

# EXHIBIT PDK 6

# CONNECTING AMERICA: THE NATIONAL BROADBAND PLAN

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# INFRASTRUCTURE

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## CHAPTER 6



**JUST AS WIRELESS NETWORKS USE PUBLICLY OWNED SPECTRUM**, wireless and wired networks rely on cables and conduits attached to public roads, bridges, poles and tunnels. Securing rights to this infrastructure is often a difficult and time-consuming process that discourages private investment. Because of permitting and zoning rules, government often has a significant role in network construction. Government also regulates how broadband providers can use existing private infrastructure like utility poles and conduits. Many state and local governments have taken steps to encourage and facilitate fiber conduit deployment as part of public works projects like road construction. Similarly, in November 2009, the Federal Communications Commission (FCC) established timelines for states and localities to process permit requests to build and locate wireless equipment on towers.<sup>1</sup>

While these are positive steps, more can and should be done. Federal, state and local governments should do two things to reduce the costs incurred by private industry when using public infrastructure. First, government should take steps to improve utilization of existing infrastructure to ensure that network providers have easier access to poles, conduits, ducts and rights-of-way. Second, the federal government should foster further infrastructure deployment by facilitating the placement of communications infrastructure on federally managed property and enacting “dig once” legislation. These two actions can improve the business case for deploying and upgrading broadband network infrastructure and facilitate competitive entry.

## RECOMMENDATIONS

### Improving utilization of infrastructure

- The FCC should establish rental rates for pole attachments that are as low and close to uniform as possible, consistent with Section 224 of the Communications Act of 1934, as amended, to promote broadband deployment.
- The FCC should implement rules that will lower the cost of the pole attachment “make-ready” process.
- The FCC should establish a comprehensive timeline for each step of the Section 224 access process and reform the process for resolving disputes regarding infrastructure access.
- The FCC should improve the collection and availability of information regarding the location and availability of poles, ducts, conduits and rights-of-way.
- Congress should consider amending Section 224 of the Act to establish a harmonized access policy for all poles, ducts, conduits and rights-of-way.

- The FCC should establish a joint task force with state, Tribal and local policymakers to craft guidelines for rates, terms and conditions for access to public rights-of-way.

### Maximizing impact of federal resources

- The U.S. Department of Transportation (DOT) should make federal financing of highway, road and bridge projects contingent on states and localities allowing joint deployment of conduits by qualified parties.
- Congress should consider enacting “dig once” legislation applying to all future federally funded projects along rights-of-way (including sewers, power transmission facilities, rail, pipelines, bridges, tunnels and roads).
- Congress should consider expressly authorizing federal agencies to set the fees for access to federal rights-of-way on a management and cost recovery basis.
- The Executive Branch should develop one or more master contracts to expedite the placement of wireless towers on federal government property and buildings.

## 6.1 IMPROVING UTILIZATION OF INFRASTRUCTURE

The cost of deploying a broadband network depends significantly on the costs that service providers incur to access conduits, ducts, poles and rights-of-way on public and private lands.<sup>2</sup> Collectively, the expense of obtaining permits and leasing pole attachments and rights-of-way can amount to 20% of the cost of fiber optic deployment.<sup>3</sup>

These costs can be reduced directly by cutting fees. The costs can also be lowered indirectly by expediting processes and decreasing the risks and complexities that companies face as they deploy broadband network infrastructure.

The FCC has already begun to take important steps in this direction with policies that will speed the deployment of wireless equipment on towers. With regard to other infrastructure such as utility poles, the FCC has authority to improve the deployment process and should use that authority. Lowering the costs of infrastructure access involves every level of government; active consultation among all levels of government will be needed to put in place pro-deployment policies such as joint trenching, conduit construction and placement of broadband facilities on public property.

**RECOMMENDATION 6.1:** The FCC should establish rental rates for pole attachments that are as low and close to uniform as possible, consistent with Section 224 of the Communications Act of 1934, to promote broadband deployment.

As Exhibit 6-A shows, the rental rates paid by communications companies to attach to a utility pole vary widely—from approximately \$7 per foot per year for cable operators to \$10 per foot per year for competitive telecommunications companies to more than \$20 per foot per year for some incumbent local exchange carriers (ILECs).<sup>4</sup> The impact of these rates can be particularly acute in rural areas, where there often are more poles per mile than households.<sup>5</sup> In a rural area with 15 households per linear mile, data suggest that the cost of pole attachments to serve a broadband customer can range from \$4.54 per month per household passed (if cable rates are used)

to \$12.96 (if ILEC rates are used). If the lower rates were applied, and if the cost differential in excess of \$8 per month were passed on to consumers, the typical monthly price of broadband for some rural consumers could fall materially.<sup>6</sup> That could have the added effect of generating an increase—possibly a significant increase—in rural broadband adoption.

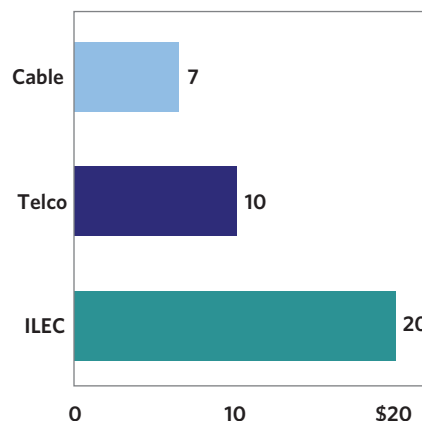
Different rates for virtually the same resource (space on a pole), based solely on the regulatory classification of the attaching provider, largely result from rate formulas established by Congress and the FCC under Section 224 of the Communications Act of 1934, as amended (“the Act”).<sup>8</sup> The rate structure is so arcane that, since the 1996 amendments to Section 224, there has been near-constant litigation about the applicability of “cable” or “telecommunications” rates to broadband, voice over Internet protocol and wireless services.<sup>9</sup>

To support the goal of broadband deployment, rates for pole attachments should be as low and as close to uniform as possible. The rate formula for cable providers articulated in Section 224(d) has been in place for 31 years and is “just and reasonable” and fully compensatory for utilities.<sup>10</sup> Through a rulemaking, the FCC should revisit its application of the telecommunications carrier rate formula to yield rates as close as possible to the cable rate in a way that is consistent with the Act.

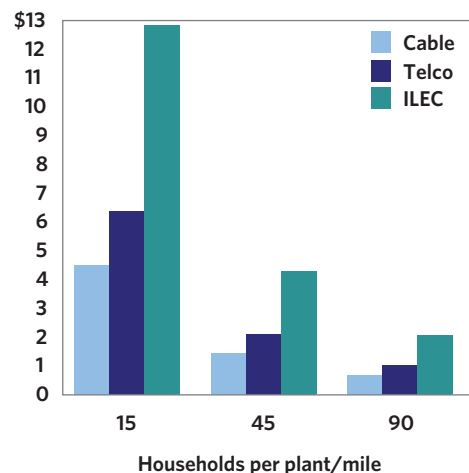
Applying different rates based on whether the attacher is classified as a “cable” or a “telecommunications” company distorts attachers’ deployment decisions. This is especially true with regard to integrated, voice, video and data networks. This uncertainty may be deterring broadband providers that pay lower pole rates from extending their networks or adding capabilities (such as high-capacity links to wireless towers). By

*Exhibit 6-A:*  
*Annual Pole Rates*  
*Vary Considerably by*  
*Provider Type<sup>7</sup>*

**Average pole attachment rates**  
Dollars per foot of pole space per year



**Pole attachment operating expenditure/subscribing household**  
Dollars per foot of pole space per year



expanding networks and capabilities, these providers risk having a higher pole rental fee apply to their entire network.<sup>11</sup>

FCC rules that move toward low rates that are as uniform as possible across service providers would help remove many of these distortions. This approach would also greatly reduce complexity and risk for those deploying broadband.

**RECOMMENDATION 6.2: The FCC should implement rules that will lower the cost of the pole attachment “make-ready” process.**

Rearranging existing pole attachments or installing new poles—a process referred to as “make-ready” work—can be a significant source of cost and delay in building broadband networks. FiberNet, a broadband provider that has deployed 3,000 miles of fiber in West Virginia, states that “the most significant obstacle to the deployment of fiber transport is FiberNet’s inability to obtain access to pole attachments in a timely manner.”<sup>12</sup>

Make-ready work frequently involves moving wires or other equipment attached to a pole to ensure proper spacing between equipment and compliance with electric and safety codes. The make-ready process requires not only coordination between the utility that owns the pole and a prospective broadband provider, but also the cooperation of communications firms that have already attached to the pole. Each attaching party is generally responsible for moving its wires and equipment, meaning that multiple visits to the same pole may be required simply to attach a new wire.

Reform of this inefficient process presents significant opportunities for savings. FiberNet commented that its make-ready charges for several fiber runs in West Virginia averaged \$4,200 per mile and took 182 days to complete,<sup>13</sup> but the company estimates that these costs should instead have averaged \$1,000 per mile.<sup>14</sup> Another provider, Fibertech, states that the make-ready process averages 89 days in Connecticut and 100 days in New York, where state commissions regulate the process directly.<sup>15</sup>

Delays can also result from existing attachers’ action (or inaction) to move equipment to accommodate a new attacher, potentially a competitor.<sup>16</sup> As a result, reform must address the obligations of existing attachers as well as the pole owner.

An evaluation of best practices at the state and local levels reveals ample opportunities to manage this process more efficiently. Yet, absent regulation, pole owners and existing attachers have few incentives to change their behavior.

To lower the cost of the make-ready process and speed it up, the FCC should, through rulemaking:

- Establish a schedule of charges for the most common categories of work (such as engineering assessments and pole construction).
- Codify the requirement that gives attachers the right to use

space- and cost-saving techniques such as boxing or extension arms where practical and in a way that is consistent with pole owners’ use of those techniques.<sup>17</sup>

- Allow prospective attachers to use independent, utility-approved and certified contractors to perform all engineering assessments and communications make-ready work, as well as independent surveys, under the joint direction and supervision of the pole owner and the new attacher.<sup>18</sup>
- Ensure that existing attachers take action within a specified period (such as 30 days) to accommodate a new attacher. This can be accomplished through measures such as mandatory timelines and rules that would allow the pole owner or new attacher to move existing communications attachments if the timeline is not met.
- Link the payment schedule for make-ready work to the actual performance of that work, rather than requiring all payment up front.

These cost-saving steps can have an immediate impact on driving fiber deeper into networks, which will advance the deployment of both wireline and wireless broadband services.

**RECOMMENDATION 6.3: The FCC should establish a comprehensive timeline for each step of the Section 224 access process and reform the process for resolving disputes regarding infrastructure access.**

There are no federal regulations addressing the duration of the entire process for obtaining access to poles, ducts, conduit and rights-of-way. While the FCC in the past has recognized that “time is critical in establishing the rate, terms and conditions for attaching,” current FCC rules only require that a utility provide a response to an application within 45 days.<sup>19</sup> The FCC does not have any deadlines for subsequent steps in the process, which can drag on for months if not years.<sup>20</sup> This causes delays in the deployment of broadband to communities and anchor institutions.<sup>21</sup>

Several states, including Connecticut and New York, have established firm timelines for the entire process, from the day that a prospective attacher files an application, to the issuance of a permit indicating that all make-ready work has been completed.<sup>22</sup> Timelines speed the process considerably in states where they have been implemented,<sup>23</sup> thus facilitating the deployment of broadband.

The FCC should establish a federal timeline that covers each step of the pole attachment process, from application to issuance of the final permit. The federal timeline should be implemented through a rulemaking and be comprehensive and applicable to all forms of communications attachments.<sup>24</sup> In addition, the FCC should establish a timeline for the process of certifying wireless equipment for attachment.<sup>25</sup>

The FCC also should institute a better process for resolving access disputes. For large broadband network builds, the pole attachment process is highly fragmented and often involves dozens of utilities, cable providers and telecommunications providers in multiple jurisdictions. Yet there is no established process for the timely resolution of disputes.<sup>26</sup>

The FCC has the authority to enforce its pole attachment rules, but today it generally attempts to informally resolve attachment disputes through mediation. This process has significant flaws. Under the current system of case-by-case adjudication, the attacher always bears the burden of bringing a formal complaint.<sup>27</sup> The formal dispute rules also do not provide for compensation dating from the time of the injury, so attachers have minimal incentive to initiate costly formal pole attachment cases that may linger for years.

