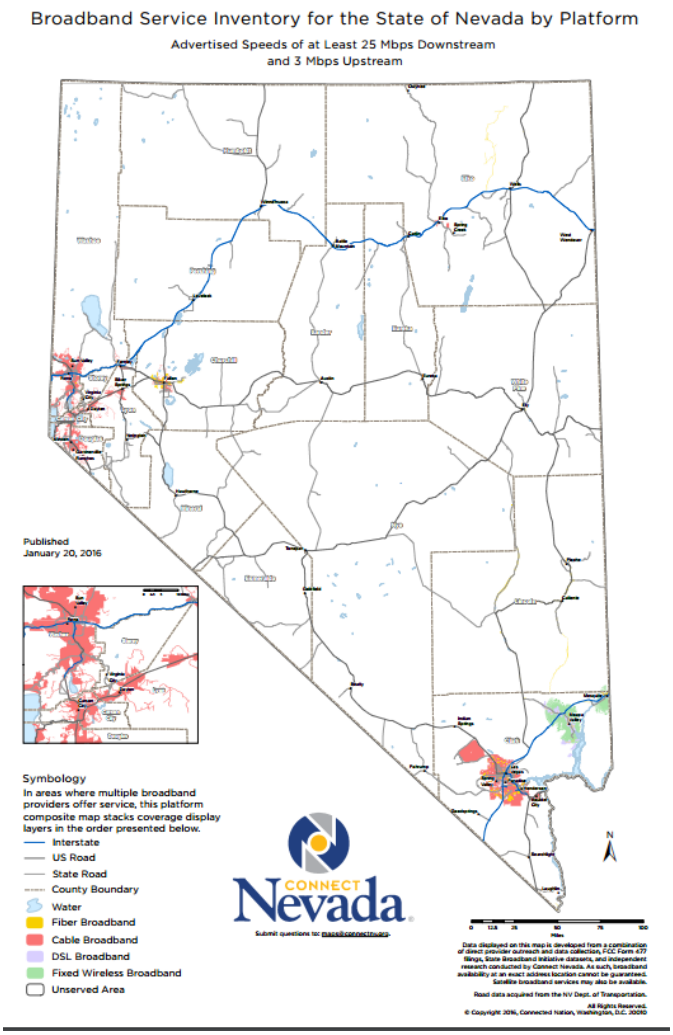
[PRELIMINARY] Proposed Recommendations

While Nevada has been ranked as the "8th most connected state in the nation"[1] for broadband adoption, this statement is somewhat misleading in that it focuses on Nevadan's "access" to broadband, rather than the number of Nevada's who are connected, or *receive it* (and thus, can afford it). Indeed, the ranking reflects the majority of the population has access, but the reality is the majority of the population resides in only two of the state's 17 counties. If the question were to be asked, "what percentage of the population in each county receives broadband services," the majority of our *counties* would be considered "underserved" or "unserved". The latest data[2] collected by the FCC, NTIA and other sources show that among with remaining 15 counties, there are 143,000 people in Nevada without access to a wired connection capable of 25 Mbps download speeds, 144,000 who have access to only one wired provider, and another 48,000 people in Nevada who don't have any wired Internet providers available where they live. The most recent data shows.



As noted early, the FCC recently changed the definition of "broadband," such that "high speed Internet" service is now considered 25 Mbps up and 3 Mbps down. Using this latest definition, 8 percent of Nevada residents do not have access to "fixed advanced telecommunications capability." [3] Finally, with respect to wireless technology, this map demonstrates there are still large areas of Nevada that lack any LTE coverage in Nevada.

Nevada has a long haul fiber line that runs along I-80, and another fiber line along Highway 50. In addition, there is a relatively new fiber line that runs from California, through Douglas County and into Reno, a fiber loop in Elko, Carson, and other long haul fiber along I-15 in Clark County. However, many of the rural counties where this fiber runs through have limited or no access to it, because there is no POP, or "on-ramps" to the fiber backbone. In addition, there is one aerial north/south fiber line that should be lit by the end of the year. This line will follow

[1] http://broadbandnow.com/Nevada, based on data collected via the FCC, NTIA and other sources. This ranking reflects the percentage of Nevada's population *with access* to 25+ Mbps down and 3 Mbps up, wired broadband. It should be noted this ranking reflects access to, not actual use by, Nevada's population. While 25/3 Mbps may be available, it may also be cost prohibitive for many.

[2] Id.

[3] https://www.fcc.gov/reports-research/reports/broadband-progress-reports/2016-broadband-progress-report

Highway 95, and will connect Reno to Las Vegas. The addition of this line offers new opportunities for those communities that exist along that line.[4]

Of the state's 17 counties, the majority of them lack any fiber that can be used to meet the community's needs. Most counties still operate on copper lines, wireless, or satellite. These solutions provide limited, if not minimal, upload and download speeds. Nevada's rural counties rely on mining and ranching to support their populations. These are two industries that contribute significantly to the state's overall economic wellbeing and yet, the reality is, given the cost of construction, the small populations in our rural counties, and the limited Return on Investment (ROI) to a telecommunication company, it is cost prohibitive to build out. Therefore, market forces will not drive broadband expansion in to these areas. This is why state policy makers will need to take the lead to adopt policy that help make it easier and more economical for telecoms to expand.

It is the intention of this Task Force that these recommendations will provide opportunities for policy makers to adopt policies that will help provide possible solutions or implement changes that will help address the state's broadband issues, and facilitate its construction and expansion in the state. In the past, Nevada adopted a laissez-faire broadband policy, one that called for the market forces to dictate expansion. This policy no longer serves the Nevada family, particularly those residing in rural communities. More must be done to devise and construct an information superhighway throughout the state – one that has low latency, redundancy and can provide more backhaul for providers. By expanding the basic backbone, we can expand opportunities to reach into Nevada's smaller communities and, as more technology, financial and data centers make their home in Nevada, more demand will be placed on the state's information highways.

In considering potential policy changes, the Broadband Task Force sought out best practices from other jurisdictions and considered the attributes, challenges and limitations that exist in our state, including our state laws, governance, geography and funding. In so doing, the Task Force has developed the following recommendations:

#1

RECOMMENDATION: Enact Legislation to Enable the Nevada Department of Transportation (NDOT) to Adopt Key Elements of the Utah Department of Transportation Fiber Trade Policies, Including Leveraging of State Rights-of-Ways (ROWs), Installation of Conduit with Excess Capacity in the ROWs, Grant Authority to Enter into Fiber Trades and Eliminate Statutory Restrictions on Public Private Partnerships.

One of the Nevada's main assets is its Rights-of-Way. While not tasked with expansion of state fiber network in the late 1990's, the Nevada's Department of Transportation demonstrated some

[4] The Nevada Broadband Network worked on construction of this grant-funded project for more than four years. The project incurred numerous delays, not uncommon when working with federal agencies, tribes and county lands. The project ran out of money in 2015 and could not be completed. Switch has since taken over this line and expects to have the line connected and operational by the end of 2016.

notable foresight when negotiated a deal with Williams Communication,[5] to use the state's ROW to install a long-haul fiber line in exchange for four strands of dark fiber via an Irrevocable Right to Use (IRU) agreement. Three years later, in 2002, the Department negotiated again for an IRU to four strands of fiber in exchange for another telecom's use of the ROW along Highway 50.[6] However, this was not made into a policy, nor was the value truly realized at the time of the state's acquisition.

Over the last 15 years, more and more states have recognized the value of their ROW. Utah recognized in the late 1990s, that its Rights-of-Way were a key asset, and that it could leverage this asset to help facilitate fiber expansion in anticipation of the 2002 Salt Lake City Olympics. Their legislature authorized their Department of Transportation to initiate trades and install conduit that be able to accommodate additional fiber in certain highway projects UDOT found that if the state installed small sections of conduit, telecoms have cooperated in helping to extend the infrastructure and provide services to rural communities. By implementing a practice of laying empty conduit during road construction projects, multiple providers can install infrastructure at a much lower cost.[7]

At the heart of the UDOT model are four principles:

1. Provide for the installation of empty conduit by the State along major routes;
2. Engage in cooperative planning with telecoms and allow telecoms access highway ROW to allow for build-outs;
3. Allow for the use of the highway ROW at low or no-cost to non-profit entities[8]; and
4. Allow for the state DOT to enter into fiber trades with telecoms.

