes		Cable Modem	10	4886 KAWAIHAU ROAD, KAPAA 96746	
KAPAA HIGH	Yes		Fiber Optic	100		
KAPAA MIDDLE	Yes		Cable Modem	10	4867 OLOHENA ROAD, KAPAA 96746	
KAPIOLANI ELEMENTARY	Yes		Cable Modem	10	966 KILAUEA AVENUE, HILO 96720	
KAUAI ADULT SCHOOL	No		Cable Modem	10	3607 LALA ROAD, LIHUE 96766	
KAUAI HIGH	Yes		Fiber Optic	100	3577 LALA ROAD, LIHUE 96766	
KAUAI ITC	No		Fiber Optic	10	4319 HARDY STREET, LIHUE 96766	
KAUMANA ELEMENTARY	Yes		Cable Modem	10	1710 KAUMANA DRIVE, HILO 96720	
KAUMUALII ELEMENTARY	Yes		Cable Modem	10	4380 HANAMAULU ROAD, LIHUE 96766	

* Data provided by DOE, valid as of May 2015

Neighbor Island

School Name	DOE Managed Connections INET 2Gbs Connection		DOE Procured Connections Service Type	Connect Rate Mbs	Address Location	Notes
KAUNAKAKAI ELEMENTARY	Yes		Cable Modem	10	30 AILOA KAUNAKAKAI, KAUNAKAKAI 96748	
KEAAU HIGH SCHOOL	Yes		Fiber Optic	200	16725 KEAAU PAHOA ROAD, KEAAU 96749	
KEAAU MIDDLE	Yes		Fiber Optic	20	16565 KEAAU PAHOA ROAD, KEAAU 96749	
KEALAKEHE ELEMENTARY	Yes		Cable Modem	10	745118 KEALAKAA STREET, KAILUA KONA 96740	
KEALAKEHE HIGH	Yes		Fiber Optic	100	745000 PUOHULIHULI STREET, KAILUA KONA 96740	
KEALAKEHE INTERMEDIATE	Yes		Cable Modem	10	745062 ONIPAA STREET, KAILUA KONA, 96740	
KEAUKAHA ELEMENTARY	Yes		Cable Modem	10	240 DESHA AVENUE, HILO 96720	
KEKAHA ELEMENTARY	Yes		Cable Modem	10	8140 KEKAHA ROAD, KEKAHA 96752	
KEKAULIKE HIGH	Yes		Fiber Optic	100	121 KULA HIGHWAY, KULA 96790	
KIHEI ELEMENTARY	Yes		Cable Modem	10	250 LIPOA STREET, KIHIE 96753	
KILAUEA ELEMENTARY	Yes		Cable Modem	10	2440 KOLO ROAD, KILAUEA 96754	
KILOHANA ELEMENTARY	Yes		Cable Modem	10	KAMEHAMEHA HIGHWAY, KAUNAKAI 96748	
KOHALA ELEMENTARY	Yes		Cable Modem	10	543609 AKONI PULE HIGHWAY, KAPAAU 96755	
KOHALA HIGH	Yes		Fiber Optic	100	543611 AKONI PULE HWY, KAPAAU 96755	
KOHALA HIGH (LIBRARY)	Yes		Cable Modem	10	60311 HONOMAKAU ROAD, KAPAAU 96755	
KOHALA MIDDLE	Yes		Cable Modem	10	544155 AKONI PULE HIGHWAY, KAPAAU 96755	
KOLOA ELEMENTARY	Yes		Cable Modem	10	3223 POIPU ROAD, KOLOA 96756	
KONAWAENA ELEMENTARY	Yes		Cable Modem	10	81901 ONOULI ROAD, KEALAKEKUA 96750	
KONAWAENA HIGH	Yes		Fiber Optic	100	811043 KONAWAENA SCHOOL ROAD, KEALAKEKUA 96750	
KONAWAENA IMMERSION	Yes		Cable Modem	10	811041 KONAWAENA SCHOOL ROAD, KEALAKEKUA 96750	
KONAWAENA INTER	Yes		Cable Modem	10	811045 KONAWAENA SCHOOL ROAD, KEALAKEKUA 96750	
KUALAPUU ELEMENTARY	Yes		Cable Modem	10	260 FARRINGTON HIGHWAY, KUALAPUU 96757	
KULA ELEMENTARY	Yes		Cable Modem	10	5000 KULA HIGHWAY, KULA 96790	
LAHAINA INTERMEDIATE	Yes		Cable Modem	10	871 LAHAINALUNA ROAD, LAHAINA 96761	
LAHAINALUNA HIGH	Yes		Cable Modem	10	980 LAHAINALUNA ROAD, LAHAINA 96761	
LANAI HIGH ELEMENTARY	Yes		Cable Modem	10	757 FRASER AVENUE, LANAI CITY 96763	
LAUPAHOEHOE HIGH & ELEM	Yes		Fiber Optic	100	352065 OLD MAMALAHOA ROAD, LAPAHOEHOE 96764	
LIHIKAI ELEMENTARY	Yes		Cable Modem	10	335 PAPA AVENUE S, KAHALUI 96732	
LOKELANI INTERMEDIATE	Yes		Cable Modem	10	1401 LILOA DRIVE, KIHEI 96753	
MAKAWAO ELEMENTARY	Yes		Cable Modem	10	3542 BALDWIN AVENUE, MAKAWAO 96768	
MAUI COMMUNITY SCHOOL	Yes		Cable Modem	10	179 KAAHUMANU AVENUE, KAHALUI 96732	
MAUI DISTRICT OFFICE	No		Cable Modem	10	54 HIGH STREET, WAILUKU 96793	
MAUI HIGH SCHOOL	Yes		Fiber Optic	100	660 LONO AVENUE, KAHULUI 96732	
MAUI WAENA INTERMEDIATE	Yes		Cable Modem	10	795 ONEHEE AVENUE, KAHULUI 96732	
MAUNALOA ELEMENTARY	Yes		Cable Modem	10	128 MAUNALOA ROAD, KAUNAKAKAI 96748	
MOLOKAI COMPLEX OFFICE	No		Cable Modem	10	65 MAKENA PLACE, KAUNAKAKAI 96748	
MOLOKAI HIGH	Yes		Fiber Optic	100	2140 FARRINGTON AVE, HOOLEHUA 96729	
MOLOKAI MIDDLE	Yes		Cable Modem	10	2175 LIHIPALI AVENUE, HOOLEHUA 96729	

