

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
)	
Inquiry Concerning Deployment of Advanced)	GN Docket No. 17-199
Telecommunications Capability to All)	
Americans in a Reasonable and Timely)	
Fashion)	

**COMMENTS
OF
NTCA–THE RURAL BROADBAND ASSOCIATION**

September 21, 2017

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EXECUTIVE SUMMARY

Mobile wireless broadband service, while clearly valuable to consumers of all kinds, is simply not a substitute for a robust, high-quality, fixed wireline connection that so many urban consumers take for granted. For rural Americans, particularly in the face of the limitations of mobile technology, the direction of the Section 706 inquiry is particularly troubling. Rural Americans are still plagued by a lack of mobile wireless service availability in areas beyond major roadways, and the arrival of 10/1 mobile wireless broadband service that will be supported by the Mobility Fund II program is likely to be of little comfort to rural Americans currently entrenched, uncomfortably, in the digital divide.

Even worse, access to a 10/1 mobile wireless broadband connection with potentially stringent usage limitations that the Mobility Fund will countenance can hardly be viewed as “advanced” in terms of enabling consumers to “originate and receive high-quality voice, data, graphics, and video telecommunications” as called for by Section 706. Even if faster speeds become available in rural areas, the increase in rural consumers relying on mobile services only will likely strain shared capacity wireless networks, limiting these consumers’ ability to utilize the “advanced” services. Moreover, while the current trend toward unlimited data plans offered by the nation’s largest mobile wireless carriers is a positive development for many consumers, such plans may no longer be available as mobile wireless providers are forced to limit data usage and recover more costs from end-users hogging up additional data if and when mobile wireless were to become the *only* means of accessing the Internet for entire communities.

In addition, the extent to which mobile broadband services depend upon fixed networks to meet broadband quality standards and consumer needs is overlooked by the NOI. As bandwidth-intensive services increasingly move to mobile platforms (and such traffic will move

to mobile platforms much faster in areas without fixed wireline service), carriers will need to “offload” greater amounts of traffic from scarce and congested airwaves to high-capacity fiber networks, located as close to the consumer as possible. Unfortunately, at best, the NOI almost seems to take for granted that such high-capacity fiber backhaul will be available – and, at worst, the NOI seems not to even contemplate that such fixed wireline backhaul is necessary. Indeed, absent a fixed connection at home, one can imagine that an entire community of mobile only consumers will be forced to seek out public WiFi hotspots in libraries and coffee shops (which in rural areas may only exist miles away, if at all) to avoid data overage charges and/or to avoid congestion otherwise.

Finally, the economic consequences of the shift in direction contemplated by the NOI cannot be overlooked. There are likely few, if any, businesses that do (or could) rely solely upon mobile broadband access and would view it as a “substitute” for fixed broadband services. Indeed, “mobile-only” communities are unlikely to be much of a draw to employers that will likely choose a community in the next county or the next state that has a more robust fixed broadband infrastructure in place.

Fortunately, for rural consumers at least, Congress foresaw that second-class communications services could leave rural consumers behind. Thus, Congress applied a different standard for universal service. Specifically, Section 254 does not define universal service as what might be deemed “good enough” at any given point in time for a given user. Instead, by law, the Commission must design universal service mechanisms that enable “reasonable comparability” in services and prices between urban and rural America. This means that if the average urban user can receive broadband of 25 Mbps speed with limited or no usage limitations, reasonably comparable access must be made available by law to rural users as well –

and sufficient universal service support must be provided to enable such access at reasonably comparable rates.

As discussed further below, detailed evidence on the record in the Commission's USF proceeding demonstrates that the budget for the RLEC High Cost support program is insufficient to enable the delivery of broadband Internet access service meeting the current 25/3 speed benchmark to tens of thousands of rural consumers or to enable these consumers to procure standalone retail broadband Internet access services at reasonably comparable rates. As such, the High Cost USF program fails to live up to the "reasonably comparable" directives contained in the Act, and the Commission should address this shortfall in short order.

As part of fulfilling its Section 706 responsibilities, the Commission should incorporate a measure of the *true* performance of certain broadband technologies, specifically by considering the latency, data usage limits, and other technical capabilities of various underlying network technologies. With respect to latency, it is critical that the Commission account for the fact that high latency services remain unable to support consumers' use of certain applications, reliable and quality voice service necessary for access to public safety officials chief among them. Latency, as well as data usage limits, are a critical part of this inquiry because to the extent particular broadband technologies are not able to afford users a meaningful opportunity "to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology," as required by section 706, they should not be considered "advanced."

Finally, NTCA discusses herein several other steps the Commission can take to remove barriers to timely and cost effective deployment of broadband in rural areas. These include streamlined model "best practices" to expedite the federal permitting process, reforms to the Commission's National Historic Preservation Act and National Environmental Protection Act

processes, an examination of railroad crossing fees, and steps to expedite the make-ready process for access to utility-owned poles and to lower the costs of such access. Certain other regulatory and permitting costs operate as barriers to infrastructure deployment as well, and thus NTCA strongly supports the Broadband Deployment Advisory Committee's work to remove barriers to broadband deployment and looks forward to the recommendations of that body.

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**COMMENTS
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I. INTRODUCTION

NTCA–The Rural Broadband Association (“NTCA”)¹ hereby submits these comments in response to the Thirteenth Section 706 Notice of Inquiry released by the Federal Communications Commission (“Commission”) on August 8, 2017.² The NOI seeks comment on the question of “whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion.”³ NTCA first discusses herein the results of its 2016 Broadband Internet Availability Survey. NTCA also addresses the provisions in the NOI seeking comment on whether the mere availability of some form of broadband Internet access is sufficient for the Commission to fulfill its Section 706 responsibilities. Finally, NTCA’s

¹ NTCA represents more than 800 independent, community-based telecommunications companies. All NTCA members are full service local exchange carriers and broadband providers, and many of its members provide wireless, cable, satellite, and long distance and other competitive services to their communities.

² *Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, Thirteenth Section 706 Report Notice of Inquiry, GN Docket No. 17-199, FCC 17-109 (rel. Aug. 8, 2017) (“NOI”).

³ *Id.*, ¶ 1 (citing 47 U.S.C. § 1302(b)).

comments points to several actions that the Commission can take to remove barriers to broadband deployment.

II. CONTEXT: RESULTS OF THE 2016 NTCA BROADBAND INTERNET AVAILABILITY SURVEY

For over 15 years, NTCA has surveyed its rural incumbent local exchange carrier (“RLEC”) members to document their progress in deploying broadband service throughout their service areas.⁴ The most recent NTCA survey for year-end 2016 was conducted in the spring of 2017, with the results published in July, 2017.

The “NTCA 2016 Broadband/Internet Availability Survey Report” found that 89% of survey respondents cited the cost to deploy fiber infrastructure as the most significant barrier to its widespread availability. Fifty-two percent of survey respondents currently deploying fiber serve at least 50% of their customers using fiber to the home (“FTTH”) connections. Eighty-two percent of survey respondents indicated they had a long-term fiber deployment strategy. Thirty-nine percent of those respondents with a fiber deployment strategy plan to offer fiber to the node to more than 75% of their customers by year-end 2019, while 66% plan to offer FTTH to at least 50% of their customers over the same time frame. An additional 31% have already completed fiber deployments to all customers.