Also, because time is often of the essence during the make-ready process, methods for resolving disputes over application of individual safety and engineering standards may be necessary. Informal local procedures and mediation may sometimes result in satisfactory settlements, but they do not create precedents for what constitutes a “just and reasonable” practice under Section 224 of the Act.

In revising its dispute resolution policies, the FCC should consider approaches that not only speed the process but also provide future guidelines for the industry. Institutional changes, such as the creation of specialized fora and processes for attachment disputes, and process changes, such as target deadlines for resolution, could expedite dispute resolution and serve the overarching goal of lowering costs and promoting rapid broadband deployment. The FCC also could use its authority under Section 224 to require utilities to post standards and adopt procedures for resolving safety and engineering disagreements and encourage appropriate state processes for resolving such disputes. Finally, awarding compensation that dates from the denial of access could stimulate swifter resolution of disputes.

**RECOMMENDATION 6.4: The FCC should improve the collection and availability of information regarding the location and availability of poles, ducts, conduits and rights-of-way.**

There are hundreds of private and public entities that own and control access to poles, ducts, conduits and rights-of-way, and an even greater number of parties that use that infrastructure. Accurate information about pole owners and attachments is critical if there is to be a timely and efficient process for accessing and utilizing this important infrastructure.<sup>28</sup> The FCC should ensure that attachers and pole owners have the data they need to lower costs and accelerate the buildout of broadband networks.

Consistent with its current jurisdiction under Section 224, the FCC should ensure that information about utility poles and conduits is up-to-date, readily accessible and secure, and

that the costs and responsibility of collecting and maintaining data are shared equitably by owners and users of these vital resources. For example, data could be collected systematically as in Germany, which is mapping fiber, ducts and conduits and is planning to coordinate these data with information about public works and infrastructure projects.<sup>29</sup> Existing industry efforts to collect and coordinate data could be expanded and made more robust.<sup>30</sup> In addition, the participation of all pole owners subject to Section 224 and attaching parties in any such database effort could be regulated and streamlined. These databases should be easily searchable, identify the owner of each pole and should contain up-to-date records of attachments and make-ready work that has been performed. For conduits and ducts, any database should note whether there is space available. Whichever methods are used, data must be regularly updated, secure and accessible in order to further the FCC’s efforts to ensure that broadband providers have efficient access to essential infrastructure information.

**RECOMMENDATION 6.5: Congress should consider amending Section 224 of the Act to establish a harmonized access policy for all poles, ducts, conduits and rights-of-way.**

Even if the FCC implemented all of the recommendations related to its Section 224 authority, additional steps would be needed to establish a comprehensive national broadband infrastructure policy. As previously discussed, without statutory change, the convoluted rate structure for cable and telecommunications providers will persist. Moreover, due to exemptions written into Section 224, a reformed FCC regime would apply to only 49 million of the nation’s 134 million poles.<sup>31</sup> In particular, the statute does not apply in states that adopt their own system of regulation and exempts poles owned by co-operatives, municipalities and non-utilities.<sup>32</sup>

The nation needs a coherent and uniform policy for broadband access to privately owned physical infrastructure. Congress should consider amending or replacing Section 224 with a harmonized and simple policy that establishes minimum standards throughout the nation—although states should remain free to enforce standards that are not inconsistent with federal law. The new statutory framework could provide that:

- All poles, ducts, conduits and rights-of-way be subject to a regulatory regime addressing a minimum set of criteria established by federal law.
- All broadband service providers, whether wholesale or retail, have the right to access pole attachments, ducts, conduit and rights-of-way based on reasonable rates, terms and conditions.
- Infrastructure access be provided within standard timelines established by the FCC, and that the FCC has the authority to award damages for non-compliance.

- The FCC has the authority to compile and update a comprehensive database of physical infrastructure assets.

**RECOMMENDATION 6.6: The FCC should establish a joint task force with state, Tribal and local policymakers to craft guidelines for rates, terms and conditions for access to public rights-of-way.**

Because local, state, Tribal and federal governments control access to important rights-of-way and facilities, a comprehensive broadband infrastructure policy necessarily requires a coordinated effort among all levels of government.

There is wide diversity among state and local policies regarding access to and payment for accessing public rights-of-way. Many jurisdictions charge a simple rental fee. Other jurisdictions use other compensation schemes, including per-foot rentals, one-time payments, in-kind payments (such as service to public institutions or contributions of fiber to city telecommunications departments) and assessments against general revenues.<sup>33</sup> Some jurisdictions calculate land rental rates based on local real estate “market value” appraisals.

Many states have limited the rights-of-way charges that municipalities may impose, either by establishing uniform rates (Michigan) or by limiting fees to administrative costs (Missouri).<sup>34</sup> Other states, including South Carolina, Illinois and Florida, do not allow municipalities to collect rights-of-way fees directly; instead, the state compensates local governments for the use of their rights-of-way with proceeds from state-administered telecommunications taxes.

Broadband service providers often assert that the expense and complexity of obtaining access to public rights-of-way in many jurisdictions increase the cost and slow the pace of broadband network deployment.<sup>35</sup> Representatives of state and local governments dispute many of these contentions.<sup>36</sup> However, nearly all agree that there can and should be better coordination across jurisdictions on infrastructure issues.<sup>37</sup>

Despite past efforts by the National Telecommunications and Information Administration (NTIA) and the National Association of Regulatory Utility Commissioners (NARUC),<sup>38</sup> a coordinated approach to rights-of-way policies has not taken hold. There are limits to state and local policies; Section 253 of the Communications Act prohibits state and local policies that impede the provision of telecommunications services while allowing for rights-of-way management practices that are nondiscriminatory, competitively neutral, fair and reasonable.<sup>39</sup> However, disputes under Section 253 have lingered for years, both before the FCC and in federal district courts.<sup>40</sup>

In consultation and partnership with state, local and Tribal authorities, the FCC should develop guidelines for public rights-of-way policies that will ensure that best practices from state and local government are applied nationally. For example, establishing common application information and inspection

protocols could lower administrative costs for the industry and governmental agencies alike. Fee structures should be consistent with the national policy of promoting greater broadband deployment. A fee structure based solely upon the market value of the land being used would not typically take into account the benefits that the public as a whole would receive from increased broadband deployment, particularly in unserved and underserved areas. In addition, broadband network construction often involves multiple jurisdictions. The timing of the process and fee calculations by one local government may not take into account the benefits that constituents in neighboring jurisdictions would receive from increased broadband deployment. The cost and social value of broadband cut across political boundaries; as a result, rights-of-way policies and best practices must reach across those boundaries and be developed with the broader public interest in mind.

To help develop this consistent rights-of-way policy, the FCC should convene a joint task force of state, local and Tribal authorities with a mandate to:

- Investigate and catalog current state and local rights-of-way practices and fee structures, building on NTIA’s 2003 compendium and the 2002 NARUC Rights-of-Way Project.
- Identify public rights-of-way and infrastructure policies and fees that are consistent with the national public policy goal of broadband deployment and those that are inconsistent with that goal.<sup>41</sup>
- Identify and articulate rights-of-way construction and maintenance practices that reduce overall capital and maintenance costs for both government and users and that avoid unnecessary delays, actions, costs and inefficiencies related to the construction and maintenance of broadband facilities along public rights-of-way.<sup>42</sup>
- Recommend appropriate guidelines for what constitutes “competitively neutral,” “nondiscriminatory” and “fair and reasonable” rights-of-way practices and fees.
- Recommend a process for the FCC to use to resolve disputes under Section 253. Creating a process should expedite resolution of public rights-of-way disputes in areas either unserved or underserved by broadband.

The FCC should request that the task force make its recommendations within six months of the task force’s creation. These recommendations should then be considered by the FCC as part of a proceeding that seeks industry-wide comment on these issues.



## 6.2 MAXIMIZING IMPACT OF FEDERAL RESOURCES

Federal government can also play an important role in directly lowering the costs of future infrastructure deployment. The federal government has already made efforts to simplify access to federal rights-of-way under President George W. Bush,<sup>43</sup> and to improve access to federal government facilities for wireless services under President William J. Clinton.<sup>44</sup> However, policies have generally taken a permissive approach, simply allowing the federal government to take steps, rather than requiring that those steps be taken.

**RECOMMENDATION 6.7:** The U.S. Department of Transportation (DOT) should make federal financing of highway, road and bridge projects contingent on states and localities allowing joint deployment of conduits by qualified parties.

**RECOMMENDATION 6.8:** Congress should consider enacting “dig once” legislation applying to all future federally funded projects along rights-of-way (including sewers, power transmission facilities, rail, pipelines, bridges, tunnels and roads).

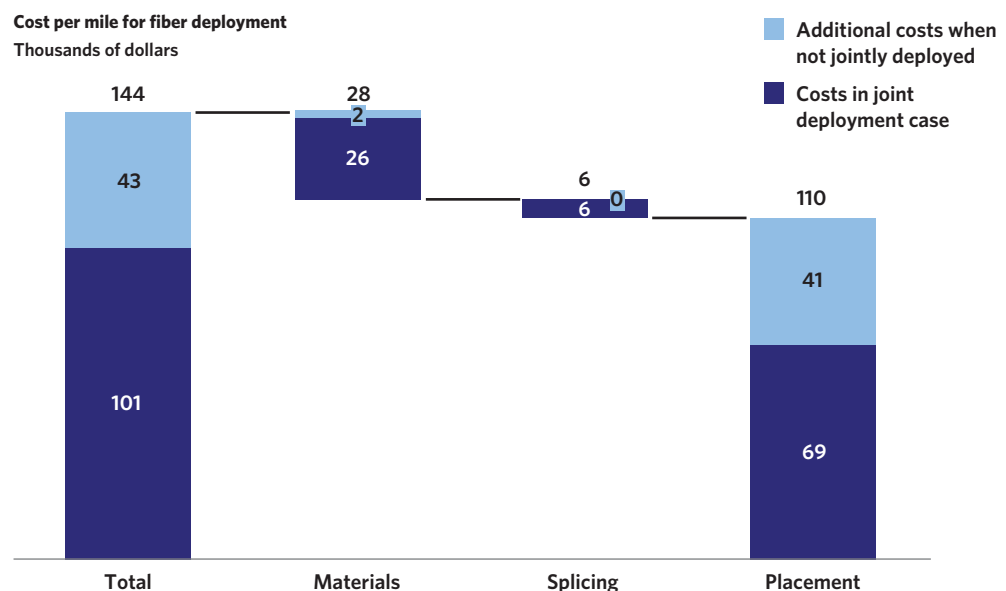
Although pushing fiber deeper into broadband networks considerably improves the performance and reliability of those networks, deploying a mile of fiber can easily cost more than

\$100,000 (see Exhibit 6-B). 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). These placement costs can, in certain cases, account for almost three-quarters of the total cost of fiber deployment. Running a strand of fiber through an existing conduit is 3–4 times cheaper than constructing a new aerial build.<sup>45</sup>

Substantial savings can be captured if fiber builds are coordinated with other infrastructure projects in which the right-of-way (e.g., road, water, sewer, gas, electric, etc.) is already being dug. For example, the city of San Francisco has a “trench once” policy, in which a 5-year moratorium is placed on opening up a road bed once the trench along that road bed has been closed.<sup>47</sup> San Francisco uses a notification process to ensure that other interested parties have the opportunity to install conduits and cabling in the open trench.<sup>48</sup> The city of Boston has implemented a “Shadow Conduit Policy,” in which the first company to request a trench takes a lead role, inviting other companies to add additional empty (or “shadow”) conduits for future use by either the city of Boston or a later entrant.<sup>49</sup> The city of Chicago seeks to “inexpensively deploy excess conduit when streets are opened for other infrastructure and public works projects.”<sup>50</sup> In the Netherlands, a committee in the city of Amsterdam similarly coordinates digging and trenching activities between the public and private sector.<sup>51</sup>

These policies have clear benefits, as shown by the case of Akron, Ohio. When Akron was deploying facilities and conduit to support its public safety network, it shared those facilities with OneCommunity, a northeast Ohio public-private partnership that aggregates demand by public institutions and private

*Exhibit 6-B:  
Joint Deployment Can  
Materially Reduce  
the Cost of Fiber  
Deployment<sup>46</sup>*





broadband service providers. As a result of that coordination, those same facilities and conduits now support health care institutions, schools and Wi-Fi access in Akron.<sup>52</sup> Similarly, along Interstate 91 in western Massachusetts, collaboration among the Massachusetts Department of Transportation, the Massachusetts Broadband Institute and the federal DOT is resulting in the installation of 55 miles of fiber optic cable with 34 interconnection points.<sup>53</sup>

DOT should implement “joint trenching” and conduit policies to lower the installation costs for broadband networks.<sup>54</sup> At a minimum, states and localities undertaking construction along rights-of-way that are partially or fully financed by DOT should be required to give at least 90 days’ notice before projects begin. This would allow private contractors or public entities to add conduits for fiber optic cables in ways that do not unreasonably increase cost, add to construction time or hurt the integrity of the project. Opportunities for joint trenching and conduit deployment are varied, from construction of Intelligent Transportation Systems alongside interstates to building and maintenance of recreational rail trails.<sup>55</sup> As a result, information about potential joint trenching and conduit deployment opportunities should be available and accessible to prospective broadband network providers whenever government engages in an infrastructure project, subject to security precautions.

