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Broadband Internet Access and the Digital Divide: Federal Assistance Programs

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Summary

The "digital divide" is a term that has been used to characterize a gap between those Americans who have access to telecommunications and information technologies and those who do not. One important subset of the digital divide debate concerns access to high-speed internet, also known as broadband. Broadband is provided by a series of technologies (e.g., cable, telephone wire, fiber, satellite, and mobile and fixed wireless) that give users the ability to send and receive data at volumes and speeds that support a number of applications including voice communications, entertainment, telemedicine, distance education, telework, ecommerce, civic engagement, public safety, and energy conservation.

Broadband technologies are currently being deployed, primarily by the private sector, throughout the United States. While the number of new broadband subscribers continues to grow, studies and data indicate that the rate of broadband deployment in urban/suburban and high-income areas is outpacing deployment in rural and low-income areas. Some policymakers, believing that disparities in broadband access across American society could have adverse economic and social consequences on those left behind, assert that the federal government should play a more active role to address the "digital divide" in broadband access. For example, in February 2009, broadband provisions in the American Recovery and Reinvestment Act (P.L. 111-5) provided a total of $7.2 billion for broadband grants, loans, and loan/grant combinations to facilitate economic development.

There are two primary ongoing federal vehicles that direct federal money to fund broadband infrastructure: the broadband and telecommunications programs at the Rural Utilities Service (RUS) of the U.S. Department of Agriculture and the Universal Service Fund (USF) programs under the Federal Communications Commission (FCC). RUS broadband programs were reauthorized and modified in the 2018 farm bill P.L. 115-334. The USF High Cost Fund, which was designed to ensure rural, high-cost areas have access to voice service, is undergoing a major transition to the Connect America Fund, which is targeted to the deployment, adoption, and utilization of both fixed and mobile broadband.

In the Consolidated Appropriations Act, 2018 (P.L. 115-141), Congress provided $600 million for RUS to conduct a new broadband loan and grant pilot program (called the ReConnect Program). In addition, Congress provided $7.5 million to the National Telecommunications and Information Administration (NTIA) to update the Fixed Broadband Deployment Map in coordination with the FCC.

In the Consolidated Appropriations Act, 2019 (P.L. 116-6), Congress provided an additional $550 million for ReConnect. The Conference Agreement of the Consolidated Appropriations Act of 2019 (P.L. 116-6) provided $7.5 million to maintain the Fixed Broadband Deployment Map.

To the extent that the 116th Congress may consider various options for further encouraging broadband deployment and adoption, a key issue is how to strike a balance between providing federal assistance for unserved and underserved areas where the private sector may not be providing acceptable levels of broadband service, while at the same time minimizing any deleterious effects that government intervention in the marketplace may have on competition and private sector investment.

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Introduction

The internet became publically available in the 1990s, and has evolved since that time as information has continually become digital (e.g., job applications, government forms have moved online). While most Americans now have access to the internet, access is not equally available across the country. The "digital divide" is a term used to describe a gap between those Americans who have adequate access to broadband and those who do not.[1] The Telecommunications Act of 1996 (P.L. 104-104) acknowledged the digital divide, with Section 706(a) directing the Federal Communications Commission (FCC) to encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans. Additionally, Section 254 of the act provided for Universal Service support to further access to advanced telecommunications services.

Broadband is high-speed internet access that is faster than traditional dial-up access and always on. Broadband can be accessed through several high-speed technologies, such as:

- Digital Subscriber Line (DSL),
- Cable modem,
- Fiber,
- Wireless,
- Satellite, and
- Broadband over Powerlines (BPL).

Broadband technologies are currently being deployed, primarily by the private sector, throughout the United States. While the numbers of new broadband subscribers continue to grow, studies and data indicate that the rate of broadband deployment in urban/suburban and high-income areas is outpacing deployment in rural and low-income areas.[2] Three federal agencies—the National Telecommunications and Information Administration (NTIA), within the Department of Commerce (DOC), the Federal Communications Commission (FCC), and the Rural Utilities Service (RUS), within the United States Department of Agriculture (USDA)—presently are or historically have had a role in providing federal funding to help close the digital divide.

Status of Broadband in the United States

Prior to the late 1990s, American homes accessed the internet at maximum speeds of 56 kilobits per second by dialing up an Internet Service Provider over the same copper telephone line used for traditional voice service. A relatively small number of businesses and institutions used broadband or high-speed[3] connections through the installation of special "dedicated lines," typically provided by their local telephone company. Starting in the late 1990s, cable television companies began offering cable modem broadband service to homes and businesses. This was accompanied by telephone companies beginning to offer DSL service (broadband over existing

[1] The term "digital divide" can also refer to international disparities in access to communications and information technology. This report focuses on domestic issues only.

[2] According to the Census Bureau, rural areas comprise open country and settlements with fewer than 2,500 residents, and urban areas comprise larger places and densely settled areas around them. United States Department of Agriculture Economic Research Service, *What Is Rural?*, available at https://www.ers.usda.gov/topics/rural-economy-population/rural-classifications/what-is-rural/.

[3] Dial-up internet is the only connection that is not considered high speed.

copper telephone wireline). Growth in broadband service has been steep, rising from 2.8 million high-speed lines reported as of December 1999, to 421 million connections as of December 31, 2017.[4]

Table 1 depicts the relative deployment of different types of broadband technologies. A distinction is often made between "current generation" and "next generation" broadband (commonly referred to as next generation networks or NGN). "Current generation" typically refers to initially deployed cable, DSL, and many wireless systems, while "next generation" refers to dramatically faster download and upload speeds offered by fiber technologies and also by successive generations of cable, DSL, and wireless technologies. In general, the greater the download and upload speeds offered by a broadband connection, the more sophisticated (and potentially valuable) the application that is enabled. The FCC has set a speed benchmark of 25 megabits per second (Mbps) (download speed)/3 Mbps (upload speed) as the measure by which it determines whether a fixed service provides advanced telecommunications capability.

Table 1. Percentage of Broadband Technologies by Types of Connection

Speed Measured in Kilobits per second (Kbps) or Megabits per second (Mbps)

	Connections over 200 kbps in at least one direction	Residential connections over 200 kbps in at least one direction	Fixed connections at least 10/1 Mbps	Residential fixed connections at least 10/1 Mbps	Fixed connections at least 25/3 Mbps	Residential fixed connections at least 25/3 Mbps
Cable modem	15.7%	16.9%	70.5%	71.1%	78.3%	78.8%
DSL	5.7%	5.9%	12.8%	12.7%	4.9%	4.9%
Mobile wireless	74.3%	72.9%	—	—	—	—
Fiber	3.3%	3.5%	14.3%	14.0%	15.6%	15.2%
All other	0.9%	0.8%	2.4%	2.2%	1.3%	1.1%

Source: FCC, *Internet Access Services: Status as of December 31, 2017*, released August 2019, pp. 16-22.

Notes: Kbps means kilobits per second, and Mbps means megabits per second. 1 megabit is equal to 1,000 kilobits. 10/1 means 10 Mbps download/1 Mbps upload, and 25/3 means 25 Mbps download/3 Mbps upload. Totals may not sum due to rounding.

Fixed Broadband Availability

FCC data indicate where fixed broadband service is and is not being deployed.[5] **Table 2** shows recent percentages of Americans in urban, rural, and tribal areas with access to terrestrial fixed broadband at speeds of 25 Mbps/3Mbps, as presented in the FCC's *2019 Broadband Deployment Report*.[6] According to the most recent FCC deployment data, as of December 2017, 93.5% of the overall population had access to fixed terrestrial broadband at speeds of at least 25 Mbps/3 Mbps

[4] Federal Communications Commission, *Internet Access Services: Status as of December 31, 2017*, released August 2019, p. 2, available at https://docs.fcc.gov/public/attachments/DOC-359342A1.pdf.

[5] See FCC, *Fixed Broadband Deployment*, available at https://broadbandmap.fcc.gov/.

[6] FCC, *2019 Broadband Deployment Report*, GN Docket No. 18-238, FCC 19-44, p. 21, available at https://docs.fcc.gov/public/attachments/FCC-19-44A1.pdf.

with 21.3 million Americans lacking access to fixed terrestrial broadband at those speeds. Nonetheless, the gap in rural and tribal America remains notable: the FCC reports that over 26% of Americans in rural areas and 32% of Americans in tribal lands lack coverage from fixed terrestrial 25 Mbps/3 Mbps broadband, as compared to only 1.7% of Americans in urban areas.[7] **Table 3** shows the percentage of Americans as of December 2017 with access to fixed 25 Mbps/3Mbps terrestrial broadband by state.

Table 2. Percentage of Americans with Access to Fixed Terrestrial Broadband at Minimum Speed of 25 Mbps/3 Mbps

	2013	2014	2015	2016	2017
All U.S.	83.6%	89.4%	89.9%	91.9%	93.5%
Urban	92.3%	96.4%	96.7%	97.7%	98.3%
Rural	47.6%	60.4%	61.5%	67.8%	73.6%
Tribal	37.1%	57.2%	57.8%	63.1%	67.9%

Source: FCC, *2019 Broadband Deployment Report*, p. 21.

Table 3. Percentage of Americans with Access to Fixed Terrestrial Broadband by State

(December 2017 data, minimum speed of 25 Mbps/3 Mbps)

	% of population with access, all areas	% of population with access, rural areas	% of population with access, urban areas
United States	**93.5%**	**73.6%**	**98.3%**
Alabama	86.1	69.7	97.7
Alaska	80.5	51.6	96.4
Arizona	86.9	39.8	93.3
Arkansas	77.4	55.9	94.4
California	97.0	67.3	98.9
Colorado	92.9	63.2	98.4
Connecticut	99.1	99.5	99.1
Delaware	97.6	93.8	98.5
Dist. of Columbia	98.1	N/A	98.1
Florida	96.2	77.9	98.2
Georgia	92.5	77.6	97.3
Hawaii	96.1	71.5	98.6
Idaho	85.3	58.6	97.3
Illinois	94.7	61.1	99.0

[7] The Form 477 deployment data for satellite broadband indicate that satellite service offering 25 Mbps/3 Mbps speeds is available to nearly all of the population. The FCC reports that these data could overstate the deployment of these services. Fixed terrestrial broadband at speeds of 25 Mbps/3Mbps includes cable modem, fiber, and a limited number of DSL connections. It does not include satellite broadband, which is also a fixed (nonmobile) broadband service. Ibid, pp. 14, 16.