Regulatory uncertainty was the second most-oft cited barrier to deployment (54%), followed by long loops (52%), current regulatory rules (36%, down from 56%), obtaining financing (20%), low customer demand (21%), fiber order fulfillment delays (13%) and obtaining cost-effective equipment (8%).

⁴ Full survey results are attached as Appendix A.

The survey results underscore, as discussed further below, that the lack of sufficient support via the High Cost Universal Service Fund (“USF”) program persists as the most significant barrier to providing rural consumers and communities with “access to advanced telecommunications services.” NTCA urges the Commission to address this barrier in short order, to ensure that RLECs can deploy robust, wireline broadband connections to rural consumers in the first instance and to ensure that once deployed services are available at “reasonably comparable” rates.

III. ACCESS TO ROBUST AND RELIABLE FIXED AND MOBILE BROADBAND INTERNET ACCESS CONNECTIONS FOR EVERY AMERICAN CONSUMER SHOULD BE THE GOAL OF THE COMMISSION IN THIS PROCEEDING.

The Commission should not consider the mere availability of *some* form of broadband Internet access as part of fulfilling its Section 706 responsibilities.⁵ Mobile wireless broadband service, while clearly valuable to consumers of all kinds, is simply not a substitute for a robust, high-quality, fixed wireline connection that so many urban consumers take for granted – and in rural areas in particular, meaningful access to mobile broadband will increasingly depend upon robust fixed networks within even just a few hundred feet of every location where access is desired.⁶

⁵ NOI, ¶ 9.

⁶ Vantage Point, *Evaluating 5G Wireless Technology as a Complement or Substitute for Wireline Broadband*, attachment to Letter from Michael R. Romano, NTCA, to Marlene H. Dortch, FCC, WC Docket No. 10-90 (fil. Feb. 13, 2017), p. 6 (stating that “5G wireless cells must be placed very close to the customer (often within 300 to 500 feet), which makes 5G particularly impractical for most rural applications.”). The Vantage Point paper goes on to state that “if 5G wireless is going to deliver on the claims of high speeds and high capacity that many hope, it will need to be a ‘deep fiber’ network that is very similar to FTTH in fact.” *Id.*, pp. 22-23. The paper further notes that “it is unclear why, when one is putting fiber so deep into the network to enable such speeds and to overcome the capacity constraints [of 5G] identified in this paper, one would stop at the small cell rather than just delivering fiber to the premises a few hundred feet away – and thereby deliver the promise of much higher speeds and availability without the same kinds of capacity limitations.” *Id.*

As an initial matter, NTCA questions the need for or the motivating force behind an abrupt about-face in long-standing policy with respect to the complementary nature of mobile wireless and fixed wireline services. It would appear that the Commission relies heavily, if not exclusively, on the fact that “13 percent of Americans across all demographic groups are relying solely on smartphones for home internet access.”⁷ Yet in that very same paragraph the NOI points to the fact that “the percentage of Americans subscribing to fixed broadband has reached *an all-time high* of approximately 73 percent.”⁸ At no point does the NOI acknowledge that the subscription numbers for fixed connections might be a more powerful number.

Indeed, the fact that a sizeable but not large (less than one in six) number of consumers are “mobile-only” now is being used as a driver of the Commission’s Section 706 current inquiry seems shortsighted at best and to miss the mark altogether at worst. More specifically, while the NOI suggests a path toward declaring mobile wireless service to be a substitute for fixed service based on the number of mobile-only households, it is noteworthy that “[c]onsumers who are mobile only often find themselves in such a position, not by choice but because they cannot afford a fixed connection.”⁹ The NOI does not address this issue at all. Coming to the conclusion that mobile access is a “substitute” for fixed access based upon the fact that a small subset of consumers may only be able to afford one option would be tantamount to concluding that public transit is an acceptable substitute for owning a car; both provide value and many Americans use both while some use only one or the other, but to call them “substitutes” would represent a massive leap in logic indeed and lead toward poorly designed public policy. At the

⁷ NOI, ¶ 9.

⁸ *Id.* (emphasis added).

⁹ *Id.*, Statement of Commissioner Mignon L. Clyburn.

very least, the drivers behind “mobile-only” consumption require more study before concluding they represent a trend toward the substitutability of mobile and fixed services.

Moreover, it would be a severe mistake indeed for policymakers to wander down a short-sighted path that looks only at what consumers can buy *today*, rather than setting national broadband policies in a manner that ensures that Americans will enjoy access to “advanced” broadband services now and in the future. In other words, the Commission should not be content to take a “snapshot” of what is available *today* and declare the job “done.” If this were not an industry and a service so dependent upon high fixed costs and long lead times for planning and construction, and if consumer demand for broadband capacity were not increasing at exponential rates, such a perspective might be somewhat acceptable – in that case, the assets through which access is provided could and would be redeployed every few years through reinvestment, making it unnecessary to “plan ahead.” But given that broadband rests upon a foundation of capital-intensive networks that take months or years to build and then are expected to provide services for years or even decades to come once constructed, a short-term look at how access is being achieved almost certainly increases the chance of failure in future Section 706 inquiries.

Beyond failing to account for the future and the sustainability of broadband access over time, the NOI fails to account for the limitations of mobile wireless broadband service. To be sure, the NOI is correct in stating that by “only includ[ing] one of these technologies in our Inquiry we would effectively be excluding a large portion of the technologies used ‘to originate and receive high-quality voice, data, graphics, and video telecommunications.’”¹⁰ However, this reference to the statutory language of Section 706 is only part of the inquiry the Commission should conduct here. More specifically, while mobile wireless and fixed wireline are both

¹⁰ *Id.*, ¶ 5 (citing 47 U.S.C § 1301(d)(1)).

technologies used to “originate and receive high-quality voice, data, graphics, and video telecommunications,” how end-users make use of such technologies and their respective limitations is even more important for the purposes of the Commission’s broadband policy. In other words, the ways consumers utilize the product and any technical limitations it has – and not the underlying technology used to deliver broadband service – should be the focus of the inquiry. That Congress saw fit to define “Advanced Telecommunications Capability” “without regard to any transmission media or technology” does not standing on its own evince congressional intent to establish a nationwide communications policy that is satisfied with a subset of consumers only having access to a more limited form of broadband technology as compared to others (particularly when wireless technology still relies so heavily upon the widespread availability of wireline infrastructure). Thus the Commission’s analysis should dive much deeper into both the technical and practical limitations of mobile technology and its reliance upon “densification” and substantial penetration of robust fixed networks.