* Data provided by DOE, valid as of May 2015

Neighbor Island

School Name	DOE Managed Connections: INET 2Gbs Connection		DOE Procured Connections: Service Type	DOE Procured Connections: Connect Rate Mbs	Address Location	Notes
MT VIEW ELEMENTARY	Yes		Fiber Optic	20	181235 VOLCANO HIGHWAY, MOUNTAIN VIEW 96771	
NAALEHU ELEM & INTERMEDIATE	Yes		Fiber Optic	100	955545 MAMALAHOA HIGHWAY, PAHALA 96777	
NAHIENAENA ELEMENTARY	Yes		Cable Modem	10	816 NIHEU STREET, LAHAINA 96761	
PAAUILO ELEM & INTER	Yes		Cable Modem	10	431497 OLD MAIN ROAD, PAAUILO, 96776	
PAHALA ELEMENTARY (KAU HIGH)	Yes		Fiber Optic	45	963150 PIKAKE STREET, PAHALA 96777	
PAHOA ELEMENTARY	Yes		Fiber Optic	20	153030 PUNA ROAD, PAHOA 96778	
PAHOA HIGH	Yes		Fiber Optic	200	153038 PUNA STREET, PAHOA 96778	
PAIA ELEMENTARY	Yes		Cable Modem	10	955 BALDWIN AVENUE, PAIA 96779	
POMAIKAI ELEMENTRY	Yes		Cable Modem	10	4650 KAMEHAMEHA AVENUE, KAHULUI	
PUKALANI ELEMENTARY	Yes		Cable Modem	10	1945 IOLANI STREET, MAKAWAO 96768	
PUUKUKUI ELEMENTARY	Yes		Cable Modem	10	3700 KEHALANI MAUKA PWY, WAILUKU 96793	
SC WILCOX ELEMENTARY	Yes		Cable Modem	10	4319 HARDY STREET, LIHUE 96766	
SOUTH HILO SPED	No		Cable Modem	10	6590 KEAAU PAHOA ROAD, KEAAU 96749	
WAIAKEA ELEMENTARY	Yes		Cable Modem	10	180 PUANAKO STREET, HILO 96720	
WAIAKEA HIGH	Yes		Fiber Optic	100	155 KAWILI STREET W, HILO 96720	
WAIAKEA INTERMEDIATE	Yes		Fiber Optic	20	200 PUAINAKO STREET, HILO 96720	
WAIHEE ELEMENTARY	Yes		Cable Modem	10	KAHEKILI HIGHWAY, WAILUKU 96793	
WAIKOLOA ELEMENTARY	Yes		Cable Modem	10	PANIOLO AVENUE, WAIKOLOA 96738	
WAILUKU ELEMENTARY	Yes		Cable Modem	10	355 HIGH STREET S, WAILUKU 96793	
WAIMEA CANYON ELEMENTARY & INTERMEDIATE	Yes		Cable Modem	10	9555 HUAKAI ROAD, WAIMEA 96796	
WAIMEA ELEMENTARY	Yes		Fiber Optic	20	671225 MAMALAHOA HIGHWAY, KAMUELA 96743	
WAIMEA HIGH	Yes		Fiber Optic	100	TSUCHIYA RD	
WEST HAWAII DISTRICT OFFICE	Yes		Cable Modem	10	75140 HUALALAI ROAD, KAILUA KONA 96740	

* Data provided by DOE, valid as of May 2015

APPENDIX F

Broadband Data Collection Form

HCR 189 Planning Group
Broadband Assistance Advisory Council (BAAC)

Broadband Service Availability, Gaps, and Plans Data Collection Form

I. Service Availability

Please provide any known information for each target area.

A. Waikiki
   1. Are you aware of any broadband service gaps in this area?
   2. If so, what is the specific type of broadband service that has a service gap? E.g., Cellular data? WiFi? Fiber?

B. Kaanapali, Maui
   [same as above]

C. South Kohala, Hawaii
   [same as above]

D. Hanalei, Kauai
   [same as above]

II. Service Availability (Wireline) and Coverage (Cellular) Maps

Please review and investigate service availability for wireline and coverage for wireless services for each target area, shown on maps provided for each of the target areas: (1) Waikiki, Oahu; (2) Kaanapali, Maui; (3) South Kohala, Hawaii; and (4) Hanalei, Kauai. These maps may be accessed through the following link:

http://bit.ly/1UlQ0wk

Service availability is shown by the colored overlay based upon the most current data (June 2014) of service availability, generally at the census block level, which is made available by the National Telecommunications and Information Administration (NTIA) and the Federal Communication Commission (FCC). Note that the data being used indicates availability of services with advertised speeds of at least 768 kilobits per second (kbps) downstream and at least 200 kbps upstream to end users.

Note also that the maps provided do not show WiFi coverage. Availability of publicly accessible WiFi, such as the Waikiki WiFi will be collected and presented, based on the Participants and Providers inputs, on separate maps or sections in the report.

