

Testimony of Carol Matthey

Principal

Matthey Consulting LLC

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Thank you very much, Chairman Thune and members of the Subcommittee. I am deeply honored to appear before you today to share my perspective on efforts to expand broadband access in rural America.

While I'm a consultant with both private sector and governmental clients, I appear before you today to share my personal views on issues I have wrestled with for many years. I bring the perspective of a former government official and regulator, with 22 years of experience at the Federal Communications Commission (FCC) and the National Telecommunications & Information Administration.

In 2009-2010, I developed the universal service recommendations in the FCC's National Broadband Plan. Then, as Deputy Chief at the FCC, I implemented those recommendations over the next seven years, transforming the FCC's Universal Service Fund (USF) voice-focused high-cost program into a modern, data-driven program that supports broadband networks only in those areas of our nation where there is no private sector business case. I am mindful that government resources must be carefully targeted and invested wisely. I bring to you firsthand experience with designing and implementing one federal government program to address the lack of broadband in rural areas and personal knowledge of the practical and political impediments to completing the task.

In this testimony, I review the progress the FCC has made and then offer some observations on next steps for the FCC now that it has largely completed its initial implementation of the Connect America Fund reforms adopted in 2011. I address the need to coordinate among broadband funding programs and then conclude with my thoughts on reforming the system for raising the funds that finance the federal USF, also known as contributions reform. Throughout, my intent is to highlight the key issues that public policymakers must resolve so that our nation can complete the job of ensuring that all Americans in rural areas have full access to opportunities for jobs, education, healthcare, economic development, and more through broadband connectivity.

Taking Stock of Where We Are

When the FCC reformed the existing high-cost program in 2011, it observed that there was a digital divide within rural America. Some rural communities had state-of-the-art communications connectivity, and other communities had nothing. The system in place at the time had numerous shortcomings and was never going to close that gap.

To get broadband service to challenging areas requires money and a willing provider. The reason why certain areas aren't served is that they are viewed by the existing incumbent telecommunications carrier as non-profitable. The costs to serve are too high compared to the anticipated revenues from the customers. That's it – plain and simple. It does not make economic sense for a private sector firm to invest more capital in low-return rural areas if it has opportunities to earn a higher return elsewhere. Without viable and willing providers, and access to capital, there will be no solution to the broadband availability gap that exists today.

As a result of the FCC's reform efforts, universal access to broadband now is an explicit goal of the FCC's universal service program.

The FCC has moved from a program that handed out money with no specific requirements to upgrade network infrastructure to a new program with defined obligations for recipients to deploy broadband by a date certain in exchange for support.

The FCC has adopted a regime with improved accountability and consequences for non-compliance. There may be more work to be done on the margins, in terms of how specific details are administered, but big picture – we now have verification of performance and an ability to track progress in closing the digital divide.

The FCC has moved from a system in which support was available throughout an incumbent's service territory, and subsidies could be used to upgrade infrastructure to compete against unsubsidized competitors in areas that aren't even that costly to serve, to one in which support is more narrowly targeted to high-cost areas lacking an unsubsidized competitor.

The FCC has created a pathway to allow non-incumbents into the universal service program, recognizing that the incumbent telecommunications carrier is not necessarily interested in serving rural markets, and others may be better situated to serve consumers.

The FCC has adopted a technology-neutrality approach, concluding that it would set performance standards and not dictate what type of provider or technology would be allowed to receive funding so long as the recipient meets the standards.

And the FCC has begun to use auctions to award support, which ensures that subsidies are subject to market discipline.

More than seven years later, we now have a situation where a variety of providers have access to a stable amount of Connect America Fund support for a defined term of years with requirements to meet certain broadband performance obligations. Essentially, the FCC committed a revenue stream for a period of years in order to stimulate additional investment in rural America. The private sector will be more willing to make those investments, and banks will be more willing to finance those upfront costs to build infrastructure, because there is an assurance of a known cash flow for a defined period. And people, your constituents, are benefitting from these changes. More people in rural America will be able to access the internet and all the benefits that come with broadband connectivity.

There have been a few bumps, and course corrections, along the way. That's to be expected.