Congress also should consider enacting “dig once” legislation to extend similar joint trenching requirements to all rights-of-way projects (including sewers, power transmission facilities, rail, pipelines, bridges, tunnels and roads) receiving federal funding.

**RECOMMENDATION 6.9:** Congress should consider expressly authorizing federal agencies to set the fees for access to federal rights-of-way on a management and cost recovery basis.

**RECOMMENDATION 6.10:** The Executive Branch should develop one or more master contracts to expedite the placement of wireless towers on federal government property and buildings.

The federal government is the largest landowner in the country—650 million acres, constituting nearly one-third of the land area of the United States.<sup>56</sup> The federal government’s General Services Administration (GSA) also owns or leases

space in 8,600 buildings nationwide.<sup>57</sup> To effectively deploy broadband, providers often need to be able to place equipment on this federally controlled property, or to use the rights-of-way that pass through the property.

Based on an August 1995 executive memorandum by President Clinton,<sup>58</sup> GSA developed guidelines to allow wireless antennas on federal buildings and land.<sup>59</sup> Additionally, since 1989, GSA has run the National Antenna Program to facilitate wireless tower placement on federal government buildings.<sup>60</sup> On more than 1,900 buildings administered by GSA, there are currently antennas covered by approximately 100 leases that result in millions of dollars in revenue for the Federal Buildings Fund annually.<sup>61</sup> For each of the leases managed by GSA, market rent is charged, and the leases are tightly crafted to cover rooftop space, specific equipment and technology.

Even given this progress, the federal government can do more to facilitate access to its rights-of-way and facilities that it either develops or maintains. In many instances, federal law currently requires that rental fees for rights-of-way controlled by federal agencies be based upon the market value of the land. As a result, these fees are often much higher than the direct costs involved.<sup>62</sup> To facilitate the development of broadband networks, Congress should consider allowing all agencies to set the fees for access to rights-of-way for broadband services on the basis of a direct cost recovery approach, especially in markets currently underserved or unserved by any broadband service provider.

The Executive Branch should also develop one or more master contracts for all federal property and buildings covering the placement of wireless towers. The contracts would apply to all buildings, unless the federal government decides that local issues require non-standard treatment. In the master contracts, GSA should also standardize the treatment of key issues covering rooftop space, equipment and technology. The goal of these master contracts would be to lower real estate acquisition costs and streamline local zoning and permitting for broadband network infrastructure.

While reducing the prices for leases on government property may reduce fees paid to governments at the local, state and federal levels, the decline in prices may also greatly increase the number of companies that acquire leases on government property. In any case, the increased deployment of broadband will stimulate investment and benefit society.

## CHAPTER 6 ENDNOTES

- 1 *Petition for Declaratory Ruling to Clarify Provisions of Section 332(c)(7)(B) to Ensure Timely Siting Review and to Preempt Under Section 253 State and Local Ordinances that Classify All Wireless Siting Proposals as Requiring a Variance*, WT Docket No. 08-165, Declaratory Ruling, 24 FCC Rcd 13994 (2009).
- 2 See Letter from Judith A. Dumont, Director, Massachusetts Broadband Initiative, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 09-47, 09-51, 09-137 (Jan. 8, 2010) (Dumont Jan. 8, 2010 *Ex Parte*) at 2 (noting that permitting requirements and procedures for rights of way, poles, conduits and towers “are key to the efficient and streamlined deployment of broadband,” and that difficulties in such access “often prove to be the greatest impediment to the efficient, cost-effective, and timely deployment of broadband.”).
- 3 We derive this estimate from several sources. OMNIBUS BROADBAND INITIATIVE, THE BROADBAND AVAILABILITY GAP. (forthcoming) See Letter from Thomas Jones, Counsel to FiberNet, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 09-51, WC Docket No. 07-245 (Sept. 16, 2009) (FiberNet Sept. 16, 2009 *Ex Parte*) at 20 (noting average cost for access to physical infrastructure of \$4,611–\$6,487 per mile); *Comment Sought on Cost Estimates for Connecting Anchor Institutions to Fiber—NBP Public Notice #12*, GN Docket Nos. 09-47, 09-51, 09-137, Public Notice, 24 FCC Rcd 12510 (2009) (*NBP PN #12*) App. A (Gates Foundation estimate of \$10,500–\$21,120 per mile for fiber optic deployment); see also Letter from Charles B. Stockdale, Fibertech, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 09-47, 09-51, 09-137 (Oct. 28, 2009) at 1–2 (estimating costs ranging from \$3,000–\$42,000 per mile).
- 4 One wireless carrier has cited instances in which it has been asked to pay a rental rate of \$1,200–\$3,000 per pole per year. See, e.g., Letter from T. Scott Thompson, Counsel for NextG Networks, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 07-245, RM-11293, RM-11303 (June 27, 2008) Attach. at 11.
- 5 See, e.g., Am. Cable Ass’n Comments in re National Broadband Plan NOI, filed June 8, 2009, at 8–9; *Amendment of the Commission’s Rules and Policies Governing Pole Attachments*, WC Docket No. 07-245, Report and Order, 15 FCC Rcd 6453, 6507–08, para. 118 (2000) (“The Commission has recognized that small systems serve areas that are far less densely populated areas than the areas served by large operators. A small rural operator might serve half of the homes along a road with only 20 homes per mile, but might need 30 poles to reach those 10 subscribers.”).
- 6 This analysis assumes that the customer purchases from an ILEC that rents all of its poles.
- 7 NCTA Comments in re American Electric Power Service Corp. et al., *Petition for Declaratory Ruling that the Telecommunications Rate Applies to Cable System Pole Attachments Used to Provide Interconnected Voice over Internet Protocol Service*, WC Docket No. 09-154 (filed Aug. 17, 2009) (*Pole Attachments Petition*), filed Sept. 24, 2009, App. B at 8–10; Letter from Thomas Jones, Counsel, Time Warner Telecom Inc., to Marlene H. Dortch, Secretary, FCC RM-11293, RM 11303 (Jan. 16, 2007) Attach., US Telecom Comments in re Pole Attachments Petition, filed Sept. 24, 2009, at 8; GEORGE S. FORD ET AL., PHOENIX CTR., THE PRICING OF POLE AMENDMENT: IMPLICATIONS AND RECOMMENDATIONS 7 (2008); Independent Telephone and Telecommunications Alliance (ITTA) Comments in re implementation of Section 224 of the Act; *Amendment of the Commission’s Rules and Policies Governing Pole Attachments*, WC Docket No. 07-245, Notice of Proposed Rulemaking, 22 FCC Rcd 20195 (2007) (*Pole Attachments NPRM*), filed Mar. 7, 2008. As Pelcovits notes, monthly cost assumes 35 poles per mile and a 30% take rate. NCTA Comments in re Pole Attachments Petition, filed Sept. 24, 2009, App. B at 14. Additionally, this analysis assumes that all poles are rented by the broadband provider and not owned by it.
- 8 The variation in rates charged to incumbent LECs also can arise from the history of pole ownership by the incumbent LECs and certain “joint use” agreements that exist between some incumbent LECs and electric utilities.
- 9 See, e.g., *Nat’l Cable & Telecom. Ass’n v. Gulf Power Co.*, 534 U.S. 327 (2002).
- 10 See, e.g., *Alabama Power Co. v. FCC*, 311 F.3d 1357 (11th Cir. 2002); *FCC v. Florida Power Corp.*, 480 U.S. 245 (1987).
- 11 See, e.g., Letter from Daniel L. Brenner, Counsel, Bright House Networks, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 09-47, 09-51, 09-137 (Jan. 8, 2010) Attach. at 4; Letter from Daniel L. Brenner, Counsel, Bright House Networks, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 09-47, 09-51, 09-137 (Feb. 16, 2010) Attach. (Affidavit of Nick Lenochi) (providing example of how application of higher telecommunications rate for poles would increase expense of deploying Fast Ethernet connections to a large school district by \$220,000 annually); NCTA Comments in re Pole Attachments Petition, filed Sept. 24, 2009, at 15–17.
- 12 tw telecom et al. Comments in re NBP Staff Workshops PN (*The Commission Welcomes Responses to Staff Workshops*, GN Docket No. 09-51, Public Notice, 24 FCC Rcd 11592 (WCB 2009) (*NBP Staff Workshops PN*)), filed Sept. 15, 2009, at 14.
- 13 FiberNet Sept. 16, 2009 *Ex Parte* Attach.; Letter from Thomas Jones, Counsel, FiberNet, LLC, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 07-245, GN Docket No. 09-51 (Nov. 16, 2009) (filed by One Communications Corp.) (FiberNet Nov. 16, 2009 *Ex Parte*) at 3 (providing cost estimate breakdown). Similarly, Fibertech reports that it pays pole owners anywhere from \$225–\$780 to move a single cable on a pole, even though it estimates that it could do the work itself for \$60. Fibertech Comments in re NBP PN #12, filed Oct. 26, 2009, at 2–3; see also Dumont Jan. 8, 2010 *Ex Parte* at 5–6 (proposing changes to pole attachment regulations so as to “facilitate easier access to existing infrastructure,” including reform to the application and make-ready process).
- 14 FiberNet Nov. 16, 2009 *Ex Parte* Attach. C (providing cost estimate breakdown).
- 15 Letter from Kelley A. Shields, Counsel, Fibertech and Kentucky Data Link, Inc. (KDL), to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 09-51, WC Docket No. 07-25, RM-11293, RM-11303 (Jan. 7, 2009) Attach. 2 at 2.
- 16 Letter from Joseph R. Lawhon, Counsel, Georgia Power Co., to Marlene H. Dortch, Secretary, FCC, WC Docket No. 07-245, GN Docket Nos. 09-29, 09-51 (Nov. 17, 2009) Attach. B (noting one example covering 294 poles in Georgia in which the electric utility completed its work within 55 days but in which the process of coordinating with existing attachers took an additional 5 months).
- 17 The FCC has already decided that utilities cannot discriminatorily prohibit such techniques when they use those techniques themselves. See *Salsgiver Comm’n, Inc. v. North Pittsburgh Tel. Co.*, Memorandum Opinion and Order, 22 FCC Rcd 20536, 20543–44 (EB 2007); *Cavalier Tel. v. Virginia Elec. and Power Co.*, Order and Request for Information, 15 FCC Rcd. 9563, 9572 (EB 2000). One provider asserts that rules allowing these practices more generally in Connecticut has allowed it to deploy many more miles of fiber in its Connecticut markets. Fibertech & KDL Comments in re Pole Attachments NPRM, filed Mar. 25, 2009, at 7–8.
- 18 Letter from John T. Nakahata, Counsel to Fibertech and KDL, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 07-245, RM 11293, RM 11303, GN Docket Nos. 09-29, 09-51 (July 29, 2009) at 7.
- 19 *Implementation of Section 703(e) of the Telecommunications Act of 1996; Amendment of the Commission’s Rules and Policies Governing Pole Attachments*, Report and Order, 13 FCC Rcd 6777, 6787–88, para. 17 (1998) (*1998 Pole Attachment Order*).
- 20 See, e.g., Crown Castle Comments in re Pole Attachments NPRM, filed Mar. 11, 2008, at 7 (12 month delay); Sunesys Comments in Petition for Rulemaking of Fibertech Networks, LLC, RM-11303 (Dec. 7, 2005) (Fibertech Petition), filed Jan. 30, 2006, at 11 (15 months); The DAS Forum Comments in re Pole Attachments NPRM, filed Mar. 7, 2008, at 11 (3 years); T-Mobile Comments in re Pole Attachments NPRM, filed Mar. 7, 2008, at 7 (4 years).
- 21 See, e.g., Fibertech & KDL Comments in re Pole Attachments NPRM, filed Mar. 25, 2009, at 4 (describing project to construct fiber to three rural school districts in Kentucky that KDL was unable to complete because of pole access delays); *1998 Pole Attachment Order*, 13 FCC Rcd. at 6788, para. 17 (delays in resolving access disputes can “delay a telecommunication’s carrier’s ability to provide service and unnecessary[ly] obstruct the process”).
- 22 *Order Adopting Policy Statement on Pole Attachments*, Case 03-M-0432 (New York Pub. Serv. Comm’n 2004) (*New York Timeline Order*) (requiring that all work be completed in 105 days), available at <http://documents.dps.state.ny.us/public/Common/ViewDoc.aspx?DocRefId={C0C4902C-7B96-4E20-936B-2174CE0621A7}>; *Review of the State’s Public Service Company Utility Pole Make-Ready Procedures*, Decision, Docket No. 07-02-13 (Conn. Dept of Pub. Util. Control, Apr. 30, 2008) (*Connecticut Timeline Order*) available at

