Before the
United States Department of Agriculture
Rural Utilities Service
Washington, D.C. 20250

In the Matter of	)	
	)	
Rural Utilities Service e-Connectivity Pilot	)	Docket No.
	)	RUS-18-TELECOM-0004
	)	

COMMENTS OF THE QUILT

The Quilt respectfully offers these comments in response to the Rural Utilities Service (RUS) July 27, 2018, request for comments on the agency's Broadband e-Connectivity Pilot Program (e-Connectivity Pilot).[1]

1. Introduction and Background

The Quilt is a non-profit 501(c)(3) organization that represents forty of our nation's non-profit Research & Education (R&E) Networks in a variety of states across the United States. Collectively, these R&E Networks connect approximately 1,000 higher education institutions and 100,000 community anchor institutions (CAIs) across the country, including in rural and frontier areas. These anchor institutions include schools and libraries, state and local government agencies, non-profit organizations, health care providers, and private industry engaged in research and educational partnerships across the states we serve.

In addition to providing high-capacity advanced network services, Internet access, and related services to CAIs across their states, these non-profit networking organizations serve in a key role of trusted convener across community and state broadband stakeholders due to the unique role each R&E network plays in their respective broadband landscape. Most R&E Networks own or control (through leasing or

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[1] 83 Fed. Reg. 35,609, https://www.gpo.gov/fdsys/pkg/FR-2018-07-27/pdf/2018-16014.pdf ("Public Notice"); *see also* Consolidated Appropriations Act of 2018, Pub.L. 115-141, § 779.

indefeasible rights of use) their own middle-mile and some last mile network infrastructure. R&E Networks across the states and regions connect at the national level to Internet2 which operates the nation's premier publicly available national research and education network (NREN).

By nature, R&E networks play a vital and expansive role in their respective broadband landscapes. R&E networks work at the community, state, and national levels to contribute their technical expertise, collaborative spirit, and community leadership roles and work opportunistically with member institutions and a wide range of partners to deploy broadband infrastructure to unserved areas. R&E networks are key partners to federal agencies such as the National Science Foundation, the Department of Energy's Energy Science Network, and the National Oceanic and Atmospheric Administration's N-Wave Network, NASA and others for academic and scientific discovery. These R&E networks also actively participate in federal programs that provide resources to improve technology infrastructure that enables scientific discovery, furthers the country's academic enterprise, and facilitates improved broadband connectivity to CAIs such as the E-rate program and the Healthcare Connect Fund. Quilt members have directly and indirectly participated in the RUS' Distance Learning and Telemedicine as well as the Community Connect Programs. One example of this is recent Community Connect Program grant in Maine which is funding infrastructure to connect Cranberry Isles to the mainland and the infrastructure of Networkmaine for distance learning activities.[2]

R&E networks have a long history of research and networking partnerships with our country's land-grant universities which include 34 land-grant tribal colleges. Land-grant institutions are important players in the development of rural broadband. Agricultural research conducted by research farms and agricultural and forest experiment stations by these institutions increasingly rely on data, systems and

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[2] *See, e.g.,* Cranberry Isles' $1.3M broadband initiative seen as a model for Maine, MaineBiz (Mar. 27, 2018), http://www.mainebiz.biz/article/20180327/NEWS01/180329948/cranberry-isles'-$13m-broadband-initiative-seen-as-a-model-for-maine.

tools that require broadband access in locations that perhaps were once thought of as remote areas of our country. Land-grant universities through their cooperative extension programs' community development efforts contribute important leadership and organization skills to bring together county and regional stakeholders to promote collaboration and partnership for the deployment of broadband facilities for their communities.

2. **RUS Should Prioritize e-Connectivity Pilot Applications That Include Connectivity to CAIs and Tribal Lands**

Policymakers have long-recognized CAIs as an important piece of the rural broadband deployment puzzle. The *National Broadband Plan* in 2010 recommended a strategy that would better aggregate the broadband needs of CAIs to drive the efficiencies and economies of scale necessary for broadband deployments in rural and Tribal areas.[3] Bringing sufficient access to critical last-mile broadband in rural areas often depends on targeted investments in middle-mile broadband infrastructure. As Internet2 has explained:

> Deploying robust broadband connections is analogous to building roads: you need to first build the highways to connect the towns and their core institutions (anchor institutions) to the broader world and then invest in the diffusion of the connections within the community. Focusing broadband deployment on these core, public-serving, anchor institutions can positively [a]ffect the broader public in multiple ways, including deployment, availability, adoption, and use.[4]