For rural Americans in particular, the direction of the Commission’s Section 706 inquiry is especially troubling. For one, it is likely that the effects of a decision to declare mobile wireless service “good enough” will fall most heavily upon rural Americans.¹¹ As the NOI states, “the most recent Internet Access Services Report finds that 59 percent of residential fixed connections equal or exceed”¹² the current 25 Mbps/3 Mbps benchmark. Yet, as the

¹¹ Fortunately, however, Congress foresaw such concerns and applied a different standard for universal service. Specifically, section 254 does not define universal service as what might be deemed “good enough” at any given point in time for a rural user. Instead, by law, the Commission must design universal service mechanisms that enable “reasonable comparability” in services and prices between urban and rural America. This means that if the average urban user can receive broadband of 25 Mbps speed with limited or no usage limitations, reasonably comparable access must be made available by law to rural users as well – and sufficient universal service support must be provided to enable such access at reasonably comparable rates.

¹² NOI, ¶ 14.

Commission reported in January 2016, while only 4 percent of Americans in urban areas lack access to 25/3 broadband, that number is 39 percent for rural Americans.¹³ Despite those statistics, the NOI could be read to declare “mission accomplished” for all users, rural and urban alike, lacking such access as long as they have a smartphone. This is particularly troubling for rural Americans still plagued by the lack of mobile wireless service availability in areas beyond major roadways. While the Commission’s pending Mobility Fund II auction may improve coverage, support will only be provided to promote 10/1 broadband service. The arrival of 10/1 mobile wireless broadband service in 2020 at the earliest¹⁴ is likely to be of little comfort to rural Americans currently entrenched, uncomfortably, in the digital divide. This is particularly troubling when, as noted above, that 10/1 will become the *de facto* standard for a decade or more thereafter once these networks are built; it can hardly be considered substantial progress toward Section 706 goals when “good enough” will effectively translate to access to 10/1 speeds (particularly with the kinds of usage limits typically imposed on many mobile services) until at least 2030.

¹³ *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*, GN Docket No. 15-191, 2016 Broadband Progress Report, FCC 16-6 (rel. Jan. 29, 2016), ¶ 4.

¹⁴ The Commission stated in March its intention to conduct the Mobility Fund II auction soon after the completion of the presumptively eligible areas challenge process it expects to conduct in January 2018. *Connect America Fund*, WC Docket No. 10-90, *Universal Service Reform – Mobility Fund*, WT Docket No. 10-208, Report and Order and Further Notice of Proposed Rulemaking, FCC 17-11 (rel. Mar. 7, 2017), ¶ 67. However, the Commission in that Report and Order also adopted construction benchmarks that use as a starting point “six months from the first day of the month that follows the month in which the MF-II auction closes.” *Id.*, ¶ 94. Those interim benchmarks “require a winning bidder to demonstrate coverage of at least 40 percent by three years after the starting point, 60 percent by four years after the starting point, 80 percent by five years after the starting point, and 85 percent by six years after the starting point across all areas for which they receive MF-II support in a state.” *Id.* Based on this timeline, most rural consumers are not likely to see the benefits of Mobility Fund II support until 2020 at the earliest.

In addition, the technical and practical limitations of mobile wireless service should inform the Commission’s Section 706 inquiry as well. First, access to a 10/1 mobile wireless broadband connection with potentially stringent usage limitations that the Mobility Fund will support can hardly be viewed as “advanced” in terms of enabling consumer to “originate and receive high-quality voice, data, graphics, and video telecommunications” as called for by Section 706. Even if faster speeds become available in rural areas, the increase in consumers relying on mobile services only will likely strain shared capacity wireless networks in rural areas, limiting consumers’ ability to utilize the “advanced” services that many Americans with access to fixed connections can enjoy today. Moreover, while the current trend toward unlimited data plans offered by the nation’s largest mobile wireless carriers is a positive development for many consumers, such plans may no longer be available as mobile wireless providers are forced to limit data usage and recover an increased portion of their costs from end-users hogging up additional data. In fact, even today, as the NOI acknowledges, most unlimited data plans come with “soft caps” under which consumers utilizing more than a certain amount of data have their traffic deprioritized or the quality of their video reduced.¹⁵ That such soft caps only apply to the largest “data hogs” today¹⁶ should be of little comfort to rural consumers stuck with mobile only, as these consumers’ data usage will rapidly increase and soft caps are forced upon more and more consumers. And all of this, of course, is especially problematic for users in any given community that requires affordable access to higher bandwidth capabilities, including businesses and anchor institutions.

¹⁵ NOI, ¶ 6, fn. 10.

¹⁶ See Diana Goovaerts, T-Mobile Raises Unlimited Prioritization Threshold to 30 GB, *Wireless Week*, Mar. 10, 2017, available at: <https://www.wirelessweek.com/news/2017/03/t-mobile-raises-unlimited-prioritization-threshold-30-gb>.

Moreover, as referenced earlier, the extent to which mobile broadband services depend upon fixed networks to meet broadband quality standards and consumer needs cannot be overlooked as part of this inquiry. As video, gaming and other bandwidth-intensive services increasingly move to mobile platforms (and such traffic will move to mobile platforms much faster in areas without fixed wireline service), carriers will need to “offload” greater amounts of traffic from scarce and congested airwaves to high-capacity fiber networks, located as close to the consumer as possible. In fact, a 2017 Cisco paper on global mobile data stated that “a sizable proportion of traffic generated by mobile and portable devices is offloaded from the mobile network onto the fixed network.”¹⁷ The paper went on to state that the percentage of mobile traffic offloaded onto fixed networks is increasing,¹⁸ and that the “amount of traffic offloaded from smartphones will be 64 percent by 2021, and the amount of traffic offloaded from tablets will be 72 percent.”¹⁹ The paper also states that “as the 5G network matures, we may see higher offload rates.”²⁰ This is consistent with the observation by Chairman Ajit Pai that “our 5G future will require a lot of infrastructure, given the “densification” of 5G networks. In my country alone, operators will have to deploy millions of small cells, and many more miles of fiber and other connections to carry all this traffic.”²¹ Unfortunately, the NOI almost seems to take for granted that such high-capacity fiber backhaul will be available (or to ignore the need for such

¹⁷ Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2016–2021, White Paper, February 7, 2017, p. 18.

¹⁸ *Id.*, pp. 18-19.

¹⁹ *Id.*, p. 19.

²⁰ *Id.*

²¹ Remarks of Federal Communications Commission Chairman Ajit Pai at the Mobile World Congress, Barcelona, Spain, February 2017.

robust fixed networks at all as a critical component of a mobile access solution²²). Even worse, absent a fixed connection at home, one can imagine that a large number of mobile only consumers will be forced to seek out WiFi hotspots in libraries and coffee shops (which in rural areas are likely miles away, if they exist at all) to avoid data overage charges.

Finally, the economic consequences of the shift in direction contemplated by the NOI cannot be overlooked. The availability of broadband Internet access service can have many transformational effects on a community. Perhaps most important is the ability of a connected community to be a draw for new employers, for businesses that simply cannot operate in today's modern economy absent a robust, high-speed broadband connection. It is thus with good reason that the inquiry is not limited to residential use; the statutory text expressly includes "elementary and secondary schools and classrooms" in the analysis, and to the extent that the economic development benefits of broadband are believed to be important, access by businesses large and small must also be a logical part of the consideration. There are likely few, if any, businesses that do (or could) rely solely upon mobile broadband access and would view it as a "substitute" for fixed broadband services. Indeed, "mobile-only" communities are unlikely to be much of a draw to employers that will likely choose a community in the next county or the next state that has robust, wireline broadband infrastructure in place. In this regard, the Commission's decisions in this proceeding can have much larger implications than whether a rural consumer can stream video on a smart TV versus a smartphone.