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- http://www.dpuc.state.ct.us/dockhist.nsf/8e6fc37a54110e3e852576190052b64d/69ccb9118f035bc38525755a005df44a/\$FILE/070213-043008.doc (90 days or 125 days when poles must be replaced).
- 23 See, e.g., Fibertech Comments in re NBP PN #12, filed July 21, 2009, Attach. (noting that since implementing timelines, in Connecticut it takes pole owners an average of 89 days to issue licenses and New York pole owners average 100 days for Fibertech's applications, compared to longer intervals elsewhere).
- 24 See, e.g., Connecticut Timeline Order; New York Timeline Order; Utah Admin. Code § R746-345-3; Vermont Public Service Board, Rules 3.708; See also Utility Pole Make-Ready Procedures, Docket No. 07-02-13 (Conn. Dep't of Pub. Util. Control, 2008), available at <http://www.dpuc.state.ct.us/dockhist.nsf/8e6fc37a54110e3e852576190052b64d/69ccb9118f035bc38525755a005df44a?OpenD> ocmunt; Sunesys Comments in re National Broadband Plan NOI, filed June 8, 2009, at 6 ("By permitting pole owners to have an uncapped and unspecified period of time in which to issue a permit, many pole owners have caused tremendous delays in the process, thereby undermining broadband deployment."); Letter from Jacqueline McCarthy, Counsel, Broadband & Wireless Pole Attachment Coalition, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 07-245 (Feb. 23, 2009) at 1-5.
- 25 Wireless providers assert that negotiations with pole owners to attach wireless devices "often face a period of years in negotiating pole agreements." PTIA—The Wireless Infrastructure Association & The DAS Forum Comments in re National Broadband Plan NOI, filed June 8, 2009, at 7. As telecommunications providers, wireless providers have the right to attach to poles under Section 224 of the Act to provide service.
- 26 Letter from Joshua Seidemann, Vice President, Regulatory Affairs, ITTA, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 07-245, RM-11293, WC 09-154 (Dec. 22, 2009) (ITTA Dec. 22, 2009 *Ex Parte*) at 3 (noting a pole attachment dispute pending before a state for five years before the parties settled).
- 27 See 47 C.F.R. §§ 1.1404-1.1410 (pole attachment complaint procedures).
- 28 See, e.g., ITTA Dec. 22, 2009 *Ex Parte* at 3 (noting that one provider alone deals with 600 separate entities and that the "lack of uniform rules, standards, and oversight makes negotiating reasonable attachment terms very difficult and extremely time consuming").
- 29 FED. MINISTRY OF ECON. & TECH., GOV'T OF GERMANY, THE FEDERAL GOVERNMENT'S BROADBAND STRATEGY 12 (2009), available at <http://www.bmwi.de/English/Redaktion/Pdf/broadband-strategy,property=pdf,bereich=bmwi,spache=en,rwb=true,pdf>.
- 30 For example, many pole owners utilize the National Joint Utilities Notification System (NJUNS) for maintaining and communicating data about their pole infrastructure. See generally National Joint Utilities Notification System—NJUNS, Inc., [http://www.njuns.com/NJUNS\\_Home/default.htm](http://www.njuns.com/NJUNS_Home/default.htm) (last visited Mar. 2, 2010).
- 31 NCTA Comments in re Pole Attachments Petition, filed Sept. 24, 2009, App. B (Declaration of Dr. Michael D. Pelcovits) Attach. 2 (Methodology and Sources) at 1-3.
- 32 Nineteen states and the District of Columbia (representing approximately 45% of the U.S. population) have exercised this type of "reverse preemption" and have certified that they directly regulate utility-owned infrastructure in their regions. See *Corrected List of States That Have Certified That They Regulate Pole Attachments*, WC Docket No. 07-245, Public Notice, 23 FCC Rcd 4878 (WCB 2008). Section 224(a)(1) expressly excludes poles owned by cooperatives from regulation, an exemption that dates back to 1978. According to the National Rural Electric Cooperative Association, electric co-operatives own approximately 42 million poles. Letter from David Predmore, National Rural Electric Cooperative Association, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 09-47, 09-51, 09-137, WC Docket No. 09-245 (Feb. 26, 2010). The exclusion of co-operatives from Section 224 regulation may impede broadband deployment in rural areas. For instance, one small broadband cable company claims that it ceased offering service in two rural communities in Arkansas because of an increase in pole attachment rates by unregulated electric cooperatives that owned the poles in those communities. Letter from Bennett W. Hooks, Jr., Buford Media Group, LLC, to Bernadette McGuire-Rivera, Assoc. Adm'r, Office of Telecom. & Info. Admin., Dep't of Comm. (Apr. 13, 2009) at n.2, 3, available at <http://www.ntia.doc.gov/broadbandgrants/comments/79C5.pdf>.
- 33 For a review of various approaches to state and local rights of way policies, see NTIA, STATE AND LOCAL RIGHTS OF WAY SUCCESS STORIES, available at <http://www.ntia.doc.gov/ntiahome/staterow/ROWstatestories.pdf>.
- 34 In 2003, the NTIA compiled a comprehensive survey of state rights-of-way approaches that may be found at NTIA, Rights-of-Way Laws by State, <http://www.ntia.doc.gov/ntiahome/staterow/rowtableexcel.htm> (last visited Feb. 18, 2010). In 2002, the National Association of Regulatory Utility Commissions undertook a similar project and issued a comprehensive report. See NARUC, PROMOTING BROADBAND ACCESS THROUGH PUBLIC RIGHTS-OF-WAY AND PUBLIC LANDS (July 31, 2002).
- 35 See, e.g., Level 3 Comments in re National Broadband Plan NOI, filed Jun. 8, 2009, at 19; Windstream Comments in re National Broadband Plan NOI, filed Jun. 8, 2009, at 2; Verizon Comments in re National Broadband Plan NOI, filed June 8, 2009, at 66; Qwest Comments in re National Broadband Plan NOI, filed June 8, 2009, at 27. Sunesys urges the FCC to "clarify the standards related to timely and reasonably priced access to necessary governmental rights of way." Sunesys Comments in re NBP PN #7 (*Comment Sought on the Contribution of Federal, State, Tribal, and Local Government to Broadband—NBP Public Notice #7*, GN Docket Nos. 09-47, 09-51, 09-137, Public Notice, 24 FCC Rcd 12110 (WCB 2009) (*NBP PN #7*)), filed Nov. 6, 2009, at 4.
- 36 See, e.g., NATOA et al. Reply in re NBP PN #30, (Reply Comments Sought in Support of National Broadband Plan—NBP Public Notice #30, GN Docket Nos. 09-47, 09-51, 09-137, Public Notice 25 FCC Rcd 241 (2010) (*NBP PN #30*) filed Jan. 27, 2010, at 12-13; NATOA et al. Comments in re NBP PN #7, filed Nov. 7, 2009, at 46-47; City of New York Comments in re NBP PN #7, filed Nov. 6, 2009, at 8; City and County of San Francisco Comments in re NBP PN #7, filed Nov. 6, 2009, at 16-20. *But cf.* Dumont Jan. 8, 2010 *Ex Parte* at 2 (noting that "difficulties involved in negotiating and gaining access to the rights of way often prove to be the greatest impediment to the efficient, cost-effective, and timely deployment of broadband.");
- 37 For example, the Broadband Principles adopted by the National Association of Telecommunications Officers and Advisors (NATOA), an organization for local government agencies, staff and public officials, states that "[t]he desired development of high capacity broadband networks and broadband services will require extensive collaboration among parties: local communities, regions, state governments, national government, the private sector, interest groups, and others." NATOA et al. Comments in re National Broadband Plan NOI, filed Jun. 8, 2009, at 3; see also Gary Gordier, CIO and IT Director, El Paso, Texas, Remarks at the FCC State and Local Government Workshop 161 (Sept. 1, 2009) ("There needs to be a lot better coordination across all jurisdictional levels to economize and share jointly in the infrastructure"), available at [http://www.broadband.gov/docs/ws\\_19\\_state\\_and\\_local.pdf](http://www.broadband.gov/docs/ws_19_state_and_local.pdf); Ray Baum, Comm'r, Oregon Pub. Util. Comm'n, Remarks at FCC State and Local Government Workshop 61 (Sept. 1, 2009) ("[W]e have a lot of infrastructure out there owned by utilities[,] both public and private[,] that sitting there that could be better utilized than it is today"); Lori Sherwood, Cable Adm'r, Howard County, Maryland, Remarks at the FCC State and Local Government Workshop 120 (Sept. 1, 2009) ("We have an opportunity to do this right and 25 years from now we don't want to say that we should have done a better job coordinating and talking to each other. For development of a national policy, the FCC should draw on its decade of government experiences including local governance.");
- 38 See note 34, *supra*.
- 39 See 47 U.S.C. § 253(c).
- 40 A public record search by FCC Staff revealed that since passage of the 1996 Act, the FCC has taken an average of 661 days to resolve Section 253 disputes filed before it, and federal district court litigation of similar disputes has taken an average of 580 days to conclude. Disputes often extend further through review by courts of appeal, as well.
- 41 See NATOA et al. Reply in re NBP PN #30, filed Jan. 27, 2010, at 38 (recommending that the FCC "consider creating a special task force" of rights-of-way experts that would "catalog federal, state, and local right-of-way practices and fees in an effort to identify and articulate existing best practices being employed by federal, state, and local authorities for different categories of public rights of way and infrastructure."). As proposed by NATOA, the task force "could also examine and report to the Commission regarding the advantages and disadvantages of alternative forms of compensation for use of public rights of way, and other rights of way related infrastructure, such as poles and conduits." *Id.* at 39.

