



HAWAI'I BROADBAND TASK FORCE INITIAL REPORT

**A Report to the
Governor
and the
Legislature of
the State of
Hawai'i**

Prepared by

The Auditor
State of Hawai'i
and
RHD Consultants,
LLC

December 2007

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STATE OF HAWAI'I



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Foreword

Through Act 2 of the First Special Session of Hawai'i 2007, the Legislature created the Hawai'i Broadband Task Force with the primary purpose of 1) removing barriers to broadband access, including gaining wider access to public rights-of-way; 2) identifying opportunities for increased broadband development and adoption, including very high speed broadband services; and 3) enabling the creation and development of new advanced communication technologies in Hawai'i. The Act required the Office of the Auditor to provide research and organizational support services necessary to assist the task force in achieving its purpose. This is the report of the task force's activities from its first months of existence.

On behalf of the task force as well as my office, we wish to express our appreciation for the cooperation and help of the many individuals who assisted us with the issues that surround the concepts of broadband and broadband availability. We would also like to thank our contractor, Mr. Robert H. Doeringer, for his technical assistance and dedication to this planning effort.

Marion M. Higa
State Auditor



HAWAI'I BROADBAND TASK FORCE

Chair's Message

David Lassner, Chair
Nam Vu, Vice Chair

Gordon Bruce
Gary Caulfield
Sen. Will Espero
Sen. Carol Fukunaga
Jennifer Goto Sabas
Sen. David Ige
Joel Matsunaga
Rep. Marcus Oshiro
Henk Rogers
Nate Smith
Clyde Sonobe
Rep. Gene Ward
Rep. Kyle Yamashita

Aloha:

The Broadband Task Force, as created by Act 2 of the First Special Session of 2007, is pleased to submit this initial report of task force activities. It includes both the initial findings from the short time the task force has been in existence in 2007 and the task force's proposed plans for 2008.

In accordance with Act 2, a final report containing the task force's plan for the development of improved broadband capabilities and services, including any proposed legislation, will be submitted prior to the 2009 regular session.

It is the hope of the Broadband Task Force that additional information regarding issues and recommendations be shared with the Legislature to remove barriers for better broadband access, identify opportunities for increased broadband development and adoption, and enable the creation and development of new and advanced communications in Hawaii.

As Chair of the Broadband Task Force, I am confident the efforts of the Task Force will result in workable recommendations to increase the broadband capabilities of the State of Hawai'i that will benefit not only our economy but all sectors including education, health, emergency preparedness and public safety. I express my personal thanks to each member of the task force and the following additional members of the five working groups who volunteered their personal time and expertise to assist in this endeavor; Tom Amontree, James Assey, Tim Bjarin, Bob Boerner, JoAnne Bourquard, Michelle Wright Conn, Margaret Cummisky, Pam Greenberg, Kazuyoshi Hashimoto, Pete Jaegar, Edgy Lee, Burt Lum, Mark Loughridge, Yuka Nagashima, Diana Oshiro, Jessica Rosenworcel, Stan Saiki, Lorenz Sell, Chuck Wall and Walter White.

Mahalo,

David Lassner, Chair
Broadband Task Force

Executive Summary

The 2007 Legislature of the State of Hawai‘i found that offering affordable Internet access services is an essential element of a long-term strategy to invest in the State’s workers, residents, and the future of Hawai‘i’s children. Act 2 of the First Special Session of 2007 established a broadband task force to advance the availability, capability, affordability, and use of broadband services in Hawai‘i.

The Task Force has used Act 2 to craft its Vision Statement for broadband in Hawai‘i:

Hawai‘i understands that advanced broadband services are an essential infrastructure for an innovation economy and a knowledge society in the twenty-first century. As a result of proactive policy initiatives, Hawai‘i residents and businesses throughout the State have access to advanced broadband services of the caliber and at the pricing available in the leading developed nations of the world.

This initial report reflects the work of the task force in the very short time it has been in existence in 2007. In many sections, the task force is providing preliminary information, along with a summary work plan for 2008. In other sections, more background work by the task force has already been done and is included in this report. The task force hopes this approach will allow the 2008 Legislature to understand what the task force has accomplished to date and what it is planning to do during the coming year.

It is clear to the task force that broadband offers Hawai‘i immense opportunities for social, economic, and educational advancement. Hawai‘i has tremendous capability and potential, as demonstrated by the wide range of activities underway and described herein that may soon outgrow the current broadband capabilities.

Initial data suggests that while Hawai‘i has gaps in availability, which will be identified in greater detail in the final report, Hawai‘i does not particularly lag other states. Of greater concern is the fact that the U.S. as a whole is already lagging and falling further behind other advanced nations that have identified broadband as a high priority and developed national policies supportive of advanced services. In addition, Hawai‘i faces several disadvantages inherent in its island geography.

Over the next year the task force will be developing its understanding of the issues as the basis of a set of recommendations that will be provided to the 2009 Legislature, in accordance with Act 2.

The task force maintains web sites documenting its own progress and relevant related work at: <http://www.hbtf.org>. Meeting agendas and minutes are available at <http://www.state.hi.us/auditor/meetings.htm>. These may be monitored throughout the year.

This report is respectfully submitted on behalf of the entire Hawai'i Broadband Task Force:

Senator Will Espero, The Senate
Senator Carol Fukunaga, The Senate
Senator David Ige, The Senate
Representative Marcus Oshiro, House of Representatives
Representative Gene Ward, House of Representatives
Representative Kyle Yamashita, House of Representatives
Gordon Bruce, Chief Information Officer, City & County of Honolulu
Gary Caulfield, Vice Chairman, First Hawaiian Bank
David Lassner, Chief Information Officer, University of Hawai'i, Task Force
Chair
Joel Matsunaga, Vice President, Hawaiian Telcom
Henk Rogers, BluePlanet Wireless
Jennifer Goto Sabas, Office of Senator Daniel K. Inouye
Nate Smith, President, Oceanic Time Warner
Clyde Sonobe, Administrator, Cable Television Division, Department of
Commerce & Consumer Affairs
Nam Vu, Chief Technical Officer, ShakaNet, Inc., Task Force Vice-Chair

Background

The Legislature of the State of Hawai‘i found that offering affordable Internet access services is an essential element of a long-term strategy to invest in the State’s workers, residents, and the future of Hawai‘i’s children. Act 2 of the First Special Session of 2007 established a broadband task force whose primary purpose is to:

- 1) Remove barriers to broadband access, including gaining wider access to public rights-of-way;
- 2) Identify opportunities for increased broadband development and adoption, including very high speed broadband services; and
- 3) Enable the creation and development of new advanced communication technologies in Hawai‘i.

The Legislature further found that the deployment of broadband networks and advanced communication services throughout Hawai‘i is essential for the State to keep pace with global changes in economic diversification, energy and environmental technology, healthcare, public safety, and education. Additional information about Act 2 is available in the Appendix to this report and the full Act is available on-line at: http://www.capitol.hawaii.gov/session2007/bills/HB310_CD2_.htm

In accordance with Act 2, the Senate President and House Speaker appointed the following individuals to the task force:

Senator Will Espero, The Senate
Senator Carol Fukunaga, The Senate
Senator David Ige, The Senate
Representative Marcus Oshiro, House of Representatives
Representative Gene Ward, House of Representatives
Representative Kyle Yamashita, House of Representatives
Gordon Bruce, Chief Information Officer, City & County of Honolulu
Gary Caulfield, Vice Chairman, First Hawaiian Bank
David Lassner, Chief Information Officer, University of Hawai‘i
Joel Matsunaga, Vice President, Hawaiian Telcom
Henk Rogers, BluePlanet Wireless
Jennifer Goto Sabas, Office of Senator Daniel K. Inouye
Nate Smith, President, Oceanic Time Warner
Clyde Sonobe, Administrator, Cable Television Division, Department of
Commerce & Consumer Affairs
Nam Vu, Chief Technology Officer, ShakaNet, Inc.