With all of this in mind, it is difficult not to envision an even larger digital divide taking root if the path suggested by the NOI takes hold. Although fortunately once again, Section 254 requires "reasonable comparability" in the fulfillment of universal service and not just

²² See footnote 6, *supra*.

achievement of “good enough,” a decision to declare mobile wireless service “good enough” for the purposes of Section 706 could be a particular blow to rural communities, stranding a large number of rural consumers in the slow lane in the information superhighway. As Commissioner Jessica Rosenworcel recently stated, “[n]o matter who you are or where you live, you need access to modern communications to have a fair shot at 21st century success.”²³ In today’s (and tomorrow’s) America, this requires access to *both* fixed *and* mobile broadband connections to enable 21st century communications whether at home, in the office, in the classroom, or on the go.

IV. THE COMMISSION’S BROADBAND POLICY, WHICH INCLUDES ITS RESPONSIBILITIES FOR REMOVING BARRIERS TO DEPLOYMENT UNDER SECTION 706 AND ITS UNIVERSAL SERVICE RESPONSIBILITIES UNDER SECTION 254, SHOULD BE FORWARD-LOOKING AND SHOULD AT EVERY TURN STRIVE FOR ROBUST, ADVANCED, AND REASONABLY COMPARABLE BROADBAND SERVICE FOR ALL CONSUMERS.

A. The Commission’s broadband speed “benchmark” and other performance metrics should ensure that all Americans have access to broadband Internet access service that is truly “advanced.”

The NOI seeks comment on the benchmark used to define “advanced telecommunications capability,” and in particular asks if the Commission should retain the existing 25/3 speed benchmark.²⁴ The NOI also seeks comment on incorporating measures of latency and consistency of service, as well as data allowances and other service limitations, into its evaluation of broadband deployment.²⁵ Although NTCA believes that a more holistic review of effective applications and uses of broadband would provide a better means still of evaluating

²³ Statement of Commissioner Jessica Rosenworcel on Being Sworn in as a Commissioner of the FCC, August 11, 2017.

²⁴ NOI, ¶ 12.

²⁵ *Id.*, ¶¶ 15-16.

whether access is being sufficiently advanced, as an alternative means of establishing proxy measures for such a review, NTCA urges the Commission to retain the current 25/3 speed standard and incorporate performance metrics into its Section 706 analysis that recognize the capabilities of technologies.

As an initial matter, to the extent that the Section 706 benchmark must focus upon static speed figures at all rather than looking to the current and long-term capabilities of the underlying network and what it enables users to do, NTCA supports the NOI's proposal to retain the 25/3 speed benchmark for fixed wireline broadband Internet access service. Nonetheless, because the 25/3 benchmark previously adopted in this proceeding is not yet within reach for many rural consumers in particular, NTCA proposes below several steps the Commission must take to reverse that unfortunate reality.

That said, it is important that the Commission incorporate into its Section 706 inquiry a measure of the *true* performance of certain broadband technologies, specifically by considering the latency, data usage limits, and other technical capabilities of various underlying network technologies. With respect to latency, it is critical that the Commission account for the fact that high latency services remain unable to support consumers' use of certain applications, reliable and quality voice service necessary for access to public safety officials chief among them. The latency inherent in satellite services, as well as other factors such as weather and foliage, has a profound effect on the quality and reliability of voice calls.²⁶ To return, again, to the definition

²⁶ Vantage Point, *Satellite Broadband Remains Inferior to Wireline Broadband*, attachment to Letter from Great Plains Communications and Consolidated Companies, to Marlene H. Dortch, FCC, WC Docket No. 10-90 (fil. Sep. 5, 2017) ("*Vantage Point 2017 Satellite Paper*"), p. 1 (stating that "satellite broadband service continues to be plagued by high latency" and that "this aspect of satellite broadband service significantly degrades or makes unusable many real-time applications, such as voice, emergency notifications, health services and virtual private networks."). The paper goes on to state that "[t]errestrial blockage, periodic solar outages and weather interference are all reliability issues that continue to persist,

of “advanced telecommunications capability” as enabling “users to originate and receive *high-quality voice*, data, graphics, and video telecommunications using any technology,” the plain language of Section 706 should dictate that the Commission include a measure of latency in this proceeding. Consumers deserve no less than an assurance that the Commission will not label a service that may not even enable reliable calls to 911 as “advanced.”

Data usage limits should be a critical part of the Section 706 inquiry as well. As noted above, while many mobile wireless carriers have moved to unlimited data plans, so-called “soft caps” under which consumers utilizing more than a certain amount of data have their traffic deprioritized or the quality of their video reduced endure in the mobile marketplace.²⁷ Data caps are also a common feature of satellite broadband service as well.²⁸ Although there is nothing inherently problematic with such practices as they attempt to ensure the user internalizes the network value consumed, and even as it is possible that more fixed providers will likewise begin to employ some means of capping or billing data based upon usage, to the extent particular broadband technologies are not able afford users a meaningful opportunity “to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology,” as required by section 706, they should not be considered “advanced” telecommunications capabilities.

even with the new satellite platforms. As customers increasingly rely on broadband for critical services, such as eHealth, satellite-based services are not able to meet the necessary reliability requirements.”). *Id.*

²⁷ See NOI, ¶ 6, fn. 10.

²⁸ *Vantage Point 2017 Satellite Paper*, p. 2. (“All the current data plans offered by Hughes Network Services (Hughes) and ViaSat, have capacity thresholds that are substantially less than the average customer’s usage. In fact, none of the current satellite broadband plans currently meet the FCC’s minimum 160 GB capacity standard for Connect America Fund (CAF) eligibility.”).

To be clear, NTCA recognizes that services with latency and data usage limits may, to some extent, provide offsetting value in the form of mobility or other features that consumers desire despite the limitations of these services noted above. These are all “tools in the broadband toolkit,” to be sure. As such, consumers should have the option to choose the service that best fits their needs. But they must be considered only complementary to, rather than substitutes for, more robust advanced telecommunications services for these reasons too. The Commission’s broadband policies – whether those the agency establishes as a direct result of this proceeding or those that flow from its universal service and other regulatory oversight duties – should aim higher than services with very real and material capability limitations. The Commission should therefore set a forward-looking (as opposed to a “what’s available today”) standard and base its policies on ensuring that all consumers have robust broadband service now and in the future.

B. A right-sized high cost program is the single biggest barrier to ensuring that every rural consumer has access to robust “advanced telecommunications service.”

As noted above, there are still a large number of rural Americans for whom broadband Internet access service remains unattainable – 39 percent of rural Americans lack access to 25/3 broadband, for example. Ensuring the availability of “advanced telecommunications service” for these rural consumers requires a “right-sized” High Cost program budget that advances and sustains broadband. Unfortunately, detailed evidence on the record in the Commission’s USF proceeding demonstrates that the budget for the RLEC High Cost support program is insufficient to enable the delivery of broadband Internet access service to wide swaths of rural America or to enable millions of rural Americans to procure standalone retail broadband Internet access services at reasonably comparable rates.