After review and investigation, please provide any known or discovered information that confirms or clarifies the service availability shown on the maps. You may send feedback either by sending us scanned (pdf) markups to the maps via email, or by emailing your comments.

III. Broadband Infrastructure Gaps

Please provide information on any known infrastructure gaps (needs) for each type of service to be addressed. Infrastructure gaps would be, for example, need for fiber, copper, or wireless backhaul; and, known challenges or reasons for the lack of infrastructure to a location.

A. Waikiki
   (1) Wireline gaps
   (2) Wireless gaps
      a. Cellular sites
      b. WiFi Hotspots

B. Kaanapali, Maui
   [same as above]

C. South Kohala, Hawaii
   [same as above]

D. Hanalei, Hawaii
   [same as above]

IV. Existing and Future Broadband Plans and Projects

Please provide information on existing and future plans or projects that you are aware of for broadband infrastructure or services. Please provide this information for each area and type of service listed below.

A. Waikiki
   (1) Wireline Plans and Projects
   (2) Wireless Plans and Projects
      a. Cellular
      b. WiFi

B. Kaanapali, Maui
   [same as above]

C. South Kohala, Hawaii
[same as above]

D. Hanalei, Hawaii
[same as above]

V. Identify Stakeholders

In the final HCR 189 Report to the Legislature, we would like to identify the private and public stakeholders who would be best able to utilize the report for future broadband planning and implementation for the respective target areas. Towards that end, please identify stakeholders that you feel should be included in the Report as stakeholders for each target area listed below. These stakeholders would likely include county agency representatives for the county in which the target area is located, the local providers' representatives, and the various users of broadband (and their representatives) in that target area.

A. Waikiki

B. Kaanapali, Maui

C. South Kohala, Hawaii

D. Hanalei, Hawaii

VI. Additional Comments

Please provide any additional comments or suggestions that you believe should be considered by the HCR 189 Planning Group.

HCR 189 Planning Group
Broadband Assistance Advisory Council (BAAC)

Broadband Service Availability, Gaps, and Plans Data Collection Form

I. Service Availability

Please provide any known information for each target area.

A. Waikiki
   1. Are you aware of any broadband service gaps in this area?
   2. If so, what is the specific type of broadband service that has a service gap? E.g., Cellular data? WiFi? Fiber?

B. Kaanapali, Maui
   [same as above]

C. South Kohala, Hawaii
   There are cellular gaps along Queen Kaahumanu Highway between Puako Beach Drive and Kawaihae
   Fiber from Oceanic Time Warner runs along the ocean and supports the resorts

D. Hanalei, Kauai
   [same as above]

II. Service Availability (Wireline) and Coverage (Cellular) Maps

Please review and investigate service availability for wireline and coverage for wireless services for each target area, shown on maps provided for each of the target areas: (1) Waikiki, Oahu; (2) Kaanapali, Maui; (3) South Kohala, Hawaii; and (4) Hanalei, Kauai. These maps may be accessed through the following link:

http://bit.ly/1UlQ0wk

Service availability is shown by the colored overlay based upon the most current data (June 2014) of service availability, generally at the census block level, which is made available by the National Telecommunications and Information Administration (NTIA) and the Federal Communication Commission (FCC). Note that the data being used indicates availability of services with advertised speeds of at least 768 kilobits per second (kbps) downstream and at least 200 kbps upstream to end users.

Note also that the maps provided do not show WiFi coverage. Availability of publicly accessible WiFi, such as the Waikiki WiFi will be collected and presented, based on the Participants and Providers inputs, on separate maps or sections in the report.

After review and investigation, please provide any known or discovered information that confirms or clarifies the service availability shown on the maps. You may send feedback either by sending us scanned (pdf) markups to the maps via email, or by emailing your comments.

III. Broadband Infrastructure Gaps

Please provide information on any known infrastructure gaps (needs) for each type of service to be addressed. Infrastructure gaps would be, for example, need for fiber, copper, or wireless backhaul; and, known challenges or reasons for the lack of infrastructure to a location.

A. Waikiki
   (1) Wireline gaps
   (2) Wireless gaps
      a. Cellular sites
      b. WiFi Hotspots

B. Kaanapali, Maui
   [same as above]

C. South Kohala, Hawaii
Lack of broadband infrastructure from Kawaihae on Queen Kaahumanu Highway until concentration of Resorts. There is little development in this area but the lack of infrastructure prevents high speed internet access for the South Kohala Fire station.

D. Hanalei, Hawaii
   [same as above]

IV. Existing and Future Broadband Plans and Projects

Please provide information on existing and future plans or projects that you are aware of for broadband infrastructure or services. Please provide this information for each area and type of service listed below.

A. Waikiki
   (1) Wireline Plans and Projects
   (2) Wireless Plans and Projects

a. Cellular
b. WiFi

B. Kaanapali, Maui
[same as above]

C. South Kohala, Hawaii
Not aware of any existing or future broadband plans in this area.

D. Hanalei, Hawaii
[same as above]

V. Identify Stakeholders

In the final HCR 189 Report to the Legislature, we would like to identify the private and public stakeholders who would be best able to utilize the report for future broadband planning and implementation for the respective target areas. Towards that end, please identify stakeholders that you feel should be included in the Report as stakeholders for each target area listed below. These stakeholders would likely include county agency representatives for the county in which the target area is located, the local providers' representatives, and the various users of broadband (and their representatives) in that target area.

A. Waikiki

B. Kaanapali, Maui

C. South Kohala, Hawaii County of Hawaii – Don Jacobs djacobs@hawaiicounty.gov: Oceanic Time Warner – Wayne Iokepa wayne.iokepa@twcable.com: Verizon – Steven Schutte steven.schutte@verizonwireless.com: ATT - Liz Gregg eg9241@att.com: Hawaiian Tel – Jimmy Fung Jimmy.Fung@hawaiitel.com

D. Hanalei, Hawaii

VI. Additional Comments

Please provide any additional comments or suggestions that you believe should be considered by the HCR 189 Planning Group.

