

Strategies for Broadband Infrastructure Deployment, Adoption and Utilization in Rural Cities and Counties

A Report of the

Oregon Business Development Department



Presented to the

Senate Interim Committee on Business and Transportation
House Interim Committee on Transportation and Economic Development
Joint Interim Committee on Ways and Means -
Sub Committee on Transportation and Economic Development
Joint Legislative Committee on Information Management and Technology
House Committee on Rural Communities, Land Use and Water

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Executive Summary

This report of the Oregon Business Development Department (Business Oregon) to the Legislative Assembly on strategies for broadband infrastructure deployment, adoption and utilization is directed by ORS 285A.070, section 1, chapter 432. The report presents the results of a study of strategies to expand broadband telecommunications infrastructure, and promote the adoption and utilization of broadband technologies in rural cities and counties for community and economic development.

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

– The National Broadband Plan

Broadband needs to be placed on the state government agenda and made a priority issue to make quality, reliable, affordable, and sustainable broadband available statewide.

Broadband telecommunications is increasingly viewed as essential infrastructure needed to support industrial and commercial activity. The Internet has emerged as the global platform for business, government, education, healthcare, communication and entertainment. Broadband is essential for:

- Businesses of any size that want to be a traded sector business and want to be competitive and effectively interact with suppliers and customers.
- Government entities that want to be responsive to the needs of citizens, support civic engagement, and provide information and services in the way that constituents want to receive them.
- Schools that want to utilize digital course content and distance learning resources to teach students, communicate with and engage parents, and professionally develop staff.
- Libraries that want to provide local community access to the information resources of the world and to provide broadband Internet access to members of the community that do not have access in their homes.
- Power utilities that wish to deploy smart grid features and enable energy management functions and services.
- Healthcare providers that want to provide a full range of clinical services to patients where they live.
- First responders that want access to video, text, and image data in real time for public safety.

Broadband may be viewed as a “meta-infrastructure” that enhances and improves other types of infrastructure. Transportation systems, power grids, water systems, communication systems and an endless list of user applications are enabled and improved by a robust broadband telecommunications infrastructure.

What constitutes broadband in terms of transmission speed and quality of service, however, is a moving target. As a result, the “Digital Divide” continues to exist in Oregon and the nation. Ten to fifteen years ago, the Digital Divide was viewed as between those geographic areas that had digital subscriber line services and those areas that only had “dial-up” Internet access services. Today, the Digital Divide is between those geographic areas that have access to services equal to or greater than the current Federal Communications Commission (FCC) standard of 25 Mbps and those areas that do not, *and* between those users who have the means, skills, and perceived need to adopt and utilize broadband services and those who do not. Rural areas are particularly affected given the perennial population-density-business-case challenge of supporting investment in broadband infrastructure. Only fifty-five percent of people living in rural areas have access to the service transmission speeds that the FCC now considers to be broadband, while ninety-four percent of people living in urban areas have access.

Broadband is currently gaining attention *and traction* as an issue at the federal level, state level, and local community level in public awareness, elected official awareness, and with end-user organizations and individuals. Broadband is becoming a necessity everywhere as the value and essential nature of broadband in an information age global economy is recognized and understood.

There are many strategies being developed and implemented across the United States to address the challenge of broadband infrastructure deployment and meet the need in rural areas. Strategies include private sector solutions, public sector solutions, non-profit organization solutions, cooperative model solutions, and public-private partnership solutions, all of which may be facilitated by a supportive public policy.

Oregon has long been engaged in broadband telecommunications public policy deliberations, and ranks highly compared to other states in broadband availability and adoption. The state’s broadband infrastructure, however, remains a work in progress and there is no one solution that best meets the needs of every community. Effective solutions will vary with the geographic, demographic, political, economic, and technological topology of areas and communities. In Oregon and nationwide, broadband service needs are being met through a mix of private sector, public sector, consortia and cooperative owned networks with varying levels of coverage.

Oregon needs to continue its work on this issue, learn from the experience of others, engage at state and local levels, collaborate, communicate and employ multiple strategies to achieve its public policy goals. Oregon needs to build on its accomplishments to date and consider moving to a higher level of state and local government participation in the planning and funding of broadband infrastructure deployment and adoption efforts. Options for action include creating a dedicated state-level government broadband office; developing an official state broadband plan; creating broadband infrastructure funding programs; creating broadband adoption funding programs; repurposing the Oregon Universal Service Fund to subsidize broadband infrastructure deployment; reviewing the state’s regulatory structure and how it impacts its broadband goals; encouraging local community broadband planning; and building/subsidizing public “middle mile” and distribution networks as a means to expand broadband service to unserved or underserved areas.

Broadband as Essential Infrastructure

“Access to high-speed broadband is no longer a luxury; it is a necessity for American families, businesses, and consumers. Affordable, reliable access to high-speed broadband is critical to U.S. economic growth and competitiveness. High-speed broadband enables Americans to use the Internet in new ways, expands access to health services and education, increases the productivity of businesses, and drives innovation throughout the digital ecosystem.”

– President Barack Obama

Broadband is increasingly viewed as essential infrastructure needed to support industrial and commercial activity. In a 2014-2016 study by Strategic Networks Group, 70% of businesses surveyed say that a location's broadband service was "essential" or "important," and only 11% said that broadband was "not important."

- Any business of any size that wants to be competitive and effectively interact with its suppliers and customers needs broadband. Today, local “main-street” businesses compete with businesses from around the world that market their goods and services over the Internet. Conversely, e-Commerce is an effective strategy for local businesses in rural communities to expand their markets and become traded sector businesses.
- Government entities that want to be responsive to the needs of citizens, support civic engagement, support economic development, and provide information and services in the way that the public wants to receive them need broadband. People as customers and citizens increasingly want and expect 24 x7 access to information, products and services from both their commercial and public-institutional service providers. They want to go on-line, not wait in-line.
- Schools that want to utilize digital course content and distance learning resources to teach students, engage with parents, and provide staff with ongoing professional development need broadband access, not only in schools and on campuses, but in students’ homes. Education is steadily moving away from paper text books and paper testing. Course content materials, student and parent communications, student assessment, and school administration functions are increasingly on-line. Levels of broadband access directly impact education delivery capabilities, student learning, student achievement and the degree of student preparation for college and employment.
- Power utilities that want to deploy smart grid features, functions and services need broadband. Broadband supports and enables real time command and control functions and demand side management for the power utility as well as enabling energy management applications for the customer.
- Healthcare providers that want access to support and services worldwide and want to provide a full range of clinical services to patients *where they live* need broadband. Telehealth is an evolving model for healthcare delivery that increases access, improves outcomes, and reduces costs. Telemedicine is an effective strategy for providing

healthcare services in rural communities, which is a critical need that is growing each year with the age of the population.

- Transportation is enhanced by smart highway systems that collect and share information about road and traffic conditions, regulate traffic flow, and interface with smart vehicles that are networked and connected. Smart vehicle and transportation systems are positioned for significant growth in the next ten years where the communication networks needed to support them are available.
- First responders that want access to video, text, and image data in real time for public safety and for interoperability with other first responder networks need broadband. Robust broadband public safety communication systems can dramatically improve and assist first responder coverage and capabilities in rural areas.
See: <http://sngroup.com/about-sng/defining-broadband/>.

High quality Internet access is a critical element in building rural economies. High quality, reliable, and affordable broadband access is a key criterion for site-selection decisions by businesses of all sizes and types as broadband access is increasingly viewed as mission critical by businesses. Broadband access is also becoming a quality-of-life consideration for rural communities as the Internet becomes a primary platform for communication, employment, education, healthcare, and entertainment. See: <http://www.dailyonder.com/broadband-access-were-all-in-the-middle-of-somewhere/2016/06/30/13992/>. Broadband provides greater access to educational resources, healthcare, news and information, government / civic participation, employment, business opportunities, markets, smart applications for energy management, entertainment, and security. Without broadband, businesses can't thrive there, and many individuals and families don't want to live there. See: https://www.whitehouse.gov/sites/default/files/page/files/20160308_broadband_cea_issue_brief.pdf.

