



October 11, 2016

National Broadband Research Agenda  
National Telecommunications and Information Administration  
U.S. Department of Commerce  
1401 Constitution Avenue, NW, Room 4887  
Washington DC 20230

National Science Foundation  
4201 Wilson Boulevard  
Arlington, VA 22230

*Submitted via e-mail to: NBRArfc2016@ntia.doc.gov*

Re: National Broadband Research Agenda, Docket No. 160831803–6803–01, RIN 0660–XC031

Dear Assistant Secretary Strickling and Director Córdova:

On behalf of The Leadership Conference on Civil and Human Rights, a coalition charged by its diverse membership of more than 200 national organizations to promote and protect the civil and human rights of all persons in the United States, and the undersigned organizations, we appreciate this opportunity to add our perspectives to the development of a National Broadband Research Agenda.

The Leadership Conference believes in equitable access to modern technologies for all people in the U.S. As President Obama said in the memorandum establishing the Broadband Opportunity Council (BOC), “Access to high-speed broadband is no longer a luxury; it is a necessity for American families, businesses, and consumers.”<sup>1</sup> For this reason, the Leadership Conference has been an active participant in the proceedings at the National Telecommunications and Information Agency (NTIA), Housing and Urban Development (HUD), and the Federal Communications Commission (FCC) as those agencies consider how best to increase broadband adoption in the U.S.

The Leadership Conference supports the BOC recommendation that the federal government “Improve data collection, analysis and research on broadband.”<sup>2</sup> In our comments to the BOC, we recommended that the federal government:

- Increase the collection of data about broadband access and adoption, particularly among underserved communities, across the federal government.
- Identify, quantify, and study the concrete potential benefits to our national goals if all people in the U.S. fully utilized broadband.

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Wade J. Henderson  
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- Study, identify best practices, and adopt policies to set minimum standards for federal-state benefits programs' use of websites and online web portals.<sup>3</sup>

We welcome the opportunity to expand and further develop these recommendations in response to the NTIA and National Science Foundation Request for Comment (RFC).<sup>4</sup> As we outline in detail below, we recommend the research agenda:

- Place a strong emphasis and additional granular data studying the reasons particular communities under-adopt broadband and the resulting socio-economic consequences;
- Provide resources for updating existing literature reviews of previous research, including a focus on local information needs and interviews or case studies; and
- Emphasize the federal government's critical role in existing census-based data collection, conduct and release an inventory of existing federal efforts and data sets, and develop best practices for federal programs.

#### **A. Broadband Technology**

The RFC seeks comment on research needs with respect to broadband technology development and innovations, and seeks specific research methodologies and proposals aimed at supporting federal efforts to expand access and adoption in underserved communities. Existing research on broadband technology is limited by metrics that do not fully capture which resources are available to underserved communities or how these communities utilize broadband technology and innovation. We believe the federal government can improve its data collection and analysis in the following ways.

Further develop more precise, granular broadband adoption metrics. The research agenda must investigate the nationwide state of broadband access and adoption using metrics beyond the FCC's existing definitions. Although the FCC's current broadband definition of 25 mbps/3 mbps serves an appropriate regulatory function, it lacks the nuance to truly capture a complicated broadband landscape. Simply dividing broadband adoption into two groups of "haves" and "have-nots" under this definition fails to adequately explain whether consumers can access Internet speed and quality to meet basic needs. The government should consider asking consumers the following questions, and ensure that these inquiries can evolve alongside expectations of average American broadband access and usage:<sup>5</sup>

- Does your current connection allow you to adequately complete homework/research assignments in a timely manner?
- How satisfied are you with the quality and speed of your connection's ability to stream video content?
- How satisfied are you with the quality and speed of your connection's ability to stream music?
- How satisfied are you with the quality and speed of your connection's ability to connect you with news and information?
- How satisfied are you with the quality and speed of your connection's ability to research local events?
- How satisfied are you with the quality and speed of your connection's ability to access social services?

- How satisfied are you with the quality and speed of your connection's ability to make critical appointments, such as with a doctor?
- How satisfied are you with the quality and speed of your connection's ability to connect you with telemedicine resources?
- Does your current plan provide you enough data to meet all your needs?
- Do you ever find yourself running up to the maximum data allowed in your plan? If so, how often?
- Do you ever have to pay extra money for exceeding your broadband cap? If so, how often?
- Does the price of going beyond your data cap influence how you use your Internet? If so, what Internet services may you prioritize over others?