HCR 189 Planning Group
Broadband Assistance Advisory Council (BAAC)

Broadband Service Availability, Gaps, and Plans
Data Collection Form

I. Service Availability

Please provide any known information for each target area.

A. Waikiki

1. Are you aware of any broadband service gaps in this area?

Hawaiian Telcom ("HT") facilities are capable of serving 75-100%of the locations at broadband speeds of 10 Mbps downstream and 1 Mbps upstream. The deployment of fiber directly to customer premises would allow HT to serve the remaining locations.

2. If so, what is the specific type of broadband service that has a service gap? E.g., Cellular data? WiFi? Fiber?

Fiber to certain customer premises.

B. Kaanapali, Maui

[same as above]

1. Are you aware of any broadband service gaps in this area?

HT facilities are capable of serving 50-75% of the locations at broadband speeds of 10 Mbps downstream and 1 Mbps upstream. The deployment of fiber directly to customer premises would allow HT to serve the remaining locations.

2. If so, what is the specific type of broadband service that has a service gap? E.g., Cellular data? WiFi? Fiber?

Fiber to certain customer premises.

C. South Kohala, Hawaii

[same as above]

1. Are you aware of any broadband service gaps in this area?

HT facilities are capable of serving 50-75% of the locations at broadband speeds of 10 Mbps downstream and 1 Mbps upstream. The deployment of fiber directly to customer premises would allow HT to serve the remaining locations.

2. If so, what is the specific type of broadband service that has a service gap? E.g., Cellular data? WiFi? Fiber?

Fiber to certain customer premises.

D. Hanalei, Kauai

[same as above]

1. Are you aware of any broadband service gaps in this area?

HT facilities are capable of serving 50-75% of the locations at broadband speeds of 10 Mbps downstream and 1 Mbps upstream. The deployment of fiber directly to customer premises would allow HT to serve the remaining locations.

2. If so, what is the specific type of broadband service that has a service gap? E.g., Cellular data? WiFi? Fiber?

Fiber to certain customer premises.

II. Service Availability (Wireline) and Coverage (Cellular) Maps

Please review and investigate service availability for wireline and coverage for wireless services for each target area, shown on maps provided for each of the target areas: (1) Waikiki, Oahu; (2) Kaanapali, Maui; (3) South Kohala, Hawaii; and (4) Hanalei, Kauai. These maps may be accessed through the following link:

http://bit.ly/1UlQ0wk

Service availability is shown by the colored overlay based upon the most current data (June 2014) of service availability, generally at the census block level, which is made available by the National Telecommunications and Information Administration (NTIA) and the Federal Communication Commission (FCC). Note that the data being used indicates availability of services with advertised speeds of at least 768 kilobits per second (kbps) downstream and at least 200 kbps upstream to end users.

Note also that the maps provided do not show WiFi coverage. Availability of publicly accessible WiFi, such as the Waikiki WiFi will be collected and presented, based on the Participants and Providers inputs, on separate maps or sections in the report.

After review and investigation, please provide any known or discovered information that confirms or clarifies the service availability shown on the maps. You may send feedback either by sending us scanned (pdf) markups to the maps via email, or by emailing your comments.

Not applicable.

III. Broadband Infrastructure Gaps

Please provide information on any known infrastructure gaps (needs) for each type of service to be addressed. Infrastructure gaps would be, for example, need for fiber, copper, or wireless backhaul; and, known challenges or reasons for the lack of infrastructure to a location.

A. Waikiki

(1) Wireline gaps

(2) Wireless gaps

a. Cellular sites
b. WiFi Hotspots

B. Kaanapali, Maui
[same as above]

C. South Kohala, Hawaii
[same as above]

D. Hanalei, Hawaii
[same as above]

For all areas, HT does not have broadband infrastructure gaps except for lack of fiber directly to some customer premises.

IV. Existing and Future Broadband Plans and Projects

Please provide information on existing and future plans or projects that you are aware of for broadband infrastructure or services. Please provide this information for each area and type of service listed below.

A. Waikiki
(1) Wireline Plans and Projects
(2) Wireless Plans and Projects
a. Cellular
b. WiFi

B. Kaanapali, Maui
[same as above]

C. South Kohala, Hawaii
[same as above]

D. Hanalei, Hawaii
[same as above]

No specific projects are planned but HT will evaluate any customer requests for broadband service and if there is a business case, HT will deploy the required fiber to the customer premise.

V. Identify Stakeholders

In the final HCR 189 Report to the Legislature, we would like to identify the private and public stakeholders who would be best able to utilize the report for future broadband planning and implementation for the respective target areas. Towards that end, please

identify stakeholders that you feel should be included in the Report as stakeholders for each target area listed below. These stakeholders would likely include county agency representatives for the county in which the target area is located, the local providers' representatives, and the various users of broadband (and their representatives) in that target area.

A. Waikiki

Waikiki Improvement Association

B. Kaanapali, Maui

C. South Kohala, Hawaii

D. Hanalei, Hawaii

For all areas, HT recommends that Hawaii Tourism Authority, Hawaii Hotel, Lodging Hospitality Association and Chamber of Commerce of Hawaii be included as stakeholders. These organizations should also be consulted for additional stakeholders.

VI. Additional Comments

Please provide any additional comments or suggestions that you believe should be considered by the HCR 189 Planning Group.

HT does not have any additional comments.