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- 42 See NATOA et al. Reply in re NBP PN #30, filed Jan. 27, 2010, at 38–39.
- 43 Memorandum on Improving Rights-of-Way Management Across Federal Lands to Spur Greater Broadband Deployment, 40 WKLY. COMP. PRES. DOC. 696 (May 3, 2004).
- 44 Memorandum on Facilitating Access to Federal Property for the Siting of Mobile Services Antennas, 31 WKLY. COMP. PRES. DOC. 1424 (Aug. 10, 1995).
- 45 See Letter from Thomas Cohen, Counsel for the Fiber to the Home Council, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 09-51 (Oct. 14, 2009).
- 46 “Splicing” includes splice kit, installation of splicing enclosure, and splicing of fiber. Splice kit is excluded from “materials” cost. Cost of construction in joint deployment case refers to construction of a single 1-mile, 2” conduit containing 216-count fiber, when coordinated with a road construction project. Additional costs reflect the same project independent of road construction. Letter from Matthew R. Johnson, Legal Fellow, NATOA, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 09-51 (Sept. 17, 2009) (attaching COLUMBIA TELECOMM. CORP. BRIEF ENGINEERING ASSESSMENT: EFFICIENCIES AVAILABLE THROUGH SIMULTANEOUS CONSTRUCTION AND CO-LOCATION OF COMMUNICATIONS CONDUIT AND FIBER tbls. 1, 2 (2009)).
- 47 Moratoria on re-opening streets for further telecommunications facilities could impede broadband deployment in certain circumstances.
- 48 DEP’T OF PUBLIC WORKS, CITY AND COUNTY OF SAN FRANCISCO, ORDER NO. 176,707 (RVSD): REGULATIONS FOR EXCAVATING AND RESTORING STREETS IN SAN FRANCISCO § 5 (Mar. 26, 2007), available at [http://www.sfgov.org/site/uploadedfiles/sfdpw/bsm/sccc/DPW\\_Order\\_176-707.pdf](http://www.sfgov.org/site/uploadedfiles/sfdpw/bsm/sccc/DPW_Order_176-707.pdf); see also City and County of San Francisco Department of Public Works, Coordinating Street Construction, [http://www.sfgov.org/site/sfdpw\\_page.asp?id=32429](http://www.sfgov.org/site/sfdpw_page.asp?id=32429) (last visited Jan. 4, 2010).
- 49 Pub. Improvement Comm’n, City of Boston, Policy Relating to Grants of Location for New Conduit Network for the Provision of Commercial Telecommunications Services (Aug. 4, 1988), as amended.
- 50 Hardik V. Bhatt, CIO, City of Chicago, Remarks at FCC State and Local Governments: Toolkits and Best Practices Workshop (Sept. 1, 2009), available at [http://www.broadband.gov/docs/ws\\_19\\_state\\_and\\_local.pdf](http://www.broadband.gov/docs/ws_19_state_and_local.pdf); see also *id.* at 94 (“we have now started knowing every time a street gets dug up either for putting in a traffic signal interconnect, or putting some street light interconnects, or maybe a private utility has dug up the street, we have an opportunity to see if we could leverage that digging up of the street and maybe put conduit or if conduit is there to put fiber there”).
- 51 Gordon Cook, *Amsterdam’s Huge FTTH Build*, BROADBAND PROPERTIES, Sept. 2006, at 68.
- 52 NATOA et al. Comments in re NBP PN #7, filed Nov. 9, 2009, App. at 14.
- 53 Dumont Jan. 8, 2010 *Ex Parte* at 3.
- 54 Dumont Jan. 8, 2010 *Ex Parte* at 4 (recommending “a mechanism to ensure that all U.S. Department of Transportation projects are deploying conduit, and that space is created for four cables”).
- 55 Dumont Jan. 8, 2010 *Ex Parte*.
- 56 United States Department of the Interior, National Atlas of the United States, <http://www.nationalatlas.gov/printable/fedlands.html> (last visited Jan. 7, 2010).
- 57 General Services Administration, GSA Properties Overview, [http://www.gsa.gov/Portal/gsa/ep/contentView.do?contentType=GSA\\_OVERVIEW&contentId=8513](http://www.gsa.gov/Portal/gsa/ep/contentView.do?contentType=GSA_OVERVIEW&contentId=8513) (last visited Jan. 7, 2010).
- 58 Memorandum on Facilitating Access to Federal Property for the Siting of Mobile Services Antennas, 31 WEEKLY COMP. PRES. DOC. 1424 (Aug. 10, 1995).
- 59 See Siting Antennas on Federal Property, 41 C.F.R. §§ 102-79.70–.100.
- 60 GSA, *GSA’s National Antenna Program Wins Vice President Al Gore’s Hammer Award Agency’s National Antenna Program Fosters Innovation and Saves Tax Dollars, Showing Government Can Work Better and Cost Less*, GSA #9552 (press release), Jan. 13, 1999 (GSA, *GSA’s National Antenna Program*), [http://www.gsa.gov/Portal/gsa/ep/contentView.do?contentType=GSA\\_BASIC&contentId=9125](http://www.gsa.gov/Portal/gsa/ep/contentView.do?contentType=GSA_BASIC&contentId=9125).
- 61 GSA, *GSA’s National Antenna Program*. These facts have been confirmed via follow-up e-mails and conversations with GSA.
- 62 NTIA, IMPROVING RIGHTS-OF-WAY MANAGEMENT ACROSS FEDERAL LANDS: A ROADMAP FOR GREATER BROADBAND DEPLOYMENT 31–33, available at <http://www.ntia.doc.gov/reports/fedrow/frowreport> (discussing applicable statutes and agency procedures). For example, the Federal Land Policy Management Act of 1976, which applies to the Department of Interior Bureau of Land Management and National Forest Service, requires that “fair market value, as determined by the Secretary.” 43 U.S.C. § 1764(g). In addition, OMB Circular A-25 (rvsd), § 6(a)(2)(b) requires that agencies assess “user charges based on market prices,” although exceptions can be granted.



Federal Communications Commission

FCC 15-24

Before the  
Federal Communications Commission  
Washington, D.C. 20554

In the Matter of )  
 )  
Protecting and Promoting the Open Internet ) GN Docket No. 14-28  
 )

**REPORT AND ORDER ON REMAND, DECLARATORY RULING, AND ORDER**

**Adopted: February 26, 2015**

**Released: March 12, 2015**

By the Commission: Chairman Wheeler and Commissioners Clyburn and Rosenworcel issuing separate statements; Commissioners Pai and O’Rielly dissenting and issuing separate statements.

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**I. INTRODUCTION**

1. The open Internet drives the American economy and serves, every day, as a critical tool for America’s citizens to conduct commerce, communicate, educate, entertain, and engage in the world around them. The benefits of an open Internet are undisputed. But it must remain open: open for commerce, innovation, and speech; open for consumers and for the innovation created by applications developers and content companies; and open for expansion and investment by America’s broadband providers. For over a decade, the Commission has been committed to protecting and promoting an open Internet.

2. Four years ago, the Commission adopted open Internet rules to protect and promote the “virtuous cycle” that drives innovation and investment on the Internet—both at the “edges” of the network, as well as in the network itself. In the years that those rules were in place, significant investment and groundbreaking innovation continued to define the broadband marketplace. For example, according to US Telecom, broadband providers invested \$212 billion in the three years following adoption of the rules—from 2011 to 2013—more than in any three year period since 2002.

3. Likewise, innovation at the edge moves forward unabated. For example, 2010 was the first year that the majority of Netflix customers received their video content via online streaming rather than via DVDs in red envelopes. Today, Netflix sends the most peak downstream traffic in North America of any company. Other innovative service providers have experienced extraordinary growth—Etsy reports that it has grown from \$314 million in merchandise sales in 2010 to \$1.35 billion in merchandise sales in 2013. And, just as importantly, new kinds of innovative businesses are busy being born. In the video space alone, in just the last sixth months, CBS and HBO have announced new plans for streaming their content free of cable subscriptions; DISH has launched a new package of channels that includes ESPN, and Sony is not far behind; and Discovery Communications founder John Hendricks has announced a new over-the-top service providing bandwidth-intensive programming. This year, Amazon took home two Golden Globes for its new series “Transparent.”

4. The lesson of this period, and the overwhelming consensus on the record, is that carefully-tailored rules to protect Internet openness will allow investment and innovation to continue to flourish. Consistent with that experience and the record built in this proceeding, today we adopt carefully-tailored rules that would prevent specific practices we know are harmful to Internet openness—blocking, throttling, and paid prioritization—as well as a strong standard of conduct designed to prevent the deployment of new practices that would harm Internet openness. We also enhance our transparency rule to ensure that consumers are fully informed as to whether the services they purchase are delivering what they expect.

5. Carefully-tailored rules need a strong legal foundation to survive and thrive. Today, we provide that foundation by grounding our open Internet rules in multiple sources of legal authority—including both section 706 of the Telecommunications Act and Title II of the Communications Act. Moreover, we concurrently exercise the Commission’s forbearance authority to forbear from application of 27 provisions of Title II of the Communications Act, and over 700 Commission rules and regulations. This is a Title II tailored for the 21<sup>st</sup> century, and consistent with the “light-touch” regulatory framework that has facilitated the tremendous investment and innovation on the Internet. We expressly eschew the future use of prescriptive, industry-wide rate regulation. Under this approach, consumers can continue to

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**c. Access to Poles, Ducts, Conduit and Rights-of-Way (Section 224)**

478. Consistent with the recommendations of certain broadband provider commenters, because we find that the section 10(a) criteria are not met, we decline to forbear from applying section 224 and the Commission's associated rules with respect to broadband Internet access service.<sup>1444</sup> Section 224 of the Act governs the Commission's regulation of pole attachments. The Commission has recognized repeatedly the importance of pole attachments to the deployment of communications networks, and we thus conclude that applying these provisions will help ensure just and reasonable rates for broadband Internet access service by continuing pole access and thereby limiting the input costs that broadband providers otherwise would need to incur.<sup>1445</sup> Leveling the pole attachment playing field for new entrants that offer solely broadband services also removes barriers to deployment and fosters additional broadband competition.<sup>1446</sup> For similar reasons we find that applying these provisions will protect consumers and advance the public interest under sections 10(a)(2) and (a)(3).<sup>1447</sup>

479. Further, in significant part, section 224 imposes obligations on utilities, as owners of poles, ducts, conduits, or rights-of-way, to ensure that cable operators and telecommunications carriers obtain access to poles on just, reasonable, and nondiscriminatory rates, terms and conditions.<sup>1448</sup> The definition of a utility, however, includes entities other than telecommunications carriers,<sup>1449</sup> and pole attachments themselves are not "telecommunications services." Section 10 allows the Commission to forbear from statutory requirements and implementing regulations as applied to "a telecommunications

(Continued from previous page)

on such providers by virtue of this Order, given our decision not to forbear from application of section 255 and its implementing regulations.

<sup>1444</sup> See, e.g., Comcast Dec. 24, 2014 *Ex Parte* Letter at 25 n.107; NCTA Dec. 23, 2014 *Ex Parte* Letter at 21. See also, e.g., Letter from Marvin Ammori and Julie Samuels, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 14-28 at 1 (filed Nov. 12, 2014) ("Title II forbearance should be implemented in such a way so as to encourage continued deployment and investment in networks by for example preserving pole attachment rights."); Letter from Austin C. Schlick, Director, Communications Law, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 14-28 at 3-4 (filed Dec. 30, 2014) (Google Dec. 30, 2014 *Ex Parte* Letter).

<sup>1445</sup> See, e.g., *Implementation of Section 224 of the Act, A National Broadband Plan for Our Future*, WC Docket No. 07-245, GN Docket No. 09-51, Report and Order and Order on Reconsideration, 26 FCC Rcd 5240, 5241-43, paras. 1-6 (2011) (2011 *Pole Attachment Order*). See also, e.g., Google Dec. 30, 2014 *Ex Parte* Letter at 3-4; Vonage Jan. 7, 2015 *Ex Parte* Letter at 1.

<sup>1446</sup> See, e.g., Google Dec. 30, 2014 *Ex Parte* Letter at 3-4; Letter from Stephen E. Coran, Counsel for WISPA, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 14-28 at 13-14 (filed Feb. 3, 2015).

<sup>1447</sup> Some commenters contend that the Commission should forbear from all of Title II based on generalized arguments about the marketplace, such as past network investment or changes in performance or price per megabit in the recent past. See, e.g., ACA Jan. 12, 2015 *Ex Parte* Letter at 10-11; Comcast Dec. 24, 2014 *Ex Parte* Letter at 4-6; NCTA Dec. 23, 2014 *Ex Parte* Letter at 19-20. We are not persuaded that those arguments justify a different outcome regarding section 224 and our associated rules, both for the reasons discussed previously, see *supra* Section V.B.1, and because commenters do not meaningfully explain how these arguments impact the section 10 analysis here, given that the need for regulated access to access to poles, ducts, conduit, and rights-of-way is not self-evidently linked to such marketplace considerations. Nor does the record reveal that concerns about adequate access to poles, ducts, conduit and rights-of-way are limited to broadband providers of a particular size, and we thus are not persuaded that these concerns would differ in the case of small broadband providers, for example. See, e.g., ACA Jan. 12, 2015 *Ex Parte* Letter at 11; AireBeam Jan. 30, 2015 *Ex Parte* Letter at 2.

<sup>1448</sup> 47 U.S.C. § 224(a)-(e).

<sup>1449</sup> See 47 U.S.C. § 224(a)(1) (defining a utility as "any person who is a local exchange carrier or an electric, gas, water, steam, or other public utility, and who owns or controls poles, ducts, conduits, or rights-of-way used, in whole or in part, for any wire communications. . . ."); see also 47 U.S.C. § 224(a)(5) ("For purposes of this section, the term 'telecommunications carrier' (as defined in section 153 of this title) does not include any incumbent local exchange carrier as defined in section 251(h) of this title.").



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# Infrastructure Month at the FCC

Oct 31 2017

**March 30, 2017 - 2:20 pm**By [Ajit Pai](#) | FCC Chairman

I recently watched the 1985 classic "Back to the Future." At the end of the movie, Marty McFly warns Dr. Emmett Brown as they prepare to head into the future, "Hey Doc, we better back up. We don't have enough road to get up to 88." Dr. Brown replies, "Roads? Where we're going, we don't need roads."