In 2011, the FCC defined fixed broadband for purposes of the Connect America Fund as 4 megabits per second (Mbps) upstream/1 Mbps downstream and decided that high-cost recipients with fixed broadband public interest obligations should provide a minimum of 4/1 Mbps service. At that time, the FCC rightly 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 fixed broadband for Connect America Fund recipients upward to 10/1 Mbps. More recently, in the December 2018 *Rate-of-Return Reform Order*, the FCC adopted 25/3 Mbps as the new minimum speed requirement for rate-of-return carriers. It has not yet addressed what the minimum should be for the rest of the country.

It is notable that each time the FCC has set a minimum standard, that standard has become outmoded before funding recipients complete their required deployments. If past experience is any indication of the future, the 25/3 Mbps standard will become out-of-date as well.

It has taken a long time to implement the initial vision for reform. It's been nine years since the release of the National Broadband Plan, and more than seven years since the release of the 2011 *USF*

Transformation Order. There are a lot of reasons why it took so long, but it's a cautionary tale for anyone urging dramatic changes to the system now in place.

Rural consumers are impatient. Once they hear that government funding is bringing broadband to their area, they expect it to appear overnight. It took decades to bring electricity and telephony to all corners of America. Hopefully, this time, it won't take so long. But there's no question, this is a massive, multi-year project.

Next Steps for the FCC

With that as the backdrop, I'd like to turn now to next steps for the FCC.

I want to personally congratulate the FCC for conducting the Phase II auction last summer, and its recent announcement that it is ready to authorize the first group of Phase II winning bidders. I authored the chapter in the National Broadband Plan that recommended, among other things, that "the FCC should identify ways to drive funding to efficient levels, including market-based mechanisms where appropriate, to determine the firms that will receive CAF support and the amount of support they receive." I believed it then, and I still support that recommendation today. Thoughtfully designed auctions are an important component of the FCC's toolkit.

I view the FCC's Phase II auction as a success. The auction demonstrated unequivocally that alternative providers using a variety of technologies are willing to compete for support – and that is a positive development. There were winning bids for about three-quarters of the locations up for bid. More than half of the locations with winning bids are slated to get 100 Mbps or better service. Providers planning to use fixed wireless technology, in some cases in conjunction with fiber, won about 65% of the dollars, to serve about 53% of the locations up for auction. Electric providers won about 18% of the dollars to serve about 13% of the locations. Satellite won 8% of the dollars, to serve 27% of the locations.

The larger incumbents (the price cap companies) won less than 2% of the dollars, to serve only 1% of the locations. But there's an important caveat – several of them did not even bid in the auction. Those price cap carriers that did bid only bid on a very small number of locations. In my view, the bidding activity of price cap carriers as a group in this auction is not necessarily indicative of how those companies might act in the context of future auctions.

I am heartened to see a variety of providers willing to provide better service, for less support, than otherwise might have been the case. That enables the FCC to stretch those dollars farther to serve more consumers.

There are several pieces of unfinished business remaining from the 2011 *USF Transformation Order*: implementing the Mobility Fund Phase II auction and the Remote Areas Fund (RAF). In addition, the FCC has promised to hold an auction before the end of the Phase II term for the larger carriers to award support in those areas on a competitive basis, often referred to as Phase III of the Connect America Fund.

I'll focus my attention today on efforts to expand access to fixed broadband, while recognizing that there is much yet to do to reach the FCC's goal of universal access to mobile broadband.

With the benefit of hindsight, I question the FCC's decision back in 2011 to adopt a separate fund called the Remote Areas Fund. The theory was well intentioned, but the structure was wrong. I've

come to appreciate that segregating one set of communities into a separate fund tends to make those folks feel like they are second class citizens.

The theory was that some areas of the country are just too expensive to serve with fiber; consumers in those areas instead would be served by alternative technologies, like fixed wireless and satellite. There'd be a separate pot of money available to providers willing to serve those areas, possibly with lowered service standards.

So, what happened? For one thing, we came to realize that RAF areas are sprinkled around and within other high-cost areas, a proverbial checkerboard on a map that does not necessarily reflect how companies build networks. Some commenters said, "Don't implement the Remote Areas Fund in my backyard." The service providers using alternative technologies that the FCC originally intended for the Remote Areas Fund said, "Don't relegate me to the Remote Areas Fund. I shouldn't be limited to the most expensive, least profitable locations in the country. I want the opportunity to compete for funding on a technology-neutral basis everywhere."