APPENDIX G

NJUNS Overview


NJUNS
Efficient Utility Communication
System Overview

Mission Statement

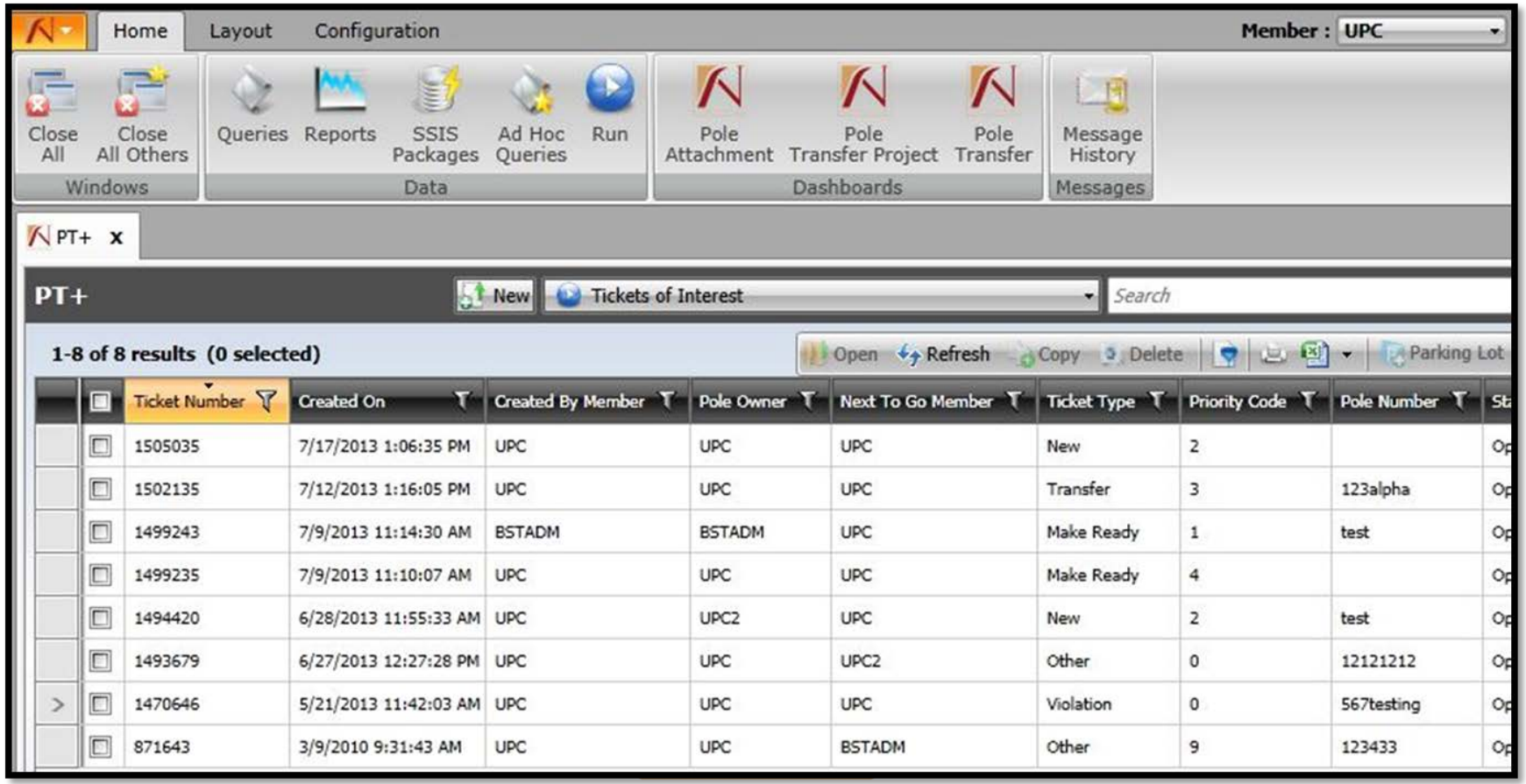
The National Joint Utilities Notification System (NJUNS) is an industry leader in providing efficient communication and work coordination while promoting cooperation and partnering to manage pole transfers, joint trench construction, and pole attachments.

What is NJUNS?

- NJUNS' primary purpose is to serve as a notification system
- Software as a Service
  - Offering Pole Transfer (PT+) and Pole Attachment (PA)
- System provides extensive reporting and search capabilities (great for records retention)
- NJUNS is NOT an asset management tool.
  - NJUNS can interface with existing work and asset management systems or local databases through the use of our API / Web Services

