October 10th, 2016

National Telecommunications and Information Administration
U.S. Department of Commerce

To whom it may concern,

We represent several land-grant universities working on rural broadband issues and opportunities. This includes research on the best technologies to provide service to rural areas, but also involves extension (outreach) efforts focused on helping rural individuals, tribes and communities take advantage of the benefits broadband can offer them.

In regards to the request for comments regarding a national broadband research agenda published on the federal registrar, volume 81, no. 175 please consider the following comments from an Extension Service and rural perspective. The points listed correspond to the 19 specific questions outlined in the original request for comment.

Broadband Technology

> **1. Critical data and research needs**: Because of the isolated, low-density nature of many rural and tribal communities, data is needed on the best technological options to serve them. In particular, under the current FCC definition of broadband (25 MBPS down, 3 MBPS up), the rural-urban access gap is significant, with more than 39% of rural Americans and approximately 63 percent of Tribal land residents lacking these speeds[1]. While wireless connections are available nearly universally across the nation (including rural areas), they cannot currently achieve official 'broadband' speeds. Further, cost and data cap issues undermine the potential of the technology to reduce the digital divide[2]. Data and research is needed regarding which technology offers the most promise for reaching rural areas, including the possibility of partnerships between rural cooperatives and private broadband providers to deploy broadband in rural locations.
>
> **3. Research proposals focusing on specific technologies** (e.g. laptops, tablets, smartphones) and user interfaces that are most useful *among older adults* is needed in efforts to get this group (which is heavily represented in rural America) to take advantage of broadband access. Many times, screen size or user interface simplicity can make a big difference. Note that this research is more focused on the adoption portion (and can also be applied to question No. 9 on reaching population groups that have traditionally under-utilized broadband). In addition, as technologies improve and new technologies enter the market, the federal government should support implementation and demonstration research to assess effective use. Research is needed to help federal agencies update funding program criteria to meet the needs of current and future technology solutions (ie. USDA DLT cloud-based applications and desktop applications versus large, expensive videoconferencing units).

Broadband Access and Adoption

> **6. Specific areas for federally-supported research on broadband deployment**: Federally-supported research on broadband access regarding best practices of successful rural deployment and adoption projects (including cooperatives in partnerships with private broadband providers) is

---

[1] https://www.fcc.gov/document/fcc-releases-2016-broadband-progress-report

[2] http://www.pewresearch.org/fact-tank/2016/10/03/smartphones-help-those-without-broadband-get-online-but-dont-necessarily-bridge-the-digital-divide/

lacking. Given the importance (and acceptance) of cooperatives in rural communities across the nation, this information would be very useful for improving access for unserved or underserved rural areas.

7a. Critical data for broadband adoption: Cost data! The price of broadband access is an increasingly important reason for non-adoption. However, no public data is available on the average cost paid for a monthly broadband connection. This is a key variable missing to better understand broadband adoption and utilization, and could significantly influence future policy options. In particular, cost data at the county or census-tract level would be best so that it can be meshed with other publicly-available datasets. We also need better estimates of broadband adoption, as the FCC categories of (0-20%, 20-40%, etc.) are not precise enough. We understand that the ACS is collecting point estimates on adoption rates but need this data sooner rather than later – and for places with low population levels (which currently have no data available).

7b. Critical data for broadband utilization: We have very little data about the uses of broadband at the county or census-tract level. In essence, we need some measure of how people are actually using broadband, and not just whether or not they have a connection. National studies exist with individual observations (e.g. Pew Internet) but state or county-level data are lacking. This data is critical to understand a dynamic digital divide or continuum and better design and implement digital literacy and technology relevance efforts.

8. Specific research proposal on broadband adoption: Several of us have argued for years that federal broadband policy should be *more focused on adoption* than on the provision of infrastructure[3]. While we support any series of experiments on improving broadband adoption rates, federal support for the role of the Extension Service should be specifically prioritized. The Extension Service has worked with rural communities for more than 100 years disseminating innovations and best practices and are well positioned to play a major role reducing the digital divide (from the adoption and utilization perspective). In addition, the role of the Extension Service can help implement the recommendation from the White House Broadband Opportunity Council encouraging more federal agencies to fund broadband access, adoption, and use.

9. Specific research and data to understand traditionally under-utilized broadband technology: Often traditional data sources do not reach those in most need of broadband such as those living on tribal lands, disables populations, etc. Outreach efforts such as those offered by the Extension Service can reach these people while also generating valuable data for outcome evaluation purposes.

Socioeconomic Impacts

12. Specific socioeconomic research areas: Requests for federally funded adoption-oriented programs should require the inclusion of a plan for how they will be evaluated. Economists are generally well-versed in establishing causal claims from secondary data, and could be helpful in evaluation work. Again, Extension Service is well-placed to work with rural and tribal communities in seeking to improve adoption, particularly for diverse uses of the technology.

Opportunities for Federal Leadership in Data Collection and Research

15. Specific role of the federal government in broadband research: From our perspective, the primary roles of the federal government should be (1) funder of research and (2) gatherer of data. As discussed in points 7a and 7b, critical data is missing at the county or census-tract level that can only be compiled by the federal government ensuring consistency and validity. On the

---

[3] http://www.sciencedirect.com/science/article/pii/S0740624X15000325

funding side, designating funding specifically for adoption-oriented projects could help reduce the rural—urban digital divide and at the same time generate valuable data for research purposes.

16. Opportunities to collect new broadband data: Regarding opportunities to collect new broadband-related data, please read point No. 15 above. In addition, more user-friendly datasets need to be published from existent databases (FCC Form 477 for example). Current datasets are bulky and require above average data crunching expertise. As an example, the "Analyze Table" that was part of prior National Broadband Map (NBM) work (2010-2014) was a useful way to see county and community-level data from the NBM. With that table no longer available, current researchers must crunch through all relevant data themselves to generate the numbers they are interested in. Lastly, more accurate mapping of broadband service is needed. Current datasets are mostly carrier-provided. For example, mechanisms such as crowdsourcing can be coordinated by the Extension Service and nonprofits throughout the country to generate this user data and compare to existent data provided by providers.

17. Data for ground-breaking research: Please refer to points No. 7a & 7b regarding what data would facilitate ground breaking research related to broadband. In particular, the cost data (if gathered across geographies and providers) would facilitate more research into the most effective adoption-oriented policies (such as changes to the existing broadband LifeLine program).

Please do not hesitate to contact us if you have any questions or comments.

Sincerely,
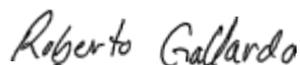
Roberto Gallardo

Roberto Gallardo, Associate Extension Professor
Mississippi State University Extension Service
MSU Extension Intelligent Community Institute
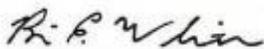
R. E. Whitacre

Brian Whitacre
Professor and Extension Economist
Department of Agricultural Economics
Oklahoma State University

Monica Babine

Monica Babine
Senior Associate, Program for Digital Initiatives
Division of Governmental Studies & Services
Washington State University

Connie Hancock
Community Vitality Extension Educator
Nebraska Extension
University of Nebraska Lincoln