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[3] *See* Federal Communications Commission, *Connecting America: The National Broadband Plan* 153-55 (2010) available at https://www.fcc.gov/national-broadband-plan (National Broadband Plan); *id.* at 154 ("Because [CAIs] are large—if not the largest—potential consumers of broadband in even the smallest of towns, adopting these recommendations will not only expand broadband options for the institutions themselves but also will improve availability in the community as a whole."); *see also The Impact Anchor Institutions on a Community's Broadband Connections"* at 3 (2016), available at https://www.internet2.edu/media/medialibrary/2016/06/22/CAI-Influence-in-Broadband-White-Paper.pdf.

[4] *Id.*; *see also National Broadband Plan* at 154 ("Expanding the R&E network model to other anchor institutions would offer tremendous benefits. Many community institutions lack the institutional resources to undertake the many tasks necessary to maximize their utilization of broadband. Facilitating collaboration on network design and how best to utilize applications to meet public needs could result in lower costs and a far more efficient and effective utilization of broadband by these institutions.").

The Quilt also recommends and endorses the Schools, Health & Libraries Broadband (SHLB) Coalition's "To and Through" strategy for bringing broadband to unserved and underserved communities[5] – recognizing that high speed broadband availability to CAIs is a first step to improved broadband access to businesses and households in surrounding communities.

While the main purposes of the e-Connectivity Pilot may be to bring sufficient broadband access to "households" that lack 10/1 service,[6] the RUS can and should give preference to applications that will also bring sufficient broadband access to CAIs[7] (other things being equal) as a component of an overall plan to serve rural and Tribal areas with insufficient broadband access. Doing so would appropriately recognize the important role CAIs play in the rural broadband ecosystem. We also support setting aside funding specifically for projects that serve businesses, households, and CAIs located on Tribal lands.

"Sufficient access to broadband" for most households and all CAIs today is typically well above 10/1 Mbps. For example, the State Educational Technology Directors Association (SETDA) publishes recommendations for minimum bandwidths necessary for schools to take advantage of the digital learning tools that are now a standard part of curricula nationwide. SETDA's most recent (2017-2018) bandwidth targets for school Internet access include at least 1.5 Mbps of connectivity *per student* for small school districts, with a minimum connection of 100 Mbps for an entire small district. Those targets grow to 4.3 Mbps and 300 Mbps, respectively by 2020-21.[8] It is important that all federal broadband investment

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[5] *See SHLB Releases New Fiber Cost Estimate and a Strategy to Connect Rural Communities*, Press Release, http://www.shlb.org/news/shlb/2018/02/PRESS-RELEASE-SHLB-Releases-New-Fiber-Cost-Estimate-and-a-Strategy-to-Connect-Rural-Communities/; *see generally* SHLB's Grow2Gig+ CAI Policy White Papers, available at http://www.shlb.org/action-plan.

[6] *See Consolidated Appropriations Act of 2018* at § 779 ("90 percent of the households to be served by a project receiving a loan or grant under the pilot program shall be in a rural area without sufficient access to broadband").

[7] We address sufficient access to broadband for CAIs in the following section.

[8] *See* THE BROADBAND IMPERATIVE II: EQUITABLE ACCESS FOR LEARNING, SETDA (Sep. 2016), at 2, http://www.setda.org/wp-content/uploads/2016/09/SETDA-Broadband-ImperativeII-Full-Document-Sept-8-2016.pdf.

programs support aggressive bandwidth targets for CAIs, even where the primary program objective is to

deliver broadband access to households that currently lack a minimum of 10/1 Mbps access.[9]

As RUS considers "what types of technologies and services" will provide "sufficient access" to broadband

for purposes of the e-Connectivity Pilot, the agency seeks comment concerning the "transmission

capacity required for economic development, and speed and latency, especially in peak usage hours, to

ensure rural premises have access to coverage similar to that offered in urban areas."[10]   While the

delivery technologies may vary, growth in capacity requirements is constant. Each significant new

application requires more, not less, bandwidth. Many new applications must wait on sufficient stable

local connectivity. Policy makers should thus maintain a general policy of technological neutrality,

focusing instead on what method of broadband delivery is the most cost-effective overall with respect

to a particular area.