How NJUNS Works

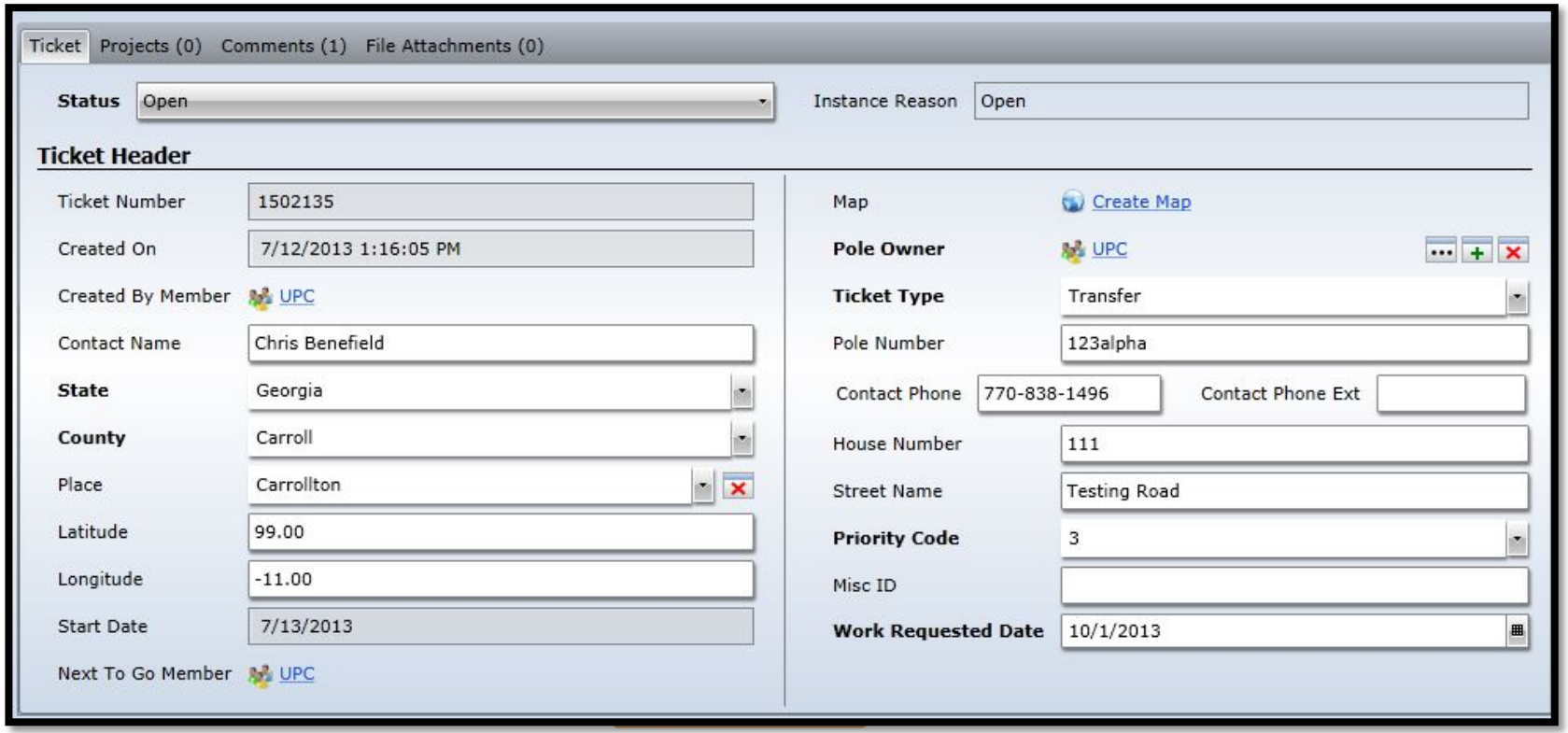
- Software as a Service (web based)
- Users utilize the WWW to access the system



Ticket Number	Created On	Created By Member	Pole Owner	Next To Go Member	Ticket Type	Priority Code	Pole Number	St
1505035	7/17/2013 1:06:35 PM	UPC	UPC	UPC	New	2		Op
1502135	7/12/2013 1:16:05 PM	UPC	UPC	UPC	Transfer	3	123alpha	Op
1499243	7/9/2013 11:14:30 AM	BSTADM	BSTADM	UPC	Make Ready	1	test	Op
1499235	7/9/2013 11:10:07 AM	UPC	UPC	UPC	Make Ready	4		Op
1494420	6/28/2013 11:55:33 AM	UPC	UPC2	UPC	New	2	test	Op
1493679	6/27/2013 12:27:28 PM	UPC	UPC	UPC2	Other	0	12121212	Op
1470646	5/21/2013 11:42:03 AM	UPC	UPC	UPC	Violation	0	567testing	Op
871643	3/9/2010 9:31:43 AM	UPC	UPC	BSTADM	Other	9	123433	Op

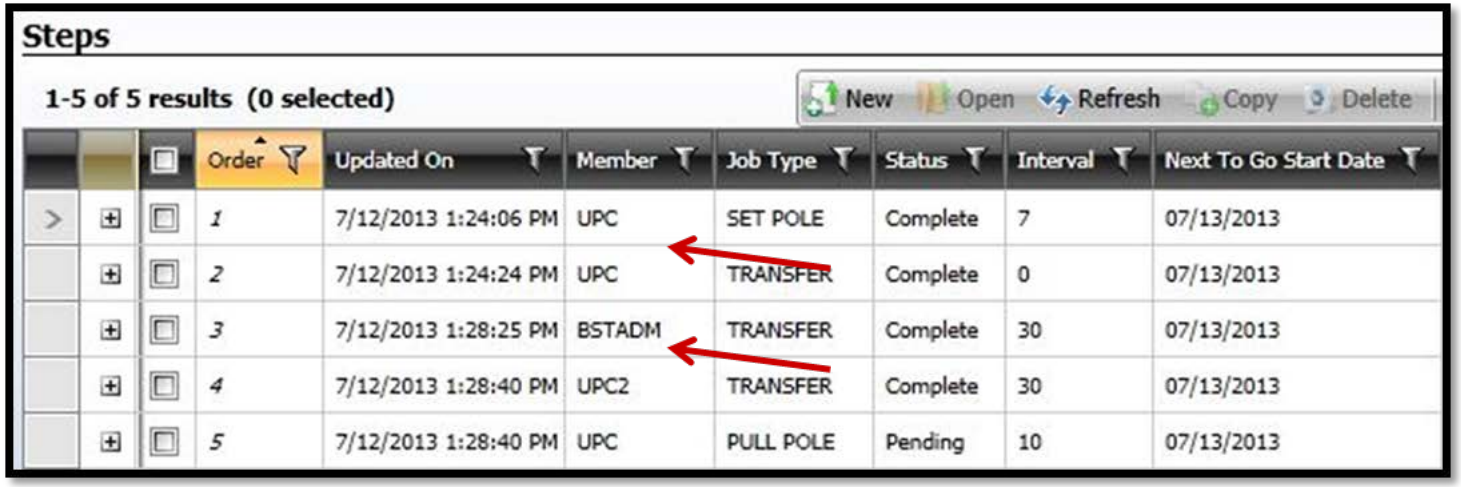
How NJUNS Works

- Users create tickets involving joint use ventures within the system
- The system electronically notifies the appropriate parties



