Broadband in Oregon

A Report of the

Oregon Broadband Advisory Council

Presented to the

Business Transportation and Economic Development Committee

for

The Seventy-Seventh Legislative Assembly

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Executive Summary

This is the second report of the Oregon Broadband Advisory Council (OBAC) to the Legislative Assembly on the affordability and accessibility of broadband technology in all areas of the state and on the extent of broadband technology use in healthcare, energy management, education and government. The 2012 report will also provide information on Oregon broadband infrastructure and application projects, the relationship between broadband and economic development, developments in broadband public safety communications, key reforms by the Federal Communications Commission (FCC), and broadband related challenges facing the state. The report is best read on-line as it contains many links to other reports and references.

Investment in broadband infrastructure in Oregon has continued to be strong over the past two years with the deployment of American Recovery and Reinvestment Act (ARRA) projects, fourth generation (4G) wireless networks, expanded and upgraded telephone company and cable company wireline networks, and significantly enhanced satellite systems. Broadband services are widely available at competitive prices throughout the state. The Oregon Broadband Map has been launched at www.broadband.oregon.gov displaying the state's broadband coverage areas, service providers, technologies and transmission speeds.

In both broadband availability and utilization, Oregon ranks highly compared to other states. According to the National Telecommunications and Information Administration (NTIA), 74.7% of all Oregon Households have broadband in the home compared to 68% of all households nationwide. According to the FCC, Oregon ranks sixth in the nation in adoption behind Utah (79.7%), New Hampshire (77.8%), Washington (76.7%), Massachusetts (76.0%) and Connecticut (74.8%). The Oregon Broadband Survey conducted by the Public Utility Commission with the support of OBAC places broadband access in Oregon homes at 82%. The FCC has also reported that 2% of Oregon's population was unserved compared to the national average of 8%. Oregonians consistently demonstrate above average adoption rates of broadband technology.

Significant progress has been made in building the statewide Oregon Health Network www.oregonhealthnet.org to support healthcare delivery and healthcare education. Additionally, the state has established the Oregon Health Information Exchange, and is implementing a system of Coordinated Care Organizations to create a new healthcare delivery and management model for Medicaid patients. Broadband energy management and smart grid applications continue to expand at a steady, but measured rate. The rapid growth of digital media and online standardized student assessment applications is outpacing the bandwidth currently in service to many K-12 schools. Virtual on-line education programs are growing at all levels from K-20. E-Government applications continue to grow as communities seek to establish Government services without walls, doors or clocks. Citizens increasingly expect to be able to access government services online from anywhere at any time. Governments are moving to make data easy to find and easy to use as well as moving services online to be responsive to citizens and for cost effectiveness. E-Government broadband applications also create more transparency and citizen access to government.

Broadband is increasingly viewed as essential infrastructure needed to support economic growth and development in a global information-based economy. Oregon has emerged as a prime location for data centers due to its 0% sales tax, climate, energy costs, seismic profile and robust telecommunications infrastructure. This growth should continue as information technology applications increasingly migrate to "the cloud." Broadband is a valuable resource that should be incorporated into state and local economic development plans and strategies to meet the needs and solve the problems of Oregon communities.

There are many great opportunities for collaboration between organizations and economic sectors some of which also present unique challenges to be addressed.

- Federal Universal Service Fund (USF) – Inter-Carrier Compensation (ICC) reforms
  - In 2011, the Federal Communications Commission issued an order introducing reforms to the federal Universal Service Fund and to the structure of intercarrier compensation. The FCC intends for these reforms to increase fiscal responsibility and cut waste in the USF, while updating it to help bring high-speed broadband Internet and voice services to all. It has resulted in a significant reduction in revenue beginning as early as July 2012 for rural incumbent carriers, especially those that are reimbursed as under the "high-cost" methodology. This reduction in revenue could result in a reduction in the level of service or perhaps even a loss of broadband service for some consumers of rural Oregon carriers.

- Oregon Universal Service Fund (OUSF) reform
  - The Public Utility Commission is reviewing the mechanics and structure of the OUSF to ensure it is meeting the purposes put forth by the Legislature in ORS 759.425 in a transparent and efficient manner.

- K-12 School network access
  - Information technology and broadband network access are fast becoming essential infrastructure for Oregon's schools. Education systems across the country are currently moving to implement common core standards for student assessment, and web-based testing, just as educational delivery systems and content increasingly become digital.

- National Public Safety Broadband Network
  - In 2012, the federal government funded and began plans to deploy the National Public Safety Broadband Network (NPSBN), or FirstNet. All fifty states will face an opt-in / opt-out decision regarding participation and interconnection with this national network.

- Development of local and statewide strategies to increase and accelerate the adoption and utilization of broadband in Oregon.
  - Broadband is essential infrastructure that can help create jobs and contribute to economic growth in our state. Broadband and related applications can have a significant impact on the effectiveness of public safety agencies, increase access to education, improve economic development, increase civic engagement and improve

government transparency. Ultimately, broadband provides a platform for Oregon communities to develop new ways to solve problems. The development and implementation of strategic plans to realize these benefits are needed.

OBAC makes the following recommendations in the areas of broadband adoption, healthcare, energy management, education and government.

Adoption

- Conduct an update of the Oregon Broadband Adoption survey every four years to measure progress in broadband adoption throughout Oregon.
- Coordinate broadband service provisioning across the multiple key application areas of telehealth, energy management, education and government.

Telehealth

- Recognize and support Oregon's national leadership in the use of broadband and information technologies to improve healthcare delivery
- Support efforts at the state level aimed at standardizing the process for physician credentialing to provide telehealth services

Energy Management

- Continue to monitor the development and deployment of Smart Grid broadband applications in Oregon

Education

- Mandate the development of a funding plan(s) for Oregon's P-20 broadband network needs
- Provide equitable access for students and educators to reliable and robust broadband connectivity both in the school and at home
- Dedicate resources to provide ongoing professional development (coaching) for educators to ensure quality implementation of technology and practice in the classroom
- Require timely and reliable collection of school readiness data for the implementation of Smarter Balanced Assessment in 2014-15 school year

Government

- Encourage state government to incorporate broadband into planning efforts.
- Encourage local governments to incorporate broadband into local planning efforts. Every community in Oregon is required by law to do a comprehensive plan every 20 years. Incorporating broadband into local planning will help ensure that localities are thoughtful about future broadband needs.
- Encourage government at all levels to open data for general use.

Broadband in Oregon: A Work in Progress

Telecommunications continues to be a dynamic industry, which is positively affecting broadband infrastructure, service availability and service quality in Oregon. The industry, in general, is continuing to invest in broadband network infrastructure expansion and service enhancements as end-users migrate away from legacy analog voice landline services to broadband and wireless technologies to meet their voice and data communication needs.

Telephone Companies

Within the past two years, Oregon's two largest telephone companies have had a change in ownership.

On July 1, 2010, Frontier Communications completed its purchase of Verizon's landline telephone business in Oregon. Verizon continues to own and operate its wireless business in Oregon. This purchase required approval by the Federal Communications Commission (FCC) and the Public Utility Commission of Oregon. During the regulatory approval process, Frontier committed to investing $25 million to expand broadband infrastructure and service coverage in its Oregon territories.

- Frontier Communications reported that it spent more than $37 million upgrading the Oregon communications network it acquired from Verizon Communications in 2010.
- Frontier has added broadband service to 25,000 homes and businesses since taking over Verizon's Oregon territory, and now offers broadband in 95 percent of the areas it serves.
- Frontier is deploying Metro Ethernet service and Dedicated Internet Access capabilities to serve the needs of their Oregon commercial customers.
- Frontier Communications has accepted $71.9 million from the Federal Communications Commission's (FCC) Connect America Fund (CAF) to expand deployment and enhance broadband in underserved or unserved areas of its service territory. Approximately $1,200,000 will be for Oregon service areas.

On April 1, 2011, CenturyLink, Inc. of Monroe, Louisiana completed its purchase of Qwest Communications. During its regulatory approval process, CenturyLink committed to investing $45 million to expand and improve broadband services in its Oregon service territories.

- CenturyLink reported that as of June 30, 2012, its broadband investment in Oregon has exceeded the $45 million commitment
- CenturyLink has indicated that 22,000 residences gained broadband service availability
- CenturyLink has accepted $35 million from the Federal Communications Commission's (FCC) Connect America Fund (CAF) to expand deployment and enhance broadband in underserved or unserved areas of its service territory. Approximately $942,400 will be for Oregon service areas.

Many areas of Oregon are served by independent telephone companies that are also investing in network infrastructure to deliver broadband services to their customers. Gervais Telephone Company and Monroe Telephone Company are illustrative examples.

Gervais Telephone Company's service area is located about halfway between Portland and Salem in Oregon's Willamette Valley. Since Gervais Telephone Company's first fiber-to-the-home (FTTH) installation in 1999, the small 700 line cooperative has actively sought out new opportunities to better serve customers:

- Placing conduit in open trenches during the 2005-2008 building boom, and building broadband into unserved areas
- Negotiating a partnership with the gas company and school district to reuse old gas lines for fiber optic intercity routes
- Working with the City of Woodburn installing fiber optic cable in its downtown Urban Renewal Project
- Completing the first Round 1 ARRA fiber infrastructure stimulus grant in the nation;
- Expanding into the underserved Hubbard Industrial Park
- Responding to an unserved rural Marion County neighborhood's request to extend its fiber service area.

Gervais Telephone through its unregulated subsidiary DataVision Communications now serves Gervais, Woodburn, Brooks, Hubbard and many unincorporated areas of Marion County with FTTH. It has expanded its service area from 32 to 54 square miles, and increased its business base 20 fold.

Monroe Telephone Company is an independent telephone company serving over 950 access lines within 50 square miles of city and rural farmlands in the southern Willamette Valley. Through a multi-million dollar combination of grants and loans from the U.S. Department of Agriculture Rural Utility Service, Monroe Telephone Co. has deployed approximately 80 miles of fiber into underserved territory. Prior to this project customers could only get 26 Kbps via copper phone lines. Monroe Telephone also has deployed fiber to the rural Territorial School in the Junction City school district as well as the Muddy Creek Charter School in the Corvallis District. Monroe Telephone Co. is currently in the process of connecting residential and small business subscribers to the newly deployed fiber network www.monroetel.com.

Cable Companies

Oregon cable companies provide video, high-speed Internet and voice services to Oregonians and the business sector. Advanced services to the business sector continue to expand, as well as the number of Oregon businesses connected to the cable telecom networks. There are over 1,000 public and private schools receiving free cable and broadband connections. And, there are approximately 200 hospitals and medical clinics receiving broadband services from their local cable company.

The Oregon Cable Telecommunications Association anticipates that Oregon cable companies will invest approximately $140 million annually in their facilities to continue to improve their networks and offer new services.

BendBroadband was the first traditional cable company in the United States to convert to a 100% digital video in 2009, freeing bandwidth for robust broadband speeds. The company was the first

in Oregon to provide cable modem service fifteen years ago. Bend also launched a state-of-the-art fixed-wireless broadband network reaching Oregonians in less dense areas in central Oregon.

Wave Broadband has upgraded all of its interconnected systems to Data Over Cable Service Interface Specification (DOCSIS) 3.0 and offers Internet access with downstream speeds of up to 50Mbps www.bendbroadband.com .

Comcast has been steadily upgrading its broadband network in Oregon since its purchase of AT&T Broadband. Comcast's new services include Anyplay, allowing customers to view TV on selected devices, while others are watching another program on their TV. Voice to Go, Streampix and home security and home control networks are services recently launched in Oregon www.comcast.com.

Charter Communications provides scalable solutions to businesses of all size, offering state-of-the-art fiber-based networks, with dedicated symmetrical Internet access. In 2011 PC Magazine named Charter the "fastest ISP". Charter has upgraded all of its cable modem systems in Oregon to DOCSIS 3.0 www.chartercom.com.

Competitive Access Providers (CAP) / Competitive Local Exchange Carriers (CLEC)
Both CAPs and CLECs provide competitive services with Incumbent Local Exchange Carriers (ILECs). CLEC, according to Harry Newton's Telecom Dictionary, is a term coined by the Telecom Act of 1996, and implies the use of the ILECs local loop to provide service to end-users. CAP implies an alternate means of connection completely bypassing the ILEC. These competitive providers were created or allowed to grow as a result of the pro-competitive provisions of the Telecommunications Act of 1996. They have invested over $100 million in infrastructure in Oregon and provide competitive service alternatives for Oregon's businesses, institutions and individuals.

The following are examples of competitive access providers serving Oregon:

- Integra Telecom is one of the largest facilities-based providers of communication and networking services in the western United States. It connects businesses of all sizes with advanced networking, communications and technology solutions in 35 metropolitan markets. Integra owns and operates an enterprise-class network consisting of a 5,000-mile long-haul fiber-optic network, 3,000–miles of metropolitan fiber and a nationwide IP/MPLS network. Its fiber network connects directly to more than 2000 enterprise buildings and data centers. Through its Ethernet-over-copper footprint, it can deliver high-bandwidth services to more than 400,000 businesses. The company's corporate headquarters is in Portland, Oregon www.integratelecom.com.

- tw telecom of Oregon delivers managed data, Internet and voice networking solutions to businesses and large organizations throughout the U.S. As one of the three largest providers of Business Ethernet in the nation, tw telecom connects more commercial buildings to its national fiber network than any other carrier. It provides managed

network services specializing in Business Ethernet, IP VPN, converged, Internet access, transport data networking, voice, VoIP and security to enterprises, large organizations and communications services companies. The company's corporate headquarters is in Littleton, Colorado www.twtelecom.com.

- XO Communications is one of the nation's largest communications service providers. XO serves businesses, large enterprises and other telecommunications companies. The company's corporate headquarters is in Herndon, Virginia www.xo.com.

- Windstream Communications provides high-speed broadband Internet, phone service and Digital TV packages to residential customers as well as products and services for small, medium and large businesses, and government agencies. Windstream Corp. is a provider of advanced network communications, including cloud computing and managed services, to businesses nationwide. The company also offers broadband, phone and digital TV services to consumers primarily in rural areas. The company's corporate headquarters is in Little Rock, Arkansas www.windstream.com.

- Eastern Oregon Telecom (EOT) is a provider broadband service to anchor institutions, residential and commercial customers in Umatilla and Morrow Counties in Northeastern Oregon. EOT now offers:
  - Broadband Internet via fiber optics (17 route miles).
  - Broadband Ethernet via fiber optics and bonded copper.
  - Switched and VOIP telephony via their own switching facilities.
  - DSL (facilities and UNE based)
  - Fixed wireless (17 broadcast sites)

  The company's corporate headquarters is in Hermiston, Oregon www.eotnet.net.

- Hunter Communications, a Southern Oregon based Telecommunications Company, CLEC and ISP, was founded in 1992, providing service for local and wide area networks. Hunter is building a fiber network in the Rogue Valley in Jackson and Josephine Counties as well as the Klamath Basin. Its fiber backbone and last mile infrastructure connects Southern Oregon's Educational Systems, City and County Governments, Healthcare and Financial Institutions, and Businesses www.hunterfiber.com.

- Douglas FastNet has become a provider of DSL with 50 remote DSLAMs in Douglas County and a voice provider. DFN now offers
  - Broadband Internet - fiber optics (440 miles)
  - Fixed wireless (16 broadcast sites, fiber optic and wireless backhaul), DSL (50 remote –DSL all DSLAMs with fiber optic backhaul
  - Broadband Ethernet - fiber optic
  - Voice - fiber optic, DSL, fixed wireless

  The company's corporate headquarters is in Roseburg, Oregon www.douglasfast.net.

Municipal Network Providers

Cities provide essential services to citizens. Many Oregon cities are aware of the critical importance of broadband as essential infrastructure that supports economic development, education, healthcare, civic engagement and the overall well-being of a community. Cities that are unserved or underserved by broadband providers are willing to go to great lengths to bring broadband to their communities. Several cities with insufficient services have developed broadband systems to meet the needs of their citizenry.

Municipal network development was particularly active in the late 1990s and early 2000s often in response to local community dissatisfaction with the broadband services available in their area. Several notable networks have been deployed in Oregon.

- Ashland FiberNet (AFN)
  AFN is the city owned broadband network providing the community with broadband connectivity, local customer service, and local technical support for business and residential customers. www.ashlandfiber.net

- Cottage Grove WiFi
  Cottage Grove has deployed a WiFi network covering over 80% of the city. Beginning in February 2013, subscribers to the system will be able to select the level of broadband service they wish to receive ranging from 128 Kbps to 7 Mbps download speeds. http://www.cottagegrove.org/CGWiFi.html

- Monmouth-Independence Network
  "MINET Fiber, a fiber optic telecommunications provider since 2006, is located in the Central Oregon Willamette Valley towns of Independence and Monmouth Oregon. MINET provides both Fiber Powered residential Internet, TV and Telephone services to Monmouth - Independence residents and a wide spectrum of Broadband Services to Oregon businesses and Governmental agencies." www.minetfiber.com

- Tillamook Lightwave
  "The mission of TLW is to provide affordable broadband telecommunication services through public/private partnerships to benefit the communities we serve. The goal is to create a high-speed telecommunication system that will promote economic development, distance learning and telemedicine opportunities in Tillamook County; and improve the overall connectivity to Tillamook County." www.tillamooklightwave.org

- QLife Network
  "QualityLife Intergovernmental Agency (QLife) is a collaborative effort of public entities in The Dalles, Oregon, who created a 17-mile fiber optic loop through the city. The goal is to enhance the region's economic development efforts with a reliable, cost effective, open access link to the Bonneville Power Administration's fiber, which runs through The Dalles." www.qlife.net

- SandyNet
  "SandyNet is the Internet Service Provider owned by the people of Sandy and operated as a public service by the City of Sandy. The City began offering this service in 2003 and has seen very strong growth in the adoption of this service by the citizens of Sandy." The City of Sandy will be deploying a fiber-to-the-premises (FTTP) network in 2013. www.sandynet.org

- IRNE
  "Integrated Regional Network Enterprise" (IRNE) is a municipal CLEC broadband telecommunications network that carries voice and data communications for the City of Portland and its partners. In operation since 2001 the network is interconnected to Comcast's Institutional Network to provide last mile connectivity to public institutions, such as schools, libraries and local governments in the Portland area.

Additionally, the cities of Lebanon, Tigard, and Coos Bay have all entered into intergovernmental or public/private partnerships in order to provide broadband services to their citizens.

Wireless Broadband Service Providers

Mobile wireless has been a particularly exciting sector of the industry. Over the past two years, there has been significant investment in backhaul and distribution network infrastructure in advance of the significant enhancement of the broadband services that will be available with the introduction of fourth generation (4G) technology. This has taken the form of deployment of fiber optic infrastructure to cellular towers throughout the state to support the dramatically growing levels of data traffic over mobile wireless networks. Prior to this expansion, most cellular towers were fed with T1 circuits over copper facilities.

With the increase in mobile data capability that 4G represents, the T1 based infrastructure is inadequate to meet the demand expected as 4G is deployed in Oregon. Hundreds of cellular towers in the state are now fed with fiber optics and it is expected that the remainder will be upgraded within the next 12 – 18 months. This has the added benefit of increasing the number of miles of fiber optics in the State and in many cases is bringing fiber capability within reach of homes and businesses that didn't have that option prior. A study by Deloitte predicts that U.S. investment in 4G networks will continue and be between $25 billion and $53 billion during 2012-2016.

AT&T invested more than $300 million in its Oregon wireless and wireline networks from 2009 through 2011 to improve the company's mobile broadband coverage and overall network performance. In 2011, AT&T made more than 625 wireless network upgrades in four key categories in Oregon. These enhancements included:

- Activating 30 new cell sites or towers to improve network coverage
- Deploying faster fiber-optic connections to nearly 300 cell sites.
- Adding capacity or an extra layer of frequency to cell sites
- Upgrading more than 40 cell sites to provide fast mobile broadband speeds

Some industry analysts predict that mobile will replace the desk-top as the user's primary interface with the Internet.

Satellite Broadband Service Providers

In 2012, satellite service providers introduced a "next generation" of satellite broadband services competitive in speed with landline services. Dish now offers several service bundles that include broadband service delivered through ViaSat's new satellite supporting speeds of up to 12 Mbps downstream and 3 Mbps upstream. Wild Blue is offering satellite broadband services through ViaSat at speeds of up to 12 Mbps downstream and 3 Mbps upstream. HughesNet is offering satellite broadband services at of up to 5 Mbps downstream and 1 Mbps upstream. DirecTV also recently announced plans to offer Gen4 next-generation satellite broadband service in partnership with ViaSat and Hughes' HughesNet with speeds up to 10 Mbps. Satellite services are available throughout Oregon with a clear view of the southern sky and supported by local dealers.

Undersea optic fiber cables

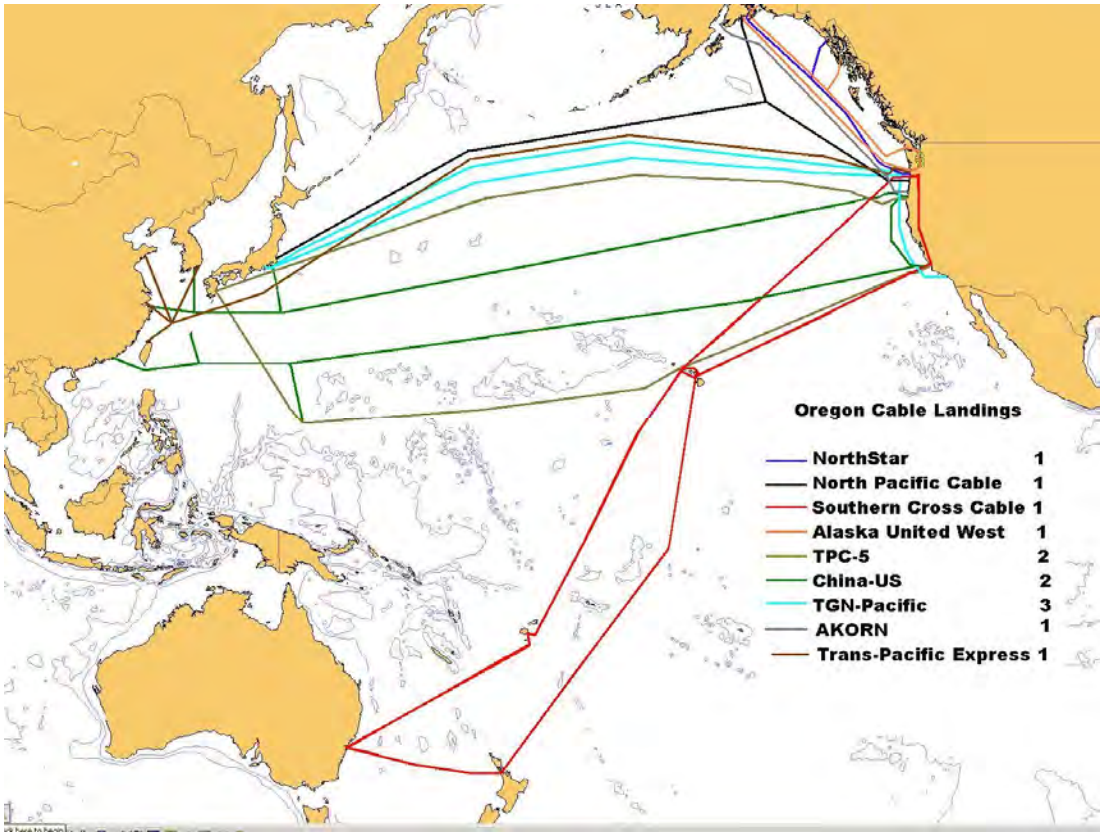
There are currently twelve undersea cables in service coming ashore in Oregon. Undersea telecommunications cables and their interconnections add valuable telecommunications infrastructure to the state. Undersea cables bring permitting and easement fees, contract work for the fishing fleet, and the potential of long-term jobs to manage and maintain related on-shore operations. Tata Communications (headquartered in India) is an illustration with three cables coming ashore in Oregon, a data center in Hillsboro and operating a "TelExchange Center" located in Portland.

There are several new projects being planned by international consortia of carriers to connect Asia to the United States that may present opportunities for Oregon according to a Submarine Cable Industry Report by the Submarine Telecoms Forum:

- China-US-2 (New)
- Malaysia-US (New)
- Trans-Pacific Express (Expansion of existing facilities)
- Thailand-US (New)

http://www.subtelforum.com/articles/wp-content/IndustryReport-2012.pdf

The Oregon Department of State Lands (ODSL) is the lead agency responsible for easements and permitting of undersea cables landing on the Oregon Coast, and the Governor is Chair of the State Land Board. The established working relationship between Oregon State government, the Oregon fishing industry, and the undersea cable operators will enable Oregon to effectively compete for future cable landings that will further position Oregon as a telecommunications gateway to the Pacific Rim.



