ADOPTION AND UTILIZATION

CHAPTER 9

WHILE 65% OF AMERICANS USE BROADBAND AT HOME, the other 35% (roughly 80 million adults) do not.[1] Some segments of the population—particularly low-income households, racial and ethnic minorities, seniors, rural residents and people with disabilities—are being left behind. As Exhibit 9-A demonstrates, some communities are significantly less likely to have broadband at home. Half of all Hispanics do not use broadband at home, while 41% of African Americans do not. Only 24% of Americans with less than a high school diploma use broadband at home, and the adoption rate for those with annual household incomes less than $20,000 is only 40%.

If history is a guide, adoption rates will continue to rise.[3] Broadband adoption reached 50% in 2007, up from 12% at the end of 2002 and 32% in early 2005.[4] But gaps will likely persist with certain segments of the population continuing to lag the national average.

Consider the history of telephone adoption. Traditional telephone service reached saturation around 1970, when 93% of households subscribed. At that point, roughly 20% of African Americans and Hispanics did not have telephone service. By 1985, households earning less than $10,000 per year still lagged those earning $40,000 or more by nearly 19 percentage points; by 2008, they continued to trail by almost 9 percentage points.[5] As described in Chapter 8, government action through the Universal Service Fund ultimately contributed to telephone adoption to near universal levels.

Absent action, broadband adoption rates will continue to be uneven. Even if broadband reaches saturation in coming years, the aggregate adoption number may mask troubling differences along socioeconomic and racial and ethnic lines. If broadband adoption follows the trajectory of telephone adoption, one in four African Americans and one in three Hispanics could still be without broadband service at home even when an overwhelming majority of Americans overall have it.

To understand broadband adoption trends, many questions must be answered. Who chooses not to adopt, and why? What is the appropriate role for government in general, and the federal government in particular, to spur sustainable adoption? How can stakeholders such as state, local and Tribal leaders, non-profit community partners and private industry support the goals of bringing all citizens online and maximizing their utilization of broadband applications?

The following recommendations outline targeted investments the United States should consider in order to increase adoption levels. Federal action is necessary but needs to be taken in partnership with and in support of state, local and Tribal governments, corporations and non-profits.

*Exhibit 9-A: Broadband Adoption Among Certain Demographic Groups2**

Demographic group	Current adoption rates, by %
National average	65
Low income (under $20,000/year)	40
Less educated (no high school degree)	24
Rural Americans	50
Older Americans (65+)	35
People with disabilities	42
African Americans	59
Hispanics	49

*The sample size of the FCC Survey, though the largest survey of non-adopters to date, is too small to make statistically reliable broadband adoption estimates for certain population subgroups, particularly racial and ethnic minorities. Data released by National Telecommunications and Information Administration (NTIA) from the U.S. Census Bureau's Current Population Survey Internet and Computer Use Supplement offer some insight into computer and Internet use by less numerous population subgroups. In particular, NTIA reports 67% of Asian Americans have broadband at home while 43% of American Indians/Alaska natives (living on and off Tribal lands) report having broadband at home. See NTIA, DIGITAL NATION: 21st Century America's Progress Toward Universal Broadband Internet Access (2010), available at http://www.ntia.doc.gov/reports/2010/NTIA_internet_use_report_Feb2010.pdf.

RECOMMENDATIONS

Address cost barriers to broadband adoption and utilization

- The Federal Communications Commission (FCC) should expand Lifeline Assistance (Lifeline) and Link-Up America (Link-Up) to make broadband more affordable for low-income households.
- The FCC should consider free or very low-cost wireless broadband as a means to address the affordability barrier to adoption.

Address digital literacy barriers to broadband adoption and utilization

- The federal government should launch a National Digital Literacy Program that creates a Digital Literacy Corps, increases the capacity of digital literacy partners and creates an Online Digital Literacy Portal.

Address relevance barriers to broadband adoption and utilization

- The National Telecommunications and Information Administration (NTIA) should explore the potential for public-private partnerships to improve broadband adoption by working with other federal agencies.
- Public and private partners should prioritize efforts to increase the relevance of broadband for older Americans.
- The federal government should explore the potential of mobile broadband access as a gateway to inclusion.
- The private sector and non-profit community should partner to conduct a national outreach and awareness campaign.

Address issues of accessibility for broadband adoption and utilization

- The Executive Branch should convene a Broadband Accessibility Working Group (BAWG) to maximize broadband adoption by people with disabilities.
- The FCC should establish an Accessibility and Innovation Forum.
- Congress, the FCC and the U.S. Department of Justice (DOJ) should consider modernizing accessibility laws, rules and related subsidy programs.

Expand federal support for regional broadband capacity-building, program evaluation and sharing of best practices

- Federal support should be expanded for regional capacity-building efforts aimed at improving broadband deployment and adoption.
- Congress and federal agencies should promote third-party evaluation of future broadband adoption programs.
- NTIA should establish a National Broadband Clearinghouse to promote best practices and information sharing.

Coordinate with Tribes on broadband issues

- The Executive Branch, the FCC and Congress should make changes to ensure effective coordination and consultation with Tribes on broadband-related issues.

9.1 UNDERSTANDING BROADBAND ADOPTION

On Feb. 23, 2010, the FCC published the results of its first Broadband Consumer Survey. This national survey of 5,005 adult Americans focused on non-adopters and the issues they face in adopting broadband. While many surveys track broadband adoption, this survey is one of the first efforts to oversample non-adopters.[6] This section builds off these survey results to develop a set of programs to improve the adoption and utilization of broadband services, focusing on the barriers faced by non-adopters.

Barriers to Adoption and Utilization

The 35% of adults who do not use broadband at home generally are older, poorer, less educated, more likely to be a racial or ethnic minority, and more likely to have a disability than those with a broadband Internet connection at home. The FCC survey identified three major barriers that keep non-adopters from getting broadband:

Cost. When prompted for the main reason they do not have broadband, 36% of non-adopters cite cost. Almost 24% of non-adopters indicate reasons related to the cost of service—15% point to the monthly service cost, and 9% say they do not want the financial commitment of a long-term service contract or find the installation fee too high. For 10% of non-adopters, the cost of a computer is the primary barrier. The additional 2% cite a combination of cost issues as the main reason they do not adopt.[7]

Digital Literacy. About 22% of non-adopters cite a digital literacy-related factor as their main barrier. This group includes those who are uncomfortable using computers and those who are "worried about all the bad things that can happen if [they] use the Internet."[8]

Relevance. Some 19% of non-adopters say they do not think digital content delivered over broadband is compelling enough to justify getting broadband service. Many do not view broadband as a means to access content they find important or necessary for activities they want to pursue. Others seem satisfied with offline alternatives. These non-adopters say, for instance, the Internet is a "waste of time."[9]

An important and cross-cutting issue is accessibility for people with disabilities. Some 39% of all non-adopters have a disability, much higher than the 24% of overall survey respondents who have a disability.[10] It is not a surprise that non-adopters include a disproportionately high share of people with disabilities. Americans with disabilities share many characteristics with other non-adopters (i.e., both groups are older and have lower incomes than adopters), but having a disability may be an independent factor contributing to lower levels of broadband adoption at home.[11] For example, some of the other impediments that people with disabilities face include:

- Devices often are not designed to be accessible for people with disabilities.[12]
- Assistive technologies are expensive (Braille displays, for example, can cost between $3,500 and $15,000).[13]
- Services, including emergency services, are not accessible.[14]
- Web pages and new media applications cannot be accessed by a person using a screen reader.[15]
- Internet-based video programming does not have captions or video descriptions offering an account of what is on the screen.[16]

Despite these barriers, ways that non-adopters use other forms of information and communications technology (ICT) bodes well for the future of broadband adoption. Some non-adopters have a positive view of the benefits of ICT; they buy and use such technology, even though they have not purchased broadband. For example, 80% of non-adopters have satellite or cable premium television, 70% have cell phones and 42% have at least one working computer at home.[17]

In addition to using ICT, many non-adopters have positive attitudes about the Internet. Fifty-nine percent of non-adopters strongly agree with the statement "the Internet is a valuable tool for learning;" 54% strongly agree that "it is important for children to learn to use the Internet;" and 37% strongly agree people can be more productive if they learn to use the Internet. This level of ownership of and interest in technology indicates that many non-adopters may be inclined to subscribe to broadband.[18]

Overcoming Barriers to Adoption and Promoting Utilization

The recommendations in this chapter address both adoption and utilization. "Adoption" refers to whether a person uses a broadband service at home or not; "utilization" refers to the intensity and quality of use of that connection to communicate with others, conduct business and pursue online activities. Research indicates that "differentiated use"—different levels of intensity and varied complexity of activities one pursues online—can affect the kind of offline benefits users experience.[24] Adoption is necessary for utilization, but utilization is

BOX 9-1:

Broadband Means Opportunity

Broadband is a platform for social and economic opportunity. It can lower the geographic barriers and help minimize socioeconomic disparities—connecting people from otherwise disconnected communities to job opportunities, avenues for educational advancement and channels for communication. Broadband is a particularly important platform for historically disadvantaged communities including racial and ethnic minorities, people with disabilities and recent immigrants. For example:

- In Santa Barbara County, Calif., a parent reads an email from her child's teacher. Although seemingly unexceptional, this event is actually quite remarkable because the teacher and the parent do not speak the same language. Using a donated foreign language translation program, a refurbished computer, heavily discounted Internet access and training provided through the local school system, this mother can now converse with her child's teacher for the first time.[19] The Computers for Families (CFF) program is a partnership between the Santa Barbara County Education Office and Partners in Education, a group of county business and education leaders that brings together the technological and educational resources to allow hundreds of families to benefit from the power of computers and the Internet.[20]
- Three in 10 families headed by a single mother live below the federal poverty line.[21] In 2001, to address the barriers that low-wage workers face in attaining skills, training and education, the New Jersey Department of Labor piloted a workforce development program in which single, working mothers received a computer, Internet access and online-skills training. The program had a 92% completion rate. Participants saw average annual wage increases of 14%, and several enrolled in community college, college programs and other educational offerings. All the women reported that they would not have completed a training program if it were not available at home—just one more demonstration of how online learning equalizes access to education and skills training.[22]
- In Tribal lands in Southern California, broadband helps bridge the physical distance between Tribal residents. Although 18 designated Tribal lands are located in the region, they are geographically separated and often isolated. In 2005, with a grant from Hewlett-Packard, the Southern California Tribal Chairmen's Association (SCTCA) launched the Tribal Digital Village. The initiative brought communications infrastructure, training and online content together. Because of the broadband provided via this initiative, the SCTCA was able to start its first for-profit business, Hi-Rez Printing.[23]

necessary to extract value from a connection.

While cost is the leading barrier to adoption, nearly two-thirds of non-adopters note that something else keeps them from getting broadband at home.[25] In addition to cost, lack of digital skills, irrelevance of online content and inaccessible hardware and software often work together to limit adoption.[26] For non-adopters to find broadband valuable enough to subscribe, they need a basic knowledge of how to find and use trustworthy, substantive content.[27] Similarly, if broadband costs fall because of lower prices or subsidies, consumers might be more willing to try it, in spite of doubts about its relevance or their own abilities to use it.

There is also an important social dimension to broadband adoption that cannot be overlooked. The primary incentive for broadband adoption is communication—two-way communication through e-mail, social networking platforms, instant messaging or video-chatting.[28] People find broadband relevant when the communities they care about are online, exchanging information and creating content.[29] Once online, individuals will stay online if they continue to find information and broadband applications that are useful and relevant to their lives and when the people around them do the same.[30] E-mailing friends and family is difficult if they do not also have e-mail.

Ultimately, broadband adoption and utilization are not about owning a specific piece of technology or subscribing to a service but about making the Internet work for people. Getting people online is a critical first step, but the goal must be to *keep* people online through sustainable efforts that promote utilization and help each user derive value from the Internet in his or her own way.