Upon passage of enabling legislation, UDOT was able to engage in public-private partnerships to allow service provider networks to expand into unserved and underserved areas. Using their ROWs, UDOT leveraged private companies' assets to decrease the cost of expanding their state-owned fiber optic networks (which supported their ITS) through a fiber optic resource sharing program and conduit trade system. UDOT found that if the state installed small sections of conduit, telecoms would then help extend the infrastructure and provide services to rural communities. By implementing a practice of laying empty conduit during road construction projects, multiple providers could install infrastructure at much lower cost. Over the last 20 years, UDOT has been successfully facilitating cooperative fiber and conduit trades with broadband providers and has implemented a number of best practices for broadband development thereby enabling the expansion of its own communications network across the state without major capital

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[5] Williams Communications has since become Level 3 Communications.

[6] These two fiber lines now form the backbone of the state's network, known as NevadaNet own , and provide important backhaul for the state's LMR Radio System and its ITS system.

[7] Because one of the largest cost element for deploying broadband is burying infrastructure underground, one of most effective ways for a telecom to reduce their construction cost is to run fiber through existing conduit in the ground. Studies have indicated that as much as ninety percent of the cost of deploying broadband infrastructure is spent during construction, particularly while excavating roadways, according to the FHWA. *See also* Meinrath, S. and Lennett, B., Open Technology Institute, *Building a 21st Century Broadband Superhighway,* January 19, 2009; *https://www.newamerica.org/oti/policy-papers/building-a-21st-century-broadband-superhighway/*

[8] https://www.fhwa.dot.gov/policy/otps/successprac.cfm

investment. The expansion of Broadband into rural areas of the state is an initiative that has been strongly supported at the highest levels, including Utah's Governor, Gary Herbert[9]

Another policy is the manner in which UDOT works with the private telecom industry. UDOT maintains open and regular communication with the state's telecoms. Every two months, UDOT meets with the telecoms to discuss broadband projects, provide assistance on ROW acquisitions, the permitting process and share information. Some of this information includes mapping data. This data sharing has enabled UDOT to develop extensive mapping of fiber locations with the help of UDOT's dedicated GIS team. UDOT has also created an electronic list of broadband providers and provides them notice of future construction projects, where broadband infrastructure can be installed, and coordinates planning and construction efforts to help minimize fiber construction costs. Finally, UDOT solicits an annual "wish list" from telecom providers, which is overlaid with road projects thereby enabling the telecoms and UDOT to align excavation/implementation activities. These practices highlight the importance of ongoing communication with the telecom partners so as to enable them to better coordinate their activities, planning and ultimately, save money.

UDOT's approach to deploying broadband has also advanced ITS initiatives in the state, expanded close-circuit cameras, and provided their DOT with real-time traffic and weather information to enable their travelers, visitors, and skiers to have timely data so they can "know before you go." By focusing on improving its transportation ITS, Utah has seen a significant expansion in their fiber infrastructure over the last ten years, the collateral effect of which has been to bring broadband to rural communities and promote their economic growth in both rural and urban areas.

All of UDOT's fiber projects and trades are overseen by the Telecommunications Advisory Council (TAC), which is comprised of six members appointed by the Governor. In addition to reviewing and approving any trades, the Council also advises UDOT on telecommunications issues and works in collaboration with a separate broadband council to develop state policies and provide guidance to the governor and legislators. Having a body to provide oversight of fiber trades and the values assigned is a key element of this overall policy.

Other states have adopted various modifications of this model. For example, Maryland has a well-developed resource sharing program, which is separated funded through an account within the state's Transportation Trust Fund to advance IT-related projects. Maryland also established a rural broadband assistance fund and a rural broadband coordination board to facilitate deployment in rural areas, and passed laws making the use of highway ROW for telecommunication services available to non-profit entities without charge until 2020. Arizona has also adopted a similar policy. However, in several of these states (including Utah), some sort of enabling legislation was required to specifically allow telecoms into the ROW, to modify the definition of transportation facility to include fiber and conduit, allow the DOTs to enter into public private partnership and conduct trades for value, and create a mechanism for approving the valuations placed on the conduit/fiber by the DOTs.

The USDOT-FHWA developed a summary on Federal-aid highway program regulations and policies pertaining to broadband deployment in highway ROW[10] and provided a summary on

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[9] https://www.fhwa.dot.gov/policy/otps/successprac.cfm#ftn2

[10] *See* Title 23 of the U.S. Code section 514 b (4), ""*to promote the innovative use of private resources in support of intelligent transportation system development*."

successful practices. Utah DOT's program was recognized as being one of the most successful models[11] for accelerating broadband deployment.

As a result of the legislative changes made by Utah 20 years ago, and the practices UDOT has developed over time, UDOT has doubled its network footprint, with 800 miles of fiber owned by the agency and acquired the use of nearly 1,000 miles obtained in trade.

Therefore, the Task Force recommends that enabling legislation be passed which would allow NDOT to:

1. **Enact enabling legislation that would grant NDOT authority to include conduit within its highway infrastructure for the purpose of conveying telecommunications fiber and to allow telecommunication providers access to the conduit in exchange for cash or in-kind compensation for such use.**

2. **Amend NRS _____ to allow NDOT to allow NDOT to imitate a public private partnership with respect to telecommunications/fiber infrastructure projects.**

3. **Require NDOT to hold an annual planning meeting with telecoms, establishing a single point of contact, and allow telecoms to submit a "telecom wish list."**

4. **Amend the definition of "highway" (NRS 408.070) to include conduit infrastructure for conveying telecommunications cable, line, fiber and wire.**

5. **Amend the definition of "transportation facility" (NRS 408.5471) to include conduit infrastructure for conveying telecommunications cable, line, fiber and wire.**
6. **Allow the Board of Transportation to review and approve any trade agreements between the Department and a telecommunications provider.**

7. **Require NDOT to regularly engage with, and coordinate with, telecommunications providers on any highway project where there is a potential to include fiber and/or conduit within highway rights-of-ways.**

8. **Require NDOT to develop a methodology for establishing value of any fiber or conduit asset within its rights-of-way.**

9. **NDOT requests authority to include conduit within its highway infrastructure for the purpose of conveying telecommunications fiber. Under existing law, the Nevada Department of Transportation allows telecommunications facilities to occupy its rights-of-way through the issuance of permits. This BDR would authorize NDOT to install conduit within its rights-of-way for use by telecommunications providers in exchange for cash or in-kind compensation for such use.**

[11] United States Department of Transportation, Federal Highway Administration, Office of Policy and Governmental Affairs, *Successful Practices of Broadband Deployment in Highway Rights-of-Way: Summary Paper*, May 2013, p. 3;

10. **Modify existing IRUs, as necessary, to allow the state to enter into fiber trades for valuable consideration.**

#2

RECOMMENDATION: Adopt a "Dig Once"/"Joint Trenching" Policy at the State Level, and Promote Adoption at the Local Levels

Laying fiber optic cable is an expensive proposition because of the cost of labor, regulatory approvals, time and permits required to gain access to trenches for the fiber. "Dig Once" policies require planning and coordination of opportunities between telecoms, DOTs or public works agencies engaged in road construction projects.

Deploying fiber can easily cost more than $100,000 per mile – and "the largest element of deployment costs is not the fiber itself, but the placement costs associated with burying the fiber in the ground (or attaching it to poles in an aerial build)."[12] In certain cases, these placement costs can account for almost three-quarters of the total cost of a fiber deployment. However, with adequate planning, these costs can be decreased substantially. According to the National Broadband Plan, "the cost of running a strand of fiber through an existing conduit is 3-4 times cheaper than constructing a new aerial build." In addition, joint trenching of infrastructure projects can cut placement costs dramatically, by sharing those costs of digging among not only broadband providers but other infrastructure costs. As a result, many states and municipalities have in recent years adopted a variety of Dig Once policies. These policies range in scope and nature, involving a notification process in which interested parties are given a notice and an opportunity to install conduits and cabling in a trench opened by another infrastructure project.

The United States Department of Transportation, Federal Highway Administration has listed several best practices for Dig Once state and local policies, noting that Dig Once and joint-use of trenches have been practices recognized by state and local stakeholders as sensible solutions to expedite the deployment of fiber along main routes when implemented as part of a cooperative planning process."[13]. Specifically, the FHWA has urged states and local governments to adopt a Dig Once/Joint Trenching policy as part of President Barak Obama's Executive Order to facilitate the deployment of Broadband on Federal lands, buildings, rights-of-way, federally assisted highways and tribal lands.

