

Bridging the American Health Care and Digital Divide: Broadband Deployment, Artificial Intelligence and Telehealth Services

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Testifying before the United States Senate Committee on Commerce, Science, and Transportation in July 2018 regarding the benefits of increasing health care connectivity, FCC Commissioner Brendan Carr told a story about his visit to the Mississippi Delta:

Last month, I returned to Mississippi and visited the Delta, which is ground zero for the country’s diabetes epidemic. It is where I met Ms. Annie. She noticed the first signs of diabetes when she woke up with blurred vision. So, she signed up for a remote patient monitoring program. She showed me the iPad and the Bluetooth-enabled blood sugar monitor that she uses to test her blood from home and it gives her instant feedback, including steps she can take that day to stay healthy. Ms. Annie’s A1C levels have gone down and she says she’s never felt better.²

Patients like Ms. Annie no longer need to be at a health care facility to receive quality care. They can now utilize mobile health applications and remote monitoring programs at home. Many of these applications and programs integrate Artificial Intelligence (“AI”), which enables medical professionals to better detect health issues, review images, correspond with patients, and maintain medical records.

While the current “hub-and-spoke”³ health care model emphasizes “broadband connectivity at and between brick-and-mortar health care facilities[,]”⁴ when a patient leaves a facility, access to quality care may be diminished or non-existent.⁵ Helping to bridge the coverage gap between health care at facilities and direct-to-patient care is the newly emerging connected health care model, which connects patients through broadband-enabled telehealth⁶ services.⁷ These services include interconnected monitoring devices, broadband-enabled video conferencing, and other digital health tools and tasks assisted by AI technology that allow patients to access quality care beyond a health care facility.⁸

But success in truly bridging the health care gap depends on both ubiquitous high-speed connectivity and the unstifled emergence of new technology.⁹ Federal and state government agencies, particularly the Federal Communications Commission (“FCC”), have a key role to play in not only grappling with the regulatory implications of these new technologies but also in implementing programs

and initiatives to help those technologies emerge. If the history of regulation of new communications technologies and services is any indication, a light-touch regulatory approach to AI and telehealth technology, in combination with ubiquitous high-speed connectivity, should encourage significant health care innovation and investment while helping to bridge the American health care and digital divide.

I. Artificial Intelligence: Not Immune from Regulation

To understand how AI fits into the FCC's efforts to deploy broadband to promote health care connectivity discussed in Section II, it is useful to first define AI; illustrate the breadth of AI's application to representative industries; and describe AI's relationship with the Internet of Things ("IoT"), cloud computing, and broadband. AI can be thought of as "a set of technologies that replicate human behavior, allowing computers to mimic, supplement, and in some cases replace human direction."¹⁰ AI has application to many industries, such as transportation, finance, and health care. For example, in the automotive industry AI can help drivers prevent accidents, provide an alert when children or pets remain in a car through inward-facing AI cameras,¹¹ and provide autonomous vehicles with sensory and cognitive functions similar to those of human drivers.¹² In finance, AI can be used to detect fraudulent transactions, develop credit risk models, and enhance customer service.¹³ In the health care sector, AI can allow doctors to remotely "pinpoint diagnosis and treatment without delay"¹⁴ as well as provide "a system to analyze medical information to determine sources of errors . . . and enhanc[e] procedures by adding computerized intelligence to medical devices and tools."¹⁵

IoT, such as wearable health technology, surveillance cameras, and smart appliances, "enables collection and exchange of data, such as biometric data, behavioral information and unstructured information, through network-connected sensors and devices that operate mostly without human interventions."¹⁶ Cloud computing can be defined as "a model for enabling a shared pool of computing resources (e.g., networks, servers, storage, applications and services) on demand that can be rapidly released . . . In cloud computing, the various applications, platforms and databases are stored in large data [centers], referred to as the cloud."¹⁷ The critical technological backbone of AI, IoT, and cloud computing is broadband.¹⁸ Broadband technologies facilitate "voice and data transmissions to data storage locations, mostly using cloud computing technologies."¹⁹ When combined, these "components can produce synergistic and transformative impacts, culminating into AI applications that bring new value" by improving on past processes.²⁰