	% of population with access, all areas	% of population with access, rural areas	% of population with access, urban areas
Indiana	89.9	67.4	98.5
Iowa	90.7	77.5	98.1
Kansas	91.1	71.8	97.9
Kentucky	90.9	79.7	98.7
Louisiana	87.6	63.3	96.5
Maine	93.3	89.6	99.4
Maryland	97.6	94.8	98
Massachusetts	97.9	92.3	98.4
Michigan	92.0	73.1	98.6
Minnesota	94.8	83.7	98.9
Mississippi	79.6	62.6	97.0
Missouri	88.7	65.1	98.8
Montana	86.3	73	97.5
Nebraska	87.3	58.0	97.9
Nevada	92.7	46.5	96.1
New Hampshire	94.7	89.1	98.3
New Jersey	99.1	97.9	99.1
New Mexico	83.4	47.3	94.8
New York	98.4	87.1	99.9
North Carolina	94.8	84.8	99.8
North Dakota	93.1	87.3	97.6
Ohio	94.7	78.4	99.3
Oklahoma	79.0	48.3	95.0
Oregon	92.4	68.9	98.3
Pennsylvania	95.3	84.2	98.3
Rhode Island	98.3	97.8	98.3
South Carolina	89.9	73.7	98.2
South Dakota	88.9	76.1	99.2
Tennessee	91.3	77.0	98.5
Texas	92.7	68.9	97.4
Utah	94.2	64.0	98.5
Vermont	89.3	83.4	98.7
Virginia	91.7	74.1	97.4
Washington	97.3	88.9	99.0
West Virginia	84.6	72.5	97.2
Wisconsin	91.3	72.1	99.5

	% of population with access, all areas	% of population with access, rural areas	% of population with access, urban areas
Wyoming	81.3	52.8	98.7

Source: FCC, 2019 Broadband Deployment Report, Appendix 1, available at https://docs.fcc.gov/public/attachments/FCC-19-44A1.pdf.

Another important broadband availability metric is the extent to which there are multiple broadband providers offering competition and consumer choice. Typically, multiple providers are more prevalent in urban than in rural areas or tribal areas (see **Table 4**).

Table 4. Percentage of Americans With Multiple Options for Fixed Terrestrial Broadband (25/3 Mbps)

	No provider	1 provider	2 providers	3 or more
Nationwide	6.6%	29.4%	43.5%	20.5%
Urban	1.9%	25.8%	48.4%	24.0%
Rural	26.4%	44.4%	23.1%	6.1%
Tribal	32.1%	36.3%	20.8%	10.8%

Source: CRS, derived from FCC Fixed Broadband Deployment Map, data as of December 2017 (https://broadbandmap.fcc.gov/).

Fixed Broadband Adoption

In contrast to broadband *availability*, which refers to whether or not broadband service is offered, broadband *adoption* refers to the extent to which American households actually subscribe to and use fixed broadband. According to Census data from the 2016 American Community Survey, 81.4% of American households have a broadband internet subscription.[8] Pew Research Center reports that 10% of adults do not use the internet in 2019, down from 48% in 2000.[9] The most recent survey data from the Pew Research Center show that populations continuing to have lower rates of internet adoption include people with low incomes, seniors, the less-educated, and households in rural areas (see **Table 5**).[10]

[8] U.S. Census Bureau, 2016 American Community Survey, accessed at NTIA BroadbandUSA, "Data Section," at https://broadbandusa.ntia.doc.gov/ntia-map.

[9] Pew Research Center, *10% of Americans Don't Use the Internet. Who Are They?* April 22, 2019, survey conducted January 8- February 7, 2019, available at https://www.pewresearch.org/fact-tank/2019/04/22/some-americans-dont-use-the-internet-who-are-they/.

[10] Monica Anderson et al., *10% of Americans Don't Use the Internet. Who Are They?*, Pew Research Center, April 22, 2019, https://www.pewresearch.org/fact-tank/2019/04/22/some-americans-dont-use-the-internet-who-are-they/.

Table 5. Percentage of U.S. Adults Who Do Not Use the Internet in 2019

U.S. Adults	10%
Men	10%
Women	9%
White	8%
Black	15%
Hispanic	14%
18-29 age	0%
30-49	3%
50-64	12%
65+	27%
Less than $30K income	18%
$30K-$50K	7%
$50K-$75K	3%
$75K+	2%
Less than high school	29%
High school	16%
Some college	5%
College +	2%
Urban	9%
Suburban	6%
Rural	15%

Source: Pew Research Center, *10% of Americans Don't Use the Internet. Who Are They?* April 22, 2019, survey conducted January 8–February 7, 2019, available at https://www.pewresearch.org/fact-tank/2019/04/22/some-americans-dont-use-the-internet-who-are-they/.

In June 2015, GAO released a report (*Intended Outcomes and Effectiveness of Efforts to Address Adoption Barriers Are Unclear*). The report found that all 21 stakeholders identified affordability, almost all 21 stakeholders identified lack of perceived relevance, and a majority of the 21 stakeholders identified lack of computer skills as the principal barriers to broadband adoption.[11] GAO examined adoption efforts by NTIA and the FCC, and identified three key approaches used to address broadband adoption barriers: discounts on computer equipment and broadband subscriptions; outreach efforts to promote broadband availability and benefits; and training to help people develop skills in using computers and broadband.[12]

[11] Government Accountability Office, *Intended Outcomes and Effectiveness of Efforts to Address Adoption Barriers Are Unclear*, GAO-15-473, June 2, 2015, p. 11, available at https://www.gao.gov/assets/680/670588.pdf.

[12] Ibid, p. 17.

Fixed Broadband in Rural Areas[13]

While the number of new broadband subscribers continues to grow, the rate of broadband deployment in urban areas has outpaced deployment in rural and tribal areas. While there are many examples of rural communities with state of the art telecommunications facilities,[14] surveys and studies have indicated that, in general, rural areas (and particularly tribal areas)[15] tend to lag behind urban and suburban areas in broadband deployment—with respect to either higher speeds or any access.

For example

- According to the FCC's *2019 Broadband Deployment Report*, "As of year-end 2017, 93.5% of the overall population had coverage [of fixed terrestrial broadband at speeds of 25 Mbps/3 Mbps], up from 91.9% in 2016. Nonetheless, the gap in rural and tribal America remained notable: over 26% of Americans in rural areas and 32% of Americans in tribal lands lacked coverage from fixed terrestrial 25 Mbps/3 Mbps broadband, as compared to only 1.7% of Americans in urban areas."[16]
- Also according to the FCC's *2019 Broadband Deployment Report*, analysis of the United States as a whole showed Americans that have access to fixed terrestrial 25 Mbps/3 Mbps service and Mobile LTE with a minimum advertised speed of 5 Mbps/1 Mbps typically lived in census block groups with a lower percentage of households living in poverty, and with higher average population, population density, per capita income, and median household income than Americans living in areas without coverage by these services.[17]

The comparatively lower population density of rural areas is likely the major reason why broadband is less deployed than in more highly populated suburban and urban areas. Particularly for wireline broadband technologies—such as cable modem and fiber—the greater the geographical distances among customers, the larger the cost to serve those customers. Thus, there is often less incentive for companies to invest in broadband in rural areas than, for example, in an urban area where there is more demand and less cost to wire the market area.

The terrain of rural areas can also be a hindrance; for example, it is more expensive to deploy broadband technologies in a mountainous or heavily forested area. An additional added cost factor for remote areas can be the expense of "backhaul" (e.g., the "middle mile"), which refers to the installation of a dedicated line which transmits a signal to and from an internet backbone, which is typically located in or near an urban area.

Some Lawmakers representing rural areas have argued many of their constituents are losing out on economic and educational resources due to a lack of broadband access.[18] A February 2006

[13] For more information on rural broadband and broadband programs at the Rural Utilities Service, see CRS Report RL33816, *Broadband Loan and Grant Programs in the USDA's Rural Utilities Service*, by Lennard G. Kruger and Alyssa R. Casey.

[14] See for example: National Exchange Carrier Association (NECA), *Trends: A Report on Rural Telecom Technology*, December 2015.

[15] For more information on tribal broadband, see CRS Report R44416, *Tribal Broadband: Status of Deployment and Federal Funding Programs*, by Lennard G. Kruger.

[16] FCC, *2019 Broadband Deployment Report*, p. 16.

[17] Ibid, p. 23.

[18] Harper Neidig, "Congress Pushes Broadband Access Ahead of Trump Infrastructure Proposal," *The Hill*, January 25,

study done by the Massachusetts Institute of Technology for the Economic Development Administration of the Department of Commerce marked the first attempt to quantitatively measure the impact of broadband on economic growth. The study found that "between 1998 and 2002, communities in which mass-market broadband was available by December 1999 experienced more rapid growth in employment, the number of businesses overall, and businesses in IT-intensive sectors, relative to comparable communities without broadband at that time."[19] Subsequently, other studies have attempted to assess the economic impact of broadband deployment. For example

- A study (first published in 2013)[20] funded by the National Agricultural and Rural Development Policy Center found that nonmetropolitan counties that had high levels of broadband adoption (greater than 60%) in 2010 had higher growth in median household income—23.4% versus just over 22%—between 2001 and 2010 when compared to counties that had similar characteristics in the 1990s but were not as successful at adopting broadband.
- A 2016 study from the Hudson Institute found that rural broadband providers directly and indirectly added $24.1 billion to the U.S. economy in 2015. The rural broadband industry supported 69,595 jobs in 2015, both through its own employment and the employment that its purchases of goods and services generated.[21]

Broadband Access and the Federal Role

Section 706 of the Telecommunications Act of 1996

Section 706(a) of the Telecommunications Act of 1996 (P.L. 104-104) directs the FCC to encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans.[22] Section 706(b) is the follow-up to that directive and requires the FCC to regularly initiate an inquiry assessing the availability of broadband to all Americans and to determine whether broadband "is being deployed to all Americans in a reasonable and timely fashion." If the determination is negative, the act directs the FCC to "take immediate action to accelerate deployment of such capability by removing barriers to infrastructure investment and by

2018, available at https://thehill.com/policy/technology/370781-congress-pushes-broadband-access-ahead-of-trump-infrastructure-proposal.