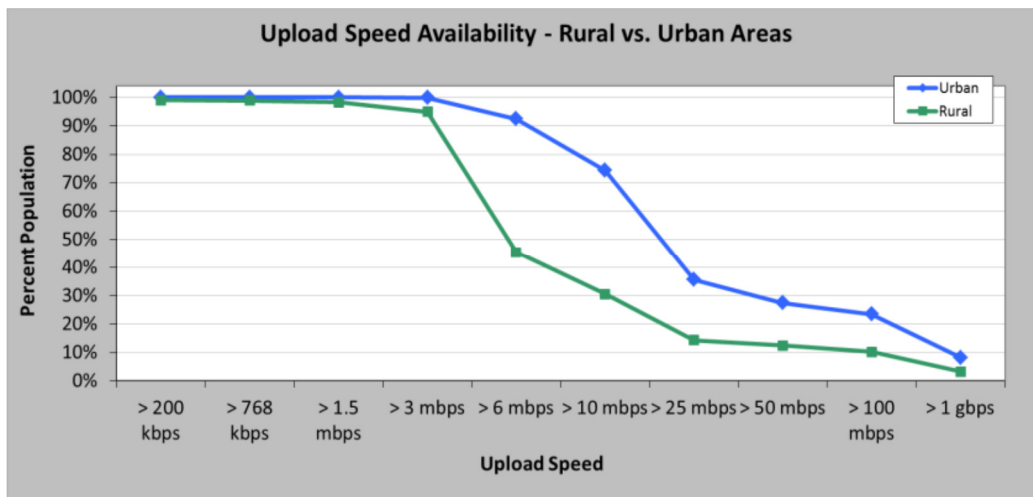
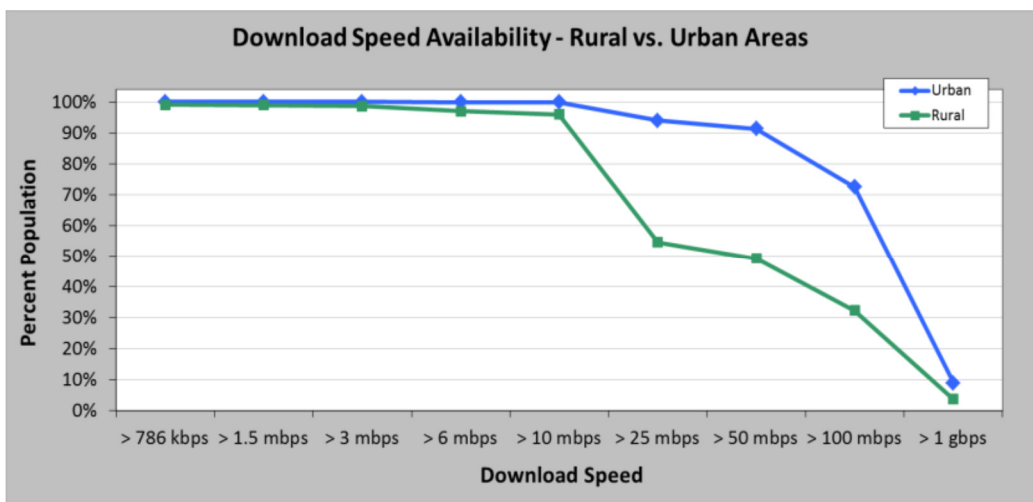
The Oregon Broadband Advisory Council (OBAC) conducted an online Outreach Survey to gauge current practices and knowledge involving broadband in the efforts of economic development organizations in Oregon. The survey showed that Oregon's economic development professionals see a strong relationship between 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
- 75.0% believe that broadband increases the number of business start-ups
- 41.7% believe that broadband increases individual's income earnings
- 75.0% of the respondents believe that broadband can encourage and enable entrepreneurship including starting new businesses, growing existing businesses and creating jobs. See: www.broadband-oregon.org.

With each passing year, the value and essential nature of broadband infrastructure is more widely recognized and appreciated by communities and their leaders.

Rural Broadband Challenges – the continuing Digital Divide

Oregon has made significant progress in the deployment of broadband infrastructure throughout the state over the past fifteen years, yet the “Digital Divide” continues to exist. Ten years ago, the Digital Divide was considered to be between those geographic areas that had digital subscriber line services and those areas that only had “dial-up” Internet access services. Today the divide is between those geographic areas that have access equal to or greater than the latest FCC broadband standard (currently 25 Mbps down and 3 Mbps up) and those areas that have access to transmission speeds under 25 Mbps. It is important to note that the divide also exists between users who have the means, digital skills, and perceived need to adopt and utilize broadband technologies and those who do not. Rural areas are particularly affected by both aspects of the Digital Divide. Only 55 percent of people living in rural areas have access to the service transmission speeds that the FCC currently considers to be broadband, while 94 percent of people living in urban areas have access.



See:

<http://www.broadbandmap.gov/download/Broadband%20Availability%20in%20Rural%20vs%20Urban%20Areas.pdf>

The business case for investment in infrastructure is more challenging for rural areas than for urban areas. Rural areas have smaller and less dense populations with fewer prospective paying customers. Rural areas have higher costs of construction to cover large service territories of varied terrains including mountains, forests, deserts, plains and coastline as well as having expansive federal and state owned lands. Broadband in rural areas is the latest infrastructure to suffer because of the perennial population-density-business-case challenge of supporting investment in infrastructure.

While measuring service availability is the most reliable statistic, it is important to recognize that service availability is not the same as service adoption. Having broadband infrastructure pass a business or residence unfortunately does not equal use. The common barriers of cost and perceived need are especially pronounced in rural areas.

In 2014, the Public Utility Commission of Oregon, using funds from its State Broadband Data and Development Program federal grant, contracted with the Oregon Business Development Department (OBDD), on behalf of the Oregon Broadband Advisory Council, to perform a survey on broadband adoption in Oregon. Over four thousand telephone interviews were conducted. Of particular concern to the Council are the findings of this study regarding variances in rates of broadband adoption in rural areas as compared to urban areas of Oregon. The study confirmed that Oregon’s Digital Divide is not only in infrastructure deployment and service availability between urban and rural areas, but also in the rates of adoption and utilization of broadband technologies between urban and rural area residents.

Broadband Status	Total	NW Coast	Portland	Central Coast	SW Oregon	North Central	Central Oregon	South Central	Eastern
Broadband at home	82%	78%	85%	83%	79%	76%	83%	69%	67%
Not-at-home Internet User	4%	6%	4%	2%	4%	3%	5%	6%	4%
Dial-up	1%	3%	1%	1%	2%	1%	2%	1%	4%
Internet Non-user	13%	14%	10%	13%	15%	20%	10%	24%	25%

Oregon Broadband Adoption by Region

Oregon Broadband Survey Report

See: <http://www.orinfrastructure.org/Infrastructure-Programs/Telecommunications/OBAC/Reports/SurveyRpt2014.pdf>

The divide is not just related to population density, but also to factors of income, age, ethnicity, and education. Less than 50 percent of households in the bottom income quintile use the Internet at home, compared to 95 percent of households in the top income quintile. See:

https://www.whitehouse.gov/sites/default/files/page/files/20160308_broadband_cea_issue_brief.pdf.

The Mississippi State University Extension Service has created an index to measure the Digital Divide which it has applied to all of the counties in the United States. The objective of the Index is to provide a measurement tool for policymakers, community leaders, and residents. The Index consists of two components: infrastructure/adoption and socioeconomic characteristics.

- Infrastructure Adoption Characteristics (INFA): Percent of people without access to 25/3 fixed broadband, number of residential fixed broadband connections per 1,000 households, and average advertised upload/download speeds from FCC Form 477 data.
- Socioeconomic Characteristics (SE): Percent aged 65 years and over, percent population 25 years and over with less than a high school education, and (individual) poverty rate.

The overall digital divide index (DDI) was determined by combining the INFA and SE components. The higher the index number, the larger the digital divide. This index is another illustration of the continuing digital divide in Oregon. The variance in urban vs. rural counties is striking. The ten Oregon Counties with the highest Digital Divide Index values are in red.

FIPS* County Code	COUNTY	OMB** Area Designation	Socio-Economic Characteristics	Infrastructure Adoption Characteristics	Digital Divide Index
41001	Baker	Noncore	53.00	58.30	54.99
41003	Benton	Metropolitan	27.98	31.86	20.27
41005	Clackamas	Metropolitan	22.44	36.00	19.46
41007	Clatsop	Micropolitan	36.85	44.43	34.77
41009	Columbia	Metropolitan	30.46	54.68	37.62
41011	Coos	Micropolitan	52.22	52.93	50.77
41013	Crook	Micropolitan	55.11	68.36	63.31
41015	Curry	Micropolitan	59.18	51.55	54.41
41017	Deschutes	Metropolitan	30.38	33.65	23.08
41019	Douglas	Micropolitan	52.45	54.06	51.70
41021	Gilliam	Noncore	39.77	83.37	63.52
41023	Grant	Noncore	54.92	75.75	68.27
41025	Harney	Noncore	52.40	74.47	65.72
41027	Hood River	Micropolitan	36.76	59.31	44.96
41029	Jackson	Metropolitan	43.82	42.94	38.35
41031	Jefferson	Noncore	47.87	58.28	51.59
41033	Josephine	Metropolitan	54.61	54.40	53.36