Eventually, the FCC decided to put those extremely high-cost areas located within the territories of the price cap companies into the Phase II auction, along with the high-cost areas in the states where the price cap carrier turned down the offer of Phase II support. The FCC figured out a way to conduct an auction in which providers using different technologies, and proposing to offer different levels of service, could compete head to head.

Effectively, the Phase II auction implemented the original vision for the Remote Areas Fund because it included the areas expected to be the most expensive to serve.

Ultimately, it was the market that determined which areas of the country would be served by alternative technologies, offering whatever level of service, not government regulators based on estimates of cost to serve from a hypothetical cost model. That's a good thing, in my opinion.

To be sure, some areas lacked winning bidders in the Phase II auction. Those areas logically would be the ones up for bid in a RAF auction, if the FCC still intends to go forward with that. It's worth considering whether the better course would be to discard the notion of the Remote Areas Fund as a standalone fund and roll those geographic areas into the upcoming Phase III auction.

The Phase II term of support for the larger price cap companies ends on December 31, 2020. In the big scheme of things, that's not that far away.

Back in 2014, the FCC decided that it would provide a six-year term of support to the companies that accepted the offer of Phase II support, with the option to receive an additional year of support through the end of 2021.

Given the usual timeline for FCC auctions, the FCC needs to get started on the Phase III auction as soon as possible. Start to finish, it generally takes 9-12 months to implement an auction after adopting the substantive rules for what is going to be auctioned, and that doesn't even include the time to solicit comment on those rules. After the bidding is over, it typically takes a minimum of six months before funding is authorized to some winning bidders and even longer to authorize all of the winning bidders.

Here are just a few of the key decisions that the FCC will need to make regarding the Phase III auction:

- What is the minimum performance standard for the Phase III auction?

In the recent Phase II auction, the FCC allowed bidders to bid on one of four performance tiers, with 10/1 Mbps service as the minimum tier. A mere quarter of 1% of the winning bids were in the 10/1 Mbps tier. The market has spoken: 10/1 Mbps is yesterday's technology. The FCC needs to recalibrate its vision for what is the minimum requirement in any future auction.

- Which geographic areas will be eligible?

A logical corollary of increasing the minimum performance standard is that the FCC would readjust the standard for determining whether there's an unsubsidized competitor that makes an area ineligible for Connect America Fund support. That would expand the geographic areas eligible for the Phase III auction, compared to the areas now receiving model-based support or slated to receive support from the Phase II auction.

- What data sources should the FCC use to decide what areas are eligible in the Phase III auction?

Many are dissatisfied with the FCC's current Form 477 data collection. The problem is that a data collection originally adopted for another purpose many years ago now is forming the foundation for funding decisions that have enormous implications for the American public.

I am personally acquainted from my tenure at the FCC with the difficulties of conducting a challenge process to determine the specific geographic areas eligible for Connect America Fund support. There must be a better way to do this.

The FCC is considering modifications to its Form 477 data collection. We all want a comprehensive national database of broadband service availability that could be used by all agencies, both federal and state, to make informed funding decisions.

If I were still at the FCC, while fully supporting the need for better datasets to make funding decisions, I'd be worried if efforts to develop a more comprehensive database of service availability were to prevent the FCC from moving to the Phase III auction in a timely manner. We should not let the perfect become the enemy of the good: there are ways to move forward so that we can achieve the shared goal of getting more broadband out to consumers sooner rather than later.

There are no silver bullet solutions that will quickly update the national broadband availability maps to a state of perfection. Any significant changes to existing data collections are going to require time and money. Any new data collection will require Paperwork Reduction Act approval from the Office of Management and Budget, and it will take time to collect and clean up the data. The first filing in a new data collection often surfaces inconsistencies amongst filers and questions that need to be ironed out. New mapping requirements will impose burdens on small businesses as well as larger companies. Any process to gather input from folks on the ground requires local government officials and consumers to speak up if they want Washington, DC to know they aren't served.

At a minimum, there must be some areas of the country where it's clear there's no broadband provider offering service that meets the FCC's requirements: the incumbent isn't offering the requisite level of service, and there are no unsubsidized competitors. One potential solution would be to proceed immediately to auction those areas, and hold a second nationwide auction later, after there's an improved dataset of service availability.