How NJUNS Works

- NJUNS notifies these entities through member codes
- Member code represents a company in specified geographical area



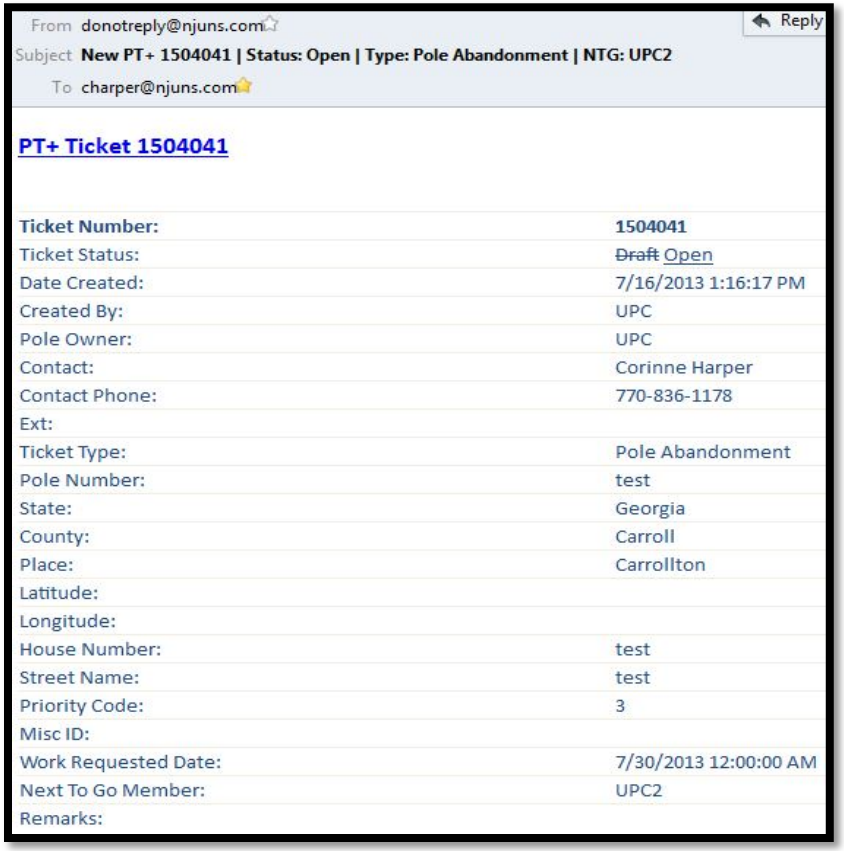
Steps

1-5 of 5 results (0 selected)

New | Open | Refresh | Copy | Delete

Order	Updated On	Member	Job Type	Status	Interval	Next To Go Start Date
1	7/12/2013 1:24:06 PM	UPC	SET POLE	Complete	7	07/13/2013
2	7/12/2013 1:24:24 PM	UPC	TRANSFER	Complete	0	07/13/2013
3	7/12/2013 1:28:25 PM	BSTADM	TRANSFER	Complete	30	07/13/2013
4	7/12/2013 1:28:40 PM	UPC2	TRANSFER	Complete	30	07/13/2013
5	7/12/2013 1:28:40 PM	UPC	PULL POLE	Pending	10	07/13/2013

How NJUNS Works



From donotreply@njuns.com
Reply
Subject **New PT+ 1504041 | Status: Open | Type: Pole Abandonment | NTG: UPC2**
To charper@njuns.com

PT+ Ticket 1504041

Ticket Number:	**1504041**
Ticket Status:	~~Draft~~ Open
Date Created:	7/16/2013 1:16:17 PM
Created By:	UPC
Pole Owner:	UPC
Contact:	Corinne Harper
Contact Phone:	770-836-1178
Ext:	
Ticket Type:	Pole Abandonment
Pole Number:	test
State:	Georgia
County:	Carroll
Place:	Carrollton
Latitude:	
Longitude:	
House Number:	test
Street Name:	test
Priority Code:	3
Misc ID:	
Work Requested Date:	7/30/2013 12:00:00 AM
Next To Go Member:	UPC2
Remarks:	

NJUNS Modules

- PT+ (Pole Transfer)
  - The purpose of the PT+ module is to provide pole owners, or contactors on their behalf, the ability to notify attachers of work being done on poles
- Pole Attachment
  - The purpose of the PA module is to provide pole owners the ability to accept permit requests in NJUNS
  - Attachers create tickets notifying the pole owners of the request

PT+ (Pole Transfer)

PT+ can handle all aspects of field work required for joint use pole lines:

- Pole Replacement
- Safety Violations
- Make-ready Adjustments
- Pole Line Relocation and Removal
- Transfer of Ownership

NJUNS' Benefits

- Reduction in costs
  - Postage - Email vs. USPS costs
  - Elimination of multiple trips to field
- Reduction of liability
  - Enables the timely removal of duplicate, damaged or dangerous poles
- Maintains constant notification
- Decreases paperwork and allows permanent records retention
- Helps comply with 96 Telecom Act, as well as FCC and PSC regulations

NJUNS' Members

- There are currently 28 member states
- There are over 2,000 different entities that utilize NJUNS in those states
- There are over 12,000 active users
- NJUNS sends out approximately 4 million notifications to its members each year
- NJUNS membership and use proves the efficiency and effectiveness of the system