Oregon Cable Landings

Oregon American Recovery and Reinvestment Act Projects

Also underway over the last two years, have been fourteen projects funded by the American Recovery and Reinvestment Act under the Broadband Technology Opportunities Program (BTOP), Broadband Initiatives Program (BIP), and State Broadband Initiative (SBI) formerly known as the State Broadband Data and Development (SBDD) projects. Oregon based projects are receiving over $52 million in federal grant and loan funding for construction of broadband infrastructure, a Computer and Education Center in Crook County and for statewide Broadband Mapping. These grant and loan awards were made to projects in Oregon and are currently being implemented by private sector companies, co-operatives, municipalities, counties, the State and a Tribe primarily to build new broadband infrastructure. Infrastructure projects include both backbone network facilities and distribution network facilities improving access and service availability for end-users. All of the projects are underway and are in various stages of completion. An inventory of the projects and their federal funding is presented in Appendix D and detailed descriptions of the projects may also be found at www.broadbandusa.gov.

Oregon Broadband Mapping Project: In 2009 the National Telecommunications and Information Administration (NTIA) released a Notice of Funds Availability (NOFA) for grant funds to support mapping the availability of broadband Internet services across the entire nation to be used in planning for the remediation of unserved and underserved populations that were identified during the mapping data collection efforts. These activities are meant, in part, to help

alleviate the "digital divide" between regions that have access to high-speed Internet connectivity and those that do not – whether that access is limited due to technical, economic, or educational reasons.

Governor Kulongoski designated the Public Utility Commission of Oregon (PUC) as the single eligible entity to interact with the National Telecommunications and Information Administration (NTIA) State Broadband Data and Development Grant Program. The PUC received an initial $2.1 million grant for two years of Broadband Data Collection and Mapping and for Broadband Planning, and that initial grant was supplemented by an additional $3.5 million to carry the effort though the end of 2014. The OPUC originally selected a contractor to assist Oregon with fulfilling the requirements of these Grant Programs, but now all grant activity is managed or performed by resources within Oregon.

After using a contractor for the first two years of the grant period, Oregon's Department of Administrative Services, Chief Information Office/Geospatial Enterprise Office has hired 3.5 FTE to collect and map specific data on broadband infrastructure and the availability of broadband services throughout Oregon, including tribal lands. They transitioned the entire project to DAS staff and have just completed their first data submission to NTIA.

A Broadband Survey was also conducted as part of the project. The report on the survey which provides detailed data on broadband adoption and the perceptions of citizens may be viewed at www.broadband.oregon.gov.

Three additional Oregon projects were funded by the State Broadband Data and Development Program.

- Oregon Broadband E-Government Project: The PUC is partnering with the Association of Oregon Counties to support and accelerate the adoption of E-Government applications by local governments. Federal grant awarded: $396,133

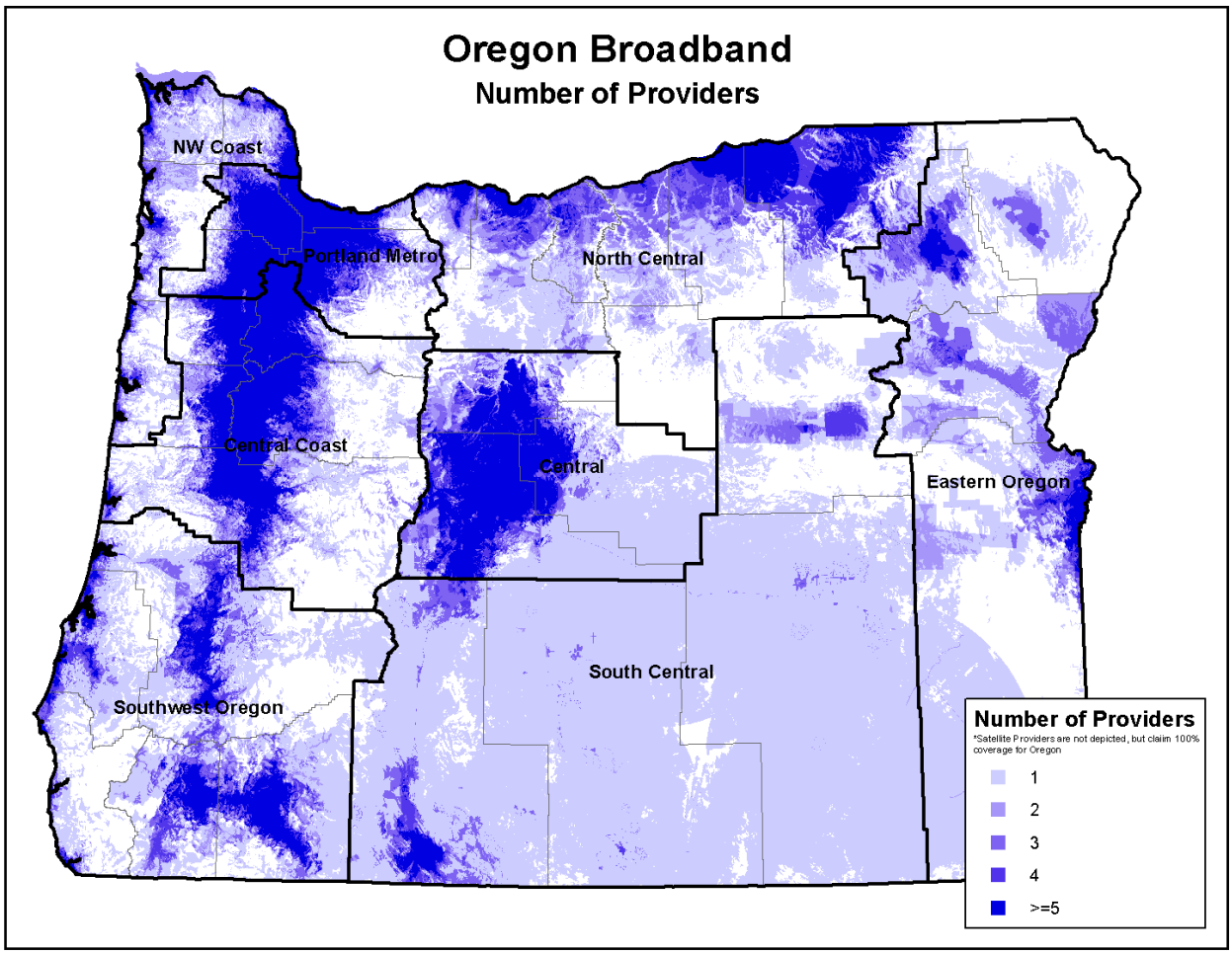
- Oregon Broadband Digital Literacy and Technical Assistance Project: The PUC is partnering with the Oregon Small Business Development Center Network and Community Colleges to provide digital literacy training and consulting services to small businesses. Federal grant awarded: $1,120,000

- Oregon Broadband Outreach and Strategic Planning Project: The PUC is partnering with the Oregon Business Development Department and the Oregon Broadband Advisory Council to develop local community plans to accelerate broadband adoption and utilization. Additional information on this project may be viewed at www.oregonbroadbandplanning.org. Federal grant awarded: $263,991.

Many of the activities by the organizations and institutions listed above have included investments in Oregon's broadband telecommunications infrastructure. Though public sector grant, loan and infrastructure projects have served to facilitate and accelerate broadband deployment, it should be noted that the vast majority of broadband deployment is occurring through private sector investment.

Broadband Accessibility in Oregon

Broadband services are widely available at competitive prices throughout the state.



This map was produced on the Oregon Broadband Mapping Project website www.broadband.oregon.gov . Users may produce maps showing service availability, technology, and providers statewide and by region, county, city, tribal lands and down to specific addresses.

Oregon ranks highly compared to other states in broadband availability. According to the FCC, 74.7% of all Oregon Households have broadband in the home compared to 68% of all households nationwide. Oregon ranks sixth in the nation in adoption behind Utah (79.7%), New Hampshire (77.8%), Washington (76.7%), Massachusetts (76.0%) and Connecticut (74.8%). The Oregon Broadband Survey conducted by the Public Utility Commission places broadband access in Oregon homes at 82%. The FCC has also reported that 2% of Oregon's population was unserved compared to the national average of 8%. Oregonians consistently demonstrate above average adoption rates of broadband technology.

Adoption is also aided by Oregon service providers offering low cost broadband to targeted groups. Examples include Comcast's Internet Essentials program which targets families with students in the federal free or reduced school lunch program, BendBroadband's Connect2Compete initiative with the Boys & Girls Clubs of Central Oregon to implement a digital literacy outreach program for the 2012-2013 school year, and CenturyLink's Internet Basics which targets families or individuals that qualify for Lifeline telephone service. These programs allow families or individuals to purchase a computer for approximately $150 and subscribe to broadband services for around $9.95 per month. These are exciting programs that demonstrate the potential of public-private partnerships.

Broadband Affordability in Oregon

Broadband services are available in Oregon at competitive price points, though prices vary by service area. A survey of broadband service pricing by technology, and a listing of current Oregon facilities-based broadband service providers follows. Information was collected from service provider websites.

DSL Service Provider	Monthly Rate
Canby Telecom [www.canbytel.com] 256 Kbps upstream, 1. Mbps downstream (faster speeds available)	$24.95
CenturyLink [www.centurylink.com] Up to 768 Kbps downstream (faster speeds available)	$29.95
Citizens Telecom dba Frontier Communications of OR [www.frontier.com] Up to 6 Mbps downstream – Broadband Max (faster speeds available)	$39.99
Douglas FastNet [www.douglasfast.net] 1.5 Mbps upstream, 5 Mbps downstream DSL (speeds up to 40 Mbps available)	$39.99
Eagle Telephone System [www.eagletelephone.com] Up to 768 Kbps downstream	$56.05
Eastern Oregon Telecom [eotnet.com] 1 Mbps upstream, 1.5 Mbps downstream (speeds up to 20 Mbps available)	$34.90
Frontier Communications High Speed Internet [www.frontier.com] Up to 6 Mbps downstream – Broadband Max (faster speeds available)	$39.99
Helix Telephone Company [www.helixtel.com] 3 Mbps downstream (other speeds are available)	$32.00

Molalla Communications Company [www.mololla.com] 512 Kbps upstream, 3 Mbps downstream (faster speeds available)	$29.95
Monroe Telephone Company [www.monroetel.com] 512 Kbps upstream, 1.5 Mbps downstream	$34.95
Mt. Angel Telephone [www.mtangel.net] 1 Mbps upstream, 3 Mbps downstream (faster speeds available)	$39.95
Nehalem Telecommunications [www.nehalemtel.com] 384 Kbps upstream, 1 Mbps downstream	$29.95
Oregon Telephone Corporation [www.ortelco.net] Up to 512 Kbps downstream (faster speeds available)	$29.95
People's Telephone Company [http://ptc-web.com] 512 Kbps upstream, 1.5 Mbps downstream	$29.95
Pine Telephone Company [www.pinetel.com] 512 Kbps upstream, 1.5 Mbps downstream	$37.95
Pioneer Telephone Company [www.pioneertelephonecoop.com] Up to 3 Mbps downstream	$39.95
Scio Mutual Telephone [www.smt-net.com] 1 Mbps upstream, 5 Mbps downstream (faster speeds available)	$48.95
St Paul Cooperative Telephone Association [www.stpaultel.com] Up to 1.5 Mbps downstream	$39.99
Stayton Cooperative Telephone Company [www.sctcweb.com] 512 Kbps upstream, 1.5 Mbps downstream	$29.95
TDS Telecom [www.tdstelecom.com] 512 Kbps upstream, 2 to 5 Mbps downstream (faster speeds available)	$35.00

Cable Modem Service Provider	Monthly Rate
Bend Broadband [www.bendbroadband.com] 1.5 Mbps upstream, 12 Mbps downstream (faster speeds available)	$30.99
Charter Communications [www.charter.com] Up to 30 Mbps	$39.99
Comcast [www.comcast.com]	$29.99

Up to 20 Mbps (faster speeds available)

Crestview Cable Communications [www.crestviewcable.com] 2 Mbps upstream, 12 Mbps downstream	$64.95
Wave Broadband [www.wbcable.com] 512 Kbps upstream, 3 Mbps downstream (faster speeds available)	$39.95

Mobile Wireless Internet Access (3G / 4G)	Monthly Rate
AT&T Wireless [www.ATTwireless.com] Downstream speeds up to 3Mbps (Faster speeds are available)	$38.00
Verizon Wireless [www.verizonwireless.com] Data Package for Basic Phones and Smartphones (2 GB)	$30.00
Sprint / Nextel [www.sprint.com] Data Card and WiFi Hotspot	$49.99

Mobile Wireless Internet Access (3.5G)	Monthly Rate
Bend Broadband 4G Mobile Broadband 2 GB Plan (other plans available).	$34.99

Mobile Wireless Internet Access (4G)	Monthly Rate
Clear 4G Internet Basic, 0.5 Mbps upstream – 1.5 Mbps downstream	$34.99
Sprint / Nextel [www.sprint.com] 3G / 4G Mobile Broadband – Unlimited use	$49.99

Fixed Wireless Internet Access	Monthly Rate
Douglas Fastnet [www.douglasfastnet.net] 5 Mbps synchronous (speeds up to 40 Mbps available) Wireless Broadband Access Service	$40.00
Eastern Oregon Net, Inc. [www.eoni.com] 256 Kbps upstream, 1 Mbps downstream service (faster speeds available).	$29.95

Eastern Oregon Telecom [www.eotnet.net] 1 Mbps upstream, 5 Mbps downstream (Speeds up to 20 Mbps available)	$49.90
FireServe Wireless Broadband [www.fireserve.com] Up to 100 Mbps downstream	$20.00
Freewire Broadband [www.freewirebroadband.com] 3 Mbps x 3Mbps Symmetrical Ethernet (faster speeds available)	$300.00
Goose Lake Computing [www.gooselake.com] Up to 4.5 Mbps downstream service	$20.00
GorgeNet [www.gorge.net] Up to 1.5 Mbps downstream (faster speeds available).	$39.95
Oregon FAST.net [www.oregonfast.net] 5 to 10 Mbps downstream	$39.99
SandyNet [www.sandynet.org] Up to 5 Mbps downstream In-city WiFi Price	$19.95
SawNet [www.saw.net] 256 Kbps upstream, 256 Kbps downstream (faster speeds available).	$49.00

<u>Municipal / Consortia / Public-Private Partnership Providers</u>

Ashland Fiber Network [www.ashlandfiber.net] 1 Mbps upstream, 5 Mbps downstream "AFN Choice" (Other speeds and ISPs available)	$35.00
Eastern Oregon Telecom [www.eotnet.net] 1 Mbps upstream, 5 Mbps downstream (Speeds up to 20 Mbps available)	$49.90
MINET (Monmouth-Independence Network) [www.minetfiber.com] 1.5 Mbps upstream, 5Mbps downstream (Faster speeds available)	$41.00
Q-Life [qlife.net] Q-Life is a middle mile transport provider with independent ISPs providing end-user services. 192 Kbps upstream, 1.5 Mbps downstream (Faster speeds available)	$39.95

<u>Facilities based Competitive Access Providers</u>

CoastCom [www.coastcom.net] Business DSL Service – 2 Mbps upstream, 16 Mbps downstream (One year contract term)	$79.00

Douglas FastNet [www.douglasfast.net]	
5 Mbps synchronous (speeds up to 55 Mbps fiber optic available)	$39.95
Eastern Oregon Telecom [www.eotnet.com]	
1 Mbps upstream, 1.5 Mbps downstream DSL (speeds up to 20 Mbps available)	$34.90
10 Mbps symmetrical business class service (faster speeds available)	$200.00
Integra Telecom [www.integratelecom.com]	
768 Kbps upstream, 1.5 Mbps downstream DSL	$34.95
(Other speeds and Internet access services are available)	

Satellite Internet Access	Monthly Rate
DishNet [www.dish.com]	$39.99
1 Mbps upstream, 5 Mbps downstream	
HughesNet [www.hughesnet.com]	$49.99
1 Mbps upstream, 10 Mbps downstream (faster speeds available)	
WildBlue [www.wildblue.com]	$49.95
3 Mbps upstream, 12 Mbps downstream (faster speeds available)	

Monthly Rates are for base level services. It should be noted that bundled service and promotional discounted pricing is also widely available from service providers.

Though prices for broadband services in Oregon are competitive with other states, cost continues to be a barrier to adoption for many Oregonians. In 2012, the FCC announced changes to the agency's Lifeline program that will give greater broadband Internet access to low-income Americans. The FCC's Lifeline service has traditionally provided discounted rates for basic voice service for eligible subscribers. FCC Chair Julius Genachowski noted that this is an important reform, "Beginning the process of modernizing Lifeline from telephone service to broadband. Broadband has gone from being a luxury to a necessity in the 21st century, broadband Internet — wired and wireless — is the most transformative new technology since electricity. It's changing almost every aspect of our economy and our lives."
http://www.fcc.gov/guides/lifeline-and-link-affordable-telephone-service-income-eligible-consumers

Broadband Providers in Oregon

The following is a list of facility-based broadband providers that have supplied data for the Oregon Broadband Map. An asterisk before the Provider Name indicates that they are 'business-only' broadband Internet service providers. Those with an asterisk only provide services to business customers.

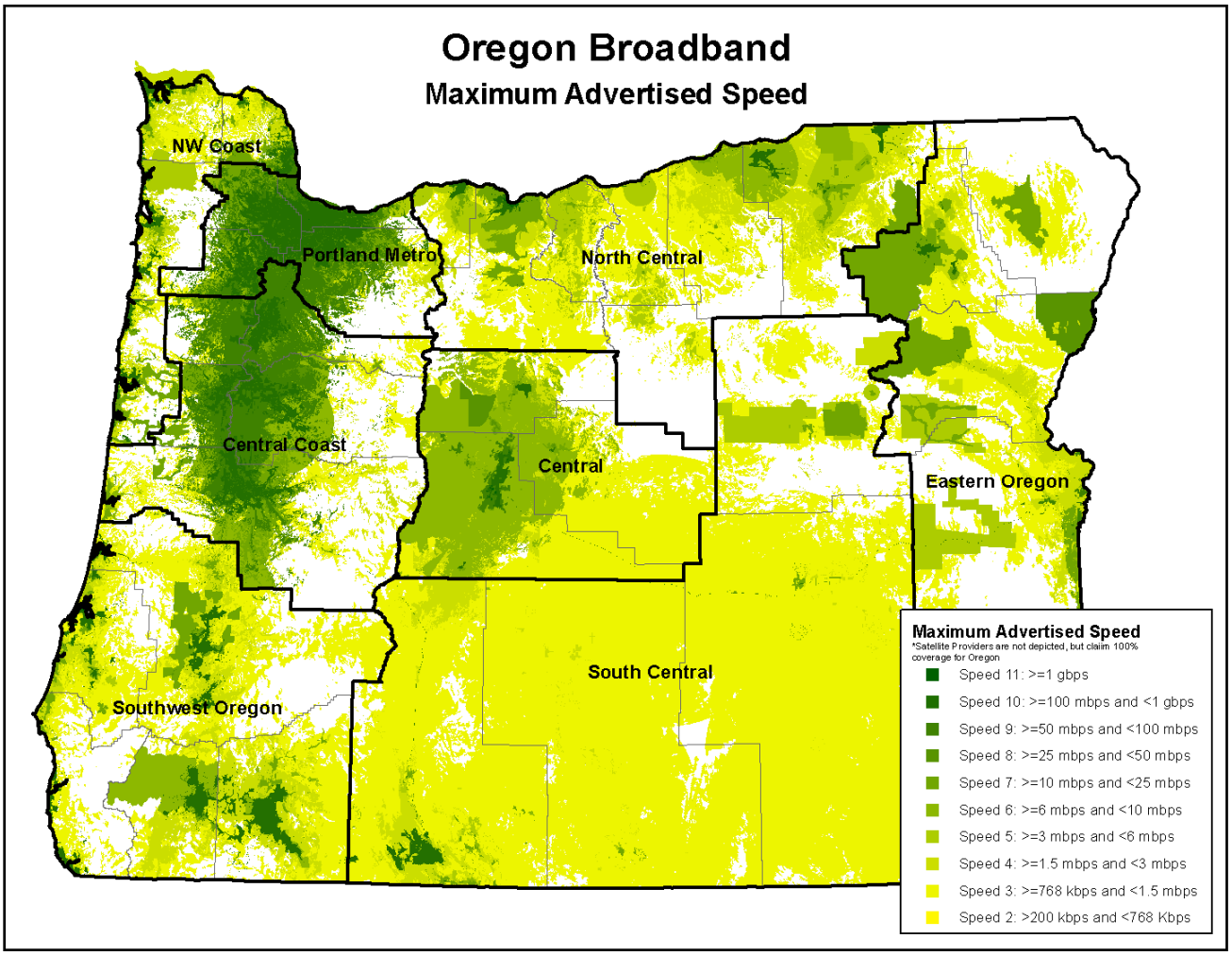
Provider Name	URL
*AboveNet Communications Inc.	http://www.abovenet.com
Alyrica	http://www.alyrica.net
Ashland Fiber Network	http://www.ashlandfiber.net
AT&T Mobility LLC	http://www.att.com
*Axxis Communications	http://www.axxistel.com
Beaver Creek Telephone Company	http://www.bctelco.com
BendBroadband	http://www.bendbroadband.com
Broadstripe LLC	http://www.broadstripe.com
Cableone	http://www.cableone.net
Cal-Ore Communications Inc.	http://www.cot.net
Canby Telcom	http://www.canbytel.com
Cascade Networks, Inc.	http://www.cascadenetworks.net
CenturyLink	http://www.centurylink.com
Chambers Cable	http://www.chamberscable.com
Charter Communications Inc.	http://www.charter-business.com/fiber-internet.aspx
City of Cascade-Locks	http://www.cascade-locks.or.us
Clear Creek Mutual Telephone Company	http://www.ccmtc.com
Clearwire	http://www.clearwire.com
CoastCom, Inc	http://www.coastcom.net
Coltontel	http://www.coltontel.com
Comcast	http://www.comcast.com
Communications Access Cooperative Holding Enterprise	http://hrec.coop/internet/index.htm
Comspan Communications Company	http://www.comspancomm.com/en
Country Vision Cable	http://www.countryvisioncable.com/
Covad Communications Company	http://www.covad.com
Crestview Cable	http://www.crestviewcable.net
Cricket Communications, Inc.	http://www.mycricket.com

Datavision Communications	http://www.dvcom.biz/home.html
Douglas FastNet	http://www.douglasfast.net
Eastern Oregon Net, Inc.	http://www.eoni.com
Eastern Oregon Telecom, LLC	http://www.eotnet.net
*Freewire Broadband LLC	http://www.gofreewire.com
Frontier Communications of Oregon	http://www.frontier.com
Gervais Telephone Company	http://www.gervaistel.com
Gorge Networks	http://new.gorge.net
helixtele.com	http://www.helixtel.com
HughesNet	http://www.hughesnet.com
*Integra Telecom	http://www.integratelecom.com
J & N Cable Systems, Inc.	http://www.jncable.net
*Level 3 Communications, LLC	http://www.level3.com
*LS Networks	http://www.lsnetworks.net
MINET	http://www.minetfiber.com
Molalla Communications Company	http://molalla.net
Monitor Cooperative Telephone Company	http://monitorcoop.com
Monroe Telephone	http://www.monroetel.com/
Mount Angel Telephone Company	http://www.mtangel.net
Nehalem Telecommunications Inc.	http://ww2.nehalemtel.net
New Edge Network, Inc.	http://www.newedgenetworks.com
North-State Telephone Co.	http://www.ortelco.net/nstc/index.html
OnlineNW	http://www.onlinenw.com
*ORCA Communications	http://www.orcacomm.com
Oregon Telephone Corporation	http://www.ortelco.net
OregonFast.net	http://www.oregonfast.net
Oregon-Idaho Utilities, Inc.	http://www.oiutelecom.net
PEAK Internet	http://www.casco.net/communications/
Pendleton Fiber Company	http://wtechlink.com
Peoples Telephone Company	http://www.sctcweb.com/PTC/index.php
Pine Telephone Systems, Inc.	http://www.pinetel.com
Pioneer Telephone Cooperative	http://www.pioneer.net
PocketiNet Communications Inc	http://www.pocketinet.com
QualityLife Intergovernmental Agency	http://www.qlife.net/

*Quantum Communications	http://www.quantum-networks.net/
Reliance Connects	http://www.relianceconnects.com/
RIO Networks	http://www.rionetworks.com/
Roome Telecommunications Inc.	http://www.rtinet.com/
Rural Network Services Inc	http://www.ruralnetwork.net/
SandyNet	http://www.ci.sandy.or.us/
SawNet	http://www.saw.net/
SCIO Mutual Telephone	http://www.smt-net.com
SCS Communications	http://www.sctcweb.com/SCS/index.php
Sprint	http://www.sprint.com
St Paul Telephone	http://www.stpaultel.com/
StarBand Communications	http://www.starband.com/
Stayton Cooperative Telephone Company	http://www.sctcweb.com/SCTC/index.php
Stephouse Networks	http://www.stephouse.net/
TDS Telecom	http://www.tdstelecom.com/
T-Mobile USA, Inc.	http://www.t-mobile.com
*TW Telecom of Oregon LLC	http://www.twtelecom.com/
Upward Access	http://www.upwardaccess.com/
Verizon Wireless	http://www.verizonwireless.com/b2c/index.html
Wave Broadband	http://www.wavebroadband.com
Webformix Company	http://www.webformix.com/
Whiz To Coho, Inc.	http://whiz.to/
WildBlue Communications, Inc.	http://www.wildblue.com
Wtechlink	http://wtechlink.com/
XO Communcations, Inc. (Affiliated Entity)	http://www.xo.com/

* Indicates that the provider serves only Businesses.