At the heart of every Dig Once policy is planning, communication and coordination. "Dig Once" also means requirements designed to reduce the number and scale of repeated excavations for the installation and maintenance of broadband utilities in highway ROW. "Joint use" means mandating that broadband utilities install at the same time, in the same trench, or in the same

[12] National Broadband Plan, 2012

[13] *Successful Practices of Broadband Deployment in Highway Rights of Way*, U.S. Department of Transportation, Federal Highway Administration, Once of Policy and Governmental Affairs, May 2013, available at http://www.fhwa.dot.gov/policy/otps/successprac.cfm.

conduit(s). It may also mean the first utility in places extra conduits, and subsequent utilities must negotiate with that utility to occupy one or more of the empty conduits.[14]

At the federal level, several bills have been put forth to implement a federal "Dig Once" policy. Earlier legislation went further than the executive order, in that it would specifically require states to evaluate the need for broadband conduit to be installed at the same time as a federally funded highway construction project. Another proposal would streamline the permitting process of federal land agencies so it would be easier for broadband providers to build infrastructure on public lands,[15] as well as address mandatory historical preservation and environmental protections and permitting required on BLM land.[16]

Few states have implemented statewide *Dig Once* policies because of the challenges working with utilities and telecoms, and a lack of a clear vision on its implementation.[17] Many DOT's see it as a local issue, and has seen more success at the local level. For example, it has been implemented by San Francisco, Santa Cruz County and a number of other cities and counties throughout the United States.[18] In most case, it requires that local cities and counties adopt ordinances that require the city or county engaged in any excavation projects where it is both financially feasible and consistent with the entity's long term communication goals, to require municipal utilities to take communications infrastructure into account in their planning process, notify telecoms and the department of public works of the trenching/excavation opportunity, and require the establishment of a process for the IT or technology department to participate in the utility excavation. Another variation of these policies is called "Trench One," which is currently being used in San Francisco. This approach allows for a roadside trench to be left open after construction ends. This trench is later used to bury conduit and is shared among broadband providers, if possible, to avoid the costs associated with additional excavation in areas where the entire right of way is paved. According to **San Francisco's Dig Once Specification**,[19] this policy reduces the cost of conduit installed from $128,000 per street mile for the first installation (including excavation of the trench) to $71,000 for the second. This decrease is largely attributable to a reduction in excavation costs.[20]

One situation where this policy could have been implemented in our own state was the construction of USA Parkway. This road will be constructed through some difficult terrain and it would have made sense to allow for the creation of joint trench that could have been used to open opportunities for telecommunications providers. The main impediments to implementing this was 1) there was no provision for a utility or for fiber in the initial design, and no utility easement, 2) the accelerated construction process precluded any long-range planning which could have enabled telecoms to participate in the planning process, and give them the lead time necessary to engage in their own internal planning processes. However, there will be future transportation

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[14] INCLUDE CITE

[15] http://www.govtech.com/network/Bipartisan-Dig-Once-Legislation-Provides-Hope-for-Broadband-Expansion.html

[16] Centurylink often faces wait-times of 6 to 12 months for permits from federal land agencies, while permits for state and private lands usually take just a few weeks. http://www.govtech.com/network/Bipartisan-Dig-Once-Legislation-Provides-Hope-for-Broadband-Expansion.html .

[17] In 2012, Arizona signed the Arizona Digital Highways Bill "to promote high-speed Internet access to citizens statewide for the purpose of advancing economic grow, education, public safety, healthcare and digital government in Arizona."

[18] http://sfgov.org/dt/sites/default/files/FileCenter/Documents/6885-San%20Francisco%20Dig-Once%20Specification%20-%20CTC%20-%20042415.pdf

[19] http://sfgov3.org/modules/showdocument.aspx?documentid=6885

[20] http://www.csg.org/pubs/capitolideas/enews/cs41_1.aspx

projects, and if the necessary legislative changes are made, there exists the ability for such a policy to succeed.

Therefore, the Task Force recommends the following:

1. **Ensure utility easements are acquired and provided for in any highway construction projects;**

2. **That the Office of Science Innovation and Technology work with local counties to review planning processes, ordinances and building codes and assist in the creation and adoption of local Dig Once and/or Joint Trenching policies, as needed.**

#3

RECOMMENDATION #3 – Establish a State Consortium to Pursue E-Rate Funds to Pay for Broadband Construction to Schools, Area Networks and Other Internal Components.

The FCC's Schools and Libraries program (referred to as "E-Rate") was created as a part of the federal Telecommunications Act of 1996. The goal of the E-Rate program is to make telecommunications and information services more affordable for schools and libraries in America, by using federal funds to subsidize broadband for schools and libraries. The amount of broadband cost the federal government will subsidize to a school or library depends on its level of poverty and location. The discounts range from 20 to 90 percent, with higher discounts for higher poverty and more rural schools. The telecommunications equity aid fund was designed to help cover the remaining costs not funded by E-Rate. However, that fund has not kept pace with the rising costs of telecommunications.[21]

In 2015, Switch conducted its own survey of schools throughout the state to determine who was connected, who was not, the speeds provided and what that connectivity cost. Based the data collected and meetings with county/community leaders, the following reflects the realty of broadband connectivity, and the digital divide that currently exists in our schools:

- Rural schools in particular need technical assistance to determine their broadband needs and to design a solution;
- Each district applies for E-rate separately; there is no collaboration, no data collection, no data sharing, and no information gathered to determine how these funds are being used, whether they are being used, how matching funds are appropriated or what schools districts actively pursue E-rate funds.
- Because each school district pursues E-rate funding on their own, there is no ability to leverage economies of scale when purchasing services nor can they hold providers to a standard of service adequate for the schools' needs.
- While NSHE has connected approximately 30% of our rural schools, NSHE does not pursue federal reimbursement to pay for services it provides to these schools.

[21] http://mn.gov/deed/images/2015-broadband-report.pdf at p 30.

- Due to constraints on time, personnel and experience, rural schools struggle with the E-rate process.

The Task Force's Subcommittee on Education held meetings with educators from New Jersey and from the Utah Education and Telehealth Network (UETN), to examine their innovative methods for pursuing E-rate. Both of these states have been recognized by the FCC for their strategic planning and innovated management of the E-rate program and both of these states recognized the benefits of large-scale purchases and created consortiums for the purpose of pursuing E-rate funds. By creating a consortium, they were able to increase their buying power and drive down costs. Consortium purchasing can drive down the prices paid by schools and libraries for E-rate supported services.

Utah, with only approximately 40 school districts, created a statewide consortium to pursue E-rate funds. First, the UETN grew as an extension of their system of higher education. The consortium took responsibility for managing the E-rate applications for all districts, performed technical assessments for the individual schools, and managing all aspects of the E-rate process. By creating a consortium, UETN was able to leverage the economies of scale, in that they could negotiate multiple contracts and secure the best pricing. By averaging the poverty levels of all of the districts, the consortium, as a whole, qualified for a 70% reimbursement.[22] This meant that E-rate paid for 70% of the costs of broadband TO the schools, as well as the services WITHIN the school. By using E-rate dollars, and having a state match, UETN was able to fund construction targets, as well as pay for Wide Area Networks and other in-school broadband services.

As part of the overall construction process, UETN negotiated with a third party ISP to provide service to the school. UETN also recognized the value of entering into long-term contracts with an ISP. This is because, with the low density in many rural towns, no ISP could possibly realize a return on their investment in one or two years. Under UETN's model, they recognized it would take approximately 4 years to realize a return on that investment, and the fifth year would provide them with a return on their investment. More importantly, by bring an ISP into a small rural community, that ISP could provide services to any of other community partners, including government buildings, hospitals, clinics, libraries, the courthouse, fire, rescue, police and residents. The result of this centralized model, featuring a state consortium, is that within 20 years, Utah has managed to connect every high school, middle school and elementary school with at least 1 Gig of service.

The UETN model focused on some key points:

- There is a benefit to consolidating purchases
- Bringing an ISP into a community serves the entire community – not just a school
- A consortium requires personnel who possess the necessary experience to process E-rate and negotiate service agreements.