Evidence on the record demonstrates that the Commission’s High Cost USF policies – the program’s budget level in particular – fails to live up to the “access to advanced telecommunications services” and “reasonably comparable” directives contained in the Act. For example, for those RLECs that elected to receive USF support via the Alternative Connect America Cost Model (“A-CAM”), budget constraints in the face of demand for model-based support meant that even an additional \$50 million was not enough to deliver the amount of support contemplated by the initial model design and offers. As a result, the Commission was unfortunately compelled to reduce final A-CAM offers notwithstanding the infusion of additional funds, thereby reducing as well the level of broadband capable network deployment in the areas in question. Because of this “budget shortfall,” tens of thousands of locations nationwide fell from being “fully funded” to “capped” (or from higher speeds to lower speeds within those categories), resulting in the delivery of much lower speeds – or perhaps no broadband at all – to those locations. More specifically, NTCA estimates that:

- Over 35,000 locations will not receive 25/3 Mbps broadband due to the insufficient budget, while another 36,000 locations that would have received 10/1 Mbps broadband will not due to the shortfall;
- Nearly 25,000 more locations will receive 4/1 broadband than under the original model offer that would have provided them with higher speeds; and
- Another 47,000 locations will now only see any broadband at all if their request for service turns out to be “reasonable” in light of USF support received and the revenues that might be anticipated from the customer.

For RLECs receiving support via the non-model cost support mechanism, the numbers are even worse because they represent actual cuts in recovery of costs associated with investments already made in broadband-capable networks and ongoing delivery of broadband services. A recent NTCA survey of found that the insufficient High Cost Program budget is

already chilling future network investment and ultimately harming rural America. More specifically, this survey found that:

- Nearly two-thirds of responding NTCA members indicate that they intend to scale back network investments over the next 12 months in the face of a budget control that has increased several times and will now reduce their USF support by \$536,000, on average, over the next year;
- While many continue to evaluate specific impacts of the recently increased 12.3 percent budget control factor, those respondents that provided financial impact estimates indicated they would reduce their broadband investments over the next 12 months by \$943,000, on average, due to the budget control;
- The total estimated investment impact for respondents equals over \$44 million in delayed or cancelled broadband investments over the next 12 months. Extrapolated across NTCA members subject to the budget control, this could equate to as much as \$300 million in delayed or cancelled broadband investments; and
- Even in the wake of USF reforms intended to achieve reasonably comparable standalone broadband service rates for rural and urban consumers, the average respondent that is not currently offering standalone broadband estimates it would need to charge a customer \$126 per month for such service due to the budget control—a rate that is more than twice the urban average.²⁹

As these numbers make clear, despite the Commission’s 2016 reforms to the RLEC High Cost program,³⁰ the insufficient program budget is undermining the effectiveness of the program, as it will leave tens of thousands of rural Americans without access to “advanced” or affordable broadband Internet access. The insufficient and arbitrary budget based on 2010 support levels – one that has no actual tether to the High Cost program as it is constituted today or the goals for

²⁹ Wireline Competition Bureau Announces Results Of 2016 Urban Rate Survey for Fixed Voice and Broadband Services, Posting of Survey Data and Explanatory Notes, and Required Minimum Usage Allowance for ETCs Subject to Broadband Public Interest Obligations, WC Docket No. 10-90, Public Notice (rel. Apr. 5, 2016), p. 2. It is also worth noting that this \$75.20 figure is actually two standard deviations higher than the rates paid by the average urban consumer.

³⁰ See *Connect America Fund*, et al., WC Docket No. 10-90, et al., Report and Order, Order and Order on Reconsideration, and Further Notice of Proposed Rulemaking, FCC 16-33 (rel. March 30, 2016) (“*Rate-of-Return Reform Order*”).

the program set forth in 2016 – stands as the single biggest barrier that the Commission can and should remove to enable tens of thousands of rural consumers to have affordable access to the very same “advanced” broadband Internet access enjoyed by their urban brethren.

NTCA therefore urges the Commission to immediately initiate a proceeding to complete the still pending “budgetary review” that was part of the 2011 establishment of the current High Cost program budget.³¹ As the Commission knows, the United States Court of Appeals for the Tenth Circuit upheld the 2011 establishment of a high-cost USF budget based in significant part upon a representation made by the Commission during appellate litigation that it would conduct “a budgetary review” by the end of 2017.³² Unfortunately, no such budget review has been initiated, despite clear evidence as discussed above that the arbitrary budget is substantially reducing broadband investment and saddling thousands of rural consumers with “unreasonably incomparable” broadband service at “unreasonably incomparable” rates. Swift Commission action to initiate a proceeding and move to a budget that accomplishes the goals of the *Rate-of-Return Reform Order* should be the Commission’s top broadband priority. During the pendency of that review, the Commission should direct the Universal Service Administrative Company (“USAC”) to collect, at a minimum, the current overall high-cost USF budget of \$4.5 billion.³³

³¹ *Connect America Fund*, WC Docket No. 10-90, et al., Report and Order and Further Notice of Proposed Rulemaking, FCC 11-161 (rel. Nov. 18, 2011), ¶ 18.

³² *In re: FCC 11-161*, 753 F.3d 1015, 1060 (10th Cir. 2014).

³³ *See ex parte* letter from Michael R. Romano, NTCA, to Marlene H. Dortch, FCC, WC Docket No. 10-90 (fil. Aug. 15, 2017).

C. There are several other steps the Commission can take to remove barriers to timely and cost effective deployment of broadband in rural areas.

NTCA members face several challenges with respect to deploying, maintaining, and upgrading broadband infrastructure in their rural service areas. Great distances, rugged terrain, low population densities, and difficult weather (weather that in many parts of the country shortens construction seasons), among other barriers, significantly increase the costs and time involved in any infrastructure deployment. Certain regulatory and permitting costs operate as barriers as well, and thus NTCA strongly supports the Broadband Deployment Advisory Committee's ("BDAC") work to remove barriers to broadband deployment. NTCA looks forward to the recommendations of the BDAC and to working with the Commission through that process and subsequent rulemakings to identify and eliminate barriers to the efficient deployment of high-quality broadband infrastructure throughout rural America.

The Association has also offered several recommendations³⁴ with respect to the issues raised specifically in the *Wireline and Wireless Barriers Notices* issued by the Commission earlier this year.³⁵ As discussed in greater detail in those comments and as summarized below, these recommendations will expedite, simplify, and ultimately reduce the cost of infrastructure deployment in rural areas and fulfill the Commission's Section 706 obligations to remove barriers to infrastructure investment.

³⁴ Comments of NTCA, WC Docket No. 17-84, WT Docket No. 17-79 (fil. Jun. 15, 2017) ("NTCA Wireline/Wireless Barriers Comments").

