

Prepared Testimony of

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Before the

Senate Communications and Technology Committee

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Good afternoon, Chairman Phillips-Hill, Minority Chair Santarsiero, and Honorable Members of this Committee, I appreciate the opportunity to speak with you today regarding the interplay of broadband and telehealth, particularly in rural areas.

While the Commission is no expert and does not directly regulate telehealth in Pennsylvania, the Commission has been working on broadband deployment issues since the General Assembly first enacted our Chapter 30 law in 1993, and then revised that law in 2004. Chapter 30 contains provisions addressing universal service and broadband deployment that are relevant to telehealth.¹

Broadband deployment in the context of telehealth means many things to many people. When speaking of broadband deployment, one should keep two important things in mind. The first is availability -- are there facilities to provide the service? The second is affordability -- are the rates reasonably affordable to consumers?² Availability is a major challenge in rural Pennsylvania. Affordability is an ongoing and separate challenge facing both rural and urban Pennsylvania. It is the main barrier to adoption.³

¹ 66 Pa.C.S. § 3011-3019, particularly Section 3011(2).

² See e.g., *Mobile Technology and Home Broadband* (June 2019) at <https://www.pewinternet.org/2019/06/13/mobile-technology-and-home-broadband-2019/>. For example, 92% of adults from households earning \$75,000 or more a year say they have broadband internet at home, but that share falls to 56% among those whose annual household income falls below \$30,000. That 36-point gap in broadband adoption between the highest- and lowest-income groups is substantially larger than the 24-point gap in smartphone ownership between these groups.

³ *In re: Lifeline and Link-Up Reform and Modernization, Connect America Fund*, Docket Nos. 11-42 and 10-90 (April 27, 2016), para. 2.

Having said that, I want to reiterate and build upon Commissioner Kennard's prior testimony regarding the obstacles to broadband deployment in underserved and unserved areas of Pennsylvania that I have attached to my testimony.⁴ A general understanding of these obstacles is important because it directly impacts the ability to provide telehealth in high-cost rural areas.

Simply put, telehealth, like so many things today, needs the internet. To get the internet, you need broadband networks and broadband internet access service. This service is purchased by residential, commercial, industrial, and health care providers. The ability to get broadband gives rise to many new services, including telehealth.

When it comes to rural Pennsylvania and telehealth, the challenges of cost and population density remain.⁵ Cost refers to the capital needed to build, operate, and replace a broadband network. Population density refers to the number of people per square mile that could purchase, and subsequently purchase, broadband.

Population density is a problem because the sheer number of people over a geographic area able to purchase broadband is much smaller in rural areas than in urban areas even if the costs were the same. Without adequate support, referred to as universal service, providers are simply unable or uninterested in providing service to areas populated by few people and is a considerable impediment to broadband deployment.

⁴ Prepared Testimony of Commissioner Normal J. Kennard, Senate of Pennsylvania Technology Committee (August 7, 2019), hereinafter *Cmmr. Kennard Testimony*.

⁵ *Kennard Testimony*, p. 6. See Appendix A for a reference to the testimony.

Population density is not the only problem. Cost is critical. Nearly a decade ago, the Federal Communications Commission's (FCC) work on the National Broadband Plan at Docket 09-51 demonstrated that the cost to provide broadband in rural America is just larger than in urban America.

At that time, the FCC examined the issue of costs while developing a National Broadband Plan that Congress required under the American Recovery and Reinvestment Act (ARRA) and Section 706.⁶ The FCC examined capital expense, operating expense, and transport. Capital expense is the one-time cost to build a network. Operating expense is the ongoing cost to operate a network that provides voice, video, and data. Transport refers to the cost that providers pay to transmit the voice, data, and video sought by consumers from their location to a place on the internet, and back, using the broadband they purchased from their internet service provider (ISP).

The differences in some costs are considerable and similar in others. The capital expense to provide broadband in rural and urban areas is wide, about \$35 per customer in urban areas compared to \$300 in rural areas. The gap, however, between operating expenses once a network is built is not that wide. Operating expenses average about \$50

⁶ American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115 (2009) (Recovery Act); see also *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act, A National Broadband Plan for Our Future*, GN Docket Nos. 09-137, 09-51, Notice of Inquiry, FCC 09-65 (rel. Aug. 7, 2009) (hereinafter *Section 706 Reports*); *Comment Sought on International Comparison and Consumer Survey Requirements in the Broadband Data Improvement Act*, GN Docket No. 09-47, Public Notice, 24 FCC Rcd 3908 (2009). There have been multiple Section 706 Reports since then. Those consulted here are the most recent ones issued in 2016 at Docket No. 15-191, 2018 at Docket 17-199 and the most recent one on May 29, 2019 at 18-238.

per customer in urban areas compared to \$57 in rural areas. A bigger gap, however, arises for the transport cost or the connection needed to carry information from a consumer back to that consumer through their ISP from an internet gateway. Transport costs about \$6 per customer in urban areas compared to \$150 in rural areas.⁷

This transport cost, sometimes referred to as special access, has been a unique challenge at the FCC that has engendered considerable controversy since 2005.⁸ The FCC has been unable to decide if transport / special access cost is unreasonably high or simply the result of geography and distance. The FCC proposed regulating the rates for transport/special access in 2015 but abandoned that effort in 2017. The FCC is currently considering this issue yet again with the Broadband Deployment Advisory Committee.⁹

It should be noted, however, that even if the capital, operating, and transport issues were resolved and fiber to the premises (FTTP) and mobile broadband were available everywhere in Pennsylvania, which they are not, there will still be the need to address obsolescence¹⁰ and depreciation. Without recognizing and accounting for the reality of rapid technological change in the telecommunications and broadband markets, what is

⁷ *In re: National Broadband Plan*, Docket 09-51 (September 29, 2009 Commission Meeting), Slide 44

⁸ See e.g. and Compare *In re: Special Access for Price-Cap Carriers*, Docket No. 05-25, Comcast Ex Parte (September 9, 2016) with XO Reply Comments (February 19, 2016) and United States Telephone Association Ex Parte (June 14, 2014). The FCC's decision was appealed and that, in turn, resulted in the current BDAC process. ⁹ See, generally, *In re: Broadband Deployment Advisory Committee*, GN Docket No. 17-83.

¹⁰ For example, the computer processing power and price reductions for the electronics related to broadband declines by 50% every 18 months under a phenomenon called Moore's Law. Cao's Law, in turn, holds that the communications spectrum is virtually infinite and that wavelength division multiplexing will follow Moore's Law. Harry Newton, *Newton's Telecom Dictionary* (20th Ed: 2004), pp. 149 and 535. The FCC staff's presentation during development of the Broadband National Plan reflects that view for fiber. *In re: National Broadband Plan*, Docket 09-51 (September 29, 2009 Commission meeting), Slide 38 (end to end fiber networks offer nearly unlimited scalability and performance). It is worth noting that fiber will be needed for wireless backhaul, including 5G.

built today may soon become obsolete tomorrow and there will be inadequate financial reserves to buy the new equipment.

This brings up another issue: depreciation. Today's capital expense investment wears out and must eventually be replaced. Without ensuring that a portion of today's revenues generated from the delivery of broadband is set aside to replace today's network, there will be insufficient revenues to replace today's equipment when it becomes obsolete or worn out tomorrow.

These should be considered in conjunction with the allocation of any public resources to support capital, operating, or transport expense to provide broadband in high-cost rural areas. Otherwise, public support may be depleted and, because the network may not be self-supporting, the same cost challenge will arise for needed future investment. In the monopoly era, regulation addressed depreciation. While today's situation may be a challenge, these fundamental economic and financial realities remain.

When it comes to the cost and price of deploying the physical facilities needed to provide broadband, one must distinguish between "middle mile" and "last mile" networks. Middle-mile networks carry broadband between the owners of networks so that broadband can be delivered to consumers on the "last mile" network. The last-mile usually runs from a consumer's specific location to the facilities their provider is using, typically cable head-end offices or telephone central offices, to provide broadband.

Pennsylvania, with some exceptions, does not have a middle mile problem when it comes to rural broadband. Pennsylvania faces a larger last-mile challenge when it comes to providing high-speed connections from the telephone central office or cable head-end to the consumer's location. For telehealth purposes, this would be from a cable or telephone network to the rural hospital, health center, or local healthcare provider.

The public focus is usually on whether there are physical facilities and services to provide broadband. However, as Commissioner Kennard observed, the definition of what constitutes broadband availability is often based on what broadband speed consumers are getting.¹¹ That has changed dramatically over the years.¹² Broadband availability today also considers whether consumers have fixed wireline broadband and mobile wireless broadband. Each is considered necessary to have broadband.¹³

On this issue of broadband availability and affordability, the FCC does not consider a consumer to have access to broadband under federal law unless that consumer can obtain not only fixed wireline broadband but also mobile wireless broadband. Wireline availability is now defined to be 25 Megabits (Mbps) download and 3 Mbps upload, the so-called Netflix speed. While the FCC's most recent Section 706 Report continues to use this 25/3 speed, there has been a considerable push to redefine that speed

¹¹ *Kennard Testimony*, p. 4.

¹² See e.g., *In re: National Broadband Plan*, Docket No. 09-51 (June 20, 2010) (FCC increases broadband speed under Section 706 from 200 kilobits per second downstream to 4 Mbps downstream and 1 Mbps upstream).

¹³ *Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, Docket No. 96-95 (January 29, 2016), para. 20; *Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, Docket No. 18-238 (May 2019), para. 10.

to 100 Mbps. This reflects the ongoing tendency to redefine what constitutes wireline broadband availability under federal law.¹⁴

On mobile or wireless broadband, the FCC considers a consumer served if they have access to 5/1 Mbps but requires a recipient serving an area without mobile broadband to build a network capable of providing 10/1 Mbps.¹⁵ To ensure that, the FCC created a Mobility Fund II program, (MF II) to identify areas eligible for mobile support and 10/1 as the performance standard for supported service. The FCC will use a reverse auction to allocate limited MF II support. The FCC's most recent Section 706 Report, again, analyzes mobile broadband at 5/1 and 10/1 speeds although some believe that this approach is too rigid and needs improvement.¹⁶

In deciding where to provide support, the FCC considers an area to be served with fixed wireline broadband if one consumer in a census block has access to broadband or a carrier could provide broadband without an unreasonable capital expenditure.¹⁷ On the wireless side, the FCC considers an area as served by mobile broadband if consumers have access to mobile broadband at 5/1 Mbps. However, the FCC's support process will require providers to deliver mobile broadband at 10/1 if it is a high-cost rural area

¹⁴ See e.g., *Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, Docket No. 18-238, Dissenting Statement of Commissioner Jessica Rosenworcel; Public Knowledge Ex Parte (March 4, 2019). Accord <https://www.multichannel.com/blog/rosenworcel-wants-100-mbps-fcc-broadband-base>.

¹⁵ *In the Matter of Connect America Fund Universal Service Reform – Mobility Fund*, Docket Nos. 10-90 and 10-208 (August 4, 2017), para. 16.

¹⁶ *Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, Docket No. 18-238 (May 29, 2019), para. 10-20, particularly 14, 16, 17.

¹⁷ *Kennard Testimony*, p. 8.

without mobile broadband.¹⁸ While one might well wonder how the FCC can consider an area served if they have mobile broadband at 5/1 but then support the building of networks to provide mobile broadband performance at 10/1 speeds, this is the current state of mobile broadband policy. For telehealth purposes, consumers and providers are supposed to have broadband access that is reasonably comparable to that in urban areas.

The MF II program supports the building of mobile broadband networks. That is one part of one program under the umbrella of the Federal Universal Service Fund. The other program is the ongoing Connect America Fund (CAF) program to build wireline broadband networks in high cost areas as well. These two programs, the MF II and CAF, are funded from the High-Cost part of the fund.¹⁹

The portion of the federal universal service fund that addresses telehealth and that I am focusing on is the Rural Health Care program or RHC. The RHC supports the deployment of facilities so that health care is as reasonably available in rural areas as it is in urban area and that the rates for those services are reasonably comparable to those in urban areas. This is required by federal law.²⁰

¹⁸ *In re: Connect America Fund*, Docket No. 10-90 (August 4, 2017), para. 14 and 15.

¹⁹ There are three other parts to the federal universal service fund. The E-Rate fund supports the deployment of broadband facilities and services to schools and libraries. In 2016, PA received \$58.8M in E-Rate funding and \$82.1M in 2017, a considerable increase that offset our overall contribution. The Lifeline Fund supports consumers by providing \$9.25 a month to eligible low-income consumers so they can buy voice or broadband service, but not both, unless they decide to buy those “bundles” of voice and broadband service.

²⁰ *In re: Promoting Telehealth in Rural America*, Docket No. 17-310 (August 20, 2019), para. 9 citing Section 254(h)(1)(A) of 47 U.S.C. 254(h)(1)(A).

Before I discuss the RHC in more detail, I'd like to address the federal support that Pennsylvania gets from this fund compared to what we pay into that fund. Table 1.9 of the FCC's Monitoring Reports from 2017 and 2018 showing disbursements to Pennsylvania is instructive.²¹ Table 1.9 shows that Pennsylvania overall contributed \$191.76M more into the Universal Service Fund than we received in 2017. The net contribution in 2016 was \$196.92M. These two-year totals demonstrate that any funding that Pennsylvania receives from that the FCC or other funding sources such as the Rural Utility Service (RUS) goes a long way to mitigating the contribution that Pennsylvania continues to make to support voice and broadband networks in other jurisdictions.