Although there is no overarching AI regulator, the White House, Congress, federal agencies, and states are creating law, regulation, and policy to promote AI technology across many industries. In a White House release from its 2018 Summit on Artificial Intelligence for American Industry, the Trump

administration emphasized the need to remove barriers to United States AI innovation: “[o]verly burdensome regulations do not stop innovation—they just move it overseas. Participants . . . addressed the importance of maintaining American leadership in AI and emerging technologies, and promoting AI [research and development] collaboration among America’s allies.”²¹ Yet, concerns remain that American AI research lacks both sufficient White House policy support and funding.²² In contrast, through private capital and government sponsorship, China hopes to charter a “\$1 trillion A.I. industry by 2030.”²³

AI is subject to a diverse framework of existing federal and state law and regulation,²⁴ but many of these frameworks are not specific to AI. Instead, many laws regarding cybersecurity, privacy, unfair and deceptive trade practices, health, and safety can be applied to AI generally as a type of technology or as an integral part of services.²⁵ Nevertheless, there are a variety of efforts in Congress to regulate AI directly, including pending legislation that seeks to establish commissions or committees on AI matters, or create autonomous vehicle safety measures.²⁶ The Congressional Artificial Intelligence Caucus, already in existence, aims “to inform policymakers of the technological, economic and social impacts of advances in AI and to ensure that rapid innovation in AI and related fields benefits Americans as fully as possible.”²⁷

Several federal agencies and bureaus also are addressing AI in their respective industries, including: the U.S. Food and Drug Administration (“FDA”); U.S. Department of Transportation (“DOT”); National Highway Traffic Safety Administration (“NHTSA”); Federal Aviation Administration (“FAA”); Federal Reserve; and Financial Crimes Enforcement Network (“FinCEN”). But on the federal level, the FCC is at the forefront of advancing the important role AI plays in quality health care and enabling health care innovation through its management of America’s wireline and wireless infrastructure.²⁸

II. Federal and State Efforts to Advance Health Care Connectivity

High-speed connectivity is essential to bring patients the benefits of mobile health applications and remote patient monitoring technologies, often assisted by AI technologies. FCC policy and actions promoting connectivity through broadband deployment have been implemented and are being expanded to encourage AI and telehealth technology in the health care context allowing more Americans to take advantage of AI telehealth technology. The following reviews these actions, and other sources of federal and state funding that complement these efforts by also encouraging more rapid broadband deployment in underserved areas.

A. Federal Communications Commission

At the 2018 Global Symposium for Regulators in Geneva, Switzerland, FCC Chairman Pai outlined how the FCC’s emphasis on delivering connectivity will promote new technologies such as AI, blockchain, virtual and augmented reality, and other technologies for all.²⁹ Chairman Pai highlighted four

“foundational principles” that are guiding the FCC’s approach to new technologies. The first is “regulatory humility,”³⁰ explaining that “government should resist pre-emptive regulation when there is no market failure or consumer harm.”³¹ Second, Chairman Pai emphasized “government should facilitate, not frustrate, innovation and investment.”³² One example he provided is the FCC’s actions to promote infrastructure deployment, including those to speed the deployment of 5G networks/services.³³ “These networks,” Chairman Pai explained, “will help usher in emerging technologies such as AI.”³⁴ Third, the FCC is promoting innovation by “freeing up spectrum for wireless services.”³⁵ Fourth, the FCC has made “universal access” a “key part of its approach to emerging technologies,” with “top priority” being to ensure “every American can benefit from the digital revolution.”³⁶