At its first meeting, the task force elected David Lassner, Vice President and Chief Information Officer of the University of Hawai‘i, as Chair and Nam Vu, Chief Technology Officer of ShakaNet, as Vice-Chair.

The task force determined that it could best achieve its mission best by establishing focused working groups chaired by task force members and composed of task force members and others from the community with specific expertise. Initial working groups are focused on specific areas, with working chairs noted below:

- 1) What other states are doing – Clyde Sonobe
- 2) Data collection (market analysis) – Joel Matsunaga
- 3) Why broadband matters – Senator Fukunaga
- 4) What other countries are doing – Vice Chair Nam Vu
- 5) Expectations at the federal level – Jennifer Goto Sabas

Task Force Plan

The intent of the Hawai‘i Broadband Task Force is to submit this initial report to the 2008 Legislature, as required by Act 2. It will be followed by a final report, prior to the 2009 regular legislative session.

The task force has developed the following structure for its reports:

- Vision for Hawai‘i
- Broadband’s relevance to the community
- Broadband status in other countries
- Hawai‘i’s broadband landscape today
- Broadband activities in other states
- Expectations at the federal level
- Changing technologies and approaches
- Current barriers and constraints
- Recommendations for the State of Hawai‘i
- Appendix: Background on the task force

This initial report reflects the work of the task force in the short time it has been in existence in 2007. In many sections, the task force is providing preliminary information, along with an outline of a work plan for 2008. In other sections, more background work by the task force has already been done and is included in this report. The task force hopes this approach will allow the 2008 Legislature to understand what the task force has accomplished to date and is planning to do during the coming year.

The task force maintains web sites documenting its own progress and relevant related work at: <http://www.hbtf.org>. Meeting agendas and minutes are available at <http://www.state.hi.us/auditor/meetings.htm>.

Vision for Hawai'i

The working vision statement for the task force is:

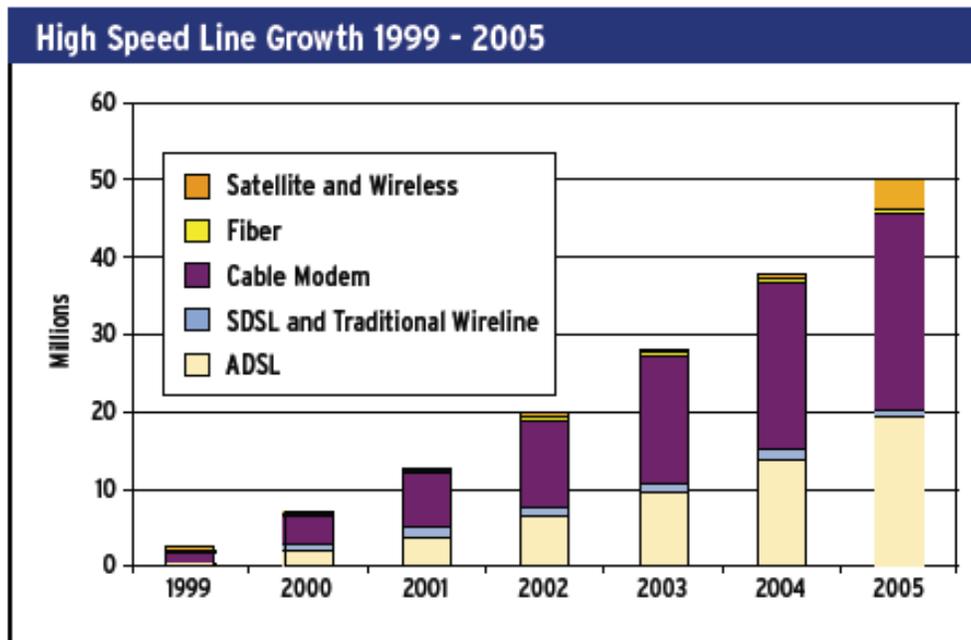
Hawai'i understands that advanced broadband services are an essential infrastructure for an innovation economy and a knowledge society in the twenty-first century. As a result of proactive policy initiatives, Hawai'i residents and businesses throughout the State have access to advanced broadband services of the caliber and at the pricing available in the leading developed nations of the world.

This vision statement is supported by the task force's belief that Hawai'i's future depends on becoming a leader in broadband infrastructure and services through the adoption of best practices.

Broadband's Relevance to the Community

Today's Internet has evolved from a text-based medium for email and information to a video and media-rich experience with enormous potential for new applications involving entertainment, education, health applications, public safety, unified communications, and social services.

These new and exciting uses of enhanced broadband capability have resulted in increased demand for and delivery of faster Internet service, as seen in the following graph:



Source: FCC'S High Speed Services for Internet Access Report, July 2006

High-speed broadband deployment is emerging as the most important new infrastructure for the twenty-first century. Having access to broadband capability increasingly shapes business productivity and global competitiveness, enhances individual creativity, and drives delivery of new health, education and social services applications. Public safety and transportation challenges underscore the benefits that use of high-speed broadband can provide across multiple levels of government, public/private partnerships, and U.S./international partnerships. Broadband has become the next infrastructure challenge for our communities, along with the availability of roads, power, and water.

Within the last two-three years, many states have established their own broadband access projects, in the form of task forces, coalitions or broadband authorities, or tax/financial incentives, to accelerate their access to high-speed broadband capacity. For example, California's Broadband Task Force completed a comprehensive set of recent recommendations for how California can take advantage of opportunities for and eliminate any related barriers to broadband access and adoption.

In November, a Sacramento Regional Research Institute (SRRI) study, entitled *The Economic Effects of Increased Broadband Use in California* reported that an increase in California's broadband Internet usage could lead to "...*significantly higher levels of employment and payroll in the state.*"

The study shows that with a 3.8 annual percentage point increase in the proportion of the adult population using broadband, California could see a net cumulative gain of 1.8 million jobs and \$132 billion of payroll over the next 10 years. "There is a clear connection between investing in broadband technology and job growth," said Dr. Kristin Van Gaasbeck, Assistant Professor of Economics at California State University, Sacramento, and one of the authors of the report.

SRRI used statistical models, as well as economic and broadband usage data from 2001 through 2005 to analyze 24 major regions of California and project future growth. Other findings from the study include:

- The percentage of Californians using a broadband connection has tripled since 2001; and
- Between 2002 and 2005 broadband use generated approximately 198,000 jobs and approximately \$11.6 billion of payroll in California.

According to the study, a boost in broadband use would affect all regions of the state, from major metropolitan areas to more rural communities.

Thus, the formation of Hawai'i's Broadband Task Force in 2007 could not have happened at a more opportune time. With the U.S. Congress now seeking more meaningful data on the extent of high-speed broadband capacity and deployment within the United States, states like Hawai'i may be able leverage future federal resources and pursue their own initiatives to increase the level of broadband deployment within the state.

Early work by the “Why Broadband Matters” working group of the Hawai‘i Broadband Task Force has already identified promising high-speed broadband applications in Hawai‘i. These include significant opportunities involving high-speed broadband applications in e-health, public safety, and education. Additional applications involving economic development, social services, and government services are also being identified and will be described in the task force’s final report. Informational briefings, site visits and demos to illustrate the benefits of high-speed broadband applications will be scheduled during spring 2008.

The following summary presents highlights of several of the topical areas already identified.

e-Health broadband applications

In 1998, prominent Maui businessman Pundy Yokouchi was the first patient to benefit from the Weinberg Telemedicine Network when his Maui Memorial physician was able to send a digital angiogram image to Queen’s Hospital specialists on Oahu within minutes. His subsequent surgery and recovery dramatically demonstrated the value of Hawai‘i’s telemedicine network, which had just been completed via a \$10 million Weinberg Foundation grant linking Hawai‘i Health Systems Corporation hospitals with health care facilities on Oahu. Hawai‘i was one of the first states at the time to use telemedicine on a comprehensive scale because of its robust telecommunications infrastructure and partnership with the Weinberg Foundation, GTE HawaiianTel (now Hawaiian Telcom), GST Hawai‘i, and Oceanic Communications.