[19] This conclusion was based on a cross-sectional panel data set of communities across the United States, segmented by zip code. Sharon E. Gillett, Massachusetts Institute of Technology, *Measuring Broadband's Economic Impact*, report prepared for the Economic Development Administration, U.S. Department of Commerce, February 28, 2006, p. 4, available at http://cfp.mit.edu/publications/CFP_Papers/Measuring_bb_econ_impact-final.pdf.

[20] Brian Whitacre, Roberto Gallardo, and Sharon Strover, "Broadband's Contribution to Economic Health in Rural Areas," *Research & Policy Brief Series*, Community and Regional Development Institute, Cornell University, February 2015, available at https://cardi.cals.cornell.edu/publications/research-policy-briefs/broadband%e2%80%99s-contribution-economic-health-rural-areas/.

[21] Hanns Kuttner, Hudson Institute, *The Economic Impact of Rural Broadband*, April 2016, available at https://s3.amazonaws.com/media.hudson.org/files/publications/20160419KuttnerTheEconomicImpactofRuralBroadband.pdf.

[22] Section 706(d)(1) defines "advanced telecommunications capability" as high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology.

promoting competition in the telecommunications market." See the FCC's 2019 Broadband Deployment Report discussed below.

Since 1999, the FCC has issued twelve Section 706 reports, each providing a snapshot and assessment of broadband deployment.[23] To help establish whether broadband is being deployed in "a reasonable and timely fashion," the FCC has set a minimum broadband speed that essentially serves as the benchmark the FCC uses to define what it considers broadband service for the purposes of its Section 706 determination. In 2015 the FCC, citing changing broadband usage patterns and multiple devices using broadband within single households, raised its minimum fixed broadband benchmark speed from 4 Mbps (download)/1 Mbps (upload) to 25 Mbps/3 Mbps. The designation of minimum benchmark speeds for fixed broadband, and how mobile broadband speeds should be benchmarked and factored into an overall determination of broadband deployment, has proven controversial.[24]

On May 8, 2019, the FCC adopted and released its latest 706 report, the *2019 Broadband Deployment Report.* For a second consecutive year, the FCC concluded that advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion. This determination was based on evaluating progress—comparing deployment in the present year to deployment in previous years. According to the *Report*:

> As the Commission has previously explained, the statute requires that we determine whether advanced telecommunications capability "*is being deployed* to all Americans"—not whether it has already been deployed to all Americans. The statute does not require perfection; reading 706(b) to require universal availability as a prerequisite for a positive finding would disregard the statute's "reasonable and timely" language.[25]

The latest 706 determination was approved by the three Republican FCC commissioners, with the remaining two Democratic commissioners dissenting. According to FCC Commissioner Rosenworcel's dissent:

> It is simply not credible for the Federal Communications Commission to clap its hands and pronounce our broadband job done—and yet that is exactly what it does in this report today. By determining that under the law broadband deployment is reasonable and timely for all Americans, we not only fall short of our statutory responsibility, we show a cruel disregard for those who the digital age has left behind.[26]

In gathering data, information, and viewpoints for the *2018 Report*, the August 8, 2017, *Notice of Inquiry*[27] proposed to maintain the 25 Mbps/3 Mbps benchmark for fixed broadband, while at the same time soliciting comments on whether to establish a lower benchmark speed specifically for mobile broadband. One proposal under consideration was whether the presence of fixed or mobile broadband should indicate that an area has adequate broadband service. Ultimately, the *2018*

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[23] An archive of notices of inquiry and released broadband progress reports is available at https://www.fcc.gov/general/archive-released-broadband-progress-notices-inquiry.

[24] See CRS Report R45039, *Defining Broadband: Minimum Threshold Speeds and Broadband Policy*, by Lennard G. Kruger.

[25] Federal Communications Commission, *2019 Broadband Deployment Report*, In the Matter of Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, GN Docket no. 18-238, FCC 19-44, adopted and released May 8, 2019, pp. 41-42, available at https://docs.fcc.gov/public/attachments/FCC-19-44A1.pdf.

[26] Ibid, p. 325.

[27] Federal Communications Commission, *Thirteenth Section 706 Report Notice of Inquiry*, GN Docket No. 17-199, FCC 17-109, August 8, 2017, available at https://transition.fcc.gov/Daily_Releases/Daily_Business/2017/db0808/FCC-17-109A1.pdf.

Report concluded that adoption of a single mobile benchmark is currently unworkable, given available data and the inherent variability of actual mobile speeds, and that mobile broadband service is not a full substitute for fixed service at this time.

On August 8, 2018, the FCC adopted the *Fourteenth Broadband Deployment Report Notice of Inquiry*, which collected comments in preparation for the 2019 Section 706 report. In the 2019 Report, the FCC concluded that the current speed benchmark of 25 Mbps/3Mbps remains an appropriate measure by which to assess whether a fixed service is providing advanced telecommunications capability.[28]

Broadband Access Data and Mapping

Obtaining an accurate snapshot of broadband deployment is problematic. Rapidly evolving technologies, the constant flux of the telecommunications industry, the uncertainty of consumer wants and needs, and the sheer diversity and size of the nation's economy and geography make the status of broadband deployment difficult to characterize. Improving the quality of broadband deployment data has become an issue of congressional interest, as policymakers recognize that more accurate broadband availability maps could help ensure that federal broadband programs target unserved areas of the country that are most in need of assistance.

Since the initial deployment of broadband in the late 1990s, two federal agencies have implemented broadband availability data collection and mapping initiatives. In 2008, the Broadband Data Improvement Act (P.L. 110-385) directed the Department of Commerce to establish a state broadband data and development grant program, and to use the data gathered by the states to create a broadband inventory map. The NTIA's State Broadband Initiative,[29] which was funded by the American Recovery and Reinvestment Act of 2009 (ARRA, P.L. 111-5), was used to develop the first National Broadband Map; and the FCC's Form 477 Data Program, is used to populate and update the current National Broadband Map.[30]

One of the major criticisms of the FCC's Form 477 National Broadband Map is that broadband availability can be overstated because fixed broadband deployment data are collected at the census block level.[31] A census block is considered served if there is broadband service (or the strong potential of broadband service) to one or more locations. This may be especially problematic in rural areas, which have large census blocks and may be considered served if, for example, a single neighborhood in that large census block has broadband service.

On August 3, 2017, the FCC adopted a *Further Notice of Proposed Rulemaking* to explore ways "to improve the quality, accuracy, and usefulness of the data it collects on fixed and mobile voice and broadband service," while at the same time examining how it can "reduce burdens on industry by eliminating unnecessary or onerous data filing requirements."[32]

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[28] Federal Communications Commission, *2019 Broadband Deployment Report*, In the Matter of Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, GN Docket no. 18-238, FCC 19-144, adopted and released May 8, 2019, p. 5, available at https://docs.fcc.gov/public/attachments/FCC-19-44A1.pdf.

[29] P.L. 110-385, Section 106.

[30] For more information on NTIA and FCC broadband data and mapping activities, see CRS Insight IN10925, *Broadband Data and Mapping*, by Lennard G. Kruger.

[31] Next Century Cities, *Discussion Guidelines—Broadband Mapping*, February 28, 2019, available at https://nextcenturycities.org/discussion-guidelines-broadband-mapping/.

[32] Federal Communications Commission, *Further Notice of Proposed Rulemaking*, "In the Matter of Modernizing the

The Consolidated Appropriations Act, 2018 (P.L. 115-141), appropriated $7.5 million to NTIA to update the national broadband availability map in coordination with the FCC and using partnerships previously developed with the states. The Consolidated Appropriations Act, 2019 (P.L. 116-6), provided an additional $7.5 million to NTIA to maintain the national broadband availability map.

On May 30, 2018, NTIA issued a *Request for Comments* on actions it should take to improve the quality and accuracy of broadband availability data.[33] NTIA received comments[34] on the following issues: identifying additional broadband availability data; technology type, service areas, and bandwidth associated with such data; new approaches, tools, technologies, or methodologies to capture broadband availability data; validating broadband availability data; and identifying gaps in broadband availability. On October 25, 2018, NTIA issued a notice for public comment regarding its intention to collect broadband availability data at a more granular level than what the FCC currently collects.[35]

On February 12, 2019, NTIA announced that California, Maine, Massachusetts, Minnesota, North Carolina, Tennessee, Utah, and West Virginia are eight pilot states that will contribute data and other inputs to the map. NTIA is also expected to seek participation from additional states.[36]

Federal Broadband Programs

There are two ongoing major federal vehicles which direct federal money to fund broadband deployment: the Universal Service Fund (USF) programs administered by the FCC, and the broadband and telecommunications programs of the Rural Utilities Service (RUS) of the U.S. Department of Agriculture.

A number of federal programs provide subsidies to expand broadband. In June 2017, the National Telecommunications and Information Administration released an updated comprehensive *Guide to Federal Funding of Broadband Projects*.[37] The guide provides summary and contact information for a variety of federal programs that may fund projects involving broadband infrastructure, adoption, access, planning, or research.[38]

FCC Form 477 Data Program," WC Docket No. 11-19, FCC 17-103, adopted August 3, 2017, p. 44, available at https://docs.fcc.gov/public/attachments/FCC-17-103A1.pdf.

[33] NTIA, "Improving the Quality and Accuracy of Broadband Availability Data," Federal Register, vol. 83, no. 104, May 30, 2018, pp. 24747-24749, available at https://www.ntia.doc.gov/files/ntia/publications/fr-05302018-rfc-improving-broadband-data.pdf.

[34] Available at https://www.ntia.doc.gov/federal-register-notice/2018/comments-improving-quality-and-accuracy-broadband-availability-data.

[35] NTIA, "Agency Information Collection Activities; Proposed Information Collection; Comment Request; Broadband Availability Data," Federal Register, vol. 83, no. 207, October 25, 2018, pp. 53852-53853, available at https://www.govinfo.gov/content/pkg/FR-2018-10-25/pdf/2018-23296.pdf.