Notwithstanding, policy makers should favor broadband investments that will allow communities

(including schools, libraries, county research stations and other CAIs) to achieve national broadband goals

for each location. This means connectivity that is:

- high-quality – symmetrical, low latency, low jitter;
- scalable – capable of being upgraded easily – to support longer-term capacity needs;
- cost-effective – capital investment required should lead to lower recurring annual bandwidth charges with a sensible timeframe related to the technology that can be used to quantify the return on the investment.

Affordability is an important consideration in determining whether or not there is sufficient in a

particular rural area. While broadband facilities may be physically present in a community, if the service

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[9] Congress expressly provided the Secretary of Agriculture authority to "re-evaluate[] and redetermine[]" this threshold on an annual basis. *See Consolidated Appropriations Act of 2018* at § 779.

[10] *See Public Notice*.

provider in that community cannot (or does not) make them available at affordable rates, the community should not be considered as having sufficient access to broadband. The avoidance of overbuilding should not be an excuse to preserve unaffordable legacy network facilities that could and should be upgraded or replaced with modern network technology that can deliver higher quality broadband more cost effectively to a potentially expanded area. Ensuring end-user pricing-parity between rural and urban areas for similar broadband service levels should be an objective of the program and will help incentivize the replacement of legacy telecommunications plant that cannot provide sufficient and affordable broadband services.

Lastly, the homework gap – where students that lack access to the Internet outside of their school or library fall behind their peers that have access at home – is a growing problem especially in rural and tribal areas. The homework gap is particularly acute for people living on tribal lands where more than one-third of residents do not have broadband speeds of at least 25 Mbps (download) and rural and tribal schools constituting 6.5 million students lack adequate broadband at their schools.[11] Students that reside in rural areas and on tribal lands that lack adequate broadband access risk falling further behind as states and schools continue to adopt more digitized content for customized learning, learning and student management systems, and access on-line cloud resources. Learning for all students shouldn't stop at the end of the day's school bell, and prioritizing applications that include CAIs aligns with the investments that serve households and together moves the needle to bridging the homework gap.

3. **The e-Connectivity Pilot Should Fund Middle-Mile Infrastructure Where Necessary to Deliver Sufficient Broadband Access to Households**

Sufficient broadband access and affordability issues faced by unserved areas is not just an issue of last-mile infrastructure, but also an issue of lack of middle-mile or the distance from the last mile to

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[11] *In the Matter of Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, GN Docket No. 17-199, 2018 Broadband Deployment Report, FCC 18-10, ¶ 50, (Feb. 2, 2018), available at https://docs.fcc.gov/public/attachments/FCC-18-10A1.pdf.

connect to the closest middle-mile infrastructure for these areas.   As discussed in Section 2 above, broadband infrastructure investments that push-out middle-mile broadband infrastructure closer to unserved areas is critical to delivering sufficient last mile broadband access to households and CAIs. The Quilt supports federal funding that allows for the construction of the middle-mile broadband infrastructure necessary to ensure CAIs, businesses, and households in rural areas have access to adequate and affordable Broadband. For that reason, we believe the e-Connectivity Pilot should prioritize grants that address the gaps between current and necessary middle-mile infrastructure to deliver sufficient last mile broadband access to communities and regions.

4.   **The e-Connectivity Pilot Should Consider the Broadband Needs on Communities and Regions, Not Just Census Blocks**

RUS recognizes that improving rural prosperity is the ultimate objective for bringing affordable broadband in rural areas that currently lack sufficient access. In this context, RUS asks for comment on how best to measure the economic impact of the e-Connectivity Pilot projects in "eligible service areas."[12] RUS should recognize that the economic impact of improved broadband access in these areas will not necessarily be bound by census blocks. Indeed, many rural areas will benefit more from a regional approach that may include service provided by multiple small ISPs rather than dealing with each area in isolation. The Quilt members' experience is that unserved broadband locations are often not isolated but rather tend to be larger swatches of geography. Funding for discrete areas or a scattershot approach is less cost-effective than an approach that explores how best to serve a wider region where unserved or underserved areas may be scattered throughout.   The e-Connectivity Pilot project selection process should recognize that there are economy-of-scale benefits for regional broadband infrastructure

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[12] *See Public Notice.*

deployment projects vs. isolated projects that take (for example) a census block-by-census block approach.