## **B. Broadband Access and Adoption**

The RFC requests comment on research and evaluation of programs, services, and applications that drive broadband access, adoption, and utilization. Today nearly one in three Americans lack home broadband access, and a disproportionate number of those individuals are people of color, low-income individuals, veterans, seniors, and rural populations.<sup>6</sup> The federal government should acquire more data to spur innovative policy recommendations to bring these Americans online.

Thoroughly investigate demographic patterns of non-adopters. The Pew Research Center, the FCC and NTIA regularly report broadband adoption levels according to ethnicity, age, income, education, and rural/urban, among other classifications.<sup>7</sup> However, to improve policies and outreach to bolster broadband adoption, the research agenda should cultivate more granular data. The federal government's highest research priority should be to identify which households have failed to adopt broadband and why.

We recommend that the federal government explore the following additional areas:

- Collect broadband adoption and pricing data by census tract and compare that data with demographic census tract details.
- Examine why people with disabilities are less likely to adopt broadband.
- Explore why non-English speakers are less likely to adopt home broadband, and learn which languages these non-adopters speak.

Finally, to more accurately assess the actual rate of broadband adoption among all racial and ethnic communities, we recommend that NTIA collect and disaggregate data based on all 2010 Census racial categories, particularly the seven AAPI categories. The federal government should look at adoption patterns among subgroups of Asian Americans and American Latinos, to ensure that policies and outreach to eliminate the digital divide are culturally relevant. The current pan-Hispanic and pan-Asian categorizations, while useful for certain purposes, potentially diminish the cultural sensitivities and needs of specific subgroups that fall under these broad categories. Asian Americans and Pacific Islanders (AAPI) include more than 50 ethnic groups and 100 languages that currently comprise 5.8 percent of the U.S. population, and is the fastest growing U.S. racial and ethnic population, with a growth rate of 2.9 percent, fueled mostly by immigration.<sup>8</sup> The lack of disaggregated data masks disparities between subethnic groups necessary to fully understand the actual state of broadband adoption within the AAPI community. Aggregated NTIA data state that Asian households exhibited the highest rates of home

computer ownership and broadband service.<sup>9</sup> Yet AAPI communities have some of the highest and lowest rates of poverty and highest and lowest rates of academic achievement among all ethnic groups in the United States.<sup>10</sup>

Take inventory of technological equipment in Americans' homes and what resources are still needed.

FCC data indicate that lack of computing devices is a barrier to adoption for poor Americans.<sup>11</sup> Indeed, teachers in low-income schools have identified lack of adequate computing systems as a major barrier to homework completion.<sup>12</sup> The research agenda should delve further into this issue, and survey the existing technological resources in low-income homes to determine whether a lack of personal equipment and infrastructure impedes communities from broadband adoption. Specifically, NTIA should examine the penetration, quality, and availability of personal computers in households across the country in addition to assessing their technological capabilities. NTIA should ask questions about the number of people in low-income households who compete for computer access, such as:

- Do neighborhoods that currently disproportionately lag behind in broadband adoption also disproportionately lack access to a home computer?
- What roles do household income and the price of such equipment play in accessing these tools?
- Are particular ethnic groups, genders, or ages more likely to lack these physical tools? If so, why?
- Is there other technological equipment lacking in certain homes?
- Does cost or lack of perceived relevance inhibit certain households from purchasing devices to improve connectivity, such as Wi-Fi routers or modems?