Federal Efforts

Historically, the federal government has supported Internet adoption through efforts that are part of broader programs. For example, the Community Connect program, run by the Rural Utilities Service, has granted more than $39 million to fund broadband infrastructure investment in 67 rural communities.[31] This program requires communities that apply to create a Community-Oriented Connectivity Plan, which must include a state-of-the-art community center that provides free Internet access to residents with the goal of facilitating economic development and enhancing educational and health care opportunities in rural communities.[32]

To take another example, from 1994-2004, NTIA's Technology Opportunity Program (TOP)* made 610 matching grants to Tribal, state and local governments, as well as health care providers, schools, libraries and non-profits, for self-sustaining adoption programs. The grants totaled $233.5 million and leveraged $313.7 million in local matching funds.[33] TOP emphasized how ICT could be efficiently and innovatively deployed. While this program often promoted broadband, broadband was not its central focus. TOP has not been funded since 2004, but many grantees have maintained operations with other funds. In this way, projects such as Austin Free Net, which provides technology training and access to residents of East Austin, Texas, and the Mountain Area Information Network, a community network for western North Carolina, continue to serve their communities.[34]

The American Recovery and Reinvestment Act of 2009 (Recovery Act), in addition to funding broadband deployment, marked the first large-scale federal broadband adoption effort. A minimum of $450 million within NTIA's Broadband Technology Opportunities Program (BTOP)* was set aside for sustainable broadband adoption programs and public computing centers.[35]

Thus far in the first round of BTOP funding awards, $15.9 million have been allocated for six public computer center projects and $2.4 have been for three sustainable broadband adoption projects.[36] The recipients include:

- Fast-Forward New Mexico, which will offer eight training courses on basic computer literacy, Internet use and e-commerce while providing outreach to Spanish-, Navajo- and Pueblo-speaking populations.[37]
- The Spokane Broadband Technology Alliance in the state of Washington,[38] which will train 12,000 individuals and 300 small businesses in courses ranging from basic computer skills to advanced multimedia production, e-commerce and online business applications. The training will take place at public libraries and other area sites.
- The Los Angeles Computer Access Network, which received $7.5 million to upgrade and expand 188 public computing centers that provide free access to broadband Internet.[39]

Additional awards are expected as this program continues.

State and Local Efforts

While the federal government has provided important financing for Internet adoption efforts, Tribal, state and local governments are often in the best position to identify barriers and circumstances unique to their communities.[40]

The Minnesota Ultra High-Speed Broadband Task Force final report provides an example of a state-level strategy to address adoption. Issued in November 2009, the report recommends that the state government promote adoption through general outreach and education and specific policies directed toward people who are not connected to the Internet for financial or other socioeconomic reasons.[41] To boost broadband adoption and utilization, the report suggested programs to make computers more affordable, including creating a clearinghouse of used computers, expanding the Minnesota Computers for Schools program and

* BTOP and TOP are distinct programs. BTOP was created and funded by the Recovery Act.

establishing a support mechanism to provide assistance for the cost of monthly broadband service for low-income consumers. The plan also suggested that the state explore a variety of partnerships to increase adoption and utilization.[42]

Local leaders can play an important role by building on existing social programs and partnering with community organizations that non-adopters already rely on as trusted sources of information.[43] They can tailor adoption efforts to address language barriers, lack of credit, low basic literacy levels and other issues faced by non-adopters.

Cities can also play a role. For instance, the City of Seattle has developed a number of initiatives to promote a "technology healthy community." In 2000, the City's Department of Information Technology and the City's Citizens Telecommunications and Technology Advisory Board, with the non-profit Sustainable Seattle, launched the Information Technology Indicators project. Through this project, the City identified a set of goals for a technology healthy community and indicators to track their progress. [44] Using these indicators, the city saw its broadband adoption rate grow from 18% in 2000 to 74% in 2009.[45]

Over the past several years, Seattle has taken a number of steps to address gaps in access, digital literacy and content. The City also has a number of ongoing digital inclusion initiatives including: The Bill Wright Technology Matching Fund which funds community-driven technology projects; promoting public access terminals in public places; Puget SoundOff, a youth-driven online portal to promote civic engagement and digital skills[46]; and, Seniors Training Seniors in Technology, a peer education program helping seniors learn basic computer and Internet skills.[47]

The point is that there is no "one-size-fits-all answer. States and municipalities across the country are working on specific efforts to increase adoption and utilization of broadband. Through local action, coupled with federal support, the US can connect people with technology to improve their lives.

Guiding Principles for Broadband Adoption and Utilization

Creating the conditions necessary to promote broadband adoption and increase utilization requires a range of activities. The federal government has a role in providing support to people with low incomes, ensuring accessibility, funding sustainable community efforts, convening key stakeholders and measuring progress. Tribal, state and local governments can develop and implement specific programs to meet their unique needs. Non-profits and philanthropic organizations often work cooperatively with government, focusing on issues important in their communities. Private industry also has a stake; businesses stand to gain because new adopters can become skilled customers and employees.

All stakeholders should work together on broadband adoption issues, guided by a set of consistent principles:

- *Focus on the barriers to adoption.* Successful efforts address multiple barriers to adoption simultaneously. They combine financial support with applications and training that make broadband connectivity more relevant for non-adopters. Relevance, in turn, boosts the technology's perceived value and affordability.[48]
- *Focus on broadband in the home.* While libraries and other public places are important points of free access that help people use online applications, home access is critical to maximizing utilization.[49] Broadband home access can also help rural, low-income, minority and other communities overcome other persistent socioeconomic or geographic disparities.[50]
- *Promote connectivity across an entire community.* New users adopt broadband to stay in touch with others.[51] In addition, people are more likely to adopt and use broadband if the people they care about are online[52] and if they see how broadband can improve their quality of life in key areas such as education, health care and employment.[53]
- *Promote broadband utilization.* Promoting access and adoption are necessary steps, but utilization is the goal. People must be able to use broadband to efficiently find information or use applications to improve their lives.[54] A connection is just the beginning.
- *Plan for changes in technology.* Adoption programs have to evolve with technology. Both the trainers and the equipment they use to serve non-adopters must employ up-to-date technology and applications.
- *Measure and adjust.* Measurement and evaluation are critical to success because they allow programs to make adjustments on an ongoing basis.[55]
- *Form partnerships across stakeholder groups.* Promoting adoption requires federal commitment, state, local and Tribal action, industry partnership and support from non-profits and philanthropic organizations. Sustainable broadband adoption and use will require efforts from all partners.

9.2 ADDRESSING COST BARRIERS TO BROADBAND ADOPTION AND UTILIZATION

As mentioned, some 36% of non-adopters cite a financial reason as the main reason they do not have broadband service at home. Nearly a quarter cite service-related concerns, while one in 10 says that the cost of getting a computer is too high.

To address this barrier directly, the FCC's Lifeline and Link-Up programs—which focus on support for telephone service—should be expanded to include broadband support.

RECOMMENDATION 9.1: The Federal Communications Commission (FCC) should expand Lifeline Assistance (Lifeline) and Link-Up America (Link-Up) to make broadband more affordable for low-income households.

- **The FCC and states should require eligible telecommunications carriers (ETCs) to permit Lifeline customers to apply Lifeline discounts to any service or package that includes basic voice service.**
- **The FCC should integrate the expanded Lifeline and Link-Up programs with other state and local e-government efforts.**
- **The FCC should facilitate pilot programs that will produce actionable information to implement the most efficient and effective long-term broadband support mechanism.**

Forty percent of adults with household incomes less than $20,000 have broadband at home, compared to 93% with household incomes greater than $75,000.[56] Many people with low incomes simply cannot afford the costs associated with having a broadband connection at home. To make broadband more affordable and overcome some of the barriers that have kept the penetration rate for these households low, the FCC should extend low-income universal service support to broadband.

The FCC created Lifeline Assistance and Link-Up America in the mid-1980s to ensure that low-income Americans could afford traditional local telephone service. Lifeline lowers the cost of monthly service for eligible consumers by providing support directly to service providers on behalf of consumer households. Link-Up provides a one-time discount on the initial installation fee for telephone service. Enhanced support is available for Tribal lands. The programs helped increase low-income telephone subscribership from 80.1% in 1984 to 89.7% in 2008.[57] The FCC expects to distribute approximately $1.4 billion in low-income support during calendar year 2010.[58]

Approximately 7 million of an estimated 24.5 million eligible households (less than 29%) participated in Lifeline in 2008.[59] Statewide participation rates vary dramatically; some states have participation rates of more than 75% and others have rates less than 10%.[60]

There are several reasons for this variance across states. They include different consumer technology preferences; restrictions on consumers' ability to apply the Lifeline discount to certain types of services; lack of service options; lack of information about the program; and differences in funding levels, enrollment procedures, eligibility criteria and outreach and awareness efforts.[61]

While the FCC establishes default eligibility criteria for Lifeline and Link-Up, states that provide additional state-funded discounts can determine their own eligibility requirements.[62] Some states, such as Florida, rely on the federal default eligibility criteria. Others, like Vermont, use more liberal criteria so that more people are eligible for support. Many states allow the discount to be used on any basic voice service—including voice service bundled with other services—as well as packages that include optional features such as caller ID or call waiting. In other states, consumers are limited to specific Lifeline-branded service offerings. Finally, some states play a more active role in managing eligibility certification, outreach and verification, while others leave the burden to service providers.

Lifeline discounts apply only to service (not customer premises equipment) offered by participating ETCs. Each eligible household is entitled to a discount on only one voice line, either fixed or mobile.

The FCC and states should require eligible telecommunications carriers (ETCs) to permit Lifeline customers to apply Lifeline discounts to any service or package that includes basic voice service. By clarifying that Lifeline consumers can apply the current Lifeline discount to any offering that includes voice and data service, the FCC and states can help low-income consumers benefit from the same discounts provided through bundled service offerings that are affordable to wealthier households in the United States. Many of these bundled offerings include broadband services. Letting consumers apply their Lifeline discounts to bundled offerings will help make broadband more affordable.

Likewise, as low-income support is extended to cover broadband, the FCC should ensure that consumers are free to apply Lifeline discounts to any service offering or package containing a broadband service that meets the standards established by the FCC.[63]

The FCC should also integrate the expanded Lifeline and Link-Up programs with other state and local e-government efforts. Under the current Lifeline program, ETCs are responsible for consumer outreach and confirming consumer eligibility. Under this model, multiple service providers collect and maintain personal consumer information to determine eligibility.[64] Requiring providers to conduct outreach and verify eligibility may add to existing disincentives to serving historically underserved, low-income populations.[65] This, in turn, affects consumer awareness of and participation in these programs.

State social service agencies should take a more active role in consumer outreach and in qualifying eligible end-users. Agencies should make Lifeline and Link-Up applications

routinely available and should discuss Lifeline and Link-Up when they discuss other assistance programs. The FCC should continue to develop and provide educational and outreach materials for use in these efforts.

Furthermore, the FCC should encourage state agencies responsible for Lifeline and Link-Up programs to coordinate with other low-income support programs to streamline enrollment for benefits. Unified online applications for social services, including the low-income programs, and automatic enrollment for Lifeline and Link-Up based on other means-tested programs are potential examples of such efforts.[66] For example, following its introduction of an automatic enrollment process, the state of Florida has seen increased Lifeline participation.[67] The FCC should also work with the states and providers to clarify obligations and identify best practices for outreach, certification and verification of eligibility. As part of these efforts, and in conjunction with Universal Service Administrative Company (USAC) reform efforts outlined in Chapter 8, the FCC should also consider whether a centralized database for online certification and verification is a cost-effective way to minimize waste, fraud and abuse.

The broadband marketplace is much more complex than the traditional world of voice telephony that the existing Lifeline program was designed to support. To make broadband more affordable, the low-income support program should expand provider eligibility to include any broadband provider selected by the consumer—be it wired or wireless, fixed or mobile, terrestrial or satellite—that meets minimum criteria to be established by the FCC.[68] Doing so will maximize consumer choice and stimulate innovation in serving low-income users.[69]

As the FCC designs a Lifeline broadband program, it should consider its recent experience with expanding Lifeline to non-facilities-based prepaid wireless providers. That change substantially increased participation in Lifeline and likely made telephone service more available to people who are less likely to subscribe to wireline voice services. As noted in Chapter 8, increased participation (associated with extending support to prepaid mobile) is one of the factors that led USAC to project a 38% year-over-year increase in low-income disbursements for calendar year 2010.[70] Extending government support to prepaid mobile service has created additional complexities when it comes to eligibility and verification.

To ensure Universal Service Fund (USF) money is used efficiently, the FCC should begin the expansion of Lifeline to broadband by facilitating pilot programs that will experiment with different program design elements. The pilots should determine which parameters most effectively increase adoption among low-income consumers by examining the effects of:

- Different levels of subsidy and/or minimum-payment requirements for consumers.
- A subsidy for installation (equivalent to Link-Up).
- A subsidy for customer premises equipment (CPE) such as aircards, modems and computers.
- Alternative strategies for integrating Lifeline into other programs to encourage broadband adoption and digital literacy. For instance, when signing up for Lifeline, new subscribers could be provided with packets of information that include sources of refurbished computers and digital literacy courses.[71] Additionally, they could receive information about Lifeline from organizations offering digital literacy courses or refurbished computers.

The FCC should also consider the unique needs of residents on Tribal lands.

The FCC should explore ways to conduct the pilots through competitive processes that would encourage providers to test alternative pricing and marketing strategies aimed at maximizing adoption in low-income communities.[72] Upon completion of the pilot programs, the FCC should report to Congress on such issues as whether CPE subsidies are a cost-effective way to increase adoption. After evaluating the results by looking at outputs such as total cost per subscriber, subscriber increases and subscriber churn rate, the FCC should begin full-scale implementation of a low-income program for broadband.

RECOMMENDATION 9.2: The FCC should consider free or very low-cost wireless broadband as a means to address the affordability barrier to adoption.