The largest of the Universal Service Funds is the High Cost Fund. The 2018 Report shows that in 2017, Pennsylvania recipients received \$68.6M for high-cost support to meet their universal service obligations and to provide fixed wireline voice and broadband. There has been no distribution to date of any MF II support to build mobile wireless networks. This \$68.6M, however, is less than the \$72.3M Pennsylvania's recipients got in 2016.

The reasons for this decline are complex. The FCC is reforming the support provided to incumbent carriers with federal universal service obligations by requiring them to build networks that can provide voice and broadband at increasingly higher speeds. The FCC is changing the way they calculate the support that they will provide

²¹ See and Compare Table 1.9 in *In re: Universal Service Monitoring Report*, Docket No. 96-45 (2018) and (2017).

to do this. While the FCC is requiring recipients to deploy a network capable of providing voice and broadband services, it has established a policy that the sole source for supporting those services is an assessment on telecommunications revenues.²² The Commission has been actively monitoring these FCC developments.

The FCC's Lifeline program is relevant to the topic of telehealth because the program supports customers at or below 135% of the federal poverty income guidelines. Given that approximately 21% of Pennsylvanians are at or below 150% of poverty,²³ any changes that trigger declines in support for Pennsylvania consumers reduces these customers access to broadband service and, in turn, telehealth.

On the Lifeline program, Pennsylvania received \$53.3M in support in 2017, compared to \$57.5M in 2016. This decline has been attributed to the FCC's implementation of National Verifier and NLAD database programs. Some providers claim that service changes make it more difficult to confirm a customer is eligible to receive that \$9.25 in support per month or to provide service to eligible consumers.²⁴

Given these considerations, the Commission remains active with the National Association of Regulatory Utility Commissioners (NARUC) to advance resolutions

²² *Kennard Testimony*, p. 13.

²³ 2017 Population Estimates and the 2016 5-year Average, American Community Survey, U.S. Census Bureau (Pennsylvania).

²⁴ See e.g., *In re: Lifeline and Link-Up Reform and Modernization*, Docket No. 11-42, Joint Petition To Pause Implementation of December 2019 Lifeline Minimum Service Standards Pending Forthcoming Marketplace Study (June 27, 2019).

encouraging the FCC to develop automatic provider interfaces (API) so that carriers can assist consumers in demonstrating eligibility.²⁵

With this background, I will focus today on the RHC or rural health care mechanism in the federal universal service fund.²⁶ Pennsylvania received \$2.1M in 2017 compared to \$4.4M in 2016.²⁷ While the reasons for this decline are varied, one reason put forth by Geisinger Systems is the very long-period of time that lapses between when a provider is identified as one who will be getting support and when the FCC actually delivers that support.²⁸ Another reason put forth by the FCC is that the lack of affordable and robust broadband service for citizens may negatively impact a health care provider's decision to invest in telehealth services like those provided with RHC support.²⁹

The most recent data provided for the RHC support for Pennsylvania in 2018 shows Pennsylvania commitments totaling \$3.97M for rural health using a variety of technologies and providers.³⁰ Providers receiving this support include Armstrong Cable Services, CenturyLink/United Telephone, Comcast Business Communications,

²⁵ *Resolution on the Lifeline National Verifier Launch and Minimum Service Standards* at <https://pubs.naruc.org/pub/3C86755C-FD04-1CF1-7558-180073A15B6A> (July 2019).

²⁶ The Universal Service Administration Corporation (USAC) administers the FCC's programs. USAC proved extremely helpful and provided invaluable information on the RHC program. More information is available on www.usac.org on timelines, processes, and funding. The overall RHC program information is at <https://www.usac.org/rhc/>. Specific information is available at <https://opendata.usac.org/Rural-Health-Care/Rural-Health-Care-Commitments-and-Disbursements-FC/2kme-evqg> (RHC); <https://opendata.usac.org/videos> (training resources); <https://www.usac.org/res/documents/rhc/pdf/handouts/RHC-Timeline-FY2019.pdf> (application timelines); <https://www.usac.org/res/documents/rhc/pdf/handouts/RHC-Program-Application-Process-Overview.pdf> (application overview for both programs); and [HCF](#) and [Telecom](#) (program information pages).

²⁷ *In re: Universal Service Monitoring Report*, Docket No. 96-45, Table 1.9 (2018) and (2017).

²⁸ *In re: Promoting Rural Health*, Docket No. 17-310, Geisinger Systems Ex Parte (May 7, 2019).

²⁹ *In re: Promoting Rural Health*, Docket No. 17-310, Geisinger Systems Ex Parte (May 7, 2019); *In the Matter of Promoting Telehealth for Low-Income Consumers*, Docket No. 18-213 (July 11, 2019), para. 2 and 10 and 13.

³⁰ See Appendix B.

Commonwealth Telephone Company, Frontier Communications, Nittany Media, Inc., Pennteldata, Salsgiver, South Canaan, Service Electric Communications, Verizon Pennsylvania LLC, Westel LLC, Windstream Communications, and Zito Media. Of these providers, the most prevalent carriers appear to be Comcast Business Communications and Pennteldata.

Background information on Monroe County and East Stroudsburg support from the RHC is included. Monroe County has received total commitments of \$171,234.19 for all years and has received \$153,156.43 to date. For 2018, Monroe has received \$43,260.83 in commitment and has received \$25,183.07 to date. Finally, East Stroudsburg received \$14,76738 in 2014 through 2015 and has received all of those disbursements. A list of the 2018 RHC commitments for Pennsylvania as well as Monroe County and East Stroudsburg based on FCC data is attached.³¹

The \$3.97M support that Pennsylvania did receive in 2018 comes from two programs.³² These two programs focus on supporting telecommunications services needed to connect health care providers to other providers and, subsequently, on providing broadband services to connect these health care providers to the Internet.

The first program is the Healthcare Connect Fund (HCF). HCF provides a 65% discount on the cost of broadband connectivity to eligible healthcare providers to encourage the formation of state and regional telehealth networks. The second is the

³¹ See Appendix C (Monroe County) and Appendix D (East Stroudsburg).

³² A brief overview of the FCC's RHC application and approval process is attached as Appendix E.

Telecommunications Program which provides discounts on telecommunications services to ensure that rural health care providers are paying rates that are reasonably comparable to the rates paid for telecommunications services in urban areas.³³

In recent years, there has been a trend in what's called "connected care," a term that refers to using the internet to monitor and diagnose a patient's healthcare. This connected care delivery system, however, depends on the healthcare provider and the end-user patient both having access to broadband. Connected care uses devices like smartphones or tablets which of course, require internet access and service. While the PUC has no jurisdiction and therefore does not have the expertise or authority to opine on the efficacy of connected care, the ability to serve patients remotely at their location compared to visits to the provider's facilities has resulted in considerable savings.³⁴

Cost is an important consideration given that the United States currently spends more than \$3 trillion on health care every year. This figure is a greater percentage of gross domestic product than any other nation in the Organization for Economic Cooperation and Development.³⁵

³³Sections 254(h)(2)(A) and 254(b)(1)-(3) and (6) of federal law require this. *See In re: Promoting Rural Health*, Docket No. 17-310, Geisinger Systems Ex Parte (May 7, 2019); *In the Matter of Promoting Telehealth for Low-Income Consumers*, Docket No. 18-213 (July 11, 2019), para. 5.

³⁴ *In the Matter of Promoting Telehealth for Low-Income Consumers*, Docket No. 18-213 (July 11, 2019), para 10.

³⁵ *In the Matter of Promoting Telehealth for Low-Income Consumers*, Docket No. 18-213 (July 11, 2019), para. 11.

For example, the Virginia Telehealth Network provided patients with broadband service and a broadband-enabled tablet in their homes.³⁶ The Veterans Administration has been able to expand services with reduced costs and, on September 19, 2018, the Veterans Administration, which had initially loaned out thousands of iPads to Veterans for Telehealth, said that the program proved so successful that it doubled the program.³⁷

In 2017, the FCC's Connect2Health Task Force issued a Public Notice seeking information on how connected care can be addressed to ensure the accessibility of broadband-based health care, particularly in rural America. One suggestion made was that the FCC's Rural Health fund subsidize the wireless broadband contracts between a wireless provider and the health care provider. The Rural Broadband Association further suggested that broadband service cost itself be supported given its relationship to remote patient health care for both wireline and wireless service. The Geisinger System also filed comments supporting the position of the American Hospital Association to include the costs for remote patient monitoring as an eligible expense.³⁸

In July of this year, the FCC issued a seminal Order and Notice of Proposed Rulemaking addressing how connected health support should operate within the

³⁶ *In the Matter of Promoting Telehealth for Low-Income Consumers*, Docket No. 18-213 (July 11, 2019), para. 7.

³⁷ *In re: Promoting Rural Health*, Docket No. 17-310, Geisinger Systems Ex Parte (May 7, 2019); *In the Matter of Promoting Telehealth for Low-Income Consumers*, Docket No. 18-213 (July 11, 2019), para. 10; Eli Richman, Fierce Healthcare, *The VA Tried Out Loaning Thousands of iPads to Veterans for Telehealth. Now They Plan to Double the Program* (Sept. 19, 2018), <https://www.fiercehealthcare.com/tech/va-expects-to-double-tablet-leasing-program-for-at-need-veteranspotentially-distributing-12>.

³⁸ *In the Matter of Promoting Telehealth for Low-Income Consumers*, Docket No. 18-213 (July 11, 2019), para. 8, n. 8.

Universal Service Fund generally, and the Rural Health Care Fund in particular.³⁹ The FCC established a 3-year/\$100M pilot program to examine ways of promoting connected care within the Universal Service Fund. The FCC recognized that the lack of affordable and robust broadband is an obstacle to the adoption of connected care service. The FCC also seeks input on what criteria and processes should govern distribution of this \$100M over the next 3 years.⁴⁰

The FCC is not the only federal agency focused on telehealth. The United States Department of Agriculture's Rural Utilities Service (RUS) is an active supporter of rural broadband in general, particularly rural telehealth.⁴¹

RUS has an ongoing Distance Learning and Telemedicine program (DLT). DLT helps rural areas overcome the effects of high costs of service for telecommunications arising from remoteness and low population density. DLT focuses on linking teachers and medical service providers in one area to students and patients in another.⁴²

Information and use of the DLT for rural telehealth play an important role in Pennsylvania. In 2016, there were no DLT grants or loans for Pennsylvania. By

³⁹ *In the Matter of Promoting Telehealth for Low-Income Consumers*, Docket No. 18-213 (July 11, 2019).

⁴⁰ *In the Matter of Promoting Telehealth for Low-Income Consumers*, Docket No. 18-213 (July 11, 2019). A party can file comments 30 days following publication in the Federal Register. Reply Comments are due 60 days after. That Order can be obtained at this link. https://www.fcc.gov/ecfs/search/filings?proceedings_name=18-213&sort=date_disseminated,DESC. A one-page reference to locate the order is also provided in Appendix H.

⁴¹ <https://www.rd.usda.gov/programs-services/distance-learning-telemedicine-grants>.

⁴² <https://www.rd.usda.gov/programs-services/distance-learning-telemedicine-grants>. A fact sheet for your information and future use about this program is attached in Appendix G.

contrast, in 2018, Pennsylvania was more proactive and secured approximately \$2.067M in new support from DLT.⁴³ That support consists of:

- \$83,161 to the Rural Regional College of Northern Pennsylvania to install one hub site and eleven end-user sites so that approximately 45,000 residents over six counties could train in the fast-growing fields of health care and social services;
- \$119,500 to the Allegheny Singer Research Institute to link Allegheny Hospital in Pittsburgh with Clarion Hospital and to equip them with telehealth equipment to provide stroke care for patients at Clarion Hospital using Allegheny Hospital doctors. The goal is to provide specialized stroke care to a population of about 159,000 people in Clarion, Forest, Jefferson, and Armstrong counties;
- \$401,679 to Saint Luke's Hospital in Bethlehem to purchase telehealth equipment to connect to the still-under-construction Saint Luke's Hospital in Orwigsburg to provide specialty care and disease management to a potential 143,573 rural residents;
- \$463,223 to the Wright Center Medical Group LLC to provide telemedicine to address opioid misuse and Hepatitis C, which may be related to opioid misuse;
- \$500,000 to Penn Highlands Healthcare to purchase and install telemedicine equipment that will link 20 locations in Clearfield, Jefferson, Elk, Center, and

⁴³ <https://www.rd.usda.gov/programs-services/distance-learning-telemedicine-grants>.

Cameron Counties to serve over 54,000 rural residents and will support the delivery of psychiatric services to address the growing opioid crisis;

- \$500,000 to Cornerstone Care to implement telehealth capabilities between eight health care centers and four schools in Washington and Greene Counties to address opioid misuse through behavioral health services and education.

Finally, as Commissioner Kennard previously testified, the recent Consolidated Appropriations Act of 2018 provided an additional \$600 million to be used on an expedited basis through a newly established broadband loan and grant pilot program, called the “Rural eConnectivity Pilot Program,” or ReConnect Program.⁴⁴ The main goal of the ReConnect Program is to expand broadband service to rural areas without sufficient broadband access, defined as a 10/1 speed.