Consistent with these principles, the FCC issued a Public Notice in 2017 recognizing the important role the FCC plays in evaluating the nation’s broadband health infrastructure and its need to understand the ongoing technology-based transformation in health care delivery.³⁷ Leading the FCC’s effort is the Connect2Health Task Force, a senior-level, multi-disciplinary team of FCC experts working in a variety of areas on proceedings and initiatives related to health care technology. “For example, the Wireless Telecommunications Bureau and the Office of Engineering and Technology manage spectrum and work to create new opportunities for competitive technologies, including wireless medical devices; and the Wireline Competition Bureau oversees the Healthcare Connect Fund, a program intended to expand health care provider access to broadband.”³⁸ Other bureaus and offices at the FCC playing key roles are the Consumer and Governmental Affairs Bureau including its Disability Rights Office and the Office of Native Affairs and Policy.³⁹

At the heart of FCC policies and actions to advance both broadband deployment and health care connectivity⁴⁰ is the more than two-decade old Congressional mandate for the FCC to make telecommunications available to health providers in rural areas.⁴¹ In addition, Congress has charged that if the FCC finds advanced telecommunications capability is not being deployed to all Americans in a “reasonable and timely fashion,” the FCC must “take immediate action to accelerate deployment of such capability by removing barriers to infrastructure investment and by promoting competition in the telecommunications market.”⁴² The FCC’s Rural Health Care (“RHC”) Program seeks to provide “eligible health care providers with discounted telecommunications and broadband Internet access services.”⁴³ The program’s goal is to “improve the quality of health care available to patients in rural communities by ensuring that eligible [health care providers] have access to telecommunications and broadband services.”⁴⁴ The RHC Program includes the Healthcare Connect Fund, the Telecommunications Program, and the Rural Health Care Pilot Program.⁴⁵ Through the Rural Health Care Pilot Program, the FCC has promoted broadband deployment to create connected health care facility

networks.⁴⁶ The FCC further established the Connect2Health Task Force, mentioned earlier, to “identify barriers to broadband-enabled health care solutions.”⁴⁷ The FCC also has developed an online “interactive mapping platform that overlays health status indicators with broadband availability across the country.”⁴⁸

While the FCC has traditionally focused its efforts on broadband connectivity between health care facilities,⁴⁹ as advances in AI lead to more interconnected monitoring devices and broadband-enabled telehealth technologies, the FCC is shifting its attention to broadband connectivity from facility to patient.⁵⁰ The FCC released its Notice of Inquiry (“Telehealth NOI”) in August 2018, which explores the creation of the Connected Care Pilot Program.⁵¹ The pilot program proposes Universal Service Fund (“USF”) support to “promote the use of broadband-enabled telehealth services and applications by low-income families and low-income veterans, with a focus on such services and applications delivered directly to patients outside of brick-and-mortar health care facilities.”⁵² The FCC has sought comments on: how the pilot program could advance the “direct-to-consumer health care” movement; promote broadband deployment in unserved and underserved areas; and help bridge the digital divide.⁵³

B. Federal Universal Service Fund

The federal Universal Service Fund (“USF”) also plays an important role in the intersection between health care, AI, and broadband deployment. The FCC together with the Federal-State Joint Board has defined the services that are funded by the federal universal service support programs, which include the RHC.⁵⁴ The FCC relies on the Universal Service Administrative Company (“USAC”) to administer the Fund, while the FCC remains responsible for implementing and enforcing all rules applicable to the Fund. For years, the RHC Program funding cap was sufficient to fulfill health care provider demand,⁵⁵ but recently, “funding requests for high-speed broadband from health care providers have outpaced the RHC Program funding cap, placing a strain on the Program’s ability to increase access to broadband for health care providers, particularly in rural areas, and foster the deployment of broadband health care networks.”⁵⁶ No doubt, the surge in requests for funding has been driven by the exponential growth in new technologies.⁵⁷ In response, in June 2018, the FCC: (1) raised the RHC Program annual funding cap to \$571 million, as applied to funding year (“FY”) 2017; (2) starting with FY 2018, annually adjusts the RHC Program funding cap to account for inflation; and (3) created a carry-forward process for unused funds.⁵⁸ The FCC’s efforts to increase the funding cap underscore the crucial role technology plays in rural health care delivery.⁵⁹ The Fund also provides funding to those eligible under the High Cost Program, which seeks to “ensure that consumers in rural, insular, and high-cost areas have access to modern communications networks capable of providing voice and broadband service, both fixed and mobile, at rates that are reasonably comparable to those in urban areas.”⁶⁰ Eligible carriers can recover some cost from the federal USF.⁶¹