More recently, Dr. Stan Saiki, Director of the Pacific Telehealth and Technology Hui, identified several federal telehealth applications with the potential to transform Hawai‘i’s delivery of health services and to position Hawai‘i as a model for the rest of the continental United States. Given Hawai‘i’s remote location in the Pacific, its multi-island needs (as opposed to the contiguous United States), and challenges of rural neighbor island communities, the telehealth applications are an exciting step towards a potentially promising e-health future for Hawai‘i.

The Veterans Administration (VA) in Hawai‘i has several ongoing telemedicine applications requiring high-speed broadband deployment. From the central “hub” at VA’s main clinic on the campus of Tripler Army Medical Center (TAMC), telemedicine activities at peripheral clinics on Kauai, Maui, the Big Island in Hilo and Kona and in American Samoa and Guam provide community-based clinic beneficiaries with a wide range of specialists in dermatology, dietetics, cardiology, general surgery, vascular surgery, orthopedic surgery, endocrinology, pulmonology, psychology, and psychiatry.

High-speed broadband deployment also enables remote viewing of electronic health records, radiologic images and the use of remote tele-pharmacy. This allows veterans to receive medications dispensed at the clinics and gain counseling from the

pharmacists over communications networks. The system also connects the Oahu, neighbor island and western Pacific clinics to U.S. mainland surgical specialty clinics for preoperative and postoperative care when patients need to be transported to the mainland. VA National is in the process of establishing a radiology support activity here in Hawai'i. Similar to the "Nighthawk's" initiative, with the time differential radiologists on duty in Hawai'i can support overnight and after hours radiology needs over broadband to institutions on the mainland.

Tripler's broadband telemedicine activities also include the **Pacific Island Health Care Initiative**. This initiative supports "store and forward," web-based telemedicine consultations to clinicians in rural areas in Hawai'i and western U.S./western Pacific. The "electronic ICU" system can link Tripler Army Medical Center intensive care experts with intensive care units in Guam and Korea. Telemetry, digital imaging, echocardiography, and other clinical information can be exchanged and reviewed over broadband video and data telecommunications systems. Expert consultation from clinicians unavailable to patients in rural areas can thus be provided in a real-time setting.

In the area of medical training and education, emerging use of the **Access Grid**, an initiative led by the National Computational Science Alliance, supports educational activities and clinical/diagnostic applications. It has been used by University of Hawai'i John A. Burns School of Medicine (JABSOM) and Tripler Army Medical Center and numerous educational programs at the University of Hawai'i. This application provides multiple interactive video streams and supporting digital media to permit people at multiple locations around the world to work together as though they are in one room. It demonstrated great value in e-Health, but is very bandwidth intensive. Thus, the costs of this initiative could not be maintained beyond the demonstration project unless the State of Hawai'i made its own investments in high-speed broadband capability.

A U.S. Department of Defense (DoD) funded project, **Pacific Rim Applications and Grid Middleware Assembly (PRAGMA) Avian Flu Grid** program is illustrative of why broadband matters. In the era of "systems biology" and the explosion of research and new applications brought by the Human Genome Project, computational requirements, and broadband inter-connectivity will quickly outstrip current capacity and availability. According to Dr. Saiki, "...the State of Hawai'i must keep up if Hawai'i hopes to participate in this revolution, let alone play a role."

This "grid-based" demonstration project, which is funded by the Department of Defense, brings together investigators from UH, Korea, Taiwan, Malaysia, Japan, and China to develop a computational grid platform that will enable the study of the H5N1 avian influenza virus. The approach is to develop three-dimensional virtual models of the avian flu molecular subunits that will allow the exploration of subunit interaction and the interaction of these complex molecules with diagnostic and therapeutic agents.

Such initiatives require huge amounts of computational cycles that are best provided by supercomputers. The project is developing not only the methods to study the

molecules computationally, but also the broadband communications systems that will allow sharing of data and computational capacity by investigators. Much of biologic science is starting to be conducted in ways that rely heavily on high-speed bandwidth and supercomputing capability. As pointed out by Dr. Saiki, “the computational assets and very large broadband communications channels will be necessary if we hope that Hawai‘i will be able to be a biotechnology participant and leader.”

In November 2007, Hawai‘i received a new federal grant of up to \$4.9 million over three years to build a broadband network linking 96 rural and urban healthcare providers throughout Hawai‘i and the Pacific island region. The project’s area extends 6,200 miles from the continental U.S. to American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands.

According to a recent *Honolulu Advertiser* article (November 25, 2007), “...this is something that is fantastic news for us,” said Dale Moyon, telehealth manager at Hawai‘i Pacific Health, which runs Straub, Kapi‘olani, Pali Momi and Wilcox hospitals. “All the partners (in the project) have been wanting to do something like this for years.”

Once the network is running, rural healthcare providers will be able to tap the expertise of modern medical centers, concentrated in urban areas, at speeds of up to 1 billion bytes of information a second.

The federal grants, totaling \$417 million [in all states] over the next three years, will be used to connect more than 6,000 public and nonprofit healthcare providers nationwide. The grants cover up to 85 percent of the cost of the projects.

The Hawai‘i project will interconnect the State Telehealth Access Network to several others serving the state government and the University of Hawai‘i. It also will interconnect networks of major healthcare providers, including the state’s Department of Health, the Hawai‘i Health Systems Corp., the Hawai‘i Pacific Health system, the Department of Veterans Affairs Pacific Island Health Care System and the American Samoa Medical Center.

Further information is available in the full report, the Internet Innovation Alliance White Paper, *Advancing Healthcare Through Broadband: Opening Up a World of Possibilities* by Neal Neuberger, CISSP President, Health Tech Strategies, LLC.

Public safety broadband applications

The task force plans to schedule informational briefings in 2008 on new federal/state/county broadband applications that address public safety issues. Given Hawai‘i’s remote location in the Pacific and its strategic position in the Department of Defense’s global telecommunications infrastructure, any investments designed to meet public safety needs can provide innumerable benefits to state residents and businesses as well.

Hawai‘i Broadband Task Force member Gordon Bruce, CIO of the City & County of Honolulu, provided one example of a public safety pilot project that the City & County of Honolulu recently participated in.

He noted that the city of Honolulu faces distinctive challenges in providing public safety. The 13th largest city in the United States, Honolulu is home to 1.2 million citizens (72 percent of the state’s population), as well as hosting an additional 500,000 tourists and military personnel at any given time. Emergency preparedness and homeland security for a population this size requires effective inter-agency communication and collaboration: “Honolulu has excellent resources for incident response because we are home to agencies from every branch of government: city, state, and federal,” Bruce stated. But the profusion of agencies in Honolulu also complicated inter-agency collaboration. Various agencies use radio networks that do not interoperate with each other, preventing communication, a problem brought to public attention by disaster response efforts in other cities. Among the voice communications systems in use by Honolulu’s public safety agencies are push-to-talk (PTT), VHF, UHF, and 800 MHz as well as five different telephone systems.

The Honolulu Public Safety Oversight Committee had attempted to address the interoperability challenge by pre-establishing talk groups, or subgroups of radio users from different agencies who collaborate during different types of incidents. However, the range of incidents that Honolulu agencies respond to was so wide-ranging, from grass fires to stadium evacuations to hazardous materials spills, that the list of talk groups had grown to more than 350. If too many talk groups were activated at once, the network would be unmanageable, bringing vital emergency communications to a halt. “We needed a less risky and more manageable alternative to communications interoperability across the chain of command,” says Bruce. “We preferred a solution that would not only address our immediate tactical need for voice interoperability, but also our long-term strategic goals for video and data interoperability.”

Replacing the disparate voice systems was not a cost-effective option because Honolulu agencies had already invested as much as tens of millions of dollars in training, applications, and equipment for their existing radio systems, which typically have life spans of a decade or more. In addition, agencies wanted the freedom to choose additional devices such as wireless laptops or PDAs based on their needs and preferences rather than having the choice imposed on them in order to avoid interoperability problems.