As connectivity and technology continue to improve, telehealth will be increasingly important to Pennsylvania. Telehealth programs currently support the delivery of health care service over broadband networks that are reasonably comparable to those already being provided in urban areas. That has historically been confined to supporting provider facilities. However, the emerging issue of connected health is now focusing on providing patients with broadband so that they can obtain telehealth service

⁴⁴ *Kennard Testimony*, pp. 15-17; <https://www.usda.gov/reconnect/program-overview>.

over the internet.⁴⁵ This, in turn, requires that broadband be equally available to end-user patients, facilities, and providers.

The FCC and RUS are the major federal agencies focused on providing support for telehealth.

While the Commission does not regulate rural telehealth and has not played a critical regulatory role in that regard, the Commission has an ongoing legal obligation under Chapter 30 of the Public Utility Code, 66 Pa. C.S. 3011(2), to ensure the deployment and delivery of broadband which is the cornerstone of telehealth.

Thank you.

⁴⁵ *In the Matter of Promoting Telehealth for Low-Income Consumers*, Docket No. 18-213 (July 11, 2019).

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APPENDIX A

Testimony of Commissioner Norman J. Kennard (August 7, 2019)

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Before the

Senate Technology Committee

August 7, 2019



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Good afternoon, Chairman Phillips-Hill, Minority Chair Santarsiero, and Honorable Members of this Committee, I appreciate the opportunity to speak with you today regarding the prospects of accelerated rural broadband deployment in the Commonwealth of Pennsylvania.

The Commonwealth is at a critical stage on the issue of broadband availability that calls for new policies and new thought processes driven by a renewed sense of urgency to bring high-speed broadband to all Pennsylvanians, whether in urban, suburban, or rural areas. I would like to thank you for your recent adoption of Senate Resolutions 47 and 48 and for your continued support to further broadband initiatives.

Prior to the Pennsylvania Public Utility Commission (Commission), I spent most of my legal career representing and advising many telecommunications companies through the seismic technological changes of the 1970s, 80s, 90s, and into the new millennium. I was personally involved in drafting Pennsylvania's original Chapter 30 of the Public Utility Code, which set out the broadband service provisions for incumbent carriers in the Commonwealth. Working with the members of the General Assembly in 1993, we laid the foundation for a modern broadband network and regulatory scheme and then updated it in 2004.

The connection speeds set out in Chapter 30 (1.5 Mbps) were good at the time and still provide a baseline for all Pennsylvania citizens. But "the apps" have overtaken that

speed and accelerated the need more and faster connectivity. As a Commonwealth, we need to update the objective and expand the solution.

The Commission's current statutory role in broadband advancement is minimal. The Commission has limited authority over the incumbent telephone companies' deployment of "broadband" service under Chapter 30; basically to ensure that the standards of that statute are maintained (1.5 Mbps service available within 10 days). The Commission does not regulate Internet service.¹ Nor does it regulate cable companies, wireless providers, or satellite operators.²

However, the Commission has a vast depth of experience in this area and a continuing objective of ensuring that all Commonwealth citizens have access and can participate in the digital advantages wrought by the Internet.

Today, I hope to share some thoughts and observations to assist you in creating policies designed to ensure high-speed Internet services are available to all Pennsylvanians, regardless of where they live and work. I hope that you will find this information of some value to you, as you begin to shape the policies that will drive the development of broadband for all of Pennsylvania. The Commission stands ready and willing to assist you in any way that we can.

¹ Internet access service rates, terms, and conditions are controlled by the FCC.

² Chapter 30 of the Public Utility Code, 66 Pa. C.S. §§ 3011-3019, stipulates a revised regulatory regime for the incumbent regulated telephone companies that volunteer to deploy a broadband network throughout their service territory that offers, through any technology, a minimum down speed of 1.544 Mbps and an up speed of at least 128 Kbps to any customer within 10 days of request. All jurisdictional ILECs have achieved their Chapter 30 network modernization plans and operate under some form of simplified ratemaking.

The Need for Rural Broadband

It is beyond debate that broadband provides a host of societal benefits. There is also no question that high-speed Internet has changed just about everything. Internet and broadband services have radically transformed our lives, business, education, medicine, news and information distribution, culture, entertainment, civic engagement, entrepreneurship, and more.

Access to broadband is no longer a want; it is a need. As the U.S. Department of Agriculture Task Force on Agriculture and Rural Prosperity concluded last year:

In today's information-driven global economy, e-connectivity is not simply an amenity - it has become essential. E-connectivity, or electronic connectivity, is more than just connecting households, schools, and healthcare centers to each other as well as the rest of the world through high-speed internet. It is also a tool that enables increased productivity for farms, factories, forests, mining, and small businesses. E-connectivity is fundamental for economic development, innovation, advancements in technology, workforce readiness, and an improved quality of life. Reliable and affordable high-speed internet connectivity will transform rural America as a key catalyst for prosperity.³

A study conducted by Purdue University in August of 2018 quantifies the real benefits and value of broadband deployment. In this study, researchers examined the economic impact that fully-available rural broadband could have in the state of Indiana.⁴ The report found that rural broadband has substantial societal benefits, including: reducing medical costs; improving education for children and workers, leading to

³ Report to the President of the United States from the Task Force on Agriculture and Rural Prosperity (October 21, 2017); available at <https://www.usda.gov/sites/default/files/documents/rural-prosperity-report.pdf>.

⁴ Alison Grant, Wallace E. Tyner, and Larry DaBoer, *Estimation of the Net Benefits of Indiana Statewide Adoption of Rural Broadband*, Center for Regional Development, Purdue University (August 2018); available at <https://www.pcrd.purdue.edu/files/media/006-RPINsights-Indiana-Broadband-Study.pdf>.

improved median household incomes and driving down unemployment; stimulating economic growth in communities; saving consumers money with better shopping opportunities; and providing increased farm revenue. The report estimates the quantifiable impact of the benefits of rural broadband, if implemented fully across the state of Indiana, to be \$12 billion, annuitized out as \$1 billion per year for twenty years.

What is Broadband and Who Provides It?

The term “broadband” is currently defined in various ways, but the Federal Communications Commission (FCC) currently considers broadband to be a minimum speed of 25 Mbps down and 3 Mbps up (25/3 speed).⁵ At this speed, broadband is sufficient to stream high definition video and has earned the unofficial moniker of “Netflix speed,” although its importance is far greater than mere video entertainment.

Various entities in Pennsylvania offer Internet connectivity, generally referred to as Internet service providers (ISPs). Incumbent local exchange (telephone) companies (ILECs), competitive telephone companies (CLECs), cable companies, wireless service providers (sometimes called WISPs),⁶ and satellite companies all offer ISP service.

Each network has different capabilities and challenges.⁷ The legacy copper network historically operated by the ILECs is ubiquitous (albeit aging), but faces

⁵ Federal Communications Commission, *2018 Broadband Deployment Report*, GN Docket No. 17-199, Adopted and Released on February 2, 2018; available at <https://docs.fcc.gov/public/attachments/FCC-18-10A1.pdf>.

⁶ The acronym “WISP,” or “wireless internet service provider,” refers to “fixed wireless” broadband access providers. Mobile wireless carriers that also provide broadband access services are classified as “commercial mobile radio services” carriers, or “CMRS” carriers.

⁷ <https://www.fcc.gov/general/types-broadband-connections>.

deterioration of signal over longer distances.⁸ For this reason, many incumbent telephone companies have adopted fiber networks in whole or part. Cable companies operate hybrid fiber/coaxial cable networks that generally have higher bandwidth, but which do not reach all Pennsylvanians. Mobile wireless service generally is slower (for now) and is not universally built out. Fixed wireless is an alternative. Satellite service can reach most people but faces reliability and pricing challenges.

According to the FCC’s database, cable is the leader in provisioning 25/3 broadband services, followed by fiber and the other technologies as charted below:

Carrier/Provider	Speed	Availability⁹	Current Number of Subscribers (speeds at or in excess of 2 Mbps)¹⁰
Cable Modem	25/3 speed or faster	94.1% of Pennsylvania’s census blocks	2.768 Million Pennsylvanians
Fiber	25/3 speed or faster	56.11% of Pennsylvania’s census blocks	Proprietary
DSL	25/3 speed or faster	5.09% of Pennsylvania’s census blocks	638,000 Pennsylvanians
Fixed Wireless	25/3 speed or faster	2.15% of Pennsylvania’s census blocks	8,000 Pennsylvanians
Mobile Wireless	2 Mbps	N/A	11.575 Million Pennsylvanians
Satellite	25/3 speed or faster	100% of Pennsylvania’s census blocks	Proprietary

⁸ Digital subscriber loop (DSL) is the technology that has been adopted for this network configuration.

⁹ <https://broadbandmap.fcc.gov/#/>.

¹⁰ Federal Communications Commission, *Internet Access Services: Status as of June 30, 2017*, Released on November 2018; available at <https://docs.fcc.gov/public/attachments/DOC-355166A1.pdf>.

Electric cooperatives have been exploring marketplace entry for telecommunications and broadband access services and, in some cases, such as the Tri-County Rural Electric Cooperative (Tri-County) in the northern tier of Pennsylvania, are doing so. There is a strong case for Cooperative entry in the marketplace, including: low customer acquisition cost, existing infrastructure (e.g., poles), billing relationships, and customer recognition .¹¹ Tri-County’s financing is a combination of: \$32.5 million from the federal Connect America Fund (CAF) Phase II (CAF II) auctions, a \$17.5 million grant from the Pennsylvania Department of Transportation, and a \$1.5 million grant from the Pennsylvania Redevelopment Assistance Capital Project program. These sources substantially fund a project that promises 1 Gbps (that’s a gigabit) in portions of Potter, Tioga, Lycoming, Cameron, Clinton and McKean counties. The Commission designated Tri-County Connections as an eligible telecommunications carrier (ETC) in April of this year.¹²

Where Is Broadband Service Available?

Rural infrastructure, including rural broadband, has always been a challenge, particularly because the cost per customer is high, given the comparative lack of customer density. Simply stated, greater infrastructure costs limit profitability and drive

¹¹ <https://www.cooperative.com/topics/telecommunications-broadband/pages/unlocking-the-value-of-broadband-for-electric-cooperative-consumer-members.aspx>. Unlocking the Value of Broadband for Electric Cooperative Consumer-Members, National Rural Electric Cooperative Association (2018).

¹² <http://www.tri-countyrec.com/content/puc-approves-first-ever-etc-designation-federal-broadband-deployment-program-rural>. Tri-Co’s designation as an ETC was a prerequisite for the availability of federal CAF II funding.

up price suppressing profitability even more. As observed by a study commissioned by NTCA – The Rural Broadband Association:

Networks in general exhibit economies of density; that is, costs per user (or usage unit) are lower in high density areas. As one moves to more rural areas, with any network, the costs per user become increasingly high, eventually leading to unsustainable business models to provide network services.¹³

It should come as no surprise then that rural broadband deployment has lagged in the less populated areas of the country, including those in the Commonwealth.

The FCC's Availability Numbers

By the FCC's most recent estimate, as set forth in its 2019 Broadband Deployment Report, over 12 million, or 95% of Pennsylvanians, have access to broadband from a fixed carrier at the 25/3 speed.¹⁴ However, only 84% of Pennsylvanians in a rural area enjoy similar access. These statistics demonstrate that there continues to be a digital divide between rural and urban areas in Pennsylvania.¹⁵ The FCC has published an online map on its website visually representing its data.¹⁶

However, it is widely acknowledged, even by the FCC Commissioners,¹⁷ that the FCC's analysis is flawed; over stating the availability of broadband services across the

¹³ https://www.ntca.org/sites/default/files/documents/2018-07/CQA-RuralBroadbandEconomics-AReviewofRuralSubsidies_FinalV07112018.pdf, Rural Broadband Economics: A Review of Rural Subsidies, By Steve G. Parsons and James Stegeman (July 11, 2018).

¹⁴ Federal Communications Commission, *2019 Broadband Deployment Report*, GN Docket No. 18-238, Adopted on May 8, 2019; <https://docs.fcc.gov/public/attachments/FCC-19-44A1.pdf>. ("FCC 2019 Broadband Report").

¹⁵ Appendix 5 contains reported deployment results on a county-by-county basis.

¹⁶ <https://broadbandmap.fcc.gov/#/>.

¹⁷ <https://docs.fcc.gov/public/attachments/FCC-19-44A4.pdf> (Rosenworcel) and <https://docs.fcc.gov/public/attachments/FCC-19-44A5.pdf> (Starks).

nation. This is true for several reasons. First, the FCC relies upon reports filed by the carriers with the FCC, the data of which is not confirmed.¹⁸ Moreover, the model employed by the FCC designates every census block as either served or unserved with high-speed broadband – with no regard for the service levels within that census block. In other words, *if a single user* within a census block is reported as having access to broadband service, then *the entire census block* is deemed to have service. This approach is particularly problematic where service within a rural population center (a town) may skew the results for a larger geographic area that has no service. Thirdly, the question posed by the FCC to the carriers in the report is whether they are “providing or could ...without an extraordinary commitment of resources provide broadband service to an area.” If the response is affirmative that census block is marked as having access even though providers are not required to have any plans to do so.