41035	Klamath	Micropolitan	48.21	52.63	47.92
41037	Lake	Noncore	52.53	65.91	59.91
41039	Lane	Metropolitan	36.95	43.48	34.19
41041	Lincoln	Micropolitan	53.01	42.19	43.89
41043	Linn	Metropolitan	39.55	41.69	34.67
41045	Malheur	Micropolitan	55.46	70.60	65.08
41047	Marion	Metropolitan	39.15	40.75	33.76
41049	Morrow	Micropolitan	46.05	53.21	46.90
41051	Multnomah	Metropolitan	29.16	35.22	23.36
41053	Polk	Metropolitan	31.74	41.77	29.57
41055	Sherman	Noncore	43.11	83.29	65.67
41057	Tillamook	Noncore	47.45	46.53	43.22
41059	Umatilla	Micropolitan	38.65	50.13	39.89
41061	Union	Micropolitan	38.23	57.37	44.60
41063	Wallowa	Noncore	47.24	76.18	63.50
41065	Wasco	Micropolitan	45.62	55.50	48.18
41067	Washington	Metropolitan	21.25	41.26	22.30
41069	Wheeler	Noncore	71.15	92.00	90.17
41071	Yamhill	Metropolitan	34.40	46.79	34.79
State Average			43.59	54.75	46.33

Digital Divide Index

*FIPS: Federal Information Processing Standard

**OMB: Office of Management and Budget

Source: Mississippi State University Extension Service Intelligent Community Institute

(<http://ici.msucare.com/ddi>)

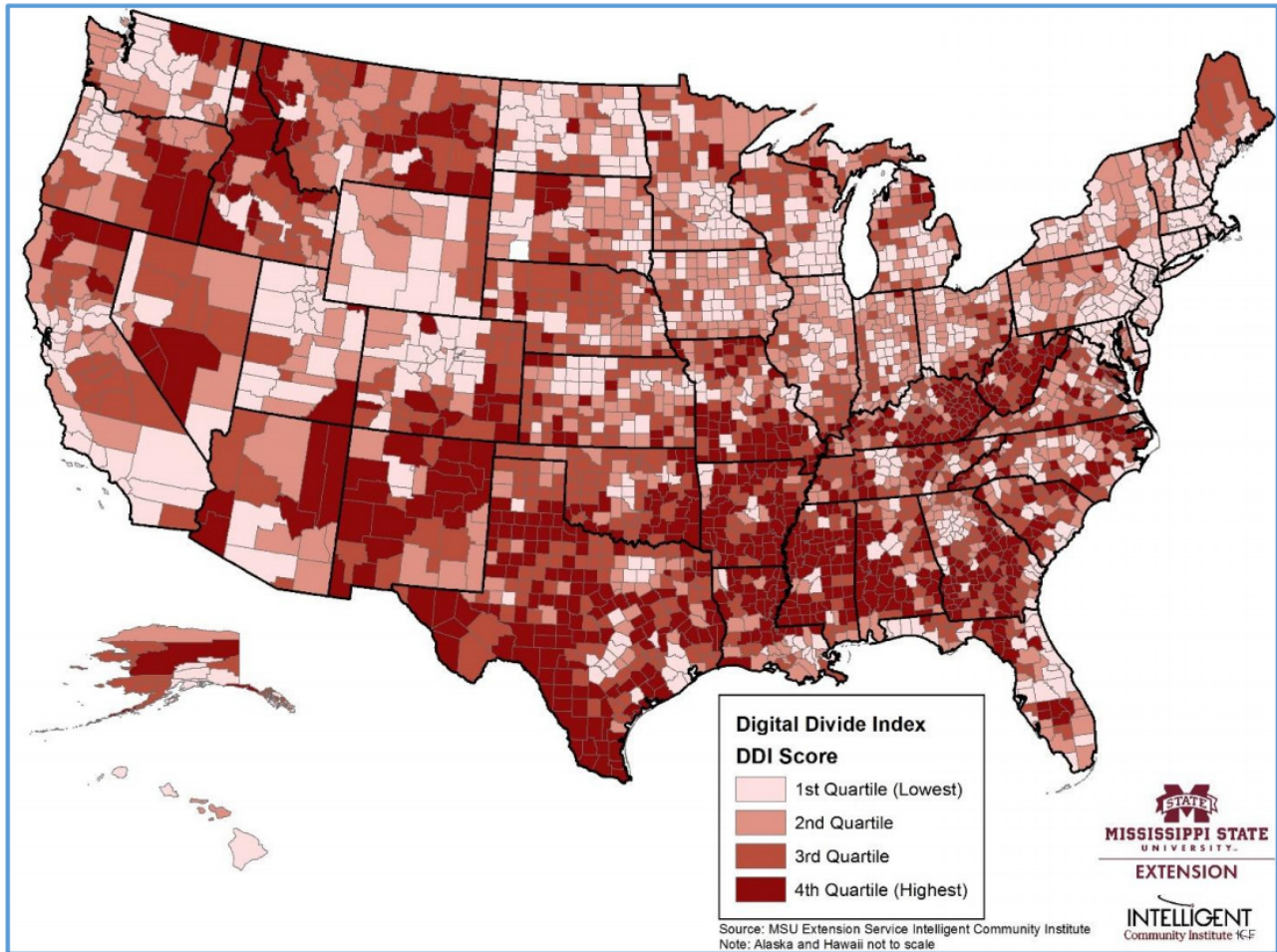
Metropolitan: A core urban area with a population of at least 50,000.

Micropolitan: An urban area with a population of at least 10,000 but less than 50,000.

Noncore: An area with a population of less than 10,000.

Rural encompasses all population, housing, and territory not included within an urban area.

www.uscensus.gov



Digital Divide Index by Quartiles

See: <http://ici.msucare.com/sites/ici.msucare.com/files/2014ddi.pdf>

Governor Kate Brown referenced the continuing Digital Divide in her 2016 State of the State Address.

“Also, the “digital divide” – a lack of Internet access in less populated areas of the state continues to challenge schools, households and businesses in some of our communities.

My administration has enlisted community and industry partners to pursue upgrades and expansion of our technological infrastructure to level the playing field by giving more Oregonians access to the vast resources of the Internet.”

- Governor Kate Brown
2016 State of the State
April 8, 2016

Oregon is not alone in this pattern; it is evident in states across the country. According to the National Telecommunications and Information Administration (NTIA), the disparities between urban and rural user Internet adoption persist across the country and are also found in the rates of adoption of new technologies such as the smartphone and social media. “This suggests that in spite of advances in both policy and technology, the barriers to Internet adoption existing in rural communities are complex and stubborn. In particular, Americans who were otherwise less likely to use the Internet—such as those with lower levels of family income or education—faced an even larger disadvantage when living in a rural area.”

See: <https://www.ntia.doc.gov/blog/2016/state-urbanrural-digital-divide>.

The Council of Economic Advisors has indicated that there is also a positive correlation between the number of service providers and the probability of broadband use in a community. This differential also is displayed in urban vs. rural communities. The Council further notes that increased competition between service providers leads to lower prices and higher quality offerings which in turn improves rates of adoption; and that broadband provides numerous socio-economic benefits to communities and individuals, improving labor market outcomes for subscribers, increasing economic growth, providing access to better health care, and enhancing civic participation. See:

https://www.whitehouse.gov/sites/default/files/page/files/20160308_broadband_cea_issue_brief.pdf.

The FCC estimates that nationwide there is a \$23.5 billion funding gap between the amount that the public and private sectors combined are spending to equip rural and underserved areas with broadband service, and the amount it believes is necessary.

<http://download.broadband.gov/plan/the-broadband-availability-gap-obi-technical-paper-no-1.pdf>

The Digital Divide continues to exist in Oregon and may well be contributing to the economic divide that also exists between urban and rural areas of the state.

Strategies to Improve Broadband Infrastructure

An increasing number of studies and reports on broadband initiatives, strategies, activities, legislation, and funding programs have been undertaken by a variety of researchers as the nationwide interest in broadband infrastructure and its effects has grown. On November 1, 2016, the National Association of Regulatory Utility Commissioners (NARUC) issued the results of its survey of broadband programs in all fifty states: *Survey On 50 States Broadband Programs*. Links to this NARUC survey along with many additional surveys, reports, and references regarding broadband infrastructure deployment, adoption and utilization are included in Appendix F.

The following is a survey of strategies that are being employed across the country in multiple states, regions, counties and cities to improve broadband infrastructure.

Formal Broadband Plans

The creation and adoption of formalized broadband plans at the national, state, and local levels promotes and accelerates broadband deployment. The National Broadband Plan released in 2010 by the Federal Communications Commission was effective in drawing attention to and stimulating action on broadband issues, and in establishing broadband goals. Formal broadband plans are particularly effective at the local community level to engage all the stakeholders in assessing and addressing broadband needs, initiating projects, making progress and achieving actual results in improving infrastructure. Links to the National Broadband Plan and to state, regional and local broadband strategic plans are included in Appendix C.

Government Funding

Providing government funding through grants, loans, loan guarantees, and tax incentives for infrastructure deployment such as fiber optic cables, conduits, poles, ducts, roof tops, wireless transmission towers, and co-location space. Funding may be directed toward private sector providers and/or public entities such as the state, cities, counties, ports, and special districts. State and local government funding is also being used to provide technical support in navigating the often complex federal funding program application process, and matching funds to assist qualified applicants access federal funding programs.