The need for an interoperability solution became more urgent in 2004, when Honolulu began making plans for extensive repairs to its 24 aging radio towers. To ensure communications resilience, the city and county wanted to augment its radio infrastructure with communications tools that would capitalize on Honolulu’s existing investments in an island-wide fiber optic infrastructure and approximately 100 WiFi hot spots.

In 2005, multiple agencies in the City and County of Honolulu, including fire, emergency medical services, and police, civil defense, and the department of

information technology began testing a Internet-based system for interoperable voice communications. They selected the Cisco® IP Interoperability and Communications System (IPICS) technology. In its initial release, IPICS enables interoperable voice communications among different radio systems and Internet Protocol (IP) devices, including both IP phones and PCs using the Cisco IPICS Push-to-Talk Management Console (PMC) software, which emulates a multi-channel PTT radio. “With an IP network you can carry traffic from a PC, camera, or cell phone, so why not an 800-MHz radio?” asks Bruce. Future releases will add support for wired and cellular phones and augment voice interoperability with video and data integration, such as instant messaging and geographic information systems (GIS).

Participants in Honolulu’s pilot included public safety operations personnel as well as government officials. The devices they used included Nextel PTT radios, VHF radios, UHF radios, 800-MHz radios, IP telephones, and the Cisco IPICS PMC software. “The use of the technology demonstrated how Honolulu public safety personnel from multiple agencies could talk to each other over IP networks on the island, including PTT radio, and IP-enabled devices,” said Bruce, “...we’re committed to building a communications network that allows the people who serve the public on the front lines to exchange vital information through voice, text, and video.”

Among the operational benefits cited in the City’s pilot project were:

- Increased preparedness through inter-agency collaboration and communication - Voice interoperability improves Honolulu’s preparedness for emergencies requiring inter-agency collaboration, ranging from weather emergencies to terrorist threats and disease outbreaks.
- Communications resilience for greater service effectiveness - The ability to communicate using a variety of devices provides more resiliency, and the Internet-based technologies allow for a reliable communications alternative by taking advantage of Honolulu’s robust fiber-optic infrastructure and WiFi networks.
- Investment protection – the Internet-based solution could be used to extend the life of city agencies’ investments in existing radio systems, devices and applications.

For its next steps, Honolulu’s IT department intends to extend the use of the Cisco IPICS system to many other interested agencies. It also plans to capitalize on future support for video and data integration capabilities to send video and sensor information to first responders, for even more effective emergency preparedness. One plan is to broadcast video of traffic accidents to first responders’ in-vehicle PCs, as well as government officials PC’s to increase situational awareness. Another plan is to send graphical GIS information to dispatchers’ consoles so they can determine if field personnel are in areas of the island with weak radio coverage and, if so, use an alternate means of communication.

Bruce foresees opening talk groups to people outside the geographic area, extending the City and County's reach to global resources. "An expert on disease in Los Angeles, New York, or one of Honolulu's sister cities in Asia, for example, could provide real-time guidance to field personnel from any Internet-connected PC. "The solution provides more than radio interoperability," Bruce concluded. "It actually changes the way we look at dispatch. If another city is using a similar IP-based communications system, we can tap their resources to help our agencies help our citizens. We look at this technology as a way to meet Honolulu's tactical need for voice interoperability, while building a strategic foundation for comprehensive rich media interoperability in the future."

Education and broadband

Just as e-health broadband applications are revolutionizing the delivery of services, diagnosis and consultation among physicians or their patients, and speeding the compilation and management of medical records, high-speed broadband offers promising opportunities to turn traditional classroom experiences into comprehensive e-learning within the near future. The task force plans to schedule several briefings and demonstrations to illustrate the range of new, educational broadband applications.

Kentucky, which recently completed an evaluation of the state's broadband deployment needs, unveiled its new Kentucky Education Network (KEN) in October 2007. The high-speed broadband network will link the state's 174 school districts to high-speed Internet that is reliable, secure, and cost-effective.

"Technology in schools means that learning is no longer bound within the walls of a classroom or the pages of a textbook," said Kentucky Education Secretary Laura Owens. "This new network will open more educational opportunities to our students and prepare them for the technology challenges of tomorrow." Among KEN's features are the Kentucky Virtual School system, the Individual Learning Plan, online tutoring services, the GoHigher Portal, online advising services, a Kentucky Community and Technical College System course applicability system, KET's Encyclomedia and a lifelong learning portal. ("Kentucky Launches Statewide High-Speed Education Network, *Government Technology*, October 31, 2007). Similar networks are already available in many other states.

Looking to the future, using the Internet and social networking are increasingly a central part of teenagers' lives. A December 2007 Pew study, "Teens and Social Media," offered these remarkable statistics:

- Some 93 percent of teens use the Internet, and more of them than ever are treating it as a venue for social interaction – a place where they can share creations, tell stories, and interact with others.

- The Pew Internet & American Life Project has found that 64 percent of online teens ages 12-17 have participated in one or more of a wide range of content-creating activities on the Internet, up from 57 percent of online teens in a similar survey at the end of 2004.
- 39 percent of online teens share their own artistic creations online, such as artwork, photos, stories, or videos, up from 33 percent in 2004.
- 33 percent create or work on webpages or blogs for others, including those for groups they belong to, friends, or school assignments, basically unchanged from 2004 (32 percent).
- 28 percent have created their own online journal or blog, up from 19 percent in 2004.
- 27 percent maintain their own personal webpage, up from 22 percent in 2004.
- 26 percent remix content they find online into their own creations, up from 19 percent in 2004.

The percentage of those ages 12-17 who said “yes” to at least one of those five content-creation activities is 64 percent of online teens, or 59percent of *all* teens.

In addition to those core elements of content creation, 55 percent of online teens ages 12-17 have created a profile on a social networking site such as Facebook or MySpace; 47 percent of online teens have uploaded photos where others can see them, though many restrict access to the photos in some way; and 14 percent of online teens have posted videos online.¹

Against the backdrop of an environment in which content creation on the Internet is a given, Myron E. Thompson Academy’s 800 online student population and the Department of Education’s e-school semester enrollment of between 200-400 students provide a fascinating glimpse of the future.

Thompson Academy principal Diana Oshiro believes that the goal of expanding opportunities for online learning, now being discussed by the Online Learning Task Force (Act 275, SpSess 2007), can be achieved much sooner than we think. Initial targets for online learning in the public school system have been pegged at 10,000 students.

Several emerging broadband initiatives may help accelerate Hawai‘i’s e-learning strategies. For example, Edgy Lee’s **Pacific Network Television** (pacificnetwork.tv) is scheduled to launch in spring 2008 and will feature Hawai‘i-themed original

¹ Amanda Lenhart, Mary Madden, Alexander Rankin Macgill, Aaron Smith, [Teens and Social Media: The use of social media gains a greater foothold in teen life as they embrace the conversational nature of interactive online media](#), Pew Internet & American Life Project, December 19, 2007.

programming. The new Internet network will broadcast nine channels online next year. “This is the first network of its kind and we've built it completely in Hawai‘i. There is no Internet site like this in the world,” Lee said. “Pacific Network will stream interactive broadcast-quality programming where 30 percent of the content will focus on Native Hawaiian issues and 70 percent on Hawai‘i-centric programming tied to global issues such as sustainability and cultural preservation.”

Another initiative involves Ulua Media and PeopleBridge, who are working with Time Warner Cable to create a “Hyper local” video on demand (VOD) application for broadband Internet and digital cable. It will enable Hawai‘i residents to upload rich media content onto the web and television. The video content will be “hyper local”; that is, it will be video content created by folks locally for local use. Broad categories include latest information on what's happening in neighborhoods, arts and culture, education (early literacy), and innovation throughout Hawai‘i.

Higher education and research

American higher education serves a public mission of education, research, service and economic development. In Hawai‘i, the University of Hawai‘i (UH) System is the sole provider of public higher education. As a knowledge-based enterprise, broadband has become essential infrastructure to every aspect of UH’s activities.