As such, there are significant limitations with the FCC’s mapping and reports, with most objective observers agreeing that the FCC’s broadband maps are distorted and overstate the availability of broadband services.¹⁹

There is a movement in Congress and at the FCC to address these shortcomings. The United States Senate Committee on Commerce, Science, and Transportation has held a series of hearings on broadband issues, including the mapping issue; with the most recent hearing occurring on June 12, 2019.²⁰ Consistent with testimony of FCC

¹⁸ <https://www.fcc.gov/general/broadband-deployment-data-fcc-form-477>.

¹⁹ U.S. Government Accountability Office, *Broadband Internet, FCC’s Data Overstate Access on Tribal Lands* (September 2018); available at <https://www.gao.gov/products/GAO-18-630>.

²⁰ <https://www.commerce.senate.gov/public/index.cfm/hearings?ID=AE64FD09-95B1-407D-8A87-8CBEE10665A4>.

Chairman Ajit Pai, the FCC released, on July 11, 2019, a draft notice of proposed rulemaking seeking comment on the need and means of collecting “more granular data” on broadband coverage.²¹ The effort suggests new data collection from the ISP and the addition of “crowdsourcing” techniques.

Efforts at Better Mapping

There are alternative data sources available. As you are aware, the Center for Rural Pennsylvania released a report in June of this year based on more than 11 million broadband speed tests from across Pennsylvania.²² The study found that “median speeds of 25 Mbps-speed broadband were not available in any county in Pennsylvania.”²³ Additionally, this report found that connectivity speeds were substantially slower in rural counties.

The report concluded that the methodology used by the FCC “not only overstates broadband speeds and availability, but are showing results that are less and less accurate year-after-year.”²⁴ The report recommends: (1) increasing the level of granularity of Pennsylvania’s broadband maps and (2) ensuring regular updating of these resources. These efforts will enable “more informed (and targeted) policy interventions, and ensure

²¹ <https://docs.fcc.gov/public/attachments/DOC-358433A1.pdf>.

²² The Center for Rural Pennsylvania, *Broadband Availability and Access in Rural Pennsylvania* (June 2019); available at https://www.rural.palegislature.us/broadband/Broadband_Availability_and_Access_in_Rural_Pennsylvania_2019_Report.pdf.

²³ *Id.* at 70.

²⁴ *Id.* at 75.

that more communities are eligible for earmarked support to help bridge existing digital divides.”²⁵

Microsoft has also undertaken mapping efforts. Through its “Airband Initiative,” Microsoft has committed to provide broadband to 3 million people in rural areas across the nation over a 5-year period by using a mixed model that combines wireless technologies including 4G and TV white spaces, traditional fiber-based connectivity, and satellite coverage.²⁶ To obtain more accurate broadband mapping information, Microsoft used its own software data sources (e.g., measured during online software upgrades) to test broadband availability across the nation.

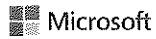
Microsoft’s effort, which focuses on usage rather than availability,²⁷ found that although the FCC reports that about 95% of Pennsylvanians have access to broadband, only 52% of Pennsylvanians use the Internet.²⁸ On a national level, the FCC reports that there are about 24 million Americans (19 million rural) lacking broadband access,²⁹ as compared to the Microsoft data which indicates that 163 million people do not use the Internet at broadband speeds. Of course, figures are much lower in economically disadvantaged areas, which includes rural territories:

²⁵ *Id.*

²⁶ <https://blogs.microsoft.com/on-the-issues/2018/12/03/the-rural-broadband-divide-an-urgent-national-problem-that-we-can-solve/>.

²⁷ “Our results align well with the FCC’s broadband subscription data and the Pew Research numbers, which suggests these data sets are far closer to the mark than the broadband access data reported by the FCC and leaves us with the unescapable conclusion that today there exists no accurate, comprehensive and public estimate of broadband coverage in the United States.” “It’s time for a new approach for mapping broadband data to better serve Americans,” John Kahan - Chief Data Analytics Officer (April 8, 2019); available at <https://blogs.microsoft.com/on-the-issues/2019/04/08/its-time-for-a-new-approach-for-mapping-broadband-data-to-better-serve-americans/>

²⁹ <https://blogs.microsoft.com/on-the-issues/2018/08/16/better-broadband-data-can-lend-a-voice-to-rural-americans/>.



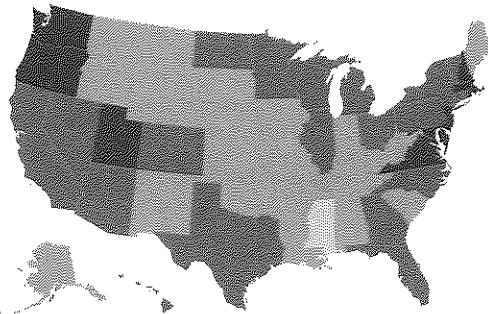
Counties with the highest unemployment rate have lower broadband usage

49.5% Broadband usage

47.6% 10 counties with the lowest unemployment rate

20.2% 10 counties with the highest unemployment rate

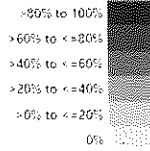
-27.4% Difference



FCC broadband availability

Broadband usage

Broadband usage by state



Average broadband usage based on Microsoft data



Data sources: FCC 2018 Broadband Report, Bureau of Labor Statistics, and Microsoft data.

Crandall et al. (2007) – Brookings Institution; Thompson and Garbacz (2009) – Ohio University; Girlett et al. (2016) – MIT; Shideler et al. (2007) – Connected Nation; Crandall et al. (2003) – Brookings Institution; Atkinson et al. (2009) – ITH

The Commission recently hosted a presentation by Microsoft representatives, who compared to their own calculations of 52% usage to the 95% statewide Pennsylvania availability reported by the FCC. By way of example, the biggest disparity noted by Microsoft was in Elks County where the FCC reported that broadband was 95% “available” compared to Microsoft’s calculations of 16% actual usage.

Demand for Broadband

According to the FCC’s most recent subscription data for wireline broadband service, 55% of Pennsylvanians take service at speed of 50/5 or greater, 64% take service

at a speed of 25/3 plus, and 70% of Pennsylvanians use service of at least 10/1.³⁰ These “take rates” are approximately equal to or slightly higher than the national averages.

Of course, Internet usage growth rates have been explosive over the last decade. A recent Pew Research study reveals that Internet use is trending up across all demographic groups in the nation. More specifically, this study shows that only about 10% of all adult Americans currently do not use the Internet, as compared to 48% of adult Americans in 2000.³¹ Interestingly, this study reveals that groups like senior citizens, age 65 and older, are part of this trend – with 14% of seniors using the Internet in 2000 as compared to 66% of seniors currently going on-line. However, the Pew study also noted that for the rural population, this percentage is higher, with 22% of adult Americans currently not using the Internet. This data is indicative that our society is driven by the Internet and that all demographic and age groups are using the Internet more and more.

Availability, even if accurately measured, however, does not take affordability into account or other factors that constrain demand. A 2013 Pew study found that: “[c]ost was also a barrier for some adults who were offline – 19% cited the expense of Internet service or owning a computer.”³² In 2018, Pew stated that “[h]ousehold income and education are also indicators of a person’s likelihood to be offline. Roughly three-in-ten adults with less than a high school education (29%) do not use the Internet in 2019, compared with 35% in 2018.” But that share falls as the level of educational attainment

³⁰ FCC 2019 Broadband Report. Appendix 8.

³¹ <https://www.pewresearch.org/fact-tank/2019/04/22/some-americans-dont-use-the-internet-who-are-they/>. Indeed, last year’s Pew report was entitled, “11% of Americans don’t use the Internet. Who are they?” (March 5, 2018).

³² Pew Research, Who’s Not Online and Why (September 25, 2013); available at <https://www.pewinternet.org/2013/09/25/whos-not-online-and-why/>.

increases. Adults from households earning less than \$30,000 a year are far more likely not to use the Internet than the most affluent adults (18% vs. 2%).

There is a portion of the population that may never subscribe to broadband or even use the Internet. Again, the 2013 Pew study is relevant: “[a] third of non-Internet users (34%) did not go online because they had no interest in doing so or did not think the Internet was relevant to their lives. Another 32% of non-users said the Internet was too difficult to use, including 8% of this group who said they were ‘too old to learn.’”

This underscores the need for customer education as a part of broadband rollout. Obviously, greater customer subscription improves the profitability of any broadband deployment. In the rural situation of fewer customers per mile of fiber (or antenna nodes) the customer take rate becomes particularly important.

Federal Broadband Funding Through the Universal Service Fund

Certain providers of telecommunications must contribute to the federal Universal Service Fund (USF) based on a percentage of their interstate and international telecommunications revenues. Those required to pay into the fund include wireline phone companies, mobile wireless phone companies, paging service companies, and certain Voice over Internet Protocol (VoIP) providers. The FCC establishes the “contribution” factor on a quarterly basis, based upon the needs of the federal USF in the

upcoming quarter. The current contribution assessment factor is 24.4%.³³ This revenue is then collected by carriers from customers on the billing line entitled “federal universal service fund” (or something similar).³⁴

The FCC’s universal service programs encompass four initiatives: low income sustenance through Lifeline services, educational access for eligible schools and libraries, support for rural health care facilities, and carrier support, including the CAF program which is dedicated to accelerating broadband development to Americans. Phase I of the CAF auction (an open bid to providers for designated areas without broadband service), held in 2012, resulted in over \$438 million dollars in awards by the FCC. In 2018, the FCC awarded \$1.49 billion dollars during Phase II of the CAF auction for broadband, designated for service to over 700,000 locations in 45 states.³⁵ In Pennsylvania, five bidders were awarded over \$56.8 million over ten years, to provide service to 54,812 locations within the Commonwealth.³⁶

The FCC’s most recent report on federal USF, released this year,³⁷ notes that Pennsylvania consumers’ estimated contribution of \$398 million exceed the federal USF funds paid back to in-state service providers by approximately \$192 million dollars.

³³ <https://www.fcc.gov/document/3rd-quarter-2019-usf-contribution-factor-244-percent>. For a history of the charge see <https://www.usac.org/cont/tools/contribution-factors.aspx>.

³⁴ Carriers are not required to pass the costs through to customers but most, if not all, do so.

³⁵ <https://www.fcc.gov/auction/903>.

³⁶ <https://docs.fcc.gov/public/attachments/DA-18-887A2.pdf> (the winning bidders in Pennsylvania were: Velocity.Net Communications, Inc., Verizon Communications, Inc., Viasat, Inc., Armstrong Telephone Co.-Northern Division, and Tri-County Rural Electric Cooperative, Inc.).

³⁷ Federal Communications Commission, *Universal Service Monitoring Report- 2018*, Table 1.9 at 18; available at <https://docs.fcc.gov/public/attachments/DOC-357769A1.pdf>. Alaska was the largest net recipient at a positive inflow of \$324 million.

Pennsylvanians have been in this “net contributor” position for as long as I can remember.

USDA Funding Project

The United States Department of Agriculture (USDA) has had a long standing presence in rural telecommunications notably through the loans (more than \$700 million per year) created by the Rural Utilities Service (RUS) program.³⁸ The USDA recently announced that it added to this portfolio of additional funds for expanding rural broadband infrastructure in unserved rural areas and tribal lands.

The Consolidated Appropriations Act of 2018 appropriated an additional \$600 million to be used on an expedited basis through a newly established broadband loan and grant pilot program, called the “Rural eConnectivity Pilot Program,” or ReConnect Program.³⁹ The main goal of the ReConnect Program is to expand broadband service to rural areas without sufficient broadband access, defined as a 10/1 speed.

The Reconnect Program offers three separate funding categories as follows: a 100% loan,⁴⁰ a 50% loan/50% grant,⁴¹ or a 100% grant.⁴² The \$600 million is to be split

³⁸ <https://www.rd.usda.gov/programs-services/all-programs/telecom-programs>.

³⁹ <https://www.usda.gov/reconnect/program-overview>.

⁴⁰ Under the 100% loan funding category, the maximum amount that can be requested in a single application is \$50,000,000. Applications under this category were due to the USDA by June 28, 2019, although the USDA did evaluate and award loan-only projects on a first-come-first-serve basis, beginning in March 2019.

⁴¹ Under the 50% loan/50% grant funding category, the maximum amount that can be requested in a single application is \$25,000,000 for the loan and \$25,000,000 for the grant. Loan and grant amounts must always be equal. Applications under this category were due to the USDA by May 29, 2019.

⁴² Under the 100% grant category, the maximum amount of funding that can be requested in a single application is \$25,000,000. Applications under this category were due to the USDA by April 29, 2019.

evenly with \$200 million to be available for each of these three funding categories. To be eligible for a 100% loan or 50% loan/50% grant, the proposed funded service area must be in a rural area where 90% of the households do not have sufficient broadband access. To be eligible for a 100% grant, the proposed funded service area must be in a rural area where 100% of the households do not have sufficient broadband access. No matter which type of funding an applicant requests, the proposed network must be capable of providing service to every premise in the proposed funded service area at a minimum 25/3 speed.