Generate Awareness

A basic, initial, and effective strategy to improve broadband infrastructure is to generate public awareness of the value of broadband technologies and the applications they enable. Broadband councils, task forces, and associations are widely used to examine broadband needs, challenges, opportunities, and service availability. They promote these issues to elected officials, community leaders, government agencies, and the public. They provide a forum for the discussion of broadband issues by stakeholders. A list of Broadband Councils with links to additional information is included in Appendix D. The mapping of broadband service availability is also useful for identifying unserved and underserved areas, for measuring progress over time, and for sharing data. These activities promote and accelerate broadband deployment.

Community Anchor Institutions

Community Anchor Institutions such as schools, libraries, healthcare providers, and local governments are being utilized as anchor tenants to expand broadband infrastructure. As shared network infrastructure is built to serve applications for these targeted users, services then become available for others in the community as well. Conversely, single user networks owned by community anchor institutions for their own use can be a disincentive for private sector investment by removing the institutions from the market as prospective customers.

The Schools, Health & Libraries Broadband (SHLB) Coalition www.shlb.org believes that deploying broadband networks to serve anchor institutions is an important investment in our nation's future and can be an effective strategy to increase service availability. Targeting deployment of broadband to anchor institutions can improve broadband access to those who may not otherwise have access to the Internet such as students, low-income and elderly people, and migrants. Schools, libraries and community centers are on the front lines of the Digital Divide.

Public Private Partnerships

Public Private Partnerships between governmental, public sector, and private sector organizations are used to improve broadband infrastructure. These partnerships can be effective in distributing costs and sharing risks through mutually beneficial relationships.

- Private Sector-Led Partnerships

A private or non-profit commercial operator builds, owns and operates the network. Community Anchor Institutions and economic development authorities support the business case by contributing planning, monetary and regulatory support, and by aggregating demand and securing customer commitments in advance.

Google Fiber is a high-profile example. The public sector supports and facilitates the private sector provider efforts, but the network facilities remain privately owned and operated independent of the public sector “partners.”

- Government-Led and Private Sector Supported Partnerships

A public entity such as a state, county or city government, municipal electric utility or cooperative owns the network and private partners construct, operate and/or maintain the network in exchange for financial and in-kind support, and permitting and regulatory support. It can also take the form of an open network owned and operated by the public sector, but used by one or more private sector providers to deliver services, or as dark fiber facilities lit and operated by private carriers to deliver services.

- Joint-Ownership Partnerships

Private or non-profit commercial operator(s) and the public sector organization(s) jointly invest in the network infrastructure and share capacity. All the partners contribute a mix of financial, in-kind and other support to build and operate the network.

[*BroadbandUSA: An introduction to effective public-private partnerships for broadband investments*, 2015 http://www2.ntia.doc.gov/files/ntia_ppp_010515.pdf]

This year, the Benton Foundation has released a guide on public private partnerships that includes two checklists for communities at any stage of broadband planning *Key strategy considerations for Building a Partnership* and *Key legal considerations for localities looking to Build a Broadband Partnership*. See: <https://www.benton.org/sites/default/files/partnerships.pdf>.

State Broadband Networks

Another strategy is building backbone and/or distribution networks that are funded and owned by the state that support expanded service availability. These “anchor networks” may be used to meet state government telecommunications needs, be used to provide services to other public institutions such as schools, and as open networks available for use by multiple service providers.

Municipal Networks

Building broadband networks that are owned by cities is a strategy that has received a lot of publicity in recent years. There are currently over 80 fiber-to-the-home networks that are publicly owned and operated with over 50 of them offering Gigabit services to their customers, including municipal networks in Oregon. See: <https://muninetworks.org/communitymap>.

Consortia and Public Partnership Networks

Building local and regional backbone and/or distribution networks that are owned by consortia and public partnerships between cities, counties, ports, and special districts is an expanded partnership strategy that can include urban and rural collaboration and network sharing. The more users there are on network facilities, the lower the cost for all. These consortia and partnerships are not limited to public entities. Consortia may be created by private sector service providers to reduce costs and expand coverage.

Electric Cooperatives

Analogies have frequently been cited between the 21st Century challenge of broadband infrastructure and the 20th Century challenge of electric power infrastructure. In the 1930’s, 90 percent of homes in rural America did not have electricity. The strategy employed for building out electric power grids to rural areas of the country in the last century was the use of electric cooperatives.

These same electric cooperatives are a prospective solution to the *broadband* challenge as well. Electric coops are in place in rural America with power grids that offer poles, towers, conduit and entry facilities into nearly all homes and businesses in their service territories, along with existing service organizations, systems and staff. See: http://www.bbcmag.com/2016mags/May_June/BBC_May16_ElectricCoops.pdf

Regional Telephone Cooperatives

Regional telephone cooperatives are an effective strategy to provide utility services in rural areas and enable rural communities to join with neighboring communities to launch projects at lower

costs and risk. The Rural Broadband Association www.ntca.org represents more than 800 independent, community-based telecommunications companies that are leading innovation in rural and small-town America. Rural independent telephone companies and cooperatives are motivated to develop broadband solutions as users steadily migrate away from “plain old telephone” voice service to wireless and broadband services for their voice.

Public Policy

Establishing public policies aimed at removing barriers to deployment in issuing construction permits, easements, access to government rights of way, and access to government vertical assets such as buildings and towers. Adopting “Dig Once” policies that incorporate broadband facilities into all infrastructure projects such as water, wastewater, roads, bridges, and power grids.

Providing state government procurement contracts that are open for use by local governments, libraries and schools. This aggregation of demand strategy makes broadband solutions more affordable and attainable particularly for small government entities.

Establishing public policies that shift the regulatory focus from voice telephone services to broadband Internet access services on which voice is one of many digital applications. Our legacy regulatory structure is from the era of analog voice and “monopoly” telephone companies. The FCC has declared that incumbent local exchange carriers are no longer dominant carriers for local access services, and it is predicted that cable companies may surpass telephone companies in providing voice services as early as next year. This year, the FCC issued rules for retiring the legacy Public Switched Telephone Network (PSTN). See: <http://www.telecompetitor.com/financial-analyst-cable-will-be-the-incumbent-phone-company-in-2017/>.

Earlier this year, FCC Commissioner Ajit Pai proposed a strategy to increase broadband availability in areas of the country where broadband remains unavailable or unaffordable. Commissioner Pai proposed the creation of “Gigabit Opportunity Zones” in economically challenged areas in which the average household income is below 75 percent of the national median by encouraging local governments to streamline regulations with broadband deployment friendly policies and tax incentives for network deployment. He also proposed that the FCC reform pole attachment rules to reduce deployment costs and create a model permitting code for communities that want to encourage broadband deployment. He also advocated being open to the placement of broadband infrastructure on federal lands and adopting Dig Once policies to require that broadband conduit is deployed as part of all federally funded road and highway construction projects. See: <http://gigcommunities.net/fcc-commissioner-pai-broadband-proposal-aims-to-close-digital-divide-with-gigabit/>.

In March 2015, President Obama created the Broadband Opportunity Council and tasked it to produce recommendations to increase broadband deployment, competition and adoption through executive actions within the scope of existing Agency programs, missions and budgets. These strategic recommendations may also be applied at state and local government levels. See: https://www.whitehouse.gov/sites/default/files/broadband_opportunity_council_report_final.pdf.

Establishing policies at the state and local level include promoting open access public networks that are open to carrier interconnection and shared use by public safety agencies, local governments, schools, libraries, and other community anchor institutions.

Establishing public policies and support for key “pull” applications such as telehealth, distance education, e-government and e-commerce that create demand and paying customers for broadband services.

Community of Interest Organizations

Organizing local communities of interest in broadband services and applications. Aggregating the demand of the different segments of the community such as business, education, libraries, healthcare, and government to help make a business case for private sector broadband investment.

There are local national and international non-governmental community of interest organizations actively promoting expanded broadband access and digitally inclusive communities.

- International City/County Management Association (ICMA)– <http://icma.org>
- National Association of Telecommunications Officers and Advisors (NATOA) www.natoya.org
NATOA includes an Oregon chapter – the Oregon Association of Telecommunications Officers and Advisors (OATOA) <https://www.natoya.org/web/chapters/oatoa.html>
- National Association of Counties (NACo) <http://www.naco.org/>
- Association of Oregon Counties <http://oregoncounties.org/>
- National League of Cities <http://www.nlc.org/>
- League of Oregon Cities <http://www.orcities.org/>
- NTCA–The Rural Broadband Association <http://www.ntca.org/>
- US Ignite <https://www.us-ignite.org/>
- Next Century Cities <http://nextcenturycities.org/>
- Rural Telecommunications Congress <https://www.facebook.com/ruraltelecomcongress/>

Local Champions

Perhaps the most effective strategy which can incorporate many of those listed above is to foster local champions: elected officials, government officials, educators, business people, and other community leaders as broadband champions. Those rural communities across Oregon and the nation that have competitive broadband services in place today often owe that welcomed status to a local champion that saw the need and took action.