Perhaps the most compelling example of broadband is the UH HITS2 (Hawai‘i Interactive Television System – Version 2) service. HITS2 was reengineered in 2000 from an analog video delivery system to a fully interactive distance learning system. Using then-emerging MPEG2-over-IP technology, UH developed the first Internet-based interactive full-motion broadcast-quality distance learning system in the nation. The system is reliant on advanced Internet technologies, including multicast and quality-of-service (QoS) that will likely be fundamental to the delivery of converged services on IP networks to the public. Thousands of students are served throughout the state each semester and graduation ceremonies now regularly recognize those who earn degrees and certificates from campuses on islands other than where they live. While UH has developed some 35 HITS2 sites at all its campuses and education centers (including Moloka‘i, Lāna‘i, Hāna, Lāhainā, Kona, Wai‘anae), the requirements of the system exceed what can be delivered over consumer broadband services.

While high-quality interactive video can provide a classroom-like experience for students without physical access to the educational opportunities they need, much more e-Learning is being developed online. As one example, Honolulu Community College pioneered an online remedial math (Algebra I) curriculum to assist students required to enhance their math skills when entering community colleges. Honolulu Community College partnered with the Cisco Global Learning Network to pilot the use of their latest technology, which is deployed via the web and requires broadband for high-quality video imagery. Projects like these address Hawai‘i’s educational needs and position Hawai‘i as an innovator, ideally bringing resources in from

elsewhere to support Hawai‘i’s requirements. This type of activity can result in savings for colleges, which are overwhelmed by the need to provide remedial education to the extent that it decreases the availability of resources for core curricula and offerings. And of course, this can help address Hawai‘i’s STEM education needs, include outreach to high schools and those in remote/rural communities.

There are many examples from research as well. UH manages the Maui High Performance Computing Center (MHPCC) for the U.S. Government. When MHPCC’s newest supercomputer was unveiled in 2006, it was the 11th most powerful supercomputer in the world and the most powerful in the DoD’s shared resource base. However, because of the cost of connectivity to Hawai‘i, it was and continues to be one of the worst-connected high-powered supercomputers in the world. While all new connections into mainland-based research supercomputers deployed by the National Science Foundation or Department of Energy are connected by at least 10 billion bits per second (gbps), MHPCC’s connection is about 1/15 of that, at 622 million bits per second (bps).

Projects such as the Avian Flu Grid noted above typify the new approach to science and research, using what NSF has termed “cyberinfrastructure.” Massive databases are managed with components in multiple locations (distributed databases) and processed by shared supercomputer resources in multiple locations (grid computing) by teams of scientists distributed around the globe using technologies such as the Access Grid, noted above, or telepresence, a new form of high-resolution, low-latency videoconferencing that truly blurs distance. Another example is astronomy. Hawai‘i’s telescopes are among the most massive data collection devices in the State. They serve scientists throughout the globe who increasingly work on a collaborative basis to answer the deepest questions about the universe using data integrated from multiple instruments and processed with high performance computers. These new scientific paradigms are driving the academic and commercial research that is vital to our future health and welfare – both socially and economically.

The UH actively avoids rolling out new high-bandwidth services that will require capacities that exceed currently available inter-island and mainland link capacities. These have included numerous experiments with uncompressed High Definition TV (HDTV) over the Internet, and the emerging work on digital cinema, which requires 4 times the capacity of HDTV. Hawai‘i is simply unable to participate in major national supercomputing initiatives, such as the NSF TeraGrid, due to the lack of bandwidth (or funding to overcome this fundamental structural limitation). And upgrades to the HITS2 network to more modern video technology have been awaiting inter-island bandwidth upgrades that were heretofore unaffordable.

In Hawai‘i, government facilities, public schools and university campuses have had network capabilities since the early 1990s through a combination of leased services and an Institutional Network (INet) developed under the State’s franchise agreements with Oceanic Time Warner. However, what was once a pioneering leadership initiative has now been overtaken by the emergence of statewide fiber-based research and education networks throughout the country. Supported by states as an investment in education and economic development, these networks generally provide multiple

strands of fiber to key locations throughout the state. And unlike Hawai'i's network, these are interconnected with dark fiber to national research and education backbones like Internet2 and National LambdaRail to support compelling emerging applications, such as telepresence (high-resolution, low-latency videoconferencing with high-fidelity audio that creates the illusion of being across the table), on a national scale.

Implications for economic development

Hawai'i's economic development can be viewed in the context of educational and social development as well. As noted in many of the preceding examples, there is pioneering work being done in Hawai'i that could be shared with the world, if the necessary network capability was available and our educational and support systems permit.

Hawai'i is developing a strong capability among our students and community in digital communications. This is supported with work in the public schools and at the UH, and continues on into the media initiatives noted above. As the world moves to more peer-to-peer networking and user-generated content, Hawai'i's unique opportunities may be stifled if the content our students and professionals create cannot be affordably shared using emerging Internet-based services.

Hawai'i's gaming industry has also been highlighted in the press. Avatar Reality hopes to revitalize local gaming industry with its new virtual reality game, Blue Mars. Among other initiatives, Blue Mars will attempt to tap into the booming market for online gaming.

Another example of information-based innovation is the pioneering work by ConvergenceCT, a Hawai'i-based global company that links patient data at healthcare institutions with Pharmaceutical and Biotech companies' data needs for clinical trial planning and recruitment processes, and research for global markets. Convergence CT's core business involves massive databases and processing on a global basis over high-speed networks.

Finally, Hawai'i has yet to consider the challenges and opportunities of the modern broadband economy to its bedrock industry, tourism. This is an area for further exploration in the task force's final report.

A key issue for any of these emerging initiatives is that very high-speed communications are required between Hawai'i and the world for services to be provided to and delivered from Hawai'i. In order to enable people to engage in these opportunities from their homes and small businesses anywhere in the state, high-bandwidth services must be universally available and affordable. In short, access to broadband will be essential if residents of Hawai'i are to participate in the national and global economy and society.

Broadband Status in Other Countries

It is widely accepted and of great concern at the national level that the United States, which invented the Internet, is now lagging behind other developed countries and losing ground each year in broadband capability. Three main measures of this are:

- Broadband penetration;
- Speed of generally available technology; and
- Price per megabit per second.

The data paints a grim picture for the United States in all areas. The following summaries are derived from data released by the Organisation for Economic Co-Operation and Development (OECD) in June and October 2007.

The United States (U.S.) is ranked 15th in the world in broadband penetration, behind most of Europe, Japan, Korea and Canada. Denmark is first with 31.9 subscribers per 100 inhabitants while the U.S. had 19.6. The OECD has been tracking this data over time and the U.S. has been losing ground since it was 4th in 2001, 8th in 2002, and 9th in 2003. The U.S. also ranked 19th in the world in the growth rate of subscribers at 4.21 percent, while the fastest growth rate came from Ireland at 6.6 percent.

Speed of transmission is measured by the number of binary digits, or bits, transmitted per second. In today's technology, data transmission is measured in thousands (kilo) of bits per second, or kbps, millions (mega) of bits per seconds, or mbps and billions (giga) of bits per second, or gbps. The U.S. ranked 19th with an average advertised download speed of 8.86 mbps. Japan was 1st at 93.693 mbps followed by France (44.157 mbps) and Korea (43.301 mbps).