Another option that can reduce the affordability barrier is the use of special spectrum rules as an inducement to provide a free (or very low-cost), advertising-supported service. The FCC could develop rules for one or more spectrum bands requiring licensees to provide a free or very low-cost broadband service tier. This service would act as a complement to the Lifeline Program.

A free broadband service requirement would be similar to the way in which America currently provides universal access to video services. The FCC provides spectrum for broadcast television stations on the condition they offer a free service in the public interest. As a result, all Americans have access to a free, over-the-air video service: broadcast television, in most instances, supported by advertising. Broadcast television provides all Americans a basic package of news, information and other programming. This free service offers fewer channels and less choice in programming than paid services offer. Indeed, the difference in offerings is so great that despite the financial differences between free and $49, which is the average monthly price of a multichannel video subscription, more than 86% of American households subscribe to a paid service.[73]

The FCC could take a similar approach to broadband: license spectrum through an auction, conditioned on the offering of a free or very low cost broadband service. This free or very-low cost

service would provide sufficient connectivity for a basic package of broadband applications.[74] As with broadcast television, the consumer would still need to purchase a device that could be used to access the service. Depending on the specific details of implementation, a free or very low-cost service may be unlikely to compete with paid services that offer greater capabilities.

The FCC should consider both the likely costs and benefits of this program. If undertaken, many more consumers who cannot afford any broadband or Internet service would have access to 21st century communications infrastructure—especially important as public-interest media content, including local news and information, is increasingly provided online. In addition, upon becoming operational, such a service could reduce the assessment of USF contributions needed to support a Lifeline broadband service. However, costs of this approach would include lower auction revenues (due to the conditions placed on use of the spectrum) and the opportunity cost of using the spectrum for other purposes.

The FCC would need to ensure that consumers actually receive the benefits of the free (or very low-cost) broadband program—for example, ensuring that devices tuned to the applicable frequency band(s) are widely available at an affordable price and acceptable bandwidth levels, and that sufficient capacity is reserved for the service. Historically, free advertising-supported telecommunications services have not had the same success as free over-the-air television services. But they might meet with more success if an appropriate business model can be identified.

Decisions about the use of spectrum for a particular purpose should be reached with special attention paid to whether a suitable band is available for this purpose. These decisions should be reached at the same time that the Lifeline pilot programs are launched.

9.3 ADDRESSING DIGITAL LITERACY BARRIERS TO BROADBAND ADOPTION AND UTILIZATION

Tasks that experienced users take for granted—using a mouse, navigating a website or creating a username and password—can be daunting for new or less experienced users of the Internet. As described earlier, 22% of non-adopters cite digital literacy as their main barrier to broadband adoption. This group includes people who are uncomfortable using computers and those "worried about all the bad things that can happen if [they] use the Internet."[75]

Digital literacy is an evolving concept. Though there is no standard definition, digital literacy generally refers to a variety of skills associated with using ICT to find, evaluate, create and communicate information. It is the sum of the technical skills and cognitive skills people employ to use computers to retrieve information, interpret what they find and judge the quality of that information. It also includes the ability to communicate and collaborate using the Internet—through blogs, self-published documents and presentations and collaborative social networking platforms. Digital literacy has different meanings at different stages of a person's life. A fourth grader does not need the same skills or type of instruction as a 45-year-old trying to re-enter the job market. Digital literacy is a necessary life skill, much like the ability to read and write.

The recommendations in this section will help all Americans to develop basic digital skills, lowering barriers to broadband adoption and utilization.

RECOMMENDATION 9.3: The federal government should launch a National Digital Literacy Program that creates a Digital Literacy Corps, increases the capacity of digital literacy partners and creates an Online Digital Literacy Portal.

- **Congress should consider providing additional public funds to create a Digital Literacy Corps to conduct training and outreach in non-adopting communities.**
- **Congress, the Institute of Museum and Library Services (IMLS) and the Office of Management and Budget (OMB) should commit to increase the capacity of institutions that act as partners in building the digital literacy skills of people within local communities.**
  - **Congress should consider providing additional public funds to IMLS to improve connectivity, enhance hardware and train personnel of libraries and other Community-based organizations (CBOs).**
  - **OMB consulting with IMLS should develop guidelines to ensure that librarians and CBOs have the training they need to help patrons use next-generation e-government applications.**
- **Congress should consider funding an Online Digital Literacy Portal.**

An independent study commissioned by the FCC and conducted by the Social Science Research Council used qualitative research techniques to examine broadband adoption and use in context, particularly in low-income communities. The report draws on focus groups, interviews and group conversations with non-adopters, librarians, community organizers, teachers, human service workers, health professionals, AmeriCorps

volunteers and others involved in supporting digital literacy and broadband use in their communities.[76]

The report highlights the important role of communities in supporting digital literacy: Non-adopters and new users often rely on the assistance of others to get online or get one-on-one support when they use the Internet. As the FCC Survey and a recent survey by the Joint Center for Political and Economic Studies found, these are most often family and friends, or trusted intermediaries like librarians and social service providers.[77] Very rarely, however, is it someone's only job to provide technical assistance or training in their community.[78]

The federal government should ensure that all citizens have access to the online and offline resources they need to develop basic digital literacy by launching a National Digital Literacy Program.[79] Such a program would have three closely related parts: the creation of a Digital Literacy Corps, a commitment to increasing the capacity of local institutions that act as partners in building digital literacy and the creation of an Online Digital Literacy Portal.

Creating A Digital Literacy Corps

Many digital literacy training programs, both in the United States and abroad, rely on face-to-face training provided by trusted resources within local communities.[80] Whether using intergenerational training that allows youth committed to community service to train senior citizens,[81] peer-to-peer training that enhances connections among seniors or youth[82] or mentoring models under which skilled college graduates reach out to underprivileged citizens,[83] these programs have helped non-adopters become more comfortable with technology while also fostering volunteers' commitment to community service and increasing their confidence.

Efforts to date have provided valuable lessons; a national program can build on these successful models and ensure the scale needed to address digital literacy barriers. To address this national need, Congress should consider providing additional public funding for NTIA to create a Digital Literacy Corps. In collaboration with the Corporation for National and Community Service (CNCS), NTIA should design and administer a Corps that builds on recognized best practices for both national service and technology learning.

NTIA and CNCS can explore best-practice models for building and managing the Corps, leveraging lessons learned from existing programs like AmeriCorps, Senior Corps and Learn and Serve America. CNCS can also leverage its own experience with the digital television transition, during which it made sure that AmeriCorps members were in communities across the country helping individuals become more comfortable with unfamiliar technology.

CNCS can provide additional lessons on how to build the national scale and operational capabilities (including recruitment, training and technical assistance) to support locally based efforts to provide face-to-face assistance for individuals who need help acquiring digital skills.[84] CNCS's history of helping people of all ages who are interested in serving their communities while learning valuable life skills will help ensure that Corps members receive appropriate training through programs that rely on best practices to adapt to the needs of each community.

This training should ensure that Corps members gain a sufficient understanding of digital literacy and learn how to teach relevant lesson plans. It should also be designed to improve Corps members' own digital literacy skills, as well as other professional skills that can enhance future career prospects.

The Corps should target segments of the population that are less likely to have broadband at home, including low-income individuals, racial and ethnic minorities, senior citizens, people with disabilities, those with lower education levels, people in rural communities, those on Tribal lands and people whose primary or only language is not English.

Efforts should be made to recruit members with foreign language skills who can work in communities where the primary language spoken is not English. Research indicates the dearth of non-English online content and the lack of comfort with English are correlated with low levels of broadband adoption. Just 20% of Hispanics who chose to take the FCC survey in Spanish have broadband at home. For these non-adopters, perceived irrelevance of broadband and lack of digital skills are the primary barriers to adoption.[85] One-on-one digital skills training in a user's native language with accompanying content can begin to alleviate the effects of cultural or linguistic isolation.

Some Corps members might be based out of urban schools where they could work with teachers, staff and administrators to create digital literacy lesson plans and integrate digital skills into the teaching of other subjects (see Box 9-2). Other members might work with broader social service programs to provide digital literacy training as part of a workforce development program. Still other members could incorporate demonstration projects into training activities in rural areas to show the relevance of broadband technology to rural non-adopters and to encourage people to invest time in digital skills training.

Corps members will help non-adopters overcome discomfort with technology and fears of getting online while also helping people become more comfortable with content and applications that are of immediate and individual relevance. For example, Corps members might help people research health information, seek employment, manage finances and engage with or utilize government services.

Beyond their service terms, former Corps members would bring technology teaching skills back to their own

communities, magnifying the impact of the program. As happens in numerous CNCS programs currently, Corps members would build other basic work skills: time management, team leadership, planning, contingency management and critical thinking. For example, 90% of AmeriCorps members reported learning new skills as part of their service, and, of those members, nearly all of those members (91%) said they use those skills in their education or career pursuits following the program.[86]

BOX 9-2:

A Model for a Digital Literacy Corps

In 42 locations across the city of Chicago, a group of young people is helping others unlock the potential of information communication technology. These young volunteers, mostly in their 20s, are CyberNavigators who, in conjunction with librarians in the Chicago Public Library system, help patrons with everything from basic computer instruction to advanced computer troubleshooting.

These young people teach classes aimed at the beginning computer user—Internet Basics, Mouse Skills and Introduction to e-mail—to support adults trying to enter the workforce after an extended absence. For example, CyberNavigators work with job seekers to update their résumés, set up e-mail accounts, post résumés online and e-mail potential employers.

The CyberNavigators provide one-on-one instruction, at times roaming the library to help users as necessary. Many speak a language other than English, enabling them to better assist a broader group of residents.[87]

Increasing the Capacity of Community Partners

For millions of Americans, libraries and other public computing centers are important venues for free Internet access. Libraries are established institutions where non-adopters know they can access the Internet, but community centers, employment offices, churches and other social service offices play increasingly important roles. Low-income Americans and racial and ethnic minorities, in particular, rely on public institutions and community access centers for Internet access. Over half (51%) of African Americans and 43% of Hispanics who use the Internet do so at a public library.[88]

But public computing centers provide more than just free access to the Internet. They provide supportive environments for reluctant and new users to begin to explore the Internet, become comfortable using it and develop the skills needed to find, utilize and create content.[89] Patrons of these centers overwhelmingly express the value of the personnel who staff them and can offer one-on-one help, training or guidance.[90]

Researchers from the SSRC have found that community-based organizations, such as libraries and non-profits, are key institutions in underserved and non-adopting communities—often providing Internet access, training and support services even when those activities fall outside their traditional missions.[91] While the challenges and opportunities they face vary, these libraries and other community partners are critical to improving digital proficiency in communities.[92]

The United States has more than 16,000 public libraries, 99% of which provide free Internet access. Ninety-one percent of libraries overall and 97% of libraries serving high-poverty areas report offering formal training classes in general computer skills, and 93% offer classes in general Internet use.[93]

However, many libraries lack the computer equipment to meet the needs of today's patrons. Eight in 10 libraries report hardware shortages that produce waiting lists during part or all of the day. More than 80% of libraries enforce time limits on use; 45% of libraries enforce time limits ranging from 31 minutes to 60 minutes,[94] which is not enough time to complete many popular and highly useful tasks such as the mathematics review course for the General Educational Development (GED) tests, which can take up to 150 minutes.[95] In addition, other CBOs such as community centers, churches and local non-profits lack resources to maintain their own computers, technical support and Internet access (see Box 9-3).[96]

Providing Resources for Digital Literacy Partners

Libraries and other CBOs need additional resources to continue to serve as access points and partners in achieving the country's digital literacy goals. IMLS administers the Library Services and Technology Act (LSTA) program which funds the long-standing Library Grants to States Program[97] and Native American Library and Museum Services grants. From 2003 to 2008, these programs distributed over $800 million in federal grants to states and territories. Professionals across the country credit LSTA with helping libraries improve technology, engage the public and establish new models for serving their communities. The State Library of Maryland, for example, reports that funds distributed through the program have "impacted [their] ability to stay on the leading edge of technology and in the delivery of resources."[98] The recommended allocation could enhance connectivity, hardware and personnel training at these community anchor institutions.

IMLS should develop guidelines for public access technology based on populations served and organization size. These guidelines would help libraries and CBOs assess their needs for public access workstations, portable devices and bandwidth. IMLS should work with these organizations to develop guidelines and review them annually to reflect changing technology and practices.

BOX 9-3:

Community-Based Organizations as Trusted Resources for Digital Literacy

The Centro Cultural serves as a link between the digital world and the rural community of Moorhead, Minn. A community center with a public computer lab, the Centro connects community members with online resources—such as jobs, scholarships and online civic engagement opportunities—that directly affect their lives. The staff has demonstrated success in reaching out to low-income, high-risk youth about the opportunities that exist on the Internet.

Owing to its popularity and the diverse populations it serves, the Centro has experienced higher than expected demand. During the last year, it has seen an increase in its electricity bills and expenses for maintaining equipment and has had to hire a full-time employee to run the lab. In working with refugees and recent immigrant youth, the Centro Cultural has found that it is difficult to provide all of the resources needed to make their broadband experience meaningful. For example, keyboards become a barrier when users do not speak English. Centro staff members have recognized that accessing the Internet in an environment that is multicultural and multilingual creates a more meaningful experience for users of diverse cultural and linguistic backgrounds.