[36] National Telecommunications and Information Administration, "NTIA Partners with 8 States on Improvements to Broadband Availability Map," press release, February 12, 2019, available at https://www.ntia.doc.gov/press-release/2019/ntia-partners-8-states-improvements-broadband-availability-map.

[37] U.S. Department of Commerce, National Telecommunications and Information Administration, *BroadbandUSA: Guide to Federal Funding of Broadband Projects*, June 2017, p. 44, available at https://broadbandusa.ntia.doc.gov/sites/default/files/resource-files/ntia_guidetofedfunding_062317.pdf.

[38] NTIA also provides an online broadband federal funding search tool, available at https://broadbandusa.ntia.doc.gov/funding-list.

The Universal Service Concept and the FCC

Since its creation in 1934, the Federal Communications Commission (FCC) has been tasked with "mak[ing] available, so far as possible, to all the people of the United States ... a rapid, efficient, Nation-wide, and world-wide wire and radio communications service with adequate facilities at reasonable charges."[39] This mandate led to the development of what has come to be known as the universal service concept.

The universal service concept, as originally designed in the Communications Act of 1934, called for the establishment of policies to ensure that telecommunications services are available to all Americans, including those in rural, insular, and high cost areas, by ensuring that rates remain affordable. Over the years this concept has evolved and expanded, fostering the development of various FCC policies and programs that target both providers of and subscribers to telecommunications and, more recently, broadband services. The Telecommunications Act of 1996 (P.L. 104-104) codified the long-standing commitment by U.S. policymakers to ensure universal service in the provision of telecommunications services, and directed the FCC to establish a federal Universal Service Fund (USF) to meet the expanded objectives and principles contained in the act. Established in 1997, the USF is administered by the Universal Service Administrative Company (USAC), an independent not-for-profit organization, under the direction of the FCC. The USF currently consists of four programs: the High Cost/Connect America Fund Program, the Schools and Libraries Program, the Rural Health Care Program, and the Low Income Program.

Funding for the USF comes from telecommunications carriers that provide interstate service and certain other providers of telecommunications services and is based on a percentage of their end-user interstate and international telecommunications revenues; the USF receives no federal revenues. Carriers may, but are not required to, pass these charges directly to their subscribers. The USAC disbursed approximately $8.5 billion from the USF in 2018 with all 50 states, the District of Columbia, and all territories receiving some benefit.[40]

Universal Service and Broadband

One of the major policy debates surrounding universal service in the last decade was whether access to advanced telecommunications services (i.e., broadband) should be incorporated into universal service objectives. The 1996 Telecommunications Act authorized the federal-state Joint Board[41] and tasked it with defining the services which should be included in the definition of services to be eligible for universal service support. The Joint Board's recommendation, which was adopted by the FCC in May 1997, largely limited the definition to voice telecommunications services. Some policymakers expressed concern that the FCC-adopted definition was too limited and did not take into account the importance and growing acceptance of advanced services such as broadband and internet access. They pointed to a number of provisions contained in the universal service principles of the 1996 act to support their claim. Specifically, the universal service principle contained in Section 254(b)(2) states that "Access to advanced

[39] Communications Act of 1934, as amended, Title I §1 (47 U.S.C. 151).

[40] Universal Service Administrative Company, *2018 Annual Report*, p. 11. Total funding approved for disbursement for the months of January-December 2018, available at https://www.usac.org/about/tools/publications/annual-reports/default.aspx.

[41] In compliance with the 1996 Telecommunications Act (Section 254(a)(1)) the FCC, in March 1996, established a Federal-State Joint Board on Universal Service to make recommendations to implement the universal service provisions of the act. This Joint Board is comprised of three FCC Commissioners, four State Utility Commissioners, and a consumer advocate representative.

telecommunications services should be provided to all regions of the Nation." The subsequent principle (b)(3) calls for consumers in all regions of the nation, including "low-income" and those in "rural, insular, and high cost areas," to have access to telecommunications and information services including "advanced services" at a comparable level and a comparable rate charged for similar services in urban areas. Such provisions, they state, dictate that the FCC expand its universal service definition.

The 1996 act does take into consideration the changing nature of the telecommunications sector and allows, if future conditions warrant, for the modification of the universal service definition. Section 254(c) of the act states that "universal service is an evolving level of telecommunications services" and that the FCC is tasked with "periodically" reevaluating this definition "taking into account advances in telecommunications and information technologies and services." Furthermore, the Joint Board is specifically authorized to recommend "from time to time" to the FCC modifications in the definition of the services to be included for federal universal service support. In November 2007, the Joint Board concluded such an inquiry and recommended that the FCC change the mix of services eligible for universal support. The Joint Board recommended, among other things, that "the universal availability of broadband Internet services" be included in the nation's communications goals and hence be supported by federal universal service funds.[42]

The debate over whether to include broadband service was put to rest when provisions contained in the American Recovery and Reinvestment Act of 2009 (ARRA) called for the FCC to develop, and submit to Congress, a national broadband plan to ensure that every American has "access to broadband capability."[43] In its national broadband plan, *Connecting America: the National Broadband Plan*, the FCC recommended that access to and adoption of broadband be a national goal. Furthermore, the national broadband plan proposed that the Universal Service Fund be restructured to become a vehicle to help reach this goal. The FCC, in an October 2011 decision, adopted an Order that calls for the USF to be transformed, in stages, over a multiyear period, from a mechanism to support voice telephone service to one that supports the deployment, adoption, and utilization of both fixed and mobile broadband. This transformation includes the phaseout of the USF's legacy High Cost Program and the creation of a new fund, the Connect America Fund, to replace it, as well as an expansion and modification of the Schools and Libraries, Rural Health Care, and Low Income programs.[44]

The High Cost/Connect America Fund Program

Historically the High Cost Program provided support for eligible telecommunications carriers to help offset the higher-than-average costs of providing voice telephone service in rural, insular, or other high cost areas. This mechanism has been the largest USF program based on disbursements and has been particularly important to rural areas due to the lack of subscriber density often combined with higher costs. The High Cost Program is undergoing a transition from one that primarily supports voice communications to one that supports a broadband platform that enables

[42] The Joint Board recommended: (1) that the FCC expand the definition of those services that qualify for universal service support and (2) the nation's communications goals include the universal availability of mobility services (i.e., wireless), broadband internet services, and voice services at affordable and comparable rates for all rural and nonrural areas. For a copy of this recommendation, see http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-07j-4A1.pdf.

[43] American Recovery and Reinvestment Act of 2009, P.L. 111-5, Section 6001 (k)(2)(D).

[44] For a detailed discussion of this Order and USF transition, see *In the Matter of the Connect America Fund, et al.*, WC Docket No. 10-90 et al., Report and Order and Further Notice of Proposed Rulemaking, FCC 11-161, adopted October 27, 2011, and released November 18, 2011, available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-11-161A1.pdf.

multiple applications, including voice. The High Cost Program is being phased out in stages and is being replaced by the Connect America Fund (CAF), which will support the provision of affordable voice and broadband services, both fixed and mobile, in high cost areas. The CAF is designed to eventually replace all of the existing support mechanisms in the High Cost Program,[45] and it contains a Mobility Fund and a Remote Areas Fund to help meet these needs. According to data released by USAC, approximately $4.84 billion in funding was disbursed under the High Cost Program in 2018.[46]

The Schools and Libraries, and Rural Health Care Programs

Congress, through the 1996 act, not only codified, but also expanded the concept of universal service to include, among other principles, that elementary and secondary schools and classrooms, libraries, and rural health care providers have access to telecommunications services for specific purposes at discounted rates. (See §§254(b)(6) and 254(h) of the 1996 Telecommunications Act, 47 U.S.C. 254.)

1. The Schools and Libraries (E-Rate) Program. Under universal service provisions contained in the 1996 act, elementary and secondary schools and classrooms and libraries are designated as beneficiaries of universal service discounts. Universal service principles detailed in Section 254(b)(6) state that "Elementary and secondary schools and classrooms ... and libraries should have access to advanced telecommunications services." The act further requires in Section 254(h)(1)(B) that services within the definition of universal service be provided to elementary and secondary schools and libraries for education purposes at discounts, that is at "rates less than the amounts charged for similar services to other parties."

The FCC established the Schools and Libraries Division within USAC to administer the schools and libraries or "E (education)-rate" program to comply with these provisions. Under this program, eligible schools and libraries receive discounts ranging from 20% to 90% for telecommunications services depending on the poverty level of the school's (or school district's) population and its location in a high cost (i.e., rural) telecommunications area. Two categories of services are eligible for discounts: category one services (telecommunications, telecommunications services, and internet access), and category two services that deliver internet access within schools and libraries (internal connections, basic maintenance of internal connections, and managed internal broadband services). According to data released by USAC, approximately $2.18 billion in funding was disbursed under the E-Rate Program in 2018.[47]

2. The Rural Health Care (RHC) Program. Section 254(h) of the 1996 act requires that public and nonprofit rural health care providers have access to telecommunications services necessary for the provision of health care services at rates comparable to those paid for similar services in urban areas. Subsection 254(h)(1) further specifies that "to the extent technically feasible and economically reasonable" health care providers should have access to advanced telecommunications and information services. The FCC established the Rural Health Care

[45] The FCC, on August 1, 2019, adopted a Notice of Proposed Rulemaking (NPR), seeking comment on establishing a Rural Digital Opportunity Fund, through the USF, to direct up to $20.4 billion, over a 10-year support term, to expand broadband in unserved rural areas. For additional information on this NPR see, https://www.fcc.gov/document/fcc-proposes-204-billion-rural-digital-opportunity-fund. See also, Federal Communications Commission, "Rural Digital Opportunity Fund, Connect America Fund," 84 *Federal Register* 43543-43563, August 21, 2019.

[46] For additional information and data on this program, see Universal Service Administrative Company, *2018 Annual Report*, pp. 5 and 11, available at https://www.usac.org/about/tools/publications/annual-reports/default.aspx.

[47] For additional information and data on this program, see Universal Service Administrative Company, *2018 Annual Report*, pp. 8 and 11, available at https://www.usac.org/about/tools/publications/annual-reports/default.aspx.