³⁵ *Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment*, WC Docket No. 17-84, Notice of Proposed Rulemaking, Notice of Inquiry, and Request for Comment, FCC 17-37 (rel. Apr. 21, 2017) ("*Wireline Barriers Notice*"); *Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment*, WT Docket No. 17-79, Notice of Proposed Rulemaking and Notice of Inquiry, FCC 17-38 (rel. Apr. 21, 2017) ("*Wireless Barriers Notice*").

It must emphasized that NTCA’s recommendations to remove barriers to broadband deployment, as well as the critical work being done by the BDAC, are only part of the puzzle for rural broadband. More specifically, the Commission must not lose sight of the importance of universal service mechanisms that are the foundation of rural Americans’ access to “advanced” and “reasonably comparable” broadband service. While the issues discussed in this section of NTCA’s comments and the work of the BDAC are critical to *expediting* the provision of broadband service to those currently lacking it and upgrading existing networks to ensure that such service once available keeps pace with consumer demand, they cannot standing on their own enable the Commission to meet its Section 706 or Section 254 responsibilities to rural consumers. All the relief in the world with respect to standardized permitting on federal lands, expedited access to pole attachments (while critical and appreciated) will not, standing alone, drive the expanded reach of or upgraded capacity of broadband networks if RLECs cannot make the business case for such investment and deployment in the first instance. Thus, a sufficient and effective High-Cost program that solves for the economics of areas where the cost of deploying and operating a network far exceeds what any consumer could possibly afford remains the foundation for broadband investment and sustainability and must be seen as part and parcel of any efforts the Commission undertakes as a result of the instant proceeding.

1. The Commission should create model “best practices” to streamline the federal permitting process.

For small broadband providers, there is perhaps no greater frustration and expenditure of time and effort than in trying to construct broadband infrastructure on or across federal lands. In fact, NTCA members typically find that delays, complications, and expenses involved in extending or upgrading facilities on federal lands far exceed those that arise on the state and local level. It is here that model “best practices” for federal agencies to look to as a model for ways in

which a particular agency – or even better still, all federal agencies – could standardize and streamline permitting approval processes would be particularly effective. NTCA members often find that the processes for obtaining permits for network construction on federal lands can vary across federal agencies and even across different departments or divisions of an individual agency. A more uniform process would inject much needed predictability into the process.

In addition, model best practices would also enable agencies to benefit from the expertise on broadband deployment that the Commission and, more importantly, the entities subject to its jurisdiction that deploy broadband on a daily basis, already have. The process of developing model best practices would allow both federal agencies and operators to identify common delays and points of failure and propose solutions that can expedite processes and be adopted across the federal government. By identifying processes that produce unnecessary delays, this would also identify processes that also fail to effectuate agencies' goals while retaining those that protect and properly allocate access to federal land. The result would be a more uniform and expedited process that would reduce manpower and financial expenditures of carriers better spent on broadband deployment.

2. The Commission should streamline its National Historic Preservation Act and National Environmental Protection Act processes.

NTCA also urges the Commission to take steps to streamline its processes with respect to the National Historic Preservation Act (“NHPA”) and the National Environmental Protection Act (“NEPA”). NTCA members report that compliance with the NHPA and NEPA processes introduce significant and unpredictable costs and delays in the deployment of broadband infrastructure. For example, there is currently a lack of clarity as to the circumstances under which a provider is obligated to consult with tribal entities and the criteria for judging a project. Commission guidelines outlining the circumstances in which fees are due, along with a

presumptively reasonable schedule of fees, would provide all parties with a clearer path in which to move forward.

The Commission should also expand the list of projects not subject to Section 106 review to include specific construction projects that, by their nature, would not cause effects to historic properties. For example, NTCA supports excluding pole replacements from Section 106 review, regardless of whether a pole is located in a historic district, provided that the replacement is of substantially the same size as the original pole and within the same property boundaries, similar to the current exclusion for replacement towers. NTCA would also welcome a provision to shorten the distance from a historic property for which Section 106 review is required for collocations of wireless facilities and excluding from review collocations that involve no new ground disturbance, as well as non-substantial collocations on existing structures in urban rights-of-way or indoors.

3. The Commission should also examine railroad crossing fees and ways to expedite broadband providers' access to such crossings.

NTCA members also face a significant and costly deployment barrier in the form of increasing and in some case unreasonable railroad crossing and access to railroad rights-of-way fees. Despite the efforts of some states to cap such fees, unreasonable and unpredictable fees and other terms and conditions that lead to unnecessary expenses (ultimately passed on to consumers) and unnecessary construction delays persist. NTCA members report excessive (and growing) fees for insurance premiums, railroad safety officers' presence during construction, fees for construction permits and fees assessed on outside contractors performing infrastructure installation. Worst of all, fees of thousands of dollars and delays of several weeks or even months can ensue for work (e.g., boring under a railroad right-of-way for the purpose of installing fiber) that is completed in a matter of hours.

NTCA thus urges the Commission to utilize its expertise in the area of broadband deployment to create a “model code” for state legislation in the area of broadband providers’ access to railroad rights-of-way. While railroads have a legitimate interest in ensuring that their facilities are undisturbed by the installation of any utilities’ facilities and in protecting the safety of all parties involved, these concerns can and must be addressed in a manner that does not unnecessarily impede broadband infrastructure deployment. A model code for the interaction of railroads and broadband providers can identify common points of delay or controversy that impede infrastructure deployment and potentially produce agreed upon processes that satisfy parties on both sides. Such a process can also inject additional predictability into the process and spur additional deployment.

4. The Commission should take several steps to expedite the make-ready process for access to utility-owned poles and lower the costs of such access.

Many of the small providers that comprise NTCA’s membership operate in rural areas of the nation that have rugged terrain that requires the use of aerial facilities, as trenching cable is prohibitively expensive or impractical, if not impossible. Thus NTCA has proposed in the *Wireline and Wireless Barriers* proceeding and reiterates here several initiatives that can expedite small ISPs’ access to this critical input to broadband infrastructure. NTCA urges the Commission to:

- Adopt a condensed timeframe for the make-ready process applicable to small broadband providers’ access to utility-owned poles;³⁶
- Inject transparency via a provision that requires pole owners to provide new attachers with a schedule of make-ready charges;³⁷

³⁶ See NTCA Wireline/Wireless Barriers Comments, pp. 4-7.

³⁷ *Id.*, pp. 7-9.

- Limit make-ready charges to those costs incurred by the owner as a direct result of performing work for a new attacher;³⁸
- Adopt a provision under which capital costs received by utilities as part of the make-ready process are excluded from pole attachment rates;³⁹ and
- Establish a pole access complaint “shot clock.”⁴⁰

On the whole, NTCA members report having good working relationships with utilities that own poles in their service areas (and NTCA members frequently have “joint use” agreements in place that simplify the process of access to poles). NTCA members are also pole owners themselves, and thus they understand the difficulty in completing “make-ready” work for large requests in a timely manner. However, despite these relationships, the length of the make-ready timeline continues to operate as a barrier to the deployment of broadband infrastructure for small providers. The process as proposed by NTCA would apply only for applications by small providers for a small number of poles (orders of 100 per six month period), and therefore it fairly balances the burdens imposed on pole owners and existing attachers when receiving and processing an application for a new attachment and performing the make-ready work while ensuring that small broadband providers are able to complete their infrastructure deployment as rapidly as possible. In addition, measures to reduce make-ready costs and make such costs more transparent will reduce carriers’ costs and ensure that unnecessary costs are not passed onto consumers. Finally, a 180-day “shot clock” would inject much needed predictability into the complaint process and “give it teeth,” and in fact would likely have a reciprocal effect on parties

³⁸ *Id.*

³⁹ *Id.*

⁴⁰ *Id.*, pp. 9-10.

potentially the subject of a complaint, spurring recalcitrant pole owners to adopt more reasonable terms and conditions in the negotiation process.

