Testimony of Carol Mattey

Principal

Mattey Consulting LLC

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Defining and Mapping Broadband Coverage in America

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Thank you very much, Chairman Blackburn and members of the Subcommittee. I am deeply honored to appear before you today to share my perspective on defining and mapping broadband coverage in the United States.

I commend you for recognizing the critical role of broadband infrastructure in our country. I worked on advancing broadband in rural areas for more than a decade while Deputy Bureau Chief at the Federal Communications Commission (FCC), and I am heartened that this issue is a priority for you and this Administration.

When I was at the FCC, I developed the recommendations in the National Broadband Plan on how to address the "broadband availability gap." I then implemented those recommendations over the next seven years. I supervised the FCC Division that transformed the traditional high-cost program in the FCC's Universal Service Fund (USF) from supporting voice to supporting broadband networks in those areas of our nation where there is no private sector business case, beginning with the FCC's 2011 USF-ICC Transformation Order and all subsequent decisions until I left the FCC in February 2017. I bring to you firsthand experience with designing a government program to address the lack of broadband in rural areas of the country and personal knowledge of how the FCC has used broadband coverage data in the course of implementing the Connect America Fund.

My statement addresses two topics: first, the definition of broadband, and second, the challenges of collecting good information about where broadband exists today.

Defining Broadband

Over the years, the definition of broadband has evolved, both at the FCC and in other federal agencies. The reason why definitions matter is because where you draw the line determines who is "unserved," and who is served. And that, in turn, determines the geographic areas where the federal government should be targeting its energies to address market failure.

In 2011, the FCC defined broadband for purposes of the Connect America Fund as 4 megabits per second (Mbps) upstream/1 Mbps downstream. It concluded that high-cost recipients with broadband public interest obligations should provide a minimum of 4/1 Mbps service, and it would target the new Connect America Fund to those areas lacking an unsubsidized competitor offering 4/1 Mbps service. At the same time, the FCC recognized the definition of broadband should evolve over time, and it committed to initiating a proceeding no later than 2014 to review the minimum performance characteristics to ensure that the Connect America Fund would continue to support broadband service that is reasonably comparable to broadband service in urban areas. In late 2014, the FCC adjusted the minimum performance standard for Connect America Fund recipients upward to 10/1 Mbps. Meanwhile, in a separate proceeding, in early 2015, the FCC set 25/3 Mbps as the benchmark for purposes of its periodic assessment of whether "advanced telecommunications capability" is being deployed to all Americans on a reasonable and timely basis, as required by Congress pursuant to section 706.

More recently, in 2016, the FCC established four potential service tiers for bidders that will compete for subsidies in the upcoming Phase II Connect America Fund auction: 10/1 Mbps, 25/3 Mbps, 100/20 Mbps, and 1 Gigabit/500 Mbps. But – and this is an important point – funding in the FCC's Phase II auction will only be made available in those census blocks that lack 10/1 Mbps broadband service. Similarly, with respect to the smaller telephone companies that receive USF, the FCC has set 10/1 Mbps as the minimum requirement, with some companies voluntarily accepting support with obligations to deploy 25/3 Mbps to a subset of locations. Thus, while 25/3 Mbps is frequently referred to as the FCC's definition of broadband, that is not the definition that guides its decisions on public funding from USF. To date, the FCC has sought to focus universal service support on expanding access in areas lacking service rather than areas that have some level of broadband, while at the same time encouraging recipients of funding to build robust, future-proof networks.

If 25 Mbps/3 Mbps is set as the dividing line for "unserved" in any future infrastructure legislation, that would expand the geographic areas that are deemed unserved, compared to what the FCC considers unserved today for purposes of targeting funding through the Connect America Fund. If additional funding is provided to expand broadband infrastructure in rural areas, it is important to consider the potential implications of one governmental agency providing funding to overbuild a service provider that currently is receiving funding from another government agency to expand its broadband network. It is important to coordinate and harmonize various programs administered by different federal agencies, so that the federal government as a whole is efficiently tackling the problem and not potentially working at cross purposes.

Mapping Broadband Coverage

Before delving into some of the issues associated with mapping broadband coverage, it is useful to review some background on the history of gathering information on broadband deployment.

In 2009, the National Telecommunications & Information Administration, working with the states, began collecting data on broadband availability through the State Broadband Initiative (SBI), which was funded by the American Recovery and Reinvestment Act of 2009 (ARRA). The data were compiled into the so-called National Broadband Map. The actual production of the map was done by FCC through an interagency agreement with NTIA, with NTIA publishing the map. After the ARRA funding expired, the National Broadband Map was no longer updated. The most recent map contains data as of June 2014.