Further explore relationships between cost, digital literacy, and broadband adoption. To successfully facilitate adoption, a better understanding of the real barriers to broadband adoption is needed. For example, while recent NTIA data indicate that relevance is the primary adoption barrier,<sup>13</sup> Pew data indicate that the cost of monthly broadband subscriptions is the major barrier, and that relevance is not even one of the top five barriers to adoption.<sup>14</sup> According to Pew, most Americans who are offline understand that being offline puts them at a disadvantage.<sup>15</sup> African Americans, American Latinos and young Americans are especially likely to perceive a lack of broadband connection as a major disadvantage.<sup>16</sup> Accordingly, NTIA should explore and try to understand the discrepancies between these conclusions, and gather more data to disentangle the roles of broadband affordability and perceived relevance that may prevent potential subscribers from going online. NTIA should probe whether a social stigma of admitting broadband is too expensive prevents low-income respondents from answering that they cannot afford broadband access and assess the role of survey design and methodology to help understand the conflicting findings.<sup>17</sup>

Investigate broadband availability in HUD-assisted housing. We welcomed the Department of Housing and Urban Development's (HUD's) recent proposed rule requiring broadband infrastructure to be installed in most future HUD-funded constructed or rehabilitated developments.<sup>18</sup> Given that low-income communities disproportionately lack access to broadband, HUD should investigate and report adoption rates as well as the extent to which broadband infrastructure is currently available in HUD structures. HUD should consider asking the following questions:

- Do these communities, and potentially other geographic areas with a high concentration of low-income consumers, possess the infrastructure to support high-speed networks?

- What role must the government and private companies play in ensuring that these communities have the physical resources needed to connect?

The data analyzed in the Affordable Access to Fair Housing (AFFH) tool could offer particular insights into these questions if properly utilized.<sup>19</sup>

Update NTIA “Competition Among U.S. Broadband Service Providers” report. In December 2014, the Department of Commerce issued a report investigating ISP market competition’s role in the availability of different download speeds to consumers. The study provided a valuable description of the nationwide competition landscape, noting that consumers often have several options of lower-speed providers and fewer choices at higher speeds, and explained on average how many providers are serving particular communities. We encourage NTIA to update this report to properly reflect the current state of competition among broadband providers and investigate how competition directly impacts broadband access and adoption in particular markets.

### **C. Socioeconomic Impacts**

The RFC seeks comment on research and evaluation that measures the social and economic impacts of deploying and/or using broadband. Broadband adoption would be of little importance to federal policy if it did not significantly impact the socioeconomic well-being of our country and its residents. The current state of the research indicates that technology disparities may be exacerbating differences in achievement that are already present because of historic factors, such as race, language, gender or disability. In particular, it is important for research to examine the interactions between broadband and a variety of socioeconomic national goals. As we suggested in our BOC comments, the federal government should, “identify and study the concrete potential benefits to our national goals and agency goals if all people in the U.S. fully utilized broadband.”<sup>20</sup> We believe the eight national purposes identified by the National Broadband Plan would be a good place to start.<sup>21</sup>

We highlight below several resources and useful studies that should be utilized, expanded or replicated.

Build on existing studies that document relationships between broadband and economic and financial success. While many studies address the importance of broadband in developing countries for economic development,<sup>22</sup> few compare communities in the U.S. and individual populations within those communities to identify and quantify the impact that broadband can have on economic success. One study that should be expanded and replicated is the Center for Social Inclusion and NAACP’s *Broadband in the Delta* (2010), which addresses the correlations between the availability of broadband to the number of businesses and to race.<sup>23</sup>

Another compelling piece of research connects the success of financial inclusion to broadband adoption. In the 2015 study, *Technology, Opportunity & Access: Understanding Financial Inclusion in the U.S.*, researchers concluded that broadband access was the “main contributor” to ownership of basic deposit bank accounts.<sup>24</sup> This study is an excellent example of how sophisticated data analysis can identify

benefits of broadband access that might not otherwise be apparent, and emphasizes the need for cross-sectional work in this area.

Catalog existing research and study broadband's ability to meet local information needs. The federal research agenda should update the Communications Policy Research Network's 2012 literature review and continue a focus on the ability of broadband communications to meet local critical information needs. The Communications Policy Research Network analyzed more than 500 existing studies and identified gaps in the literature that related to the nation's knowledge about newer online technologies as well as more established technologies. The review identified eight core civic information needs and the capacity of our information infrastructure to meet those needs.<sup>25</sup> The report paid particular attention to the localized needs of historically underserved communities, and summarized the research available that documents or analyzes differences in the ability of various communities to use information technologies to meet critical needs.<sup>26</sup> The study laid out a series of research protocols and methods for use. This literature review is unique because of its focus on the functionality of broadband in meeting local needs. The importance of local information access is emphasized clearly in this quote from the literature review's conclusion:

*We are fortunate today that most of us can log-on, either at home or the local library, and go to a CDC website and get health information that was locked in medical journals only a few short years ago. But, if we have a problem, if we are sick or need well-baby care, in the end, we are faced with finding a doctor in our own communities.*<sup>27</sup>

Analyze impact of varying broadband products and consistency of access. While in the past, "broadband adoption" was a straightforward measure of home subscription to a wired broadband service, today we recognize that broadband use, particularly among low-income individuals and families, is a varied and multi-layered question. We recommend detailed study of the impact of irregular and limited connectivity on economic, educational and other critical needs. For example, some data show that low-income families that do adopt broadband often have less-than-consistent access, as cost and other factors can force families off the technology for periods of time.<sup>28</sup> Families without paid access at home rely on a variety of access points, each that come with benefits and limitations. Libraries, for example, are critical elements of the broadband access ecology, but due to funding limitations cannot offer unlimited access for all patrons who need it. Similarly, some products may offer differing levels of access to different kinds of content as part of a low-cost offering. For example, the Lifeline low-income subsidy program only supports one connection per household even as many Americans move toward one device per adult. The impact of consistent access, differing speeds or quality, and varied products offerings is not well known. The Joan Ganz Cooney Center study, for example, identified less-than ideal access, such as slower speeds or the different functionalities of mobile devices vs. laptops or desktops, as a problem for some families.<sup>29</sup>

The following questions are a small sampling of the types of questions that should be further explored:

- How long does a family have to be disconnected before they begin to lose some of the advantages they obtained while online?

- How long does it take for children to catch up in their technical knowledge?
- What happens when some kinds of content are more easily reached or more affordable or do not count against product constraints?
- How do overage charges impact use and literacy? Do these characteristics impact the benefits of broadband access?

Support case studies and interviews. Federal dollars should support case studies and interviews, rather than solely relying on polls, surveys or other quantitative methods. These research techniques better identify challenges from the perspectives of the communities themselves. For example, in *Broadband Adoption in Low Income Communities* by Dailey *et al.*, research found that low-income communities were extremely interested in obtaining broadband while intermediaries such as social workers were more likely to report that these families had no interest in obtaining Internet access.<sup>30</sup> Likewise, *Digital Inclusion Project: Findings and Implications, A Canadian Perspective*, used semi-structured interviews to obtain a more nuanced understanding of data indicating low-income survey respondents answers that they had no interest or no need for Internet connectivity.<sup>31</sup> The robust findings of the recent Joan Ganz Cooney Center study of low-income families' access to the Internet, *Opportunity for All?*, were based on in-depth interviews prior to developing a survey instrument.<sup>32</sup> Given the many interrelated factors leading to broadband non-adoption, mere survey-based data and quantitative analysis will not be sufficient to paint a complete picture of the impact and factors relating to non-adoption, and do not take fully into account community needs from the communities' own viewpoint.

#### **D. Opportunities for Federal Leadership in Data Collection and Research**

Continue NTIA data collection and analysis. The federal government should continue the leadership of NTIA in collecting, analyzing, and publicizing basic data about broadband adoption. As NTIA itself has noted, "The CPS Computer and Internet Use Supplement has evolved significantly since the first survey in 1994, which began with a simple question: 'Does someone in this household own a personal computer?'"<sup>33</sup> The regular collection of these data from a very large sample provides some of the only data for groups that make up a smaller percentage of the U.S. population and permits sophisticated analysis because of its integration with Census data. In addition, we welcome the new NTIA "Data Central" and "Data Explorer" and the release of analysis in a timely format through blog posts.<sup>34</sup> If NTIA ceases publishing annual Digital Nation reports, it must maintain a commitment to continuing analysis and data collection on a regular, timely schedule. More information at shorter intervals would better serve research and policy needs.