Division (RHCD) within USAC to administer the universal support program to comply with these provisions. The goal of the RHC Program is to improve the quality of health care for those living in rural areas by ensuring access to broadband and telecommunications services. Under FCC established rules, only public or nonprofit health care providers are eligible to receive funding.[48]

The Rural Health Care Program currently provides funding through two sub-programs: the Telecommunications Program, and the Healthcare Connect Fund.[49] The Telecommunications Program, established in 1997, provides discounts for telecommunications services to ensure that eligible rural health care providers pay no more than urban providers for telecommunications services. The primary use of the funding is to provide reduced rates for telecommunications and information services necessary for the provision of health care.

In December 2012, the FCC created the Healthcare Connect Fund,[50] a program to expand health care provider access to broadband, particularly in rural areas, and replace the previously established Rural Health Care Pilot Program with a permanent program.[51] The Healthcare Connect Fund program supports high-capacity broadband connectivity and encourages the development of state and regional networks. This program provides a 65% discount on eligible expenses related to broadband connectivity and is available to individual rural health care providers and consortia. Consortia can include nonrural providers, but at least 50% of providers must be located in a rural area.

According to data released by USAC, approximately $296.8 million was disbursed under the Rural Health Care Program in 2018.[52]

The Low Income Program

As initially designed, the Low Income Program provided a discount for voice telephony service for eligible low-income consumers. The major program has two subprograms, Lifeline and Link Up,[53] with the Lifeline Program providing the vast majority of support. In March 2016, the FCC adopted an Order to expand the Lifeline Program to support mobile and fixed broadband internet access services on a stand-alone basis, or with a bundled voice service. Households must meet needs-based criteria for eligibility. The Lifeline Program provides assistance for only one line per eligible household (either wired or wireless), in the form of a monthly subsidy of, in most cases, $9.25.[54] Support is not given directly to the subscriber but to the designated service provider.

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[48] The Rural Healthcare Connectivity Act of 2016, Title II (P.L. 114-182) added skilled nursing facilities to the list of health care providers eligible to receive RHC program support. This change became effective June 21, 2017.

[49] For additional information on these programs, see USAC's Rural Health Care Program website: https://www.usac.org/rhc/default.aspx.

[50] For more details on the USF rural health care support mechanism and the Healthcare Connect Fund see *In the Matter of Rural Health Care Support Mechanism*, WC Docket No. 02-60, Federal Communications Commission, adopted December 12, 2012, available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-12-150A1.pdf.

[51] The Rural Health Care Pilot Program was established by the FCC, in 2006 to help public and nonprofit health care providers build state and region wide broadband networks dedicated to the provision of health care services. It was the precursor to the current Healthcare Connect Fund and is no longer accepting applications.

[52] For additional information and data on this program, see Universal Service Administrative Company, *2018 Annual Report*, pp. 7 and 11, available at https://www.usac.org/about/tools/publications/annual-reports/default.aspx.

[53] The Link Up program assists eligible low-income subscribers to pay the costs associated with the initiation of service and is no longer available except for on Tribal Lands.

[54] Tribal Lands Lifeline provides an additional discount of up to $25 for eligible low-income consumers living on Tribal Lands for a total discount of up to $34.25.

According to data released by USAC, approximately $1.16 billion in funding was disbursed under the Low Income Program in 2018.[55]

FCC's Broadband Deployment Advisory Committee

Aside from funding, another way the federal government can facilitate broadband deployment is by taking steps to lower or remove regulatory barriers to broadband deployment facing private sector providers. On January 31, 2017, FCC Chairman Ajit Pai announced the formation of a new federal advisory committee, the Broadband Deployment Advisory Committee (BDAC),[56] to provide advice and recommendations for the FCC on how to accelerate the deployment of broadband by reducing and/or removing regulatory barriers to infrastructure investment.[57] The BDAC is composed of stakeholders, appointed by the FCC chairman, representing industry, states, localities, tribes, academia, and others. Five working groups have been formed; these are Model Code for Municipalities, Model Code for States, Competitive Access to Broadband Infrastructure, Removing State and Local Regulatory Barriers, and Streamlining Federal Siting.[58]

The FCC has also initiated proceedings and adopted orders addressing the issue of reducing regulatory barriers for the deployment of wireless and wireline broadband.[59]

Rural Utilities Service Programs

RUS implements four programs specifically targeted at providing assistance for broadband connectivity infrastructure deployment in rural areas: the Rural Broadband Access Loan and Loan Guarantee Program (also referred to as the Farm Bill Broadband Loans),[60] the Telecommunications Infrastructure Loans and Loan Guarantees (previously the rural telephone loan program dating back to 1949),[61] the ReConnect Program (pilot broadband loan and grant program),[62] and the Community Connect Grant Program.[63] Additionally, RUS houses the Distance Learning and Telemedicine Grant Program, which supports broadband-based distance learning and telemedicine applications.[64] The 115th Congress reauthorized, modified and provided funding for RUS broadband programs as part of the 2018 farm bill (Agriculture Improvement Act of 2018, P.L. 115-334). For more information on how the 2018 farm bill addressed RUS broadband programs, see CRS Report RL33816, *Broadband Loan and Grant Programs in the USDA's Rural Utilities Service*, by Lennard G. Kruger and Alyssa R. Casey.

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[55] For additional information and data on this program, see Universal Service Administrative Company, *2018 Annual Report*, pp. 6 and 11, available at https://www.usac.org/about/tools/publications/annual-reports/default.aspx.

[56] https://www.fcc.gov/broadband-deployment-advisory-committee.

[57] See https://www.fcc.gov/broadband-deployment-advisory-committee.

[58] Federal Communications Commission, *Public Notice*, "FCC Announced Membership and First Meeting of the Broadband Deployment Advisory Committee," GN Docket No. 17-83, April 6, 2017, available at https://apps.fcc.gov/edocs_public/attachmatch/DA-17-328A1.pdf.

[59] See Federal Communications Commission, *Fourteenth Broadband Deployment Report Notice of Inquiry*, GN Docket No. 18-238, FCC 18-119, adopted August 8, 2018, para. 24, available at https://docs.fcc.gov/public/attachments/FCC-18-119A1.pdf.

[60] 7 U.S.C. 950bb.

[61] 7 U.S.C. 922 et. seq.

[62] Consolidated Appropriations Act, 2018 (P.L. 115-141, Division A, §779), and Consolidated Appropriations Act, 2019 (P.L. 116-6, Division B, §762).

[63] 7 U.S.C. 950bb-3.

[64] 7 U.S.C. 950aaa et. seq.

P.L. 111-5: The American Recovery and Reinvestment Act of 2009 Programs

On February 17, 2009, President Obama signed P.L. 111-5, the American Recovery and Reinvestment Act (ARRA). Broadband provisions of the ARRA provided a total of $7.2 billion, for broadband grants, loans, and loan/grant combinations. The total consisted of $4.7 billion to NTIA/DOC for a newly established Broadband Technology Opportunities Program (grants) and $2.5 billion to the RUS/USDA Broadband Initiatives Program (grants, loans, and grant/loan combinations).

Regarding the $2.5 billion to RUS/USDA broadband programs, the ARRA specified that at least 75% of the area to be served by a project receiving funds shall be in a rural area without sufficient access to high-speed broadband service to facilitate economic development, as determined by the Secretary of Agriculture. ARRA directed the USDA to give priority to projects that provide service to the most rural residents that do not have access to broadband services. Priority was also given to borrowers and former borrowers of rural telephone loans.

Of the $4.7 billion appropriated to NTIA

- $4.35 billion was directed to a competitive broadband grant program, of which not less than $200 million were to be available for competitive grants for expanding public computer center capacity (including at community colleges and public libraries); not less than $250 million to encourage sustainable adoption of broadband service; and $10 million transferred to the Department of Commerce Office of Inspector General for audits and oversight; and
- $350 million was directed for funding the Broadband Data Improvement Act (P.L. 110-385) and for the purpose of developing and maintaining a broadband inventory map, to be made accessible to the public no later than two years after enactment. Funds deemed necessary and appropriate by the Secretary of Commerce were to be transferred to the FCC for the purposes of developing a national broadband plan, which was released on March 17, 2010.[65]

Final BTOP and BIP program awards were announced by September 30, 2010. With a few exceptions, all ARRA broadband projects were concluded as of September 30, 2015.[66]

BroadbandUSA

BroadbandUSA is housed at the Department of Commerce's National Telecommunications and Information Administration (NTIA). Using the expertise gained during administration of the ARRA Broadband Technology Opportunities Program (BTOP), the BroadbandUSA program offers one-to-one technical assistance to communities seeking to plan and implement broadband initiatives. BroadbandUSA is intended to leverage knowledge of federal funding and its network of contacts to help communities identify and leverage funding opportunities; provide support to

[65] Federal Communications Commission, *Connecting America: The National Broadband Plan*, released March 17, 2010, available at https://transition.fcc.gov/national-broadband-plan/national-broadband-plan.pdf. For more information, see "The National Broadband Plan," below.

[66] For more information on implementation of the broadband provisions of the ARRA, see CRS Report R40436, *Broadband Infrastructure Programs in the American Recovery and Reinvestment Act*, by Lennard G. Kruger. For information on the distribution and oversight of ARRA broadband grants and loans, see CRS Report R41775, *Background and Issues for Congressional Oversight of ARRA Broadband Awards*, by Lennard G. Kruger.

communities seeking public-private partnerships; review, analyze, and provide recommendations and guidance associated with community-level reports, studies, and procurements; and provide background information and training to organizations that need assistance navigating the broadband landscape.[67] BroadbandUSA also organizes regional events and workshops bringing together broadband stakeholders and publishes guides and tools that can serve as resources for communities seeking to launch broadband initiatives.[68]

Additionally, NTIA serves as cochair of the Broadband Interagency Working Group (BIWG)[69] alongside the Department of Agriculture's Rural Utilities Service (RUS). Through the BIWG, NTIA works with other federal agencies to improve coordination across programs, reduce regulatory barriers to broadband deployment, promote awareness of the importance of federal support for broadband investment and digital inclusion programs, and collect and share information with communities about available federal resources for broadband deployment and digital inclusion efforts. The BIWG was formed in January 2017, in response to the *Broadband Opportunity Council Agency's Progress Report*, which was a report that described progress on broadband deployment, competition, and adoption as directed by a Presidential Memorandum signed on March 23, 2015.[70]

BroadbandUSA also coordinates the State Broadband Leaders Network (SBLN), which includes state level office representatives involved in broadband efforts. The SBLN shares priorities and best practices; discusses emerging telecommunications policy issues; links states and local jurisdictions to federal agencies and funding sources; and addresses barriers to collaboration across states and agencies.[71]

The National Broadband Plan

As mandated by the American Recovery and Reinvestment Act of 2009 (ARRA P.L. 111-5), on March 16, 2010, the FCC released its report, *Connecting America: The National Broadband Plan*.[72] The National Broadband Plan (NBP) sought to "create a high-performance America," which the FCC defined as "a more productive, creative, efficient America in which affordable broadband is available everywhere and everyone has the means and skills to use valuable

[67] For more information on the types of technical assistance BroadbandUSA offers, see http://www2.ntia.doc.gov/technical_assistance.