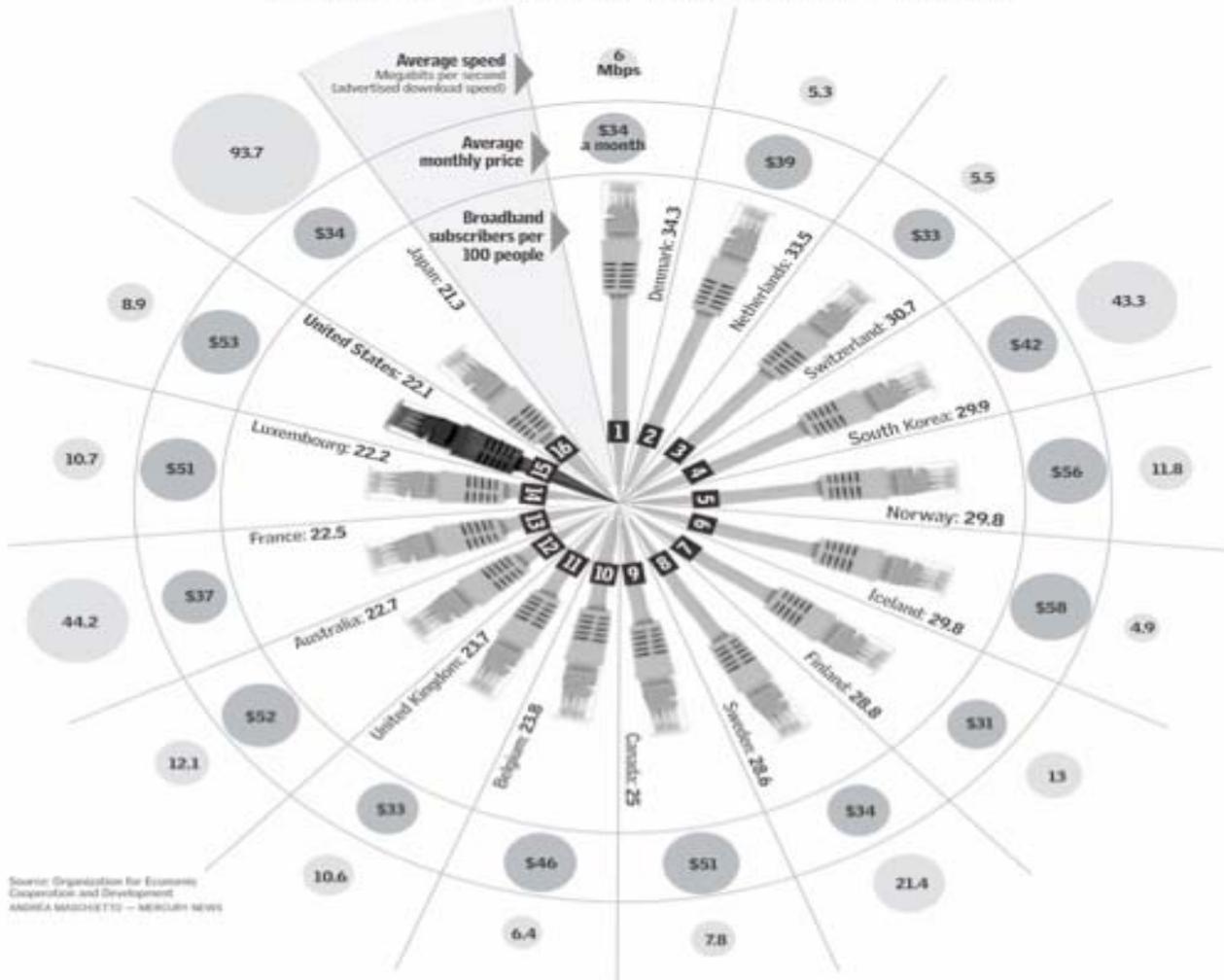
Purchasing Power Parity, as defined by the OECD adjusts prices to equalize the purchasing power of different currencies measured against a fixed basket of goods. The U.S. ranked 18th in price per mbps per month with a \$2.83 Pricing Power Parity (PPP). Japan had the lowest prices with a PPP of \$0.13 per mbps per month. Finland has the lowest Average Subscription Price at \$31.18 PPP, while the U.S. is ranked 22nd at \$53.06.

During the next year the task force will attempt to identify the characteristics of the nations that have leapfrogged the U.S. so that Hawai'i can understand how it can best advance its capability. The task force will also provide any updated data that is available in its final report.

The following diagram portrays current OECD broadband data in a graphical format. Additional information can be found at: <http://www.oecd.org/sti/ict/broadband>

U.S. lags in broadband

While the United States has the most broadband subscribers, it ranks only 15th when counting subscribers per 100 people — well behind other countries that often provide faster Internet access at a lower price.



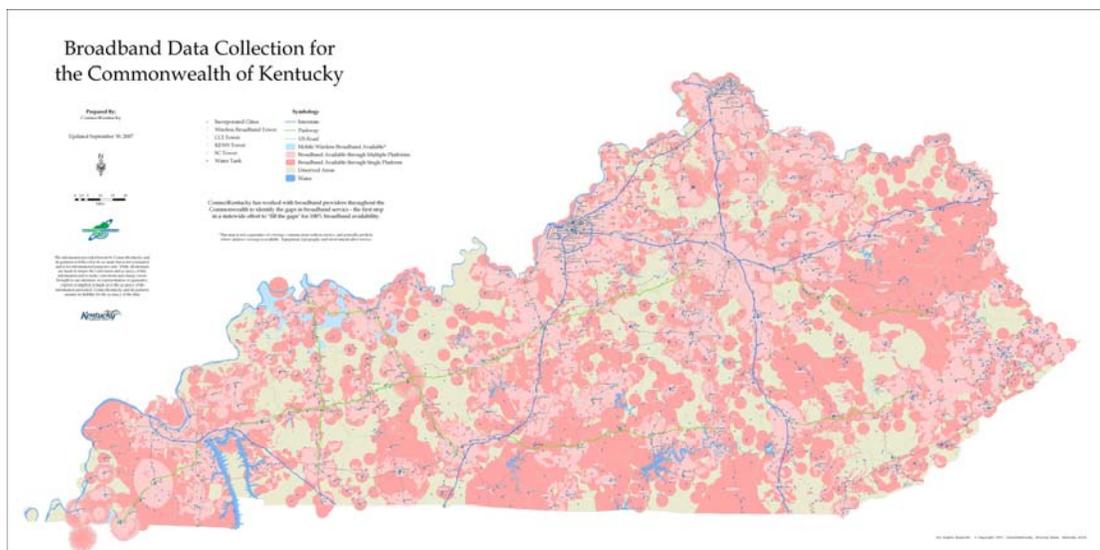
Hawai‘i’s Broadband Landscape Today

The task force plans to gather data to address the following areas in its final report:

- 1) Broadband supply - What wired and wireless services and technologies are available in Hawai‘i today and at what prices? What is the present penetration and availability? Where are the gaps in Hawai‘i’s coverage today and what steps are being taking to fill those gaps? Who are the key players in the private sector and where are they headed with advanced services? What do the providers see as the opportunities and barriers to achieving the vision for Hawai‘i?
- 2) Broadband demand - What is the actual uptake by users and why? Where are our geographic and socio-economic gaps?

The task force will develop a plan for broadband data collection and attempt to pilot that methodology. It will be informed by work in other states and by expected federal initiatives to improve data collection at the state level. The task force notes that for data to be useful, it must be maintained on an ongoing basis. So the final report will contain the task forces recommendations on how the State of Hawai‘i can maintain an ongoing process to understand its broadband availability, capability and usage. One of the states that is considered a model for broadband data collection is Kentucky. Their initiative has spread to several other states and would be available to support Hawai‘i for a fee. Kentucky’s broadband maps are available at: http://www.connectkentucky.org/mapping_&_research/ and a sample map is provided below. Using sophisticated Geographic Information System (GIS) technologies to portray data collected from providers under non-disclosure agreements (NDAs), Kentucky maps data by region down to the household level.

The task force notes that Hawai‘i is doing well relative to many other states in terms of broadband availability and services. So a data collection capability that serves other states may not map exactly to Hawai‘i’s situation.



In addition, the task force noted the need to focus on Hawai‘i’s uniqueness. Our island geography presents challenges faced by no other state. One challenge is the requirement of interisland fiber optic systems to provide advanced broadband capabilities throughout the State. Such submarine systems are much more expensive than the terrestrial fiber systems for intra-state infrastructure elsewhere in the country.