Finish and make public the federal inventory of broadband data needs and assets. The BOC Report recommended that an inventory of federal agency broadband data needs and assets be completed by March 2016.<sup>35</sup> This inventory is a critical element of any federal effort to use existing programs and data to analyze and improve broadband adoption. It is highly likely that many agencies have some data about how their constituencies use broadband and online services, but it is unlikely that all of it is collected in systematic ways or is being put to its greatest use. In our comments to the BOC, we suggested:

Each federal agency should know the broadband adoption rates of each population it serves, and more specifically, should track how most people interact with the agency. Areas of inquiry could include: (a) what percentage of case files were created via in-person, telephonic, or online mechanisms;

(b) what percentage of respondents use online platforms from home, via mobile devices, or at anchor institutions like libraries, community centers or schools;

(c) would respondents prefer different technology than the one that they are using; and

(d) would broadband further other programmatic goals for the target population?<sup>36</sup>

We further recommended that data be made public in a format that can be manipulated and compared across agencies and programs.<sup>37</sup> As explained above, as agencies collect this data, it should be categorized according to Census racial and ethnic categories.<sup>38</sup> It will be very difficult for researchers to take advantage of data sets or for policy experts to recommend steps to increase broadband adoption if we do not yet have a solid inventory of current efforts and data. While the initial inventory might take considerable resources, it is likely that some of the ongoing work could be folded into existing program evaluation efforts. To succeed in modern times, programs must understand how their beneficiaries are obtaining information and responding to program incentives or obligations. If further resources are needed, the administration should include these resources in budget recommendations. To augment such action, we recommend creation of a broadband adoption working group to focus and improve agency efforts toward this goal.

Develop federal program best practices. Moreover, once the inventory is complete, the administration could move forward on another recommendation that we submitted to the BOC, which was to “study, identify best practices, and adopt policies to set minimum standards for federal benefits programs’ use of websites and online web portals.” We further recommended that federal agencies “review their own and state online portals to ensure that online materials are no less accurate or accessible than their paper counterparts.”<sup>39</sup> By combining efforts and creating uniform tools, the burden of federal agencies would decrease and the efficacy of their programs increase, thereby stretching scarce program dollars.

Procure a meta-analysis or literature review of existing data and research. Just as a federal inventory is needed, so, too, is a literature review or meta-analysis of existing research identifying robust findings and gaps. As recommended above, the Critical Information Needs literature review should be updated, or another meta-analysis should be procured to identify the current state of knowledge and research gaps. The federal government is uniquely positioned to procure such an analysis.

The broadband research agenda has the potential to provide data and resources that will undergird critical policy decisions, and ultimately the success of our nation, for years to come. Thank you for the opportunity to comment on this important undertaking. If you have any questions about these comments, please contact Leadership Conference Media/Telecommunications Co-Chairs Cheryl Leanza, United Church of Christ, Office of Communication, Inc., at 202-904-2168 or [cleanza@alhmail.com](mailto:cleanza@alhmail.com), or Michael Macleod-Ball, American Civil Liberties Union, at (202) 675-2309 or [mmacleod@aclu.org](mailto:mmacleod@aclu.org) or Corrine Yu, Leadership Conference Managing Policy Director at 202-466-5670 or [yu@civilrights.org](mailto:yu@civilrights.org) if you would like to discuss the above issues.

Sincerely,

The Leadership Conference on Civil and Human Rights  
AFL-CIO  
American Civil Liberties Union  
Asian Americans Advancing Justice | AAJC  
Common Cause  
Communications Workers of America  
NAACP  
National Hispanic Media Coalition  
OCA – Asian Pacific American Advocates  
United Church of Christ, OC Inc.

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<sup>1</sup> Presidential Memorandum -- Expanding Broadband Deployment and Adoption by Addressing Regulatory Barriers and Encouraging Investment and Training (March 23, 2015) available at: <https://www.whitehouse.gov/the-press-office/2015/03/23/presidential-memorandum-expanding-broadband-deployment-and-adoption-addr>.

<sup>2</sup> Broadband Opportunities Council Report at 3.

<sup>3</sup> Broadband Opportunity Council Comments of the Leadership Conference on Civil and Human Rights at 1-2 (June 10, 2015) (“Leadership Conference BOC Comments”) available at: <http://www.civilrights.org/advocacy/letters/2015/comments-to-broadband.html>.

<sup>4</sup> National Broadband Research Agenda, Notice & Request for Comment, 81 Fed. Reg. 62479 (Sept. 9, 2016).