NJUNS' Administration

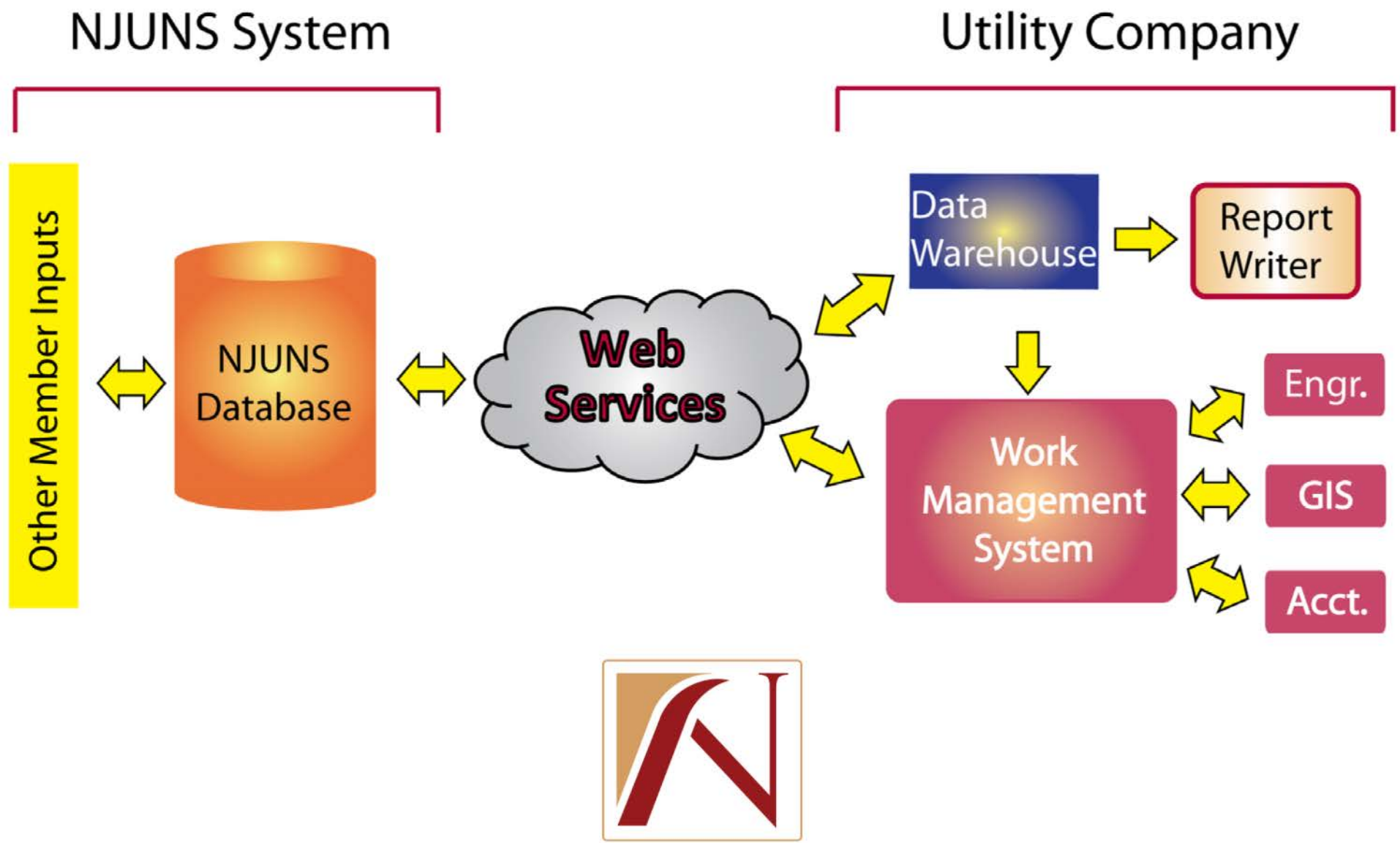
- NJUNS has a Board of Directors and is led by an elected 14 member Executive Committee
  - Each member state has 2 Board seats
  - Full-time Staff
- Provide regularly scheduled training classes
- NJUNS provides self-help documentation in the form of an user's manual and training videos
- Provide 100% system support M-F

NJUNS' Reliability

- Since its inception in 1990, there have been 2.6 million tickets generated
- Delivered over 40 million notifications
- Provide access to users from any PC that has Internet Access and a browser with Silverlight capabilities
- Retention of all tickets; no matter if they are open, closed, or cancelled
- Maintains over 99% uptime

NJUNS' API/Web Services

- API: Application Programming Interface: allows and specifies software to interact with each other
- Provide our API for companies to utilize in order to better fit their process
  - Allows for automation
  - Allows for data warehousing
- Can automatically work with your WMS
- Will need IT expertise to work with the API


NJUNS System
Utility Company
Other Member Inputs
NJUNS Database
Web Services
Data Warehouse
Report Writer
Work Management System
Engr.
GIS
Acct.

How to Become a Member

- Membership to NJUNS is on a by state by state basis.
- To join NJUNS, a consortium of sponsoring companies, usually pole owners, agree to sponsor the use of the system for the entire state.
- This consortium controls all individual company membership for their state.

Cost

- The initial membership fee: $12,000 (per state)
- Annual membership fee: $21,000 (per state)
  - The first year's membership is prorated based on the start date for system use.
- This fee allows the state to have as many member companies as desired
- No per ticket, transmission or per attachment charges that are difficult to verify or that escalate over time
- Any fee change must be approved by the Board

Questions

- If you are interested in learning more about NJUNS or a live demonstration please contact:
  - Tim Webers – Executive Director
  - Phone – 770-298-5860
  - Email – twebers@njuns.com

- Thank you for your time!