[68] See http://www2.ntia.doc.gov/publications.

[69] NTIA, Broadband Interagency Working Group (BIWG) Members, March 2018, available at NTIA, Broadband Interagency Working Group (BIWG) Members, March 29, 2018, available at https://www.ntia.doc.gov/other-publication/2018/broadband-interagency-working-group-biwg-members.

[70] Department of Commerce and Department of Agriculture, *Broadband Opportunity Council Agency's Progress Report*, January 2017, available at https://www.ntia.doc.gov/files/ntia/publications/broadband_opportunity_council_agencies_progress_report_jan2017.pdf. The report was issued pursuant to the March 23, 2015, Presidential Memorandum, "Expanding Broadband Deployment and Adoption by Addressing Regulatory Barriers and Encouraging Investment and Training," and the subsequent August 20, 2015, *Broadband Opportunity Council Report and Recommendations*, available at https://www.ntia.doc.gov/files/ntia/publications/broadband_opportunity_council_report_final.pdf.

[71] For more information on the SBLN, see https://broadbandusa.ntia.doc.gov/ntia-resources/state-broadband-leaders-network-sbln. A fact sheet is available at https://broadbandusa.ntia.doc.gov/sites/default/files/resource-files/sbln_fact_sheet_007262017_0.pdf.

[72] Federal Communications Commission, *Connecting America: The National Broadband Plan*, March 16, 2010, https://transition.fcc.gov/national-broadband-plan/national-broadband-plan.pdf.

broadband applications."[73] In order to achieve this mission, the NBP recommended that the country set six goals for 2020:

- Goal 1: At least 100 million U.S. homes should have affordable access to actual download speeds of at least 100 megabits per second and actual upload speeds of at least 50 megabits per second.
- Goal 2: The United States should lead the world in mobile innovation, with the fastest and most extensive wireless networks of any nation.
- Goal 3: Every American should have affordable access to robust broadband service, and the means and skills to subscribe if they so choose.
- Goal 4: Every American community should have affordable access to at least 1 gigabit per second broadband service to anchor institutions such as schools, hospitals, and government buildings.
- Goal 5: To ensure the safety of the American people, every first responder should have access to a nationwide, wireless, interoperable broadband public safety network.
- Goal 6: To ensure that America leads in the clean energy economy, every American should be able to use broadband to track and manage their real-time energy consumption.

The National Broadband Plan was categorized into three parts

- **Part I (Innovation and Investment)**, which "discusses recommendations to maximize innovation, investment and consumer welfare, primarily through competition. It then recommends more efficient allocation and management of assets government controls or influences."[74] The recommendations address a number of issues, including spectrum policy, improved broadband data collection, broadband performance standards and disclosure, special access rates, interconnection, privacy and cybersecurity, child online safety, poles and rights-of-way, research and experimentation (R&E) tax credits, and R&D funding.
- **Part II (Inclusion)**, which "makes recommendations to promote inclusion—to ensure that all Americans have access to the opportunities broadband can provide."[75] Issues identified include reforming the Universal Service Fund, intercarrier compensation, federal assistance for broadband in tribal lands, expanding existing broadband grant and loan programs at the Rural Utilities Service, enabling greater broadband connectivity in anchor institutions, and improved broadband adoption and utilization especially among disadvantaged and vulnerable populations.
- **Part III (National Purposes)**, which "makes recommendations to maximize the use of broadband to address national priorities. This includes reforming laws, policies and incentives to maximize the benefits of broadband in areas where government plays a significant role."[76] National purposes include health care, education, energy and the environment, government performance, civic engagement, and public safety. Issues include telehealth and health IT, online

[73] Federal Communications Commission, *Connecting America*: *The National Broadband Plan*, March 17, 2010, p. 9.

[74] Ibid, p. 11.

[75] Ibid.

[76] Ibid.

learning and modernizing educational broadband infrastructure, digital literacy and job training, smart grid and smart buildings, federal support for broadband in small businesses, telework within the federal government, cybersecurity and protection of critical broadband infrastructure, copyright of public digital media, interoperable public safety communications, next generation 911 networks, and emergency alert systems.

Other Federal Programs and Initiatives

Appalachian Regional Commission

Section 1436 of the Fixing America's Surface Transportation Act (FAST Act, P.L. 114-94) authorized a high-speed broadband deployment initiative for the 13-state Appalachian region consisting of $10 million in available broadband grants annually through FY2020. In August 2016, ARC published a *Broadband Planning Primer and Toolkit*.[77]

Economic Development Administration

Broadband projects are eligible for funding under the Economic Development Assistance programs of the Economic Development Administration (EDA) in the Department of Commerce. The Explanatory Statement that accompanied the FY2018 Consolidated Appropriations Act (P.L. 115-141) stated that funding provided under EDA's Public Works, Economic Adjustment Assistance, and other programs may be used to support broadband infrastructure projects, and that EDA is encouraged to prioritize unserved areas.[78]

Trump Administration Legislative Outline

On February 12, 2018, the Trump Administration released its *Legislative Outline for Rebuilding Infrastructure in America*.[79] The plan did not dedicate any funding exclusively for broadband, but did include rural broadband among the types of infrastructure projects that would be eligible for funding. Proposed funding amounts include the following:

- *$50 billion* for a Rural Infrastructure Program. Funding would be block-granted to the states under a formula distribution for infrastructure projects including transportation, water and waste, power and electric, water resources, and broadband (including other high-speed data and communication conduits). Governors "would have the discretion to choose investments to respond to the unique rural needs of their states."[80] Eligible infrastructure projects would serve rural areas with populations of less than 50,000. An unspecified portion of the Rural Infrastructure Program funds would be set aside for tribal infrastructure and territorial infrastructure.
- *$20 billion* for a Transformative Projects Program, which would "provide Federal funding and technical assistance for bold, innovative, and transformative

[77] Available at https://www.arc.gov/images/programs/telecom/ARCBroadbandPlanningPrimerToolkit.pdf.

[78] Explanatory Statement accompanying FY2018 Consolidated Appropriations Act, Division B, p. 173, available at https://www.govinfo.gov/content/pkg/CPRT-115HPRT29456/pdf/CPRT-115HPRT29456.pdf.

[79] The White House, *Legislative Outline for Rebuilding Infrastructure in America*, released February 12, 2018, 53 p., available at https://www.whitehouse.gov/wp-content/uploads/2018/02/INFRASTRUCTURE-211.pdf.

[80] Ibid. p. 6.

infrastructure projects that could dramatically improve infrastructure."[81] Funding would be awarded on a competitive basis to projects "that are likely to be commercially viable, but that possess unique technical and risk characteristics that otherwise deter private sector investment."[82] The program would be led by the Department of Commerce, which would chair an interagency project selection and evaluation committee. Federal funding would be available for up to 30% of eligible costs for project demonstration, up to 50% of eligible costs for project planning, and up to 80% of eligible costs for capital construction.

- *$14 billion* for expanding existing federal credit programs that address infrastructure. This would include additional budget authority to the USDA's Rural Utilities Service for RUS loan programs (which include telecommunications and broadband loans and loan guarantees).
- *$6 billion* for expanding the scope of Public Activity Bonds (PABs). The proposal would expand and modify eligible exempt facilities for PABs to include a number of new categories, including rural broadband service facilities.

116th Congress

In the 116th Congress, numerous broadband bills have been introduced (see the **Appendix**). Broadband is included in a comprehensive infrastructure bill in the House and may also be considered as part of a comprehensive infrastructure package that may be proposed by the Administration. On May 15, 2019, Representative Pallone, Chairman of the House Energy and Commerce Committee, introduced the Leading Infrastructure for Tomorrow's America Act (LIFT America Act, H.R. 2741).[83] Title I, Subtitle A, would provide $40 billion to the FCC to establish a reverse auction, nationally and by states, that would fund broadband infrastructure deployment in unserved and underserved areas. Title I, Subtitle C, the Broadband Infrastructure Finance and Innovation Act of 2019 (BIFIA), would provide $5 billion to NTIA to make available secured loans, loan guarantees, and lines of credit for the construction and deployment of broadband infrastructure.

The Consolidated Appropriations Act, 2019 (P.L. 116-6) contains the following provisions related to the Reconnect Program and the NTIA broadband mapping and data initiative:

- Title VII, Section 762 of Division B (Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2019) allocated an additional $550 million for the ReConnect Program. Section 779 directs USDA to (1) ensure that applicants that are determined to be ineligible for the pilot program have a means of appealing or otherwise challenging that determination in a timely fashion; and (2) in determining whether an entity may overbuild or duplicate broadband expansion efforts made by any entity that has received a broadband loan from the RUS, not consider loans that were rescinded or defaulted on, or loans the terms and conditions of which were not met, if the entity under consideration has not previously defaulted on, or failed to meet the

[81] Ibid, p. 8.

[82] Ibid.

[83] House Committee on Energy and Commerce, *Press Release*, "E&C Democrats Introduce Infrastructure Package Aimed at Combating Climate Change, Expanding Broadband Access and Protecting Public Health and the Environment," May 15, 2019, available at https://energycommerce.house.gov/newsroom/press-releases/ec-democrats-introduce-infrastructure-package-aimed-at-combating-climate.

terms and conditions of, a RUS loan or had a Rural Utilities Service loan rescinded.