C. United States Department of Agriculture - Rural Development

The United States Department of Agriculture's Rural Utilities Service ("RUS"), is also involved in ensuring Americans in rural areas have access to advanced telecommunications services.⁶² RUS oversees programs that provide rural communities with necessary infrastructure or related improvements.⁶³ Grant programs include: (1) Community Connect Grants; (2) Distance Learning and Telemedicine Grants; (3) Rural Broadband Access Loan and Loan Guarantee; and (4) Telecommunications Infrastructure Loans and Guarantees.⁶⁴ On March 23, 2018, Congress appropriated the RUS e-Connectivity Pilot program \$600 million. "The e-Connectivity Pilot was directed to expedite loans and grants for the costs of the construction, improvement, and acquisition of facilities and equipment for broadband service in eligible rural areas."⁶⁵ In addition, the United States Department of Agriculture Rural Development's Distance Learning and Telemedicine program "helps rural communities use the unique capabilities of telecommunications to connect to each other and to the world, overcoming the effects of remoteness and low population density."⁶⁶ These overlapping programs administered by a separate federal agency are not without controversy. FCC Commissioner O'Rielly and leading communications service providers have urged USDA to administer its broadband deployment-related funds in a manner consistent with the efforts of the FCC and not to duplicate other FCC programs or permit "cherry-picking" in remote areas.⁶⁷

D. State Efforts

States also are taking an active role to speed the deployment of broadband through grant programs. Funding priority is typically given to projects located in unserved or underserved areas. But other factors are being considered, such as: type of entity seeking to provide broadband, whether the project promotes telemedicine, environmental benefits, home automation, and cost.⁶⁸ For example, a 2017 recipient of Minnesota's Border-to-Border Broadband grant program provided the following description of its intended project: "[b]eyond the benefit of providing in-home access to educational resources across all learning levels and the growing adoption of telemedicine services by rural residents, these broadband investments provide families the ability to take advantage of Smart Grid and home automation technologies, shaving dollars off utility bills, contributing to a healthy environment, and adding the convenience of home network management."⁶⁹

III. Regulatory Humility: A Model for Promoting Innovation and Investment

In addition to increased connectivity, the advancement of new technologies also depends on investment. Burdensome regulation can hinder innovation and discourage investment, and, as the White House contends, push innovation overseas.⁷⁰ The FCC's model of "regulatory humility," as discussed, has helped to facilitate the emergence of information service technologies and promote investment in those technologies since the 1990s. As Chairman Pai explained, by rescinding traditional common carrier

regulation that was briefly applied to Internet access service, the FCC has restored the “bipartisan, light-touch approach that served the online world well for nearly 20 years . . . On June 11, [2018] we will have a framework in place that encourages innovation and investment in our nation’s networks so that all Americans, no matter where they live, can have access to better, cheaper, and faster Internet access and the jobs, opportunities, and platform for free expression that it provides.”⁷¹ In a similar message, albeit more cautionary, Andrea O’Sullivan submits in the MIT TECHNOLOGY REVIEW, *Don’t Let Regulators Ruin AI*:

[a]s AI grows to touch more and more domains of existence, a new federal AI agency could have a worryingly large command over American life. Policymakers would need the patience and humility to discern one AI application from another. The social risks from AI assistants, for example, are different from those posed by predictive policing software and ‘smart weapons.’ But an overly zealous regulatory regime might erroneously lump such applications together, stifling beneficial technologies while dedicating fewer resources to the big problems that really matter.⁷²

The FCC’s long history of applying a light-touch approach to new technology appears to have served the public well. In the AI and telehealth context, technology has thrived in the absence of major, overarching regulation. According to one source, “[t]otal corporate funding for healthcare technology companies climbed to \$8.2 billion (including debt and public market financing) in 2017 . . . analytics technology was the top funded category . . . with the biggest focus area being artificial intelligence.”⁷³ These facts suggest the government should heed those urging that it not be driven by solutions in search of a problem. The market, public interest, and public safety should continue to drive and guide new regulation, with special attention paid to the experience of the FCC in overseeing the regulation of some of the biggest changes in information and communication technologies in the past 30 years.⁷⁴ AI and telehealth technology are nascent technologies and any governmental oversight must be careful not to stifle, but to encourage and enhance innovation and investment.