- What should the budget for the Phase III auction be?

I do not ascribe to the view that the budgets adopted in 2011 for various components of the Connect America Fund should be carved in stone. Just because \$1.5 billion was accepted by the price cap carriers back in 2015, based on a decision made in 2011, that does not mean that's the right number for Phase III of the Connect America Fund.

- Is there a way to auction partially served census blocks?

One of the problems with the current approach is that it ignores the plight of people who live in partially served census blocks. Thus far, the FCC has treated any census block that is partially served as if it were fully served, and therefore ineligible for funding. As a consequence, the FCC's December 2018 estimate that nearly 12 million rural Americans lack 25/3 Mbps fixed broadband undoubtedly is too low.¹ If the FCC at some future date has more granular information about actual service availability at the sub-census block level, the next step would be to figure out how to include the unserved portions of high-cost census blocks in any auction.

This is just the tip of the iceberg. There are many more decisions to make. It's time to get started.

Coordination Among Government Programs

It is critically important to coordinate and harmonize various programs administered by different federal and state agencies, so that the government as a whole is efficiently tackling the problem and not potentially working at cross purposes. It's a concern if one government agency is providing funding to overbuild a service provider that currently is receiving funding from another government agency.

Some state and local governments are not satisfied with the extent of private sector broadband investment in their communities and are actively taking steps to provide funding above and beyond what is available from the federal government. This is a welcome development. In my view, all states should provide some level of funding to supplement federal funding. Achieving universal broadband should not be the job of the federal government alone.

Coordination requires more than periodic touchpoints between agencies to talk generally about their respective programs and new initiatives. The federal government needs to share information in near real time – both within the federal government, and with state and local officials engaged in similar efforts – regarding the specific geographic areas where parties have applied for funding, or where funding has been authorized, even if construction has not yet occurred. The information needs to be sufficiently detailed that other agencies can map the location of planned deployments when making their own funding decisions and evaluate whether there is an overlap. Ideally, there would be a shared standard, at least among federal agencies, for what constitutes an unsubsidized competitor so that everyone's working on the same page.

Coordination should not be a one-way street. The federal government needs to share information with state and local officials, but state and local officials also have a responsibility to share their deep local knowledge about service availability with the federal government.

I presided over several challenge processes while at the FCC. We invited the states to weigh in on those challenges. My recollection is there was little to no participation from state or local officials. I sincerely hope that all states and localities will play a more visible and proactive role in whatever

¹ *Communications Marketplace Report et al.*, GN Docket No. 18-231, FCC 18-181, para. 248 (rel. Dec. 26, 2018) (finding that 24% of rural Americans lack 25/3 Mbps fixed terrestrial broadband).

processes the FCC uses in the future to decide which areas are eligible for the Phase III auction. They ought to; it is their citizens who will be directly impacted.

Contributions Reform

I oversaw the FCC's contributions reform docket when it started back in 2001. I worked on this docket for much of my FCC career, including the two Further Notices of Proposed Rulemaking in 2002, the more recent Notice of Proposed Rulemaking in 2012, and the referral to the Federal-State Universal Service Joint Board in 2014. I also have assisted numerous clients while consulting in the private sector, including competitive providers, mobile providers, and interconnected Voice over Internet Protocol (VoIP) providers, on complying with their USF contributions obligations. I've seen the many problems with the current system from both sides of the fence.

Under today's system, there are several thousand contributors to the federal USF. Contributions are based on interstate and international retail revenues. Notably, the top five contributors (alphabetically, AT&T, CenturyLink, Sprint, T-Mobile, and Verizon) collectively fund about two-thirds of the entire USF.² A couple of the major cable operators probably are among the top 10 contributors. Think about that, basically a handful of the large communications firms collectively contribute most of the money that goes into the USF (and pass through those amounts to their end user customers), and thousands of smaller contributors (and their customers) pick up the balance.

The current system is built on regulatory constructs from decades ago. Only revenues from interstate and international telecommunications services and certain other telecommunications are subject to assessment. The form used to collect information from potential contributors uses terminology and categories that do not reflect today's marketplace. Companies are making judgments as to whether certain data services are telecommunications services (assessable) or information services (non-assessable). Dividing revenues into mythical buckets of intrastate and interstate jurisdiction is like counting how many angels are dancing on the head of a pin. The compliance burden, particularly for the thousands of smaller contributors that are not familiar with arcane regulatory details, is non-trivial. The major wireless and cable providers – who principally contribute today based on their voice revenues – probably could cause the system to collapse on a moment's notice if they decided to provide voice for free when bundled with broadband. The system we have today needs an overhaul.