While UETN model has some notable elements, it cannot be immediately duplicated here in Nevada for several reasons. First, UETN has evolved into an organization with 115 employees who carry out these functions. Second, while UETN is under their system of higher education, their governance structure is quite different that our higher education structure. Third, the Utah legislature has appropriated the necessary funds to enable UETN to pursue those federal dollars.

This highlights a weakness within our current system, where the Nevada System of Higher Education has agreed to act as the ISP and provide internet service to certain rural schools. In some cases, it can divest the community of an opportunity for a private ISP to serve the community, because when an ISP can serve a school in a rural community, it can also serve the residents if they can secure contractual guarantees from the community anchor. Additionally, NSHE does not seek any E-rate reimbursement. It conceivably

[22] The reimbursement at 770% is for service costs (subsidies to providers).

could, but it would require NSHE to cost allocate to determine what each school is using and the cost of that service.[23] Our current way of doing things means that the state is leaving E-rate dollars on the table. And finally, unlike Utah, there is no recurring mechanism for providing the state matching funds required by E-rate.

In order to move toward a more cohesive education network model, we believe the first step is to create an E-rate consortium under the Office of Science, Innovation & Technology. It would require hiring additional staff to manage and oversee the E-rate applications, securing "buy-in" from all school districts, in addition to securing legislative approval to provide funding for the state match.

Additional issue remain concerning governance, such as whether it is in the best interest of the schools and small rural communities to have NSHE provide services to the K-12 schools, whether the state network should be centralized under one agency, such as NSHE or EITS, or whether a different governance structure would be best. While NSHE has assumed responsibility for providing Internet services at no cost, it remains to be seen whether this is a viable long term strategy, particularly when there is no statutory requirement that NSHE serve K-12 education, and it is not part of a school's ongoing budget.

Therefore, the Task Force hereby makes the following recommendations:

1. **Create a state consortium and use statewide purchasing to leverage economies of scale to bring competitive pricing to all schools throughout the state. The consortium would provide oversight over the E-rate process, manage procurement, and conduct technical assessments and planning. A consortium would work in connection with the Governor's Office of Science, Innovation and Technology to provide leadership of acquisition services at the highest level (versus a local level).**

2. **Require bi-annual meetings between consortium staff and school districts to engage in strategic planning and fiscal assessments;**

3. **Conduct an assessment of the NSHE services to determine whether it is in the best interests of the DOE and State to continue providing Internet services at no cost, particularly in the rural K-12 schools;**

4. **Request NSHE to continue providing technical assistance to, and act as a technical advisor to, the state's rural schools.**

5. **Give libraries the opportunity to join the consortium and engage in the planning processes.**

#4

RECOMMENDATION: Place Authority for the State Education Consortium Under the Governor's Office of Science, Innovation & Technology.

[23] While NSHE will help connect a school and provide Internet services for free, the school has to pay the cost to build out to the NSHE system. The cost to build out can be quite expensive and that is one reason why there aren't more K-12 schools connected to the NSHE system. However, it is important to recognize that NSHE currently connects approximately 30% of our rural schools to the Internet.

***** UNDER CONSTRUCTION PENDING**

RESEARCH BY CONNECTED NATION ****

To carry out the recommendations for creation of an education consortium, there will need to be more than one person to accomplish this task. The more successful state consortium models have involved a centralized communications network with adequate staffing. For instance, the UETN has a staff of 115, and the Iowa Telecommunications Network (ICN), has an equally large staff. Recognizing that this state is cannot duplicate these models, the Subcommittee on Education elected to consider several governance possibilities, from placing the consortium under the direction of NSHE, to placing it under the Department of Education, and placing it under OSIT. Based on how our education, IT and communications operations operate and function, several issues present themselves when considering who should govern, manage and operate a consortium:

Issue presented placing the consortium under Higher Education: The Nevada System of Higher Education is constitutionally separate from the Executive Branch, pursuant to Article 11 of the Nevada Constitution. In addition, there is no clear leadership because the state's fiber assets are owned, operated and managed by three different agencies. In the late 1990s and early 2000s, at the time NDOT entered into its IRUs with Williams Communication and Sierra Touch America it recognized that it did not have the finances or skills to operate or use this dark fiber. Only with the addition of EITS and NSHE, was the state able to make use of that fiber. This partnership has now morphed into a situation where NDOT maintains the state's fiber assets, NSHE operates and maintains it, as well as approves who can use the network. Finally, there is the issue of the relationship between the System of Higher Education and the Department of Education within the Executive Branch. Authority for the direction of connectivity within K-12 schools rests within the purview of the Department of Education; however the DOE has no authority over the policies that define the NevadaNet system that serves a number of K-12 schools, nor can DOE dictate who NSHE will serve.

Issues are also presented with respect to governance of a state consortium, and where it should be housed. The primary reason why the DOE may not be the best agency to operate a consortium is because keeping it with in the Governor's Office, it is elevated to, and driven by, the highest level in the state. Placing it within the purview of the DOE makes it susceptible to cancelation by future political leaders who may not see value in appropriating funds to operate a consortium to pursue E-rate and education technology.

Therefore, the Task Force Recommends:

1. **Creating the Nevada Consortium for Education Technology within the Governor's Office of Science, Innovation and Technology, to ensure this mission of pursuing federal funds is carried out from the highest level.**

2. **Provide for the repurposing, or creation of, at least four to six new positions**

3. **Repurpose funds designated to, and paid to, E-rate consultants to the Consortium.**

#5

RECOMMENDATION: Continuation of the Broadband Task Force, or a Broadband Council or Committee to Regularly Engage with Stakeholders, Provide Guidance to the Legislative and Executive Branches on Broadband Policy.

The federal funds American Reinvestment and Recovery Act were used on a number of broadband initiatives throughout the nation, and provided $7 billion in funding for broadband initiatives, and states were urged to engage in developing broadband policy, broadband mapping, and examining ways to promote broadband within each state. When these funds expired, many states continued to retain their broadband task forces or broadband councils as a way of maintaining an ongoing discussion of policy issues, to stay abreast of particular state issue or changes in the private sector, vet broadband policies, examine emerging technology, regulatory changes, continue engagement with stakeholders, and provide guidance to lawmakers. The knowledge and experience possessed by members in such a body provides state leaders with an important resource to draw from and regularly brings interested parties and stakeholders to the table for discussions and planning.

While the current Task Force was convened by Executive Order of the Governor, the Order will expire in June, 2017 and remains much be done. Nevada must continue to examine what it has, what it needs, establish and pursue strategic goals. The need for fiber optic capabilities and expansion of broadband will only increase as the demand for more connectivity and bandwidth continues. A broadband council or committee could also assist in data collection and provide ongoing support both the Department of Transportation as well as the Governor's Office of Science Innovation and Technology.

Therefore, the Task Force Recommends:

1. **Charge the Office of Science, Innovation and Technology with the responsibility of convening and running a Broadband and Telecommunication Advisory Council, which would provide an annual report to the Governor and state leadership addressing broadband issues, procurement, adoption, and ongoing policy recommendations and guidance.**

#6

RECOMMENDATION: Adopt Specific Broadband Goals in Legislation and Authorize Creation of a Strategic 5 and 10 Year Broadband Plans for the State.

In every other state that has made notable improvements in their broadband infrastructure, all of them recognized the importance of planning, and establishing specific goals. It is not enough to simply say "we need to provide more broadband infrastructure to all Nevadans. It is important that the state develop both short-term and long-term strategic plans that identify measures of success and how it envisions expansion of its information highways 5, 10 and even 20 years from now.

Some examples of such planning process include Minnesota, Wisconsin, New York, Georgia and Utah. In 2010, Minnesota's legislature adopted five year goal that by 2015, "*all state residents and businesses have access to have access to high-speed broadband that provides minimum download speeds of ten to 20 megabits per second and minimum upload speeds of five to ten megabits per second"* and that "the state be in the (1) top five (1) the top five states of the United States for broadband speed universally accessible to residents and businesses; (2) the top five states for broadband access; and (3) the top 15 when compared to countries globally for broadband penetration. [24]

Creating a vision and identifying goals are some of the first steps to creating a short term and long term plan. Some of the basic questions the state must consider are: Where should our fiber "information highways" be constructed? Can the state provide funding to help pay for a more robust system that will

[24] Minn. Statute §237.012

address issues of access, latency and redundancy? Should there be a centralized system that operates and maintains a state network? What are the benefits of having NSHE continue its operation and management of the existing network? If so, should the state own or lease future fiber for the system? What is the role of the state in providing services to its agencies or for the public good? Should the transport of data be approached the same way we think about commerce and transportation?