It turns out that Dr. Brown was wrong; in 2017, we still need roads. But even more, what paves the way in the 21st century is high-speed Internet access, or broadband. That's certainly what we believe here at the FCC. And that's why our goal is to make sure that every American can get faster, cheaper, and better broadband.

Next-generation networks are [hard to build](#). It takes a lot of money and effort to lay fiber, install wireless infrastructure, build satellite earth stations, and more. It also requires a reasonably certain business case for deployment, which is all too often hard to prove in parts of the country with sparse population and/or lower incomes.

But the benefits of doing so are tremendous. Infrastructure investment is critical to closing the digital divide in our country and bringing high-speed Internet access to more rural Americans. Broadband has also made many sectors of the economy more productive, from shipping to energy. And it's has given birth to entirely new industries, like the mobile apps economy, telemedicine, online education, and the nascent Internet of Things.

To bring the benefits of the digital age to all Americans, the FCC needs to make it easier for companies to build and expand broadband networks. We need to reduce the cost of broadband deployment, and we need to eliminate unnecessary rules that slow down or deter deployment. At next month's Commission meeting on April 20, the FCC will be voting on a number of proposals to do just that. That's why we are calling April "Infrastructure Month" at the FCC.

*1. Wired Infrastructure.* — In one set of proposals, I'm asking my colleagues to support rules that would facilitate the construction of wired networks. For example, attaching Internet-related equipment to utility poles is a major cost element for companies of all sizes. We'll seek to both lower costs for and speed deployment of this equipment. I'm also proposing rules to allow companies to speed the retirement of legacy copper networks, some of which were installed many decades ago, and expedite the transition to newer, more resilient, higher-capacity fiber-based networks and services. After all,

every dollar spent maintaining the fading networks of yesterday is a dollar that can't be spent building the networks of tomorrow. Finally, I am teeing up questions about whether state and local regulations are stifling network deployment and whether the FCC should consider using its authority to preempt any unnecessary regulatory roadblocks.

*2. Wireless Infrastructure.* — Next, the Commission will focus on the wireless side of the equation. The wireless networks of the future will look very different. Instead of tall towers you can see from a mile away, there will be small cells — wireless access points you might not even see and/or could hold in your hands. With this "densification" of so-called 5G networks, we'll need to deploy millions of small cells in order to realize the promise of multi-gigabit connectivity through millimeter-wave technology. That's why I'm advancing proposals to make it easier for the private sector to build these "5G" networks. We'll aim to expedite state and local approval of infrastructure deployment applications and streamline our own rules to account for these new networks. Regulations designed for big towers don't necessarily make sense for small cells. So we need to modernize our rules to keep up with technology.

*3. Business Data Services.* — Speaking of modernizing our rules that affect infrastructure investment, next month we'll also vote on new rules to update the rules for business data services (BDS), otherwise known as "special access." BDS involves network connections used by businesses, non-profits, and government institutions to securely move large amounts of data. ATM withdrawals and credit card transactions are examples of how we rely on these services.

Twelve years ago, the Commission began to study the business data services market to see if changing market conditions warranted changes to our rules. At long last, the time for action has arrived. I'm proposing that we take a balanced approach to reforming the rules governing this marketplace. The extensive record compiled by the Commission's excellent staff shows substantial and growing competition in many areas of the country, thanks to new market entrants like cable companies. Where this competition exists, we will relax unnecessary regulation, thereby creating greater incentives for the private sector to invest in next-generation networks. But where competition is still lacking, we'll preserve regulations necessary to prevent anti-competitive price increases.

*4. Facilitating Rural Deployment.* — As I mentioned earlier, there are some parts of this country, primarily rural America, where the business case for broadband deployment is very difficult, and the private sector lacks the economic incentives to build out next-generation networks no matter how many regulatory barriers the Commission removes. For those areas that are the most expensive to serve, the Commission provides direct support to companies through the Universal Service Fund (USF). The USF's high-cost program subsidizes broadband deployment for small carriers. I am proposing that we tweak one of the rules for that program to make sure that some rural households that could be served by these carriers are not left stranded without broadband service.

While infrastructure will be the focus of the Commission's April meeting, it won't be the only subject we're addressing. If we're majoring in infrastructure next month, you could say that we're minoring in media, with three items on the agenda.

*5. Easing Burdens on Noncommercial Stations.* — Recently, the FCC adopted a rule requiring officers and members of boards of directors of noncommercial educational (NCE) broadcaster stations to provide personal information to the FCC. However, public television and radio stations have complained that this rule is discouraging volunteers from serving in these positions. In my view, we should be thanking people who want to serve their community in this way, not imposing unnecessary regulatory burdens upon them. So next month, we'll be voting to eliminate this rule.

*6. Allowing Broadcasters to Raise Funds for Charity.* — We will also consider giving NCE broadcasters more flexibility to raise money for disaster relief groups, charities, and other non-profit organizations. In the past, the FCC has granted waivers to allow NCE television and radio stations to solicit donations for causes such as Hurricane Katrina and Haitian earthquake relief. I believe that we should make it easier for stations to engage in this type of activity so long as it doesn't

compromise their non-commercial nature. That's why I'm proposing that stations be allowed to devote no more than 1% of their total annual airtime to fundraising for non-profit organizations. Moreover, because certain stations have indicated that they have no interest in engaging in such activity, this rule change would not apply to stations funded by the Corporation for Public Broadcasting.

*7. UHF Discount.* — Finally, we'll consider whether to restore the so-called Ultra-High Frequency, or UHF discount, which is related to the Commission's national television ownership cap. Last September, the FCC voted to eliminate the discount on a party-line vote. That decision has been challenged in the U.S. Court of Appeals for the D.C. Circuit. In [my view](#), the FCC is likely to lose that litigation because it went about eliminating the UHF discount in the wrong way. So I'm proposing that we hit the reset button, returning the rule to the way it was up until last fall. And then we'll launch a comprehensive review of the national ownership cap, including the UHF discount, later this year.

\* \* \*

Keeping with recent trends, the FCC's April meeting will be a busy one. But it'll be an important one — Infrastructure Month will present several chances for the FCC to promote deployment and benefit consumers across America. Infrastructure might not be as flashy as a flux capacitor, but it'll be a 1.21 gigawatt jolt for the digital economy.

**Tags:**

[Communications Infrastructure](#) - [FCC Management & Policies](#) - [Spectrum](#) - [UHF and VHF](#)

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# State Broadband Plan Progress Report



**Joint Legislative Oversight Committee on Information  
Technology and the Fiscal Research Division**

Department of Information Technology  
December 1, 2015

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Oct 31 2017

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## Legislative Request

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This report is submitted pursuant to H97, Session Law 2015-241, which directed the State CIO to provide a report to the Joint Legislative Oversight Committee on Information Technology and the Fiscal Research Division on the development and implementation of the State broadband plan (“plan”).

The full text of the legislation can be found in Appendix A.

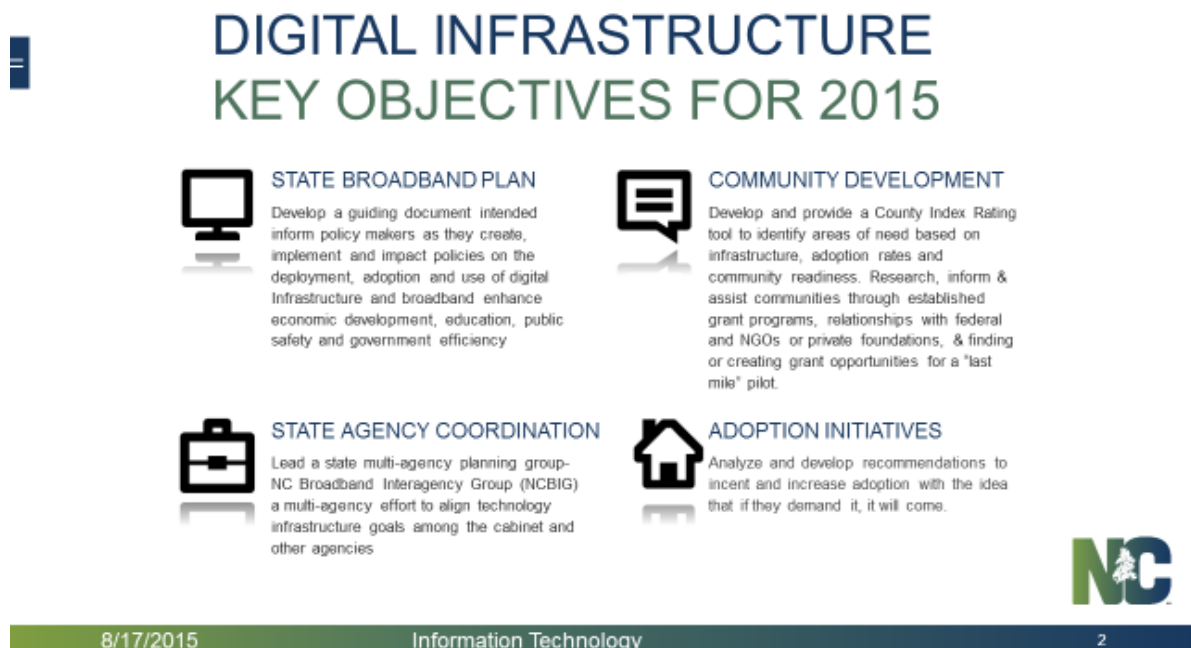


## Introduction

The State Chief Information Officer established the Broadband Infrastructure Office in 2015 as a statewide resource for broadband access, first responder communications, and classroom connectivity initiatives led by the State of North Carolina. In accordance with Session Law 2015-241, H97, the Broadband Infrastructure Office will develop a State broadband plan and will coordinate with other State agencies in order to maximize the effectiveness and efficiency of available resources.

The Broadband Infrastructure Office aligns NC Broadband, the statewide effort to expand high-speed Internet access, with the FirstNet public safety initiative for improved resource sharing across state agencies. The centralized and streamlined Office provides the opportunity to work across agencies and identify infrastructure development needs across North Carolina.

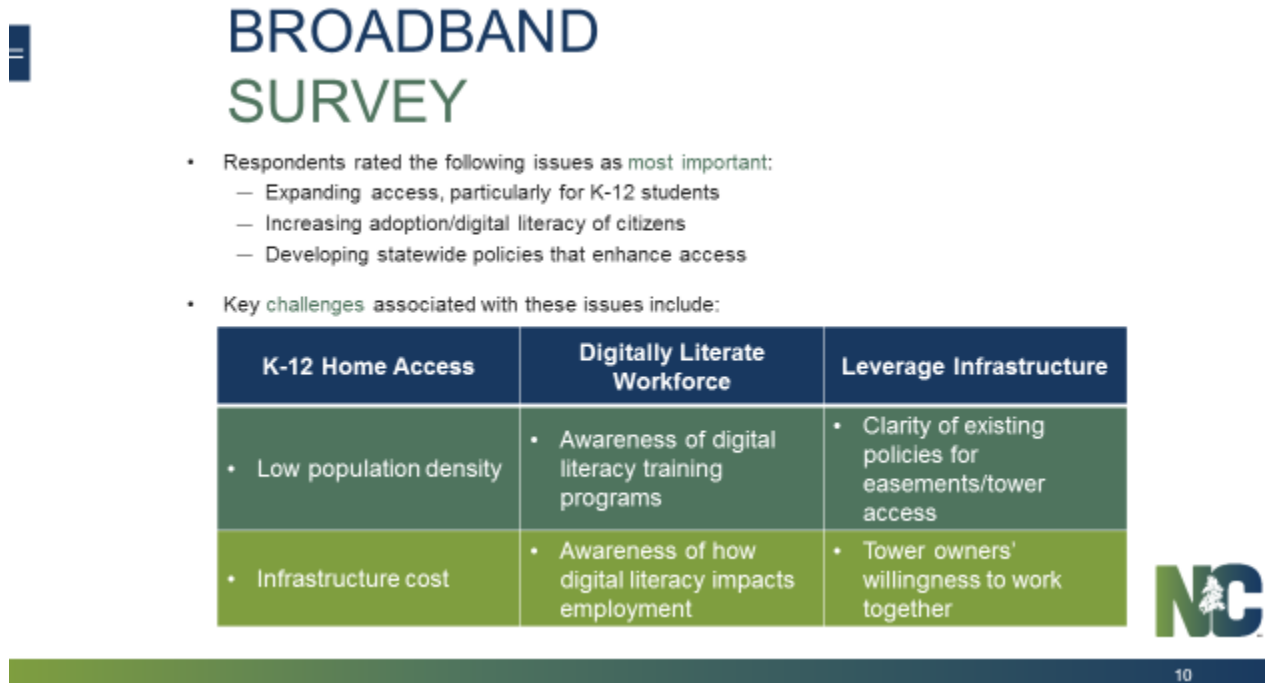
The Office's mission includes creating the nation's first giga-state by 2020, expanding broadband access to underserved communities, and supporting digital learning by extending Wi-Fi access to every classroom in the State. We also provide policy recommendations and guidance to government leaders and key stakeholders to foster digital infrastructure expansion, adoption, and use.