Meanwhile, since 2000, the FCC had been collecting information on broadband subscription through its Form 477 data collection. In 2013, recognizing that NTIA's SBI program would soon be ending, the FCC modified its existing Form 477 data collection to begin collecting information on broadband deployment, commencing with data as of June 2014. After adoption of the new rule, it took

the FCC roughly 15 months to open an electronic interface to begin collecting the data, as it had to obtain approval to collect the new broadband deployment data from the Office of Management and Budget under the Paperwork Reduction Act and develop necessary information technology (IT) systems to accept the new information.

Data on fixed and mobile broadband deployment are now collected by the FCC twice a year. Broadband providers are required to submit information on speed and coverage through an FCC online filing system. The Form 477 broadband deployment data, with the exception of certain spectrum and speed information associated with the mobile coverage areas, are available online on the FCC's website. The public can download tables of information showing census blocks with reported coverage, indicating the speed and technology, either for individual states or for the entire nation. The most recent released FCC data are data for fixed broadband deployment as of June 2016; the FCC has indicated that shapefiles showing mobile coverage will be made available at a future date.

While the FCC has published maps using the data it collects from time to time, both in its periodic Broadband Progress Report and more generally on its website,[1] it has not published a map of the data in a format identical to the National Broadband Map. Publication of the data in a map in a format comparable to the National Broadband Map requires dedication of funding for additional IT resources. But it can be done – the FCC has the ongoing data collection program in place and is collecting a new set of data every six months.

Fixed broadband providers are required today to provide a list of census blocks where they can or do offer service to at least one location, with information provided about the speed of that service and the technology used to deliver the service. A provider that reports deployment of a particular

[1] A map of fixed broadband can be found here: https://www.fcc.gov/maps/fixed-broadband-deployment-data. Information about mobile coverage can be found here: https://www.fcc.gov/mobile-deployment-form-477-data.

technology and bandwidth in a census block thus may not necessarily offer that service everywhere in the block. Mobile broadband providers file maps of their coverage areas for each broadband technology (e.g., EV-DO, HSPA, LTE).

In my view, the FCC's Form 477 data collection provides a solid foundation for mapping broadband coverage, and any future program should build on that existing data collection rather than starting anew. At the same time, I am aware that concerns have been raised regarding certain aspects of the FCC's current data collection program. For instance, on the fixed broadband side, there is a concern that reporting a block as served when there may be only one served location in that block significantly overstates the extent of coverage. There is a concern that mobile coverage maps may not accurately reflect the extent of coverage. And more broadly, some have questioned whether companies in fact are taking adequate measures to report the information correctly.

While there may be a desire to map broadband coverage in a more granular way at a sub-census block level, there are many practical difficulties to doing so. I am not aware of any comprehensive current dataset showing the geocoded location of every structure where one might want broadband to be available in the United States. Moreover, what I learned in the course of my work on the Connect America Fund is that most service providers – whether incumbents or non-incumbents – do not maintain records of service availability with geocoded locations. Requiring all broadband providers in the country to report fixed deployment at the address level, or by geocoded location, would be a significantly more burdensome data collection for affected broadband providers, both big and small, than what exists today.

Invariably, some companies would argue that they lack the resources to provide information as a more granular level, and if one were to exempt a subset of providers from more granular reporting requirements, the end result would be an inconsistent and incomplete picture of the actual extent of

coverage. Moreover, requiring such detailed reporting for every census block in the country – which number over 11 million – is unnecessary given that most of those census blocks are served, in urban areas, and presumably not the target of government efforts to expand broadband where there is market failure.

An alternative approach to address-level reporting would be change the current rules for what is deemed served. For the fixed broadband deployment collection, the current requirement is that a provider reports a census block if it can or does serve at least one location. For instance, one could report a census block as "served" only if a provider has actually deployed plant to serve one location – and eliminate the requirement that a block is reported as served if the provider "can" provision service within a reasonable time interval without extraordinary commitment of resources. Or, one could eliminate the current requirement to report a block as served if at least one location is served, and instead require that a block be reported as served only if broadband infrastructure is currently available to all locations in the block. Any changes along these lines would take time to implement, both for the FCC and reporting service providers.

At the end of the day, it's a policy judgment of whether you want to treat a partially served census block as "served" or "unserved." If you treat a partially served block as served, that eliminates the possibility of providing funding to one entity to overbuild, or compete against, another entity that is commercially providing service without benefit of government funding in part of the census block. On the other hand, that approach may leave unserved locations in the block potentially stranded without service forever.