A second challenge is that Hawai‘i’s distance from the mainland and Asia make the entire state reliant on expensive trans-Pacific fiber optic systems to connect Hawai‘i to the rest of the country and the world. Contrary to the conventional notion that Hawai‘i enjoys rich connectivity due to being a hub for trans-Pacific fiber, the most recent fiber optic systems constructed to connect Asia to the U.S. have all bypassed Hawai‘i. Much as aircraft no longer need to land in Hawai‘i on the routes from the U.S. to Asia or Australia, modern fiber optic systems no longer require a regeneration point in Hawai‘i. As advanced high-bandwidth digital information and communications services become more prevalent, the lack of “dark fiber” to Hawai‘i and disproportional cost of high bandwidth capacity will become an increasing barrier. While adding to the cost of all broadband services in Hawai‘i, this most notably affects advanced research and education today. It will become an increasing factor as more digital media services, particularly those involving content creation and delivery, migrate to Internet-based technologies. The task force will attempt to understand how Hawai‘i can adopt public policies that maximize the availability of access to submarine fiber in Hawai‘i and contain costs.

Broadband Activities in Other States

The task force notes that while Hawai‘i is one of the early states to establish a task force focused on advancing broadband, there are already a number of other activities in place from which Hawai‘i can learn. These include task forces and initiatives in California, Ohio, Missouri, North Carolina, Kentucky, Tennessee and most recently, New York. In addition, the National Conference of State Legislatures (NCSL) has compiled but yet not analyzed data on legislation passed in all 50 states relating to broadband.

During 2008, the task force plans to work with national resources and other states to attempt to answer such questions as:

- 1) How many states have initiated broadband data collection projects and where have they placed them within the government structure?
- 2) What is the nature of any regulatory changes that states have made? Have any states created a unified telecom authority to drive broadband deployment?
- 3) Many mainland states now have dark fiber networks for research & education that are tied into the national networks (Internet2 & National LambdaRail). What drove these direct investments in advanced broadband infrastructure for

research and education, and are there any other patterns of investment in dark fiber for the public sector?

- 3) Many states have passed legislation to improve competitive access to rights of way. Does NCSL have any summary information regarding what this legislation involves? Any standard approaches? Any ideas as to which may be working or will we have to wait for the “Best Practices” document?
- 4) Have any States looked at actions to drive the deployment of Fiber-to-the-Home (FTTH), or are they expecting the telcos and cable companies to make their own business cases for these investments based on expected return to investors/owners?

To accomplish its objectives, the task force plans to utilize resources such as the NCSL and other states’ broadband task forces. The task force has already initiated contact with broadband initiatives in California, Kentucky, North Carolina, and Ohio.

The following web sites provide a glimpse of what is occurring in other states today:

NCSL briefing document: Broadband at the State Level

(<http://www.nextgenweb.org/nextgenweb-ncsl-briefing-documents/>)

The California Broadband Initiative

(<http://www.calink.ca.gov/documents/default.asp>)

ConnectKentucky

(<http://www.connectkentucky.org/>)

Expectations at the Federal Level

A working group of the task force was tasked with providing our best guess as to what changes, if any, may take place at the federal level. As telecom regulation in the U.S. is primarily a federal matter, this can impact some of what Hawai‘i may or may not do in the area of broadband deployment.

Section 706 of the Telecommunications Act of 1996 requires the Federal Communications Commission (FCC) to promote the deployment of “advanced telecommunications” - broadband - to all Americans. Section 706 also requires that the FCC issue periodic reports on the availability of broadband. If the FCC finds that broadband is not being deployed to all Americans in a reasonable and timely fashion, the statute requires the FCC to “take immediate action to accelerate deployment” by “removing barriers to infrastructure investment” and to promote competition.

To date, the FCC has issued four Section 706 reports. These reports are largely based on data the FCC gathers from industry on a semi-annual basis, on a form known as FCC 477. The FCC has generally used this data to paint a rosy picture of broadband deployment. The discrepancy between the FCC’s portrayal of progress in the U.S. and international data has propelled lawmakers to pursue legislation that focuses on

the FCC's data gathering efforts as the first step in implementing the section 706 mandate.

The FCC uses a 200 kbps standard to define broadband. Most would agree that 200 kbps is far too slow to be called "broadband", let alone be considered the benchmark for progress. At 200 kbps, the current technologies cannot take advantage of full-motion full-screen video, much less innovative Internet services such as high-definition video. In contrast, consumers in Japan and Korea have easy access to over 100 mbps at lower costs on average. Hence, if the FCC were to revise its broadband threshold upwards, even to a modest 1.5 mbps, its 706 reports would likely paint a much bleaker picture of broadband deployment in the U.S.

Many also question the FCC's statistical methodology which relies on zip codes. Basically, if one subscriber in a zip code receives broadband, the FCC assumes that broadband is available throughout the entire area. With this methodology, the FCC reports that broadband is available in 99 percent of the United States. The flaw in such logic is obvious. It would be comparable to stating that since one consumer in a given zipcode area has a Mercedes, then all consumers have or could have a Mercedes.

Change may be on the horizon. The FCC recently announced that it would seek comment on making changes to its broadband data gathering efforts focusing on the two areas set forth above, namely, the need to adjust the 200 kbps threshold and the need to address the shortcomings of its zip code assessment efforts. Addressing these changes may have been a result of the criticism over the years and recent initiatives in both houses of Congress to require the FCC to address these two issues.

The U.S. Senate Commerce, Science & Transportation Committee, of which Senator Inouye is the Chair, approved S. 1492, the Broadband Data Improvement Act which would require the FCC to:

- 1) Reconsider its current 200 kbps broadband standard;
- 2) Create a new second generation broadband standard for speeds capable of delivering high definition video;
- 3) Report on broadband availability by nine-digit zip codes (as opposed to five digits) for greater precision;
- 4) Conduct annual inquiries/updates into the deployment of broadband services; and
- 5) Authorize a 5-year, \$40 million per year program to provide matching grants to state public-private partnerships to more effectively identify barriers and solutions to broadband adoption throughout the state.

S. 1492 is currently pending floor action. The Committee is optimistic that S. 1492 will go to the floor and will be passed before the end of the year, or in the early part of 2008. Concurrently, HR 3919, introduced by Congressman Markey, which is conceptually similar to S. 1492, has passed the House and is awaiting conference with the Senate upon the Senate's passage of S. 1492.

The other federal area of interest relates to the Universal Service Fund (USF) which is intended to support carriers that serve rural and sparsely populated areas of the country where the cost of providing telephone service is high. Last year, USF distributed about \$4.2 billion to support this effort. USF is funded through small contributions made by all customers on their interstate phone bills. At present, USF provides support for telephone service, both wired and wireless. Most of these funds are directed to small carriers serving rural communities and are based on the carrier's embedded costs. Some, however, were provided for the larger Bell Operating Companies based on a formula model. For wireless carriers, the fund provides funding based on the support granted to the wired carrier in the area where the wireless carrier seeks to provide service. (There has been a call for "reform" in this area because the wireless carriers receive similar levels of support without a comparable infrastructure burden.)

Under the FCC's current rules, USF is designed to support the cost of voice telephone service only. Critics argue that this limitation is dated and should be refocused to include broadband service. Opponents of expanding USF argue that because voice and data service are provided over the same network, the program is already indirectly supporting broadband service. There are cost and funding issues as well—additional revenues will need to be raised to be able to continue support of telephone service while adding broadband service to USF. Additionally, as a result of FCC's limited broadband data gathering, it is difficult to determine precisely where to direct USF moneys. Without knowing with some certainty where the broadband gaps lie, it may be difficult to distribute funds in a way that benefits those consumers who truly lack access to broadband.

Recently, the Federal-State Joint Board on Universal Service, comprised of state and federal regulators, recommended to the FCC that the USF be divided into three separate programs—one focusing on traditional wired telephone service, one focusing on wireless or "mobility" service, and one focusing on broadband. By law, the FCC is required to act on the Joint Board's recommendation within one year.

In Congress, there is consensus that USF is in need of reform, for all the reasons mentioned above. However, the consensus ends at that point. In the legislative session next year, Chairman Inouye's strategy will be to find those areas for which there can be a level of consensus or compromise, whether it involves a more equitable means to provide support between wired and wireless telephone carriers or adding to the USF's revenue base to be able to include broadband service.