Strategies to Expand Broadband Adoption and Utilization for Economic and Community Development

Strategies for broadband adoption and utilization may also, in effect, be considered strategies for infrastructure deployment. There is no better incentive for sustained private sector investment in broadband infrastructure than growing market demand for services by paying customers. Broadband adoption and utilization are also key to producing economic and community development benefits. A list of surveys, reports, and references regarding broadband infrastructure adoption and utilization strategies are included in Appendix F.

Here are strategies that are being employed nationwide and in multiple states, regions, counties and cities.

Develop Formal Broadband Plans and initiatives

The creation and adoption of formalized broadband plans or initiatives at the national, state, and local levels are effective in developing and implementing broadband adoption and utilization initiatives. Planning at the local community level can be particularly effective in promoting adoption and utilization. It is also helpful to incorporate broadband objectives and strategies into local economic development plans. *Connectivity creates opportunity.*

Planning can increase rates of broadband adoption and utilization. The *Oregon Broadband Outreach and Strategic Planning Project* provides a template, process and references for local communities to develop broadband adoption strategic plans. See:

www.oregonbroadbandplanning.org.

Provide Public Sector Funding

Providing government funding through grants and line item budget allocations for broadband adoption, adoption planning, and training by selected groups such as school districts, community colleges, public libraries, utility cooperatives, local governments, associations, and state agencies.

Provide Technical Assistance

Strategies that focus on “driver” applications such as distance learning, e-business, e-government, telehealth, and energy management and promoting broadband utilization in these areas and provide technical assistance through community college, state, and local agency programs.

Generate Awareness

Here again, a basic, initial, and effective strategy to improve broadband adoption and utilization is to generate awareness of the value of broadband technology and the applications it enables. Broadband councils, task forces, and associations are widely used tools to examine broadband challenges and opportunities and promote these issues and conduct outreach to the public,

community leaders, economic development organizations, and governments. Community Anchor Institutions, K-12 schools, and community colleges in particular can educate the public.

Address Barriers to Adoption

Just as the Digital Divide persists, so do the major barriers to broadband adoption; cost, digital literacy, perceived need, and service availability. Strategies to increase broadband adoption and utilization address these barriers.

Cost

The FCC is currently migrating its Lifeline Program subsidy for telephone service for qualified low income users to include subsidizing broadband access service.

Major broadband services providers including AT&T, Comcast, CenturyLink, Charter/Spectrum, Frontier Communications, and BendBroadband are providing special discounted services and equipment to qualified low income users.

Community centers and libraries make broadband access available to community members that do not have access at home.

Digital Literacy and Perceived Need

Provide digital skills training aimed at entrepreneurs and small businesses including coaching, templates, consulting and metrics.

Provide training and education programs that provide low adoption populations with knowledge of the value of broadband Internet access and the technical skills to use and benefit from broadband Internet access.

Improve digital literacy through broadband/Internet training and education programs in K-12 Schools, Community Colleges, the Employment Department, Community Centers, and public libraries.

Community Anchor Institutions

Use schools, libraries, and community centers as sources of broadband Internet access for members of the community that do not have that access in their homes. “Homework Gap” strategies are now emerging for schools to be a source of Internet access that can be extended to students in their homes. The FCC is currently being petitioned to allow its funding programs for K-12 schools to be applied to extending broadband services to students in their homes.

Public libraries, in particular, are in a key position to support and enhance digital inclusion.

Recognize the Importance of Adoption for Digital Equity

The National Digital Inclusion Alliance (NDIA) has defined Digital Equity as ensuring that all individuals and communities have the information technology capacity needed for full

participation in our society, democracy, and economy. Digital Equity is necessary for civic and cultural participation, employment, lifelong learning, and access to essential services. NDIA has further described Digital Inclusion as the activities necessary to ensure that all individuals and communities, including the most disadvantaged, have access to, and use of, information and communication technologies including Affordable and robust broadband Internet service, Internet-enabled devices that meet the needs of the user, access to digital literacy training, quality technical support, and applications and online content designed to enable and encourage self-sufficiency, participation, and collaboration. See: <http://www.digitalinclusionalliance.org/>.

Broadband Funding Models

Communities in Oregon vary dramatically in population and geography, and there is not a single broadband technology or funding model that is the best fit for all communities. Multiple technological, organizational, and financial models need to be employed.

Common funding models include the following.

Private sector investment

Private sector companies, regulated and unregulated, undertake the financing, construction, and operation of the broadband network. Since the invention of the telegraph and telephone in the 1800's, a private sector model has been employed in the United States to provide telecommunications infrastructure and services to the country, and this remains the dominant model today.

While acknowledging the realities of the Digital Divide and the existence of unserved and underserved populations of the country, it is also noted that according to the National Cable and Telecommunications Association (NCTA), private industry has invested over \$1.4 trillion to build the robust networks that reach most Americans today, and that private industry significantly increases service speeds and network performance every year. See: <https://www.ncta.com/news-and-events/media-room/content/statement-ncta-regarding-upcoming-fcc-report-broadband-deployment>.

Public sector direct investment and ownership of infrastructure

A public entity or agency undertakes the financing, construction and operation of the broadband network, a model most commonly seen in municipal fiber and wireless networks.

City of Sandy

In 2015, the City of Sandy completed a fiber-to-the-home municipally owned network to provide 1 Gbps service at \$59.95 per month and 100 Mbps service at \$39.95 per month to its citizens, SandyNet. Funding for this project was accomplished by the issuance of a \$7.5 million revenue bond. The revenues generated by the system cover the operating costs as well as the bond costs. See: <http://www.ci.sandy.or.us/SandyNet/>.

State of Oklahoma

Oklahoma Community Anchor Network (OKAN) is a 1,005 miles of middle-mile infrastructure that connects 32 anchor institutions in underserved or unserved areas of the state. This fiber route extends to 35 of Oklahoma's 77 counties, approximately 89% of the state's population, and is on state highway right-of-way. See: <http://broadband.ok.gov/ocan-overview>.

Non-profit organizations

Non-profit organizations undertake the financing, construction and operations to improve the broadband Internet Protocol (IP) infrastructure.

Connect Arkansas

Connect Arkansas, established in 2007, is a private, non-profit corporation dedicated to increasing high-speed Internet subscription and improving and sustaining Internet adoption throughout Arkansas. The Connect Arkansas Broadband Act was signed into law on March 28, 2007, with the goal of improving personal lives and creating economic opportunity for Arkansans. ACT 604 of the State of Arkansas states that Connect Arkansas's mission is to "prepare the people and businesses of Arkansas to secure the economic, educational, health, social and other benefits available via broadband use." Connect Arkansas seeks to advance that goal through community-based initiatives. See: <https://www.linkedin.com/company/connect-arkansas>.

Northwest Access Exchange (NWAX)

The Northwest Access Exchange (NWAX) is a 501(c)(6) non-profit corporation. NWAX was created in 2001 and operated by Oregon Health and Science University, Portland State University, and the Oregon Graduate Center. It transitioned to an independent non-profit January 1, 2014 and was modeled after the successful Seattle Internet Exchange (SIX). Its operations are supported by a volunteer board, officers, engineers and technicians. NWAX is growing (36 members in 2013 to 80 members today). Its service capacity is also growing and now delivers 60 Gbps peak traffic nightly up from 4 Gbps peak in July 2013. NWAX is currently the 14th largest Internet exchange in the U.S. See: www.nwax.net.

Cooperatives

Providing broadband services through user owned cooperatives.

Douglas FastNet

In Oregon, Douglas Electric Cooperative (DEC) and its Douglas FastNet provides an example of a successful application of this strategy. DEC is a member-owned private, not-for-profit electric utility serving 2,200 square miles of Douglas County as well as some areas of Coos and Lane counties. It began operations in 1939 as a locally owned cooperative to provide an electric power solution to the local community. DEC went on to be an early champion in recognizing the need for broadband in its service area and in finding a solution by founding Douglas FastNet (DFN) to deliver advanced telecommunications services through fiber, wireless and other wireline network facilities. See: www.dfn.net.

DFN was selected by the Federal Communication Commission as one of a few recipients for its rural broadband experiments funding. Douglas Services was one of twelve bidders selected nationwide, and received \$2,375,000 in funding under the program. The funding is supporting a fiber-to-the-home construction project to about 2,500 homes in rural Douglas County.

http://transition.fcc.gov/Daily_Releases/Daily_Business/2015/db0310/DA-15-288A1.pdf

Eastern Oregon Telecom, CACHE (in Hood river), Peak Internet, Quantum Communications and LS Networks are additional Oregon broadband service providers that are owned by electric cooperatives or by an organization that is owned by electric cooperatives, in total or in part.

South Arkansas Telephone (SATCO) and Ouachita Electric Cooperative (OECC)

A rural telecommunications service provider, South Arkansas Telephone (SATCO), and a rural electric power cooperative, Ouachita Electric Cooperative (OECC), are partnering to bring gigabit broadband to parts of rural Arkansas. The utility partnership has formed a new company called Arkansas Rural Internet Service (ARIS) <http://www.arisark.us/>. Plans call for deploying fiber-to-the-premises to 9,500 OECC member homes and businesses. The project is expected to take three years to complete. See: <http://www.telecompetitor.com/telecom-utility-partnership-pursues-arkansas-gigabit/>.