After public access technology guidelines are developed, Congress should consider providing additional public funds to expand organizational training and capacity—with a matching requirement and minimum percentage set aside for organizations other than libraries. These funds would enhance connectivity, hardware and personnel training at libraries and other public access points and shorten the wait for broadband access at those sites.

Training the Personnel of Digital Literacy Partners

As government services increasingly go online, libraries shoulder responsibility for helping people learn how to use these online services.[99] Eighty percent of libraries report that they help patrons use e-government applications. However, some librarians say they have been overwhelmed by patrons seeking help with government services and online programs, including applications for digital television converter box coupons, Federal Emergency Management Agency forms following Hurricane Katrina and Medicare Part D paperwork. These librarians also say that they did not receive suitable training or information from the agencies that provided the e-government solutions.[100]

OMB should consider developing guidelines to help federal agencies develop e-government services that take into account the role of public libraries and CBOs as delivery points. OMB should consult with IMLS to develop the guidelines. Agencies should work with IMLS to develop online tutorials for using government websites and toolkits for librarians who help patrons use online government services.

Creating an Online Digital Literacy Portal

Every American should have access to free, age-appropriate content that imparts digital skills. This content should be available in a user's native language and should meet the accessibility requirements applicable to federal agencies under Section 508 of the Rehabilitation Act.

To achieve this, the Federal Trade Commission (FTC), FCC, U.S. Department of Education and NTIA should launch an Online Digital Literacy Portal. Congress should consider providing public funds to support this effort, and these agencies should partner with the technology industry and education sector to approve or create high-quality online lessons that users can access and use at their own pace. The collaboration between the agencies and non-government partners should be similar to the efforts that have produced the online safety resources available through OnGuardOnline.gov.[101] Offline resources will be important complements to this online content. They should be made available for printing or ordering and distributed by libraries, CBOs and other organizations.

This collaborative model has been successful in programs such as the U.S. Department of Housing and Urban Development (HUD) Community Outreach Partnerships Program, which brings institutions of higher education and community partners together to revitalize communities. Historically Black Colleges and Universities (HBCUs), Hispanic-Serving Institutions Assisting Communities (HSIACs) and Tribal Colleges and Universities (TCUs) serve critical roles educating members of minority communities in the United States.[102] In addition to their educational missions, through the Community Outreach Partnerships Program, these organizations provide links to community employment assistance, child care, health care information, fair housing assistance, job training, youth programs and other services. As crucial community institutions and trusted sources of information, HBCUs, HSIACs and TCUs could also serve as offline ambassadors to promote digital literacy and other national digital priorities.

Executive Branch agencies such as HUD and NTIA should also use existing relationships—for example, with Neighborhood Networks and Public Computing Center grant recipients—to distribute outreach materials associated with the Online Digital Literacy Portal. E-rate recipients should also be encouraged to promote the portal. Chapter 11 details how recipients of E-rate funds could use their facilities to allow community members to build digital literacy skills through after-hours access to school computing labs.

The Online Digital Literacy portal should be evaluated after

two years to assess its impact. The evaluation should consider, among other metrics, the total number of individuals accessing the portal, the number of individuals from specific target populations accessing the portal and the effectiveness of different offline resources in promoting the portal.

9.4 ADDRESSING RELEVANCE BARRIERS TO BROADBAND ADOPTION AND UTILIZATION

As mentioned, 19% of non-adopters say they do not think digital content delivered over broadband is compelling enough to justify getting broadband service.[103] Many Americans may not feel broadband can help them achieve specific purposes and do not view online resources as helpful to their lives.[104] Others seem satisfied with offline alternatives. These respondents say, for example, that the Internet is a "waste of time."[105] The country has a unique opportunity to spur adoption by making broadband content relevant to these non-adopters.

Many federal agencies, from HUD to the Social Security Administration (SSA), already administer programs that support disconnected Americans, including people with low incomes and senior citizens. These agencies can serve as advisers and channels for outreach, training and information to link the populations they serve with the digital world.

This effort will require more than federal action. The federal government should support the public-private partnership model to implement these programs at the local level; private, non-profit and community-based entities should work together to draw people online, particularly those that under adopt. Using targeted, culturally relevant messaging and trusted community intermediaries, these groups should work together to inform their communities about the tangible benefits of broadband.

Finally, while the recommendations in this section focus primarily on boosting adoption of fixed Internet at home or at public access points, this plan recognizes that Internet use on handheld devices may be a gateway for home broadband adoption. Further investigation into consumer use of wireless devices is necessary.

RECOMMENDATION 9.4: The National Telecommunications and Information Administration (NTIA) should explore the potential for public-private partnerships to improve broadband adoption by working with other federal agencies.

NTIA should consider supporting public-private partnerships of hardware manufacturers, software companies, broadband service providers and digital literacy training partners to improve broadband adoption and utilization by working with federal agencies already serving non-adopting communities. Congress should consider providing additional public funds, or NTIA should use existing funds to support these partnerships.

Getting people online and connected to technology means engaging non-adopters where they are. Low-income and other vulnerable populations—groups that make up a disproportionate share of non-adopters of broadband—may already receive government services or participate in ongoing public programs. To bring non-adopters online, these agencies should integrate broadband connectivity into their goals, services and operations (see Box 9-4).

These partnerships would support the communities hit hardest by poverty. Participants would be eligible to receive discounted technology products, reduced-priced service offerings, basic digital literacy training and ongoing support. In addition, these partnerships would offer customized training, applications and tools. Government agencies could facilitate and help qualify participants to receive technology products and inspire people to use the Internet. Agencies could advise industry and non-profit partners how to make broadband service important to people's lives, while simultaneously making agency operations more efficient.

For example, a public-private partnership program specifically targeting people living in HUD-subsidized housing could reach more than nine million low-income people including nearly four million school-aged children, more than 1.4 million older Americans and nearly one million households headed by people with disabilities.[106] HUD households, including those on Tribal lands, are often located in areas of concentrated poverty with limited educational and employment opportunities.[107]

While families with school-age children generally have higher-than-average levels of broadband adoption, families with annual income less than $20,000, such as the ones living in HUD housing, are less likely than higher-earning families to have broadband service in the home.[108] Children from low-income families that cannot afford broadband devices or services are at a disadvantage relative to their connected peers. Recent surveys have found that 71% of teens say the Internet has been the primary source for recent school projects; 65% of teens go online at home to complete Internet-related homework.[109]

Similar partnerships, working with SSA, could benefit the seven million children and adults with disabilities who receive Supplemental Security Income (SSI) under the program run by the SSA to provide financial assistance to these Americans.[110] Like HUD, SSA programs would combine contributions from private and non-profit partners to create and fund broad

solutions that open the way for SSI recipients to receive a similar package of discounted hardware and broadband service, as well as access to relevant software, training and applications.

Initially, HUD, SSA, the U.S. Department of Education and the U.S. Department of Agriculture are high-impact agencies for partnership programs to target. But interactions with other agencies could provide future opportunities for partnerships to reach non-adopters.

RECOMMENDATION 9.5: Public and private partners should prioritize efforts to increase the relevance of broadband for older Americans.

The broadband adoption rate for Americans over the age of 65 is 35%—well below the national average. The average age of people who identify relevance as their main barrier to getting online is 61.[111] The lag in broadband adoption is particularly acute for older African Americans and Hispanics. Just 21% of African American senior citizens and 23% of Hispanic seniors have broadband. This means that roughly 1.2 million African American and Hispanic seniors do not have broadband at home.[112]

While cost and lack of comfort with technology are almost certainly impediments to older Americans adopting broadband, data indicate that relevance is an issue as well. Experience has shown that older Americans will adopt broadband at home when exposed to its immediate, practical benefits and after receiving focused, hands-on training (see Box 9-5).[113]

The FCC should work with the National Institute on Aging (NIA) to conduct a survey of older Americans to more clearly identify barriers to their adoption of broadband technology. The survey should particularly focus on relevance and skills. Service providers, other federal agencies and non-profit agencies that serve as trusted information sources can work together to develop government initiatives, broadband service offerings, online tools and content that give people a reason to be online, a low-cost way to do it and an easy way to do the things they need to do.

In addition, the FCC and NIA should work together to identify how to best target adoption programs to older Americans. These programs should address the social infrastructure that supports adoption, including family members and others who care for older Americans, and organizations that serve as trusted sources of information. This work should focus on incorporating the needs of older Americans into the implementation of other recommendations in this section, such as the National Digital Literacy Program, the Best Practices Clearinghouse and any programs to improve broadband affordability for low-income populations.

One way to increase the relevance of broadband for older Americans is to highlight how broadband can improve their access to health care information and services. Broadband enables telemedicine solutions like videoconferencing and remote monitoring, which allow for better health management, lower health care costs and effective aging-in-place programs (see Chapter 10). Numerous initiatives, led by partnerships among

BOX 9-4:

Using Broadband to Create Stronger Communities in Washington, D.C.

Engaging people where they live has already proven to be a successful program model, as demonstrated by the example of Edgewood Terrace, a mixed-income housing complex in northeast Washington, D.C. Through a joint effort, the Community Preservation and Development Corporation, HUD and the U.S. Department of Commerce's TOP initiative developed a strategy to create a stronger community using broadband.

Each of Edgewood Terrace's 792 residences is wired for broadband. But connections are only one part of the overall strategy for this community. Edgewood Terrace's 2,400 network-registered residents use subsidized devices to connect to the Internet and to a specially tailored intranet known as the EdgeNet. The EdgeNet gives residents free e-mail accounts and access to an online forum which residents use to exchange community information and news. Community empowerment staff members have worked with residents to create training classes on community issues.

Beyond the walls of the housing complex, project partners use broadband to connect residents with social services, counseling, financial and educational resources. The community operates learning centers where residents take instructional classes. In one course, the Career and Skills Enhancement Program, students receive information technology (IT) training, skills training and assistance using the Internet to search for jobs. Other courses focus on career preparation and building digital skills (for youth) or health IT (for seniors).

Edgewood Terrace residents and the community have experienced direct benefits as a result of these harmonized efforts. School attendance is up, graduates of IT skills training courses have seen an increase in their average incomes and community residents report feeling more engaged. Community members are using broadband as a tool to accomplish shared goals and create a more involved neighborhood.

The example of Edgewood Terrace makes clear that using existing agency channels and relationships to incorporate broadband into people's lives can have a transformative impact on traditionally underserved communities.

the medical community, the private sector and the academic and research community, are underway.[114]

In addition, the private sector, in collaboration with non-profits that serve older Americans, could launch a competition to invite development of applications that enhance the social benefits of broadband for older Americans. Social networking tools can help older adults to reconnect, to stay connected with others or to expand their social network to people they could never have met in person without traveling.[115] Research shows that social networking can help prevent depression[116] and provide information resources, feedback and support.[117] Despite these benefits, older adults rarely use popular social networking websites such as Facebook and MySpace,[118] which were designed for younger, more tech-savvy users. A competition to encourage the development of "entry-level" social networking applications for older Americans could induce innovators to direct their attention to the needs of this community and encourage older Americans to adopt other broadband applications in the future.

BOX 9-5:

A Web Portal for Senior Citizens

The Brooklyn, N.Y., non-profit Older Adults Technology Services (OATS) encourages older adults to use information technology to enhance their quality of life. In addition to specially targeted training methods and device support, OATS has developed a model to engage older adults with information technology by aggregating useful, trustworthy information.

SeniorPlanet is a Web portal for older adults. It promotes health, wellness and quality-of-life improvements. Developed by OATS in 2006, SeniorPlanet is a grassroots digital community seeded with trusted resources and improved by users. The site includes a forum for resource exchanges, an events calendar and user-created blogs. Through SeniorPlanet, a person can register to attend a seminar on Internet safety, ask a technology question, create and share content or find information about legal services in the New York area.

RECOMMENDATION 9.6: The federal government should explore the potential of mobile broadband access as a gateway to inclusion.

Although home broadband adoption (of wireline or fixed wireless technology) is lower for African Americans and Hispanics, these groups are relatively heavier users of mobile Internet. Although African Americans and Hispanics are as likely as other demographic groups to own a cell phone (86% do), they are more likely to have ever accessed the Internet on a mobile handheld device.[119] This handheld access may or may not be high-speed; it is difficult to determine in a survey whether participants' access occurs over 3G networks. Research also indicates that handheld online access is often a supplementary access path rather than a substitute.[120]

As broadband technology and devices continue to evolve, mobile broadband applications may become important gateways to broadband.[121] The FCC should conduct an in-depth examination of consumer mobile use with particular focus on Americans with lower broadband adoption rates—low-income households, people with lower education levels, seniors, non-English speakers and rural Americans. Any study should also consider mobile use among racial and ethnic minorities that tend to have higher than average use of the mobile Internet.