IV. Conclusion

The emergence of AI technology requires high-speed connectivity. The FCC is well-positioned to play a leading role in maximizing widespread accessible broadband infrastructure. Patients must have broadband access to enjoy the benefits of telemedicine. A continued focus on broadband deployment is therefore crucial in the health care context. Multiple efforts are underway to encourage this development, and the future looks exciting. History suggests that the best path to encourage greater health care innovation and investment, while also bridging the American health care and digital divide, will be a light-touch regulatory approach to AI and other telehealth technology implemented only to protect the public interest or ensure public safety where true problems exist. As the leader in this area, the FCC appears to

have embraced its mandate and is well on its way to delivering policies to more rapidly encourage ubiquitous high-speed connectivity that is needed by all Americans for all things, especially health care.

Notes

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² *Oversight of the Fed. Commc’ns Comm’n Before the S. Comm. On Commerce, Sci., & Transp.*, 115th Cong. (2018) (statement of Brendan Carr, Commissioner, Federal Communications Commission).

³ See James K. Elrod and John L. Fortenberry, Jr., *The Hub-and-Spoke Organization Design Revisited: A Lifeline for Rural Hospitals*, BMC Health Services Research 17 (Dec. 2017), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5751794/>.

⁴ *Promoting Telehealth for Low-Income Consumers*, Notice of Inquiry, WC Docket No. 18-213, ¶ 4 (Aug. 2, 2018) (“Telehealth NOI”).

⁵ *Telehealth NOI* ¶ 4.

⁶ *Compare What is Telehealth*, CENTER FOR CONNECTED HEALTH POLICY, <http://www.cchpca.org/what-is-telehealth> (last visited Aug. 20, 2018) (Defining “telehealth” as “a broad variety of technologies and tactics to deliver virtual medical, health, and education services”) with *Is There a Difference between Telemedicine and Telehealth?*, MHEALTHINTELLIGENCE, <https://mhealthintelligence.com/features/is-there-a-difference-between-telemedicine-and-telehealth> (last visited Aug. 31, 2018) (Defining “telemedicine” as the “clinical application of technology”).

⁷ *Telehealth NOI* ¶ 4.

⁸ See, e.g., *Telehealth NOI* ¶ 4.

⁹ See, e.g., *Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, Notice of Inquiry, GN Docket No. 18-238 (Aug. 9, 2018) (Dissenting Statement of Commissioner Jessica Rosenworcel) (“I believe the future belongs to the connected. No matter whom you are or where you live in this country, you need access to modern communications to have a fair shot at 21st century success.”).

¹⁰ Kira Hessekiel et al., *AGTech Forum Briefing Book: State Attorneys General and Artificial Intelligence*, BERKMAN KLEIN CENTER FOR INTERNET & SOCIETY AT HARVARD UNIVERSITY (2018).

¹¹ See Jeff Peters, *The AI in your non-autonomous car*, TECHCRUNCH (May 24, 2018), <https://techcrunch.com/2018/05/24/the-ai-in-your-non-autonomous-car/>.

¹² See Suhasini Gadam, *Artificial Intelligence and Autonomous Vehicles*, MEDIUM (Apr. 19, 2018), <https://medium.com/datadriveninvestor/artificial-intelligence-and-autonomous-vehicles-ae877feb6cd2>.

¹³ Taryn MacKinney, Shruthi Ashok, and Brendan Bordelon, National Journal, Presentation, Artificial intelligence: Regulation and government (Aug. 16, 2018).