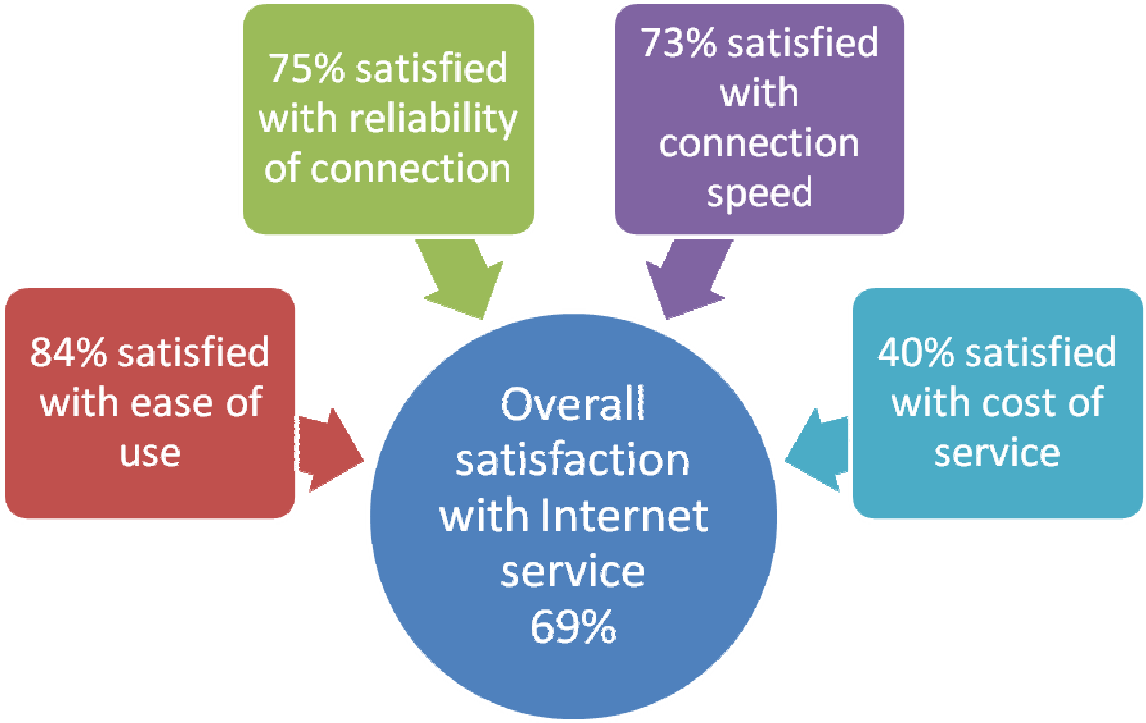
Broadband Performance
Oregon benefits from over one-hundred facilities based service providers offering services competitive in performance with service available in other states.



This map was produced on the Oregon Broadband Mapping Project website www.broadband.oregon.gov . Users may produce maps showing service availability, technology, and providers statewide and by region, county, city, tribal lands and down to specific addresses.

In July 2012, the FCC released its "Measuring Broadband America" report based on performance data collected in April 2012. U.S. broadband customers subscribe to service at an average of 14.3 Mbps, according to the report, an increase of 30% from the 11.1 Mbps average subscribed speed measured in 2011. The report also noted that broadband service providers were found to meet or exceed their advertised speeds. The full report may be found at http://www.fcc.gov/measuring-broadband-america/.

The Oregon Broadband Survey indicated that overall, Oregonians are generally satisfied with their home Internet service – 33% are very satisfied and 36% are satisfied.



Oregonian Overall Satisfaction with Internet Service

Broadband Trends

With the publishing of the National Broadband Plan (NBBP) and the 2011 FCC order reforming inter-carrier compensation (ICC) and the Universal Service Fund (USF), it is clear that the migration away from traditional telephone and copper based broadband delivery is well under way. We are rapidly seeing more and more services being delivered via Internet Protocol (IP) to include voice and video programming. The demand for IP video is the single greatest driver of bandwidth consumption and is spurring a rapid deployment of infrastructure all across the nation and here in Oregon. This increasing demand is no longer isolated to a person's home or business but is now becoming ubiquitous as smart phone adoption is increasing exponentially. This move toward a more mobile broadband population, partially encouraged by both the NBBP and the ICC/USF Reform Order, has created a demand for spectrum that will take years to play out and there is some question as to whether or not there is enough to meet the projected mobile data demand.

As the demand for spectrum becomes more pronounced and wireless providers off-load increasing amounts of data onto landline broadband networks to relieve wireless network

congestion, we expect the result will be additional, uncompensated pressure on landline based service providers. One likely outcome will be a move away from unlimited, speed-based Internet access to a metered access model. In other words, consumers will pay for what they use. This model is similar to what electric utilities use today with a small, monthly connection fee and then charges based on consumption.

Additionally, applications (ways that broadband is used) and storage of data are both migrating rapidly to "the cloud". Here in Oregon, we have seen this manifest itself with the construction of numerous data centers which create jobs and boost the state and local economies. As mentioned earlier in this report, Oregon's tax structure, climate, and geological stability make it an attractive place to locate data centers. We can expect that these opportunities will continue into the future.

Organizations around the globe are migrating their applications, and increasingly their services, into hosted data center environments, or "the cloud." The benefits of cloud based services are becoming increasingly apparent—businesses no longer have to worry about large up-front capital expenditures, unexpected and unbudgeted hardware upgrades, or technology obsolescence. Cloud based services are scalable, flexible and cost effective because the physical equipment is managed by a service provider in a secure, network rich, carrier-class environment.

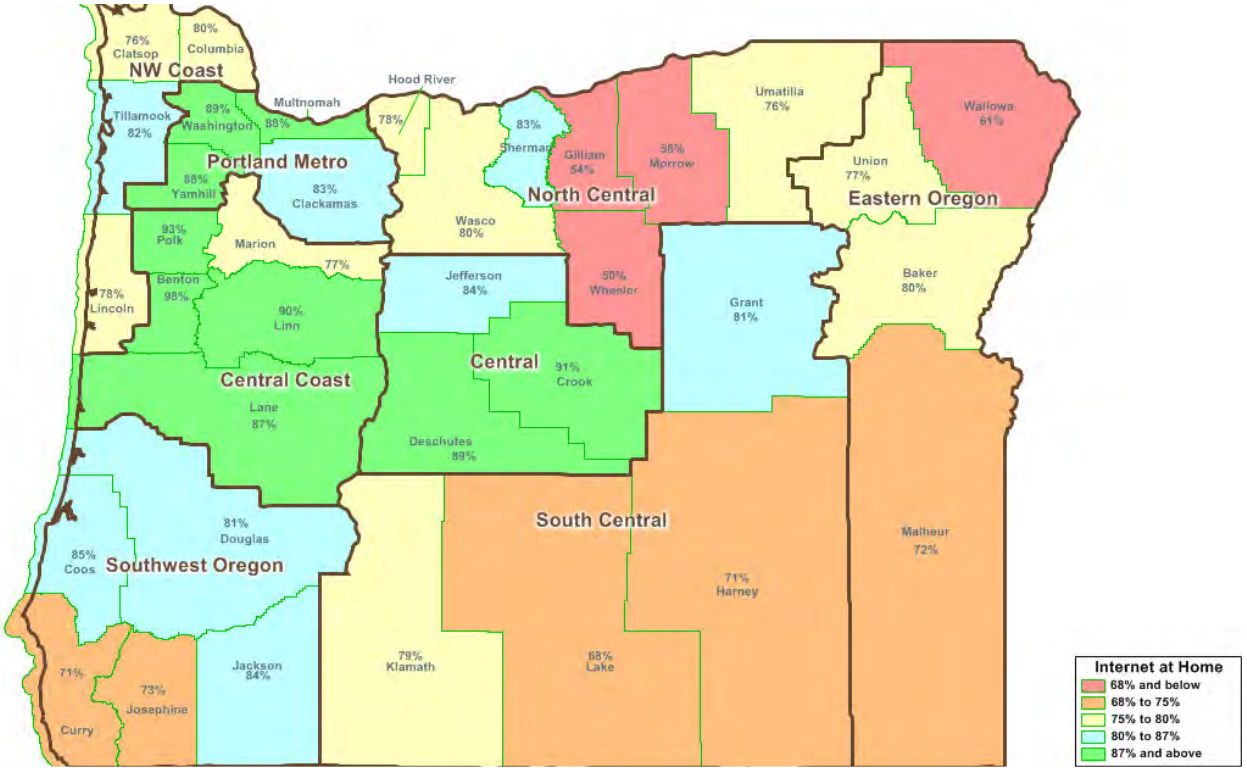
Along with the growth of cloud-based applications, there has been an exponentially growing participation in social media platforms such as Facebook, Twitter, Google+ and LinkedIn. These platforms are increasingly being used not just for personal communications, but for professional and organizational communication, promotion and interaction.

Not since the 1996 Telecom Act has such rapid transformation of the market taken place. Over the next several years we expect to continue to see rapid expansion of infrastructure, technological advancements, new services and increases in consumer demand.

Broadband Technology Adoption and Utilization in Oregon

According to the Oregon Broadband Adoption Survey, Oregon ranks highly compared to other states in both broadband availability and utilization.

- Nearly nine out of ten (88%) adult Oregonians have a computer compared to 78% nationally.
- Almost all (97%) of those with a computer use the Internet, and more than half (53%) are "Heavy" or "Power" users of the Internet, having used the Internet for nine or more activities in the past month.
- The most common Internet activities are checking e-mail, finding local businesses and events, researching prices or product information, reading or watching the news, and online banking.
- 97% of Internet users utilize high-speed broadband access rather than a dial-up connection.
- Computer and Internet use are less common among less educated, lower-income, and older adults living without children in the household. Oregon's broadband adoption rate far exceeds the national average—82% compared to 68%.
- Although Oregonians' broadband adoption outpaces many other states, “less-wired” segments, or high percentages of low-adopting segments, occur in some regions, whereas Portland is the “most wired," pushing the overall adoption rate up.
  [Oregon Broadband Survey Report]



Map of Internet Use at Home by County

Other key findings of the Oregon Broadband Survey included the following.

- Those living in Eastern Oregon are the least likely to personally have a computer. Nearly twice as many residents in this region do not have a computer compared to the statewide average. Computer ownership is also well below average in North Central and South Central Oregon and along the Northwest Coast. These are all geographic areas with large rural areas and a less affluent population base.

- Those living in the Willamette / Central Coast, Central Oregon, and Portland Metro regions are the most likely to personally have a computer.

- More than one-third of Oregon adults without a high school diploma do not have a computer.

- Nearly two out of five Oregon adults with household incomes below $20,000 do not have a computer. However, while two-thirds of those in this income category without a high school diploma do not have a computer, only 26% of those with a high school diploma do not have a computer.

- Nearly one out of four (23%) Oregonians who are 65 and older do not personally have a computer. Among those who live alone, this figure increases to more than two out of five (41%).

- Nearly one out of four (24%) do not own a computer. Among those with limited English proficiency (that is, speak English as a second language or do not speak English), this figure increases to 64%.

- Only three out of five Oregonians without a high school education and 69% of those with a high school diploma have broadband at home, compared with 84% to 92% of those with college backgrounds or degrees.

- Less than two out of three Oregonians with household incomes below $30,000 have broadband Internet at home.

The Oregon Broadband Survey suggested that the cost of equipment and broadband services are major barriers to adoption.

- Three major factors represent the primary reasons given for not using the Internet: (1) cost, (2) discomfort with the Internet compounded or manifested by a lack of perceived need, and (3) access to service elsewhere or perceived lack of residential Internet Service Providers (ISPs).
- While cost is the primary barrier for all non-adopters, it is a major factor among those with household incomes below $30,000.
- Activation / installation fees are a greater factor than monthly cost.

- Availability of service is not generally seen as a barrier, except for those living in some communities along the Northwest Coast, in the Willamette Valley or Central Coast, Central Oregon, and South Central Oregon. [Oregon Broadband Survey]

The Oregon Broadband Survey report concludes that while Oregon ranks high in broadband service availability and in broadband adoption and utilization compared to other states and to the nation as a whole, it is known that a digital divide continues to exist in Oregon, and that divide cannot be successfully addressed without understanding the underlying conditions that prevent or deter Oregonians from accessing broadband service and utilizing the array of applications it offers from which they can benefit. The survey was conducted at the end of 2010 and the entire report may be viewed at www.broadband.oregon.gov.

"The lack of a broadband connection puts people at a profound disadvantage. People without access, who are likely to be lower on the economic ladder, fall further and further behind, widening the "digital divide" between rich and poor. When the NTIA asked those who did not subscribe to explain, 46 percent said "don't need/not interested;" 25 percent said it was too expensive; and 14 percent said it was because they didn't have a computer." http://investigativereportingworkshop.org/investigations/broadband-adoption/story/poverty-stretches-digital-divide/

Customer Service

It has been noted that Telecommunications is consistently at the top of Oregon Department of Justice's Consumer Complaints list. In 211, Telecommunications ranked number two behind Telemarketing Calls (http://www.doj.state.or.us/consumer/pdf/top_ten_complaints_2011.pdf) . Oregonians regularly contact the Public Utility Commission and the Oregon Department of Justice regarding broadband and other telecommunications service issues. In part, this is due to the high level of market penetration by Telecommunications service providers and the large number of consumers "touched" by Telecommunications service providers. Never the less, it underscores the challenge of providing excellent customer service and care in this increasingly essential service industry. Excellent customer service and care will promote broadband adoption and utilization.

Telehealth

Broadband access is currently being used in Oregon to improve healthcare outcomes. Broadband facilitates delivery of healthcare by extending the reach of a limited resource of providers, thus increasing access to care geographically and temporally, in both acute care and chronic care situations. Broadband connectivity also assists electronic health record data handling thus enhancing care coordination.

The increased use of broadband enabled Telehealth applications is in line with the goals of the Institute for Healthcare Improvement (IHI) Triple Aim, a framework that describes an approach to optimizing health system performance. It is IHI's belief that new designs must be developed to simultaneously pursue three dimensions, the "Triple Aim":

- Improving the patient experience of care (including quality and satisfaction);
- Improving the health of populations; and
- Reducing the per capita cost of health care.

http://www.ihi.org/offerings/Initiatives/TripleAim/Pages/default.aspx

The needs for systematic change in our healthcare system are beyond the scope of this report, but it is clear that Telehealth is an important tool as we move forward with these reforms. Oregon is currently undergoing a health care restructuring process with a focus on the emerging strategy of the Coordinated Care Organizations (CCOs). Oregon has a unique opportunity to redefine the health care delivery model highlighted by its recent federal Medicaid waiver, granting $1.9 billion from the federal government to Oregon to retool how health care is delivered to the poor. Recent infrastructure development and utilization of Telehealth, electronic medical records, and health IT applications in general have positioned these components to be major strategies of that new model. This process is shining a national spotlight on Oregon.

The Telehealth Alliance of Oregon (www.ortelehealth.org) has done an assessment of how Telehealth aligns with Oregon's new CCOs. Telehealth can be incorporated in a health care strategy to provide access to healthcare providers that are not currently available in many areas of the state. With the majority of subspecialists working in the Portland metropolitan area, the rest of the state has varying degrees of local access to specialists in various fields. Telehealth can provide convenient and efficient access to healthcare providers regardless of physical location enhancing the quality of care.

An example of the need is demonstrated by the situation with regards to pediatric emergency care. While 27% of all Emergency Room visits are by children, only 6% of Emergency Rooms in the United States have all necessary pediatric resources to provide this specialty care (*Emergency Care for Children: Growing Pains* – Institute of Medicine Report 2006). Exacerbating the situation in Oregon is that the state has only two Pediatric Intensive Care facilities, both located in Portland. These centers support a referral area of over 100,000 square miles and as a result transport more than 1,000 children per year. The recurring dilemma for the rural hospital ER doctor is whether to transport an ill child to Portland; a decision with a great impact on the patient, parents and transport team including significant financial impacts on the family, the healthcare system and local economy. Telemedicine enhances the effectiveness of decision-making, on-site patient care and outcomes. Telemedicine has helped to avoid unnecessary patient transports, expense, and hardship with documented cost savings.

This section of the report highlights the progress of the Oregon Health Network (OHN), the development of the Health Information Exchange and efforts to improve Telehealth applications. Such uses of broadband are focused on improving the overall health of Americans while at the same time reducing cost. The FCC's National Broadband Plan (www.broadband.gov/plan/10-healthcare) identifies many of the opportunities and ongoing cost issues: "Health care already accounts for 17% of U.S. gross domestic product (GDP); by 2020, it will top 20%. America is aging—by 2040, there will be twice as many Americans older than 65 as there are today—and health care costs will likely increase as a consequence." Despite these rising costs, the overall health of Americans is lagging behind the rest of the world in many areas. "In addition, the

United States has a health care supply problem. The country is expected to have a shortage of tens of thousands of physicians by 2020. An aging physician workforce that is nearing retirement and working fewer hours exacerbates the situation. Supply will be further strained if previously uninsured Americans enter the care delivery system." Broadband offers many opportunities, but alone "is not a panacea. However, there is a developing set of broadband-enabled solutions that can play an important role in the transformation required to address these issues. These solutions, usually grouped under the name health information technology (IT), offer the potential to improve health care outcomes while simultaneously controlling costs and extending the reach of the limited pool of health care professionals. Furthermore, as a major area of innovation and entrepreneurial activity, the health IT industry can serve as an engine for job creation and global competitiveness."

We agree especially with the FCC assessment that "in its traditional role, the FCC would evaluate this challenge primarily through a network connectivity perspective. However, it is the ecosystem of networks, applications, devices and individual actions that drives value, not just the network itself. It is imperative to focus on adoption challenges, and specifically the government decisions that influence the system in which private actors operate, if America is to realize the enormous potential of broadband-enabled health IT." Further successful build out in Oregon is dependent not only on the efforts of OHN to create the infrastructure, but as importantly on improving the conditions of the end users, both health care providers and patients.

Telemedicine

Telemedicine, the interactive delivery of health care over distance using advances in telecommunication technology (i.e. video-conferencing equipment), is an evolving model for care delivery that increases access, improve outcomes, and reduces costs. By improving access, both geographically and temporally, telemedicine is a potentially transformative use of technology, allowing earlier involvement of specialists in acute, life-threatening situations, as well as for many other in-person health interactions that while not urgent, are not efficiently occurring, impeded by the current delivery system. Access to medically underserved areas, both rural and urban, is improved, with resultant improved outcomes and cost savings from reduced patient transports.

Current Telemedicine activities in the state are as listed below. There has been significant growth in activity in just the two years since our last report. All health systems queried also identified great interest in adding additional facilities and medical specialties in the near future.

Oregon Health and Science University (OHSU)

OHSU is delivering acute care Telemedicine including Pediatric Critical Care, Neonatology, and Stroke Neurology to a number of hospitals (see map below). Services delivered depend on local resources and needs.

The following hospitals are part of the OHSU Telemedicine Network for acute services:

- Sacred Heart Medical Center, Riverbend and University District, Springfield-Eugene, OR
- Mercy Medical Center, Roseburg, OR
- Asante Rogue Regional Medical Center, Medford. OR

- Salem Hospital, Salem, OR
- Silverton Hospital, Silverton, OR
- Bay Area Hospital, Coos Bay, OR
- Columbia Memorial Hospital, Astoria, OR
- Mid-Columbia Medical Center, The Dalles, OR
- Willamette Valley Medical Center, McMinnville, OR
- Adventist Medical Center, Portland, OR
- Grande Ronde Hospital, LaGrande, OR

Scheduled Tele-Psychiatry services are being delivered to:

- Snake River Correctional Institution, Ontario, OR
- Yellowhawk Tribal Health Center, Umatilla, OR
- Hurricane Katrina Victims in New Orleans, LA

OHSU is additionally piloting programs to provide telemedicine in ambulatory care settings (at Grande Ronde Hospital, La Grande, OR), pediatric hospice services to the home, and in-home monitoring for patients discharged with congestive heart failure with a prime objective of decreasing re-admission rates.

Additional information and links to several telehealth videos are available at:
http://www.ohsu.edu/xd/health/for-healthcare-professionals/telemedicine-network.cfm

Providence Health and Services

Providence is delivering acute care Telemedicine including Adult Critical Care and Stroke Neurology to a number of hospitals (see map below). Services delivered depend on local resources and needs.

The following hospitals are part of the Providence Telemedicine Network:

- Curry Hospital, Gold Beach, OR
- Good Shepherd Medical Center, Hermiston, OR
- Ocean Beach Hospital, Ilwaco, WA
- Lake District Hospital, Lakeview, OR
- Pioneer Memorial Hospital, Heppner, OR
- Providence Hood River Memorial Hospital, Hood River, OR
- Providence Medford Medical Center, Medford, OR
- Providence Milwaukie Hospital, Milwaukie, OR
- Providence Newberg Medical Center, Newberg, OR
- Providence Portland Medical Center, Portland, OR
- Providence St. Mary Medical Center, Walla Walla, WA
- Providence St. Vincent Medical Center, Portland, OR
- Providence Seaside Hospital, Seaside, OR
- Providence Willamette Falls Medical Center, Oregon City, OR
- Silverton Hospital, Silverton, OR
- Sky Lakes Medical Center, Klamath Falls, OR
- St. Anthony Hospital, Pendleton, OR
- Tillamook County General Hospital, Tillamook, OR
- Wallowa Memorial Hospital, Enterprise, OR

Oregon Telemedicine Sites

Additional information and links to several telehealth videos are available at: http://oregon.providence.org/patients/programs/providence-telemedicine-network/Pages/default.aspx

Legacy Health System
Legacy is delivering acute care Telemedicine including Pediatric Critical Care and Stroke Neurology within the 6 hospital Legacy System including:

- Legacy Emanuel Medical Center and Randall Children's Hospital, Portland, OR
- Legacy Good Samaritan Medical Center, Portland, OR
- Legacy Meridian Park Medical Center, Tualatin, OR
- Legacy Mount Hood Medical Center, Gresham, OR
- Legacy Salmon Creek Medical Center, Vancouver, WA

The Northwest Tribal Vision Project delivers Tele-Ophthalmology as a joint venture between Legacy Good Samaritan Devers Eye Institute, Oregon Health and Science University's Prevention Research Center, the Northwest Portland Area Indian Health Board, and participating tribes. This project is assessing for diabetic retinopathy in Native Americans in Pendleton, Oregon and Wichita, Kansas.

PeaceHealth
PeaceHealth is delivering Telemedicine as below:

- Geriatric services between the Gerontology Institute in Oregon in Eugene and PeaceHealth Southeast Alaska in Ketchikan
- Telestroke, Mental Health Crisis Intervention and outpatient Psychiatry from PeaceHealth Sacred Heart Medical Center in Eugene to Peace Harbor in Florence
- Pediatric consultations between the Emergency Department at Cottage Grove Community Hospital and Sacred Heart at RiverBend.
- Language interpretation services to more than 40 facilities in Lane County.
- Telemedicine services from a clinic in Roseburg to the Oregon Bariatric Center at Sacred Heart at RiverBend.

Grande Ronde Hospital
Grande Ronde Hospital is a 25-bed critical access hospital located in La Grande that has successfully increased its patients' access to care by creating telemedicine connections for:

- Neonatology, Maternal Fetal Medicine, Perioperative Training/Interactive Surgery from St. Alphonsus, Boise, ID
- Intensive Care Consultations from Advanced ICU Care, St. Louis MO
- Cardiology from Idaho Emergency Physicians and Idaho Heart Care
- Oncology and Dermatology from Walla Walla, WA
- Foreign and Sign Language Interpretation from Portland, OR and Seattle, WA

In 2011, Grande Ronde Hospital' Telemedicine Program was awarded the 6th annual Health Devices Achievement Award from the ECRI Institute, an independent nonprofit that researches the best approaches to improving patient care.

"Connected Health" – Remote Health Management
Long-term, chronic conditions create many challenges—for the patients who have them, as well as for their immediate caregivers and the healthcare professionals responsible for their care. Remote health management (RHM) connects these patients and caregivers in a new care model via broadband connectivity. Combining standard physiologic monitoring equipment with sophisticated new devices and social science informed algorithms, physicians are better able to track chronic disease progress, thereby supporting their patients earlier before conditions worsen to the extreme of needed emergent care.