All of these questions highlight one important and timely fact: The state needs to create a vision for the state, and determine its role in facilitating the expansion and development of a more robust "information highway" system to ensure that all Nevadans have access to, and can afford, a reliable information and communication system.

Therefore, the Task Force recommends the following:

1. **Establish in statute a long-term vision and goal for the state and authorize the creation of five and ten year strategic plans to identify the state's goals and objectives, and the path for achieving the goals.**

2. **Require OSIT, with the support of Connected Nation, to devise and conduct annual surveys to collect data to identify which federal funds are/are not being pursued, assess the successes and failures of applicants, identify sources for matching funds, and assemble best practices.**

3. **Require certain key agencies to submit broadband-related data to OSIT on an annual basis, including E-rate information, to enable OSIT to engage in strategic planning.**

4. **Continue to better understand the current broadband landscape through planning and mapping.**

#7

RECOMMENDATION: Require Developers of Certain Projects, to Incorporate Conduit in their Utility Planning and Design – Where It Makes Sense.

The goal in any city or community is to install conduit or fiber in a cost effective manner, and in projects where it makes sense. For example, requiring installation of conduit during the construction phase of a road project is far more cost effective than trenching after the fact. Installing conduit in a master planned community where there is no fiber backbone to connect to would not make sense. If fiber was nearby, then it would make sense to include it in the project during the construction.

Unlike several counties in California, there is no county in Nevada has adopted any local building ordinances or codes that require a developer to install conduit, when and where it makes sense. It should also be noted there is nothing in state statute that requires developers to accommodate fiber[25] because it is not considered a utility. At the state level, the only utility the state requires is sewer and power.[26] It is left to county ordinances to determine any other services the developer must provide for, which usually include power, telephone, and sometimes cable.

One of the smartest things a community can do to improve connectivity is prepare an environment that encourages high-speed connectivity infrastructure investment. As developers erect new buildings, some

[25] Really what we are talking about is not fiber optic cable itself, but the conduit.
[26] PROVIDE CITE TO NRS

cities require developers to work with them to develop internal wiring standards and *conduit* installation standards for high-quality Internet access within and to their buildings. One example is a city of approximately 45,000, located immediately west of Minneapolis, which has not adopted any formal building code language, but has negotiated broadband readiness specifications with several new multi-dwelling unit building developers. Savvy developers realize that high-speed connectivity is now a basic utility that tenants demand. Another example is Loma Linda, California, which implemented a similar approach when it passed an ordinance concerning wiring codes for its Connected Communities Program in 2004. New development and remodels that involve more than 50 percent of the structure must include internal Fiber-to-the-Home (*FTTH*) wiring. Developers in other jurisdictions, recognizing the increase in value of properties wired for FTTH, have embraced the practice as there is strong evidence that it also increases the value of a home or commercial building. [27] In addition, the conduit and fiber could later be used by the local government or leased to other providers. Over a period of ten years or more, this policy could result in fiber throughout the majority of a community and developers would recoup their costs.[28]

Therefore, the Task Force hereby recommends:

1. **Statutorily require developers of commercial or certain master planned communities to incorporate fiber-ready conduit as part of their utility designs where it makes sense (where any part of the construction occurs within "X" number of feet/yards from a fiber backbone)**

#8

RECOMMENDATION: Require the Attorney General's Office, in Conjunction with Any Agencies who are Party to an IRU, to Initiate Review of an IRU at Least Three Years Prior to Its Expiration

Currently, the state's fiber assets are controlled by an Irrevocable Right to Use (IRU). One IRU governs the fiber asset along Interstate 80, and the other IRU controls the fiber asset along Highway 50. Contained in the IRUs are the rights, duties, limitations and restrictions of the user (i.e. the state, and more specifically NDOT). These contracts secure more than the right to use the fiber; it is akin to a vested property right for the duration of the IRU. Most IRUs are for 20 to 25 years. In addition, NSHE has entered into a number of IRUs in the south to provide connectivity to schools and higher education institutions. Both state IRUs, for the fiber along 80 and 50) are for 25 years, with one being executed in 1999 and the other executed in 2002. These IRUs also contain certain limits with respect to what the state can and cannot do with these assets, and who can have transport on the lines. Some of these terms limit the states' ability to engage in trades or enter into a public-private partnership with another entity.

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[27] In speaking with one Douglas County planner, there was tremendous enthusiasm for this policy, because the process for changing an ordinance or building can be long and arduous, and local elected officials may not have the political will to require their contributors to make such changes. Douglas County is one community where planners had advocated for such a policy, and seeing little interest in such a policy, asked developers to voluntarily consider installing conduit in certain projects. These requests were ignored, as developers did not want to undertake any additional work. It was their recommendation that it would make more sense to have the state initiate legislation which would grant local planners the ability to request inclusion of conduit as part of the utility design in certain types of construction projects, and to allow the local communities/counties to define the "where it makes sense" part of the policy.

[28] Connecting 21st Century Communities, A policy Agenda for Broadband Stakeholders, July 2015.

This recommendation is designed to allow the state sufficient time to determine whether it can renegotiate any of the terms of the IRUs in order to have them align with a goals and objectives that would be set forth in the state's 5, 10 and/or 20 year strategic plan. This recommendation is to address the concern that, without sufficient time for review, these IRUs may be automatically renewed and there will be no opportunity for the state to modify any of the terms in order to meet its needs, or determine whether it is even in the state's best interests to continue operating and maintaining this asset.

#9

RECOMMENDATION: Classify Documents Evidencing Certain Fiber Assets as "Critical Infrastructure" and Establish Protocol for, and Creation of Different Levels of Access to Fiber Assets which are Designated Critical Infrastructure.

Currently, there is no statutory definition for "critical infrastructure." [29] The only place the definition can be found is on the Nevada Department of Emergency Management Website, which defines critical infrastructure as,"*systems, assets, and services that are necessary to ensure security, safety, and health. Critical infrastructure supports the region's economy and maintains public confidence. Destruction or compromise of any of these systems or services would have a debilitating impact on the area either directly, through interdependencies or from cascading effects*."

> Assembly Bill 239, passed in the 2015 Legislative Session, sets forth a new definition of "Critical facility" as a "*petroleum refinery, a petroleum or chemical production, transportation, storage or processing facility, a chemical manufacturing facility, a pipeline and any appurtenance thereto, a wastewater treatment facility, a water treatment facility, a mine as that term is defined in NRS 512.006, a power generating station, plant or substation and any appurtenances thereto, any transmission line that is owned in whole or in part by an electric utility as that term is defined in subsection 5 of NRS 704.187, a county, city or town jail or detention facility and any prison, facility or institution under the control of the Department of Corrections. The term does not include any facility or infrastructure of a utility that is located underground."*

At issue is whether the state should specifically identify long-haul fiber as "critical infrastructure," so as to limit what type of information concerning fiber, vaults, Points of Presence (POPs) regeneration stations and other electronic components, can be disseminated to the public via public records requests, or included in state mapping; and if included in the on-going state mapping, what levels of access should be created. In addition, the state needs to acquire certain data for its broadband mapping/data collection efforts, but remain sensitive to what information should or should not be part of the public domain, and what information or documents should be designated "critical" and confidential, or "non-critical" and open to the public domain. If NDOT adopts the UDOT model, the fiber information will be gathered and maintained on a public map[30]

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[29] CONFIRM WITH ATTORNEY GENERAL'S OFFICE

[30] Per Lynne Yocum, of UDOT, "the real threat isn't a terrorist attack on a fiber line, but someone's backhoe"

Why should it be considered “critical?” In today’s technology age broadband connects the world in almost every way. Beyond providing basic internet connectivity, data-reliant applications have redefined broadband into a necessary utility to conduct aspects of everyday life, for public safety these applications stretch even further. Fiber back haul has offered the capability to transmit sensitive data in a timely manner to ensure first responders, critical utilities and other governmental agencies has access to critical information in real time. These broadband assets should be considered critical infrastructure not only in that they allow for communication among public safety entities but for their role in connecting utilities and their economic implications.