¹⁴ Terry Cooper, *Embracing AI to help doctors develop communities of care*, IBM (June 27, 2018), <https://www.ibm.com/blogs/client-voices/embracing-ai-to-help-doctors-develop-communities-of-care/>.

¹⁵ Danica Mitch M. Pacis et al., *Trends in telemedicine utilizing artificial intelligence*, AMERICAN INSTITUTE OF PHYSICS (2018). For further discussion of AI application in telehealth, see also Terry Cooper, *Embracing AI to help doctors develop communities of care*, IBM (June 27, 2018), <https://www.ibm.com/blogs/client-voices/embracing-ai-to-help-doctors-develop-communities-of-care/> (Discussing IBM AI telemedicine technology such as “case management, Watson Analytics, chat functionality, a built-in database, file and image sharing, a human body map and integration with electronic medical record (EMR) systems”); Eric Wicklund, *FDA OKs mHealth App That Uses AI to Spot Strokes, Alert Specialists*, MHEALTHINTELLIGENCE (Feb. 14, 2018), <https://mhealthintelligence.com/news/fda-oks-mhealth-app-that-uses-ai-to-spot-strokes-alert-specialists> (Discussing technology that “uses artificial intelligence to analyze CT images for signs of a stroke, potentially speeding up the time to treatment”); Eric Wicklund, *mHealth Research on Mental Health Taps Into One’s Tapping Habits*, MHEALTHINTELLIGENCE (Mar. 29, 2018), <https://mhealthintelligence.com/news/mhealth-research-on-mental-health-taps-into-ones-tapping-habits> (Offering discussion of AI-enhanced applications to detect depression in patients based on analysis of user’s smartphone habits).

¹⁶ U.N. Economic and Social Commission for Asia and the Pacific, Artificial Intelligence and Broadband Divide: State of ICT Connectivity in Asia and the Pacific (2017) at 6, https://www.unescap.org/sites/default/files/StateofICT2017_16Jan2018.pdf (“U.N. Report”).

¹⁷ U.N. Report at 29-30.

¹⁸ FCC Public Notice, *FCC Seeks Comment and Data on Actions to Accelerate Adoption and Accessibility of Broadband-Enabled Health Care Solutions and Advanced Technologies*, FCC 17-46, GN Docket No. 16-46, 32 FCC Rcd 3660 (2017) (“Public Notice”).

¹⁹ U.N. Report at 7.

²⁰ U.N. Report at 7.

²¹ *White House Hosts Summit on Artificial Intelligence for American Industry*, THE WHITE HOUSE (May 10, 2018), <https://www.whitehouse.gov/articles/white-house-hosts-summit-artificial-intelligence-american-industry/>.

²² *China is determined to steal A.I. crown from US and nothing, not even a trade war, will stop it*, CNBC (May 4, 2018), <https://www.cnbc.com/2018/05/04/china-aims-to-steal-us-a-i-crown-and-not-even-trade-war-will-stop-it.html>.

²³ *Id.*

²⁴ State action taken regarding AI is concentrated in the autonomous vehicle legislation and regulation context. *See, e.g.*, Ben Husch & Anne Teigen, *Regulating Autonomous Vehicles*, NAT'L CONFERENCE OF STATE LEGISLATURES (Apr. 2017), <http://www.ncsl.org/research/transportation/regulating-autonomous-vehicles.aspx>.

²⁵ Christopher Fonzone & Kate Heinzelman, *Should the government regulate artificial intelligence? It already is*, THE HILL (Feb. 26, 2018), <http://thehill.com/opinion/technology/375606-should-the-government-regulate-artificial-intelligence-it-already-is>.

²⁶ *See, e.g.*, FUTURE of Artificial Intelligence Act of 2017, H.R. 4625, 115th Cong. (2017-2018); SELF DRIVE Act, H.R. 3388, 115th Cong. (2017-2018); National Security Commission Artificial Intelligence Act of 2018, H.R. 5356, 115th Cong. (2017-2018); AV START Act, S. 1885, 115th Cong. (2017-2018).