Studies show that RHM provides real, measurable benefits for chronic patients and their clinical teams, as well as for the healthcare organizations that face the ever-increasing challenges of chronic care. RHM can help:

- Reduce hospitalization and readmission rates. RHM enables clinical staff to identify changes in patients' health before conditions become acute (The Approaching Telehealth Revolution in Home Care." Telemedicine Information Exchange, March 2009).

- Increase patient compliance with disease management programs. RHM has been shown to increase patient engagement and compliance ("Connected Care: Technology-enabled Care at Home." Deloitte, March 2008).

- Offer cost-effective extended care to more patients. By enabling clinicians to monitor patients without in-person visits, RHM allows them to extend care to more patients, maintain consistent and frequent contact with them, and provide timely interventions ("The Approaching Telehealth Revolution in Home Care." Telemedicine Information Exchange, March 2009).

The Oregon Center for Aging and Technology (ORCATECH)

ORCATECH is a unique academic-industry-community collaboration involving Oregon Health & Science University and companies such as Intel, Inc. and SPRY Learning Company (Portland). ORCATECH was formally established in 2004 through a National Institute on Aging Roybal Center grant to study the use of "intelligent systems" to detect aging-related changes that may impair a person's ability to live independently. ORCATECH Director Jeffrey Kaye, M.D., explains that around-the-clock, in-home assessment might one day reveal possible signs of cognitive decline, such as changes in walking speed or dressing speed. This would allow clinicians to address emerging problems earlier in the disease process than they can today. "The traditional model for studying cognitive change is to identify volunteers and follow them over time, using assessment batteries that are most often administered annually," says Dr. Kaye, who also directs the Layton Aging and Alzheimer's Disease Center at OHSU. "Typically in our field, we bring people into a clinic once or twice a year, evaluate them, and then they go home. It can take years to map the trajectory of cognitive decline, and the testing is not done in people's natural environments, so we're not seeing individuals' normal daily ups and downs."

ORCATECH studies remote health monitoring in simulated and real life settings:

- The Point of Care Laboratory is designed to simulate an apartment and is outfitted with motion sensors, a user computer and a sensor computer in addition to new technologies that are being tested. All technologies that get deployed are tested in this space prior to being released to homes of the participants.
- The Living Laboratory is a population of community-dwelling seniors who have agreed to participate on an ongoing basis in research on technology-based health monitoring, intervention, and support of independent aging. The Living Lab is used to explore technologies to support independent living, to assess new behavioral markers, and to evaluate approaches for assessing neurological and other relevant health changes.

Asante Health System

Asante Health System was awarded a HRSA Rural Services Outreach grant in 2009, to work with home care agencies from four counties to reduce emergent care visits and to prevent unnecessary hospitalizations for patients with congestive heart failure and chronic obstructive pulmonary disease (COPD). The program is administered from Three Rivers Community Hospital in Grants Pass and has served 101 patients in the past year in Curry, Douglas, Josephine, and Siskiyou (northern CA) counties. The program provides remote monitoring

including standard health measurements such as blood pressure and weight, as well as video conferencing and health coaching.

Continua Health Alliance
Continua Health Alliance in Beaverton is another Oregon entity involved in RHM. It is a non-profit open industry coalition of leading healthcare and technology companies joining in collaboration to improve the quality of personal healthcare. With more than 220 member companies around the world, Continua's mission is to establish a system of interoperable personal telehealth solutions that fosters independence and empowers people and organizations to better manage health and wellness.

Continua's objectives include:

- Developing design guidelines that will enable vendors to build interoperable sensors, home networks, telehealth platforms, and health and wellness services.
- Establishing a product certification program with a consumer-recognizable logo signifying the promise of interoperability across certified products.
- Collaborating with government regulatory agencies to provide methods for safe and effective management of diverse vendor solutions.
- Working with leaders in the health care industries to develop new ways to address the costs of providing personal telehealth systems.

These many initiatives in the state demonstrate the adoption and utilization of broadband for telehealth and telemedicine applications. The state of Oregon has made significant strides in establishing a strong broadband infrastructure for healthcare; leading the way have been the efforts of the Oregon Health Network to build the network platform, as well a nationally recognized effort in Health Information Technology. These efforts are not complete and will continue to require ongoing investments to optimize. And it is on this sound backbone that transformative healthcare models will grow, including "Connected-Health" and Telemedicine. Oregon has the infrastructure and players to lead the country in this area, as demonstrated by the national recognition and the federal dollars we've thus far been able to attract. Barriers remain but there is a huge opportunity to utilize broadband to further improve healthcare for Oregonians in a meaningful way.

<u>Barriers to Broadband Utilization in Healthcare</u>
Overall:

- Proof of concept, return on investment
- Support for operational overhead for implementation and ongoing coordination

Technology:

- Quality broadband access
- Interoperability of technology, whether telemedicine, remote health monitoring equipment, or electronic health records
- Cost of technology, again for all areas

Providers:

- Provider knowledge of, access to, and comfort with HIT and telemedicine technology
- Adequacy of provider workforce capacity (both with and without Telehealth)
- Provider Reimbursement, especially with regards to rules for Medicare reimbursement which are being addressed at a federal level and Oregon Medicaid managed care plans (both of which are not addressed by Senate Bill 24)
- Sustainability and funding

Health Systems and Health Care Facilities:

- Cooperation across health systems with regards to equipment (especially with respect to Stark Law Issues) to reduce redundancy and inefficiencies as Telehealth expands
- Credentialing and Privileging, lack of uniformity across health systems within the state and evolving federal rules from the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) and the Centers for Medicare & Medicaid Services (CMS)
- Sustainability and funding, across the spectrum from large health systems to small critical access hospitals and rural clinics

Health Information Exchange (HIE) – Strategic Plan for Oregon Health Information Technology

The Health Information Technology Oversight Council (HITOC) is a statutory body of Governor-appointed, Senate-confirmed citizens, tasked with setting goals and developing a strategic health information technology plan for the state, as well as monitoring progress in achieving those goals and providing oversight for the implementation of the plan. HITOC is coordinating Oregon's public and private statewide efforts in electronic health records adoption and the development of a statewide system for electronic health information exchange. HITOC has helped Oregon meet federal requirements so that providers are eligible for millions of federal health information technology stimulus dollars. HITOC builds on the past work of the Health Information Infrastructure Advisory Committee (HIIAC) and the Health Information Security & Privacy Collaborative (HISPC).

HITOC has developed a Strategic Plan for Oregon Health Information Technology.

Priority Areas for the Strategic Plan:

- Health Information Exchange
- Electronic Health Record adoption
- Telehealth
- Data Analytics
- Technical Assistance
- Health IT workforce development

The plan addresses methods for high-capacity secure communications between health care service providers, educators, and patients.

Key elements of the plan include the following.

- A proposed new health IT fund, that would support such things as health information exchange and adoption of electronic health records by providers who are not eligible for federal EHR incentive payments.
- A consumer engagement program to develop materials for providers and to help consumers and patients understand their personal health record options and ways they can benefit from health IT.
- Improve interoperability among diverse organizations and their information systems, relying in part of the widespread use of Direct Secure Messaging and action by emerging Coordinated Care Organizations.
- Set up conversations within Oregon about standards development to increase interoperability.
- Encourage the Oregon Health Authority and Department of Human Services to develop a three-year technology plan based on a unified enterprise architecture design and national standards.
- Extend technical assistance to small, rural and other providers that have not yet adopted health IT or need help incorporating it into their practices' workflow and using it to improve care.
- Develop a data strategy to streamline electronic provider data reporting and carry out pilot programs that demonstrate measurable results.

The Proposed Strategies in the Plan are:

- Establish financial support for critical health IT infrastructure through a Health IT Fund
- Advance the value of HIT for consumers
- Focus on interoperability as a key component to drive public and private HIT adoption
- Embrace an enterprise architecture approach to state HIT systems
- Encourage HIT in emerging care systems that have alternate payment structures
- Extend technical assistance availability
- Develop a data strategy for statewide analytics
- Coordinate the efforts of all HIT-related initiatives in Oregon
- Use HIT to advance population health

Strategic planning for Health IT will be an ongoing process due to the dynamic nature of the technologies and the strong national focus on healthcare delivery and funding models. The complete HITOC plan may be viewed at www.healthit.oregon.gov.

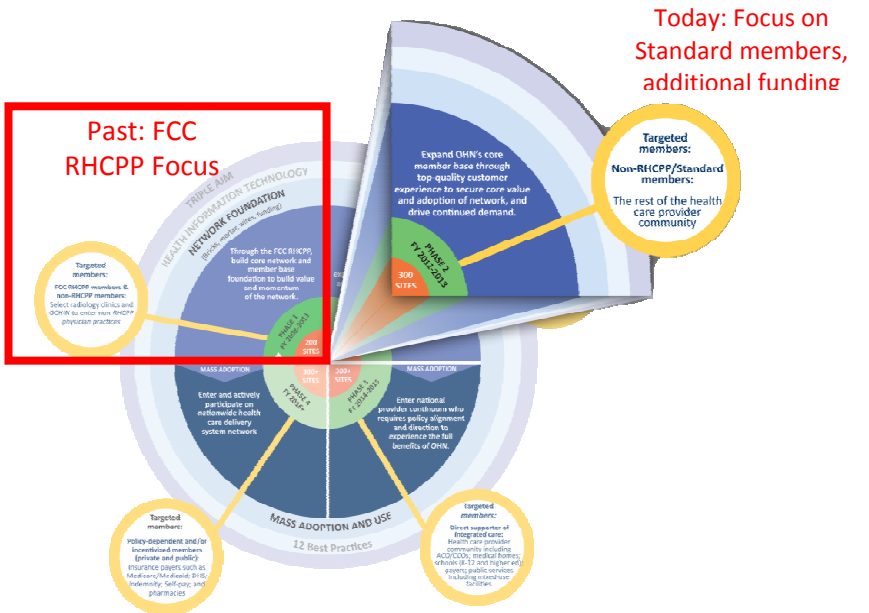
Oregon's Healthcare Broadband Infrastructure – the Oregon Health Network

The Oregon Health Network (OHN), a 501(c)(3) membership-based organization that was founded in 2007, has created Oregon's only statewide health care "highway" designed to support all Oregon health care providers and educators in delivering the next generation of patient-centered health care. With seven and one-half full-time employees and four core offerings (connectivity with a managed network; hosted services like teleconferencing; health care IT best practices; and regional, state, and federal advocacy), OHN helps providers serve the goals of the "Triple Aim:" improved patient experience, improved population health, and reduced costs.

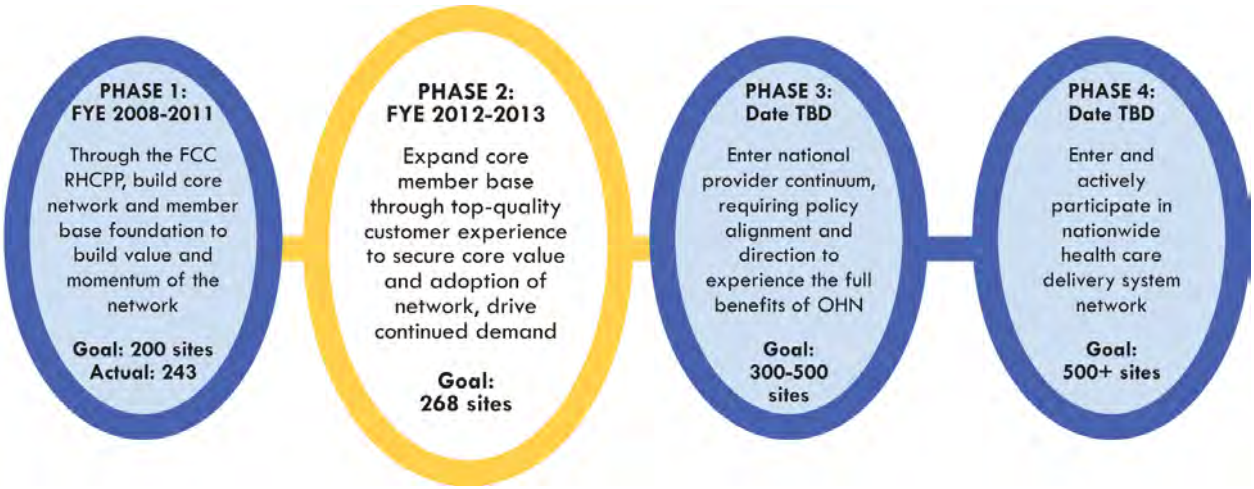
Focusing on how health information technology (HIT) can provide greater integrated care, OHN serves anyone who is on the continuum of care for patients: doctors, educators, nurses, pharmacists, specialists, and more. OHN now connects over 230 providers and educators across the state.

OHN first began with phase one of its growth plan, helping hospitals, clinics, and community colleges in 2007 with Federal Communications Commission (FCC) subsidies for the Rural Health Care Pilot Program (RHCPP) and a grant from the Oregon Department of Community Colleges and Workforce Development (ODCCWD). With these funds, totaling $20.2M, OHN was able to provide the broadband infrastructure, and other key services, needed to help all Oregonians gain equal access to the best possible health care, regardless of their location. OHN is one of the sixth largest, and most mature, projects in the 50 remaining RHCPP projects nationwide. The five largest RHCPP projects are statewide health networks in the country located in California, Colorado, Oregon, South Carolina, and West Virginia.

OHN provides tele-stroke, tele-psychiatry, tele-cardiology, tele-dermatology, radiology/PACS/image transfer, continued medical education, and prenatal/Pediatric ICU/Neonatal ICU services over its network.
OHN currently connects 230 member sites statewide. With funding for member participants of the FCC and ODCCWD programs ending in June of 2014, OHN is now well into phase two of its growth, targeting all health care providers, including those who were not eligible for (or



weren't ready to receive) funding from the FCC RHCPP to connect to OHN. In addition, OHN is focusing upon continued and improved FCC funding for members of its consortium network, and OHN has recently filed comments with the FCC on the upcoming Rural Health Care Reform proceedings. These comments encourage the FCC to provide continued and expanded coverage to urban and non-profit providers, including ongoing support of OHN's Network Operations Center (NOC).



OHN's future plans include three main areas of growth

- **Membership:** Enhancing the network's critical mass through increased membership participation
- **Value & Use:** Enabling the use of the network to support current and future health IT
- applications, services, and delivery models – particularly for Oregon's Coordinated Care Organizations (CCOs)
- **Sustainability:** Ensuring the long-term financial, programmatic, and staffing sustainability requirements to support OHN post-2014, when the FCC subsidy ends

On August 13, 2012, the FCC's Wireline Competition Bureau issued a staff report evaluating the lessons learned from the Rural Health Care Pilot Program. Those key lessons included the following.

- Broadband health care networks improve the quality and reduce the cost of delivering health care in rural areas
- Consortium applications are more efficient
- Bulk buying plus competitive bidding is a powerful combination
- Urban sites are key members of rural health care provider networks
- Most health care providers do not have the technical expertise to manage broadband networks and do not want to own such networks
- Funding challenges remain for rural health care providers

More information about the Oregon Health Network can be found in Appendix B and at the OHN's website at www.oregonhealthnet.org.

Energy Management

This section of the report summarizes actions taken to date by electric and gas utilities with Oregon customers to deploy broadband in Oregon. We have focused on broadband uses related to controlling "mission-critical" functions that support monitoring and managing flows of energy from where they are produced to where they are consumed. We have excluded from this report broadband applications that are not considered mission-critical, such as, office email and administrative functions.

Energy management applications are widely referred to as the Smart Grid. The Oregon Public Utilities Commission (OPUC) defined Smart Grid as follows: "Smart grid investments are utility investments in technology with two-way communication capability that will (I) improve the control and operation of the utility's transmission or distribution system, and (2) provide consumers information about their electricity use and its cost and enable them to respond to price signals from the utility either by using programmable appliances or by manually managing their energy use." This definition was adopted for the purpose of defining the scope of Smart Grid investments that the electric utilities regulated by the OPUC must submit in accordance with OPUC Order 12-158.

Policy makers have recognized the strategic importance of modernizing the electrical grid. The Energy Independence and Security Act of 2007 (EISA) established Smart Grid as an objective of national policy. Further, the ARRA devoted $4.5 billion to accelerating standardization and deployment of SG. The Electric Power Research Institute (EPRI) estimates that the U.S. will spend $165 billion over the next 20 years building the Smart Grid.

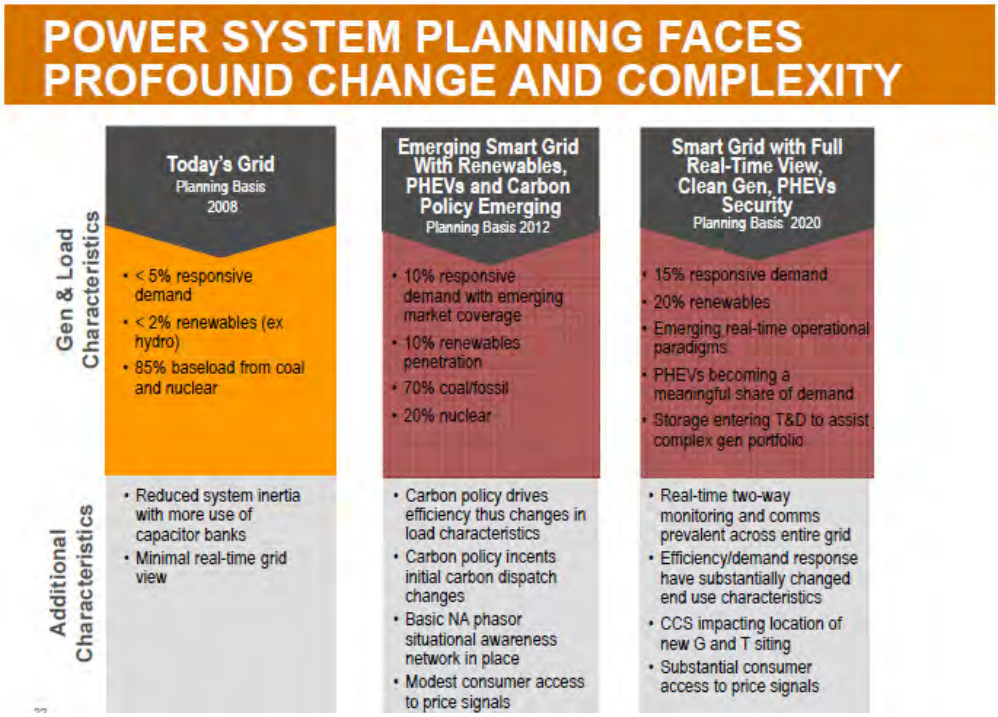
Smart Grid promises a future grid that better coordinates disbursed electric generating sources, through transmission and distribution investments. As the SG Report indicates, "The move to a smarter grid promises to change the industry's entire business model and its relationship with all stakeholders, involving and affecting utilities, regulators, energy service providers, technology and automation vendors and all consumers of electric power."

Goals for Smart Grid include:

- A more affordable electric system
- Fewer environmental impacts
- Better electrical power reliability
- Maintain our global competitiveness
- Improved integration of disbursed renewable resources with traditional central station energy resources
- Increased customer control over the amount and timing of the electrical use

Broadband is necessary infrastructure for the implementation of Smart Grid. The Federal Communications Commission (FCC) has recognized this and holds that broadband is a necessary component of Smart Grid. The National Broadband Plan recommends that states should require electric utilities to provide consumers access to, and control of, their digital energy information, including real-time information from smart meters, historical consumption, price, and bill data over the Internet. If states fail to develop reasonable policies, the Broadband Plan recommends

that Congress should consider national legislation to address consumer privacy and the accessibility of energy data.



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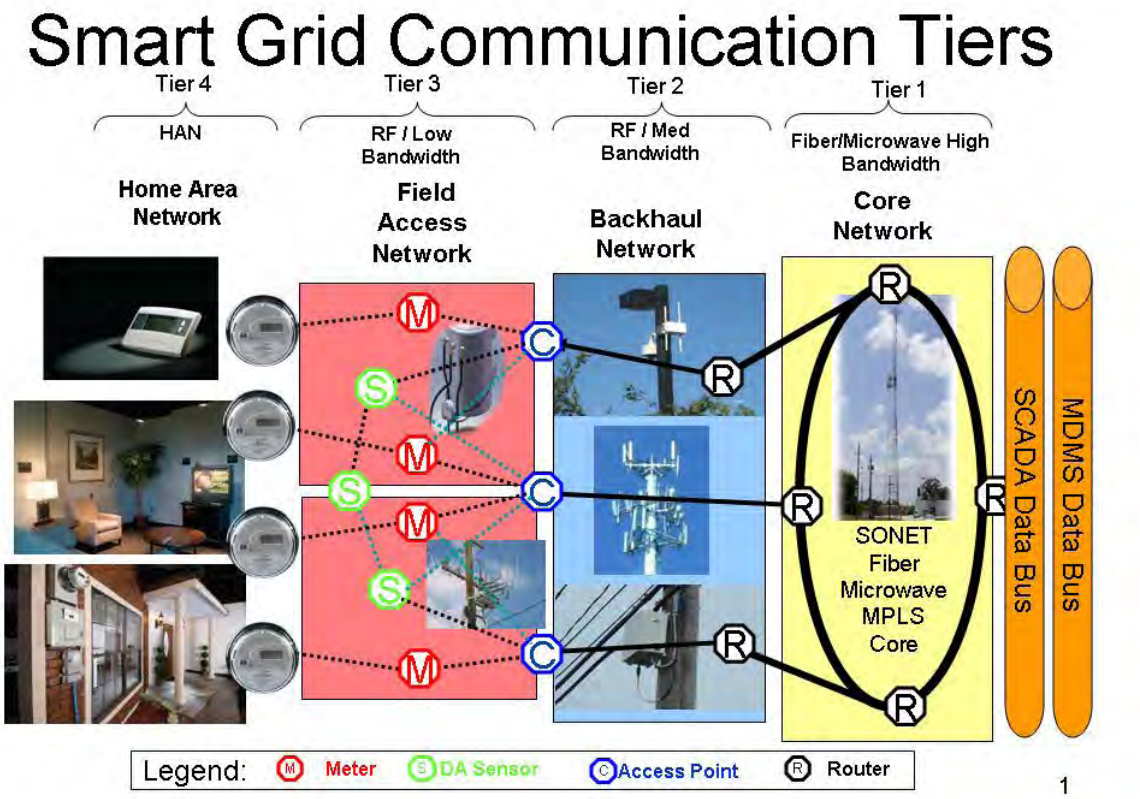
The FCC describes broadband as the connective tissue between various parts of a digitally integrated system which will include elements such as, Smart meters at both home and work locations that allow for two-way communication and can significantly expand end-user control of energy use; Outage management systems, Energy management systems, New sensing technologies, such as synchrophasors (equipment that monitors power flows very rapidly and assists in doing a better job of maintaining the grid).

The following schematic developed by Excelon Corporation illustrates where broadband fits in the communications scheme for Smart Grid deployment in the electric sector.



Status of Broadband Deployment among Electric Utilities Serving Oregon Customers

The Staff of the Oregon Public Utility Commission (OPUC) with assistance from OBAC member Dave Sabala of Douglas Electric Cooperative developed and distributed a survey of broadband capabilities to all electric utilities serving Oregon customers. The three electric investor owned utilities (IOUs) with Oregon customers are: Portland General Electric, PacifiCorp, and Idaho Power Company. There also were 28 consumer owned utilities (COUs) in Oregon who replied to the broadband status information request.

All of the IOUs use broadband capabilities down into the 60-70 kbps range for data transmissions that support infrastructure essential to sustaining power flows. One such use of communications down in that speed range includes data used to monitor sub-station status. For each IOU, the utility- owned broadband capability is used for such actions as two-way radio communication, generation and/or transmission energy management, along with implementing and monitoring responses to power disturbances, inter-connections with other utilities, and security operations.

There is more variation in broadband capabilities among the Oregon COUs. Some of these utilities rely solely on third-party providers for their high-speed broadband capabilities while others have large owned networks. For some, broadband capabilities are used solely for remote meter reading. This is economically efficient for facilities that are quite remote and costly to

visit on site. For others, it is also used for substation monitoring via remote meter reading and supervisory control and data acquisition (SCADA). Some utilities have Advanced Metering Infra-structure (AMI) capabilities and others have none. At least three utilities own a subsidiary business that provides wholesale/retail broadband services to medical, education, government, business and residential customers.

Several of the COUs are in the process of installing AMI capability. A number of them have at least some of their sub-stations wired for remote monitoring, and it appears that at least some of this monitoring is done at fairly high speeds of 1Mbps – 1,000 Mbps. Communications between the customer meters and sub-stations are at slower speeds in the 64 kb/s range.