The results of the study will give developers, community leaders and private industry insight into potential opportunities to use mobile Internet to support individuals and communities.

RECOMMENDATION 9.7: The private sector and non-profit community should partner to conduct a national outreach and awareness campaign.

How people perceive the Internet shapes how they use it. People with strong concerns about potential hazards online reported engaging in a narrower range of activities online than users without those worries.[122] For broadband to be beneficial to their lives, consumers need to be aware of both the benefits of broadband as a means for solving everyday problems and of ways to manage potential hazards. While digital literacy training supports this goal, it is important to explicitly demonstrate the relevance of broadband to people's lives in order to create comfort and familiarity with technology in communities.[123]

Leading media, broadband providers and other technology companies should partner with national non-profits with strong ties to underserved communities to conduct a nationwide outreach and awareness campaign.[124]

The campaign should specifically target key segments of non-adopters such as the elderly, low-income Americans, ethnic and racial minorities and rural Americans. Its messaging should communicate to audiences and their families, in a culturally relevant way, why broadband matters.[125] The campaign's media strategy should include public service announcements and local broadcast messages, but should also focus on printed materials and other resources for local media outreach. In addition to creating targeted, culturally relevant outreach information and materials, the campaign should make media and other resources available in multiple languages so that they are accessible by non-adopters whose primary or only language is not English.

Although the federal government may not directly coordinate the campaign, the FCC and other actors from federal, Tribal, state and local government should work with the partnership to ensure that existing government outreach efforts communicate consistent messages (when possible). The FCC's Consumer Advisory Committee should also monitor the campaign and

report back to the FCC on the campaign's effectiveness and private sector's level of engagement with the campaign.

9.5 ADDRESSING ISSUES OF ACCESSIBILITY FOR BROADBAND ADOPTION AND UTILIZATION

Broadband-enabled applications create unique opportunities for people with disabilities. To allow Americans with disabilities to experience the benefits of broadband, hardware, software, services and digital content must be accessible and assistive technologies must be affordable.

In order to achieve this goal, the federal government must become a model for accessibility. Further, the federal government must promote innovative and affordable solutions to ensure that people with disabilities have equal access to communications services and that they do not bear disproportionate costs to obtain that access.

RECOMMENDATION 9.8: The Executive Branch should convene a Broadband Accessibility Working Group (BAWG) to maximize broadband adoption by people with disabilities.

The Executive Branch should convene a working group to coordinate federal efforts to maximize broadband adoption by people with disabilities. The BAWG also should work to make the federal government itself a model of accessibility. Members of the BAWG would bring together representatives from the Executive Branch including the departments of Agriculture, Commerce, Defense, Education, Health and Human Services, Justice, Labor and Veterans Affairs; the Access Board; the FCC; the FTC; the General Services Administration; the National Council on Disability and the National Science Foundation.

The BAWG would take on several important tasks:

- Ensure the federal government complies with Section 508 of the Rehabilitation Act.[126] Under Section 508 of the Rehabilitation Act, federal agencies must "develop, procure, maintain and use" electronic and information technologies that are accessible to people with disabilities—unless doing so would cause an "undue burden."[127] The record indicates that the government's efforts with respect to procurement and website accessibility need improvement.[128] Section 508 requires the U.S. Office of the Attorney General to submit a biennial report to the President and Congress providing information on agency compliance and making recommendations.[129] The Attorney General prepared an interim report in 2000; prospectively, the Attorney General should carry out his statutory duty of submitting a biennial report to the President and Congress providing information on agency compliance with Section 508 and making recommendations.[130] The BAWG should work with the Executive Branch to conduct an ongoing and public assessment of the degree to which agencies are complying with Section 508. The BAWG should also survey federal agencies to determine how they could apply Section 508 requirements to grant recipients and licensees.
- Coordinate policies and develop funding priorities across agencies. The BAWG should work to identify and modify program restrictions that prevent new and efficient technologies from being funded.[131] It also should explore whether any public funding should be used for the development and operation of new software enhancements that could support a network-based delivery system for assistive technologies to allow users to "call up interface features or adaptations that they need anytime, anywhere and on any device that they encounter."[132]
- Prepare a report on the state of broadband accessibility in the United States within a year after the BAWG is created and biennially thereafter. This report should consider broadband adoption, barriers and usage among people with disabilities and incorporate the results from questions included in FCC surveys conducted pursuant to the Broadband Data Improvement Act.[133] It should also analyze the root causes of the relatively low broadband adoption rate by people with disabilities and make specific recommendations to address these problems.

RECOMMENDATION 9.9: The FCC should establish an Accessibility and Innovation Forum.

The Accessibility and Innovation Forum could allow manufacturers, service providers, assistive technology companies, third-party application developers, government representatives and others to learn from consumers about their needs, to share best practices and to demonstrate new products, applications and assistive technologies. The forum could hold workshops to share and discuss breakthroughs by technologists, engineers, researchers and others that promote accessibility. The Chairman of the FCC, in conjunction with the forum, could also present an annual Accessibility and Innovation Award recognizing innovations by industry, small business, individuals and public-private partnerships that have made the greatest contribution to advancing broadband accessibility. The forum could have an ongoing web presence to allow participants to share information about public and private accessibility efforts and discuss accessibility barriers and inaccessible products.

RECOMMENDATION 9.10: Congress, the FCC and the U.S. Department of Justice (DOJ) should modernize accessibility laws, rules and related subsidy programs.

Accessibility laws, regulations and subsidy programs should be updated to cover Internet Protocol (IP)-based communications and video-programming technologies.[134] To do so:

- The FCC should ensure services and equipment are accessible to people with disabilities. The FCC should extend its Section 255 rules[135] to require providers of advanced services[136] and manufacturers of end-user equipment, network equipment and software used for advanced services to make their products accessible to people with disabilities.[137] Further, the FCC should extend its Hearing Aid Compatibility rules to all devices that provide voice communications via a built-in speaker and are typically held to the ear, to the extent that it is technologically feasible.[138] Finally, the FCC should open a proceeding to implement a standard for reliable and interoperable real-time text any time that Voice over Internet Protocol is available and supported.[139]
- The federal government should ensure the accessibility of digital content. The DOJ should amend its regulations to clarify the obligations of commercial establishments under Title III of the Americans with Disabilities Act[140] with respect to commercial websites. The FCC should open a proceeding on the accessibility of video programming distributed over the Internet, the devices used to display such programming and related user interfaces, video programming guides and menus.[141] Congress should consider clarifying the FCC's authority to adopt video description rules.[142]
- The FCC should materially support assistive technologies to make broadband more usable for people with disabilities. Congress should consider authorizing the FCC to use Universal Service Funds to provide assistive technologies that would enable individuals who are deaf or blind to access broadband services (up to $10 million per year)[143] and to provide funding for competitive awards to be given to developers of innovative devices, components, software applications or other assistive technologies that promote access to broadband (up to $10 million per year). As part of its ongoing reform efforts,[144] the FCC should issue a Notice of Proposed Rulemaking on whether to establish separate subsidy programs to fund broadband services and assistive technologies under the Telecommunications Relay Services (TRS) program.[145] The FCC should also determine whether additional Internet Protocol-enabled TRS services, such as Video Assisted Speech-to-Speech Service,[146] could benefit people with disabilities.

9.6 EXPANDING FEDERAL SUPPORT FOR REGIONAL BROADBAND CAPACITY-BUILDING, PROGRAM EVALUATION AND SHARING OF BEST PRACTICES

Over the past decade several Tribal, state and local governments have developed broadband adoption and deployment strategies. The federal government has an important role in supporting these complementary state and local efforts and encouraging the "partnership of the public and private sectors in the continued growth of broadband services and information technology for residents and businesses."[147]

Building sustainable efforts to support Tribal, state and local initiatives requires sufficient financial, technical and information resources. The federal government can bolster these efforts by providing additional funding for regional capacity-building and by investing in program evaluation, identification of best practices and facilitation of information sharing among stakeholders across the country.[148]

RECOMMENDATION 9.11: Federal support should be expanded for regional capacity-building efforts aimed at improving broadband deployment and adoption.

Many states have shown leadership by developing digital inclusion policies and programs. For example, California, Georgia, Illinois, Kentucky, Maine, Massachusetts, Minnesota and New York have created broadband offices. These offices are building state-level plans, supporting local programs and leading broadband initiatives aligned with the states' economic development, education and health care goals. The federal government can use these strong state programs to achieve national broadband objectives by relying on states to be local advocates for national programs that boost awareness about broadband and ICT.

Some state programs have taken advantage of unique funding opportunities. California, for example, imposed merger conditions on telecommunications providers to establish the California Emerging Technology Fund, which helps fund local efforts to bring broadband to unserved and underserved communities within the state.[149] However, not all states have been able to develop and consistently fund state-level programs.

Additional federal support of state efforts can encourage state and local initiatives.

In 2008, the Broadband Data Improvement Act (BDIA) recognized this opportunity.[150] BDIA established a state grant program, eventually funded by the Recovery Act, to begin to ensure all residents and businesses had affordable access to broadband and to promote state efforts to improve technology literacy, computer ownership and broadband use.[151]

Initial grants allocated a per-state maximum of $500,000 over the course of five years for strategic planning; many states have used these grants to create state broadband task forces or hire dedicated broadband staff.[152] States can use additional funding to continue the work begun under these initial planning grants and establish state and local adoption programs envisioned by the legislation.

NTIA should provide additional funding to support ongoing grants aligned with Section 106 of BDIA. The Recovery Act made $350 million available to NTIA to fund the state data-gathering and development goals set in BDIA. NTIA has currently assigned only a portion of these funds; the remainder should be obligated to state-level organizations in 2010. To ensure long-term sustainable efforts, states that have designated an outside entity should be encouraged to include state agency oversight of the planning. These state-level organizations should:*

- Complete strategic planning based on gap analysis of broadband availability, adoption and the existing capacity of local support organizations.[153]
- Establish programs to improve computer ownership and Internet access in unserved and underserved areas.[154]
- Provide technical expertise to local institutions, non-profits and governments to develop deployment and adoption-related initiatives.[155]
- Work with the private sector to create public-private partnerships to access infrastructure, technical expertise, training and program funding.
- Accelerate broadband application usage in key areas like government, education and health care.[156]
- Gather state and local benchmark data to determine program success over time.[157]
- Coordinate and enhance volunteer and non-profit programs that provide digital literacy and small business broadband training.[158]

If Congress makes additional funding available under BDIA, it should consider amending BDIA to make Tribes eligible to receive funding. In addition, if BDIA is amended, Congress should consider allowing NTIA to require that new state funding award recipients re-grant a portion of their total award to local and regional broadband programs. Congress also should consider allowing local, community and non-profit entities to apply independently for this new funding in the event that any state, territory or the District of Columbia fails to designate an eligible entity.

RECOMMENDATION 9.12: Congress and federal agencies should promote third-party evaluation of future broadband adoption programs.

Better measurement is widely recognized as necessary for understanding the costs, benefits and efficiency of different adoption programs. But little progress has been made.[159] More systematic evaluation is required to make the most of the federal government's broadband investment.[160] Most adoption programs spend their money on program activities, rather than measuring results. This is an understandable choice in the short run. But in the long run it has left the country with a limited understanding of what works and what does not.[161] The government needs to invest in detailed evaluations of how adoption programs actually influence broadband adoption and use. Such evaluations should also assess the impact of adoption programs on educational achievement and literacy as well as cost effectiveness.

Future federal appropriations for broadband adoption should include specific requirements and funding for third-party evaluation and assessment. Each grant should include funding for program evaluation, with additional funding to conduct in-depth assessments and longitudinal program assessment.

Program evaluation should not use a single methodology or type of data collection; evaluations will differ depending on project type and intended outcomes. But evaluations must provide a clear framework against which programs can be measured. They should define what makes a person a broadband "adopter" and track costs per incremental adopter. Further, evaluation should be a basic part of planning a project and adjusting that project when necessary. Evaluations should be designed to track progress and results at the program level, the organizational level and the community level. Longitudinal assessments should sample outcomes across program types.

RECOMMENDATION 9.13: NTIA should establish a National Broadband Clearinghouse to promote best practices and information sharing.

In addition to detailed evaluation, practitioners, including the federal government, need better information sharing. A National Broadband Clearinghouse would promote best practices and collaboration among those involved in programs aimed at boosting broadband adoption and utilization. NTIA should work with the FCC, Tribal, state and local governments, regulators, CBOs and the private sector to create, maintain and market a

*Each of the following is consistent with the uses outlined by BDIA.

nationally recognized online clearinghouse for best practices. It should serve as a resource for all parties involved in establishing broadband services—providers, Tribal, state and local governments and non-profits. NTIA should establish standards for managing the clearinghouse's online information. NTIA should also provide the clearinghouse with relevant content, including results and data collected during an evaluation of its own programs. States and other entities receiving federal broadband funding from NTIA would be expected to contribute content.