A variety of other FCC policies relate to broadband. For example, the FCC's E-rate program helps fund broadband connections to schools and libraries across the

country. Similarly, the FCC's rural healthcare program assists rural healthcare providers with the cost of broadband used for health service functions.

Recently, the FCC took its first steps toward making "white space"—empty TV channels on the public airwaves—available for wireless broadband services. There is also an upcoming 700 MHz auction of spectrum currently used by broadcasters that is expected to be vacated following the change to digital television in February 2009. It is possible that through such actions that a viable alternative to cable and DSL service can grow, making the broadband market more competitive and available to consumers.

Over the next year the task force will continue to monitor the federal landscape to help guide the recommendations made for action by the State of Hawai'i to maximize Hawai'i's leverage of federal opportunities.

Changing Technologies and Approaches

In its final report the task force will provide an overview of applicable broadband technologies. This will address both wired and wireless technologies as well as different approaches to sharing broadband infrastructure. An important component to be explored will be the elements and approaches that drive infrastructure costs such as: usage of underground and above ground rights-of-way, government buildings, spectrum, towers, conduits, public-sector initiatives, and structural separation. Examples will be provided from other countries that lead the world in the availability and use of affordable broadband services.

In order to remain forward-looking, the task force will also address how "big broadband" is distinct from today's technologies. While emerging wireless services such as WiMax and 4G Long Term Evolution (LTE) may approach the wired broadband services available today and challenge the duopoly of cable modem and Digital Subscriber Line (DSL) services, the next generation of wired services are already being rolled out in the advanced nations of the world and in some communities. These are typically based on fiber-to-the-home (FTTH) and in some cases, pure IP (Internet Protocol) technologies.

Current Barriers and Constraints

The task force will attempt to understand the current barriers and constraints to enhancing broadband capability in Hawai'i today—on both the supply and demand sides. The task force expects this will include regulatory, policy, technical, financial, and socio-educational considerations.

Recommendations for the State of Hawai'i

Finally, the task force will provide a set of recommendations for action to realize the vision it has crafted to achieve the intent of Act 2. At this point, the task force

expects to focus on policy, regulatory, informational, developmental, and leadership initiatives that would stimulate both the demand for and competitive supply of advanced broadband capability and services throughout the State of Hawai'i. The task force's goal is for Hawai'i to enjoy advanced broadband services comparable to those available in the most advanced nations, not just for a leadership position among U.S. states.

A BILL FOR AN ACT

RELATING TO TECHNOLOGY.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

1 SECTION 1. Technology is the key to success in today's
2 economy. The legislature finds that removing barriers against
3 broadband deployment by using a technology-neutral approach will
4 encourage lower prices for broadband services and create more
5 consumer choices. In addition, deploying broadband networks and
6 advanced communication services throughout Hawaii are essential
7 for the State to keep pace with global changes in economic
8 diversification, energy and environmental technology,
9 healthcare, public safety, and education.

10 The legislature further finds that Hawaii's enterprises do
11 not have access to the types of low-cost, high-capacity digital
12 transport services which are increasingly available in
13 communities concerned about advanced affordable services. As a
14 result, state action is needed to support investment in,
15 stimulate the adoption of, and remove potential barriers to the
16 development and availability of world-class and universally
17 accessible broadband networks in Hawaii.



1 Offering affordable Internet access services statewide is
2 an essential element of a long-term strategy to invest in the
3 State's workers, residents, and most importantly, the future of
4 Hawaii's children.

5 The purpose of this Act is to establish a Hawaii broadband
6 task force to:

- 7 (1) Remove barriers to broadband access, including gaining
8 wider access to public rights-of-way;
- 9 (2) Identify opportunities for increased broadband
10 deployment and adoption, including very high speed
11 broadband services; and
- 12 (3) Enable the creation and deployment of new advanced
13 communication technologies in Hawaii.

14 SECTION 2. (a) There is established the Hawaii broadband
15 task force. The task force shall be comprised of the following:

- 16 (1) Three members of the senate, appointed by the
17 president of the senate;
- 18 (2) Three members of the house of representatives,
19 appointed by the speaker of the house of
20 representatives;
- 21 (3) Four representatives of federal, state, and county
22 government entities having a role in infrastructure



1 deployment; management of public rights-of-way,
2 regulation, and franchising; information technology;
3 and economic development; and

4 (4) Five representatives of Hawaii's private sector
5 technology, telecommunications, and investment
6 industries, including the incumbent local exchange
7 carrier;

8 provided that the members in paragraphs (3) and (4) shall be
9 appointed jointly by the president of the senate and the speaker
10 of the house of representatives.

11 (b) The members of the task force shall select the
12 chairperson of the task force and shall be reimbursed for
13 reasonable expenses, including travel expenses, necessary for
14 the performance of their duties.

15 (c) The task force shall:

16 (1) Identify actions that will produce increased
17 investment in and the availability of advanced
18 broadband capabilities at more affordable costs by
19 using new approaches to broadband deployment,
20 including through increased access to public rights-
21 of-way and shared fiber infrastructure;



- 1 (2) Identify administrative actions that will promote
- 2 broadband access and usage within the state;
- 3 (3) Make specific recommendations on how Hawaii can
- 4 leverage federal, state, and international
- 5 opportunities for and eliminate any related barriers
- 6 to broadband access and adoption;
- 7 (4) Focus special attention on how broadband can be used
- 8 to substantially benefit educational institutions,
- 9 healthcare institutions, community-based
- 10 organizations, and governmental institutions;
- 11 (5) Consult with public and private stakeholders to
- 12 coordinate statewide efforts to obtain and maximize
- 13 loan funding available for broadband deployment and
- 14 development projects in the state;
- 15 (6) Consult with private sector stakeholders to leverage
- 16 opportunities to increase investments in state-of-the-
- 17 art technologies, and new approaches to advancing
- 18 capabilities at reduced costs;
- 19 (7) Identify best practices to establish a database that
- 20 identifies current and prospective projects for
- 21 deploying broadband;



- 1 (8) Encourage all state and county agencies to lead by
2 example by obtaining the necessary equipment for
3 broadband usage and have full access to broadband
4 service; and
- 5 (9) Encourage all state and county agencies to study the
6 feasibility of and utilize various services that
7 broadband provides such as streaming video
8 technologies to broadcast public meetings over the
9 Internet, videoconferencing, wireless Internet access
10 in state and county facilities that are most used by
11 the public, and the deployment of voice over Internet
12 protocol (VoIP).
- 13 (d) The office of the auditor shall provide the research
14 and organizational support services necessary to assist the task
15 force in achieving its purpose as required under this Act.
- 16 (e) The task force shall submit a report of its initial
17 findings and recommendations regarding improved broadband
18 capabilities and services to the legislature no later than
19 twenty days prior to the convening of the regular session of
20 2008.
- 21 (f) The task force shall submit a final plan for the
22 development of improved broadband capabilities and services,



1 including any proposed legislation, no later than twenty days
2 prior to the convening of the regular session of 2009.

3 (g) The Hawaii broadband task force shall cease to exist
4 after June 30, 2009.

5 SECTION 3. There is appropriated out of the general
6 revenues of the State of Hawaii the sum of \$50,000 or so much
7 thereof as may be necessary for fiscal year 2007-2008 for the
8 purpose of supporting the work of the Hawaii broadband task
9 force established in section 2.

10 The sum appropriated shall be expended by the office of the
11 auditor for the purposes of this Act.

12 SECTION 4. This Act shall take effect on July 1, 2007.



H.B. NO. 310
H.D. 2
S.D. 2
C.D. 2

Report Title:

Hawaii Broadband Task Force

Description:

Establishes a Hawaii Broadband Task Force to remove barriers to broadband access, including gaining wider access to public rights-of-way; identify opportunities for increased broadband deployment and adoption, including very high speed broadband services; and enable the creation and deployment of new advanced communication technologies in Hawaii. Appropriates \$50,000 for the task force. (HB310 CD2)

HB310 CD2 HMS 2007-4284