Consortia - Partnerships

Create consortia and partnerships for broadband network projects.

Commonwealth of Kentucky

On January 22, 2014, Kentucky announced a \$100 million plan to expand high speed Internet access in Kentucky, beginning in the eastern part of the state. The project is funded with \$60 million in state bonds and \$40 million in federal and private funds, including \$10 million approved by Congress in mid-January 2014 for broadband deployment through the Appalachian Regional Commission. A public-private partnership has been formed between the state and Macquarie Capital, a tech team that will be developing the fiber “backbone” infrastructure for the high-speed Internet. It is expected to be operational in two years. See:

<http://finance.ky.gov/initiatives/nextgenkih/pages/default.aspx> /
<http://www.kentucky.com/news/local/news-columns-blogs/tom-eblen/article56259250.html>.

Iowa Network Services (INS) and Indiana Fiber Network (IFN)

Iowa Network Services (INS) and Indiana Fiber Network (IFN), two statewide fiber networks run by independent telco consortiums, have interconnected their networks at a Chicago point of presence operated by wholesale carrier INDATEL, a nationwide consortium of state and regional fiber networks. The move illustrates new opportunities for rural telecom carriers and the statewide and regional fiber network operators. See:

<http://www.telecompetitor.com/statewide-fiber-networks-interconnect-enhancing-ethernet-offerings/>

Public sector grants, loans and tax incentives

Create public sector grant and loan programs and tax incentives to promote broadband network projects. Sources of public sector funding include General Fund allocations, bonds, special taxes, surcharges and fees.

State of Nebraska

On November 21, 2011, the Commission entered an order establishing the Nebraska Broadband Pilot Program (NEBP) with funding from its universal service fund for telephone service. Nebraska is one of only four states in the nation with a universal service program to fund broadband deployment. Grants are available to regulated wireline, wireless, and unregulated communications providers wishing to participate. The state universal service fund is funded with a 6.95% assessment on all in-state retail telecommunications services.

State of Minnesota

In 2014, legislation was passed and signed by Governor Dayton to create a \$20 million Border-to-Border Broadband Infrastructure grant program. Grants were awarded through a one-time competitive grant process for up to 50 percent of eligible project costs and a maximum award of \$5 million. Eligible project areas had to consist of locations that were unserved (no wireline broadband of at least 4 Mbps down/1 Mbps upload) or underserved (no wireline broadband at Minnesota's speed goals of at least 10Mbps down/5Mbps upload).

A map and list of the projects selected for funding can be found at <http://mn.gov/deed/programs-services/broadband/grant-program/index.jsp>

State Funding

Leverage federal funding programs through state funding for technical assistance to eligible applicants and for applicant matching contributions.

- Federal funding programs

For the years 2009 through 2016, the U.S. Department of Agriculture awarded over \$75 million in telecommunications loans and grants for projects in Oregon. See: <https://www.rd.usda.gov/files/OR-2016ProgressSummary.pdf>.

The FCC's Schools and Libraries Program of the Universal Service Fund commonly referred to as the "E-Rate Program" provides \$15-25 million per year to Oregon schools to support broadband telecommunications and Internet access.

A list of federal broadband funding program may be found in Appendix F.

Private foundation funding

Private foundations are supporting rural broadband projects.

- Benton Foundation <https://www.benton.org>
The Benton Foundation has released a new guide on public private partnerships that includes two checklists for communities at any stage of broadband planning *Key strategy considerations for Building a Partnership* and *Key legal considerations for localities looking to Build a Broadband Partnership*. See: <https://www.benton.org/sites/default/files/partnerships.pdf>.
- Blandon Foundation <http://broadband.blandinfoundation.org>
- Foundation for Rural Service www.frs.org
- Bill and Melinda Gates Foundation <http://www.gatesfoundation.org/>

Implications for Oregon Public Policy

Broadband needs to be placed on the state government agenda and made a priority issue to make quality, reliable, affordable, sustainable broadband available statewide. Broadband is one of the most powerful tools available for economic, community, workforce and individual development. It provides a gateway, a connection to the information age world.

Fortunately, Oregon is not beginning at “ground zero” with regard to broadband infrastructure deployment and adoption. Despite limited state level funding as compared to some other states, Oregon ranks highly both for broadband service availability and for broadband adoption. The Rural Telecommunications Congress commissioned a study of broadband investment and activity, and in May 2016 issued a report entitled the *Fifty States of Broadband* <http://sngroup.com/wp-content/uploads/2016/05/50-States-of-Broadband-Overview-reissued-3may2016.pdf>. This report ranked Oregon number three in the nation for broadband availability and number three in the nation for broadband adoption, but notably, ranked Oregon 19th overall due to the lack of activity in driving “meaningful use” at the state level.

The *Fifty States of Broadband* report also noted that half of all states and 25 of the 48 states surveyed reported that they have a state funded broadband office with an average of 3.8 employees, and a median of 3 employees. Only one state ranking in the overall top 20 did not have a broadband office—Oregon. The states that have a State Broadband Office are Alabama, Arizona, Arkansas, Colorado, Connecticut, Delaware, Idaho, Iowa, Kentucky, Maine, Massachusetts, Minnesota, Mississippi, New Hampshire, New Mexico, New York, Nevada, North Carolina, Ohio, Pennsylvania, Utah, Vermont, Virginia, Wisconsin, and Wyoming.

Implications

Oregon should seek to maintain its current position of leadership in infrastructure deployment and adoption, engage in planning, set goals, adopt proven strategies to achieve them, and work to ensure that *all* areas of the state are included. Given the nature of telecommunications and its capital intensive infrastructure, the pattern has consistently been that rural areas lag behind urban areas in broadband deployment thereby maintaining the “Digital Divide” over time. Oregon, as a progressive state, should work to eliminate that lag, or at least reduce it to close the digital divide as well as the ongoing economic prosperity divide.

Create an Oregon Broadband Office

A dedicated state-level government office can be a tool for creating connections and sharing information among state agencies, broadband service providers, and other stakeholders. Whether as an independent agency, within a state agency, or in the Office of the Governor, the broadband office’s responsibilities should include:

- Developing and recommending broadband policies at the local and state levels.
- Being a source of current information about broadband infrastructure and digital inclusion, best practices, and lessons learned.
- Supporting other state agencies’ efforts to increase broadband access (to homes, businesses, and community anchor institutions).

- Supporting other state agencies' efforts to increase digital literacy.
- Championing commercial access to state-owned and managed assets.
- Connecting communities working toward similar broadband-related goals or facing similar challenges.
- Forecast demand and set long term goals for sustainable service in partnership with industry.
- Responding to consumer calls regarding broadband access and helping coordinate and navigate federal and state funding sources.

<http://pellcenter.org/wp-content/uploads/2015/09/State-Level-Broadband-Policy-FINAL.pdf>

A list of state broadband offices with Uniform Resource Locator (URL) links is included in Appendix E.

Develop and formally adopt a State Broadband Strategic Plan

- Convene a summit of stakeholders to discuss what is needed for Oregon and how to obtain it.
- Develop and adopt a State Broadband Strategic Plan.
- Establish broadband standards for the state.
- Develop a system of broadband metrics for the state.
- Make Oregon a world class digitally inclusive state to be competitive in a digital world.

Provide State funding

Consider new grant, loan and loan guarantee programs for broadband infrastructure in unserved areas and as matching funds for other funding sources.

Leverage federal funding programs through state funding match and technical assistance for eligible Oregon applicants.

Upgrade state and local government telecommunications networks as a means to expand broadband service to unserved or underserved areas.

Repurpose the Oregon Universal Service Fund to improve broadband infrastructure in unserved and underserved areas.

Consider state funding to subsidize broadband costs for low adoption populations and community anchor institutions similar to the FCC's E-rate Program, Healthcare Connect Fund and Lifeline Program.

Require that broadband infrastructure components such as conduit be included for all state infrastructure funding programs such as roads, bridges, water, and wastewater projects.

Reduce barriers to broadband infrastructure deployment

Encourage, facilitate and incent private sector investment in broadband infrastructure. Encourage competition. Aggregate demand and reduce regulatory barriers to improve the private sector business case.

Adopt Dig Once policies that mitigate a high cost component of buried cable infrastructure by requiring ample time interval notification of open trench construction projects and in some cases requiring placement of conduit within the public right of way for future use in deploying optic fiber network systems. Incorporate broadband into all new construction projects including buildings and housing developments. The City of Sandy as a municipality already requires that new housing developments and other new construction projects include the placement of telecommunications conduit.