- The conference report (H.Rept. 116-9) directed up to $7.5 million to continue the broadband mapping effort started in FY2018 and directs NTIA to work with the FCC to improve the collection of broadband data.

115th Congress

The Consolidated Appropriations Act, 2018 (P.L. 115-141) contained many new broadband-related provisions:

- Title VII, Section 779 of Division A (Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2018) appropriated $600 million to RUS to "conduct a new broadband loan and grant pilot program." The law states that the funding is to "remain available until expended," and that at least 90% of the households to be served by a project receiving a loan or grant under the pilot program shall be in a rural area without sufficient access to broadband, defined for this pilot program as 10 Mbps downstream, and 1 Mbps upstream, which shall be reevaluated and redetermined, as necessary, on an annual basis by the Secretary of Agriculture. The pilot broadband loan and grant program is being implemented as the ReConnect Program, which is offering loans, grants, and loan/grant combinations. More information on the ReConnect Program is available at https://reconnect.usda.gov.
- Title I of Division B (Commerce, Justice, Science, and Related Agencies Appropriations Act, 2018) appropriated $7.5 million to update the national broadband availability map in coordination with the FCC and using partnerships previously developed with the states.
- Title V of Division P (Ray Baum's Act of 2018). Section 101 amended the Communications Act of 1934 to provide for the deposits of bidders in auctions of spectrum frequencies to be deposited in the Treasury. Section 504 directed the FCC to submit a report to Congress on promoting broadband for veterans, in particular low-income veterans and veterans residing in rural areas.[84] Section 505 directed the FCC to promulgate regulations to establish a methodology that shall apply to the collection of mobile service coverage data for the purposes of the Universal Service program. Section 508 required the FCC to submit a report to Congress evaluating broadband coverage in Indian country and on land held by a Native Corporation pursuant to the Alaska Native Claims Settlement Act, with the FCC required to complete a proceeding to address the unserved areas identified in the report.[85]
- Title VI (MOBILE NOW) of Division P directed the NTIA and FCC to make more spectrum available for wireless broadband, facilitate broadband infrastructure deployment on federal lands, include communications facility installation data in the federal real property database, require consultation between telecommunications providers and state highway authorities receiving

[84] The FCC's report on promoting internet access service for veterans was released on May 1, 2019, see https://www.fcc.gov/document/report-promoting-internet-access-service-veterans.

[85] The FCC's report on broadband deployment in Indian country was released on May 1, 2019, see https://www.fcc.gov/document/report-broadband-deployment-indian-country.

federal highway money. Additionally, Section 615 directed GAO to conduct a study to evaluate the availability of broadband access using unlicensed spectrum and wireless networks in low-income neighborhoods.

The 115th Congress did not enact legislation to implement a comprehensive infrastructure package. Rural broadband was included in the $20 billion ($10 billion per year for two years) carved out for infrastructure in the two-year budget agreement reached between the House and Senate in February 2018 (P.L. 115-123). However, Congress did not specify the amount of funding targeted specifically for broadband.

The Trump Administration's *Legislative Outline* also contained many recommendations intended to reduce the costs and improve the time-effectiveness of infrastructure deployment by streamlining permitting regulations and procedures. In the 115th Congress, the House and Senate enacted legislation to streamline permitting for broadband deployment.[86] The FCC also began a process to develop recommendations for lowering or removing regulatory barriers to broadband deployment.

Concluding Observations

To the extent that Congress may consider various options for encouraging broadband deployment and adoption, a key issue may be how to strike a balance between providing federal assistance for unserved and underserved areas where the private sector may not be providing acceptable levels of broadband service, as determined by Congress and the FCC, while minimizing any effects that government intervention in the marketplace may have on competition and private sector investment.

The 116th Congress has a wide variety of options for oversight and legislation to address the digital divide. Congress could contemplate various approaches to providing support, through vehicles like appropriations or hearings, for broadband infrastructure deployment. This may include support for rural broadband—such as subsidies, loans, loan guarantees, and grants. Additionally, a wide array of policy instruments including tax incentives to encourage private sector deployment, broadband bonds, demand-side incentives (such as assistance to low-income families for purchasing computers), reducing regulatory barriers to broadband deployment, and spectrum policy to spur rollout of wireless broadband services could be considered.

[86] Consolidated Appropriations Act, 2018 (P.L. 115-141), Division P, Title V (Ray Baum's Act of 2018) and Title VI (MOBILE NOW).

Appendix. Broadband Legislation in the 116th Congress

Aside from the annual appropriations legislation, the following are selected broadband-related bills introduced into the 116th Congress.

Federal Funding, Incentives, and Coordination

H.R. 427 (Collins), introduced on January 10, 2019, as the Connect America Fund Accountability Act of 2019, would amend Section 254 of the Communications Act of 1934 to provide reporting requirements for recipients of funds that provide access in rural and high cost areas. Referred to the Subcommittee on Communications and Technology.

H.R. 658 (DeLauro), introduced on January 17, 2019, as the National Infrastructure Development Bank Act of 2019, would facilitate efficient investments and financing of infrastructure projects (including broadband projects) through the establishment of a National Infrastructure Development Bank. Referred to the Subcommittee on Economic Development, Public Buildings, and Emergency Management.

H.R. 711 (Young), introduced on January 22, 2019, would require GAO to conduct a study and submit a report on filing requirements under the Universal Service Fund programs. Referred to the Subcommittee on Communications and Technology.

H.R. 1328 (Tonko), introduced on February 25, 2019, as the ACCESS Broadband Act, would establish the Office of Internet Connectivity and Growth within NTIA at the Department of Commerce. The Office would provide outreach to communities seeking improved broadband connectivity and digital inclusion; track federal broadband dollars; and facilitate streamlined and standardized applications for federal broadband programs. Referred to the Committee on Energy and Commerce. Passed by the House on May 8, 2019.

H.R. 1508 (Blumenauer), introduced on March 5, 2019, as the Move America Act of 2019, would amend the Internal Revenue Code of 1986 to provide for bonds and credits to finance infrastructure, including rural broadband service infrastructure. Referred to the Committee on Ways and Means.

H.R. 1586 (Butterfield), introduced on March 7, 2019, as the BRIDGE Act, would establish a digital network technology program within NTIA which would award grants, cooperative agreements, and contracts to eligible institutions to assist such institutions in acquiring, and augmenting use by such institutions of, broadband internet access service to improve the quality and delivery of educational services provided by such institutions. Referred to the Committee on Energy and Commerce and the Committee on Education and Labor.

H.R. 1693 (Luján), introduced on March 12, 2019, would require the FCC to make the provision of Wi-Fi access on school buses eligible for E-rate support. Referred to the Committee on Energy and Commerce.

H.R. 2228 (Butterfield), introduced on April 10, 2019, would offer persistent poverty counties and political subdivisions of such counties the opportunity to have their rural development loans (including broadband and telecommunications loans) restructured. Referred to the Subcommittee on Commodity Exchanges, Energy, and Credit.

H.R. 2601 (Peterson), introduced on May 8, 2019, as the Office of Rural Telecommunications Act, would direct the FCC to establish the Office of Rural Telecommunications which would

coordinate with RUS, NTIA, and other federal broadband programs. Referred to the Committee on Energy and Commerce.

H.R. 2661 (Tipton), introduced on May 10, 2019, as the RURAL Broadband Act of 2019, would amend the Rural Electrification Act of 1936 to restrict the use of RUS grants or loans to deploy broadband infrastructure that overbuild or otherwise duplicate existing broadband networks. Referred to the Subcommittee on Commodity Exchanges, Energy, and Credit.

H.R. 2741 (Pallone), introduced on May 15, 2019, as the LIFT America Act, would provide (Title I, Subtitle A) $40 billion to the FCC to establish a reverse auction nationally and by states that would fund broadband infrastructure deployment in unserved and underserved areas. Referred to the Subcommittee for Indigenous Peoples of the United States.

H.R. 2921 (Kilmer), introduced on May 22, 2019, as the Broadband for All Act, would amend the Internal Revenue Code of 1986 to provide a tax credit to consumers to reimburse a portion of the cost of broadband infrastructure serving limited broadband districts. Referred to the Committee on Ways and Means.

H.R. 2929 (Mullin), introduced on May 22, 2019, as the Rural Broadband Network Advancement Act of 2019, would direct the FCC to promulgate a rule that would require edge providers transporting data across high cost rural networks to pay a network user fee to support broadband deployment in high cost rural areas. Referred to the Committee on Energy and Commerce.

H.R. 3278 (Loebsack), introduced on June 13, 2019, as the Connect America Act of 2019, would amend the Communications Act of 1934 to provide for the establishment of a program to expand access to broadband. Referred to the House Committee on Energy and Commerce.

H.R. 4127 (Luján), introduced on July 30, 2019, as the Broadband Infrastructure Finance and Innovation Act of 2019, would establish a broadband infrastructure finance and innovation program to make available loans, loan guarantees, and lines of credit for the construction and deployment of broadband infrastructure. Referred to the House Committee on Energy and Commerce.

H.R. 4283 (Pence), introduced on September 11, 2019, as the Broadband Interagency Coordination Act of 2019, would require federal agencies with jurisdiction over broadband deployment to enter into an interagency agreement related to certain types of funding for broadband deployment. Referred to the Committee on Energy and Commerce and Committee on Agriculture.

H.R. 4641 (Delgado), introduced on October 11, 2019, as the Broadband Speed Act, would require the FCC to establish an annual reporting requirement in which each provider of broadband service submits a report on broadband speed data based on a reasonable sample that is captured to demonstrate that the provider is capable of performing at the speed reported; establish a fine for any provider that is found to have willfully or knowingly provided false data about the speeds offered; and incorporate any other requirements issued by the FCC related to reporting on broadband speed data to minimize duplication. Referred to the Committee on Energy and Commerce.

S. 146 (Hoeven), introduced on January 16, 2019, as the Move America Act of 2019, would amend the Internal Revenue Code of 1986 to provide for bonds and credits to finance infrastructure, including rural broadband service infrastructure. Referred to the Committee on Finance.

S. 161 (Sullivan), introduced on January 16, 2019, would require GAO to conduct a study and submit a report on filing requirements under the Universal Service Fund programs. Referred to the Committee on Commerce, Science, and Transportation.