Broadband back haul is critical in use by the following:

1. Department of Defense
2. Homeland Security
3. Local Radio Networks
4. First Responders
5. Monitoring for Energy, Sewer and Water and other utility facilities
6. Data Centers
7. Large Scale Business Enterprises

Of primary importance, wireless broadband supports the interoperability of communications systems that would allow first responders anywhere in the nation to communicate with each other, send and receive critical voice and data to save lives, reduce injuries, and prevent acts of crime and terror. Furthermore, with broadband, 911 call centers (also known as public safety answering points or PSAPs) could receive texts, pictures, and videos from the public and relay them to first responders. Similarly, the government could use broadband networks to disseminate vital information to the public during emergencies in multiple formats and languages. Finally, Nevada 211, a comprehensive, free connection to critical health and human services, utilizes broadband to provide information about local community services in a single, statewide location that can be accessed via voice, text, or online. Launched in February 2006, Nevada 211 is a statewide partnership that is led by the State of Nevada, United Way of Southern Nevada, United Way of Northern Nevada and the Sierra, Crisis Call Center, and HELP of Southern Nevada. The goal of this partnership is to connect any and all Nevadans to vital health and human resources and to eliminate the confusion and frustration of not knowing where to turn in a time of need.

While gas pipelines and electricity grids allow our governments to operate smoothly and efficiently are important to homeland security, fiber infrastructure and broadband also plays a critical role in ensuring government, state and local agencies and emergency personnel can operate and communicate. When fiber lines are compromised or damaged, (particularly those fiber lines that lack redundancy - or the ability to re-route traffic) basic communications essential to government operations and public safety can cease. Government and emergency services without communications would be catastrophic. Therefore, the question is what can and should be done to ensure that certain aspects of our communications and broadband infrastructure are protected?

While it is necessary for the state to understand where the back-haul assets are for planning purposes, the Nevada Broadband Task Force believes at least some of the details regarding these assets should remain secure and kept confidential. As such, the Task Force recommends:

1. **Adding the term "broadband" to the list of critical infrastructure components that could potentially be deemed confidential at the Governor's discretion per NRS 239C.210.[31]**

2. **Request NDOT, EITS and DEM to examine what aspects of fiber infrastructure should be deemed "critical" and subject to confidentiality, and what elements can be included in mapping, including the degree of specificity and levels of access.**

3. **Amend Executive Order of May 12, 2010, and Executive Order 2012-04 concerning the confidentiality of documents affecting homeland security, to include specific fiber optic infrastructure, as identified by NDOT, EITS and DEM.**

#10

RECOMMENDATION: Set Aside an Annual Appropriate Each Biennium as Matching Funds to Enable Nevada's Health Care Stakeholders to Pursue Federal Grant Funding for Telemedicine and Distance Learning.

Each year the United States Department of Agriculture, Rural Utilities Services, offers a Distance Learning and Telemedicine Grant that awards from $50,000 to $500,000 to support telemedicine and distance learning and training. This year, OSIT pulled together certain stakeholders to solve how Nevada's health care providers could pursue this Grant. In order to apply for the grant, you must provide at least 30% of the matching funds. This proves challenging, for two reasons: 1)

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31 **NRS 239C.210 Confidentiality of certain documents, records or other items of information upon declaration of Governor; penalties; decennial review.**

1. A document, record or other item of information described in subsection 2 that is prepared and maintained for the purpose of preventing or responding to an act of terrorism is confidential, not subject to subpoena or discovery, not subject to inspection by the general public and may only be inspected by or released to:

(a) Public safety and public health personnel; and

(b) Except as otherwise provided in this subsection, the Legislative Auditor conducting a post audit pursuant to NRS 218G.010 to 218G.555, inclusive, if the Governor determines, by executive order, that the disclosure or release of the document, record or other item of information would thereby create a substantial likelihood of compromising, jeopardizing or otherwise threatening the public health, safety or welfare. Any information that is inspected by or released to the Legislative Auditor pursuant to this subsection is not subject to the exception from confidentiality set forth in NRS 218G.130. The Legislative Auditor may confirm that vulnerability assessments have been submitted to or are in the possession of a state agency that is the subject of a postaudit, but the assessments must not be inspected by or released to the Legislative Auditor. An employee of the Audit Division of the Legislative Counsel Bureau who is conducting a postaudit that includes access to documents or information subject to the provisions of this section must be properly cleared through federal criteria or state or local background investigation and instructed, trained or certified, as applicable, regarding the security sensitivity of the documents or information.

2. The types of documents, records or other items of information subject to executive order pursuant to subsection 1 are as follows:

(a) Assessments, plans or records that evaluate or reveal the susceptibility of fire stations, police stations and other law enforcement stations to acts of terrorism or other related emergencies.

(b) Drawings, maps, plans or records that reveal the critical infrastructure of primary buildings, facilities and other structures used for storing, transporting or transmitting water or electricity, natural gas or other forms of energy.

(c) ….. (g)

finding just 30% of the funding, and 2) finding more than 30%. Because this is such a competitive grant, the applicants can receive additional points – for additional matching funds.

This grant has not been pursued with any regularity because of the challenge of finding the matching funds. This year, Renown, in collaboration with both California and Nevada rural hospitals, did make application, with Renown's supplying the matching funds. Renown's application sought federal funding for emergency room telemedicine carts, primary care telemedicine carts, and equipment necessary to conduct distance education and training for physicians through Project Echo and for other very rural health care sites.

In addition to funding opportunities presented by the U.S. Department of Agriculture, Rural Utility Services, other funding opportunities are available through the U.S. Department of Commerce and the U.S. Department of Housing and Urban Development. These agencies have different programs that may fund projects involving broadband infrastructure, adoption, access, planning or research.[32] Some of these programs include:

	Infrastructure Deployment	Adoption and Digital Literacy	Public Computer Access	Planning	Research	Other
Appalachian Regional Commission						
Telecommunications and Technology Program	X	X	X	X		
Federal Communications Commission						
Connect America Fund (High Cost Program)	X					
E-Rate (Schools and Libraries) Program	X					
Rural Health Care Program	X					
U.S. Department of Agriculture, Rural Utilities Service						
Telecommunications Infrastructure Loan Program	X					
Farm Bill Broadband Loan Program	X					
Substantially Underserved Trust Areas (SUTA) Provisions	X					
Community Connect Grant Program	X					
Distance Learning and Telemedicine Grant Program						X*
U.S. Department of Commerce, Economic Development Administration						
Public Works	X					
Economic Adjustment Assistance	X			X		
Partnership Planning				X		
Local Technical Assistance				X		
U.S. Department of Housing and Urban Development						
Community Development Block Grants (including Section 108 Loan Guarantee Program)	X	X	X	X**		
Public Housing Capital Fund			X			
Public Housing Operating Fund		X	X			
Multifamily Housing		X	X			
Indian Community Development Block Grants	X					
Indian Housing Block Grants	X					

[32] United States Department of Commerce, National Telecommunications & Information Association, *BroadbandUSA: Guide to Federal Funding of Broadband Projects,* September 2015, p. 2; *See* http://www2.ntia.doc.gov/files/broadband_fed_funding_guide.pdf

Providing matching funds will enable our rural hospitals and health care clinics to actively pursue these annual federal grants designed to promote and develop telemedicine, as well as improvement connectivity in rural communities (i.e. creation of community computer centers, or free Wi-Fi for small towns, parks or rest areas). Even if the state was able to appropriate $100,000 each year, it would enable our rural health care providers to pursue more than $300,000 in federal funds in order to help pay for telemedicine equipment and IT equipment necessary to operate telemedicine equipment.

Therefore, the Task Force Recommends:

1. **An annual appropriation in the minimum sum of $100,000 in order to provide the matching funds necessary for our rural health care providers to competitively pursue any USDA grants, with any unused funds reverting to the General Fund at the end of each biennium.**

#11

FOR DISCUSSION

RECOMMENDATION: Increase the State Universal Service Fee

The availability of reasonably comparable communications services to all citizens of the United States at affordable rates, regardless of where they live, has been a key national policy goal since the passage of the Communications Act of 1934. Section I of the Act establishes the Federal Communications Commission (FCC) and instructs it to make available, so far as possible, to all the people of the United States, without discrimination on the basis of race, color, religion, national origin, or sex, a rapid, efficient, Nationwide, and world-wide wire and radio communication service with adequate facilities at reasonable charges. Prior to the passage of the Telecommunications Act of 1996, the availability of communications services at affordable rates even in rural locations was made possible by a system where high long distance rates offset low local rates and higher rates for business customers allowed lower rates for residential customers.