In addition, Congress designated that up to three percent of awarded e-Connectivity Pilot funding can be utilized for "technical assistance and pre-development planning activities."[13] Recognizing how critical technical knowledge and planning are to the success of broadband investment projects, we support allowing the full three percent allowable to be utilized for these purposes.[14]

Economic impact to a rural area will be maximized by projects that serve CAIs in addition to households and businesses that lack access to 10/1 Mbps broadband service. As noted above, CAIs need broadband connectivity at levels far above 10/1 Mbps. Ensuring CAIs such as schools, libraries, vocational institutions, community colleges, etc., have these higher levels of service – in addition to ensuring surrounding households and business have sufficient access to broadband -- will create significant additional economic benefits beyond those of a project that serves just households. These additional benefits will be substantial and should not be ignored. As discussed above, projects that propose to serve CAIs as part of their proposal to serve households – all other things being equal – should be given a preference in the RUS selection process.

Finally, with respect to measuring economic impact, Quilt members include land-grant universities with cooperative extension offices that are well-positioned to conduct case studies which can assess the economic impact of broadband funding. We would be happy to work with RUS to realize this potential.

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[13] *See* Consolidated Appropriations Act of 2018 at § 779.

[14] Congress similarly allowed up to five percent of awarded funding to be devoted to administrative costs, which we understand to mean the administrative costs of individual projects rather than RUS administrative costs. *See id.*

5.   Measuring Broadband Access, Affordability, and Performance

In determining whether households currently have sufficient access to broadband (*i.e.*, access to at least 10/1 Mbps service), RUS asks "how data speeds are to be used or verified, given the limited availability of publicly-available information regarding accurate broadband speeds provided to rural households."[15] The Quilt agrees this is a difficult issue and that RUS is correct to recognize that reported and actual speeds can vary widely. NTIA recently sought public comment on Improving the Quality and Accuracy of Broadband Availability Data[16] and we note that one our member networks, Merit Network, filed joint comments with The Quello Center at Michigan State University (Merit/Quello Comments) in response to this request.[17] Among other things Merit/Quello proposed augmenting carrier-reported broadband availability data with consumer-sourced data and proposed a framework to obtain, analyze, and integrate such data with carrier data to create a more accurate and complete broadband availability picture. The Quilt supports the use of consumer-originated data and suggests RUS consider implementing a challenge process for the e-Connectivity Pilot where individual consumers can report insufficient broadband access in areas where RUS's broadband data may show sufficient access.

To address this issue in the future, the RUS should consider making some type of broadband data speed measurement and reporting a requirement for recipients of e-Connectivity Pilot funding. This could involve installation of a device or application attached to each funded connection that, at a minimum, reports in real-time the connection speed to the end-user of that connection. Ideally, such connection information should also be available to federal policy makers, at RUS and/or other federal agencies such as the Federal Communications Commission responsible for broadband mapping.

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[15] *Public Notice.*

[16] *See* https://www.ntia.doc.gov/federal-register-notice/2018/comments-improving-quality-and-accuracy-broadband-availability-data.

[17] *See* https://www.ntia.doc.gov/files/ntia/publications/quello_merit_commentsdocket_no.180427421-8421-01.pdf; [add cite to SHLB NTIA comments].

6. Recommendations Regarding the Structure of the e-Connectivity Pilot

There are already multiple existing federal programs that provide loans and subsidies to traditional telecommunications providers in order to bridge the rural broadband gap. Rather than replicate other programs, we believe the e-Connectivity program should focus on grants to fund projects that demonstrate sustainability. A grant structure promotes partnerships and investments in areas that lack sufficient broadband and lack the market mechanisms that incent direct investment in broadband facilities through a strong return on investment by a single provider through loans or otherwise. R&E networks support an open application process for federal broadband program funding that allows any qualified entity – not just traditional telecommunications carriers – to seek funding. Non-traditional providers are well-positioned to plan and facilitate broadband deployments that address the diverse needs of communities and regions that often extend beyond the service area footprint of an individual commercial provider.

As consortium purchasers of broadband and telecommunications services, R&E Networks have formed lasting public/private partnerships with a range of partners from national to small rural providers, state departments of transportation, rural electric cooperatives, to tribal governments. Encouraging such partnerships was a key aspect of successful BTOP projects, several of which Quilt members participated in.

There is no 'one size fits all' when it comes to solutions to bridge the broadband gap in underserved areas. These types of partnerships lower costs for commercial entities to extend last-mile facilities to benefit the businesses and households in the communities in which CAIs are located while allowing schools, libraries and other CAIs to cost-effectively access R&E Networks' shared infrastructure. Grant applications that include public/private partnerships between community organizations and rural

telecommunications providers and/or rural electric/utility associations will be stronger at addressing

regional broadband needs and should be prioritized within the application process.

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