The trend lines are not good. According to the FCC, while non-telecommunications revenues (which are not assessed) have more than tripled between 2006 and 2016, there has been a steady decline in assessable revenues over the last decade, by more than 20%.³

The FCC has sought comment on alternative contributions methodologies multiple times, from connections to numbers to hybrids. It also has sought comment multiple times on whether to assess broadband internet access under its permissive authority granted by Congress in section 254(d).

Meanwhile, several states are looking at alternative contribution methodologies for their own state universal service funds. For instance, Nebraska will shortly implement a new hybrid contributions system – assessing a flat fee on all voice connections, with business services continuing to contribute based on revenues.

² FCC, *Universal Service Monitoring Report*, CC Docket No. 96-45 et al. , Tables 1.7 (2017), available at https://www.fcc.gov/sites/default/files/2017_universal_service_monitoring_report.pdf.

³ *Universal Service Monitoring Report*, Tables 1.2, 1.5.

At the outset, it's important to step back and ask: what are we trying to accomplish with contributions reform?

People often say the current federal contributions system is "unsustainable" and rail about the fact that the contribution factor is hovering around 20%. In my opinion, focusing on the contribution factor is a red herring. It's not 20% of your total bill; it's 20% of a small fraction of your communications bill.

Many argue that "We should expand the contribution base," which implies that contributions reform would assess firms that are not subject to assessment today.

Some apparently believe that expanding the contribution base would bring more money into the USF. That's not the case. The budgets for the disbursement programs are set independently of any decision regarding how the money is collected.

When people say, "We need to expand the contributions base," they often look to broadband. And then the conversation morphs into a "Don't tax the internet" debate. This is unfortunate, because it may prevent us from having a thoughtful conversation about new ways to ensure that universal service remains on a solid footing.

Because most firms pass these assessments through to their end users, I would suggest that it's useful to look at the impact on end users, rather than focusing exclusively on which industry sector has the obligation to report and contribute in the first instance.

Assessing retail broadband internet access would not likely bring in new contributors, at least on the residential side. Do you know any person who has a broadband connection, but no voice connection, either landline or mobile? In today's world, people with broadband also have some form of voice connection, whether it's a traditional landline connection, a VoIP connection or a cell phone. That's why changing the contributions methodology to assess broadband effectively would just shift the universal service line item from one bill to another or, in the case of a bundled voice/broadband offering, be a wash. One amount goes down, while another amount goes up. Either way, that residential customer still is paying for it.

Nonetheless, I believe as a matter of logic and fairness it's appropriate to assess retail broadband internet access. We all agree that universal broadband is a public policy goal, and that broadband is essential to our lives in the 21st century. To me, it makes sense to assess broadband to contribute to a fund that is intended to advance the deployment of broadband infrastructure.

Some fear that assessing broadband would suppress adoption. Broadband is not some fragile nascent service. With consumers cutting the cord on traditional voice service, it's broadband and the cell phones that are the necessities; if anything, landline voice is the service that people increasingly are willing to do without.

The more difficult question is what to do on the business side.

For many years, the FCC has estimated that contributions based on services typically sold to residential users represent roughly half of overall contributions.⁴ Stated another way, residential households bear roughly half of the contribution burden, with the balance falling on businesses. It's worth asking whether residential consumers will increasingly be contributing a greater percentage of the total USF, based on assessments imposed on voice service (whether it's traditional landline service,

⁴ *Universal Service Monitoring Report*, Tables 1.12.

mobile voice, or VoIP), as businesses shift away from services that historically have been subject to assessment into new service offerings that fall within the definition of information services. The concern is that as the marketplace shifts to new services and new technologies, businesses will increasingly be able to escape any responsibility for financing USF under the current system.

Is that we want?

Conclusion

To conclude, the need for coordinated action to fulfill the promise of access to broadband in rural America is compelling. It will take a careful and a concerted effort involving federal, state and local governments, private sector investment, and American ingenuity to connect all of rural America.

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