The following entities are eligible to apply for assistance under the ReConnect Program: non-profit entities; for-profit corporations; limited liability companies; cooperative or mutual organizations; states, local governments, or any agency, subdivision, instrumentality, or political subdivision thereof; a territory or possession of the United States; and an Indian tribe (as defined in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. § 450b)).⁴³

The ReConnect Program offers funding for the following eligible purposes: (1) the construction or improvement of buildings, land, and other facilities that are required to provide broadband service; (2) reasonable pre-application expenses, not to exceed 5% of the award amount; (3) the acquisition and improvement of an existing system that is

⁴³ *Id.*

currently providing insufficient broadband service (eligible for 100% loan requests only); and (4) terrestrial based facilities that support the provision of satellite broadband service.

Only projects that the USDA determines to be financially feasible and sustainable will be eligible to receive awards from the Reconnect Program. Additionally, ReConnect Program funds cannot be used to build-out service areas that fall within the census block groups of CAF II Auction 903 recipients, unless the entity requesting additional support is the CAF II recipient in that area. CAF II winners seeking additional funding to buildout its awarded census block groups may only apply for funds under the 100% loan offering category.

State-level Broadband Funding Methodologies and Initiatives

From a policy perspective, states across the nation are recognizing high-speed broadband, particularly in the underserved rural and remote areas, is important infrastructure that requires investment by the local, state, and federal government. As you formulate policies to incentivize broadband, you should be aware that there are a variety of means that are in use, including large dedicated funds, bonds issued for these purposes, and surcharges on a variety of services ranging from telecommunication-specific fees to vehicle tolls.

Dedicated Broadband Funds

Many states have supported broadband initiatives through dedicated broadband funding programs. These funds are typically administered by an agency, who then awards grants and loans dedicated to broadband projects. This policy approach is well understood, as it functions much like the host of other programs that already exist in Pennsylvania. The biggest challenge, of course, is in the funding. One of the largest funds created for broadband is in New York, where bank settlements provided \$500 million in funding for the state's broadband initiatives. New York then successfully leveraged this \$500 million to secure an additional \$170 million in CAF II funds from the FCC. This approach, obviously, requires a one-time, large amount of undedicated funds and has not been replicated by any other state.

Consumer Surcharges and Fees

California has also created a large fund for broadband development, approximately \$645 million, but funded it through surcharges. This fund, known as the "California Advanced Services Fund," is administered by California Public Utility Commission and provides targeted grants and revolving loans for broadband initiatives. The funding stream for this fund is a surcharge rate, found as a line item on intrastate service bills, collected from California's consumers.

Like California, but to a much lesser degree, several other states have also used universal service funds to provide grants for broadband deployment initiatives, including:

Maine, Nevada, West Virginia, Delaware, and Colorado.⁴⁴ The legislature in the State of Washington also passed a bill that would use universal service funds for broadband grants to rural areas for 5G service. The common theme among these fees is that they are collected from the consumers of telecommunication services, which is an important policy consideration.

In Minnesota, matching state grants and local funds have been used to create a state grant program that covers up to 50% of broadband development costs for applicants, including municipal entities and non-profits created specifically for broadband development. This program is administered by Minnesota Office of Broadband Development. In Ohio, there is proposed legislation that would float a bond for \$50 million in annual funds for broadband development.

Other states, like Oregon, have created policies and funding that are designed to capture maximum federal funds. Specifically, Oregon created a dedicated fund to ensure that all K-12 public schools in the state have high speed, affordable broadband by matching state funds with federal funding received through the FCC's E-rate school Internet access program.

Using a different model, the Governor of Indiana announced a \$100 million-dollar broadband initiative to push broadband into underserved areas, that will be financed by tolls on heavy trucks on one of the state's toll roads.

⁴⁴ <http://nrri.org/wp-content/uploads/2016/04/2015-Feb-Sherry-Lichtenberg-State-Universal-Service-Funds.pdf>. *State Universal Service Funds 2014*, Lichtenberg, Nat'l Reg. Research Institute (June 2015). Pennsylvania operates a revenue replacement fund, which is labeled universal service fund but serves a different purpose.

Tax Credits

Another popular approach to incentivizing broadband is through tax policy. New Jersey, for example, has already used this concept to establish a tax credit for carriers installing broadband facilities in unserved and underserved areas. Pennsylvania already has several programs that use this creative approach, including the Keystone Opportunity Zone (KOZ) or Neighborhood Improvement Zones (NIZ), although those have been focused on general economic development and not broadband specifically. There may be opportunities to incentivize broadband in rural areas, in much the same way the KOZs and NIZs return tax revenues to participants in the dedicated areas.

Local Government and Quasi-Government Investment

Another model for investment in broadband deployment resides at the municipal government level. For example, in Pennsylvania, the Bradford County Authority is working on the installation of a dark fiber loop for other service providers to use for provision of services. We find this same approach has been implemented in Maine, where a quasi-municipal broadband utility in Maine, known as “Downeast Broadband Utility,” was created earlier this year to install fiber in rural communities. This regional utility plans to create an open-access fiber optic network, 87 miles in length, to bring high-speed broadband to several rural areas in Maine that lacked the service.

Anchor Tenant Model

Another model for public and private investment is to use “anchor-tenant” projects by which a large corporate entity “tenant” invests in fiber installation. Once the fiber is installed by a large entity, the fiber line can be leveraged by other individuals and/or entities within close proximity to the line.⁴⁵

Private Investment

Additionally, public-private partnership projects have proven very successful for broadband deployment. For example, beginning in 2012, Google Fiber has used public-private partnership money to deploy fiber in certain parts of the Mid-West and the South. The state of Kentucky has also specifically used private-public partnerships for investment in broadband deployment.

Public vs. Private Networks

Although this testimony does not linger on the issue, one threshold issue that you will need to address is the relative benefits of private and public networks. Supporters of public networks argue that municipal broadband can provide access more cheaply than private service providers, if not for free. Critics argue that the offering of broadband service is an inappropriate use of public funds that relies upon hidden subsidies from taxpayers, while private networks are tax generators.

⁴⁵ A detailed analysis is available at <http://www.ctcnet.us/publications/a-model-for-understanding-the-cost-to-connect-anchor-institutions-with-fiber-optics/>. A Model for Understanding the Cost to Connect Anchor Institutions with Fiber Optics Prepared for the Schools, Health & Libraries Broadband (SHLB) Coalition (February 2018).

There are several public networks in Pennsylvania, some successful, some less so. A recent study at the University of Pennsylvania extensively analyzed 20 governmentally owned networks, including a network in Kutztown, Pennsylvania.⁴⁶

Commission's Broadband Initiatives

The Commission is working diligently to explore its options to expand access to rural broadband. At its June 14, 2018 Public Meeting, the Commission unanimously approved my proposed motion to begin a rulemaking to assert Commission jurisdiction over pole attachments pursuant to the Telecommunications Act of 1996. That action led to a Notice of Proposed Rulemaking Order that proposed to adopt the FCC's existing regulations over pole attachments and create a forum for dispute resolution.⁴⁷

The purpose of the rulemaking is to: (1) decrease regulatory uncertainty for pole owners and pole attachers and (2) to provide a local forum for pole owners and pole attachers to get relief quickly. The rulemaking was published in the *Pennsylvania Bulletin* on September 29, 2018. Comments and reply comments to the Commission's Notice of Proposed Rulemaking Order were filed by various interested parties and the Commission plans to issue the Final Rulemaking Order in the very near future.

⁴⁶ Municipal Fiber in the United States: An Empirical Assessment of Financial Performance, Christopher S. Yoo; available at <https://www.law.upenn.edu/live/files/6611-report-municipal-fiber-in-the-united-states-an>.

⁴⁷ Notice of Proposed Rulemaking In re: Assumption of Commission Jurisdiction over Pole Attachments from the Federal Communications Commission, PUC Docket No. L-2018-3002672 (Order entered July 13, 2018); available at http://www.puc.pa.gov/about_puc/search_results.aspx?advanced=true.

Additional Regulatory Options

I would like to close by providing some thoughts about obstacles to broadband that don't involve funding. In my opinion, there are several legislative and regulatory improvements that would maximize the deployment of broadband, especially in rural areas. These improvements include, but are not limited to the following:

- Better collaboration between local, state and federal agencies;
- Leveraging state and local government resources and assets (buildings and rights-of-way) to serve underserved or unserved areas;
- Developing a map of all state and local agency assets for antenna (buildings, towers, other structures);
- Developing standards for conduit installation; and
- Reducing permitting times, increasing access to rights-of-way and implementing reasonable permit fees.

Some of these options are being developed or are under active consideration, so you may be familiar with them and/or actively involved with them already.

Conclusion

Expanding access to rural broadband is an important issue and the Commission stands ready to assist in any way we can to develop solutions to provide greater access to Pennsylvanians. We are focusing our attention on this topic and are diligently exploring options and seeking solutions within our own sphere.

Thank you again for inviting me here to speak today. I hope that my testimony has been helpful. I welcome the opportunity to answer any questions you may have.

APPENDIX B

Pennsylvania Support From FCC Rural Health Care Program

(2018)

**Pennsylvania Rural Health Care Commitments
2018 Breakout**

Office of Chairman Gladys Brown Durkaille
Joseph Witmer, Esq. (717) 787-3663
Assisted by John-Paul Rodgers, Technical Utility Services (717) 214-9115