<sup>5</sup> We note that the NTIA, under the Community Connectivity Initiative, is aiming “to create a national consensus around local measures for broadband access, adoption, policies, and use.” See Community Connectivity Initiative available at: <http://www2.ntia.doc.gov/CCI>.

<sup>6</sup> Digital Nation Data Explorer, National Telecommunications & Information Administration (Mar. 21, 2016) available at: <http://www.ntia.doc.gov/other-publication/2016/digital-nation-data-explorer>.

<sup>7</sup> See, e.g., Horrigan and Duggan, Home Broadband 2015, Pew Research Center (Dec. 21, 2015) available at: <http://www.pewinternet.org/2015/12/21/home-broadband-2015/> (“2015 Home Broadband”).

<sup>8</sup> Pew Research Center (June 2014). U.S. Hispanic and Asian Populations Growing, but for Different Reasons. Available at: <http://www.pewresearch.org/fact-tank/2014/06/26/u-s-hispanic-and-asian-populations-growing-but-for-different-reasons/>.

<sup>9</sup> For example, in 2011, the rates for Asian American computer ownership was 86 percent and broadband service was 81 percent. NTIA, *Exploring the Digital Nation* (Nov. 2011) available at: <http://www.ntia.doc.gov/report/2011/exploring-digital-nation-computer-and-internet-use-home>

<sup>10</sup> Asian Americans Advancing Justice, *A Community of Contrasts, Asian Americans in the United States: 2011*. Aggregated data will often combine information regarding recent refugees, such as the Burmese and Korean, with more affluent and well-established Taiwanese and Japanese American datasets. Recent migrants, among those in

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greatest need of assistance, are statistically hidden by higher achieving second, third and fourth generation APAs. Southeast Asian and Pacific Islander Americans have some of the highest rates of poverty among all racial and ethnic groups in the United States and Chinese and Indian Americans have the highest absolute number of individuals living in poverty. *Id.*

<sup>11</sup> See 2015 Home Broadband at 4; Horrigan, Broadband Adoption and Use in America, Federal Communications Commission at 5 (Feb. 2010) available at: [https://apps.fcc.gov/edocs\\_public/attachmatch/DOC-296442A1.pdf](https://apps.fcc.gov/edocs_public/attachmatch/DOC-296442A1.pdf).

<sup>12</sup> Purcell, Heaps, Buchanan and Friedrich, *How Teachers Are Using Technology at Home and in Their Classrooms*, Pew Research Center at 3 (Feb. 28, 2013) available at: [http://www.pewinternet.org/files/old-media/Files/Reports/2013/PIP\\_TeachersandTechnologywithmethodology\\_PDF.pdf](http://www.pewinternet.org/files/old-media/Files/Reports/2013/PIP_TeachersandTechnologywithmethodology_PDF.pdf).

<sup>13</sup> Lewis, *Digitally Unconnected in the U.S.: Who's Not Online and Why?*, National Telecommunications and Information Administration (Sept. 28, 2016) available at: <http://www.ntia.doc.gov/blog/2016/digitally-unconnected-us-who-s-not-online-and-why>.

<sup>14</sup> Home Broadband 2015 at 15.

<sup>15</sup> *Id.* at 4.

<sup>16</sup> *Id.* at 13.

<sup>17</sup> See also, *infra* section C, our discussion of the importance of case studies and interviews to supplement surveys and polling.

<sup>18</sup> HUD Proposed Rule Requiring Installation of Broadband Technology During Construction of Most HUD-Financed Multifamily Housing (May 17, 2016) available at:

[http://portal.hud.gov/hudportal/HUD?src=/press/press\\_releases\\_media\\_advisories/2016/HUDNo\\_16-074](http://portal.hud.gov/hudportal/HUD?src=/press/press_releases_media_advisories/2016/HUDNo_16-074).

<sup>19</sup> Leadership Conference BOC Comments at 3.

<sup>20</sup> *Id.*

<sup>21</sup> They are: health care, education, energy and the environment, economic opportunity, government performance, civic engagement and public safety. National Broadband Plan, Section III, National Purposes.