Smart Meters

Intelligent digital metering devices have been, and are continuing to be, installed by utilities across Oregon. To date, about 55 percent of the approximately 1.8 million hook-ups across the state have a smart meter, which is slightly more than 1 million customers. Smart meters are currently serving about 60 percent of or about 840,000 IOU customers. Smart meters are currently serving about 41 percent of or about 200,000 COU customers. Within the COU ranks, 79.5% of Co-ops, 41% of People's Utility Districts (PUDs), and 5% of municipally-owned utilities customers are served with a smart meter.

The table below presents survey results for a selected set of functions that can be supported using broadband

Electric Utility Broadband Supported Functions

Function Support	Current Yes	Future Yes	Future Maybe
Load Interruption (e.g., direct load control)	6	8	12
Automated Distribution (e.g., fault detection and recovery)	9	11	12
Advanced Meter Infrastructure (AMI)	14	15	10
Supervisory Control & Data Acquisition (SCADA)	16	18	8
Customer Account Pre-pay	2	9	10
Energy Monitoring Web Portal and/or In Home Display	5	11	11
Control/Monitoring of Spinning Reserves	2	2	0
Control/Monitoring of Non-Spinning Reserves	2	2	1
Control/Monitoring of Regulation Service	3	4	2
Demand Bidding and Buyback	1	1	3
Time-of-Use Pricing	4	8	12
Critical Peak Pricing	0	2	15
Real-Time Pricing	0	2	12
Peak Time Rebate	0	2	12

Notes:

1. The sum for a row may be less than 41 (retail utilities serving Oregon customers) due to non-responses and/or deleting responses that fell into the 'future no' category. We feel this table more clearly represents the plans for additions/grid improvements in the future.
2. These numbers are based on responses to surveys sent to each of the 41 electric utilities with Oregon customers. The numbers may not add up to 41 for any row due to omissions.

Looking at the row for Advanced Meter Infrastructure (AMI) which includes the subject of this section, Smart Meters, 14 utilities have it in place, 15 more utilities have definite plans for its future deployment, and 10 utilities are more uncertain about its future deployment. Considering the importance of AMI to support a variety of grid enhancements (e.g., two-way communications of usage and prices, expedite fault detection and repair, potential to support demand response programs), it is encouraging to see that a majority (about 80 percent) of the retail electric utilities in Oregon will be operating with AMI in the future.

Demand Response (DR) / Direct Load Control (DLC) is another emerging utility function that is supported by AMI. DLC is one form of DR that has historically been used by utilities in other regions of the country to manage peak usage. It generally involves the end-user agreeing to allow the utility to interrupt some or all of the end-users electric delivery for some specified period of time. There are usually limits on the number of interruptions that are allowed, and the utility typically must conform to a specific lead-time notice to the customer. DLC can either be automatic or provide for customer override. If it is automatic DLC, the customer has no ability to override the utility's signal to reduce usage. In the case where the customer has some ability to override the utility's signal, the customer typically is limited in the number of such overrides they may exercise without penalty. Whether the DLC is automatic or provides for some customer override, the customer receives a price cut on their deliveries. The customer usually also faces substantial penalties if they are found in violation of the agreement.

DR is a less well known in the Pacific Northwest and Oregon. Though, it is receiving increasing attention within both Oregon and the Pacific Northwest. One factor affecting its use here is that both Oregon and the Pacific Northwest have generally been more concerned with total energy use rather than peak use. Studies from other parts of the country has shown that DR has very little, if any, impact on total energy consumption; it's impact is on the timing of that consumption. Since Oregon's and the Pacific Northwest's electricity planning has historically been more focused on total energy use and less focused on peak usage because of the extensive hydro resources and the ability to purchase energy from California during the winter, DR has received less attention in planning and rate design. However, this is beginning to change as air conditioning becomes a larger amount of the utility's load. In addition, on October 1, 2011, the Bonneville Power Administration (BPA) implemented tiered rates for its wholesale sales to COUs. BPA's tiered rates are designed to allocate the benefits of the existing federal power system and provide more direct price signals about the cost of the new resources to meet load growth. Embedded in BPA's Tier 1 rates are incremental peak demand charges that are about

triple their historic cost to COUs on a per kW basis. It is believed this peak demand pricing signal has led to increased interest in DLC strategies by COUs.

Smart Grid applications enabled by broadband are delivering increased efficiencies and economies in the distribution of electricity to Oregon's businesses, institutions and homes.

The complete "Status Report on Broadband Deployment by Electric and Gas Utilities in Oregon," prepared by the Oregon Public Utilities Commission Staff for the Oregon Broadband Advisory Council may be viewed at www.broadband-oregon.org.

Education

Information technology and broadband network access are fast becoming essential infrastructure for Oregon schools. Education systems across the country including Oregon are currently moving to implement common core standards for student assessment. These standards represent "high-stakes" student testing that will be required for graduation. Oregon has chosen "Smarter Balanced" which is a computer adaptive online assessment system. The related broadband issue is that the new assessment testing systems are computer based and on-line requiring network access as well as gateway access to the Internet for portions of the tests. The testing window will be the last twelve weeks of the school year adding to the need for sufficient bandwidth to support the applications. Hardware, software and bandwidth requirements are still under development. There are plans for an optional paper and pencil version of the tests for three years, though how well this option will work compared to the digital computer adaptive version is not known. It could present another classical digital divide disadvantage for students without the broadband access. Poor or no network connectivity will also limit student and teacher access to test preparation resources.

These new assessment systems will be implemented in the 2014-15 school year and preparation time is short. In order for students to master the new testing requirements sufficient skill and opportunity in the utilization of technology will be required. Schools will need to dedicate resources to adequately provide hardware, broadband, software, and infrastructure to support ongoing teacher training to improve student outcomes. Additionally, there is an increasing use of Internet-based administration systems. Approximately sixty-five on-line state and federal reports are currently filed by schools each year. The clear trend toward on-line systems and the resulting need for more bandwidth is a great challenge facing all school districts in Oregon.

A committee of technology leaders from across the state is currently developing a plan for educational technology in Oregon. The Oregon Department of Education (ODE) committee is comprised of practitioners from K-12 schools and districts and higher education, with expertise from different perspectives ranging from classroom teachers to technology systems specialists.

Desired access to technology for K-12 schools includes

- Hardware: The ratio of computer/tablet/handheld device to student/educator of 1:1 (a device for every learner) and each device is used routinely in the instructional/learning process.

- Network connectivity
  - Local Area Networks (LANs)
    - Availability for administration, teaching and learning 24/7.
    - Adequate broadband bandwidth for accessing the Internet and technology-based learning resources (i.e., student have the ability to use the Internet in the classroom and on the surrounding campus).
    - Robust wireless network coverage in every classroom.
  - Wide Area Networks (WANs) between schools, Local Education Agencies and state resources that are robust, redundant and managed to handle the needed bandwidth to support administrator, teacher and students.

The State Educational Technology Directors Association (SETDA) recommends in its report, "The Broadband Imperative," that broadband standards for schools be established. SETDA recommends schools increase their broadband speeds to 100 Mbps per 1,000 students and staff by 2014-15, and 1 Gbps per 1,000 students and staff by 2017-18. Internal and wide area networks (WANs) connecting schools within districts should support speeds of 1 Gbps by 2014-15 and 10 Gbps by 2017-18. SETDA further recommends that States should lead the effort to ensure broadband access in K-12 schools, homes and publicly accessible institutions such as libraries and community centers and that the federal government should provide funding support. The need for access to high-speed networks is also recognized in Oregon Department of Education's "Oregon Educational Technology Plan 2006-2010." This plan is currently being reviewed and will be updated.

The coming changes in student assessment along with larger trends in information technology and an exponentially expanding base of human knowledge raise serious concerns about the level of broadband access currently in service in Oregon's schools. Students that do not have broadband in the home will also potentially be at a disadvantage in taking the on-line tests as compared to those students that have broadband access in the home and frequently use the technology. This situation is predictive of another growing problem, digital literacy. Digital literacy is the ability of people to interact in general with computers and on-line systems beyond the school environment.

As the Internet expands its role as our primary communications platform, the new common core standards are resulting in a big push to "digital text books" as a solution. Current printed paper textbooks are increasingly out of date, costly to replace, and do not meet the needs of teachers and students. U.S. Secretary of Education Arnie Duncan has publicly called for accelerating the move to digital media in the nation's schools. Once again, this creates equity issues for schools as well as students at home without adequate network access.

Connect2Compete is a national nonprofit organization initiated by the FCC that seeks to address this access issue for student in low-income families. It is working to provide discounted high-speed Internet access services and low-cost computers along with digital literacy training. Supporting service providers with service territories in Oregon include Bend Broadband, Charter Communications and Comcast.

Several broadband service providers in Oregon have programs to provide discounted broadband services and equipment to families of children that qualify for the federal school lunch program.

- BendBroadband
  Offers high-speed Internet for $9.95 for 2 years including a free modem and installation. Families without a computer at home have the option to purchase a refurbished computer for $150. Partners with the Boys & Girls Clubs of Central Oregon to provide digital literacy training www.bendbroadband.com.
- Comcast Internet Essentials
  Offers broadband Internet service with online security protection for $9.95 per month, plus customers can buy a computer for $149.99. Free introductory computer education classes are also available www.internetessentials.com.
- CenturyLink Internet Basics
  Offers 1.5 Mbps DSL Internet service for $9.95 per month, including security suite and parental controls and customers can buy a computer for $150.00. Free basic Internet training is also available www.centurylink.com/home/internetbasics.

The Oregon Broadband Advisory Council will work with ODE to assess the state's readiness for emerging technology requirements for school districts. Clearly, Oregon schools are facing technical and financial challenges in this area.

Broadband in Higher Education

Traditional Broadband was defined by the FCC in 1999 as internet speed in excess of 200 kilobits per second (Kbps) in at least one direction. In 2010, the FCC redefined broadband speeds to be a minimum 4 Mbps in order to keep up with consumer's demands for larger bandwidth to support higher quality data, graphics and video communications. While these speeds may be adequate for residential use, Colleges and Universities typically produce and distribute large amounts of this type of information and rely increasingly on video communications to deliver course materials and academic lectures to students anytime, anywhere. Being the source of much of the information available on the Internet and representing an aggregation of thousands of consumers in one location, Higher Education institutions have much higher bandwidth needs.

Colleges and Universities in the state of Oregon in general are well positioned to serve the bandwidth needs of their students and faculty in support of teaching and learning activities. The National Broadband Plan (NBP) set a target of 100 Mbps for residential service by 2020 and 1 Gbps for anchor institutions. Through the efforts of fiber based network providers such as The Network for Engineering and Research in Oregon (NERO), LS Networks, Charter Communications, Hunter Communications, CenturyLink, Comcast, BendBroadband, and others, connections of 100 Mbps and higher are readily available statewide.

Using the 1 Gbps given by the NBP as a benchmark, Colleges and Universities throughout the state are well positioned to attain this goal. For example, Oregon Institute of Technology and Eastern Oregon University each have 100 Mbps of bandwidth available, while Western Oregon University and Southern Oregon University are currently connected to the Internet at 1 Gbps.

Anecdotally, private Universities have connections that are in line with those described above, but hard numbers were not available. In many cases, the Universities that do not have 1Gbps are not yet connected at that speed due to the costs associated with that increase rather than the service not being available to them.

In addition to teaching and learning activities, the four major Research Universities (Oregon State University, University of Oregon, Oregon Health and Sciences University, and Portland State University) have additional bandwidth needs beyond those set out in the NBP. Modern research activities involve the transportation and processing of very large data sets and the need for cutting edge visualization and collaboration tools to bring together the world's foremost researchers. Portland State University, Oregon Health and Sciences University, Oregon State and the University of Oregon have worked together to build 10 Gbps connections among themselves and to connect to the Internet2 (www.internet2.edu) national backbone in addition to their standard Internet connections.

Just as the FCC redefined broadband to keep up with demand, there is a growing need for these research Universities to have a capacity well beyond current broadband standards that will allow them to exchange massive data sets in an efficient manner and to enable new scientific discovery. For example each of these institutions is engaged today in the field of Genomics research that holds the potential to transform modern biological sciences and human medicine. The genetic sequence from a single sample produces over three Terabytes of data. To transfer that file over the 1Gb/s connection suggested by the NBP would take nearly 6 hours; more time than it would take researchers to drive the data file from Portland to Eugene.

Oregon Education Investment Board

In 2011, Senate Bill 909 was passed and signed into law creating the Oregon Education Investment Board with the charge of

- Developing an education investment strategy to improve defined learning outcomes from early childhood through public schools, colleges and universities.
- Hiring a Chief Education Officer to oversee the unified public education system.
- Establishing a statewide student database, from early childhood through higher education that encourages accountability for outcomes, and provides better information for policy-makers, educators, students and their families to ensure progress along the entire educational path.
- Establishing an Early Learning Council to streamline and strengthen early childhood services to at-risk youth to ensure all children are ready to learn when they enter kindergarten.
- Reporting back to the Oregon Legislature, on progress and legislation for 2012.

Rudy Crew became Oregon's Chief Education Officer on July 1, 2012. He will lead the Oregon Education Investment Board and will be examining education in Oregon at all levels from early childhood programs through college to enable the successful participation of all Oregonians in

the economic and civic life of their state. The Board has identified three major priorities and challenges that face Oregon: data and assessment, curriculum and instruction, and social equity.

OBAC anticipates that distance-education strategies, digital solutions, and broadband networks will play key roles in Oregon's future education system strategies. More information about the board and its work may be found at
http://www.oregon.gov/Gov/Pages/oeib/OregonEducationInvestmentBoard.aspx

Education is an application area where action is required. Oregon's K-12 schools need funding plans to provide for broadband network needs. Students and educators need equitable access to reliable and robust broadband connectivity both in the school and at home. Resources are needed to provide ongoing professional development (coaching) for educators to ensure quality implementation of technology and practice in the classroom. Oregon needs to collect current school readiness data for the implementation of Smarter Balanced Assessment in 2014-15 school year. The state should take the lead to ensure that these needs are addressed.

Government

Oregon's state, local and tribal governments use broadband for administration, communication, and E-Government applications.

E-Government – State of Oregon

The State of Oregon continues to be a national leader in the use of E-Government applications and the delivery of online services to its citizens. Oregon's E-Government Program enables nearly all state agencies to engage citizens online through online interactive websites, web applications, online payments and collaboration. The E-Government Program provides the technology, training, support, and oversight management for much of the state. Oregon also uses these technologies to help state agencies and employees share information through the state's Intranet.

On July 1, 2012, the Oregon Department of Administrative Services (DAS) transitioned to a new business model known as Entrepreneurial Management (EM), the heart of which is customer involvement. Under the EM business model, DAS made several organizational shifts, structuring the agency to address its simultaneous roles of policy-making and service-delivery. Under the new model the E-Government program moves from the CIO Office to the Enterprise Technology Services Division.

Over 85% of Oregonians have Internet access, making Oregon the 4th highest online state, per capita, in the nation. The goal of Oregon's E-Government program is to provide Oregon residents online Internet services that meet their growing expectations to interact with government quickly and efficiently, from any location over the Internet, while reducing the cost impact to the state budget.

The E-Government Program supports the business of Oregon government on the Internet through its contracted portal services. This service portfolio includes support for the State of Oregon's portal: Oregon.gov, dynamic web hosting, help desk and tools for state agencies, secure online payments, an intranet portal, custom web applications, the open data portal Data.Oregon.gov, the

state's collaboration portal known as Oregon GovSpace, agency and public service desk, a secure environment, licensing applications, standards, templates, training and development assistance.

A web based content management system provides capacity and tools for the development, hosting, and management of all web content for all state agencies. Rather than each agency deploying and hosting their own website, the site provide a common, dynamic platform using modern technology that supports consistent Oregon navigation while providing the individual flexibility each branch, department, commission and board needs to focus on the members of the public they serve. It provides a central search engine to improve searching and categorization across all state government websites as well as central language translation of web pages to 17 different languages. Over 85 agencies and 39 courts use the system. Over 900 content creators manage over 300,000 pages and files, and receive about 5 million visitors and 16 million page views per month. The program also provides consulting, training, application development and integration support for agency e-commerce activities. In 2011, agencies have hosted 32 online stores with over $95 million dollars transacted in the prior year.

In 2011 the online enterprise collaboration tools (GovSpace) are in use by over 6,000 users collaborating on over 32,000 discussions and documents. Its use is growing exponentially currently increasing by about 140 new users a month.

Transition to new E-Government Portal Service Provider
In July 2011 the Department of Administrative Services awarded a contract to NICUSA to replace the current expiring E-Government Portal Service Provider contract. Migration of current portal services began in December 2012 and was completed on September 28, 2012. The transition included new hosting, software and service desk for:

- 178 Websites for Executive and Judicial branches
- 28 E-Commerce stores for the Executive, Legislative and Judicial branches
- 23 Custom Applications for the Executive and Judicial branches
- 9 Intranet sites for the Executive and Judicial branches
- 200 Unique agency services transitioned

The new software allows for improved dynamic content and authoring capabilities making it easier for the site owners to update information and services. It also contemplates developing all new websites using responsive design that will support mobile devices visiting Oregon.gov and related sites. New e-commerce stores and online applications will be designed to provide mobile access.

The transition valued at in excess of $2.8 million dollars was paid for by the contractor based on the terms of the new self funded contract. ORS 182.132 permits DAS to fund portal services through a self funding model. Under the model, the portal provider can be authorized by DAS if recommended by the Oregon Electronic Government Portal Advisory Board to collect a convenience fee on approved transactions to fund the cost of the operation of all portal services and the development of future state services provided through the portal.

The savings to state government through the 10 month transition are dramatic. The cost of the transition valued at over $2.8 million was built into self funded contract model. As a result, there was no direct cost to the state for the transition. In addition, if each agency were able to transition their service, in very conservative time frame of 3.5 months each, it would be the equivalent of 58 years of effort (200 x 3.5 divided by 12 months). The transition was completed in 10 months.

New E-Government Portal Services

Oregon was the first state to launch open social data portal in 2011 receiving the top honors in national open government and transparency categories. This ground breaking approach allows citizens to create a personal account and seamless access information and interact with state government. The site allows a user to create their own views with multiple options to graph and tabulate data from various government sources. With open APIs the site allows citizens to embed data from the site in their own web page "mashups" that automatically update as the data is refreshed. The Center for Digital Government bestowed the Government to Citizen Digital Government Achievement Award to Oregon for Data.Oregon.gov (Data.Oregon.Gov https://data.oregon.gov/.) The National Association of State Chief Information Officers (NASCIO) named it the top Open Government Initiative for the 2011. Data.Oregon.gov has over 533 open datasets and has been viewed over 1,600,000 times. It can become the repository of public information and with its available information streams stimulate economic development through citizen IT developers.

In response to House Bill 3247, the Oregon Secretary of State partnered with DAS and NICUSA to build a “One-Stop Business Portal” for the State of Oregon in collaboration with the other Oregon agencies involved with doing business in Oregon. The new portal provides a single point of access for information, services, and resources for business in the state of Oregon. The application delivers web pages one time and is accessible from a variety of devices including mobile devices such as tablets and smart phones.

The Oregon Housing and Community Services launched http://www.oregonhomeownersupport.gov/. The new website is designed to help Oregonians find resources to prevent or recover from foreclosure. The website includes videos about the foreclosure assistance website and foreclosure prevention counseling. It also includes a “Find a Counselor” search feature and lots of information and links to all different types of foreclosure prevention and assistance programs.

Oregon State Treasury redesigned its website to create more effective lines of communication with customers, compile information repositories and gain resource efficiencies. The redesigned site provides a single point of contact that improves the customers experience and ability to conduct business. It includes OST’s main public website (www.ost.state.or.us), Guard Your Money (www.guardyourmoney.org), Buy Oregon Bonds (www.buyoregonbonds.com), and Oregon 529 College Savings Network.

What's next for E-Government Services
The E-Government Program has a number of portal services projects planned for remainder or 2012 and 2013 that have been prioritized through criteria recommended by the Oregon Electronic Government Advisory Board.

The Department of Revenue is working with the Portal Provider to develop an Electronic Funds Transfer application that will accept state payroll and estimated corporation excise and income tax payments. The web site for the Department of Consumer and Business Affairs is undergoing a redesign and upgrade. A drive-through emissions testing payment system is in planning for the Department of Environmental Quality.

The Oregon Marine Board, Teachers Standards Board, and Tax Practitioners are working with the Electronic Portal Provider to develop replacement licensing systems to provide improved online licensing renewals and interface with back office systems. With over 70 agencies in state government providing certification and licensing, upgrade and improvement to licensing systems and interface with agency administrative systems provides an opportunity for improved citizen interaction.

<u>E-Government - Counties</u>
Most of Oregon's 36 county governments have embraced the Internet as a means to communicate with their constituents and provide on-line services for taxpayers and residents of their jurisdictions. As broadband service expands across the state, access to the Internet and county services has grown.

Thirty three Oregon counties have individual websites offering a variety of E-Government functions from paying property taxes on-line, to finding out how to license a dog or get a permit for building a new house. Many counties offer information about jail inmate incarceration and release, and access to human services programs such as drug and alcohol treatment. County websites are where election results are posted and information about candidates and ballot measures are listed. Residents in most Oregon counties can find information about applying for a concealed handgun license on their county's website.

Most Oregon counties offer access to the myriad of forms needed by homeowners and contractors when construction or remodeling is undertaken. On-line access to environmental forms is common. In some counties, those forms can be filled out and returned electronically. There is access to the GIS maps realtors and contractors rely on. Several counties have reported a decided decrease in foot traffic at county offices from realtors and contractors who need those maps and a decided increase in traffic to their websites for that information.

Several counties offer mobile apps for various county functions. Several offer streaming audio and video for public meetings, most notably boards of commissioners and county courts. Some of the larger population counties offer streaming video of planning commission meetings along with other informational video productions.

Public records are a big part of Oregon county websites in 2012. Minutes and agendas of meetings are archived along with news releases, department informational white papers, ordinances, codes and proclamations. In those counties that have a transient lodging tax, information about how that revenue is collected is usually found on the county website along with the prerequisite forms.

In those counties with websites and parks, information about where those facilities are located and hours of operation are usually found on the county website. In some cases, there is information about permits or fees and the ability to apply for the permit or pay the fee on-line.

Employment information is offered on virtually every county website. In addition to job openings in county government, many county websites offer links to other employers seeking applicants.

County clerks offer many services in addition to the elections function. They issues marriage licenses and domestic partnerships and serve as a clearinghouse for passports. It is crucial that citizens and residents have clear information about where to obtain those important documents and when the clerk's office is open. Many county websites serve that need well.

However, not all Oregon counties are functioning at a high level on-line. Three counties share websites with local chambers of commerce. One small, frontier Oregon county is still in the process of designing a website. Six counties do not offer property tax payments on-line. In some cases, county officials are reluctant to incur the expense of on-line property tax payments or ask their taxpayers to incur the expense involved. In most cases, payment of property taxes has a fee of 2.5% of the total or a flat fee for an electronic check. The payments are fairly consistent across the state for those counties that offer the service.

A handful of Oregon counties offer the opportunity to pay court fines and traffic fines on-line.

The Association of Oregon Counties (has) issued an RFP for a vendor who will establish a base line of on-line services and website functions. Counties who fall below the baseline will be given an opportunity to apply for consultation from the successful vendor and assistance with the purchase of needed software and hardware to upgrade their E-Government capabilities. The funding is coming from a federal grant administered by the Oregon Public Utility Commission. It is expected that the program will be well underway in early 2013.

In 2012, most Oregon counties are embracing on-line E-Government services. As technology evolves, most Oregon counties see an opportunity to continue to address the needs of residents and taxpayers on-line. For those counties who haven't been able to function at a high level with E-Government services or the use of websites and utilization of broadband services, it is simply a matter of economics. During the recent economic downturn and the downsizing of federal forest payments, strapped counties put E-Government services on a wish list, despite the knowledge that such services are in the long run, more efficient and cost effective.

E-Government - Cities

Cities in Oregon are increasing their use of the Internet to deliver government information and services to their citizens. Roughly eighty percent of cities have dedicated websites that provide basic information about the city. But more and more cities are expanding the scope of their Internet presence by including citizen engagement, the ability to sign up for city services online and participation in governance.

Open data initiatives are increasing. Open data means that certain data should be freely available to everyone to use and republish as they wish, without restrictions. By making the government data open anyone can develop applications for general use in a community. Cities are beginning to use social media and networking for communication with community members. Responding to an informal League of Oregon Cities survey, 33 of the 40 largest cities in Oregon (83 percent) indicated they are using some form of social media, including 100 percent participation by the state's 20 largest cities (see table, page 21). In addition, several small cities (under 5,000 pop.) confirmed their use of social media, including one of the smallest, the city of Rufus (pop. 250). It also appears that more cities will join the social media bandwagon soon, as numerous survey respondents indicated that they need to resolve operational, legal and policy issues before launching their social media participation (League of Oregon Cities, April 2012).

Although cities recognize the incredible opportunities presented by evolving technology, economics has proved a difficult barrier to surmount for smaller cities. The following brief tale of two cities provides insight into the possibilities and frustrations faced by Oregon cities.