Entity	Address	City	Capacity	Start Date	End Date	Value	Notes
Lehigh Valley Hospital-Schuylkill	420 South Jackson Street	Pottsville	10 Mbps	7/1/2018	6/30/2019	8,056.50	0
Gaisinger South Wilkes-Barre Hospital	25 Church Street	Wilkes-Barre	NA	7/1/2018	6/30/2019	15,912.00	15,912.00
Acmh Hospital	1 Noble Dr.	Kittanning	200 Mbps	7/1/2018	9/30/2018	2,340.00	2,340.00
Lancaster Regional Medical Center	1250 College Ave	Lancaster	100.0MB	7/1/2018	6/30/2019	0	0
Walpole Chambersburg Hospital	1120 N 7th St	Chambersburg	1,068	7/1/2018	6/30/2019	14,319.00	7,159.50
Hearst Of Lancaster Regional Medical Center	1500 Highlands Dr	Lititz	1,544MB	7/1/2018	6/30/2019	4,446.00	4,446.00
Gaisinger Tunkhannock	10 Trible Dr	Tunkhannock	1.0 Gbps	7/1/2018	6/30/2019	19,942.94	18,098.53
Gaisinger Holy Spirit	503 North 21st Street	Camp Hill	10 Gbps	7/1/2018	6/30/2019	17,323.83	17,323.83
Acmh Hospital	1 Noble Dr	Kittanning	200 Mbps	7/1/2018	6/30/2019	7,020.00	5,460.00
Mount Nittany Medical Center	1800 East Park Avenue	Mifflin	13 Mbps	7/1/2018	6/30/2019	348.54	348.54
Mifflin Gaisinger Medical Group (Juniata)	56 Jam House Road	Mifflin	12 Mbps	7/1/2018	6/30/2019	4,842.85	3,912.25
Punxsutawney Area Hospital	81 Hilceat Drive	Punxsutawney	100 Mbps	7/1/2018	6/30/2019	0	0
Gaisinger - Lawistown	217 South Logan Boulevard	Burnham	12 Mbps	7/1/2018	6/30/2019	8,892.00	0
Lancaster Regional Medical Center (Juniata)	230 College Ave	Lancaster	100.0MB	7/1/2018	6/30/2019	0	0
Mifflin Gaisinger Medical Group	56 Jam House Road	Mifflin	12 Mbps	7/1/2018	6/30/2019	12,375.71	11,288.07
Gaisinger South Wilkes-Barre Hospital	25 Church Street	Wilkes-Barre	1.0 Gbps	7/1/2018	6/30/2019	6,084.00	0
Green Street Primary Care	2000 Green Street	Ferrell	500 Mbps	7/1/2018	6/30/2019	9,961.83	0
Phillipsburg Gaisinger Medical Group	210 Medical Center Drive	Phillipsburg	1,544MB	10/24/2018	6/30/2019	8,598.72	0
Carlisle Regional Medical Center	361 Alexander Spring Rd	Carlisle	50 Mbps	7/1/2018	6/30/2019	11,111.49	9,998.41
Gray's Woods	132 Abigail Lane (aka Scotts Road)	Port Matilda	50 Mbps	7/1/2018	6/30/2019	3,658.20	0
Uppr Pinnacle Hanover	300 Highland Ave	Hanover	10.0MB	7/1/2018	6/30/2019	6/4/2018	0
Pinnaclehealth West Shore Hospital	1995 Technology Parkway	Mechanicsburg	100.0 Mbps	7/1/2018	6/30/2019	8,097.22	0
Beaver Falls Primary Care, Ob/Gyn, Dental, And Behav	1302 Severn Avenue	Beaver Falls	10.0 Mbps	7/1/2018	6/30/2019	6,513.00	0
Worthington Draw Station	1492 Burler Road	Worthington	20 Mbps	10/1/2018	6/30/2019	6/29/2018	1,755.00
Uppr Pinnacle Hanover	300 Highland Ave	Hanover	10.0MB	7/1/2018	6/30/2019	6/4/2018	0
Uppr Pinnacle Hanover	300 Highland Ave	Hanover	10.0MB	7/1/2018	6/30/2019	3,736.20	0
Gaisinger Gastroenterology And Endoscopy Center	1800 Mulberry Street	Lawistown	1.0 Gbps	7/1/2018	6/30/2019	4,508.40	0
Ford City Health Pavilion	202 Fifth Avenue	Ford City	12 Mbps	7/1/2018	6/30/2019	7,254.00	0
Gaisinger - Family Health Associates - Mifflintown	27 Gerns Lane	Mifflintown	20 Mbps	10/1/2018	6/30/2019	12,375.71	11,288.07
Gaisinger Jersey Shore Hospital	1020 Thompson St	Jersey Shore	50 Mbps	12/21/2018	6/30/2019	585	585
Gaisinger Family Health Associates Big Valley	4752 State Route 655	Bellville	1.0 Gbps	7/1/2018	6/30/2019	1,900.51	1,601.44
Gaisinger-Careworks Walk-In Clinic(Burnham)	224 North Logan Boulevard	Burnham	10.0 Gbps	7/1/2018	6/30/2019	32,860.54	30,069.90
South Bethlehem Primary Care Center	102 South Street	New Bethlehem	20 Mbps	10/1/2018	6/30/2019	4,194.00	0
Carlton Hospital	One Hospital Drive	Carlton	NA	7/1/2018	6/4/2018	1,765.59	0
Jersey Shore Medical Associates - Aviz	104 E Central Ave	Aviz	20 Mbps	7/1/2018	6/30/2019	343.77	343.77
Jersey Shore Medical Associates - Aviz	601 Park Street	Horseshole	1,544 Mbps	7/1/2018	6/30/2019	1,469.47	1,238.24
Wayne Memorial Hospital	361 Alexander Spring Rd	Carlisle	50.0MB	7/1/2018	6/30/2019	19,143.85	0
Carlisle Regional Medical Center	1500 Highlands Dr	Lititz	50.0MB	7/1/2018	6/30/2019	12,441.00	0
Hearst Of Lancaster Regional Medical Center	2985 Technology Parkway	Mechanicsburg	100.0 Mbps	7/1/2018	6/30/2019	9,041.76	21,192.80
Pinnaclehealth West Shore Hospital	112 N 7th St	Chambersburg	25.0MB	7/1/2018	6/30/2019	4,134.00	0
Walippan Chambersburg Hospital	1310 Electric Avenue	Lawistown	100.0 Mbps	7/1/2018	6/30/2019	2,735.47	0
Gaisinger Gastroenterology And Endoscopy Center	132 Abigail Lane (aka Scotts Road)	Port Matilda	100.0 Mbps	7/1/2018	6/30/2019	12,214.80	12,214.80
Gray's Woods	1500 Highlands Dr	Lititz	1,544MB	10/24/2018	6/30/2019	5/7/2018	2,202.14
Hearst Of Lancaster Regional Medical Center	126 Market Way	Mount Pocono	20 Mbps	7/1/2018	6/30/2019	9,961.83	0
Mount Pocono Gaisinger Medical Group	560 Meekhanan Drive	Meekhanan	20 Mbps	7/1/2018	6/30/2019	1,469.47	1,238.24
Urgent Care Center At Meekhanan	250 College Ave	Lancaster	50 Mbps	7/1/2018	6/30/2019	9,055.80	0
Lancaster Regional Medical Center	1020 Thompson St	Jersey Shore	100.0MB	12/21/2018	6/30/2019	4,642.85	3,912.25
Gaisinger Jersey Shore Hospital	132 Abigail Lane (aka Scotts Road)	Port Matilda	100.0 Mbps	7/1/2018	6/30/2019	343.77	342.06
Gray's Woods	27 Gerns Lane	Mifflintown	12 Mbps	7/1/2018	6/30/2019	0	0
Gaisinger - Family Health Associates - Mifflintown	503 North 21st Street	Camp Hill	10.0 Gbps	7/1/2018	6/30/2019	17,373.83	17,373.83
Gaisinger Holy Spirit	10261 Route 85	Kittanning	20 Mbps	7/1/2018	6/30/2019	585	585
Rural Valley Primary Care Center	202 Fifth Avenue	Ford City	20 Mbps	7/1/2018	6/30/2019	1,755.00	1,965.00
Ford City Health Pavilion	132 Abigail Lane (aka Scotts Road)	Port Matilda	1 Gbps	7/1/2018	6/30/2019	28,097.32	21,047.88
Gray's Woods	250 College Ave	Lancaster	1,068	7/1/2018	6/30/2019	21,746.40	0
Lancaster Regional Medical Center	1995 Technology Parkway	Mechanicsburg	100.0 Mbps	7/1/2018	6/30/2019	8,529.30	0
Pinnaclehealth West Shore Hospital	4752 State Route 655	Bellville	1.0 Gbps	7/1/2018	6/30/2019	21,746.40	0
Gaisinger Family Health Associates Big Valley	132 Abigail Lane (aka Scotts Road)	Port Matilda	1,544MB	7/1/2018	6/30/2019	7,254.00	0
Pinnaclehealth Community General Osteopathic Hosp	132 Abigail Lane (aka Scotts Road)	Port Matilda	50.0 Mbps	7/1/2018	6/30/2019	4,663.82	0
Gray's Woods	25 Church Street	Wilkes-Barre	1.0 Gbps	7/1/2018	6/30/2019	343.77	342.06
Gaisinger South Wilkes-Barre Hospital	25 Church Street	Wilkes-Barre	1.0 Gbps	7/1/2018	6/30/2019	12,375.71	11,288.07

Pennsylvania Rural Health Care Commitments
2018 Breakout

Office of Chairman Gladys Brown Durtneulle
Joseph Whitmer, Esq. (717) 787-3663
Assisted by John-Paul Rodgers, Technical Utility Services (717) 214-9115

Kane Community Hospital - Kch Mt. Jewett Family Me	18 W. Main St	Mount Jewett	16740	100.0MB	100.0MB	7/1/2018	6/30/2019	1/22/2019	2/26/2018	5,070.00	5,070.00
Pike Family Health Center	750 Route 739	Lords Valley	19428			7/1/2018	6/30/2019	1/4/2019	6/26/2018	350.04	0
Mansfield Health Center	40 West Wellsboro Street	Mansfield	16933	25.0MB	25.0MB	7/1/2018	6/30/2019	1/22/2019	6/22/2018	5,733.00	5,733.00
Corry Memorial Hospital	965 Shamrock Lane	Corry	16407	1,544MB	1,544MB	7/1/2018	6/30/2019	11/29/2018	2/12/2018	5,082.17	0
Warren General Hospital	2 W Crescent Park	Warren	16365	500.0MB	500.0MB	7/1/2018	6/30/2019	11/29/2018	3/19/2018	9,750.00	9,750.00
Johnsonburg Dental Center	81 Clanton Road	Johnsonburg	16945	10.0MB	10.0MB	7/1/2018	6/30/2019	1/11/2019	3/12/2018	2,340.00	2,340.00
Guthrie-Sayre Pediatrics	1011 North Elmier Avenue	Sayre	18840	10.0GB	10.0GB	7/1/2018	6/30/2019	1/22/2019	2/14/2018	3,900.00	0
Mount Pocono Regional Medical Group	126 Market Way	Mount Pocono	18344	50.0 Mbps	50.0 Mbps	7/1/2018	10/29/2018	2/15/2019	5/9/2018	4,513.96	0
Williamsport Regional Medical Center	700 High Street	Williamsport	17701	100.0MB	100.0MB	7/1/2018	6/30/2019	2/15/2019	6/25/2018	8,757.45	0
Corry Memorial Hospital	965 Shamrock Lane	Corry	16407	50.0MB	50.0MB	7/1/2018	6/30/2019	12/20/2018	5/21/2018	8,502.00	0
PinnacleHealth West Shore Hospital	1995 Technology Parkway	Mechanicsburg	17950	10.0GB	10.0GB	7/1/2018	6/30/2019	2/15/2019	6/4/2018	57,352.15	0
Carlisle Regional Medical Center	361 Alexander Spring Rd	Carlisle	17015	1,544MB	1,544MB	7/1/2018	6/30/2019	2/15/2019	5/7/2018	3,388.40	0
Tyone Hospital - Houtsdale Rural Health Clinic	120 Spring Street	Houtsdale	16651	50.0MB	10.0MB	7/1/2018	6/30/2019	1/4/2019	9/5/2018	1,013.22	1,013.22
Wellspring Chambersburg Hospital,	112 N 7th St	Chambersburg	17201	1,066	1.0GB	7/1/2018	6/30/2019	1/11/2019	6/13/2018	5,257.64	2,628.82
Troy Community Hospital And Clinic	275 Guthrie Drive	Troy	16947	100.0MB	100.0MB	7/1/2018	6/30/2019	11/29/2018	2/14/2018	9,929.56	4,082.15
Fox Township Medical Center	174 Skyline Drive	Kersey	15946	100.0MB	100.0MB	7/1/2018	6/30/2019	1/11/2019	9/12/2018	1,560.00	1,560.00
Guthrie - Robert Packard Hospital	1 Guthrie Square	Sayre	18840	1,544MB	1,544MB	7/1/2018	6/30/2019	1/11/2019	6/19/2018	5,536.99	5,536.99
Cameron County Healthcare Center	90 East 2nd Street	Emporium	15834	20.0MB	20.0MB	7/1/2018	6/30/2019	1/11/2019	2/20/2018	3,510.00	3,510.00
J C Blair Memorial Hospital - Convenient Care Center	7651 Lake Raystown Shopping	Huntingdon	16057	15.0MB	15.0MB	7/1/2018	6/30/2019	1/22/2019	2/20/2018	6,470.10	6,470.10
Slippery Rock Primary Care	100 Innovation Drive	Slippery Rock	16552	1,544MB	1,544MB	7/1/2018	6/30/2019	1/11/2019	2/3/2018	2,615.08	0
Kane Dental Center	118 Paley St	Kane	16735	100.0MB	100.0MB	7/1/2018	6/30/2019	1/11/2019	3/12/2018	3,315.00	3,315.00
Lancaster Regional Medical Center	250 College Ave	Lancaster	17603	100.0MB	100.0MB	7/1/2018	6/30/2019	2/8/2019	5/21/2018	15,079.35	15,079.35
Petrolia Primary Care	296 Church Street	Petrolia	16050	50.0MB	5.0MB	7/1/2018	6/30/2019	1/11/2019	2/3/2018	1,579.11	1,579.11

\$3,993,586.29 \$1,809,526.03

APPENDIX C

Monroe County Support from FCC Rural Health Care Program (Historic/Current)

Monroe County Rural Health Care Commitments

Office of Chairman Gladys Brown Dutreuilie
Joseph Wfimer, Esq.
Assisted by John-Paul Rodgers, Staff