V. CONCLUSION

For all of the reasons discussed above, the Commission should continue to consider mobile wireless broadband as a service complementary to fixed, wireline broadband service. While a valuable service, mobile wireless service has several practical and technical limitations that

Respectfully submitted,



By: /s/ Michael R. Romano
Michael R. Romano
Senior Vice President –
Industry Affairs & Business Development
mromano@ntca.org

By: /s/ Brian J. Ford
Brian J. Ford
Senior Regulatory Counsel
bford@ntca.org

4121 Wilson Boulevard, Suite 1000
Arlington, VA 22203
703-351-2000 (Tel)

September 21, 2017



NTCA 2016 BROADBAND/INTERNET AVAILABILITY SURVEY REPORT

July 2017

DISCLAIMER: Data from the survey has been presented as reported.

To get more information on this report please contact Rick Schadelbauer at NTCA (703-351-2019, rschadelbauer@ntca.org).

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EXECUTIVE SUMMARY

For nearly two decades, NTCA–The Rural Broadband Association has conducted its annual Broadband/Internet Availability Survey to gauge the deployment rates of advanced services by its member companies. In the spring of 2017, NTCA sent an electronic survey form to each of the companies (as reflected at the holding company level) in NTCA’s email database; 172 members (29%) responded.

One hundred percent of the 2016 survey respondents offer broadband to some part of their customer bases, compared with the 58% of the year 2000 survey respondents who offered the then-lower definition of broadband service.¹ Respondents indicated that they use a variety of technologies within their respective serving areas to provide at least basic levels of broadband to their customers. Forty-one percent of respondents’ broadband customers are served via fiber to the home (FTTH), 36% via copper loops, 12% cable modem, 9% fiber to the node (FTTN), 1% licensed and unlicensed fixed wireless, and 0.2% satellite.

Fifty-two percent of those survey respondents currently deploying fiber serve at least 50% of their customers with FTTH, while 24% serve 20% of their customers or less via such technology. Eighty-two percent of survey respondents indicated they had a long-term fiber deployment strategy. Thirty-nine percent of those respondents with a fiber deployment strategy plan to offer fiber to the node to more than 75% of their customers by year-end 2019, while 66% plan to offer fiber to the home to at least 50% of their customers over the same time frame. An additional 31% have already completed fiber deployments to all customers.

Deployment cost remains the most significant barrier to widespread deployment of fiber, followed by regulatory uncertainty, long loops, current regulatory rules, low customer demand, obtaining financing, fiber order fulfillment delays, and obtaining cost-effective equipment. Throughout the history of the survey, deployment cost has been respondents’ most significant concern.

Approximately 0.3% of respondents’ customers can receive a maximum downstream speed of between 768 kilobits per second (kbps) and 1.0 megabits per second (Mbps); 0.8% 1.0 to 1.5 Mbps; 2% 1.5 to 3.0 Mbps; 1% 3.0 to 4.0 Mbps; 3% 4.0 to 6.0 Mbps; 7% 6.0 to 10.0 Mbps; 20% 10.0 Mbps to 25.0 Mbps; and 67% greater than 25.0 Mbps.

Forty-one percent of survey respondents’ customers taking broadband subscribe to service greater than or equal to 10 Mbps downstream. The next most popular speed tiers

¹ Beginning with the 2015 survey, broadband was defined as throughput of at least 3 Mbps in one direction. This was an update from earlier NTCA Broadband Surveys, which defined broadband as throughput of at least 768 kbps (from 2009 through 2014) or 200 kbps (from 2000 through 2008) in one direction.



are 6.0 Mbps to 10.0 Mbps (10%), and 4.0 Mbps to 6.0 Mbps (9%). The overall take rate for broadband service is 72% (virtually unchanged from 73% last year).

The average respondent is 68 miles from its primary internet connection; the median respondent is 38 miles away. Eighty-eight percent of those who recently changed backbone providers did so for price reasons. Seventy-three percent of respondents indicated they are generally satisfied with their current backbone access provider, while 27% are generally dissatisfied.

Survey respondents indicated they face some type of competition for broadband in limited portions of their serving areas from national internet service providers (ISPs), cable companies and fixed and/or mobile wireless internet service providers (WISPs.) Respondents are taking numerous marketing steps to increase broadband take rates, including free customer premise equipment installation, bundling of services, price promotions, free introductory service, free education and training, discounted computers or tablets, and free modems.

Thirty-three percent of respondents currently offer voice over internet protocol (VoIP) service, unchanged from last year. Forty-seven percent of respondents not currently offering VoIP have plans to do so in the foreseeable future, up from 38% last year. Seventy percent of respondents offer video service to their customers, down slightly from 72% last year.

INTRODUCTION

In the spring of 2017, NTCA–The Rural Broadband Association surveyed its members on their activities in the areas of providing broadband services and internet availability to their members/customers. NTCA is a national association representing nearly 850 rural rate-of-return regulated operating company telecommunications providers in 45 states. All NTCA members are small carriers that are “rural telephone companies” as defined in the Communications Act of 1934, as amended by the Telecommunications Act of 1996. Only four NTCA member study areas comprise 40,000 lines or more; the largest is just over 58,000. Population density in most member service areas is generally in the 1 to 5 customers per square mile range.

This latest broadband survey is a follow-up to similar surveys conducted in recent years by NTCA, and seeks to build upon the results of those surveys.² This year’s survey asked about technologies used to provide broadband service, broadband availability and subscription rates, prices charged, quantity and type of competition, broadband marketing

² Copies of this and previous NTCA survey reports may be downloaded from the NTCA web site, www.ntca.org/survey-reports/survey-reports.html.

efforts, fiber deployment, emerging technologies, internet backbone connections, finance and availability of capital. The survey also provided an opportunity for respondents to provide any specific comments they wished to share.

OVERVIEW OF SURVEY

The 2016 NTCA Broadband/Internet Availability Survey was conducted online. Every effort was made to minimize the reporting burden on the survey respondents.

The survey was composed of general questions about the respondents' current operations, competition/marketing and current and planned fiber deployment. Additional questions dealt with the internet backbone, voice over internet protocol (VoIP) and video. The survey also provided an opportunity for respondents to offer any miscellaneous thoughts.