As part of the clearinghouse, NTIA should create a National Broadband Data Warehouse to serve as a central repository for broadband consumer data that exist across government agencies. NTIA's BTOP program rightly places strict reporting requirements on grant recipients in order to gather important performance data. To make the most of these data, they should be included in the warehouse. To the extent possible, the warehouse should provide data in standard and interoperable formats.

Those managing the clearinghouse should conduct outreach efforts and promote the online clearinghouse and its services. They also should encourage community members and broadband users to submit and update information that could be shared online and to develop a review system to ensure the content's quality and usefulness. If necessary, Congress should consider providing additional public funds to support development and management of the clearinghouse and a program of regional outreach, events and field-based data collection.

9.7 COORDINATING WITH TRIBES ON BROADBAND ISSUES

Developing and executing a plan to ensure that Tribal lands have broadband access and that Tribal communities utilize broadband services requires regular and meaningful consultation with Tribes on a government-to-government basis, as well as coordination across multiple federal departments and agencies.

To facilitate effective Tribal consultation and streamline coordination across federal entities on broadband-related issues, the following changes are recommended:

RECOMMENDATION 9.14: The Executive Branch, the FCC and Congress should consider making changes to ensure effective coordination and consultation with Tribes on broadband related issues.

- **The Executive Branch should establish a Federal-Tribal Broadband Initiative through which the federal government can coordinate both internally and directly with Tribal governments on broadband-related policies, programs and initiatives.**
- **The FCC should increase its commitment to government-to-government coordination with Tribal leaders.**
- **Congress and the FCC should consider increasing Tribal representation in telecommunications planning.**
- **Federal agencies should facilitate Tribal access to broadband funding opportunities.**
- **The FCC and Congress should support technical training and development on Tribal lands.**
- **The federal government should improve the quality of data on broadband in Tribal lands.**

Government-to-Government Coordination and Consultation

Tribal governments must interact with multiple federal agencies and departments on a wide range of programs. Because broadband is a critical input to the achievement of goals in many areas, including education, health care, public safety and economic development, the federal government should establish a Federal-Tribal Broadband Initiative to coordinate both internally and directly with Tribal governments on broadband-related policies, programs and initiatives. The initiative will include elected Tribal leaders or their appointees and officials from relevant federal departments and agencies.

The FCC should create an FCC-Tribal Broadband Task Force consisting of senior FCC staff and elected Tribal leaders or their appointees to carry out its commitment to promoting government-to-government relations.[162] The task force will assist in developing and executing an FCC consultation policy, ensure that Tribal concerns are considered in all proceedings related to broadband and develop additional recommendations for promoting broadband deployment and adoption on Tribal lands. The FCC should also create an FCC Office of Tribal Affairs to consult regularly with Tribal leaders, to develop and drive a Tribal agenda in coordination with other FCC bureaus and offices and to manage the FCC-Tribal Broadband Task Force.

Further, the Secretary of Agriculture should complete the department's ongoing consultation process with Tribes and implement provisions of the 2008 Farm Bill relating to substantially underserved trust areas for all broadband funding programs.[163]

In addition, Congress should consider amending the Communications Act to establish a Tribal seat on the USF Joint Board. The FCC should establish a Tribal seat on the USAC Board of Directors.

Technical Training for Tribes

Congress should consider additional annual funding for the FCC to expand the Indian Telecommunications Initiatives' Tribal workshops and roundtables to include sessions on education, technical support and assistance with broadband

initiatives.[164] In order to help Tribes acquire technical knowledge and expertise, Congress should also consider additional annual funding to allow Tribal representatives to participate in FCC University training programs at no cost.

Improving Data on Tribal Lands

The FCC should identify methods for collecting and reporting broadband information that is specific to Tribal lands, working with Tribes to ensure that any information collected is accurate and useful. In the interim, the FCC should immediately coordinate discussions between broadband providers and Tribal governments to develop a process for Tribes to receive information about services on Tribal lands. In addition, NTIA should provide BDIA planning and mapping grantees with guidance on how to work with Tribes to obtain data about Tribal lands, and ensure that Tribal governments have the opportunity to review mapping data about Tribal lands and offer supplemental data or corrections.[165] Congress should also consider allowing NTIA to provide separate grants to Tribes or their designees for any purpose permitted under the BDIA, including future planning and mapping projects on Tribal lands.

CHAPTER 9 ENDNOTES

1 John Horrigan, *Broadband Adoption and Use in America* 1 (OBI, Working Paper No. 1, 2010) (Horrigan, *Broadband Adoption and Use in America*); *see also* Nat'l Telecomm. & Info. Admin., Digital Nation: 21st Century America's Progress Toward Universal Broadband Internet Access 4 (2010) (estimating that 64% of U.S. households used a broadband Internet access service), *available at* http://www.ntia.doc.gov/reports/2010/NTIA_internet_use_report_Feb2010.pdf; Lee Rainie, Pew Internet & Am. Life, Internet, Broadband and Cell phone Statistics 1 (2010) (finding that 60–63% of American adults used broadband at home in 2009), *available at* http://www.pewinternet.org/~/media//Files/Reports/2010/PIP_December09_update.pdf.

2 Horrigan, *Broadband Adoption and Use in America* at 1, 13–14. The table does not report results for Asian Americans or American Indians/Alaska natives because the survey did not have enough respondents in each of these groups to draw statistically reliable inferences.

3 *See, e.g.*, Pew Research Ctr., Trend Data: Home Broadband Adoption Since 2000, http://www.pewinternet.org/Trend-Data/Home-Broadband-Adoption.aspx (last visited Mar. 4, 2010).

4 John Horrigan, Pew Internet & Am. Life Project, Home Broadband Adoption 2009, at 8–11 (2009), *available at* http://www.pewinternet.org/~/media//Files/Reports/2009/Home-Broadband-Adoption-2009.pdf.

5 Indust. Analysis & Tech. Div., FCC, High-Speed Service for Internet Access: Status as of December 31, 2008 (2010), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-296239A1.pdf.

6 In Fall 2009, the FCC fielded a national survey of Americans' technology use under authority granted by the Broadband Data Improvement Act (BDIA). This survey included an oversample of respondents who do not have broadband at home; of 5,005 survey respondents, 2,334 reported not having or using broadband at home. *See* Horrigan, *Broadband Adoption and Use in America* at 11.

7 Horrigan, *Broadband Adoption and Use in America* at 5. The remaining 2% cite a combination of cost-related issues.

8 Horrigan, *Broadband Adoption and Use in America* at 5.

9 Horrigan, *Broadband Adoption and Use in America* at 5.

10 Horrigan, *Broadband Adoption and Use in America* at 24, 7. The FCC Survey defined disability in accordance with OMB guidance. Disability status is related to respondents' answers to any of six questions and is aligned with the questions in upcoming American Community Surveys to be fielded by the Bureau of the Census.

11 *See, e.g.*, Horrigan, *Broadband Adoption and Use in America* at 26 ("Some of the difference in adoption rates is due to individuals' disabilities and some is due to lower incomes, advanced age or other factors associated with low adoption."). FCC analysis of the data (a logit model) shows that having a disability is, independent of other factors, linked to lower broadband adoption. People with disabilities, for example, have employment rates that are less than half of those without disabilities (36.9% compared with 79.7%) and poverty rates that are nearly three times higher (24.7% compared with 9.0%). People with lower incomes are less likely to have broadband at home (35% compared with 65%). Cornell University Rehabilitation Research and Training Center on Disability Demographics and Statistics, 2007 Disability Status Report 24, 34 (2008), *available at* http://www.ilr.cornell.edu/edi/disabilitystatistics/StatusReports/2007-PDF.

12 *See, e.g.*, Eric Bridges, American Council of the Blind, Statement, Remarks at the FCC Broadband Accessibility for People with Disabilities Workshop II, at 81–84 (Oct. 20, 2009) (noting the first Smartphone that had features built in allowing it to be used by a person who was blind was introduced in July 2009), *available at* http://www.broadband.gov/docs/ws_accessibility_disabilities/ws_accessibility_disabilities_transcript.pdf.

13 *See* American Foundation for the Blind, Technology, Assistive Technology, Braille Technology, http://www.afb.org/Section.asp?SectionID=4&TopicID=31&DocumentID=1282 (last visited Jan. 9, 2010).

14 For example, people with hearing and speech disabilities who have transitioned from using TTYs to text and video communications cannot call 911 directly. *See* Telecommunications for the Deaf and Hard of Hearing, Inc. Comments in re NBP PN #14 (*Comment Sought on Public Safety Issues Related to Broadband Deployment in Rural and Tribal Areas and Communications to and from Persons with Disabilities—NBP PN #14*, GN Docket Nos. 09-47, 09-51, 09-137, Public Notice, 24 FCC Rcd 13512 (WCB 2009) (*NBP PN #14*)), filed Dec. 1, 2009, at 2.

15 *See, e.g.*, WebAIM, Screen Reader User Survey Results 23 (2009) (finding that only about 8% of the 665 screen reader users surveyed found that social media sites were "very accessible"), *available at* http://www.webaim.org/projects/screenreadersurvey2/.

16 *See* Rehabilitation Engineering Research Center on Telecommunications Access Comments in re NBP PN #4 (*Comment Sought on Broadband Accessibility for People with Disabilities Workshop II: Barriers, Opportunities, and Policy Recommendations—NBP PN #4*, GN Docket Nos. 09-47, 09-51, 09-137, Public Notice, 24 FCC Rcd 11968 (CGB 2009) (*NBP PN #4*)), filed Oct. 6, 2009, at 3. Video description is "the insertion of verbal descriptions of on-screen visual elements during natural pauses in a program's audio content." Karen Peltz Strauss, *Past and Present: Making the Case for a Regulatory Approach to Addressing Disability Discrimination in the Provision of Emerging Broadband and Cable Technologies*, *in* Broadband and Cable Television Law 2010 Developments in Cable Technology 6 n.17 (2010).

17 Horrigan, *Broadband Adoption and Use in America* at 6. The FCC survey found 86% of Americans have premium television, 86% have a cell phone and 80% have a working computer at home.

18 Horrigan, *Broadband Adoption and Use in America* at 6.

19 *See* Letter from William J. Cirone, Superintendent, Santa Barbara County Education Office, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 09-51 (June 30, 2009).

20 *See* Computers for Families, http://www.sbceo.org/~sbceocff/ (last visited Feb. 22, 2010); Cox Comments in re National Broadband Plan NOI, filed June 8, 2009, Attach. at 5–6.

21 Carmen DeNavas-Walt et al., U.S. Census Bureau, Current Population Reports, Income, Poverty, and Health Insurance Coverage in the United States: 2008, at 4 (2009), *available at* http://www.census.gov/prod/2009pubs/p60-236.pdf.

22 United States Department of Labor, WB-Previous Projects, Strengthening the Family Initiatives 2008, http://www.dol.gov/wb/programs/family1.htm(last visited Mar. 4, 2010).

23 *See* Native Public Media (NPM) and the National Congress of American Indians (NCAI) Comments in re NBP PN #5 (*Comment Sought on Broadband Deployment and Adoption on Tribal Lands—NBP Public Notice #5*, GN Docket Nos. 09-47, 09-51, 09-137, Public Notice, 24 FCC Rcd 12010 (CGB 2009) (*NBP PN #5*)) filed Dec. 9, 2009 (NCAI-NPM Dec. 9, 2009, Comments), Attach. at 4–5; *Tribes Take to Wireless Web*, BBC News, Mar. 3, 2004, *available at* http://news.bbc.co.uk/2/hi/technology/3489932.stm.

24 *See, e.g.*, Paul DiMaggio et al., From Unequal Access to Differentiated Use: A Literature Review and Agenda for Research on Digital Inequality (2001) (recommending research agendas focused on the extent and causes of different returns to Internet use for different kinds of uses), *available at* http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.85.6001&rep=rep1&type=pdf; Eszter Hargittai & Amanda Hinnant, *Digital Inequality: Differences in Young Adults' Use of the Internet*, 35 Comm. Res. 602 (2008)(discussing the impact of differentiated Internet use and capital-enhancing activities by young people).

25 Horrigan, *Broadband Adoption and Use in America* at 33.

26 Horrigan, *Broadband Adoption and Use in America* at 31–33.

27 *See, e.g.*, Digital Impact Group Comment in re NBP PN #16, (*Comment Sought on Broadband Adoption—NBP Public Notice #16*, GN Docket Nos. 09-47, 09-51, 09-137, Public Notice, 24 FCC Rcd 13692 (WCB 2009) (*NBP PN #16*)) filed Dec. 2, 2009, at 4–5 (noting that relevant uses of broadband technology provide both the initial motivation for broadband adoption and sustained use thereafter); Windstream Communications, Inc. Comments in re NBP PN #16, filed Dec. 2, 2009, at ii ("[W]hether and what amount a consumer is willing to pay for broadband service is largely a function of the value a consumer places on the service . . ."); National Black Caucus of State Legislators Comments in re National Broadband Plan NOI, filed Jan. 8, 2010, Attach. at 23.