Participating HCP Name	Participating HCP City	Participatir	Participatir	Download Speed	Upload Speed	Funding Start	Dr Funding End	Da Funding	Commitment	Da Total	Committed	Total Authorized	Disbursement Amount
Pocono Medical Center	East Stroudsburg	PA	18301 NA	NA	NA	12/23/2015	6/30/2016	6/30/2016	2/16/2016	2/16/2016	1,308.42	1,308.42	1,308.42
Mount Pocono Geisinger Medical Group	Mount Pocono	PA	18344 NA	NA	NA	12/23/2015	6/30/2016	6/30/2016	2/16/2016	2/16/2016	2,757.89	2,757.88	2,757.88
East Stroudsburg Geisinger Medical Group	Stroudsburg	PA	18301 NA	NA	NA	12/23/2015	6/30/2016	6/30/2016	2/16/2016	2/16/2016	1,308.42	1,308.42	1,308.42
Pocono Medical Center	East Stroudsburg	PA	18301 1.5 Mbps	1.5 Mbps	NA	10/1/2014	6/30/2017	6/30/2017	10/7/2014	10/7/2014	7,023.79	7,023.79	7,023.79
Mount Pocono Geisinger Medical Group	Mount Pocono	PA	18344 NA	NA	NA	12/23/2015	6/30/2016	6/30/2016	2/16/2016	2/16/2016	2,455.64	2,455.64	2,455.64
Pocono Medical Center	Mount Pocono	PA	18301 NA	NA	NA	12/23/2015	6/30/2016	6/30/2016	2/16/2016	2/16/2016	335.14	335.14	335.14
Mount Pocono Geisinger Medical Group	East Stroudsburg	PA	18301 1.544MB	1.544MB	NA	7/8/2014	9/30/2014	9/30/2014	2/16/2016	2/16/2016	662.47	662.48	662.48
Pocono Medical Center	Mount Pocono	PA	18344 NA	NA	NA	12/23/2015	6/30/2016	6/30/2016	2/16/2016	2/16/2016	5,603.46	5,603.46	5,603.46
Mount Pocono Geisinger Medical Group	Mount Pocono	PA	18301 NA	NA	NA	12/23/2015	6/30/2016	6/30/2016	2/16/2016	2/16/2016	83.79	83.79	83.79
East Stroudsburg Geisinger Medical Group	Stroudsburg	PA	18301 NA	NA	NA	12/23/2015	6/30/2016	6/30/2016	2/16/2016	2/16/2016	41.89	41.89	41.89
Pocono Medical Center	East Stroudsburg	PA	18301 NA	NA	NA	12/23/2015	6/30/2016	6/30/2016	2/16/2016	2/16/2016	3,275.17	3,275.17	3,275.17
East Stroudsburg Geisinger Medical Group	Stroudsburg	PA	18301 NA	NA	NA	12/23/2015	6/30/2016	6/30/2016	2/16/2016	2/16/2016	4,911.27	4,911.27	4,911.27
Mount Pocono Geisinger Medical Group	Mount Pocono	PA	18344 NA	NA	NA	12/23/2015	6/30/2016	6/30/2016	2/16/2016	2/16/2016	19,645.08	19,645.08	19,645.08
Pocono Medical Center	East Stroudsburg	PA	18301 NA	NA	NA	12/23/2015	6/30/2016	6/30/2016	2/16/2016	2/16/2016	3,275.17	3,275.17	3,275.17
East Stroudsburg Geisinger Medical Group	Stroudsburg	PA	18301 1.544MB	1.544MB	NA	7/8/2014	9/30/2014	9/30/2014	2/16/2016	2/16/2016	534.77	534.77	534.77
Mount Pocono Geisinger Medical Group	Mount Pocono	PA	18344 50.0MB	50.0MB	2.0MB	10/24/2017	6/30/2018	6/30/2018	3/16/2018	3/16/2018	9,787.64	9,787.64	9,787.64
East Stroudsburg Geisinger Medical Group	Stroudsburg	PA	18301 12 Mbps	12.0MB	2.0MB	11/4/2014	6/30/2017	6/30/2017	12/16/2014	12/16/2014	1,977.24	1,977.23	1,977.23
East Stroudsburg Geisinger Medical Group	Stroudsburg	PA	18301 1.5 Mbps	1.5 Mbps	2 Mbps	10/1/2014	6/30/2017	6/30/2017	10/7/2014	10/7/2014	5,403.53	5,403.54	5,403.54
East Stroudsburg Geisinger Medical Group	Stroudsburg	PA	18301 1.5 Mbps	1.5 Mbps	2 Mbps	7/1/2017	6/30/2018	6/30/2018	3/16/2018	3/16/2018	0	0	0
Mount Pocono Geisinger Medical Group	Mount Pocono	PA	18344 50.0 Mbps	50.0 Mbps	50.0 Mbps	10/24/2018	6/30/2019	6/30/2019	2/15/2019	2/15/2019	9,951.83	9,951.83	9,951.83
Mount Pocono Geisinger Medical Group	Mount Pocono	PA	18344 50.0MB	50.0MB	10.0MB	7/1/2017	10/23/2017	10/23/2017	3/16/2018	3/16/2018	4,426.16	4,426.16	4,426.16
East Stroudsburg Geisinger Medical Group	Stroudsburg	PA	18344 10.0MB	10.0MB	1.0GB	8/19/2016	6/30/2019	6/30/2019	4/12/2017	4/12/2017	22,788.26	22,788.26	22,788.26
Mount Pocono Geisinger Medical Group	Mount Pocono	PA	18344 1.0GB	1.0GB	50.0 Mbps	7/1/2018	6/30/2019	6/30/2019	5/29/2019	5/29/2019	28,785.04	28,785.04	28,785.04
Mount Pocono Geisinger Medical Group	Mount Pocono	PA	18344 50.0 Mbps	50.0 Mbps	100 Mbps	7/1/2018	10/23/2018	10/23/2018	2/15/2019	2/15/2019	4,513.96	4,513.96	4,513.96
Mount Pocono Geisinger Medical Group	Mount Pocono	PA	18344 100 Mbps	100 Mbps	100 Mbps	10/25/2014	6/30/2017	6/30/2017	11/4/2014	11/4/2014	30,368.16	30,368.16	30,368.16
											\$ 171,234.19	\$ 153,156.43	

**Monroe County Rural Health Care Commitments
2018 Breakout**

Office of Chairman Gladys Brown Dufresuille
Joseph Witmer, Esq.
Assisted by John-Paul Rodgers, Staff

Participating HCP Name	Participating HCP Str	Participating HCP	Participati	Download Speed	Upload Speed	Funding Start Date	Funding End Date	Funding Commitment Da	Total Committed	Total Authorized Disbursement Amount
Mount Pecono Geisinger Medical Group	126 Market Way	Mount Pecono	PA	18344 50.0 Mbps	50.0 Mbps	10/24/2018	6/30/2019	2/15/2019	9,961.83	0
Mount Pecono Geisinger Medical Group	126 Market Way	Mount Pecono	PA	18344 1.0GB	1.0GB	7/1/2018	6/30/2019	5/25/2019	28,785.04	25,183.07
Mount Pecono Geisinger Medical Group	126 Market Way	Mount Pecono	PA	18344 50.0 Mbps	50.0 Mbps	7/1/2018	10/23/2018	2/15/2019	4,513.96	0
									\$ 43,260.83	\$ 25,183.07

APPENDIX D

East Stroudsburg Support from FCC Rural Health Care Program

(Historic/No Current Support)

**Monroe County Rural Health Care Commitments
East Stroudsburg Breakout**

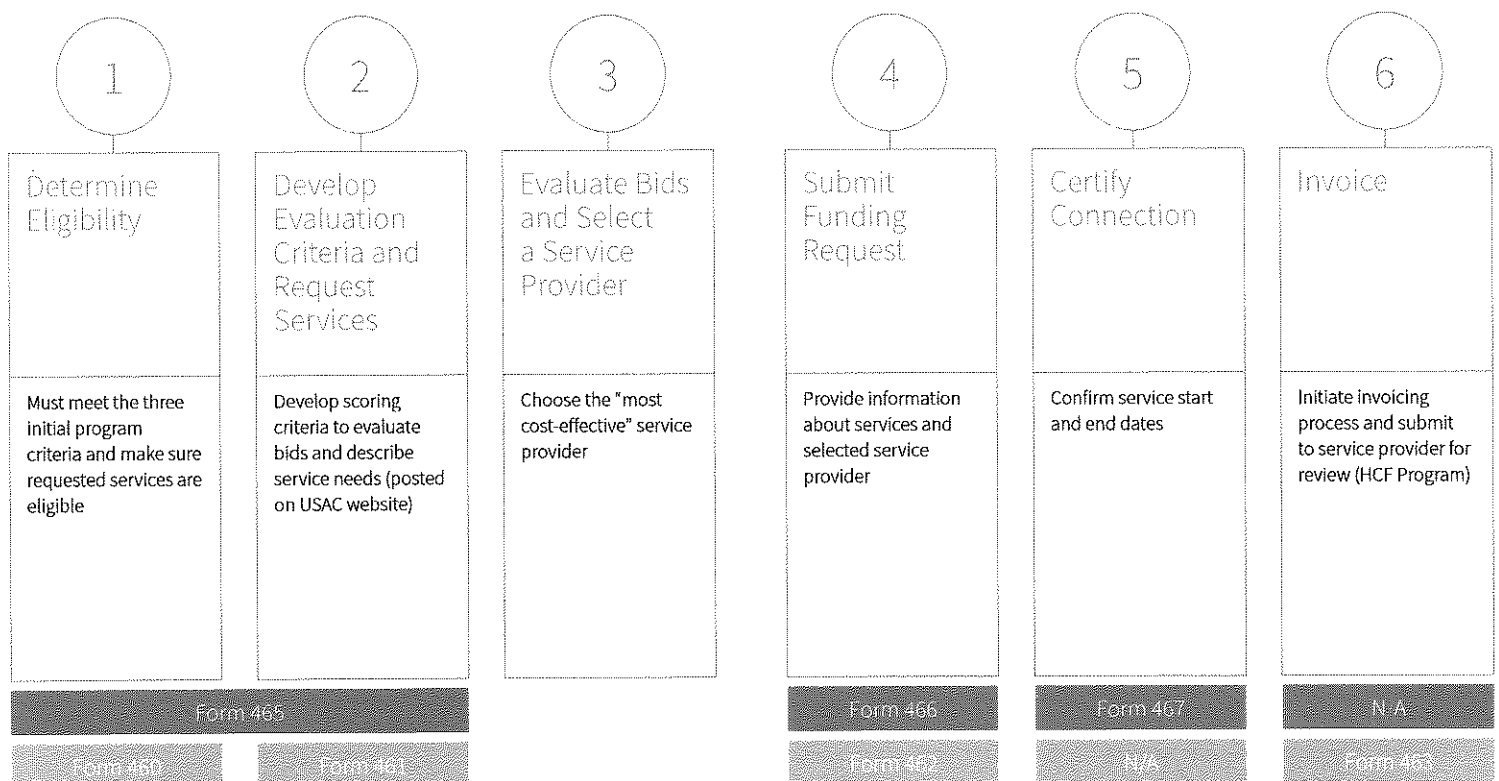
Office of Chairman Gladys Brown Durkaille
Joseph Withner, Esq.
Assisted by John-Paul Rodgers, Staff

Participating HCP Name	Participating HCP Street	Participating HCP City	Participating HCP State	Participating HCP Download	Upload Speed	Funding Start Date	Funding End Date	Funding Commitment	Funding Submits	Total Commitment	Total Authorized Disbursement Amount
Poccono Medical Center	206 East Brown Street	East Stroudsburg	PA	18301 NA	NA	12/23/2015	6/30/2016	2/16/2016	12/23/2015	1,308.42	1,308.42
Poccono Medical Center	206 East Brown Street	East Stroudsburg	PA	18301 1.5 Mbps	1.5 Mbps	10/17/2014	6/30/2017	10/7/2014	9/12/2014	7,023.79	7,023.79
Poccono Medical Center	206 East Brown Street	East Stroudsburg	PA	18301 NA	NA	12/23/2015	6/30/2016	2/16/2016	12/23/2015	2,455.64	2,455.64
Poccono Medical Center	206 East Brown Street	East Stroudsburg	PA	18301 1.544MB	1.544MB	7/8/2014	9/30/2014	2/10/2015	1/29/2015	662.47	662.48
Poccono Medical Center	206 East Brown Street	East Stroudsburg	PA	18301 NA	NA	12/23/2015	6/30/2016	2/16/2016	12/23/2015	41.89	41.89
Poccono Medical Center	206 East Brown Street	East Stroudsburg	PA	18301 NA	NA	12/23/2015	6/30/2016	2/16/2016	12/23/2015	3,275.17	3,275.17
										\$ 14,767.38	\$ 14,767.39

APPENDIX E

Overview of Rural Health Care Processes and Timelines

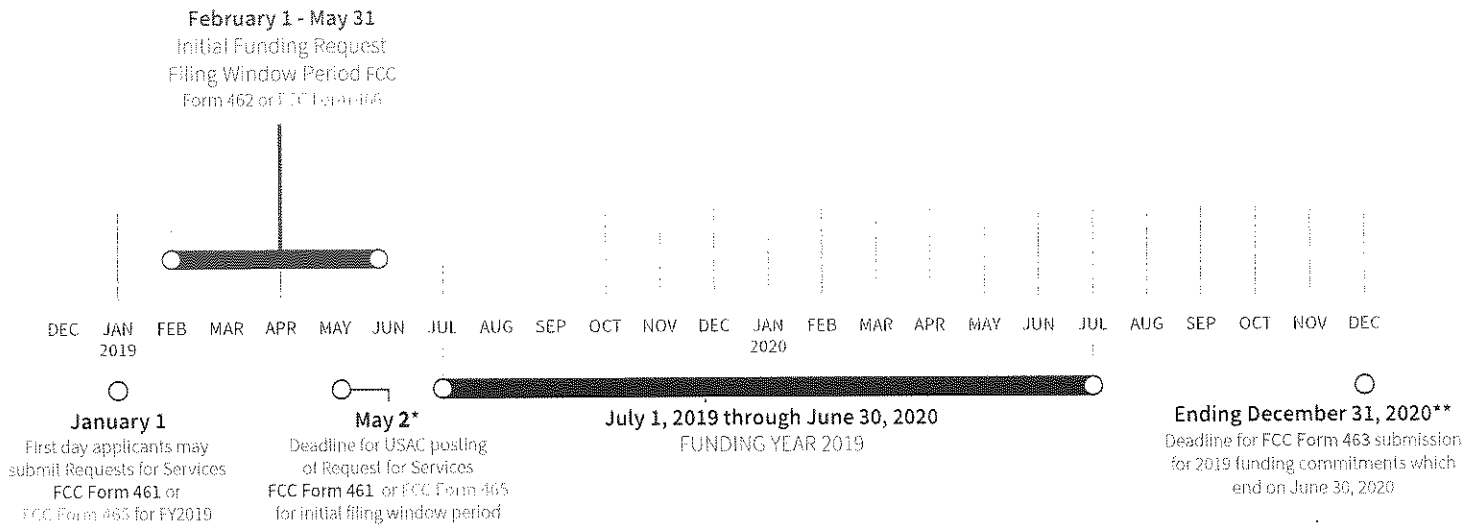
Rural Healthcare Program Application Process





TELECOMMUNICATIONS PROGRAM
 HEALTHCARE CONNECT FUND

FUNDING YEAR (FY) 2019

FILING CALENDAR



	Funding Request Filing Window Period	Healthcare Connect Fund (HCF) Program
	General Funding Year Deadlines	Telecommunications Program

*Applicants should allow for processing time between their submission and USAC posting of the form by this day