²⁷ *Congressional Artificial Intelligence Caucus*, U.S. HOUSE OF REPRESENTATIVES, <https://artificialintelligencecaucus-delaney.house.gov/> (last visited August 20, 2018).

²⁸ Public Notice.

²⁹ Remarks of FCC Chairman Ajit Pai at the 18th Global Symposium for Regulators, Geneva, Switzerland (July 10, 2018).

³⁰ *Id.*

³¹ *Id.*

³² *Id.*

³³ *Id.*

³⁴ *Id.*

³⁵ *Id.*

³⁶ *Id.*

³⁷ *See* Public Notice.

³⁸ *Id.* at 3662.

³⁹ *Id.*

⁴⁰ Congress is also actively engaged in proposing legislation directing the FCC to further promote broadband Internet access, particularly in rural areas. *See, e.g.*, RAY BAUM'S Act of 2018, H.R. 4986, 115th Cong. (2017-2018); Office of Rural Broadband Act, S. 2959, 115th Cong. (2017-2018).

⁴¹ 47 U.S.C. § 254(h)(1).

⁴² Section 706 of the Telecommunications Act of 1996, as amended, 47 U.S.C. § 1302.

⁴³ *Telehealth NOI* ¶ 3.

⁴⁴ *Rural Health Care Program*, FCC, <https://www.fcc.gov/general/rural-health-care-program> (last visited Aug. 29, 2018).

⁴⁵ *Rural Health Care Program*, FCC, <https://www.fcc.gov/general/rural-health-care-program> (last visited Aug. 29, 2018).

⁴⁶ *Telehealth NOI* ¶ 3; *Rural Health Care Pilot Program*, FCC, <https://www.fcc.gov/general/rural-health-care-pilot-program> (last visited Aug. 20, 2018).

⁴⁷ *Telehealth NOI* ¶ 3; *Connect2HealthFCC*, FCC, <https://www.fcc.gov/about-fcc/fcc-initiatives/connect2healthfcc> (last visited Aug. 20, 2018). *See also* Public Notice at 3667 (Led efforts to collect comments and data regarding the FCC's "Broadband Health Imperative" in order to "encourage broadband adoption and promote health IT").

⁴⁸ *Telehealth NOI* ¶ 3; *Mapping Broadband Health in America*, FCC, www.fcc.gov/health/maps (last visited Aug. 20, 2018).

⁴⁹ *Telehealth NOI* ¶¶ 2, 4.

⁵⁰ *Telehealth NOI* ¶ 4.

⁵¹ *See Telehealth NOI* ¶ 2.

⁵² *Id.* ¶ 11. The FCC intends to allocate up to \$100 million in pilot program funding. Each telehealth pilot project "could receive up to \$5 million in funding to support broadband connectivity to low-income patients and increased capabilities for the health care provider." *Id.* ¶ 13. The FCC also expects the "pilot program would provide funding for: (1) broadband connectivity that eligible low-income patients of participating clinics and hospitals would use to receive connected care services (as well as for other uses); and (2) broadband connectivity that the participating clinic or hospital needs to conduct its proposed connected care pilot project." *Id.* ¶ 42.

⁵³ *Id.* ¶¶ 21, 25, 27.

⁵⁴ *See, e.g., Promoting Telehealth in Rural America*, WC Docket No. 17-310, Report and Order, ¶ 7 (2018).

⁵⁵ *Id.* ¶ 2.

⁵⁶ *Id.* ¶ 2.

⁵⁷ *See id.* ¶ 13 ("Raising the funding cap to \$571 million responds to the significant increase in RHC Program demand resulting from the expansion of eligible services and entities since the Program's creation, as well as the advances in technology

that often require higher bandwidth (e.g., higher-speed bandwidth, less latency, and diverse routing) than was contemplated by the Commission when it established a \$400 million cap for the Program in 1997.”).

⁵⁸ *Id.* ¶ 9.

⁵⁹ *Id.* ¶ 1.

⁶⁰ *Universal Service for High Cost Areas – Connect America Fund*, FCC, <https://www.fcc.gov/general/universal-service-high-cost-areas-connect-america-fund> (last visited Aug. 31, 2018).