Evaluate policies governing access to public rights-of-way, pole attachments, duct access, facilities siting, and public vertical assets such as towers and buildings can impact broadband network deployment. In 2013, the Federal Highway Administration estimated that 90 percent of the cost of burying broadband infrastructure along a roadway consists of the expense of digging up and replacing disturbed land and the road. The National Broadband Plan found that an effective rights-of-way policy of facilitating joint placement of facilities through “dig once” policies can reduce broadband deployment costs by over 20 percent.

https://www.fhwa.dot.gov/policy/otps/policy_brief_dig_once.pdf

Governments are the largest owners of property in the nation. In 2015, the Broadband Opportunity Council recommended that the Federal Government create an “open data inventory of infrastructure assets” for broadband to enable the private sector to more easily identify and access public assets available for broadband infrastructure placement. Create this inventory for Oregon.

Reduce barriers to adoption

- Provide outreach to low-adoption populations through established community institutions.
- Increase the availability of affordable broadband services.
- Increase access to user devices.
- Work with service providers to offer, leverage and promote low income subsidy/discount programs.
- Promote digital literacy:
 - Focus on building digital skills education and digital literacy in the K-20 school system.
 - Focus on building digital skills education and digital literacy through workforce training and outreach to low adopters including low income groups, low education groups, and seniors.
 - Educate organizations on how to use broadband technologies to pursue their mission and achieve their goals.
 - Educate communities on how to use broadband technologies for economic and community development.

Maintain and enhance the Oregon Broadband Map

Maintain and develop the Oregon Broadband Map as a platform for data collection to track the availability of broadband services and measure progress and provide public access to the data.

The Oregon Broadband Map presents data on the availability of broadband services, technologies, service speeds and service providers searchable by geographic area. The data may

be searched by street address, municipality, county, tribal lands, or by positioning a “push-pin” icon at a desired location on the map. Also included on the map are Community Anchor Institutions which include schools, libraries, hospitals, colleges and universities, medical/health care facilities, and public safety entities all identified and searchable by name and address. The Oregon Broadband Mapping Project website is available at www.broadband.oregon.gov.

Remain technology neutral

A frequent misstep in broadband public policy development is to specify technologies. Public policy should focus on user needs and desired outcomes, and not on the specific technological solutions to meet them. Government and public policy should not select technological or service provider “winners.”

Promote public-private partnerships

Engage stakeholders and explore private sector, state, local and tribal government partnerships to achieve established goals.

As noted earlier, the private sector model is the dominant funding model in the nation including Oregon. Willing service providers, especially the incumbent providers should be invited to engage at the beginning of any planning process to determine if they are willing and able to participate in solution development. Incumbents respond to potential changes in the status quo, especially the presence of competition. Incumbents more and more recognize their vested interest in providing the competitive products and services that their customers demand. Private sector investment as a funding model can be the least cost, least time and least effort model for state and local governments, and should be among the first options explored. Private sector investment is also one of the best methods to insure programs that keep up with technological and service innovations.

An overarching rural strategy

Given the significant rates of change in telecommunications market structure, technology, applications, and user needs, attention needs to be paid at the state and local level to broadband issues and their impacts.

The overarching strategy to address the rural city and county broadband challenge is communication and collaboration among broadband service providers and local users. Communication, collaboration, demand aggregation, joint action and planning by service providers, businesses, government institutions, economic development organizations, schools, and health care providers will promote and accelerate broadband deployment, adoption and utilization in rural communities.

Appendix A
HB 3274 Enrolled

78th OREGON LEGISLATIVE ASSEMBLY--2015 Regular Session

Enrolled
House Bill 3274

Sponsored by Representative WILSON

CHAPTER

AN ACT

Relating to expansion of technology infrastructure in rural Oregon; and declaring an emergency.

Be It Enacted by the People of the State of Oregon:

SECTION 1. (1) No later than December 31, 2016, the Oregon Business Development Department shall conduct a study and submit a report to the interim legislative committees on economic development regarding methods to expand broadband and telecommunications infrastructure in rural cities and counties in Oregon.

(2) The report may include recommendations for legislative changes.

SECTION 2. This 2015 Act being necessary for the immediate preservation of the public peace, health and safety, an emergency is declared to exist, and this 2015 Act takes effect on its passage.

Passed by House April 23, 2015

.....
Timothy G. Sekerak, Chief Clerk of House

.....
Tina Kotek, Speaker of House

Passed by Senate June 4, 2015

.....
Peter Courtney, President of Senate

Received by Governor:

.....M....., 2015

Approved:

.....M....., 2015

.....
Kate Brown, Governor

Filed in Office of Secretary of State:

.....M....., 2015

.....
Jeanne P. Atkins, Secretary of State

Appendix B

Strategic Networks Group

Broadband Economic Impact Model – Oregon

See: <http://sngroup.com/broadband-economic-impact-model/>.

Broadband Economic Impact Model

Estimate of economic impacts from business adoption of eSolutions for selected geographies and industry profiles.

- These estimates are intended to provide guidance on the scale of economic impacts possible from meaningful use of broadband.

- SNG's evidence-based approach enables evaluation based on the best research available applied to selected geographic profiles.



Dashboard Metrics

Measure	Impact
Businesses Adopting	3,033
New Revenues / Business	\$56,100
Annual GDP	\$ 214.0 M
Annual Tax Revenues	\$ 7.93 M
Total New Jobs	3,125

Select a State Select a County (Leave blank for entire state; Select Multiple for more than one county)

Scenario Parameters	Inputs and outputs
Target Profile ⁽¹⁾	19% Rural
State	Oregon
County	All
Total Households ⁽¹⁾	1,518,938
Total Businesses (all industries/sizes) ^{(1), (4)}	107,134
Selected Industries (Max. of 10)	Accommodation & Food Services Administrative & Support Services Construction Finance & Insurance Health Care & Social Assistance Other services (exc. public admin) Professional & Technical Services Retail Trade Wholesale Trade
Selected Employment Range	Less than 20
Total Businesses (selected industries/sizes)	82,202
% of Selected Industries	88.9%
% of ALL businesses	76.7%
Total Employment of Selected Industries ⁽²⁾	987,288
Selected Industries % of Total Employment	77.8%
Adoption Scenario	
Selected eSolutions (Max. of 3)	Selling goods or services Web site for organization Advertising and promotion Deliver services and content Customer service and support
Number of Selected eSolutions	3
% Increase in adoption	5.0%
Estimates of Direct Impacts from Adoption ⁽⁴⁾	
Total number of businesses adopting eSolutions	3,033
% of Total businesses in selected industries	3.7%
Total number of new eSolutions adoptions	8,459
Average new eSolutions per business adopting	2.8
Total incremental Revenue from new eSolutions	\$170,000,000
Total incremental Cost Savings from new eSolutions	\$10,800,000
Total incremental Direct Impact	\$180,800,000
Direct Impact Metrics	
Total annual revenues for adopting businesses	\$1,330,000,000
Total annual operating expenses for adopting businesses	\$785,000,000
Operating expenses as percentage of revenues	58.1%
Aggregate percent increase in revenues	12.6%
Aggregate percent cost savings	1.4%
Average incremental revenue per business adopting	\$56,100
Average cost saving per business adopting	\$3,570
Economic Impact Assessment ⁽¹⁾	
Total Direct Output - Selected Industries	\$181,000,000
Total Indirect Output - All Industries	\$76,300,000
Total Induced Output - All Industries	\$101,000,000
Total Incremental Output	\$358,300,000
Total Direct Jobs	1,845
Total Indirect Jobs	302
Total Induced Jobs	793
Total Incremental Job Creation ⁽⁶⁾	3,125
Total Incremental GDP ⁽⁷⁾	\$214,000,000
Total Incremental Household Earnings	\$110,000,000
Total Incremental State and Local Taxes	\$7,930,000
Total Incremental Federal Taxes	\$10,700,000
Economic Impact Metrics	
Average total incremental output per adopting business	\$118,000
Average direct jobs per adopting business	0.6
Average indirect and induced jobs per adopting business	0.4
Average incremental total taxes per adopting business	\$6,140
Average incremental GDP per adopting business	\$70,300
Average incremental Household Earnings	\$72