The breakup of the Bell System in 1984 and the introduction of competition in 1996 changed the paradigm for supporting universal service. With AT&T's local and long distance companies separated from each other, long distance revenues could no longer subsidize local services, causing a potential gap between urban and rural rates. To close this gap, the 1996 Act created a Universal Service Fund (USF) to replace these implicit subsidies with direct funding for carriers servicing high cost areas and to ensure that comparable service was provided to all consumers across the country, regardless of their location.

Federal Universal Service funds (FUSF) provide a baseline for ensuring that comparable service is available to both urban and rural consumers. State funds both add to support services provided

by the Federal USF and are used to provide targeted support to address specific issues faced by each state's consumers.[33]

State USF's provides funding for high cost support in 22 states, funding for broadband access for schools and libraries in 5 states, funding for Lifeline Services in 17 states, and dedicated broadband funding in 5 states. *The majority of states direct USF contributions to specific funds.* In addition, states condition distribution of their USF funds on a number of factors not considered in the federal program, including limiting funding to unserved and underserved areas and creating funds to provide specific support for broadband.

In 2014, 6 states (California, Colorado, Delaware, Maine, Nebraska, and West Virginia) specifically designated a portion of their state USF funds to support broadband deployment and adoption of broadband. Further, the California Commission authorized the California Advanced Services Fund (CASF) on December 20, 2007, by adopting D.07-12-054. The CASF provides grants to "telephone corporations" as defined under to bridge the "digital divide" in unserved and underserved areas in the state. With an initial funding of $100 million, the CASF supported projects that will a) provide broadband services to areas currently without broadband access and b) build out facilities in underserved areas, if funds are still available.

On September 25, 2010, Governor Schwarzenegger signed SB 1040 (Chapter 317, Stats 2010), which provided an additional $125 million, allocated to the following CASF accounts: $100 million to the Broadband Infrastructure Grant Account, $10 million to the Rural and Regional Urban Consortia Account, and $15 million to the Broadband Infrastructure Loan Account. On June 28, 2011, the Commission approved D.11-06-038 to implement the Rural and Urban Regional Broadband Consortia grant program to help fund activities promoting broadband deployment, access, and adoption with a budget of $10 million. And on February 1, 2012 the Commission approved D.12-02-015* adopting additional programs including a Revolving Loan Program to provide supplemental financing for projects also applying for CASF grant funding (up to 20% of projects costs, with a maximum of $500,000), utilizing the same project and applicant eligibility requirements as the Infrastructure Grant Program. Additionally, during the 2013-2014 Legislative Session, the Legislature passed AB 1299. AB 1299 created an additional account under the CASF called the Broadband Public Housing Account to support projects to deploy local area networks and to increase adoption rates in publicly supported housing communities. These efforts will be funded through $20 million from the CASF Broadband Infrastructure Account and $5 million from the Revolving Loan Account, respectively.

Delaware, which did not have a state USF in 2012, created two funds in 2014 to support telecommunications relay service (TRS) and broadband deployment. The Broadband fund is managed by a state agency established specifically for this purpose. Broadband funding for Delaware was estimated to be $2 million in 2014.

In 2014, Colorado established a broadband fund using monies originally designated for high cost support in areas subsequently deemed to be "competitive" and thus no longer requiring high cost subsidies. HB 14-1328 created the fund and established an independent board to implement and administer the deployment of broadband service in unserved areas from the fund. The Colorado broadband fund includes moneys allocated from the High Cost Fund to provide access to

[33] INCLUDE CITE

broadband service through broadband networks in unserved areas pursuant to [the rules defined by the Commission to implement HB 14-1328.

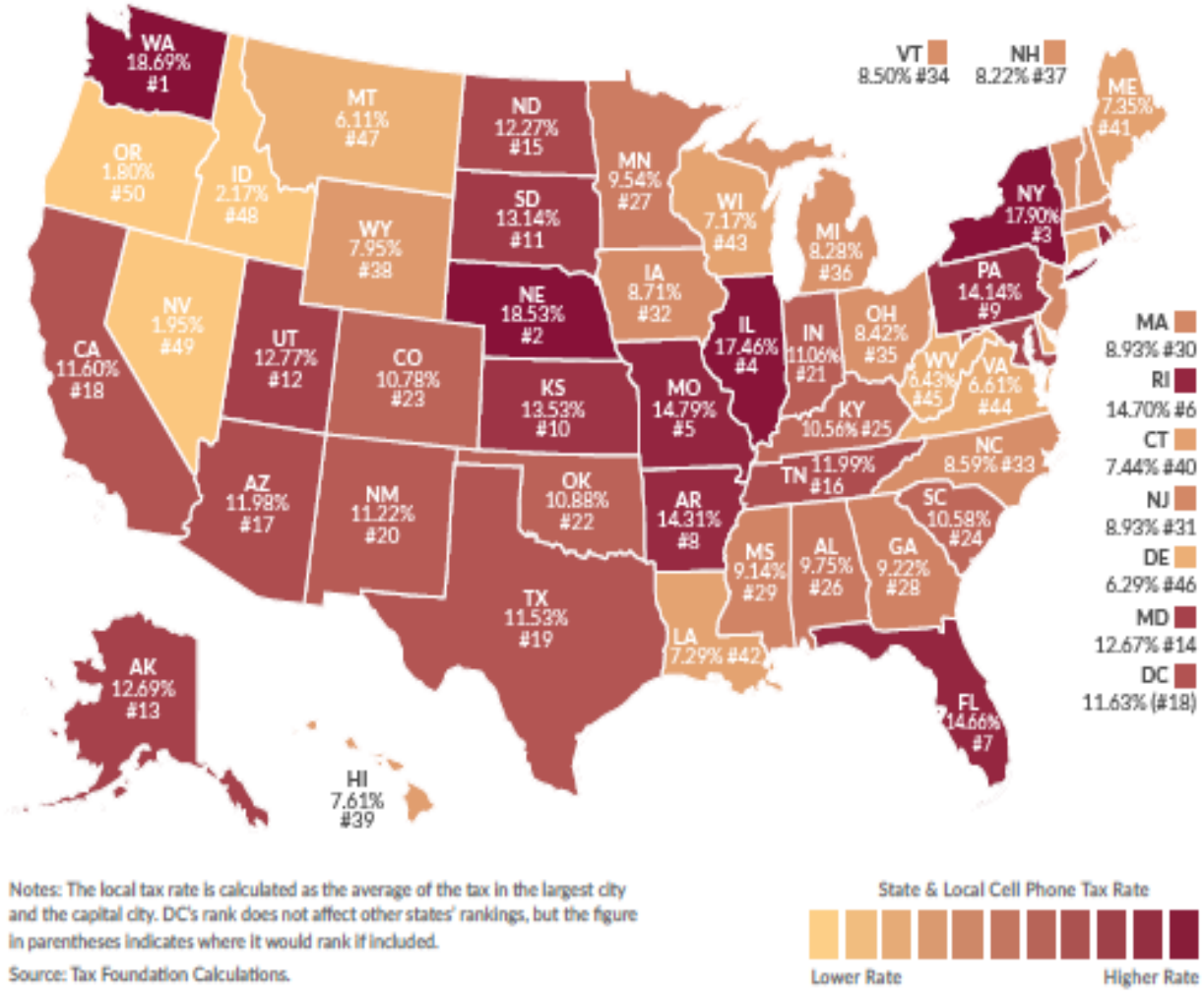
In 2014, Nebraska nearly doubled the size of its broadband fund, increasing it from $4M in 2012 to $8,050,000 in 2014. The broadband program is a grant program which will award approximately $8 million in funding for broadband capital construction and $0.5 million for broadband adoption programs in 2015.

Maine uses broadband funds for grants (awarded outright or as matching dollars) to expand infrastructure into unserved areas and local planning grants for communities to assess broadband needs. They also use state broadband monies to fund and support the ConnectME authority.