28 Horrigan, *Broadband Adoption and Use in America* at 19.

29 *See generally* Everett Rogers, Diffusion of Innovations (Free Press 4th ed. 1995) (Rogers, Diffusion of Innovations).

30 *See, e.g.*, National Black Caucus of State Legislators Comments in re National Broadband Plan NOI, filed Jan. 8, 2010, Attach. at 13.

31 Awardees must contribute support equal to 15% of the requested grant amount. Further information, including application materials and guidelines, is available at USDA, Rural Development, www.usda.gov/rus/telecom/commconnect.htm (last visited Mar. 9, 2010).

CHAPTER 9 ENDNOTES

32 *See* U.S. Dep't Agric., Community Connect Broadband Program, Grant Application Guide, Fiscal Year 2009, at 22 (2009), *available at* http://www.usda.gov/rus/telecom/commconnect/2009/2009CommConnectAppGuideb.pdf.

33 National Telecommunications and Information Administration, Technology Opportunities Program About TOP, http://www.ntia.doc.gov/top/about.html (last visited Feb. 22, 2010); National Telecommunications and Information Administration, Technology Opportunities Program, Grants, http://www.ntia.doc.gov/top/grants/grants.htm (last visited Feb. 22,2010).

34 *See* Austen Free-Net, About AFN, http://www.austinfree.net/about/index.html (last visited Feb. 22, 2010); Mountain Area Information Network, About Main, http://www.main.nc.us/about/. (last visited Feb. 22, 2010).

35 American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, div. A, tit. II, 123 Stat. 115, 128 (2009) (Recovery Act).

36 *See* Broadband Technology Opportunities Program, 75 Fed. Reg. 3,792 (Jan. 22, 2010); NTIA, Broadband Technology Opportunities Program, BTOP Project Information, http://www.ntia.doc.gov/broadbandgrants/projects.html (last visited Feb. 20, 2010). *See* BroadbandUSA, Fast-Forward New Mexico—Project Description, http://www.ntia.doc.gov/broadbandgrants/BTOPAward_NewMexicoStateLibrary_121709.pdf.

37 *See* National Telecommunications and Information Administration, BroadbandUSA, Fast-Forward New Mexico, http://www.ntia.doc.gov/broadbandgrants/BTOPAward_NewMexicoStateLibrary_121709.pdf (last visited Feb. 23, 2010).

38 *See* National Telecommunications and Information Administration, Broadband USA, Spokane Broadband Technology Alliance, http://www.ntia.doc.gov/broadbandgrants/BTOPAward_TINCANWA_121709.pdf (last visited Feb. 23, 2010).

39 *See* National Telecommunications Information Administration, BroadbandUSA, Los Angeles Computer Access Network, http://www.ntia.doc.gov/broadbandgrants/LA_BTOP_Factsheet_FINAL.pdf (last visited Feb. 23, 2010).

40 *See* Advanced Communications Law & Policy Institute Comments in re NBP PN #16, filed Dec. 2, 2009, at 6.

41 Ultra High-Speed Broadband Task Force, Minnesota Ultra High-Speed Broadband Report 66 (2009) (Minnesota Ultra High-Speed Broadband Report), *available at* http://www.ultra-high-speed-mn.org/CM/Custom/UHS%20Broadband%20Report_Full.pdf.

42 Minnesota Ultra High-Speed Broadband Report at 71.

43 *See, e.g.*, Advanced Communications Law & Policy Institute Comments in re NBP PN #16, filed Dec. 2, 2009, at 6–7.

44 City of Seattle, *Community Technology Overview* available at http://seattle.gov/tech/overview/

45 Cmty. Tech. Program, Dep't of Info. Tech., City of Seattle, Information Technology Access and Adoption in Seattle (2009), *available at* http://www.cityofseattle.net/tech/indicators/docs/2009_TechAccessAndAdoptionInSeattleReport.pdf.

46 Puget Sound Off, *Empower, Encourage SOUNDING OFF in your community*, http://pugetsoundoff.org/

47 City of Seattle, *Community Technology Overview* available at http://seattle.gov/tech/overview/ of Chicago Comments in re NBP PN #16, filed Dec. 3, 2009, at 15–16.

48 *See, e.g.*, City of Chicago Comments in re NBP PN #16, filed Dec. 3, 2009, at 2; Connected Nation Comments in re NBP PN #16, filed Dec. 2, 2009, at 7.

49 *See, e.g.*, City of Chicago Comments in re NBP PN #16, filed Dec. 3, 2009, at 4–5; Connected Nation Comments in re NBP PN #16, filed Dec. 2, 2009, at 7.

50 Letter from Rep. Calvin Smyre, George House of Representatives and President of the National Black Caucus of State Legislators (NBCSL), to Hon. Julius Genachowski Chairman, FCC, GN Docket No. 09–51 (filed Jan. 8, 2010) (NBCSL Jan. 8, 2010 Letter) Attach. at 10 ("Broadband in the home can help minimize the socio-economic disparities that persist among low income, minority or socially disadvantaged populations, which tend to be disparately impacted by a lack of access to quality information or essential services.").

51 Horrigan, *Broadband Adoption and Use in America* at 19.

52 *See generally* Rogers, Diffusion of Innovations.

53 NBCSL Jan. 8, 2010, Attach. at 7.

54 *See* Greenlining Institute Comments in re NBP PN #13 (*Comment Sought on Broadband Study Conducted by the Berkman Center for Internet and Society—NBP Public Notice #13*, GN Docket Nos. 09-47, 09-51, 09-137, Public Notice, 24 FCC Rcd 12609 (WCB 2009) (*NBP PN #13*)), filed Nov. 16, 2009, Attach. at 3, 6–12; Advanced Communications Law & Policy Institute Comments in re NBP PN #16, filed Dec. 2, 2009, at 6; Broadband Diversity Supporters Comments in re National Broadband Plan NOI (*A National Broadband Plan for Our Future*, GN Docket No. 09-51, Notice of Inquiry, 24 FCC Rcd 4342 (2009)), filed Jun. 8, 2009, at 23.

55 *See* Janice Hauge & James Prieger, Demand-Side Programs to Stimulate Adoption of Broadband: What Works? 59 (2009) (Hauge & Prieger, Programs to Stimulate Adoption of Broadband).

56 Horrigan, *Broadband Adoption and Use in America* at 13.

57 *See* Federal-State Joint Board on Universal Service Staff, 2009 Universal Service Monitoring Report, CC Docket Nos. 96-45, 98-62, at 2-2 (2009 Universal Service Monitoring Report), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-295442A1.pdf.

58 *See* USAC, Federal Universal Service Support Mechanisms Fund Size Projections for Second Quarter 2010, at 2 (2010) (USAC, 2Q 2010 Fund Size Projections), *available at* http://www.universalservice.org/about/governance/fcc-filings/2010/Q2/2Q2010%20Quarterly%20Demand%20Filing.pdf.

59 2009 Universal Service Monitoring Report at tbl. 2.1; *see also* USAC, 2008 Lifeline Participation Rate Data, http://www.usac.org/li/about/participation-rate-information.aspx (last visited Feb. 19, 2010).

60 In 2008, five states—Alaska, California, Colorado, Montana and Oklahoma—has an estimated Lifeline participation rate in excess of 50%. *See* USAC, 2008 Lifeline Participation Rates by State Map, http://www.usac.org/li/about/participation-rate-information.aspx (last visited Feb. 19, 2010).

61 *See, e.g.*, Mark Burton et al., *Understanding Participation in Social Programs: Why Don't Households Pick up the Lifeline?*, 7 B.E. J. Econ. Anal & Pol'y, Art. 57 (2007), *available at* http:www.bepress.com/bejeap/vol7/iss1/art57 (purchase required); Janice A. Hague et al., *Whose Call Is It? Targeting Universal Service Programs to Low-Income Households' Telecommunications Preferences*, 33 Telecomm. Pol'y 129, 136–38 (2009), *available at* http://warrington.ufl.edu/purc/purcdocs/papers/0805_Hauge_Whose_Call_is.pdf (pages 8–10 in this version).

62 The FCC's rules impose one limitation on eligibility criteria for states that have their own programs: the criteria must be linked to income. *See* 47 C.F.R. § 54.409(a).

63 *See, e.g.*, Cox Comments in re NBP PN #19, (*Comment Sought on the Role of the Universal Service Fund and Intercarrier Compensation in the National Broadband Plan—NBP Public Notice #19*, GN Docket Nos. 09-47, 09-51, 09-137, Public Notice, 24 FCC Rcd 13757 (OSP 2009) (*NBP PN #19*)) filed Dec. 7, 2009, at 12 (Lifeline customer should be able to use broadband virtual vouchers for fixed dollar amount of subsidy for any service tier that meets customer needs).

64 *See, e.g.*, AT&T Comments in re NBP PN #19, filed Dec. 7, 2009, at 31.

65 *See, e.g.*, AT&T Comments in re NBP PN #19, filed Dec. 7, 2009, at 31.

66 *See, e.g.*, Letter from Jaime M. Tan, Director, Federal Regulatory, AT&T, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 03-109, GN Docket Nos. 09-47, 09-51, 09-137 (Dec. 22, 2009); State of New York Comments in re NBP PN #19, filed Dec. 7, 2009, at 2 (filed by David B. Salway on behalf of Melodie Mayberry-Stewart).

67 Fl. Pub. Serv. Comm'n, Florida Lifeline & Link-Up Assistance: Number of Customers Subscribing to Lifeline Service and the Effectiveness of Procedures to Promote Participation 1 (2009), *available at* http://www.psc.state.fl.us/publications/pdf/telecomm/tele-lifelinereport2009.pdf.

68 *See, e.g.*, Time Warner Cable Comments in re NBP PN #23 (*Comments Sought on Network Deployment Study Conducted by The Columbia Institute for Tele-Information—NBP Public Notice #23*, GN Docket Nos. 09-47. 09-51, 09-137, Public Notice, 24 FCC Rcd 13890 (WCB 2009) (*NBP PN #23*)), filed Dec. 4, 2009, at 3; Free Press 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, DA 10-61 (WCB, rel. Jan. 13, 2010) (*NBP PN #30*), filed Jan. 27, 2010, at 12.

69 *See, e.g.*, Tracfone Comments in re NBP PN #19, filed Dec. 7, 2009, at 7.

70 USAC, 2Q 2010 Fund Size Projections at 3, 15–17.

71 *See, e.g.*, Cox Comments in re NBP PN #19, filed Dec. 7, 2009 (urging the FCC to promote digital literacy

CHAPTER 9 ENDNOTES

in other ways, such as partnerships between service providers and community organizations, schools and community colleges).

72 *See, e.g.*, Robert D. Atkinson, Info.Tech. & Innovation Found., Policies to Increase Broadband Adoption At Home 3–4 (2009) (suggesting a market-based competition that would spur innovative adoption strategies by rewarding ISPs for attracting new subscribers in low-income communities), *available at* http://www.itif.org/files/2009-demand-side-policies.pdf.

73 *Annual Assessment of Status of Competition in the Market for the Delivery of Video Programming*, MB Docket No. 06-189, Thirteenth Annual Report, 24 FCC Rcd 542, 546, para. 8 (2009).

74 The cost of providing this wireless broadband service is not reflected in the broadband availability gap discussed in Chapter 8.

75 Horrigan, *Broadband Adoption and Use in America* at 5.

76 Immigrant and minority communities were heavily represented in the study, as the sizes of these populations tend to be too small to survey accurate. In this study, for example, 5% of the sample were Hmong—a population of relatively recent immigrants from Laos and Cambodia. Researchers attempted to explore possible regional differences, conducting interviews across the country, in urban and rural areas.

77 Horrigan, *Broadband Adoption and Use in America* at 24, 26 ("Among current 'not-at-home' Internet users, 22% live with someone who uses the Internet at home. These nonusers often ask their online housemates to carry out tasks online for them"); Jon P. Gant et al., National Minority Broadband Adoption: Comparative Trends in Adoption, Acceptance and Use, Jt. Ctr. for Pol. & Econ. Stud. 3 (2010) (Gant et al., National Minority Broadband Adoption), *available at* http://www.jointcenter.org/publications1/publication-PDFs/MTI_BROADBAND_REPORT_2.pdf.

78 Dharma Dailey et al., Broadband Adoption in Low-Income Communities 27 (2010), (Dharma Dailey et al., Broadband Adoption) *available at* http://www.ssrc.org/programs/broadband-adoption-in-low-income-communities/.

79 Letter from Rey Ramsey, Chief Executive Officer, One Economy Corporation, to Julius Genachowski, Chairman, FCC, GN Docket No. 09-51 (Nov. 3, 2009).

80 For a sampling of digital literacy programs in the European Union that are offered in a variety of formats, including face-to-face training, see Knud Erik Hilding-Hamann et al., Danish Tech. Inst., Supporting Digital Literacy: Analysis of Good Practice Initiatives, Topic 1 Report Annexes (April 2008), *available at* http://ec.europa.eu/information_society/eeurope/i2010/docs/benchmarking/dl_topic_report_1.pdf.