## Current Work

In May 2015, the Broadband Infrastructure Office (BIO) released the NC LITE-Up (North Carolina Linking the Internet to Economically Underprivileged People), an 18-month research study designed to better understand Internet adoption barriers in low-income households. BIO will use the findings from this unique study, in part, to help with the development of the comprehensive statewide plan that will address broadband issues including adoption.

In August 2015, the Broadband Infrastructure Office conducted an online survey to better understand the challenges that impact continued deployment of broadband infrastructure and adoption of broadband technology in the State. The survey received more than 500 stakeholder responses, a response rate of almost 20 percent, from a diverse sample representing a mixture of populations and counties. We received at least one response from all 100 counties. The results of this survey provide a current catalogue of the challenges the state faces to achieving universal connectivity and adoption. These challenges will be presented to small working groups of stakeholders and experts that will help identify recommendations to be included in the state broadband plan.



**BROADBAND SURVEY**

- Respondents rated the following issues as most important:
  - Expanding access, particularly for K-12 students
  - Increasing adoption/digital literacy of citizens
  - Developing statewide policies that enhance access
- Key challenges associated with these issues include:

K-12 Home Access	Digitally Literate Workforce	Leverage Infrastructure
• Low population density	• Awareness of digital literacy training programs	• Clarity of existing policies for easements/tower access
• Infrastructure cost	• Awareness of how digital literacy impacts employment	• Tower owners' willingness to work together

NC

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BIO continues to actively reach out to State agencies to look for opportunities to utilize existing infrastructure and resources and identify ways to streamline permitting and approval processes. Working with the Departments of Transportation, Administration, Commerce, and Department of Public Safety we continue to look for and find assets, resources and opportunities to increase high-speed broadband access and adoption throughout the State.

We are developing a broadband index to rate each county based on availability, adoption and community readiness. This index, similar to a rating tool, will inform the plan and assist our office in determining which challenges and which solutions may be needed for individual counties. The data sets used to develop the index include current NTIA and FCC coverage maps, potentially FCC subscription data, state Citizen Surveys, the BIO stakeholder survey, and community engagement.

BIO is developing an on-line, interactive toolkit, to leverage our information, resources, and on-the-ground technical assistance advisors to help communities with planning. This toolkit will work in conjunction with the Index and the Plan.

Finally, we continue to work closely with more than a dozen counties and communities to provide technical and community planning assistance. This work includes developing goals, aggregating demand, developing asset surveys, and identifying funding sources. The technical assistance team also engages with Internet service providers to highlight unserved or underserved communities, work through technical solutions, and provide guidance on locating community-owned assets available to reduce capital costs. These efforts have resulted in bringing broadband for the first time to communities around the state, including most recently: Yancey, Mitchell, Polk, Graham, and McDowell Counties. Projects continue in various counties throughout the central and eastern parts of the state.

## Early Findings

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The story of broadband infrastructure in North Carolina is a good news story for most of the state. Many communities, typically in sparsely populated or economically distressed areas, however, continue to find themselves on the wrong side of the digital divide. The plan will focus on bridging this divide as well as positioning the state for the future.

Today, North Carolina boasts many unique broadband assets. The state is home to a non-profit middle-mile network connecting universities, schools, hospitals and libraries among other institutions. Several large cable and telecom companies such as Time Warner, AT&T, CenturyLink and Frontier, provide Internet connections to millions of residents. Google Fiber announced at the beginning of the year plans to offer service in the Charlotte and Triangle areas. Many mid-to-small providers, including NorthState, Carolina West Wireless, Pangaea, Wilkes, Greenlight, and others, have established themselves in less populated markets. All of our K-12 schools are connected to fiber and every classroom will be equipped for WiFi connectivity by 2018. The tele-health market continues to see success and expand.

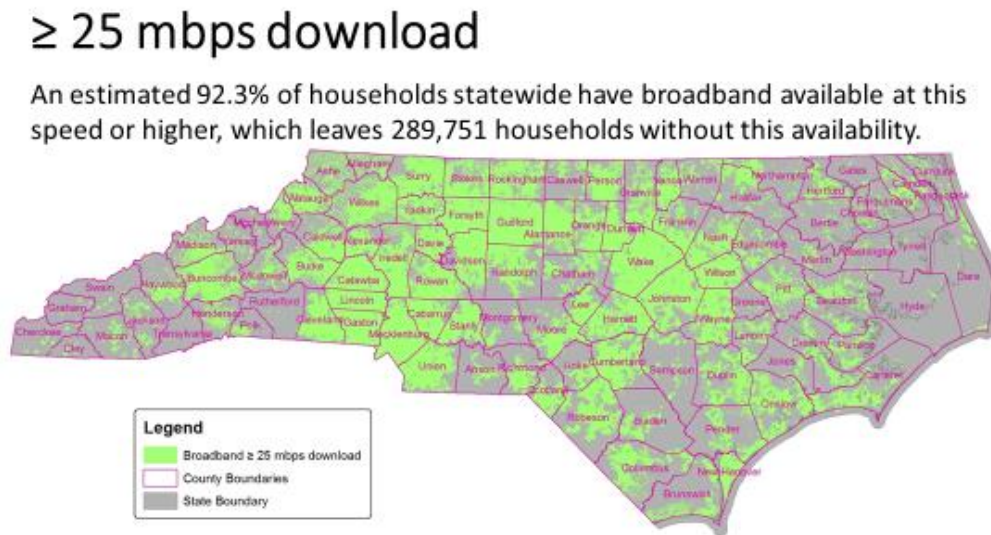
The State broadband plan will offer policy and planning recommendations that will leverage these assets to ensure universal access and connectivity. The speed at which technology evolves and the projected amount of data to be transferred in the near future will require significant infrastructure upgrades in our state. While almost 90 percent of the state has availability to the FCC threshold speeds of 25Mbps download/3 Mbps upload, less than 10 percent of the households have fiber to

the home. Most of the investments to upgrade infrastructure and expand cell or WiFi connectivity are taking place in urban areas. To continue to be a hub for technology and biotechnology innovation and to continue to attract manufacturing, knowledge-based businesses and improve our agricultural output, we will need to focus on upgrading existing infrastructure and investing in fiber and high-speed wireless infrastructure in the remote or sparsely populated areas of the state.

North Carolina leads the nation in many of the broadband categories mentioned above. Therefore, this plan will use data, stakeholder feedback, and experts to hone in on the most difficult challenges facing the state. For example, our research shows that despite availability, many communities are not adopting or utilizing high-speed Internet. We know increased adoption will drive the need for next-gen infrastructure. We have also found that community readiness or initiative, particularly in sparsely populated area, distinguishes those that have access to broadband and those that do not. The plan will address each of these challenges and offer recommendations to the General Assembly, local leaders and policy makers to overcome these challenges.

#### Availability: Broadband Deployment and Existing Infrastructure

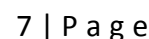
In January 2015, the FCC updated the recommended “availability” target speed threshold to 25Mbps (download)/3Mbps (upload) from the previous recommended benchmark 4Mbps (download)/1Mbps (upload).



Source: NC Broadband, 2014

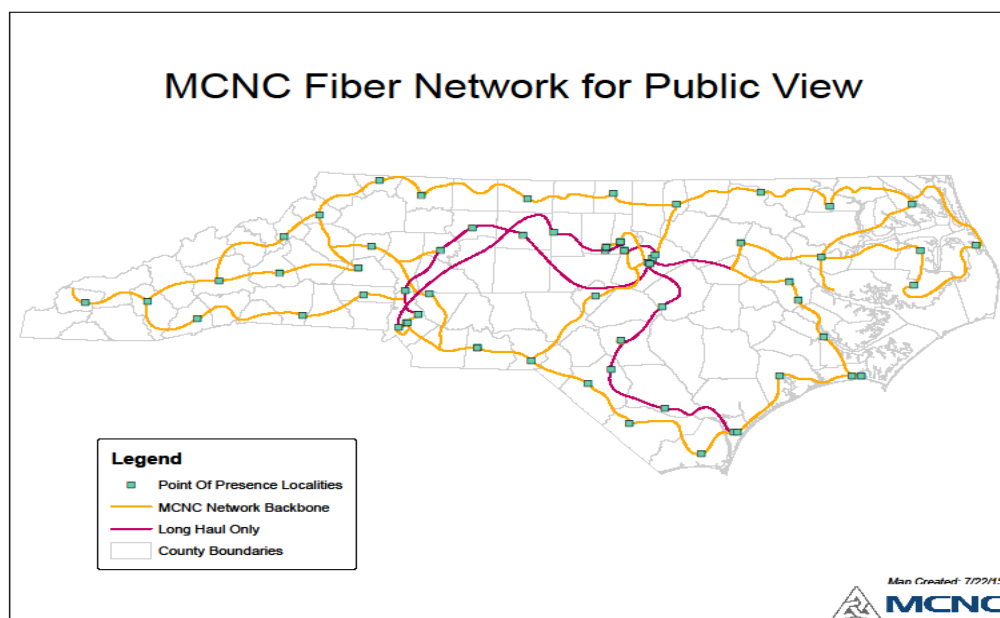
At the speed examined, North Carolina ranks 9th in the nation in terms of broadband deployment rate. Specifically, at 86 percent, North Carolina’s broadband deployment rate is slightly above the U.S. average (83 percent), 13 percentage points behind the most covered state, Connecticut, and is

Source: FCC 2015 Broadband Progress Report



North Carolina's adoption rate, 10 percent at the examined speed threshold, has increased from the 1.6 percent rate reported in the previous report in spite of the increase in speed threshold. However, North Carolina ranks 22nd out of 25—a lower rank than all peer states. Within North Carolina, 58 of the 100 counties have a household broadband deployment rate at the download speed examined, equal to or above the US average of 83 percent. Of the 42 North Carolina counties below the U.S. average, 19 have a deployment rate between 50 and 82 percent, and the remaining 26 counties have a deployment rate of less than 50 percent.

While standard metrics for middle-mile are difficult to obtain, North Carolina's major broadband providers do have significant middle-mile assets. In addition, North Carolina possesses a 2,600 mile long, contiguous open access middle-mile network that touches 82 of North Carolina's 100 counties. Operated by the nonprofit, MCNC, the dark fiber (fiber that is not being used) shares the conduit with a lit fiber optic backbone that serves the broadband needs of all K–20 public education institutions, most of K–20 private education and select research institutes, nonprofit healthcare providers, public safety and other anchor institutions. Almost half the strands of fiber are also available to broadband service providers to lease and serve consumers and businesses. Enterprises across all vertical markets (financial services, technology, healthcare, biotech, transportation, logistics, etc.) can also lease the fiber strands to build their own enterprise networks.