City of Eugene

The city of Eugene is Oregon's second largest with a population of 156,185. The city recently took advantage of an opportunity to revamp its website and create a new municipal logo when the vendor of the city's old site said it was dropping product and service support for the site. Eugene is spending about $275,000 on the revamp, including $175,000 for outside help creating the new site and $100,000 for a five-year contract to host it at a remote location.

Eugene began working on its website revamp in the summer of 2010 and focused on making the new site easier for citizens to use. Elements include better and more intuitive navigation, improved ways to do business with the city online – from paying parking tickets to buying concert tickets – and more prominent display of information to help visitors to the city or newcomers to the area. Overall, the city hopes the new site will allow people to find and report things on their own, saving residents' time and also saving Eugene some money. The new website also prominently features links that allow citizens to follow Eugene on Twitter, friend the city on Facebook, or sign up for any one of over twenty newsletters (i.e. news, bid postings, community health and safety alerts) www.eugene-or.gov/AlertCenter.aspx.

City of Lafayette

The city of Lafayette has a population of 3,920. The city upgraded its website in 2010 and focused on delivering information on the city and city services to its citizens. Lafayette has added information to its website over the past two years. But it wasn't until a few months ago that the city tried to offer live City Council meetings via the Internet. The goal, on a shoestring

budget, was to allow citizens to watch live meetings from the convenience of personal computers or smart phones. Dedicated volunteers agreed to operate the necessary audio-visual equipment at each city council meeting and the city administrator located a free website to host the streaming service. Unfortunately, the city received citizen complaints stemming from pop-up ads for video games generated by the free website service and the city was obliged to halt the project to stream live City Council meetings until a suitable, and affordable, solution could be found. Until then, Lafayette continues to add information and forms to its website. But the city's ability to leverage existing technology is compromised by economics www.ci.lafayette.or.us.

Additional examples of local government initiatives related to broadband and software:

- CivicApps is where ideas, apps, and datasets converge as the result of a regional open data initiative. CivicApps.org serves as an open data catalog and collaboration platform for conducting a number of efforts and events between residents, local business, and local government. The data catalog contains more than 145 datasets, in varying formats, from the City of Portland; TriMet; Metro; Multnomah, Washington and Clackamas counties; Portland Public Schools, and the State of Oregon. Various events have included a number of idea and design contests with residents, hack-a-thons, and more, since its launch in the Spring of 2010. For more information visit http://civicapps.org

- PDX CitySync is an innovative, personalized web-based platform, which aims to engage our community partners to help generate and build upon ideas, apps, and data in support of increased civic awareness, participation, and collaboration among residents, local business, and City government. CitySync is the next step beyond offering the raw data available on CivicApps.org. CitySync provides a highly integrated framework for residents and local business to provide tools and services to their community, powered by government and community data.
  For more information visit http://www.civicapps.org/about/city-sync

- Portland Online Refresh project is an ongoing complete redesign of the City of Portland's web presence for both bureau and elected office websites. Soon to be known as PortlandOregon.gov, the ongoing redesign effort is resulting in a much more modern design and improved capabilities for the information architecture and accessibility features for all users. For an example bureau deployment, see http://portlandoregon.gov/bps

E-Government – Oregon Tribes

All of the Oregon Tribes have websites that provide information about their respective governmental services. The amount of information and areas of emphasis vary. Few of the websites provide opportunities for interaction with the exception of providing e-mail contacts for elected officials and administrative departments.

Information provided by most if not all of the websites included tribal law and code, plans, forms, permits, public meeting notices, agendas and minutes, and job announcements. Only one

website offers extensive streaming video of public meetings. Two websites indicate participation in interactive programs like Facebook, Twitter and Flickr. Few if any offered Listserv or E-mail notification services, online bill or fee pay, or online forms submission.

Although many of the websites provide maps with information like land boundaries, roads and service locations, none offered true interactive mapping where users can build maps based on their interests or business needs. None of the sites offered discussion forums.

Tribes also use exclusive portals for information sharing within the tribal organization. These may provide information and opportunities for interactivity that do not exist at the public website.

National Broadband Public Safety Network (FirstNet)

On February 22, 2012 President Obama signed into law Public Law 112-96, the "Middle Class Tax Relief and Job Creation Act of 2012." Title VI of PL112-96, entitled "Public Safety Communications and Electromagnetic Spectrum Auctions," that included provisions to fund and govern the National Public Safety Broadband Network (NPSBN), reallocate the 700 MHz D Block spectrum to public safety, and authorize the FCC to conduct incentive auctions to raise $7 billion for building and managing the new network. It also established within the Department of Commerce's National Telecommunications and Information Administration (NTIA) the First Responder Network Authority (FirstNet), to oversee network planning, construction, and operation.

The FirstNet Board was announced in August and is working on plans to develop a nationwide public safety broadband network. As part of its mission, FirstNet must consult with state, local, and tribal jurisdictions through a single state designated officer or governmental body regarding the distribution and expenditures of funds to carry out its responsibilities. Those include construction, infrastructure placement, coverage areas, resiliency requirements, assignment of priority to local users, assignment of priority to other users, and training needs of local users. In Oregon ODOT is acting as the interim public safety broadband office to accommodate interactions with FirstNet. Efforts to date are focused on developing a "working business plan", and identifying metrics from current public safety broadband usage. Metrics on public safety broadband use show:

- How users intend to use the broadband network
- What are the most desired applications intended for use
- Where are the biggest gaps between desired and implemented applications
- The biggest barrier preventing users from implementing or using wireless data

Next Steps

The Act provides $135 million nationwide to support planning and implementation efforts to prepare for NPSBN implementation. The states will be required to submit to NTIA for grants. State, regional, tribal, and local jurisdictions will identify, plan, and implement the most efficient and effective way for their jurisdiction to use and integrate the infrastructure, equipment, and

other architecture associated with local roll-out of the network. Unless waived by the NTIA, the grants will require a 20% match from the state and are contingent on the office or single designated point of contact being assigned by the Governor's Office The anticipated grant amount for Oregon is between $2 - $3 million dollars.

ODOT is preparing information in coordination with public safety stakeholders, the State Interoperability Executive Council, the Oregon Department of Administrative Services Chief Information Officer and the Oregon Broadband Advisory Committee to ensure the governor is in position to work with FirstNet when it presents the Oregon public safety broadband plan. FirstNet will present the governor with a detailed implementation plan for use by public safety officials in Oregon the time estimate for this action is 2015. This plan will show the number of communications sites used, location of the system, cost of the system and recurring cost required by users of the National Public Safety Broadband Network. Key national and Oregon project dates are attached.

Oregon Judicial Department eCourt Program

Oregon eCourt is a statewide web-based courthouse system that is intended to transform how Oregon's court system serves the people of this state. Oregon will become the first state to provide a statewide virtual courthouse, using technology to increase access to the courts, improve court efficiency, and ensure that judges have complete and timely information with which to make the most effective dispositions.

Oregon eCourt will be the most accessible courthouse in the state, providing court services from any computer with an Internet connection, at any time. Consumers, public safety partners, and the legal community will have 24 hour a day - 7 day a week, access (based on that individual's authorization) to:

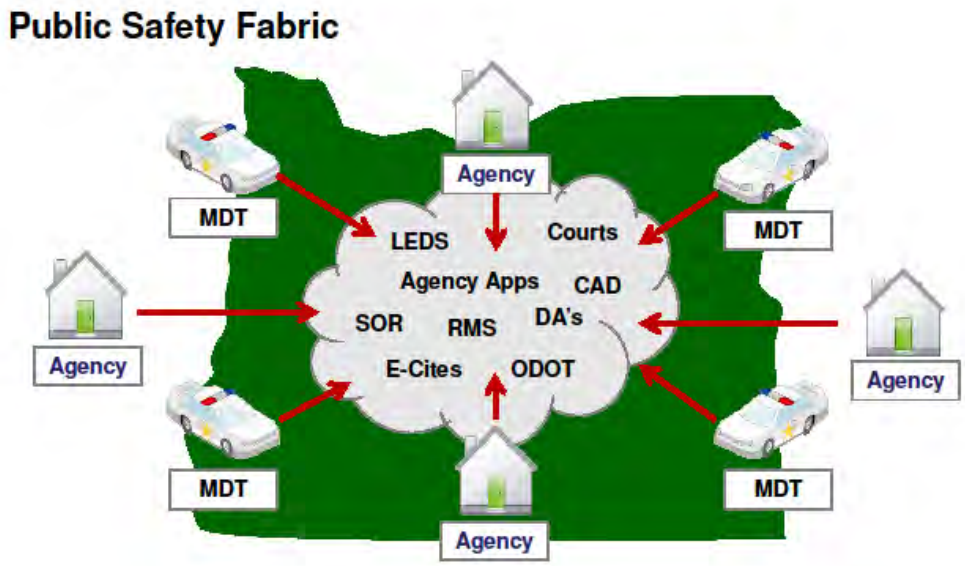
- documents and case records
- court information and court calendars
- case-related filing and payment services
- multilingual guides, online fill-in-the-blank court forms, and online self-help "centers" to assist the public with court

This is another illustration of how broadband and information technologies provide valuable tools for government to meet the needs of its citizens. The Oregon Judicial Department's IT-Strategic Plan Oregon eCourt Program may be found at http://courts.oregon.gov/Oregonecourt/docs/oeg_it-strategic-plan_v6.0_ses_2009-04-15.pdf

Oregon State Police Broadband Applications

The Oregon State Police (OSP) is working toward homogeneous network connectivity and services for its operations, or toward a "Public Safety Fabric." OSP has made excellent progress in mobility applications with its e-ticketing and e-court systems. There are about 600,000 convictions per year posted to drivers' records. Functioning broadband mobility applications enable OSP to focus more resources on core law enforcement activities.

Broadband networks are enabling the development of these applications. OSP is working toward the implementation of services-based cloud architecture for the "Public Safety Fabric" to support all needed applications as illustrated below.



Key
CAD: Computer Aided Dispatch
LEDS: Law Enforcement Data Systems
MDT: Mobile Data Terminals
RMS: Records Management System
SOR: Sex Offender Registry
ODOT: Oregon Department of Transportation

The State Data Center and Department of Administrative Services (DAS) Network

The State of Oregon makes extensive use of high-capacity broadband telecommunications. The Department of Administrative Services, through the State Data Center, provides broadband network access to all state agencies via contract, and supports contractual access to telecommunications services for many non-state governmental entities via the Oregon Cooperative Procurement Program (ORCPP). Enterprise level access is provided to at least 590 distinct locations across Oregon by the SDC and its contracted service providers (down from 651

in 2010, as summarized in the tables below). There appears to be a movement from Frame Relay and Direct Digital service provision toward Ethernet providers, as well as a marked increase in bandwidth (110 locations report greater than 10 Mbps speeds in 2012, and opposed to only 45 locations in 2012). Best-Effort Service (DSL) is provided at an additional 73 locations (2 locations with 256 Kbps upload/256 Kbps download, 1 location with 640 Kbps/3Mbps, 64 with 896 Kbps/1.5 Mbps, 1 with 896 Kbps/3 Mbps, and 5 with 896 Kbps/7 Mbps).

	Number of Locations with this Type of Service			
Bandwidth provided	Frame Relay	Ethernet	Direct Digital	Total
56 Kbps	2			2
1.5 Mbps	101	125	86	312
2 Mbps		53		53
3 Mbps	3	37	16	56
4.5 Mbps			4	4
5 Mbps		42		42
6 Mbps		2	1	3
8 Mbps		1		1
9 Mbps			7	7
10 Mbps		53		53
12 Mbps		1		1
15 Mbps		3		3
20 Mbps		10		10
25 Mbps		5		5
30 Mbps		8		8
40 Mbps		3		3
50 Mbps		7		7
70 Mbps		2		2
100 Mbps		12		12
115 Mbps		1		1
170 Mbps		1		1
200 Mbps		1		1
400 Mbps		2		2
1 Gbps		1		1
TOTAL	106	370	114	590

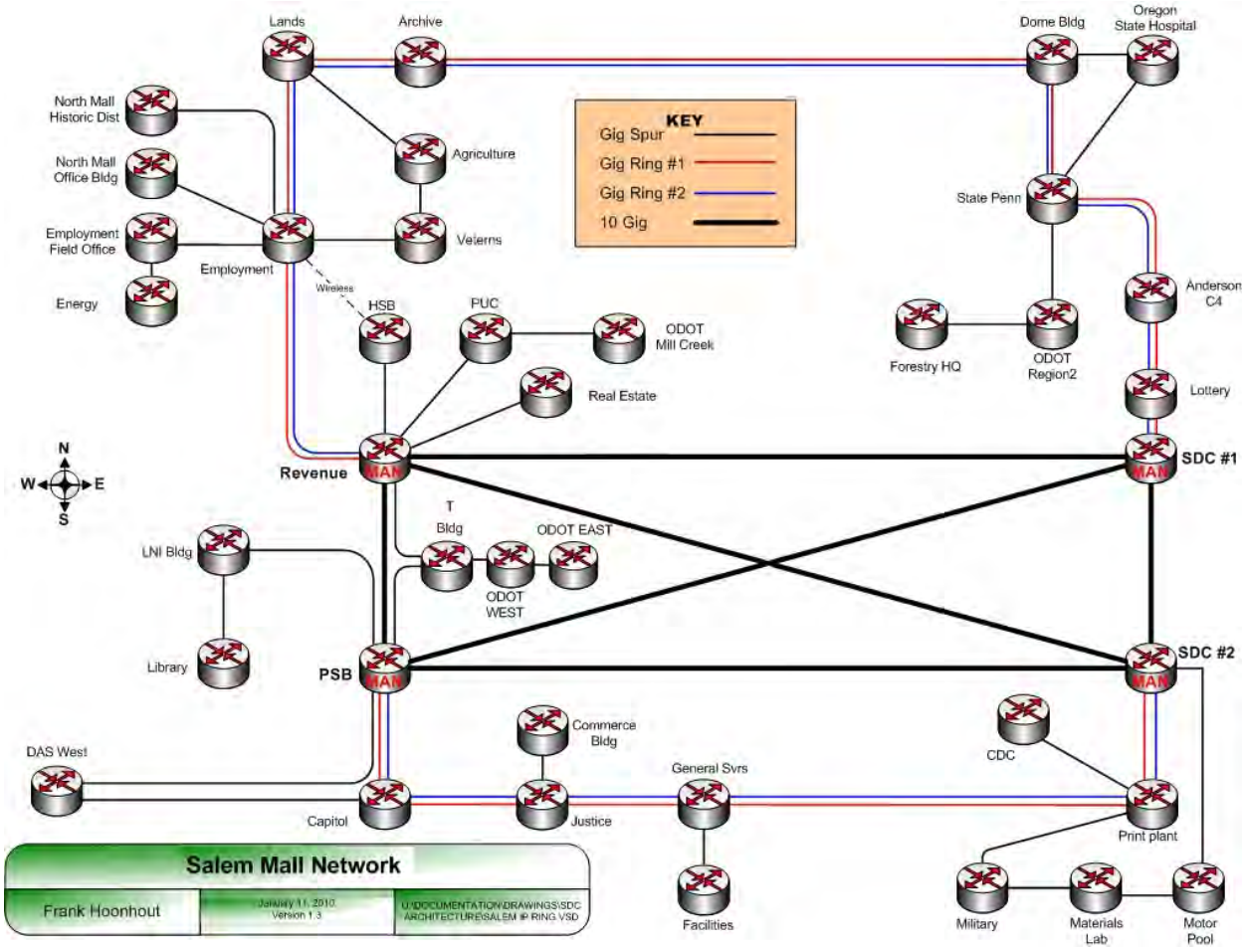
Enterprise level broadband access for state agencies - 2012

Oregon networking infrastructure and legal constraints

Several statutes guide the acquisition and use of telecommunications technologies by the State of Oregon, including ORS 184.475, 184.477, 283.140, 283.500, 283.505, **283.510,** 283.515, **283.520**, 283.524, and 291.037-038 [primary statutes indicated in bold]. ORS 283.510 establishes the definitions of "advanced digital communications" and "telecommunications provider," and then specifies that the State *must contract* for the provision of "advanced digital

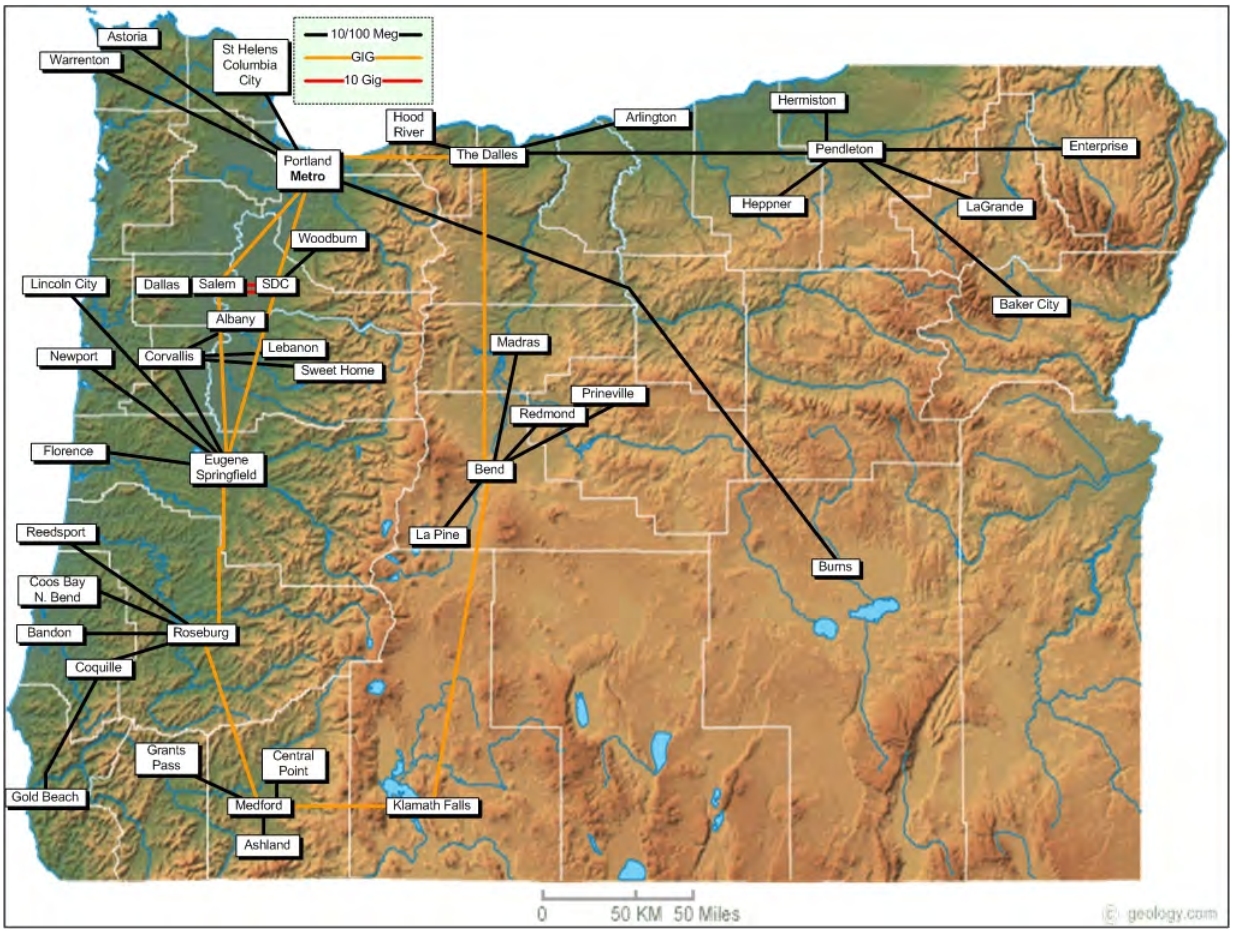
communications services" [emphasis added]. ORS 283.520 limits contract services contracts to a period less than 10 years. In summary, Oregon contracts for nearly all of its network services with private telecommunications providers.

The state-owned network loop supports the network access and data transport needs of state agencies that are located on or near the Capitol Mall.

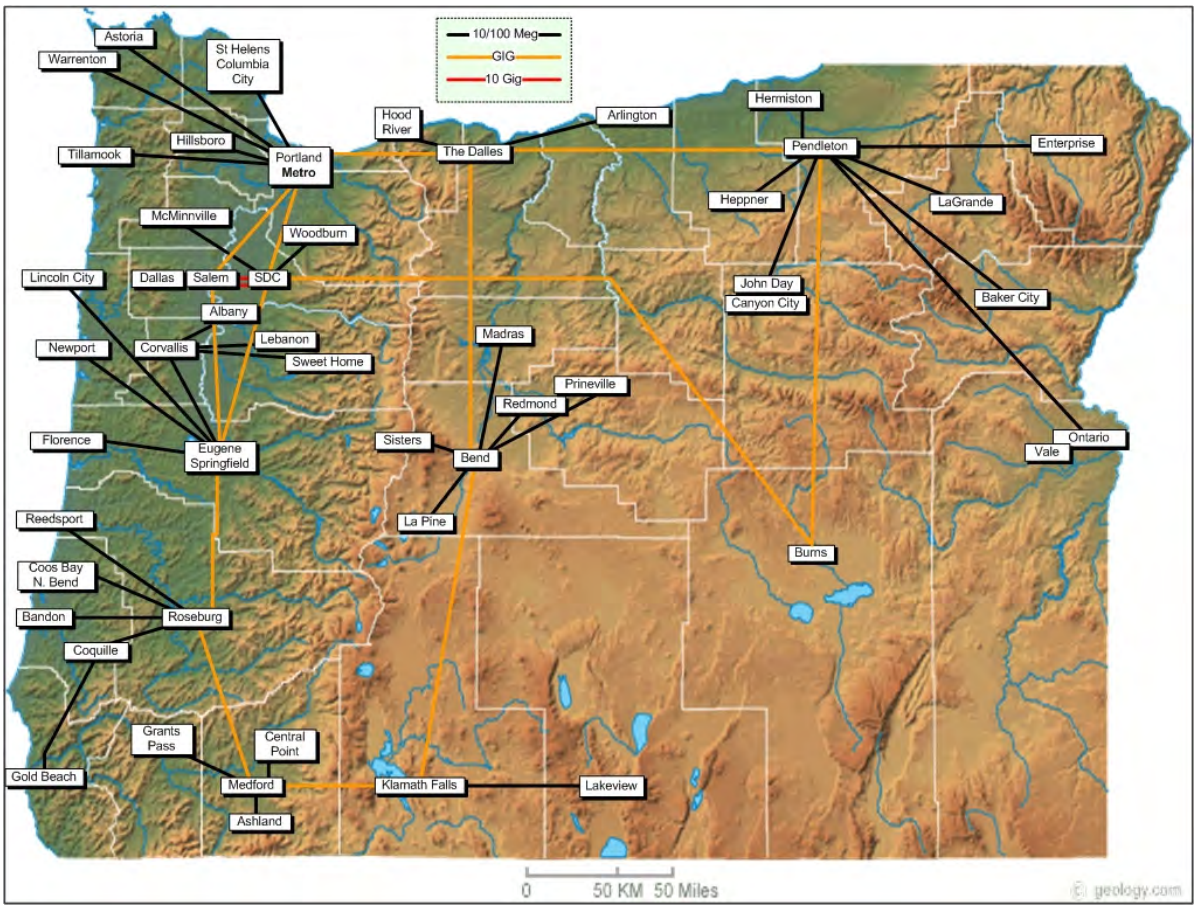


Capital Mall Network Loop

As you can see in the 2012 State-contracted network hubs map below, the State has improved network capacity between The Dalles and Pendleton (from 10/100 Meg to GIG) and has contracted for GIG capacity between Salem and Burns and between Pendleton and Burns. We have also extended 10/100Meg service to Tillamook, Hillsboro, McMinnville, Sisters, Lakeview, John Day/Canyon City, and Ontario/Vale, as compared with the map from the 2010 OBAC Report to the Legislature.



2010 State-contracted network hubs



2012 State-contracted network hubs

ODOT Network

ODOT leases network communications capacity via the State Data Center (and its contracts) or via the Network for Education and Research in Oregon (NERO). ODOT also participates in a communications consortium in the Portland/METRO region, but again this is lease-based and is not owned or managed by ODOT. In the past, ODOT has allowed telecommunications providers to bury their assets along the highway rights-of-way during the construction phase of highway projects. That said, those assets are not owned by ODOT, nor does ODOT manage them (so they could not know, for example, if buried optical fiber was dark or lit at any given time).

ODOT's future broadband network needs are anticipated to be ad-hoc as there is no significant investment planned for broadband usage within their agency. All significant network carrying capacity is and will be leased.