**An invoice must be submitted to the service provider and approved by the deadline.

APPENDIX F

USDA Rural Utilities Support in Pennsylvania

Distance Learning and Telemedicine Grants
October 31, 2018

State	Sen.	Representatives	Recipient	Grants	Project Description
OK	James Inhofe James Lankford	Frank Lucas (03) Tom Cole (04) Steve Russell (05)	St. Anthony Hospital	\$457,020	This Rural Development investment will be used to help SSM Health Care of Oklahoma purchase telemedicine equipment to expand its current Saints 1st Telehealth Network to serve up to 3,434 inpatients and 3,401 outpatients. This project will reduce long distance and significant travel expense for patients to access specialized medical services including cardiology, endocrinology, pulmonology, ENT (ear, nose & throat), pediatric, hospitalist, primary care, and mental healthcare services via telemedicine patients at twelve hub/end-user locations in Beaver, Blaine, Custer, Garvin, Harper, Kiowa, Lincoln, Major, McClain, Washita, and Woods Counties. Project sites include nine rural hospitals and three rurally located physician practices. This project will significantly improve healthcare in the areas it will serve.
OK	James Inhofe James Lankford	Markwayne Mullin (02) Frank Lucas (03)	Perry High School	\$440,734	This Rural Development investment will be used to help the Perry School District implement the Oklahoma Rural STEM Achievers program. Interactive distance learning technology will be installed to deliver advanced placement and professional development courses, and Science, Technology, Engineering and Math (STEM) courses for talented and gifted students. This project will also serve Native American Tribal Areas at nine sites, potentially serving more than 2,500 students and 200 teachers overall.
OR, IN	Ron Wyden Jeff Merkley (OR); Joe Donnelly Todd Young B126 (IN)	Earl Blumensauer (OR 03) Peter DeFazio (OR 04) Luke Messer (IN 06)	Coquille Indian Tribe	\$57,370	This Rural Development investment will be used to create an enhanced specialized professional medical care delivery telemedicine system by the Coquille Indian Community Health Center. The Center serves Native Americans throughout southwestern Oregon. It is located on the Coquille Indian Tribe's Reservation (Kilkich Reservation) and is a primary health care provider and investment will benefit approximately 1,300 resident Native Americans. Funds will be used to buy equipment such as computers, dual monitors, high-definition cameras with built-in microphones, specialized software, and ancillary support technology. Telepsychiatry site in Columbus, IN is a Hub site for this project. The Center will provide previously unavailable medical care such as psychiatry, pediatric psychiatry, pain management and dermatology services. It also will treat
PA	Robert Casey Patrick Toomey	Glenn Thompson (05) Mike Doyle (14)	Allegheny Singer Research Institute	\$119,500	This Rural Development investment will be used to help Allegheny Singer Research Institute empower Allegheny General Hospital (AGH), based in Pittsburgh, Pennsylvania to equip rural Clarion Hospital with telemedicine equipment. The equipment will be 100 percent dedicated to telestroke care for patients with acute stroke emergencies at Clarion Hospital. Rural patients from the geographic service region, which includes Clarion, Forest, Jefferson and Armstrong counties in western Pennsylvania, will receive specialized stroke care over the Allegheny Health Network provided by AGH doctors located in Pittsburgh. The census population of these counties totals approximately 159,000 people.
PA	Robert Casey Patrick Toomey	Glenn Thompson (05)	Penn Highlands Healthcare	\$500,000	This Rural Development investment will be used to purchase and install telemedicine equipment linking 20 locations in Clearfield, Jefferson, Elk, Centre and Cameron Counties, serving over 54,300 rural residents. Penn Highlands Healthcare will also launch a telepsychiatry service to address the growing opioid misuse crisis in this very rural, underserved area of Pennsylvania.
PA	Robert Casey Patrick Toomey	Bill Shuster (09) Tim Murphy (18)	Cornerstone Care	\$500,000	This Rural Development investment will help Cornerstone Care address opioid misuse. This project will implement telehealth treatment capabilities between eight health care centers and four schools in Washington and Greene counties in Southwestern Pennsylvania. The project will utilize telehealth systems to expand access to behavioral health services and education to reduce the impact of opioid misuse through remote screening. It will increase school district personnel's knowledge of opioid use disorder and available resources. Seventy-five percent of personnel will be trained by the end of the project's first year, allowing effective intervention with students who are suspected to suffer from opioid misuse. More than 16,000 residents will have increased access to



United States
Department of
Agriculture

Distance Learning and Telemedicine Grants
October 31, 2018

State	Sen.	Representatives	Recipient	Grants	Project Description
PA	Robert Casey Patrick Toomey	Glenn Thompson (05)	Rural Regional College of Northern Penns	\$83,161	This Rural Development investment will be used to help Rural Regional College of Northern Pennsylvania (RRC) install the latest interactive distance learning technology to one (1) hub site, and eleven (11) end-user sites in order to provide education and training to high school and adult residents spread out over six (6) Pennsylvania counties. This Rural Development investment will allow residents in this economically-challenged region to complete educational courses required to compete for opportunities in the fast-growing field of health care and social services, potentially impacting over 45,000 residents. RRC is making a concerted effort to create an educated rural-based population that is more attractive to business and industry looking to establish new
PA	Robert Casey Patrick Toomey	Charles Dent (15) Matthew Cartwright (17)	Saint Luke's Hospital of Bethlehem, Pennsylvania	\$401,679	This Rural Development investment will be used to help St. Luke's Hospital purchase telemedicine equipment to help expand St. Luke's Hospital-Bethlehem, PA telehealth network to the new, still under construction St. Luke's Hospital at Orwigsburg, PA, which is slated to open in 2019. The project will provide critically needed specialty care and disease management to a potential 143,573 rural residents who need higher quality medical services. Improved services will include inpatient healthcare, behavioral health services, chronic disease management and professional development for the staff. In addition, St. Luke's Hospital-Bethlehem provides over 1,900 virtual professional development sessions each year, and participation in these events will increase with the availability of these programs to the staff at the hospital in Orwigsburg.
PA	Robert Casey Patrick Toomey	Tom Marino (10) Lou Barletta (11) Matthew Cartwright (17)	Wright Center Medical Group PC	\$463,223	This Rural Development investment will be used to help provide telemedicine resources to address two primary and related concerns -- opioid misuse and a related disease, Hepatitis C, that seems to affect those suffering with opioid misuse at a greater rate. This investment will ensure those who need assistance and treatment for opioid misuse in isolated rural communities will have the same access afforded to less rural patients. In addition, the resources will be used to train specialty care providers including physicians, nurses and other professionals to practice telemedicine benefiting
SC	Lindsey Graham Tim Scott	Tom Rice (07)	Northeastern Technical College	\$499,933	This Rural Development (RD) investment will be used to help Northeastern Technical College (NETC) to upgrade its distance learning network to include two rural school districts and two AMKids Juvenile Justice Programs in South Carolina. 1,178 students at the project sites will be provided access to specialized workforce training opportunities through this RD Distance Learning and Telemedicine project. Two-way interactive videoconferencing equipment will be provided to expand STEM-based technical training programs from NETC in Bennettsville, South Carolina and the other participating sites. The project will help alleviate the shortage of health care workers in the rural communities.
SC	Lindsey Graham Tim Scott	Tom Rice (07)	Northeastern Technical College	\$499,933	This Rural Development investment will be used to help Northeastern Technical College (NETC) to upgrade their distance learning network to include two rural school districts and two AMKids Juvenile Justice Programs. 2,212 students at the project sites will be provided access to specialized workforce training opportunities through this project. Two-way interactive videoconferencing equipment will be provided to expand STEM-based technical training programs from the Northeast Technical College in Cheraw, South Carolina and the participating sites. Advanced Manufacturing 4.0 offerings will help address the shortage of employees qualified to obtain high-tech, STEM-based workforce positions in the rural communities.
SC	Lindsey Graham Tim Scott	Ralph Norman (05) James Clyburn (06)	University of South Carolina	\$478,556	This Rural Development investment will help the University of South Carolina provide Science, Technology, Education and Math (STEM) education programs. Interactive video equipment will be installed at five satellite college campuses in Sumter, Union, Lancaster, Allendale and Walterboro counties in the Northern and Southern regions of South Carolina. The project will enhance network and video-conferencing equipment, increasing access to 33 STEM-related courses and Bachelor of Science in Nursing courses reaching more than 3,580 students. The project will provide increased opportunities for nursing degrees, addressing the need due to the expected shortage of 10,400

APPENDIX G

USDA Rural Utilities Service:

Distance Learning Technology (DLT) Program: Application Process

Distance Learning & Telemedicine Grants

What does this program do?

This grant program helps rural communities acquire the technology and training necessary to connect educational and medical professionals with the teachers and medical providers who serve rural residents at the local level.

Who may apply for this program?

Eligible applicants, which are providing education or healthcare services through telecommunication facilities, include:

- State and local governmental entities
- Nonprofit organizations
- Consortia of eligible entities
- Federally recognized Tribes
- For-profit businesses

What is an eligible area?

The intent of the DLT program is to benefit rural areas with populations of 20,000 or less.

How may funds be used?

Grant funds may be used for:

- Audio, video and interactive video equipment
- Broadband facilities that support distant learning or telemedicine
- Computer hardware, network components and software
- Acquisition of instructional programming
- Acquisition of technical assistance and instruction for using eligible equipment

What kinds of funding are available?

Grant funds are awarded through a nationally competitive process. Funding is not currently available for DLT loans or loan / grant combinations.

What are some grant requirements?

- Awards can range from \$50,000 to \$500,000
- A minimum 15 percent match is required and cannot be from another federal source.

How do we get started?

- Application windows for this program are announced through the national office on a periodic basis.
- Program Resources are available online at www.rd.usda.gov (includes forms, guidance, certifications, etc.)

Who can answer questions?

Contact a General Field Representative that serves your area, call (202) 720-0800 or email dltinfo@wdc.usda.gov.

What governs this program?

- Code of Federal Regulation: 7 CFR Part 1734

Why does USDA Rural Development do this?

The DLT program helps rural residents tap into the enormous potential of modern telecommunications and the Internet for education and healthcare, two of the keys to economic and community development.

NOTE: Because citations and other information may be subject to change please always consult the program instructions listed in the section above titled "What Governs this Program?" You may also contact your General Field Representative for assistance. You will find additional forms, resources, and program information at www.rd.usda.gov. *USDA is an equal opportunity provider, employer, and lender.*

APPENDIX H

FCC Order in Docket 18-213 Creating

“Connected Care” Pilot

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

In the Matter of)
)
Promoting Telehealth in Rural America) WC Docket No. 17-310
)

REPORT AND ORDER

Adopted: August 1, 2019

Released: August 20, 2019

By the Commission: Chairman Pai and Commissioners O’Rielly and Carr issuing separate statements; Commissioners Rosenworcel and Starks approving in part, dissenting in part, and issuing separate statements.

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I. INTRODUCTION

1. Nearly 60 million people—roughly 1 out of every 5 Americans—live in a rural area.¹ For these millions of Americans, affordable, quality health care at the local level can be scarce. Geographic isolation, combined with low population densities, make the provision of sustainable local health care in rural areas a challenge; indeed, many rural areas have witnessed an increasing number of local health care facilities closing in recent years. Inadequate local resources and difficulties in recruiting and retaining physicians further complicate local access to quality health care. As a result, millions of rural Americans are forced to travel long distances to obtain medical treatment, at significant time and expense not only for the patient but also for friends and family.² Those unable to bear the expense may forgo treatment altogether and risk a personal health care crisis.

2. Telehealth services are one important solution to the challenge of health care access in rural areas by connecting rural patients with general physicians and medical specialists located outside the patients’ communities. The Commission promotes telehealth in rural areas through the Rural Health Care Program (RHC Program or Program), which provides financial support to help rural health care providers obtain broadband and other communications services at discounted rates. These services are in turn used by health care providers to offer telehealth to patients living in and around the communities they serve.

3. As the demand for robust broadband has increased throughout the country, the RHC Program has witnessed a dramatic increase in health care provider participation. Even with the Commission increasing the RHC funding cap last year by more than \$170 million over the prior \$400 million funding cap to account for inflation, demand continues to stress the RHC Program. This creates a challenge for program administration, leading to uncertainty among participants as to the status of their funding requests and complicating the planning of upgrades and existing service relationships. This increased demand and resulting administrative challenges required us to take a closer look at whether the current rules and procedures are cost-effective and efficient and adequately protect the Universal Service Fund against waste, fraud, and abuse. Accordingly, in this Report and Order, after reviewing the record,

¹ Press Release, Census Bureau, New Census Data Show Differences in Rural and Urban Populations (Dec. 8, 2016), <https://www.census.gov/newsroom/press-releases/2016/cb16-210.html>.

² According to a recent Pew Research survey, “[R]ural Americans are more likely than people in urban and suburban areas to say access to good doctors and hospitals is a major problem in their community” and on average have longer travel times to the nearest hospital. Onyi Lam et al., *How far Americans Live from the Closest Hospital Differs by Community Type*, Pew Research Center (Dec. 12, 2018), <https://www.pewresearch.org/fact-tank/2018/12/12/how-far-americans-live-from-the-closest-hospital-differs-by-community-type/>.

(continued....)