## Adoption

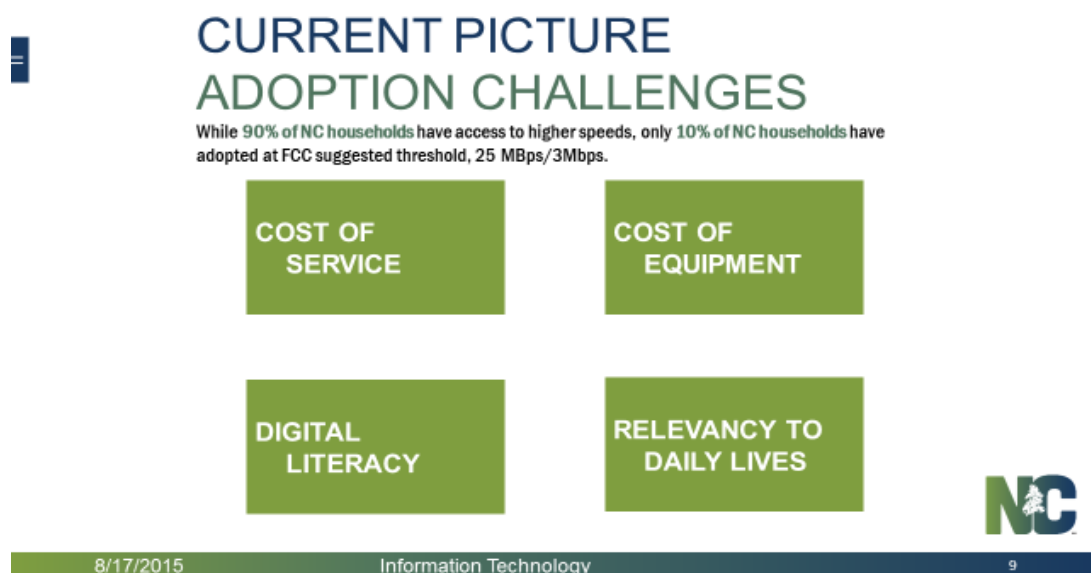
While there is a continued need for access to high-speed Internet and infrastructure expansion, Broadband adoption in NC is lower than it should be given connectivity access across the state. While more than 90% of NC households have access to higher speeds, only 10% of NC households



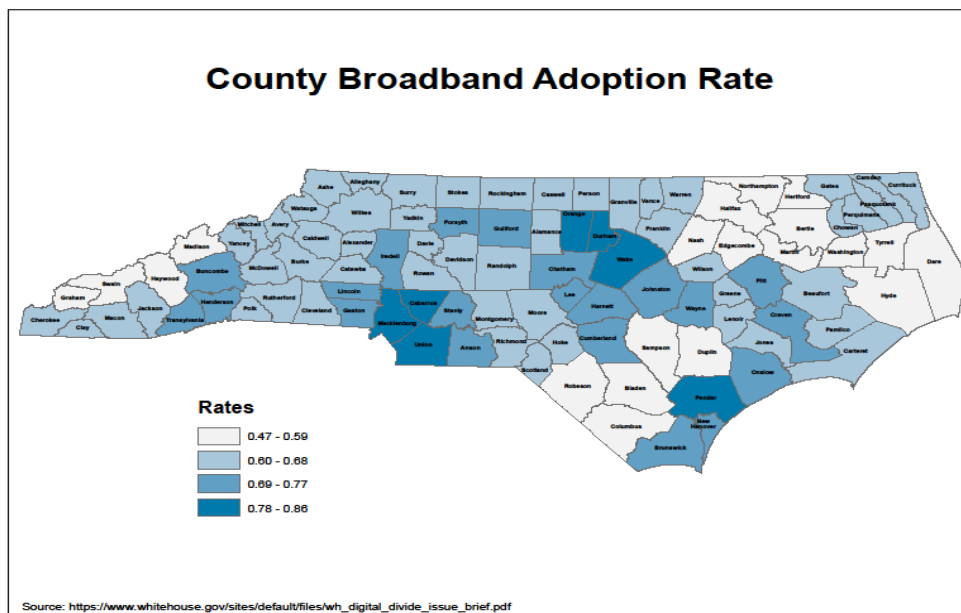
have adopted at Federal Communication Commission (FCC) suggested threshold, 25Mbps (download)/3Mbps (upload). Adoption is particularly low among low-income households. In 2013 only 47% of NC households with annual incomes under \$15,000 adopted broadband.

We know there are four main barriers influencing broadband adoption, particularly among low-income households, including cost of service, real or perceived costs of computer, laptop or other devices, digital literacy, and the perceived relevancy of the Internet on daily lives.

Participants in the study became more fully active digital citizens and improved their digital literacy and broadband utilization for everyday casts. Once the connectivity was established, 85% of participants signed up for Internet services and 79% continued service after the study's subsidies ended.



Early research shows that as a State, we need to focus on increasing adoption rates. This is especially true in areas where we have found significant broadband infrastructure, including fiber, but low utilization. Aside from the economic barriers discussed above, we are finding that large numbers of certain populations, like the elderly, do not use the Internet. Often these groups do not see the benefits of being on-line. Therefore, digital learning and increased education of the services, such as telehealth, and benefits, such as driver's license renewal, are needed.



## Identifying Challenges

The broadband survey issued to stakeholders across the state was intended to identify challenges to broadband deployment and adoption in NC. Respondents to the survey were asked to rate their opinion on the importance of specific broadband issues, such as “expanding access to broadband in NC.” Secondly, respondents were asked to rate the extent to which they agreed that certain factors posed a challenge to resolving availability and adoption issues. For example, respondents rated the extent to which they agree that “The cost to deploy broadband infrastructure” affects connectivity using a 5-point scale.

Respondents rated expanding access, particularly for K-12 students, increasing adoption/digital literacy of citizens, developing statewide policies that enhance access as the most important issues. The survey also identified some key challenges associated with the issues, including K-12 home access, having a digitally literate workforce, and the need to leverage existing infrastructure.





## SUPPORTING EDUCATION FCC E-RATE PROGRAM

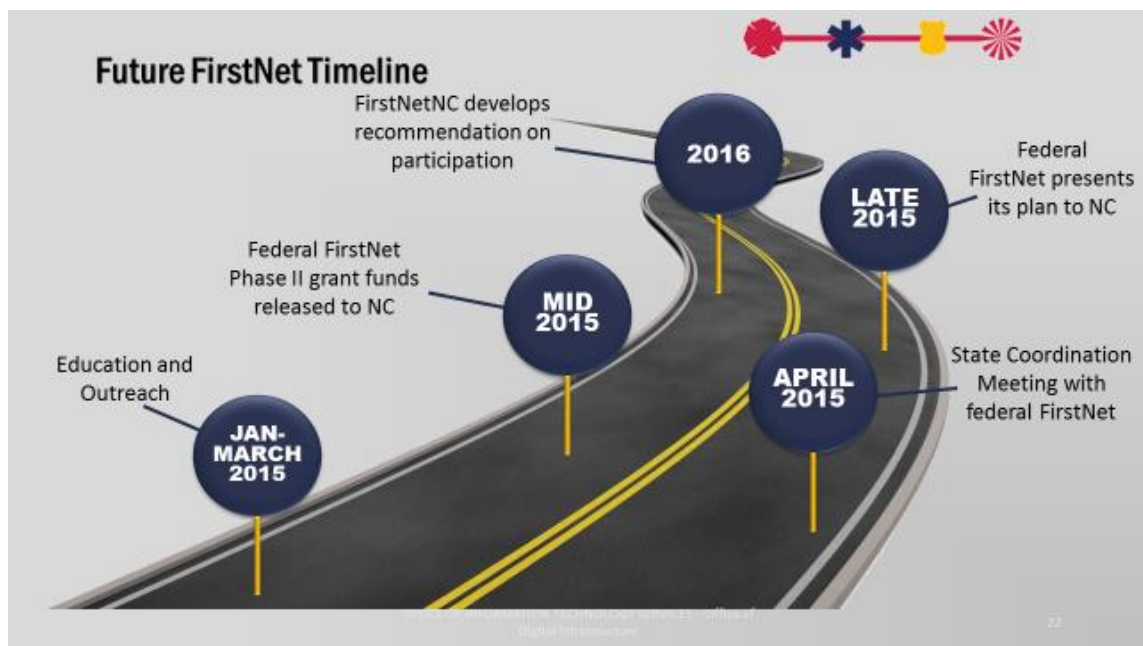
IMPROVING DIGITAL LEARNING  
CONNECTING EVERY CLASSROOM

More than \$23 million to expand Wi-Fi access to K-12 classrooms throughout the state, bringing the total funding for this initiative to nearly \$40 million



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The plan will also incorporate aspects of the national wireless data network, FirstNet. The FirstNet initiative for North Carolina, located within BIO, compliments and aids the work on the plan. We have worked with the federal FirstNet team to contemplate the use of the FirstNet network (with the objective of 100 percent coverage) by secondary users when not occupied by public safety or emergency responders. Remote communities or students without access at home may be able to use the frequency and bandwidth to connect to the Internet. This network could potentially have a significant impact in bridging the digital divide for underserved and unserved populations.



Currently we are providing technical and development assistance to several communities and counties throughout the state. The lessons learned from the communities that have successfully expanded broadband to their citizens will be captured in the plan.

**SUCCESSSES  
AND MOMENTUM**

 <b>SUCCESSFUL USDA GRANT DEPLOYMENT</b> YANCEY COUNTY, NC Residential customers can get 500 megabits-per- second connections	 <b>ECONOMIC DEVELOPMENT</b> GRAHAM COUNTY, NC Provider deployment into a region previously deemed uncompetitive	 <b>INFRASTRUCTURE DEVELOPMENT</b> CONNECT AMERICA More than \$19 million in annual funding during the next six years will help with the buildout of broadband service
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## Next Steps

We continue to gather, analyze and synthesize availability, adoption, and utilization data from sources to better inform the report's final recommendations. These sources include the FCC, the NC Department of Commerce's Citizen Survey, NTIA and other federal agencies, and private foundations (Pew, Benton, Brookings Institution among others). Much of this data will frame the current challenges to broadband deployment and adoption we face in North Carolina.

The next phases of planning and development of the State's broadband plan will involve engaging stakeholder groups' and state agencies' for assistance and participation. Currently we are developing a schedule of workshop meetings where BIO will engage stakeholders from a variety of areas to get specific feedback on strengths and weaknesses, challenges, and opportunities for improvement. Specific stakeholder groups include K-12/education, workforce development and small business, telemedicine, and State agencies. These meetings will begin in December and continue through March of 2016.

The information and feedback gathered in these meetings will inform the recommendations included in the plan. Recommendations, in part, will focus on how to better leverage existing infrastructure, streamlining state and local permitting and access to right-of-ways, methods for

fostering public-private partnerships, and creative approaches to funding. For example, in the near future the state may benefit from the federal government's broadening of existing grant programs, such as E-Rate and HUD community block grants, for broadband deployment. For economic development initiatives, the plan will consider how the state can leverage existing funds and incentives to support projects in disadvantaged communities.

Additionally, community leadership plays a key role in communities that enjoy universal high-speed, affordable broadband service. It will be the difference between the haves and the have-nots. Therefore, recommendations will consider what communities need to do to organize effectively.

Solutions will highlight successful methods to incentivize providers to expand, enhance, and lower costs. For example, all K-12 schools and community colleges have fiber to their doors. Providers bid to provide service. Communities can work more closely with schools and work to create incentives to leverage service to the broader community. Also, communities, partnering with private providers, could look at ways to use fiber to the school to establish wireless service from the school to the community.

Finally, the state needs to act as the convener, a thought leader and resource center to better direct projects or providers. Currently, BIO provides technical assistance team to be proactive and target communities in need. We need to continue to connect private providers, community leaders, state agencies, and funding sources to identify projects and collaborate to implement project plans.

The plan will be divided into chapters that will include:

- A brief history, current status of availability and general location of broadband infrastructure,
- Findings and analysis of the Availability challenges throughout the State,
- A study and analysis of Adoption challenges facing the State,
- An in-depth look at several key areas including economic development, workforce, telehealth, and the "homework gap" (students without access to Internet at home), and,
- Case studies to highlight successful deployment and strategies to support affordability, including potential partnerships and sources of funding to support the effort, and,
- Recommendations to lawmakers and community leaders that will specifically address the challenges identified and the means, methods and best practices for achieving state-wide access.

The target date for the completion of the State Broadband Plan is Spring 2016.

## Appendix A

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### Session Law 2015-241, H97

#### **STATE BROADBAND PLAN**

**SECTION 7.23.(a)** The State CIO shall develop a State broadband plan that includes:

- (1) Information regarding the availability and functionality of broadband throughout the State and an evaluation of the current deployment of broadband service.
- (2) A strategy to support the affordability of broadband service as well as maximum utilization of broadband infrastructure, including potential partnerships and sources of funding to support the effort.
- (3) Analysis of means, methods, and best practices to establish universal broadband access across the State.

In developing the State broadband plan, the State CIO shall coordinate with other State agencies in order to maximize the effectiveness and efficiency of available resources.

**SECTION 7.23.(b)** For the 2015-2017 fiscal biennium, by December 1, 2015, and then annually thereafter, the State CIO shall provide a report to the Joint Legislative Oversight Committee on Information Technology and the Fiscal