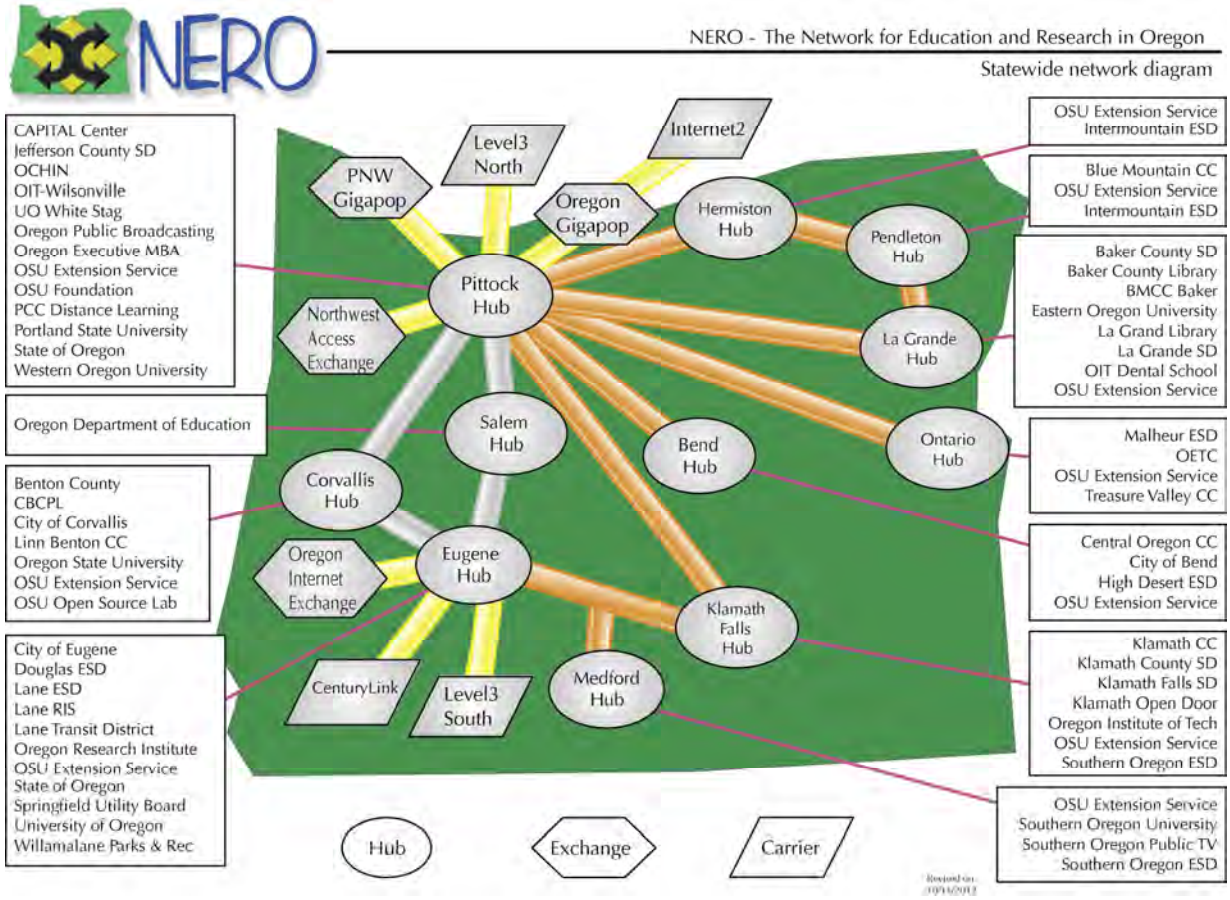
Network for Education and Research in Oregon (NERO)

The Network for Education and Research in Oregon (NERO) operates a scalable, high-bandwidth, regional network primarily for the benefit of public entities in Oregon. NERO is operated by the University of Oregon in cooperation with the Oregon University System and has been operating in this capacity since 1995. The Oregon University System is the public

university system of the State of Oregon and NERO performs services completely within the State of Oregon. NERO currently operates a path and route diverse backbone network with multiple 10-Gbps Ethernet backbone links between the Pittock (Portland), Salem, Eugene and Corvallis Hubs. Regional Hubs in Bend, Hermiston, Klamath Falls, La Grande, Medford, Ontario, and Pendleton further expand the NERO backbone as close to the customer edge as possible with 1-Gbps Ethernet links.

Internet Transit is the primary service provided to all partners and additional internal private capacity is provided to partners where necessary. NERO currently utilizes Level(3) and CenturyLink Communications for global Internet transit connectivity with resilience and geographic diversity of connections. Internet2 and local peering with other Oregon commercial providers provides additional capacity and diversity of connectivity paths and capacity.

NERO takes an opportunistic approach to expansion of bandwidth capacity by working with commercial carriers as much as possible and finding other partnerships to extend capacity where needed if commercial carriers are not able to meet its objectives for capacity or cost controls.



Network for Education and Research in Oregon

Broadband and Economic Development

OBAC conducted an online survey helped to gauge current practices and knowledge involving broadband in the efforts of economic development organizations in Oregon. The results of the survey indicated an interest by local communities in gaining assistance in the form of templates and guidance for planning purposes related to broadband adoption and use.

An opportunity exists to work with key economic development organizations to develop a coordinated and concerted effort that could have a big influence on promoting the use of broadband as a part of economic development activities in Oregon. Efforts to provide education and guidelines on the critical role of broadband in the economy will foster increased competency and outreach in the use of broadband to spur economic development activities across the state.

Websites are now a first stop for many conducting searches relative to economic development. Website content for economic development organizations, counties and cities vary greatly in appearance and pertinence. It was noted while doing the research that there is little consistency across all of the websites in the presentation of area or regional broadband resources. In most instances information about broadband is missing completely and none of the sites referred to the Oregon Broadband Mapping Project online resource at www.broadband.oregon.gov.

The survey showed that Oregon's economic development professionals see a strong relationship between broadband and economic development. 100% of the respondents believe that broadband enables local companies to increase their trading area, 91.7% believe that broadband enables new businesses to locate in their communities, 83.3% % believe that broadband enables their communities to retain businesses, 75% believe that broadband increases the number of business start-ups, and 41.7% believe that broadband increases individual's income earnings.

Additionally, 100% of the respondents believe that broadband is a valuable tool for accessing needed information, 91.7% of the respondents believe that broadband enables people to reach higher education levels, 83.3% of the respondents believe that broadband helps people in starting home-based businesses, 66.7% of the respondents believe that broadband is a tool for improving job skills and for professional development, 66.7% of the respondents believe that broadband is valuable for transitioning to a new industry or profession, and 58.3% of the respondents believe that broadband enables people to find a better job.

75% of the respondents believe that broadband can encourage and enable entrepreneurship including starting new businesses, growing existing businesses and creating jobs.

66.7% of the respondents believe that broadband positively impacts the development of home-based businesses.

100% of respondents indicated interest in a reference guide or template on how to develop a community broadband strategic plan.

83.3% indicated Interest in technical support and training on how to develop a community broadband strategic plan.

Broadband is a critical 21st century infrastructure. Many reports and anecdotal stories suggest broadband plays a significant role in economies. It has been noted that Oregon has been progressive in recognizing this role and in deploying broadband infrastructure. This survey suggests that there is a significant opportunity for Oregon's local communities to promote and leverage this important resource for economic development.

The complete Oregon Broadband Advisory Council "Broadband Outreach Survey" report prepared by John Irwin for the Oregon Broadband Advisory Council may be viewed at www.broadband-oregon.org.

This year, Google announced an initiative called, "Oregon Get Your Business Online." This outreach program is providing assistance for Oregon businesses to get on-line, by providing businesses with a free website for one year along with free tools, training and resources to help them succeed online.

The program is intended to drive economic growth by giving Oregon businesses the tools and resources to establish a website, find new customers, and grow their business. They are promoting that small businesses need to be online noting that 97% of Americans look online for *local* products and services, and that 57% of small businesses do not have a website or online presence. More information on the program is at www.oregongetonline.com

Though the value and role of broadband for economic development is increasingly recognized, work remains to be done to leverage broadband for this purpose. There is a need and opportunity to

- Develop an overall planning framework for broadband outreach and education to economic development organizations in the state.
- Provide information to the economic development organizations on the power and impact of broadband for economic development.
- Develop a planning framework/template for use by economic development organizations (e.g., information for their website, talking points, use of maps, FAQs, strategic frameworks that include broadband usage, and other yet to be developed aids).
- Encourage economic development organizations to include information about broadband availability and resources at their websites and to add a link on their websites to the Oregon Broadband Map www.broadband.oregon.gov.
- Encourage economic development organizations to update their websites. Many of the economic development organization websites are inadequate and/or out of date in the overall information content they provide, and not just the telecommunications-related material.
- Develop a plan to encourage Oregon counties and cities to participate in provision of broadband-related information on their websites, similar to the recommendations for economic development organizations.

Broadband Related Challenges

Universal Service Fund

The national Universal Service Fund is a federal program that financially supports telecommunications service in high-cost areas of the nation through targeted high-cost sub-funds. It also supports other public purpose programs including Lifeline and Tribal Lifeline, Schools and Libraries, Telecommunications Relay Service, The USF was established in 1997 by the FCC to meet congressional universal service goals mandated by the Federal Communications Act of 1996.

The national Universal Service Fund (USF) is being reformed and repurposed by the Federal Communications Commission (FCC) in ways that are significantly impacting Oregon's service providers.

In 2011, the FCC issued an order introducing reforms to the national USF and to the structure of intercarrier compensation (ICC) to ensure that robust, affordable voice and broadband service, both fixed and mobile, are available to Americans throughout the nation. [Order *FCC 11-161* released November 18, 2011]

Reform period: 2012 through 2018

The reforms 1) maintain the current annual USF funding level of $4.5 billion; 2) expressly support broadband-capable networks; 3) place a cap on some high cost program mechanisms for six years; 4) eliminate other program mechanisms; 5) implement new rules; and 6) create several new funding mechanisms that redirect the fund savings from cuts and adjustments.

Modified or eliminated program mechanisms and new rules designed to eliminated waste and inefficiency and improve incentives for rational investment and operations by Rate of Return (ROR) carriers (small companies/cooperatives rate regulated by the FCC based on set rates of return) include:

- Limit reimbursable capital and operations expenses for purposes of determining high cost loop support, 7/1/2012
- Limit recovery of corporate operations expenses for purposes of determining interstate common line support, 1/1/ 2012
- Reduce high cost loop support to the extent carrier's rates for local voice fall below an urban local rate floor, 7/1/2012, the urban rate floor will rise each of the next two years
- Phase out during 2012, safety net additive support received as a result of line loss
- Eliminate support in any study area that is completely overlapped by an unsubsidized competitor
- Reduce then eliminates support in excess of $250 per line per month.

And, beginning July 2012, ROR carriers:

- Must provide broadband service at speeds of at least 4 Mbps downstream and 1 Mbps upstream upon reasonable request if receiving high-cost or CAF from intercarrier compensation reform
- Did not change carrier of last resort obligations imposed by states

- Will receive CAF support based on calculations of the Rural Broadband Network Transmission Support component (not yet determined and could be changed) and the high-cost loop and interstate common line support and loss of access revenues, but phased down 5% per year beginning in 2012.

While modifying the basis of existing subsidies for ROR carriers with the reforms listed above, the total funding at approximately $2 billion per year (nationally) is approximately equal to pre-reform levels.

For ROR carriers the FCC did not "adopt intermediate build-out milestones or increased speed requirements for future years, but we expect carriers will deploy scalable broadband to their communities and will monitor their progress in doing so, including through the annual reports they will be required to submit."

The Identical Support Rule, which determines the amount of support for mobile and wireline competitive ETCs (eligible telephone company) was eliminated. Current support is frozen as of yearend 2011 and will phased-down over a period of five years. The CETC high cost support will cease whenever a CETC begins receiving Phase II support.

A limit on monthly universal service support per line was established effective July 1, 2012 at $250 for all carriers. This new rule will be phased in over three years to ease any potential impact.

High-cost support will now factor in an urban rate floor to so high cost support does not subsidize local rates beyond what is necessary to ensure reasonable comparability. Residential end user local rates must meet an urban rate floor (benchmark rate) and this rule applies to both ROR and Price Cap carriers. The rate floor is initially set at $10 until July 1, 2013 and then it goes to $14. The rate floor will be set annually after that.

New Funding Mechanisms
The Connect America Mobility Fund to support immediate (Phase 1) deployment of wireless voice and broadband networks in areas currently unserved through nationwide reverse auctions in 3rd quarter 2012 with up to $300 million and future (Phase II) on-going support up to $500 million annually. Competitive Local Exchange Carriers (CLEC) who become ETCs can participate. The Mobility Fund includes a one-time Tribal Mobility Fund to award up to $50 million in additional universal service funding to Tribal lands to accelerate mobile voice and broadband availability in these remote and underserved areas and up to $100 million per year as part of Phase II. CETCs can participate in this fund too.

The Remote Area Fund to support alternative technology platforms, including satellite and unlicensed wireless service, to serve remote areas with at least $100 million annually.

The Connect America Fund (CAF) to support Price Cap and Rural telephone companies' existing and new voice and broadband networks.

CAF Phase 1 applied to Price Cap Carriers (not rate of return regulated by the FCC) does several important things. It bridges the interval between initial reforms and the implementation of Phase II. It freezes high-cost support $1.8 billion (nationally); reduces support to the extent carrier's rates for local voice fall below an urban local rate floor; and provides $300 million incremental support to support broadband deployment in unserved areas (areas with less than 768 kbps downstream available) and prohibits using it in areas that are not substantially served by an unsubsidized broadband service provider. The funds are limited for Cap-Ex and not designed to cover OP-EX. The reform also eliminates the rural designation of Price Cap affiliates effectively opening up those areas to further competition.

The FCC determined the amount each Price Cap carrier could receive at the holding company level. Carriers had 90 days to accept the incremental support, a portion of it or decline it. Carriers that accepted support must meet deployment requirements and provide notice of the areas by wire center and census block where it intends to deploy broadband.

Frontier and CenturyLink are the Price Cap carriers in Oregon and each has accepted CAF Phase 1 funding. Carriers must offer broadband service with minimum speeds of 4 Mbps downstream and 1 Mbps upstream to areas unserved by fixed broadband with a minimum speed of 768 kbps downstream and 200 kbps upstream. Carriers also must certify that their current capital improvement plan did not already include plans to complete broadband deployment to these unserved areas within the next three years and that the incremental support will not be used to satisfy any merger commitment or similar regulatory obligation.

Support is capped at $775 per location served and deployment must be completed to no fewer than two-thirds of the required number of locations within two years, and all required locations within three years after filing their notice of acceptance. The Price Cap LECs will have to repay amounts equal to $775 per location commitment not met. This limited duration phase does not provide funding for CLECs but it does safeguard from subsidizing competition to unsubsidized broadband service providers.

CAF Phase II repurposes frozen high-cost support for Price Cap carriers to a five year, state-level commitment plans. Carriers must commit to provide 4 Mbps downstream/1 Mbps upstream to all supported locations:

- January 2013, 1/3+ of support must be used to build or maintain retail broadband service in areas substantially unserved by an unsubsidized competitor
- For 2014, 2/3+ of support must be used in such fashion
- for 2015 and subsequent years, all support must be spent in such fashion

Where Price Caps do not apply, CLECs can participate in reverse auctions. Some states (Calif. specifically) are looking at allowing CLECs to accept relinquished carrier of last resort (COLR) responsibilities and thereby also receive state USF. Further, while not definite, it appears that after the initial CAF Phase II 5 year period, reverse auctions would be used that would presumably allow CETC participation.

CAF Phase II also establishes national certification and reporting requirements for all recipients and leaves states with ETC designations and monitoring responsibilities. It allows for Petitions for Waiver, an explicit waiver mechanism under which a carrier can seek relief from some or all of its reforms if it can demonstrate that the reduction in existing high-cost support would put consumers at risk of losing voice service. Waivers are subject to a thorough (and possibly exhaustive) total company earnings review and the FCC will seek the assistance of the relevant state commission in review of such a waiver.

Intercarrier Compensation (ICC)
Intercarrier Compensation is a system of payments (revenue) resulting from the charges that one carrier pays to another carrier to originate, transport, and/or terminate telecommunications traffic.

Reform Period: 2012 through 2020
The reform calls for immediate caps on specific rates and a transition to bill-and-keep where each carrier looks to its customers to pay for the costs of its network. To the extent additional subsidies are necessary, such subsidies will come from the Connect America Fund, and/or state universal service funds.

Capped rates include interstate and intrastate switched rates assessed on terminating traffic for all carriers; interstate and intrastate switched rates assessed on originating traffic for Price Cap carriers; and interstate switched rates assessed on originating traffic for Rate of Return carriers. The transition reduces switched rates for terminating traffic to bill-and-keep (zero) by 2018 for Price Cap carriers and by 2020 for Rate of Return carriers.

The reforms include a Recovery Mechanism designed to facilitate incumbent local exchange carriers' (ILEC) eligible recovery of revenues reduced by the transitional changes in Intercarrier Compensation.

The Access Recovery Mechanism (ARC) is a monthly fixed charge on end user access lines (Lifeline end user exempted). It cannot be assessed on residential access lines whose composite local rate is at or above the FCC composite rate ceiling of $30 30 which includes the residential rate, mandatory EAS, 911 and TRS charges, SLC and ARC charges.

For Price Cap carriers:
- Residential and single line business capped at annual increments of $0.50 and a total of $2.50 in year 5
- Multi-line business charge may not exceed $12.20 in combination with the current subscriber line charge

For Rate of Return carriers:
- Residential and single line business capped at annual increments of $0.50 and a total of $3.00 in year 6 if total regulated residential rate (see components described above) does not exceed $30.00

- Multi-line business capped at annual increments of $1.00 and a total of $6.00 in year 6; charge may not exceed $12.20 in combination with the current subscriber line charge

Competitive LECs: may recover through end use charges

In Oregon, five of the six Price Cap carriers list exceptions to the application of the ARC where their composite residential customer access line rate equals or exceeds the FCC's composite rate ceiling. Nine of the ROR carriers' composite residential customer access line rates are at or above the FCC's residential rate ceiling so they cannot recover revenue from this mechanism.

Where the limited end user charges assessed through the ARC are insufficient to recover a carrier's eligible recovery the carrier will be entitled to CAF support equal to the remaining Eligible Recovery Replacement CAF Support. For Price Cap carriers any support must be used for building and operating broadband-capable networks for retail broadband service in areas substantially unserved by an unsubsidized competitor of voice and broadband services. Support is transitional and phased out in three years beginning in 2017.

For ROR carriers' ICC-Replacement CAF support is based on baseline revenue, which declines by 5% annually, minus all wireline intercarrier compensation revenue and ARC revenue.

A carrier can petition to request additional ICC-Replacement CAF support and/or waiver of CAF ICC support broadband obligations. This is known as a "Total Cost and Earnings Review".

- Rebuttable presumption; reforms allow carriers to earn reasonable return on investment
- Need to demonstrate regime threatens financial integrity or otherwise impedes ability to attract capital

FCC Further Notice of Proposed Rulemaking

The FCC is seeking comment on other changes being contemplated by the FCC and the major ones are noted here.

- Timing for eliminating the recovery mechanism, including end-user recovery, in its entirety and the ICC-Replacement CAF support for ROR carriers.
- What components should be collected by the wireline bureau to inform its computation of comparable urban and rural voice and broadband rates and what is reasonable for each by technology?
- Should CAF recipients be required to offer IP-to-IP interconnection for voice service? Should any obligations be based on the requirements of section 251(a)(1), since, as ETCs, the providers subject to these requirements will be telecommunications carriers? How would any such obligations be enforced?
- What things should the FCC be doing to enable WISPs, non-profits, and other small and non-traditional communications providers to extend broadband in rural America, including in areas where traditional commercial providers have not deployed?
- Should it create a fund for a Technology Opportunities Program in order to assist communities with deploying their own broadband networks. How much money should the Commission set aside for such a program? Are there any legal impediments to the Commission running such a pilot program out of the Universal Service Fund?

- Should different performance characteristics such as download and/or upload speeds, latency, and limits on monthly data usage be used in the evaluation of bids?
- Should individual providers be allowed to propose different prices at which they would be willing to offer services at different performance levels, with selection of the winning bids based on both prices and performance scores?
- Is there a possible need for rules governing the "edge" that defines the scope of functions encompassed by bill-and-keep under the reforms adopted in this Order?
- Should support for "middle mile" facilities and access to the Internet backbone be provided, what are the benefits and costs, and how would constraint on the recovery of middle mile costs occur?
- Should we adopt a rule that rate-of-return carriers are not required to serve any location within their study area that is served by an unsubsidized competitor and will not receive support for those lines to the extent they choose to extend service to areas of competitive overlap? How would we implement the Rural Associations' proposal in conjunction with such a rule? In particular, what would be the methodology for removing the broadband costs associated with areas of competitive overlap from the calculation of the proposed CAF support?
- Should areas served by rate-of-return carriers be transitioned to CAF?
- The presently applied interstate rate-of-return, 11.25 percent, is no longer reflective of the cost of capital. We believe updating the rate of return is necessary for rate-of-return carriers to both attract capital on reasonable terms in today's markets and encourage economically sound network investments. We welcome input from state regulators that may have insights from conducting intrastate rate of return represcriptions in recent years. In particular, we seek comment on the following:
  - *Weighted average* cost of capital (WACC)
  - *Capital Structure.* Any modification to the formula or inputs warranted or necessary?
  - *Surrogates* to use as a basis for the cost of capital analysis
  - *Cost of Debt.* what is the relative weight either the "book" or "market" approach should be given
  - *Cost of Preferred Stock* is any modification to the formula or inputs warranted or necessary?
  - *Cost of Equity* What approaches should be used to estimate a firm's cost of equity?
  - *Zone of Reasonableness* What additional policy considerations should be taken into account before finalizing the new rate of return
  - *Preliminary Analysis* would conservatively suggest that the authorized interstate rate of return should be no more than 9 percent.
  - *Impact on Universal Service Funding* should any savings realized from reducing the rate of return be used to establish a new CAF mechanism for rate of return companies that would support new broadband investment?
  - *Tribally-Owned and Operated Carriers.* Is a different rate of return warranted for these carriers?
  - What Commission action may be appropriate to adjust ETCs' existing service obligations as funding shifts to new, more targeted mechanisms.
- Should there be a federal framework for the process to be used in redefining service areas, by the states or this Commission, as appropriate?
- If service obligations should only attach in the specific geographies (*e.g.*, wire centers) where the ETC is receiving universal service support what would be the appropriate geography to use wire centers, census blocks, census tracts, or counties?

- Should all ETCs be required to obtain an irrevocable standby letter of credit (LOC) no later than January 1, 2013 to protect the integrity of the USF funds disbursed to the recipient and to secure return of those funds in the event of a default, even in the event of bankruptcy?
- Should CAF phase II units be bidder defined or specified census tracks?
- How should the Remote Area Fund be structured: portable consumer subsidy, competitive bidding process or Request for Proposal?
- Should the Commission change its determination that carriers seeking non-Tribal land ETC designation must first seek it from the state commissions? Likewise, to the extent that providers may seek to serve remote areas in multiple states, can and should the Commission establish a streamlined process whereby the Commission could grant providers a multi-state or nationwide ETC designation?
- Subsidy Pass Through. To the extent the Remote Areas Fund is structured in a way that support is provided to ETCs on a per-subscriber basis (*e.g.*, as a portable consumer subsidy or as a per-subscribed-location auction), we propose that ETCs be required to pass the subsidy it receives for a subscriber on to that subscriber – in its entirety – in the form of a discount?

National Influences on Broadband in Oregon

The percentage of Oregonians that use broadband at home is well above the national average but there are still areas of Oregon where high speed Internet access is not available. It is anticipated that the FCC reforms to federal universal service support structures and intercarrier compensation mechanisms will increase the build out of broadband networks in unserved and underserved areas of Oregon and the nation.

Many companies have relied upon federal universal service funds and revenues from terminating access charges. As the FCC moves funding away from access charges and focuses on broadband, some companies may face financial difficulties and will need to change their business models or consolidate in order to stay viable.

Oregon's rugged terrain and relatively low population densities mean that in some areas it is extraordinarily costly to expand services. The FCC's order imposes limits on the level of cost support carriers can achieve, regardless of whether there are extraordinary circumstances that raise costs.

In response, carriers have the right to petition the FCC for additional support or for a waiver of broadband obligations and include in their petitions a request to recover the costs of developing and supporting the petition. However, the FCC has stated that its intention is to grant waivers only where it can be shown that voice telephony cannot be provided without the waiver. The effect on broadband efforts is unknown. Nevertheless, the FCC's order is broad sweeping and its full impact will not be known for some time.

Oregon Universal Service Fund

The Public Utility Commission currently has an open docket to evaluate the Oregon Universal Service Fund (OUSF) - Docket UM 1481. A schedule has been adopted and hearings are scheduled for February 4, 2013. To date, there have been no rulings by the Commission on the OUSF issues under this docket.

Evidentiary issues to be addressed in UM 1481 are as follows:

- What changes should be made to the existing OUSF related to the calculation, collection and distribution of funds?