81 *See, e.g.*, Letter from Rey Ramsey, CEO, One Economy Corp., to Chmn. Julius Genachowski, FCC, GN Docket No. 09-51 (Nov. 3, 2009), Attach. (Comments of One Economy Corporation [on] National Digital Literacy Initiative) at 17; Senior Connects Corporation, Senior Connects, http://www.seniorconnects.org/index.html (last visited Mar. 3, 2010), *as referenced in* Net Literacy Corporation Reply in re NBP PN #16, filed Dec. 6, 2009, at 25–29 (filed by Daniel Kent).

82 *See, e.g.*, Senior Connects Corporation, Senior Connects, http://www.seniorconnects.org/index.html (last visited March 3, 2010), *as referenced in* Net Literacy Corporation Reply in re NBP PN #16, filed Dec. 6, 2009, at 25–29 (filed by Daniel Kent); Net Literacy, Community Connects Program, http://www.communityconnects.org/netliteracy.html (last visited March 3, 2010) ("Net Literacy's programs are independently beginning to be developed by students from New York to California. The European Union's Commission on Digital Inclusion has nominated Net Literacy to be one of their 85 "Best of Class" digital inclusion models, based upon the Senior Connects programs established in Germany.").

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89 *See, e.g.*, American Library Association Comments in re NBP PN #16, filed Dec. 2, 2009, at 3.

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96 Dharma Dailey et al., Broadband Adoption at 28.

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104 American Library Association Comments in re NBP PN #16, filed Dec. 2, 2009, at 7.

105 Horrigan, *Broadband Adoption and Use in America* at 30.

106 *See* Letter from David E. Chase, Dir., Program Monitoring and Res. Div., Off. of Pol'y Dev. & Res., U.S. Dep't of Housing & Urban Dev., to Marlene H. Dortch, Secretary, FCC, GN Docket No. 09-51 (Feb. 25, 2010).

107 *See, e.g.*, Video: U.S. Dep't of Hous. & Urban Dev., Choice Neighborhoods Stakeholder Meeting Presentation (Nov. 10, 2009), *available at* http://link.onlinevideoservice.com/hud/2009/1110/Archive_20091110_edited-1.wmv.

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109 AT&T, *National Survey Finds Kids Give High Marks to High Speed* (press release), Aug. 4, 2004, http://www.att.com/gen/press-room?pid=4800&cdvn=news&newsarticleid=21284.

110 Social Sec. Admin., Annual Report of the Supplemental Security Income Program Program 106–07 (2009), *available at* http://www.ssa.gov/OACT/ssir/SSI09/ssi2009.pdf.

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CHAPTER 9 ENDNOTES

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115 *See, e.g.*, Advanced Communications Law & Policy Institute Reply in re National Broadband Plan NOI, filed July 21, 2009, at 4–5; Consumer Policy Solutions Comments in re National Broadband Plan NOI, filed June 8, 2009, at 3–4 (filed by Debra Berlyn).

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118 Amanda Lenhart, *Senior Citizens Not Flocking to Social Networking Sites: Just 7% Have Posted Profile*, SeniorJournal.com, Jan. 22, 2009, http://seniorjournal.com/NEWS/WebsWeLike/2009/20090122-SenCitNotFlocking.htm.

119 Horrigan, *Broadband Adoption and Use in America* at 35–36. Some 39% of African Americans have gone online with their cell or Smartphone (defined as e-mailing, accessing the web for information or downloading an application), 39% of Hispanics have done this, and 27% of whites have done this.

120 Horrigan, *Broadband Adoption and Use in America* at 35–36. The 20% of African Americans without broadband at home have used the Internet on their handheld devices, and 25% of Hispanics without broadband at home have done this.

121 *See, e.g.*, Robert C. Atkinson & Ivy E. Schultz, Columbia Inst. for Tele-Information, Broadband In America: Where It Is And Where It Is Going (According To Broadband Service Providers) 10 (2009).

122 Horrigan, *Broadband Adoption and Use in America* at 17.

123 NBCSL Jan. 8, 2010, Attach. at 13.

124 NBCSL Jan. 8, 2010, Attach. at 13.

125 Common Sense Media Nov. 23, 2009 *Ex Parte* at 2–3.

126 Workforce Investment Act of 1998, § 508, Pub. L. No. 105-220, 112 Stat. 936 (1998) (codified as § 504 of the Rehabilitation Act, 29 U.S.C. § 794d) (Workforce Investment Act).

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128 *See, e.g.*, Eric Bridges, American Council of the Blind, Remarks at FCC Broadband Accessibility for People with Disabilities II: Barriers, Opportunities, and Policy Recommendations Workshop (Oct. 20, 2009), *available at* http://broadband.gov/docs/ws_accessibility_disabilities/ws_accessibility_disabilities_transcript.pdf; Karen Peltz Strauss, Co-Chair, Coalition of Organizations for Accessible Technologies, Remarks at FCC Broadband Accessibility for People with Disabilities II: Barriers, Opportunities, and Policy Recommendations Workshop (Oct. 20, 2009), *available at* http://broadband.gov/docs/ws_accessibility_disabilities/ws_accessibility_disabilities_transcript.pdf.

129 Workforce Investment Act § 508(d)(2).

130 *See* Dep't of Justice, Civil Rights Div., Section 508 Homepage, http://www.justice.gov/crt/508/508home.php (last visited Feb. 20, 2010).

131 Workforce Investment Act § 508(d)(2).

132 For example, under Medicare's regulations, coverage of assistive technologies is limited to "durable medical equipment" that is "primarily and customarily used to serve a medical purpose" and "generally is not useful to a person in the absence of an illness or injury." 42 C.F.R. § 414.202.

133 Karen Peltz Strauss, Co-Chair, Coalition of Organizations for Accessible Technologies, Remarks at FCC Broadband Accessibility for People with Disabilities II: Barriers, Opportunities, and Policy Recommendations Workshop (Oct. 20, 2009), *available at* http://broadband.gov/docs/ws_accessibility_disabilities/ws_accessibility_disabilities_transcript.pdf; *see also* Letter from Gregg Vanderheiden, Dir., Rehabilitation Eng. Res. Ctr. on Universal Interface & Info. Tech. Access, Trace R&D Ctr., Univ. of Wisc. et al., to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 09-47, 09-51, 09-137 (Jan. 6, 2010) at 1.

134 Broadband Data Improvement Act of 2008, Pub. L. No. 110-385, 122 Stat. 4097 (2008) (codified at 47 U.S.C. §§ 1301–1304) (BDIA).

135 *See, e.g.*, Twenty-First Century Communications and Video Accessibility Act of 2009, H.R. 3101, 111th Cong. § 2 (2009).

136 47 C.F.R. § 6.1 et seq. The rules implementing Section 255 require telecommunications and interconnected VoIP service providers and manufacturers to consider accessibility issues in the design and development phase and to include accessibility features in their products when it is readily achievable to do so.

137 Advanced services as defined in H.R. 3101 include non-interconnected VoIP, electronic messaging, and video conferencing (as well as interconnected VoIP, which is covered by Section 255). The FCC should assure itself of its jurisdiction to extend Section 255 to all advanced services or, if it cannot do so, seek authorization from Congress.

138 H.R. 3101 requires advanced services providers and equipment manufacturers to make their products accessible unless doing so would cause an undue burden. H.R. 3101 should be a starting point for discussion of both the scope of coverage and the legal standard of the accessibility obligation applied to service providers and manufacturers. We encourage stakeholders to work toward a long-term goal of having as much inclusion as possible for people with disabilities.

139 *See, e.g.*, Twenty-first Century Communications and Video Accessibility Act of 2009, H.R. 3101, 111th Cong. § 102 (2009).

140 This proceeding should be coordinated with the FCC proceeding, which addresses the future roles of 911 and NG911 as communications technologies, networks and architectures expand beyond traditional voice-centric devices. As part of the proceeding, the FCC should assess its jurisdiction to adopt rules with respect to (i) captioning and emergency information of video programming on the Internet and devices which display such programming; and (ii) related user interfaces, video programming guides and menus.

141 The Americans with Disabilities Act of 1990, Pub. L. No. 101-336, 104 Stat. 327 (1990) (codified at 42 U.S.C. §12101) (ADA).

142 This recommendation is similar to a provision in H.R. 3101, § 201.

143 In *Motion Picture Ass'n of America, Inc. v. FCC*, 309 F.3d 796 (D.C. Cir. 2002), the D.C. Circuit vacated the FCC's video description rules, finding that the FCC lacked the authority to adopt such rules. H.R. 3121 should be a starting point for discussion with respect to the scope of the FCC's authority to adopt video description rules.

144 *See, e.g.*, Twenty-first Century Communications and Video Accessibility Act of 2009, H.R. 3101, 111th Cong. § 105 (2009).

145 *See* FCC, *FCC Announces Agenda and Panelists for Workshop on VRS Reform To Be Held on December 17, 2009* (press release), Dec. 15, 2009, http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-295208A1.doc.

146 *See* FCC, FCC Telecommunications Relay Services, Consumer Facts, http://www.fcc.gov/cgb/consumerfacts/trs.html (last visited Jan. 6, 2010).

147 *See* Rebecca Ladew, East Coast Representative, Speech Communications Assistance by Telephone, Inc., Remarks at FCC Broadband Accessibility for People with Disabilities II: Barriers, Opportunities, and Policy Recommendations Workshop (Nov. 6, 2009), *available at* http://broadband.gov/docs/ws_accessibility_disabilities/ws_accessibility_disabilities_transcript.pdf; Letter from Monica Martinez, Commissioner, Mich. Pub. Serv. Comm'n, to Julius Genachowski, Chairman, FCC, GN Docket Nos. 09-47, 09-51, 09-137, CS Docket No. 97-80 (Dec. 23, 2009) at 1.

148 BDIA § 106(i)(2) (codified at 47 U.S.C. § 1304(i)(2)); *see also* California Public Utilities Commission Comments (filed July 30, 2009) at 4.

149 California Emerging Technology Fund, History, http://cetfund.org/aboutus/history (last visited Mar. 4, 2010).

150 BDIA § 102(4) ("The Federal Government should also recognize and encourage complementary State efforts to improve the quality and usefulness of broadband data and should encourage and support the partnership of the public and private sectors in the continued growth of broadband services and information technology for the residents and businesses of the Nation.")

151 BDIA § 106(a)(1)–(2).

152 Esme Vos, *Ten States Receive Broadband Mapping and*

CHAPTER 9 ENDNOTES

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153 *See* BDIA § 106(e)(5)(B)(iii) (codified at 47 U.S.C. § 1304(e)(5)(B)(iii)).

154 BDIA § 106(e)(7) (codified at 47 U.S.C. § 1304(e)(7)).

155 *See* BDIA § 106(e)(6)–(7) (codified at 47 U.S.C. § 1304(e)(6)–(7)). *See also* Sen. Kay Bailey Hutchinson, *Broadband Plan Must be Daring, Comprehensive*, Hill, Jan. 5, 2010, *available at* http://thehill.com/special-reports/technology-january-2010/74481-broadband-plan-must-be-daring-comprehensive.

156 *See* BDIA § 106(e)(5)(B)(ii), (e)(7).

157 *See* BDIA § 106(e)(5)(B)(i), (e)(6)–(7).

158 *See* BDIA § 106(e)(5)–(7) (codified at 47 U.S.C. §1304(e)–(7)).

159 *See generally* Westat, Collected Case Study Evaluations: Summary of Findings 20 (1999), *available at* http://www.ntia.doc.gov/top/research/EvaluationReport/case_studies/casestudysummary.pdf.

160 Hauge & Prieger, Programs to Stimulate Adoption of Broadband at 59.

161 Hauge & Prieger, Programs to Stimulate Adoption of Broadband at 62.

162 *See Statement of Policy on Establishing a Government-to-Government Relationship with Indian Tribes*, Policy Statement, 16 FCC Rcd 4078 (2000).

163 *See* Food, Conservation and Energy Act of 2008, Pub. L. No. 110-246, § 6105, 122 Stat. 1651, 1957–58 (2008) (codified at 7 U.S.C. § 936f).

164 *See* California Association of Tribal Governments Ex Parte in re NBP PN #5, filed Dec. 17, 2009, at 7; Letter from Loris Ann Taylor, Executive Director, Native Public Media et al., to Marlene H. Dortch, Secretary, FCC, GN Docket Nos 09-47, 09-51, 09-137 (Dec. 24, 2009) (Native Public Media et al. Dec. 24, 2009 *Ex Parte*) at 24.

165 *See* California Association of Tribal Governments *Ex Parte* in re NBP PN #5, filed Dec. 17, 2009, at 12; Native Public Media et al. Dec. 24, 2009 *Ex Parte* at 5–6; Native Public Media & the National Congress of American Indians Comments in re NBP PN #5, filed Dec. 9, 2009, Attach. 1 at 4, 39, 44.