S. 454 (Cramer), introduced on February 12, 2019, as the Office of Rural Broadband Act, would establish an Office of Rural Broadband within the FCC that would coordinate with RUS/USDA, NTIA, and other FCC broadband-related activities. Referred to the Committee on Commerce, Science, and Transportation.

S. 738 (Udall), introduced on March 12, 2019, would require the FCC to make the provision of Wi-Fi access on school buses eligible for E-rate support. Referred to the Committee on Commerce, Science, and Transportation.

S. 1046 (Cortez Masto), introduced on April 4, 2019, as the ACCESS Broadband Act, would establish the Office of Internet Connectivity and Growth within NTIA at the Department of Commerce. The Office would provide outreach to communities seeking improved broadband connectivity and digital inclusion, track federal broadband dollars, and facilitate streamlined and standardized applications for federal broadband programs. Referred to the Committee on Commerce, Science, and Transportation.

S. 1166 (Blackburn), introduced April 11, 2019, as the Internet Exchange Act of 2019, would direct NTIA to make grants for the establishment or expansion of internet exchange facilities. Referred to the Committee on Commerce, Science, and Transportation.

S. 1167 (Murray), introduced April 11, 2019, as the Digital Equity Act of 2019, would establish an NTIA state-based and competitive grant programs to support national digital inclusion, digital equity, and broadband adoption programs. Referred to the Committee on Commerce, Science, and Transportation.

S. 1294 (Wicker), introduced on May 2, 2019, as the Broadband Interagency Coordination Act of 2019, would require federal agencies with jurisdiction over broadband deployment to enter into an interagency agreement related to certain types of funding for broadband deployment. Referred to the Committee on Commerce, Science, and Transportation.

S. 2018 (Collins), introduced on June 27, 2019, as the American Broadband Buildout Act of 2019, would provide federal matching funding for state-level broadband programs. Referred to the Committee on Commerce, Science, and Transportation.

S. 2344 (Peters), introduced on July 30, 2019 as the Broadband Infrastructure Finance and Innovation Act of 2019, would establish a broadband infrastructure finance and innovation program to make available loans, loan guarantees, and lines of credit for the construction and deployment of broadband infrastructure. Referred to the Committee on Commerce, Science, and Transportation.

S. 2385 (Wyden), introduced on July 31, 2019, as the Broadband Internet for Small Ports Act, would amend the Rural Electrification Act of 1936 to improve access to broadband telecommunications services in rural areas, including by encouraging the provision of broadband loans and grants. Referred to the Committee on Agriculture, Nutrition, and Forestry.

Broadband Data and Mapping, Studies, Reports

H.R. 55 (Rush), introduced on January 3, 2019, as the Connecting Broadband Deserts Act of 2019, would amend the Communications Act of 1934 to direct the FCC to conduct an annual inquiry on the availability of advanced telecommunications capability in broadband deserts. Referred to the Committee on Energy and Commerce.

H.R. 1644 (Doyle), introduced on March 8, 2019, as the Save the Internet Act of 2019, includes provisions that would require GAO to prepare reports on broadband internet access service competition, ways to improve broadband infrastructure in rural areas, challenges to accurate broadband mapping, and on the benefits of standalone broadband. It would require the FCC to engage with tribal communities to address broadband needs, to not release its 706 report until broadband data inaccuracies are corrected, and to submit to Congress a report containing a plan for how the FCC will evaluate and address problems with Form 477 broadband data. Passed by the House on April 10, 2019.

H.R. 2643 (Latta), introduced on May 9, 2019, as the Broadband MAPS Act of 2019, would direct the FCC to establish a challenge process to verify fixed and mobile broadband service coverage data. Referred to the Committee on Energy and Commerce.

H.R. 2741(Pallone), introduced on May 15, 2019, as the LIFT America Act, would provide (Title I, Subtitle A) $40 billion to the FCC to establish a reverse auction nationally and by states that would fund broadband infrastructure deployment in unserved and underserved areas. Referred to the Subcommittee for Indigenous Peoples of the United States.

H.R. 3055 (Serrano), introduced June 3, 2019, as the Commerce, Justice, Science, Agriculture, Rural Development, Food and Drug Administration, Interior, Environment, Military Construction, Veterans Affairs, Transportation, and Housing and Urban Development Appropriations Act, 2020, included two provisions on broadband mapping. One provision would prevent NTIA from using funding to update broadband maps using only Form 477 data and the other would provide $1 million in broadband mapping funding to NTIA. Passed the House and placed on the Senate Legislative Calendar.

H.R. 3162 (McMorris Rodgers), introduced June 6, 2019, as the Broadband Data Improvement Act of 2019, would require the FCC to establish a reporting requirement under which each provider submits accurate and granular information regarding the geographic availability of broadband internet access service provided by the provider and establish a framework for an ongoing challenge process through which a provider or a member of the public may submit information challenging the accuracy of the information reflected on the National Broadband Map. Referred to the House Committee on Energy and Commerce.

H.R. 3676 (Khanna), companion to S. 1289, introduced on July 10, 2019, as the Measuring the Economic Impact of Broadband Act of 2019, would require the Secretary of Commerce to conduct an assessment and analysis of the effects of broadband deployment and adoption on the economy of the United States. Referred to the Committee on Energy and Commerce.

H.R. 3999 (Bergman), introduced on July 25, 2019, as the Rural Broadband Connectivity Act of 2019, would amend the Internal Revenue Code of 1986 to allow for a credit against tax for placing qualified broadband property in service to expand the level of broadband service in a qualified rural census tract. Referred to the House Committee on Ways and Means.

H.R. 4024 (Finkenauer), introduced on July 25, 2019, as the Broadband Transparency and Accountability Act of 2019, would direct the FCC to require an entity to report data that reflects the average speed and characteristics of broadband service. It would also require the FCC to establish a process to use data that is reported by consumers, businesses, and state and local governments to verify the data used in the Broadband Map. Referred to the House Committee on Energy and Commerce.

H.R. 4128 (Luján), introduced on July 30, 2019, as the Map Improvement Act of 2019, would direct the FCC to establish a standardized methodology for collecting and mapping accurate fixed broadband internet service and mobile broadband internet service coverage data. It would also

establish an Office of Broadband Data Collection and Mapping within the FCC. Referred to the House Committee on Energy and Commerce.

H.R. 4227 (McEachin), introduced on September 6, 2019, as the Mapping Accuracy Promotes Services Act, would prohibit the submission to the Federal Communications Commission of broadband internet access service coverage information or data for the purposes of compiling an inaccurate broadband coverage map. Referred to the House Committee on Energy and Commerce.

H.R. 4229 (Loebsack), introduced on September 6, 2019, as the Broadband Deployment Accuracy and Technological Availability Act, would require the Federal Communications Commission to issue rules relating to the collection of data with respect to the availability of broadband services. Referred to the House Committee on Energy and Commerce.

H.R. 4642 (Delgado), introduced on October 11, 2019, as the Community Broadband Mapping Act, would allow RUS telecommunications grants to be made for the collection of broadband infrastructure data by local governments, economic development or other community organizations, electric or telephone cooperatives, and small internet providers. Referred to the Subcommittee on Commodity Exchanges, Energy, and Credit.

S. 842 (Klobuchar), introduced on March 14, 2019, as the Improving Broadband Mapping Act of 2019, would require the FCC to establish a process to use coverage data reported by consumers and state, local, and tribal government entities to verify coverage data reported by wireless carriers. Additionally, it would require the FCC to consider other measures, including, but not limited to, an evidence-based challenge process, to help in verifying coverage data reported by providers of both fixed and mobile broadband services. Referred to the Committee on Commerce, Science, and Transportation.

S. 1289 (Klobuchar), introduced on May 2, 2019, as the Measuring the Economic Impact of Broadband Act of 2019, would require the Secretary of Commerce to conduct an assessment and analysis of the effects of broadband deployment and adoption on the economy of the United States. Passed by the Senate without amendment by unanimous consent on June 5, 2019. Received in the House and referred to the House Committee on Energy and Commerce on June 10, 2019.

S. 1485 (Manchin), introduced on May 15, 2019, as the Map Improvement Act of 2019, would require the FCC, in coordination with NTIA, to establish a standardized methodology for collecting and mapping accurate fixed and mobile broadband coverage data. Establishes an Office of Broadband Data Collection and Mapping at the FCC to serve as the central point of collection, aggregation, and validation of data. It would also establish a technical assistance grant program at NTIA to support state and local entities in broadband mapping and assessing broadband adoption and pricing within their communities. Referred to the Committee on Commerce, Science, and Transportation.

S. 1515 (Hassan), introduced on May 16, 2019, would direct the FCC to promulgate regulations that establish a national standard for determining whether mobile and broadband services available in rural areas are reasonably comparable to those services provided in urban areas. Referred to the Committee on Commerce, Science, and Transportation.

S. 1522 (Capito), introduced on May 16, 2019, as the Broadband Data Improvement Act of 2019, would direct the FCC to establish rules that require providers to submit more accurate and granular broadband data; a three-pronged data validation process involving public feedback, third-party commercial datasets, and an on-the-ground field validation process; and a periodic challenge process. It would require the National Broadband Map to be used by federal agencies to

identify areas that remain unserved and track where awarded funds have actually resulted in broadband buildout. Referred to the Committee on Commerce, Science, and Transportation.

S. 1822 (Wicker), introduced on June 12, 2019, as the Broadband Deployment Accuracy and Technological Availability (Data) Act, would require the FCC to issue rules to collect more granular broadband coverage data, including a decision on whether to collect verified information from others, including state, local, and tribal governmental entities that are primarily responsible for mapping or tracking broadband internet access service coverage for their respective jurisdictions. Referred to the Committee on Commerce, Science, and Transportation.

S. 2275 (Bennet), introduced on July 25, 2019, as the Broadband Transparency and Accountability Act of 2019, would direct the FCC to require an entity to report data that reflects the average speed and characteristics of broadband service. It would also require the FCC to establish a process to use data that is reported by consumers, businesses, and state and local governments to verify the data used in the Broadband Map. Read twice and referred to the Committee on Commerce, Science, and Transportation.

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