- What changes should be made to the existing OUSF related to how funds are used?

- What changes should be made to the existing OUSF related to transparency and accountability?

Progress on the docket may be followed at
http://apps.puc.state.or.us/edockets/docket.asp?DocketID=16169

Strategies for Broadband Adoption and Utilization
The Council believes that local community and business leaders, elected officials and tribal governments should engage in proactive strategic planning to realize and accelerate broadband adoption and utilization for economic and community development. It is hoped that the Oregon Broadband Outreach and Strategic Planning Project www.oregonbroadbandplanning.org will produce a vetted template to serve as a guide for local communities and the state to engage in this planning.

At the national level, the FCC has announced a new Public-Private Initiative to "drive collaboration among government and private sector entities, including non-profit organizations, on broadband-related national priorities." FCC Chairman Julius Genachowski hopes that the initiative will advance broadband goals such as

- Broadband adoption
- Digital literacy
- Technology and education
- Cyber security
- Public safety
- Job creation, and
- Broadband and healthcare

The latest initiative will build on previous efforts at the commission to encourage the public and private sectors to work together to advance goals set for the broadband. Those initiatives include

- Connect to Compete, a broadband adoption program with national digital literacy and low-cost broadband offerings www.connect2compete.org
- The Digital Textbooks Initiative www.fcc.gov
- FCC's cyber security small-business initiative www.fcc.gov
- Jobs4America www.jobs4america.net
- A joint effort with mobile carriers on a new nationwide public safety emergency alerting system www.fcc.gov

Conclusions

Communications is a dynamic industry and impacts all parts of our economy and many parts of our lives. In fact, we know of no other single technology or business that has potential for such positive impact to Oregon. Because of this, it is prudent for leaders in public service and in the private sector to be informed about its potential and proactive in its use.

The Internet has emerged as the global platform for communication, business, government, education, information storage and distribution, and entertainment and is growing in importance in other areas and in impact as user applications migrate to "the cloud." According to the Broadband Forum, a non-profit industry organization, there are now more than 600 million broadband service subscribers around the world.

Broadband network infrastructure will always be a work in progress as technologies and applications change over time. In fact, what constitutes broadband, e.g., transmission speeds of thousands of bits per second, millions of bits per second, or billions of bits per second is a moving target. This is evident in the ever increasing estimates of bandwidth needs for almost every application. As a result, encouraging continued deployment of broadband network infrastructure continues to become even more important. That encouragement can take the form of active promotion or in many cases, all that is needed is the removal of barriers that slow deployment and discourage investment.

It is clear that access to competitive high-speed IP telecommunication networks and the Internet is becoming essential for Oregon's institutions, businesses and individual citizens. Action is required to ensure that Oregon's broadband needs are met and that broadband benefits are realized. OBAC makes the following recommendations in the areas of broadband adoption, healthcare, energy management, education and government.

<u>Adoption</u>

- Conduct an update of the Oregon Broadband Adoption survey every four years to measure progress in broadband adoption throughout Oregon.
- Coordinate broadband service provisioning across the multiple key application areas of telehealth, energy management, education and government.

<u>Telehealth</u>

- Recognize and support Oregon's national leadership in the use of broadband and information technologies to improve healthcare delivery
- Support efforts at the state level aimed at standardizing the process for physician credentialing to provide telehealth services

<u>Energy Management</u>

- Continue to monitor the development and deployment of Smart Grid broadband applications in Oregon

Education

- Mandate the development of a funding plan(s) for Oregon's P-20 broadband network needs
- Provide equitable access for students and educators to reliable and robust broadband connectivity both in the school and at home
- Dedicate resources to provide ongoing professional development (coaching) for educators to ensure quality implementation of technology and practice in the classroom
- Require timely and reliable collection of school readiness data for the implementation of Smarter Balanced Assessment in 2014-15 school year

Government

- Encourage state government to incorporate broadband into planning efforts.
- Encourage local governments to incorporate broadband into local planning efforts. Every community in Oregon is required by law to do a comprehensive plan every 20 years. Incorporating broadband into local planning will help ensure that localities are thoughtful about future broadband needs.
- Encourage government at all levels to open data for general use.

Finally, while we can celebrate Oregon's success in attracting new businesses such as Amazon, Apple Computer, Facebook, Google, and a growing list of data centers, we can still see significant opportunities for our state to promote and leverage its broadband telecommunications infrastructure and to develop strategies to accelerate broadband adoption and utilization for economic and community development. It is the hope of the entire Oregon Broadband Advisory Council, that this report will help move us collectively in that direction.

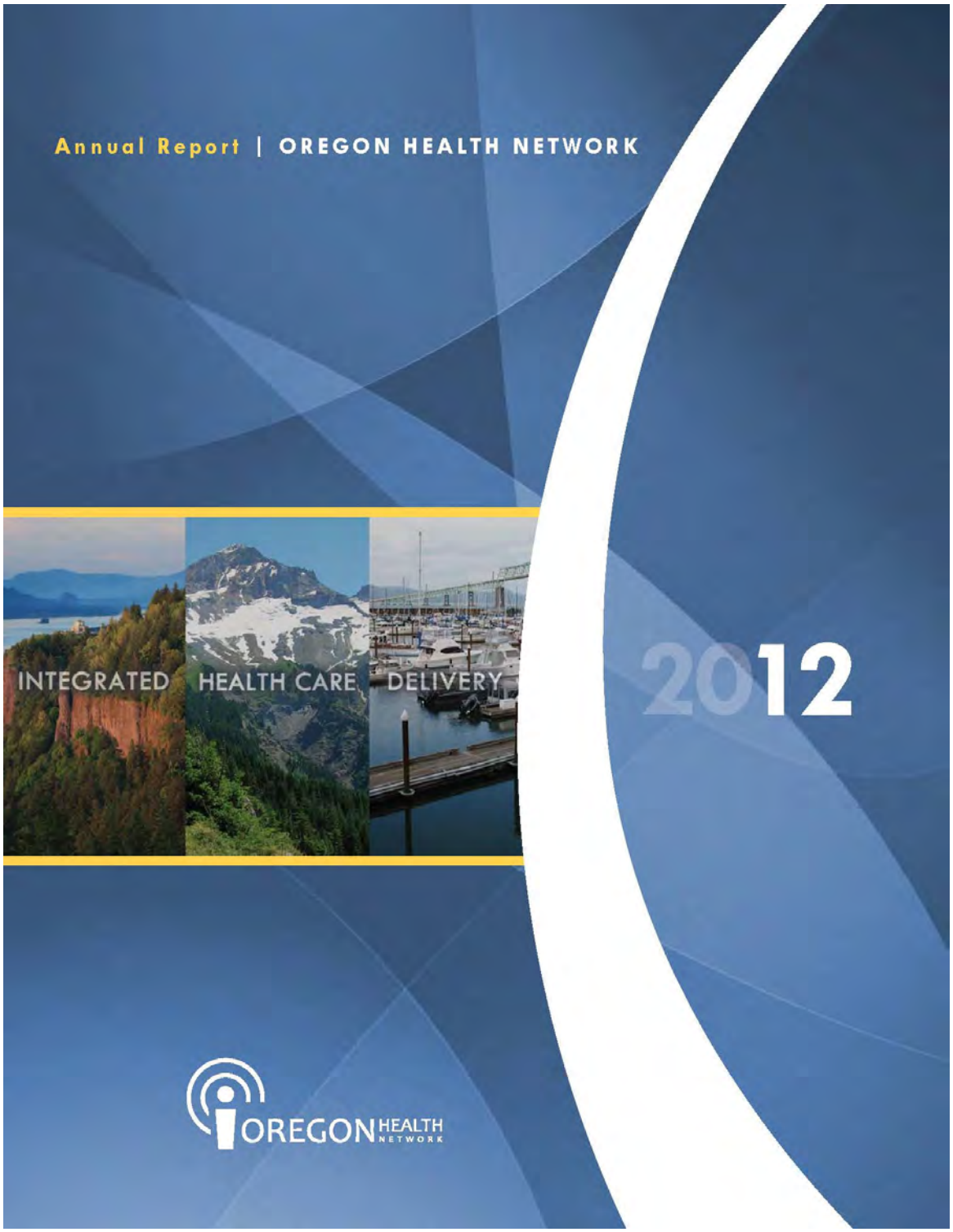
Appendix A

Oregon Telecommunications Time Line

| - 1984 AT&T's divestiture of the Bell System / Creation of U S WEST
|
|
| - 1991 Oregon Task Force on Telecommunications – Oregon's Next Trail Report
|
| - 1995 Commercialization of the Internet
| - 1996 Telecommunications Act of 1996
| - 1996 Integra Telecom founded in Oregon
| - 1997 CenturyTel acquires Pacific Telecom, Inc.
| - 1998 Google founded
| - 1999 SB 622 passed - Telecommunications Infrastructure Fund
| - 1999 Northwest Open Access Network (NoaNet) founded
| - 1999 Ashland FiberNet founded
| - 2000 U S WEST is acquired by and begins d.b.a. Qwest
| - 2000 GTE Northwest merged with and begins d.b.a. Verizon
| - 2001 Creation of the Oregon Telecommunications Coordinating Council (ORTCC)
| - 2001 QLife Network founded
| - 2001 City of Portland's IRNE founded
| - 2002 AT&T Broadband in Oregon and SW Washington is acquired by Comcast
| - 2002 Monmouth-Independence Network (MINET) founded
| - 2003 Completion of SB622 Telecommunications Infrastructure Projects
| - 2005 LightSpeed Networks (LS Networks) founded
| - 2006 Google datacenter opens in The Dalles
| - 2006 Sprint/United reorganized as Embarq
| - 2009 Creation of the Oregon Broadband Advisory Council (OBAC)
| - 2009 American Recovery and Reinvestment Act – Broadband programs
| - 2009 Embarq acquired by CenturyTel d.b.a. CenturyLink
| - 2010 Verizon's Oregon wireline business is sold to Frontier Communications
| - 2010 Facebook datacenter opens in Prineville
| - 2011 Qwest is acquired by CenturyTel and begins d.b.a. CenturyLink
| - 2011 FCC Universal Service Fund and Intercarrier Compensation Reforms
| - 2012 OPUC Oregon Universal Service Fund reform Docket #1481
| - 2012 Creation of the National Broadband Public Safety Network (FirstNet)

Appendix B

Oregon Health Network
2012 Annual Report



From the Executive Director

OHN is happy to report that we have successfully used our FCC Rural Health Care Pilot Program (RHCPP) subsidy dollars to build **Oregon's first statewide health care network.** Networks like OHN are required to support "real" health care reform that both incentivizes and mandates that health care providers transition from the siloed health care systems of the past to the new integrated, coordinated, and patient-centered models of the future.

As a result of these RHCPP funds, national policies, and our growing membership base, OHN is on its way to full sustainability in 2014. Entering fiscal year 2013 with over 236 member locations, our primary efforts in the coming year will be focused upon:

1. Supporting the Coordinated Care Organizations (CCOs) and bringing on the rest of the health care community that wasn't eligible for, or didn't receive, RHCPP funding to connect to OHN

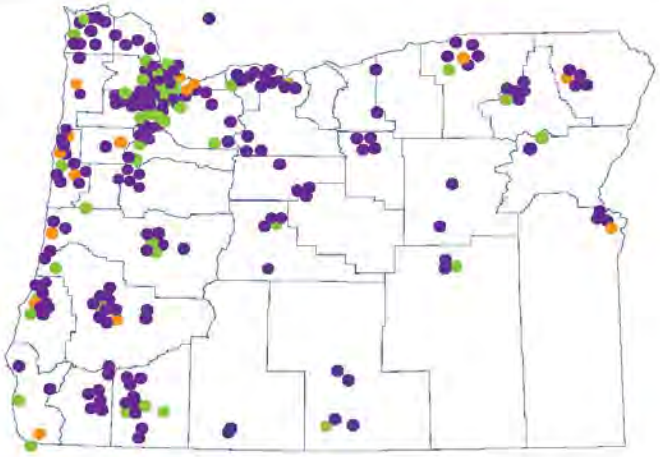
2. Educating members on the use and adoption of our Telehealth Video Conferencing Solution

Thanks to the **courage**, **trust**, **persistence**, and **innovation** of our valued members, staff, board, and state and national community of stakeholders, OHN has earned a national reputation as an innovator in the new landscape of **statewide health networks.** With this new title comes the added responsibility of doing right by both our members and the state as we learn to do more and better with less—together. Our unique ability to convene cross-organizational and regional discussions, and collect and share unique data, allows us to deliver trusted and scalable connectivity infrastructure that supports the health care, economic, and workforce development needs of the state. We look forward to a future where OHN and our membership play a more central role in Oregon's HIT discussions, investments, and efforts.

- Kim Lamb
Executive Director, Oregon Health Network

WHAT IS OUR REACH?

How many member sites do we have?



236* MEMBER SITES

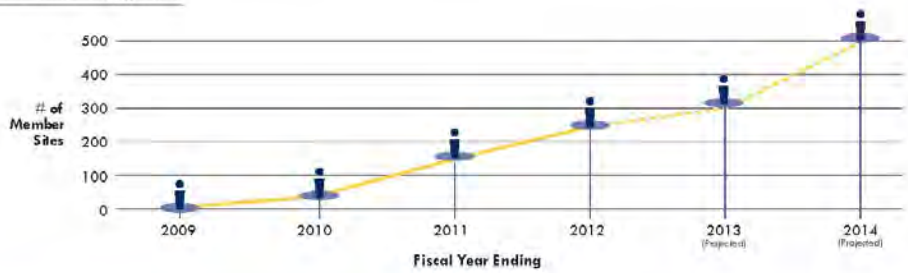
184 CLINICS

38 HOSPITALS
- *37 in Oregon, 1 in California*
- *Includes 10 hospital systems*

14 COMMUNITY COLLEGES

** While OHN currently has 236 bricks-and-mortar facilities directly connected to the network, we also have several large hospital systems and state agencies that provide connectivity for hundreds of their locations through a single, convenient data center connection. Since these connections are indirect, we do not currently include them in our totals.*

How has membership grown?



QUALITY: THE HEALTH OF THE NETWORK

OHN Telecom Provider Performance, 2011-2012:
With health care delivery, lives are literally on the OHN lines. OHN traffic is highly dependent on reliable broadband connectivity. Therefore, we maintain strict vendor service level agreements (SLAs), including overall availability of >99.99%.

If you would like more detailed technical information about our telecom providers' performance, please contact us.

HOW IS THE NETWORK BEING USED?

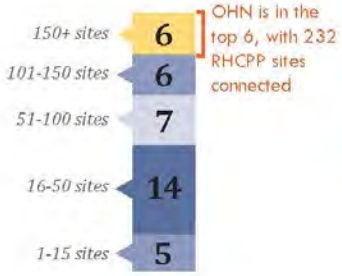
How are OHN member sites using their connection?

THE TOP 5 USES:

1. Radiology/Pacs/Image Transfer
2. General Use: Grand Rounds, CME, Training+
3. Electronic Health Records
4. Telestroke
5. Telemedicine NICU/PICU

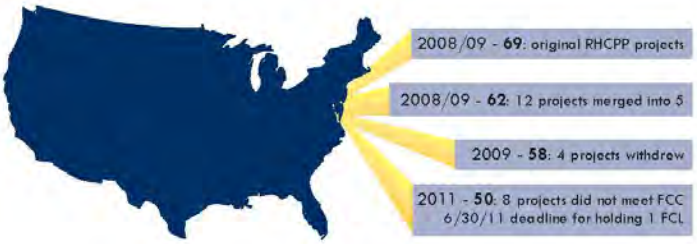
HOW OHN MEASURES UP NATIONWIDE: *The FCC's Rural Health Care Pilot Program (RHCPP)*

*Number of member sites connected per RHCPP project, nationwide **



(**12 sites did not report data)*

National RHCPP Projects: as of May 1, 2012



FYE 2012 RHCPP Member Sites: Goal vs. Actual

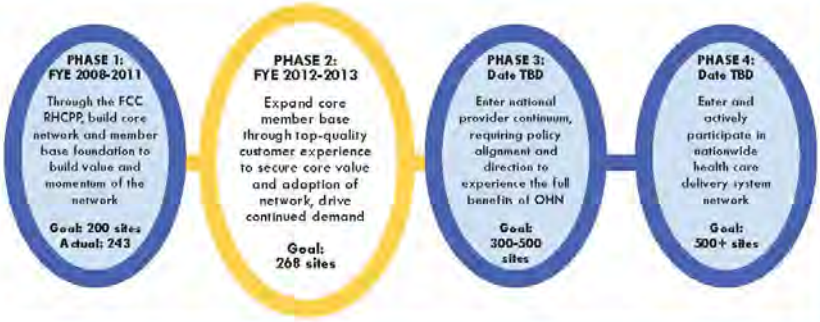
Fiber Deployment: New and Existing

Note- This report includes data pulled from July 1, 2011, to May 1, 2012. All member site data also includes those who have signed as members but who may have not completed installation.

OUR TRANSITION: FROM PHASE 1 to PHASE 2

Phase 1 *focused on building a core network and member base through the FCC's Rural Health Care Pilot Program and was completed in FYE 2012.*

In Phase 2 *we are focusing on expanding our core membership base and driving continued demand for OHN's four core membership offerings: connectivity, health IT best practices, hosted services, and advocacy. This phase targets the rest of the health care community.*



THE POWER OF MEMBERSHIP

We listen and respond to the needs of our members. In addition to putting our members in the company of other visionaries in the health care community, we provide **greater broadband connectivity, proven health IT best practices, integrated hosted services,** and **targeted advocacy.** These offerings are necessary to better serve the *Triple Aim* (defined as improving population health, improving patient experience and outcomes, and reducing costs) and achieve the meaningful use and exchange of electronic health records. OHN is fast becoming a working model and sustainable reality, and our network has helped to position Oregon as one of the leading health IT innovators in the country.

Core Services for Our Members

CONNECTIVITY	BEST PRACTICES	HOSTED SERVICES	ADVOCACY
OHN provides a scalable, high-speed, reliable, and managed solution connecting a growing majority of Oregon's health care and education providers.	OHN is in the unique position of creating best practices and identifying and sharing information that helps best serve our members and state/national leadership.	OHN offers the only full-service video conferencing solution of its kind in the country to best support coordinated care and telehealth program initiatives.	OHN provides leadership by delivering ongoing support and advocacy for health IT needs and best practices at community, state, and national levels.

THE FUTURE OF OHN: FYE 2013 and BEYOND...

Unprecedented changes in health care delivery reform are taking shape in Oregon and beyond. The Centers for Medicare and Medicaid Services (CMS) has pushed for all health care providers to achieve meaningful use and exchange of electronic health records. This, combined with the state's new Coordinated Care Organization (CCO) model, means that fiscal year end 2013 will be a watershed year for OHN and the health care community as a whole. In order to successfully complete Phase 2 of our network's rollout in the coming year, our focus will be on investing in outreach efforts that support membership expansion and the meaningful use and value of the network.

Our plan is to:

- *Maintain and expand upon the reputation and momentum OHN has developed as one of the nation's industry leaders, specifically as it relates to the organization being:*
  - *A trusted partner in helping to co-design and support the next generation nationwide health care delivery system, starting at the CCO level in Oregon*
  - *A valued convener and producer of best practices*
  - *An advocate of supported consortium networks at state and federal levels*
  - *A proven/working statewide health care network model*
- *Bring on 500 member sites by expanding membership to include all members of the health care continuum*
- *Work with internal staff, members, key stakeholders, and those throughout the health care continuum in support of OHN's 12 Health IT Best Practices model and overarching vision and mission*

Appendix C

What is Broadband?

Broadband is a general term used to represent a wide range of telecommunications technologies and services which utilize a faster data transmission rate than that available over the standard voice grade telephone line, which is 56 Kbps and usually less. Broadband is also widely referred to as "high-speed" Internet access service.

Until 2008, the FCC's official definition of broadband was a transport service offering a minimum data transmission rate of 200 Kbps in one direction. That year, the FCC established a set of Broadband Tiers:

Tier	***Rate***
1	200 Kbps up to 768 Kbps
2	768 Kbps to 1.5 Mbps
3	1.5 Mbps to < 3.0 Mbps
4	3.0 Mbps to < 6.0 Mbps
5	6.0 Mbps to < 10.0 Mbps
6	10.0 Mbps to < 25.0 Mbps
7	25.0 Mbps but < 100.0 Mbps
8	100.0 Mbps and beyond

FCC Broadband Service Speed Tiers

Tier 1 is characterized as "First Generation Data." 768 Kbps is now the minimum data transmission rate for "Basic Broadband." Tiers 3 through 8 reflect the range of service speeds available and expected to become available from providers.

In its National Broadband Plan, the FCC proposes a goal that every household and business location in America should have access to affordable broadband service with actual download speeds of at least 4 million bits per second (Mbps) and actual upload speeds of at least 1 Mbps with the further recommendation that the FCC review and reset this target every four years.

Many different technologies are employed to deliver broadband services in Oregon including Digital Subscriber Line (DSL), Cable-Modem, wireless (mobile 3G / 4G, fixed, satellite), and fiber to the premises (FTTP). These service technologies range in transmission performance from 200 Kbps up to 50 Mbps and beyond.

Broadband services in Oregon are available from a wide mix of service providers including telephone companies, cable companies, competitive access providers, fixed and mobile wireless providers, municipal and consortia providers, and satellite service providers.

Appendix D

American Recovery and Reinvestment Act of 2009 (ARRA)
Funded Oregon Based Broadband Projects

ARRA Oregon Project Award Summary

Award Recipient	ARRA Program	Grant	Loan	Federal Funds Total
Oregon based projects				
Canby Telephone Association	BIP	$ 496,090	$ 248,046	$ 744,136
Cascade Networks, Inc.	BIP	$ 578,316	$ 578,316	$ 1,156,632
Cascade Utilities, Inc.	BIP	$ 3,898,299	$ 1,299,433	$ 5,197,732
City of Sandy	BIP	$ 374,537	$ 374,548	$ 749,085
Monroe Telephone Company	BIP	$ 4,241,050	$ 1,413,684	$ 5,654,734
Trans-Cascades Telephone Company	BIP	$ 1,770,294	$ 590,099	$ 2,360,393
Warm Springs Telephone Company	BIP	$ 2,722,960	$ 2,722,960	$ 5,445,920
				$ -
Bend Cable Communications	BTOP	$ 4,418,765		$ 4,418,765
Clackamas County	BTOP	$ 7,804,181		$ 7,804,181
Crook County	BTOP	$ 3,908,064		$ 3,908,064
Gervais Telephone Company	BIP/BTOP	$ 314,430	$ 314,430	$ 628,860
Lane Council of Governments	BTOP	$ 8,325,530		$ 8,325,530
				$ -
Public Utility Commission of Oregon	SBDD	$ 2,108,302		$ 2,108,302
Public Utility Commission of Oregon	SBDD	$ 3,550,000		$ 3,550,000
	TOTAL	$ 44,510,818	$ 7,541,516	$ 52,052,334

*These are Oregon based projects indicating that the applicant is located in Oregon and that the project will be implemented in Oregon.

Notes:

- Portland State University's Lerner Web Partnership project is a multi-state project which was awarded $3,318,031 including $1,125,380 for Oregon (BTOP)

Appendix E
Oregon Broadband Advisory Council Members – 2012

The mission of the council is to encourage coordination and collaboration between organizations and economic sectors to leverage the development and utilization of broadband for education, workforce development, government and healthcare, and to promote broadband adoption by citizens and communities. The council members represent Oregon's cities, counties, telecommunications service providers, tribes, educators, economic development organizations, public safety agencies, healthcare providers, E-Government, the Public Utility Commission, the State House of Representatives and the State Senate. Members of the Council were appointed by the Governor, the Speaker of the House and the President of the Senate.

Council Members

Susan Ackerman
Commissioner and Chair
Public Utility Commission of Oregon

Rich Bader
President and CEO
EasyStreet Online Services

Anne Carloss
Director of Special Education
Hood River County School District

Brian Clem
Representative
Oregon House of Representatives

Miles Ellenby
Associate Professor of Pediatric Critical Care Medicine
Medical Director, Telemedicine Program
Doernbecher Children's Hospital
Oregon Health and Science University

Ted Ferrioli
Senator
Oregon State Senate

Joseph Franell **(Council Chair)**
General Manager and CEO
Eastern Oregon Telecom

Adam Grzybicki
President
AT&T Oregon

Mary Beth Henry **(Council Vice-Chair)**
Deputy Director, Office for Community Technology
City of Portland / Mt. Hood Cable Regulatory Commission

Lonny Macy
Community and Economic Development Planner
Confederated Tribes of Warm Springs

Dugan Petty
Chief Information Officer
Oregon Department of Administrative Services

Dave Sabala
General Manager
Douglas Electric Cooperative

Michael Smith
Commission
Sherman County

Tom Worthy
Lieutenant
Oregon State Police

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503 581-5115 Fax
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Council Website URL: www.broadband-oregon.org

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