⁶¹ *Universal Service for High Cost Areas – Connect America Fund*, FCC, <https://www.fcc.gov/general/universal-service-high-cost-areas-connect-america-fund> (last visited Aug. 31, 2018).

⁶² RUS is soliciting comments until September 10, 2018 regarding its proposed broadband pilot program (e-Connectivity Pilot). Broadband e-Connectivity Pilot Program, 83 Fed. Reg. 35609 (July 27, 2018).

⁶³ *Rural Utilities Service*, USDA RURAL DEV., <https://www.rd.usda.gov/about-rd/agencies/rural-utilities-service> (last visited Aug. 29, 2018).

⁶⁴ *Telecom Programs*, USDA RURAL DEV., <https://www.rd.usda.gov/programs-services/all-programs/telecom-programs> (last visited Aug. 29, 2018).

⁶⁵ See Consolidated Appropriations Act of 2018, Pub. L. No. 115-141, 132 Stat. 348 (2018); Broadband e-Connectivity Pilot Program, 83 Fed. Reg. 35609 (July 27, 2018).

⁶⁶ *Distance Learning & Telemedicine Grants*, USDA RURAL DEV., <https://www.rd.usda.gov/programs-services/distance-learning-telemedicine-grants> (last visited Aug. 31, 2018).

⁶⁷ See FCC Commissioner Michael O’Rielly Comments in Rural Utilities Service, *Broadband e-Connectivity Pilot Program Notice of Inquiry and Request for Comments*, Docket No. RUS-18-TELECOM-0004 at 2; Kelcee Griffis, *Rural Broadband Funds Shouldn’t Overlap, O’Rielly Says*, LAW360 (Sept. 10, 2018), <https://www.law360.com/telecom/articles/1081206/rural-broadband-funds-shouldn-t-overlap-o-rielly-says>.

⁶⁸ *Broadband Grant Program*, MINNESOTA DEP’T OF EMP’T & ECON. DEV., <https://mn.gov/deed/programs-services/broadband/grant-program/> (last visited Aug. 24, 2018); Joan Engebretson, *Ohio Broadband Grants Would Total \$50M Annually, Joins Growing State Level Focus on Broadband*, TELECOMPETITOR (Apr. 12, 2018), <https://www.telecompetitor.com/ohio-broadband-grants-would-total-50-million-annually/>.

⁶⁹ *Broadband Grant Program*, MINNESOTA DEP’T OF EMP’T & ECON. DEV., <https://mn.gov/deed/programs-services/broadband/grant-program/> (last visited Aug. 24, 2018).

⁷⁰ See also William D. Eggers et al., *The future of regulation – Principles for regulating emerging technologies*, DELOITTE INSIGHTS (June 19, 2018), <https://www2.deloitte.com/insights/us/en/industry/public-sector/future-of-regulation/regulating-emerging-technology.html#endnote-5>; Andrea O’Sullivan, *Don’t Let Regulators Ruin AI*, MIT TECHNOLOGY REVIEW (Oct. 24, 2017), <https://www.technologyreview.com/s/609132/dont-let-regulators-ruin-ai/>.

⁷¹ *Chairman Pai Statement on Restoring Internet Freedom Order Taking Effect*, FCC Press Release (May 10, 2018), https://transition.fcc.gov/Daily_Releases/Daily_Business/2018/db0510/DOC-350643A1.pdf.

⁷² Andrea O’Sullivan, *Don’t Let Regulators Ruin AI*, MIT TECHNOLOGY REVIEW (Oct. 24, 2017), <https://www.technologyreview.com/s/609132/dont-let-regulators-ruin-ai/>.

⁷³ Mike Miliard, *AI funding tops \$1 billion mark as mobile investments wane*, HEALTHCARE IT NEWS (Jan. 17, 2018), <https://www.healthcareitnews.com/news/health-it-funding-surpasses-7-billion-first-time-ai-and-analytics-biggest-winners>.

⁷⁴ See *infra* Section II.A.

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