Scenario Parameter Selections			
Adopting	Select up to 10 Industries ^{(1), (4)}	All Businesses ⁽⁶⁾	Rank
269	<input checked="" type="checkbox"/> Accommodation & Food Services	10,787	5
166	<input checked="" type="checkbox"/> Administrative & Support Services	5,430	9
	<input type="checkbox"/> Agriculture / Forestry / Fishing	1,310	16
	<input type="checkbox"/> Arts, Entertainment & Recreation	1,722	14
491	<input checked="" type="checkbox"/> Construction	11,189	4
	<input type="checkbox"/> Educational Services	1,507	15
139	<input checked="" type="checkbox"/> Finance & Insurance	5,857	7
467	<input checked="" type="checkbox"/> Health Care & Social Services	12,689	2
	<input type="checkbox"/> Information	1,950	13
	<input type="checkbox"/> Manufacturing / Processing	5,222	11
346	<input checked="" type="checkbox"/> Other services (exc. public admin)	9,727	6
389	<input checked="" type="checkbox"/> Professional & Technical Services	11,800	3
183	<input checked="" type="checkbox"/> Retail Trade	5,677	8
392	<input checked="" type="checkbox"/> Wholesale Trade	13,913	1
	<input type="checkbox"/> Transportation & Warehousing	2,940	12
171	<input checked="" type="checkbox"/> Wholesale Trade	5,412	10
3,033		107,134	
Select Employment Ranges			
Adopting	Select Employment Ranges	All Industries ⁽⁸⁾	% of Bus.
2,013	<input checked="" type="checkbox"/> 1 - 4	59,125	55.0%
636	<input checked="" type="checkbox"/> 5 - 9	20,877	19.4%
384	<input checked="" type="checkbox"/> 10 - 19	14,007	13.1%
	<input type="checkbox"/> 20 - 49	8,740	8.2%
	<input type="checkbox"/> 50 - 99	2,968	2.4%
	<input type="checkbox"/> 100 - 249	1,316	1.3%
3,033		106,634	
Select Number of eSolutions			
		5	(Leave blank to manually select eSolutions below)
AND % Increase in adoption ⁽¹¹⁾			
		5%	
OR Select up to 5 eSolutions and % increase in adoption			
Adopting eSolutions	% Increase ⁽¹¹⁾	Net Using	
2,014	<input type="checkbox"/> Selling goods or services	45.7%	
	<input type="checkbox"/> Purchasing goods or services	18.3%	
861	<input type="checkbox"/> Web site for organization	12.2%	
1,348	<input type="checkbox"/> Advertising and promotion	29.9%	
2,614	<input type="checkbox"/> Deliver services and content	55.3%	
1,427	<input type="checkbox"/> Customer service and support	29.0%	
	<input type="checkbox"/> Banking and financial	24.4%	
	<input type="checkbox"/> Research by staff	10.1%	
	<input type="checkbox"/> Electronic document transfer	10.5%	
	<input type="checkbox"/> Supplier communication and coordination	17.1%	
	<input type="checkbox"/> Access government information	15.7%	
	<input type="checkbox"/> Government transactions	30.3%	
	<input type="checkbox"/> Staff training and skills development	25.5%	
	<input type="checkbox"/> Teleworking	43.8%	
	<input type="checkbox"/> Assessing collaborative tools	29.6%	
	<input type="checkbox"/> Social networking	28.6%	
	<input type="checkbox"/> Multimedia content or service creation	49.4%	
8,459			
Selected Counties (Multiple Selection)			
		All Businesses ⁽⁶⁾	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
0			

Selecting Industries

Select up to 10 Industries with sufficient businesses to provide a base for increasing adoption of new online business practices (eSolutions). A base of 1,500 Total Businesses (selected industries/sizes) is recommended for a reliable estimate of Impacts.

Multiple county selections may be required to provide a base of business population sufficient for estimating the financial, economic, and employment impacts. Business populations are provided for guidance.

The estimated number of businesses adopting new eSolutions are shown for each industry selected.

Select target business sizes using employment size ranges from 1 up to 249 employees. Counts are provided for all industries listed above.

Selection of businesses with 250 employees or more is not provided due to insufficient data for analysis of this segment.

Selecting eSolutions

eSolutions are typical business practices that can be enabled or enhanced through online methods.

Option 1 - Auto Selection
Select the number of eSolutions to include and the percent increase in adoption. The most impactful eSolutions will be automatically selected.

Option 2 - Manual Selection
Select up to 5 eSolutions and the target percent increase in adoption for each.

With either option the target increase in adoption is applied to each selected industry. Estimated new adoptions are shown for each selected eSolution.

Nominal Tax Rates Used *

State & Local	
Individual Income Tax	3.4%
Corporate Income Tax	0.4%
Sales & Other Indirect Taxes	1.3%
Federal	
Individual Income Tax	6.2%
Corporate Income Tax	0.8%
Other Taxes	0.4%

* Applied to gross output or gross income

Notes

- Industry profiles are based on USCB County Business Patterns (2013)
- Employment is total for all business sizes. USCB CBP data does not provide a breakdown by employment size range.
- Analysis does not include Public Administration sector (not included in USCB CBP data)
- Mining, Utilities, and Management of Companies are not included for selection due to small numbers of businesses.
- Direct financial impacts for eSolutions adoption are based on SNG research
- Direct, indirect, and induced job impacts are based on I-O modeling and are one-time impacts based on stimulus from new adoptions.
- GDP and Tax impacts are based on I-O modeling
- I-O model uses nominal statewide BEA factors as a proxy for estimation
- Household counts are from USCB 2010 census data
- Percent increase applied to percentage of businesses not currently using the eSolution, by industry and size.
- Financial impacts are annualized based on fully realized benefits from new adoptions.
- Rural percentages based on USCB 2010 data for percent urban population by county.

For more information about the Broadband Economic Impact Calculator, visit: <http://www.sngroup.com/impact>

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Appendix C

Broadband Plans

National

National Broadband Plan

<https://www.fcc.gov/general/national-broadband-plan>

States

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Local

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Appendix D

State Broadband Task Forces, Councils, and Commissions

Alaska Broadband Task Force

<http://www.alaska.edu/oit/bbtaskforce/homepage.html>

Digital Arizona Council

<https://digitalarizona.az.gov/search/node/Digital%20Arizona%20Council%20About%20DAC>

Arkansas Broadband Advisory Council

<http://www.arkansas.gov/directory/detail2.cgi?ID=3682>

California Broadband Council

<http://www.cio.ca.gov/broadband/council/aboutus.asp>

Illinois Broadband Deployment Council

<http://www.broadbandillinois.org/About/The-Broadband-Deployment-Council.html>

LinkIDAHO Broadband Advisory Team

<https://link.idaho.gov/content/state-planning>

Maine – ConnectME Advisory Council

<http://www.maine.gov/connectme/about/index.shtml>

Maryland Rural Broadband Coordination Board

<http://msa.maryland.gov/msa/mdmanual/26excom/defunct/html/31rural.html>

Massachusetts Broadband Institute

<http://broadband.masstech.org/>

Michigan Collaborative Broadband Committee

<http://www.connectmi.org/BBTaskForce>

Minnesota Governor’s Task Force on Broadband

<http://mn.gov/deed/programs-services/broadband/task-force/>

Nevada Broadband Task Force

<http://www.connectnv.org/BBTaskForce>

New Mexico Broadband Executive Committee

http://www.doit.state.nm.us/broadband/exec_committee.shtml

Oregon Broadband Advisory Council

www.broadband-oregon.org

South Dakota Broadband Advisory Team
<http://broadband.sd.gov/BBTeam.aspx>

Utah Broadband Advisory Council
<https://broadband.utah.gov/about/broadband-advisory-council/>

Vermont Telecommunications Authority
<http://www.telecomvt.org/index.php>

Virginia Broadband Advisory Council
<https://www.wired.virginia.gov/broadband/advisory-council>

West Virginia Broadband Enhancement Council
<http://law.justia.com/codes/west-virginia/2015/chapter-31/article-15c/section-31-15c-3>

Appendix E
State Broadband Offices

Arizona	https://digitalarizona.az.gov/
Alabama	http://governor.alabama.gov/assets/2015/07/EO-9-Broadband.pdf
California	http://www.cio.ca.gov/broadband/
Colorado	http://www.oit.state.co.us/broadband
Connecticut	http://www.ct.gov/broadband/cwp/view.asp?a=4696&Q=568046
Delaware	http://www.broadband.delaware.gov/about.shtml
Idaho	https://link.idaho.gov/home/about.html
Illinois	http://www.broadbandillinois.org/index.html
Iowa	https://ocio.iowa.gov/broadband
Kentucky	http://kentuckywired.ky.gov/Pages/index.aspx
Maine	http://www.maine.gov/connectme/
Massachusetts	http://broadband.masstech.org/
Michigan	http://www.connectmi.org/
Minnesota	http://mn.gov/deed/programs-services/broadband/
Mississippi	http://srdc.msstate.edu/ebeat/about.html
New York	https://nysbroadband.ny.gov/
New Hampshire	http://iwantbroadbandnh.org/
New Mexico	http://www.doit.state.nm.us/broadband/
North Carolina	https://ncbroadband.gov/
North Dakota	http://broadband.nd.gov/
Oklahoma	http://broadband.ok.gov/
Utah	http://business.utah.gov/publications/utah-broadband-project-2/

Virginia <https://www.wired.virginia.gov/>

Wisconsin <http://www.link.wisconsin.gov/>

Wyoming <http://ets.wyo.gov/>

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Oregon Broadband Advisory Council

Prepared by:

Christopher Tamarin
Telecommunications Strategist
Oregon Business Development Department
121 SW Salmon Street, Suite 205
Portland, Oregon 97204
christopher.tamarin@oregon.gov

BUSINESS OREGON | WWW.OREGON4BIZ.COM

Office / Cell: 503 508-0178
Fax: 503 581-5115