<sup>22</sup> For a good summary of the studies addressing broadband economic development, see Common Sense Media Kids Action, *The Benefits of Broadband Expansion to America's Economy, Education and Health* (2015) available at: [https://d2e111jq13me73.cloudfront.net/sites/default/files/uploads/kids\\_action/benefits\\_of\\_broadband\\_expansion\\_to\\_americas\\_economy\\_education\\_and\\_health-cska-2015.pdf](https://d2e111jq13me73.cloudfront.net/sites/default/files/uploads/kids_action/benefits_of_broadband_expansion_to_americas_economy_education_and_health-cska-2015.pdf).

<sup>23</sup> Broadband in the Mississippi Delta: A 21<sup>st</sup> Century Racial Justice Issue (Feb 2010) by the Center for Social Inclusion, available at: <https://www.centerforsocialinclusion.org/broadband-in-the-mississippi-delta-a-21st-century-racial-justice-issue/>.

<sup>24</sup> Karp and Nash-Stacey, *Technology, Opportunity & Access: Understanding Financial Inclusion in the U.S.* (2015) available at: [https://www.bbvaresearch.com/wp-content/uploads/2015/07/WP15-25\\_FinancialInclusion\\_MSA.pdf](https://www.bbvaresearch.com/wp-content/uploads/2015/07/WP15-25_FinancialInclusion_MSA.pdf).

<sup>25</sup> *Literature Review Regarding Critical Information Needs of the American Public* (2012) available at: [https://transition.fcc.gov/bureaus/ocbo/Final\\_Literature\\_Review.pdf](https://transition.fcc.gov/bureaus/ocbo/Final_Literature_Review.pdf). The eight needs identified in the scholarship are:

- 1) emergencies and risks, both immediate and long term;
- 2) health and welfare, including specifically local health information as well as group specific health information where it exists;
- 3) education, including the quality of local schools and choices available to parents;
- 4) transportation, including available alternatives, costs, and schedules;
- 5) economic opportunities, including job information, job training, and small business assistance;
- 6) the environment, including air and water quality and access to recreation;
- 7) civic information, including the availability of civic institutions and opportunities to associate with others;
- 8) political information, including information about candidates at all relevant levels of local governance, and about relevant public policy initiatives affecting communities and neighborhoods.

<sup>26</sup> *Id.* at 51-53; 64-69.

<sup>27</sup> *Id.* at 90.

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<sup>28</sup> See, e.g., Half of Americans who rely on smartphones for broadband access have had to cancel their cell phone service because of financial hardship. Pew Research Center, U.S. Smartphone Use in 2015 at 14 (April 1, 2015) available at: <http://www.pewinternet.org/2015/04/01/us-smartphone-use-in-2015/>.

<sup>29</sup> For example, the Cooney Center study showed children without home Internet access are less likely to go online to look up information about things that they are interested in compared to families with home access. *Opportunity for All?* at 6.

<sup>30</sup> Dailey et al., *Broadband Adoption in Low Income Communities* at 23 (2010) available at: <http://www.ssrc.org/publications/view/1EB76F62-C720-DF11-9D32-001CC477EC70/>.

<sup>31</sup> Haight and Quan-Haase, *Digital Inclusion Project: Findings and Implications, A Canadian Perspective* (December 2015) available at: <https://ecfsapi.fcc.gov/file/60001390098.pdf>.

<sup>32</sup> Rideout and Katz *Opportunity for All?* (2016) <http://www.joanganzcooneycenter.org/publication/opportunity-for-all-technology-and-learning-in-lower-income-families/>.

<sup>33</sup> Goldberg, Rafi, Data Preview: What's New in the July 2015 CPS Computer and Internet Use Supplement, available at: <http://www.ntia.doc.gov/blog/2016/data-preview-whats-new-july-2015-cps-computer-and-internet-use-supplement>.

<sup>34</sup> Morris, John, Introducing NTIA Data Central (October 28, 2015), National Telecommunications and Information Agency, available at: <http://www.ntia.doc.gov/blog/2015/introducing-ntia-data-central>.

<sup>35</sup> Broadband Opportunity Council Report and Recommendations at 25, Section 4.4 (August 2015).

<sup>36</sup> Leadership Conference BOC Comments at 3.

<sup>37</sup> *Id.*

<sup>38</sup> *Id.*

<sup>39</sup> *Id.*