Alternatively, in a challenge process, one could use the FCC Form 477 data as the starting point, not the end point, for determining which areas are served and not served. The FCC took that approach in implementing the Connect America Fund, in several instances using a challenge process regarding

broadband coverage data to determine where to target Connect America Fund support. And there currently is a pending FCC rulemaking regarding how to conduct a challenge process to finalize the areas that will be eligible for bidding in the Mobility Fund Phase II auction.

I have firsthand experience in this area, as I oversaw the team that conducted the challenge process for both the Connect America Fund Phase II offer of support to the larger incumbent telephone companies in 2015 and the Alternative Connect America Cost Model (A-CAM) offer of support to the smaller incumbent carriers in 2016. In each case, it was a monumental undertaking. For the Phase II challenge process, the Wireline Competition Bureau (Bureau) initially released an order providing guidance on how it would conduct the challenge process, and it adopted a standardized form for challengers and respondents to use. Subsequently, the Bureau determined based on the then-available SBI data that nearly 745,000 census blocks would be eligible for the offer of Phase II model-based support because there was no unsubsidized competitor reporting it served the block. More than 140 parties filed challenges regarding the classification of nearly 180,000 census blocks. Effectively, we conducted 140 mini-adjudications. After an initial review of those challenges, the Bureau determined that parties had made a prima facie case that the status of more than 95,000 census blocks should be changed, and invited parties to reply to the challenges for that subset of blocks. The Bureau then reviewed all of the arguments and evidence submitted. In particular, the team reviewed submissions that included customer records, customer invoices, plant and other facilities maps, employee statements and declarations, advertising materials, screenshots from websites, and test data. Ultimately, the Bureau resolved all of the challenges, changing the status of certain blocks from their initial classification as served or unserved. The net result of the process was to treat as "unserved" an additional 17,000 census blocks, on top of the 745,000 blocks initially classified as unserved, a two percent increase in the number of census blocks eligible for Phase II support. From start to finish, it took nine months.

For the A-CAM challenge process, the FCC directed the Bureau to incorporate newly released FCC Form 477 data into the cost model used to determine A-CAM support, subject to a streamlined challenge process. The FCC wanted to make sure that support would not be provided to overbuild areas where an unsubsidized provider already was providing voice and broadband service. The Bureau invited competitors that had made recent corrections or newly deployed broadband to file comments, and it also provided an opportunity to challenge the competitive coverage contained in the updated version of the model. The Bureau received 273 separate requests to change reported coverage data: some from competitors seeking to correct their coverage data; some from incumbents seeking to correct their own data; and some from incumbents seeking to challenge the reported coverage of a competitor. The Bureau ultimately granted 80 requests to change coverage data, denied 73 requests, and declined to act on the remainder for administrative reasons or as unnecessary to make. The streamlined challenge process took place over a three-month time period.

Notwithstanding the burdens that it places on those who actually have to review all of the information and make a decision, there are several advantages to using a challenge process to refine the understanding of which areas have broadband available, rather than a wholescale revision of the FCC's Form 477 data collection. First, participation in a challenge process is voluntary, so parties can make their own determination of whether the regulatory benefits outweigh the regulatory burdens of such participation. Second, a challenge process is likely to focus on a much smaller set of census blocks – specifically those in rural areas with some population – that are likely candidates for new deployment initiatives, rather than the many more numerous suburban and urban census blocks that are unquestionably served. Third, a challenge process can take into account additional information that is not part of the Form 477 data collection that may be of policy interest, including attributes of the desired broadband service other than speed. For instance, in the FCC challenge process, the Bureau required purported competitors to indicate whether they were offering service with usage allowances at

a price that met the FCC's requirements for recipients of Connect America support. That information is not collected through the Form 477 data collection.

In any challenge process, it is critical for the agency that will conduct the challenge process to define in advance what information is relevant to the inquiry and how it is to be submitted, and to set firm deadlines for submission. In the two Connect America Fund challenge processes conducted by the FCC, the agency announced in advance that it would not consider evidence or arguments established outside of the specified time period for filing challenges and responses. The FCC also required parties to file "concrete and verifiable evidence" to support their claims. It's important to have an electronic system that can easily intake the data submitted, and the ability to manage the information so that there is consistent treatment across parties that are making similar claims and submitting similar types of evidence.

To conclude, the need to accelerate broadband deployment in unserved areas is compelling. But to further that objective, it is important for the federal government to identify accurately the areas where further government action is necessary. And it is equally important to ensure that various federal programs work effectively together.

I appreciate the opportunity to appear before you today. I will be happy to answer any questions you might have.