In 2014, Vermont passed Act 190 to upgrade the state's telecommunications objectives. To accomplish this goal, the Act increased the State USF surcharge to a flat 2%, added prepaid wireless carriers to the companies contributing to the SUSF, and proposed additional savings by consolidating the State telecommunications oversight functions. Act 190 requires companies receiving high cost support to use those monies to provide both basic telecommunications service and broadband internet access services throughout their territory. High cost support will be provided only in non-competitive areas where broadband has not yet been deployed. To qualify for high cost funds, a company must be designated as a Vermont ETC by the Public Service Board and Provide broadband Internet access at speeds meeting 4 Mbps download and 1 Mbps upload in each high cost area it serves within five years of designation. A VETC need not provide broadband service to a location that has service available from another service provider, as determined by the Department of Public Service. Act 190 also creates a Vermont Connectivity Initiative to fund broadband infrastructure for unserved and underserved areas of the state

Broadband funding totaled $32,945,000 in 2014, up from $13,300,000 in 2012. This increase was driven by the two states that added funds, as well as significant growth in broadband funding in California.

Figure 3 shows the states by average state and local rates, without including federal impositions. Consumers in four states pay rates in excess of 15 percent, and in another 21 states plus the District of Columbia and Puerto Rico the rate is between 10 percent and 15 percent. Of the remaining 24 states with rates below 10 percent, only three – Idaho, Nevada, and Oregon – have rates below 5 percent. Oregon consumers face the lowest combined state and local rates in the country, at just 1.8 percent.



The following Table provides a snapshot of wireless tax, fee, and surcharge burdens by state as of July 2015. Column 1 shows the state and local tax burden in each state, while column 3 shows the total tax, fee, and surcharge burden including the Federal USF surcharge. The state of Washington has now edged out Nebraska as the state with the highest average wireless consumer burden in the country, with a combined rate of 25.15 percent. Nebraska is not far behind with a combined burden of 24.99 percent.[34]

[34] Mackey, S., and Henchman, J., Tax Foundation, *Record High Taxes and Fees on Wireless Consumers in 2015,* November 2015, No. 490., pp. 5-6. *See* http://taxfoundation.org/article/record-high-taxes-and-fees-wireless-consumers-2015

Table 2

Taxes, Fees, and Government Charges on Wireless Service, July 2015

Rank		Wireless State-Local Rate	Federal USF Rate	Combined Federal/State/ Local Rate
1	Washington	18.69%	6.46%	25.15%
2	Nebraska	18.53%	6.46%	24.99%
3	New York	17.90%	6.46%	24.36%
4	Illinois	17.46%	6.46%	23.92%
5	Missouri	14.79%	6.46%	21.25%
6	Rhode Island	14.70%	6.46%	21.16%
7	Florida	14.66%	6.46%	21.12%
8	Arkansas	14.31%	6.46%	20.77%
9	Pennsylvania	14.14%	6.46%	20.60%
10	Kansas	13.53%	6.46%	19.99%
11	Puerto Rico	13.45%	6.46%	19.91%
12	South Dakota	13.14%	6.46%	19.60%
13	Utah	12.77%	6.46%	19.23%
14	Alaska	12.69%	6.46%	19.15%
15	Maryland	12.67%	6.46%	19.13%
16	North Dakota	12.27%	6.46%	18.73%
17	Tennessee	11.99%	6.46%	18.45%
18	Arizona	11.98%	6.46%	18.44%
19	DC	11.63%	6.46%	18.09%
20	California	11.60%	6.46%	18.06%
21	Texas	11.53%	6.46%	17.99%
22	New Mexico	11.22%	6.46%	17.68%
23	Indiana	11.06%	6.46%	17.52%
24	Oklahoma	10.88%	6.46%	17.34%
25	Colorado	10.78%	6.46%	17.24%
26	South Carolina	10.58%	6.46%	17.04%
27	Kentucky	10.56%	6.46%	17.02%
28	Alabama	9.75%	6.46%	16.21%
29	Minnesota	9.54%	6.46%	16.00%
30	Georgia	9.22%	6.46%	15.68%
31	Mississippi	9.14%	6.46%	15.60%
32	Massachusetts	8.93%	6.46%	15.39%
33	New Jersey	8.93%	6.46%	15.39%
34	Iowa	8.71%	6.46%	15.17%
35	North Carolina	8.59%	6.46%	15.05%
36	Vermont	8.50%	6.46%	14.96%
37	Ohio	8.42%	6.46%	14.88%
37	Michigan	8.28%	6.46%	14.74%
39	New Hampshire	8.22%	6.46%	14.68%
40	Wyoming	7.95%	6.46%	14.41%
41	Hawaii	7.61%	6.46%	14.07%
42	Connecticut	7.44%	6.46%	13.90%
43	Maine	7.35%	6.46%	13.81%
44	Louisiana	7.29%	6.46%	13.75%
45	Wisconsin	7.17%	6.46%	13.63%
46	Virginia	6.61%	6.46%	13.07%
47	West Virginia	6.43%	6.46%	12.89%
48	Delaware	6.29%	6.46%	12.75%
49	Montana	6.11%	6.46%	12.57%
50	Idaho	2.17%	6.46%	8.63%
51	Nevada	1.95%	6.46%	8.41%
52	Oregon	1.80%	6.46%	8.26%
	Weighted Avg.	11.50%	6.46%	17.96%
	Simple Avg.	10.42%	6.46%	16.88%

Source: Methodology from COST, *50-State Study and Report on Telecommunications Taxation*, May 2005. Updated July 2015 using state statutes, FCC data, and local ordinances.

Table 3.

Disparity Between Wireless Tax & Fee Rate and General Sales Tax Rate, July 2015

Rank		Sales Tax Rate	Wireless Tax Rate	Wireless Over/Under Sales Tax Rate
1	Nebraska	7.00%	18.53%	11.53%
2	Alaska	2.50%	12.69%	10.19%
3	Washington	9.15%	18.69%	9.54%
4	New York	8.44%	17.90%	9.46%
5	Illinois	8.88%	17.46%	8.59%
6	New Hampshire	0.00%	8.22%	8.22%
7	Rhode Island	7.00%	14.70%	7.70%
8	Florida	7.25%	14.66%	7.41%
9	Pennsylvania	7.00%	14.14%	7.14%
10	South Dakota	6.00%	13.14%	7.14%
11	Maryland	6.00%	12.67%	6.67%
12	Missouri	8.29%	14.79%	6.50%
13	Delaware	0.00%	6.29%	6.29%
14	Montana	0.00%	6.11%	6.11%
15	Utah	6.80%	12.77%	5.97%
16	DC	5.75%	11.63%	5.88%
17	North Dakota	7.00%	12.27%	5.27%
18	Kansas	8.33%	13.53%	5.20%
19	Arkansas	9.38%	14.31%	4.94%
20	Kentucky	6.00%	10.56%	4.56%
21	Indiana	7.00%	11.06%	4.06%
22	Arizona	8.20%	11.98%	3.78%
23	New Mexico	7.75%	11.22%	3.47%
24	Texas	8.25%	11.53%	3.28%
25	Colorado	7.64%	10.78%	3.14%
26	California	8.75%	11.60%	2.85%
27	Tennessee	9.25%	11.99%	2.74%
28	Massachusetts	6.25%	8.93%	2.68%
29	Wyoming	5.50%	7.95%	2.45%
30	Oklahoma	8.45%	10.88%	2.43%
31	Hawaii	4.00%	6.38%	2.38%
32	South Carolina	8.25%	10.58%	2.33%
33	Michigan	6.00%	8.28%	2.28%
34	Iowa	6.50%	8.71%	2.21%
35	Vermont	6.50%	8.50%	2.00%
36	Puerto Rico	11.50%	13.45%	1.95%
37	New Jersey	7.00%	8.93%	1.93%
37	Maine	5.50%	7.35%	1.85%
39	Minnesota	7.70%	9.54%	1.84%
40	Oregon	0.00%	1.80%	1.80%
41	Mississippi	7.50%	9.14%	1.64%
42	Wisconsin	5.55%	7.18%	1.63%
43	North Carolina	7.00%	8.59%	1.59%
44	Georgia	8.00%	9.22%	1.22%
45	Connecticut	6.35%	7.44%	1.09%
46	Virginia	5.65%	6.61%	0.96%
47	Ohio	7.75%	8.42%	0.67%
48	Alabama	9.50%	9.75%	0.25%
49	West Virginia	7.00%	6.43%	-0.57%
50	Louisiana	9.00%	7.29%	-1.71%
51	Idaho	6.00%	2.17%	-3.83%
52	Nevada	7.85%	1.95%	-5.90%
	Weighted Avg.	7.57%	11.50%	3.72%

Source: Methodology from COST, *50-State Study and Report on Telecommunications Taxation*, May 2005. Updated July 2015 using state statutes, FCC data, and local ordinances.