SURVEY RESULTS

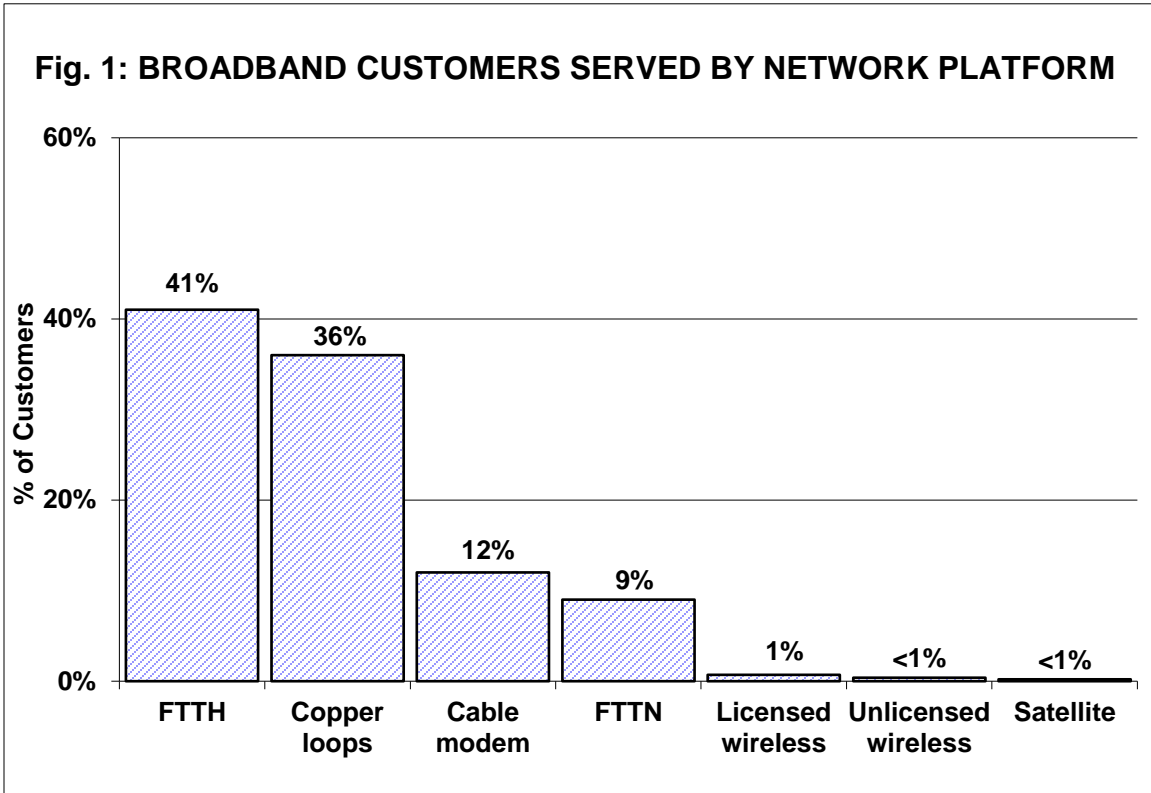
The survey URL for each part of the survey was distributed via email to all member companies in NTCA's email database. The message contained instructions for online access to the survey. Responses were received from 172 member companies, a 29% response rate.³

Fifty-seven percent of survey respondents' service areas are 500 square miles or larger; 25% are at least 2,000 square miles. Half—51%—have customer densities in their service area of 10 residential customers per square mile or less. More than one-fifth—22%—have customer densities of two residential customers per square mile or less.

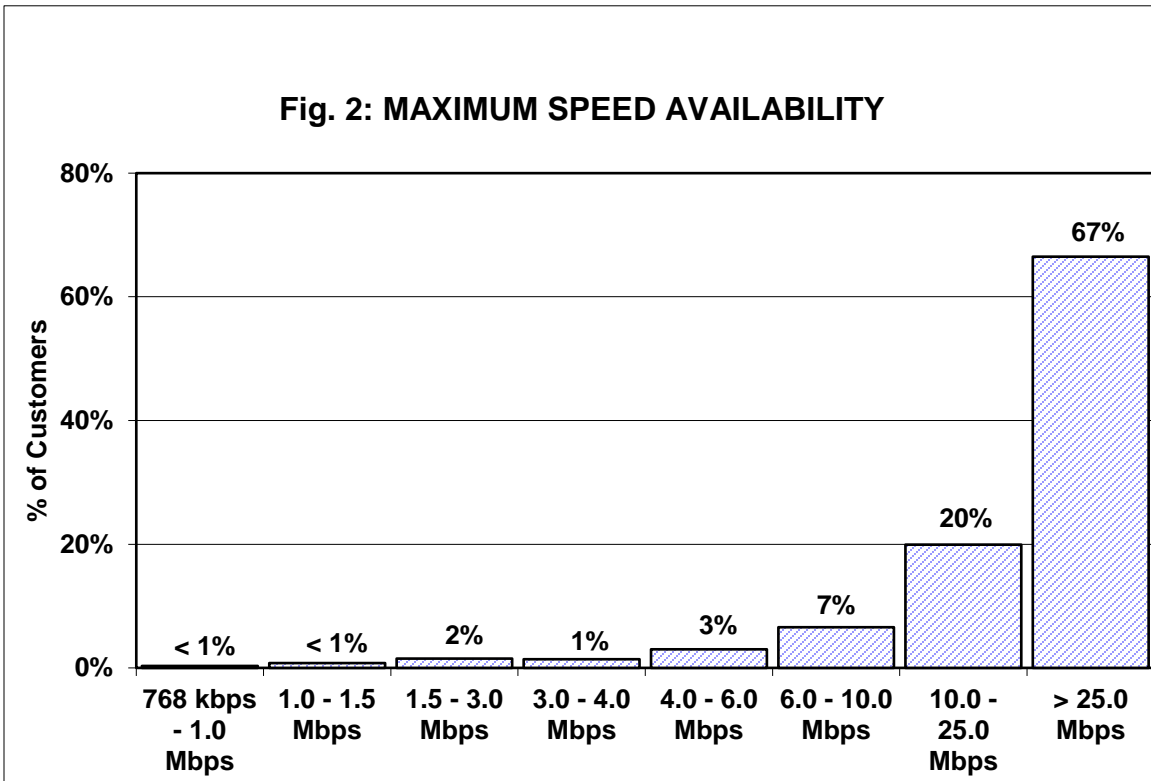
The average survey respondent serves 4,723 residential and 1,463 business voice grade access lines; a few larger companies skew these numbers upward, hence the median respondent serves 2,227 residential and 611 business lines. One hundred percent of survey respondents offer broadband service to some part of their customer base.⁴ Respondents indicated that they use a variety of technologies, even within individual serving areas, to offer at least basic levels of broadband to their customers: 41% of respondents' broadband customers are served via fiber to the home (FTTH), 36% via copper loops, 12% cable modem, 9% fiber to the node (FTTN), 1.1% licensed and unlicensed wireless, and 0.2% satellite. (See Figure 1.)

³ Based on the sample size, results of this survey can be assumed to be accurate to within $\pm 6\%$ at the 95% confidence level.

⁴ For the purpose of this survey, broadband is defined as throughput of at least 3 Mbps in one direction.

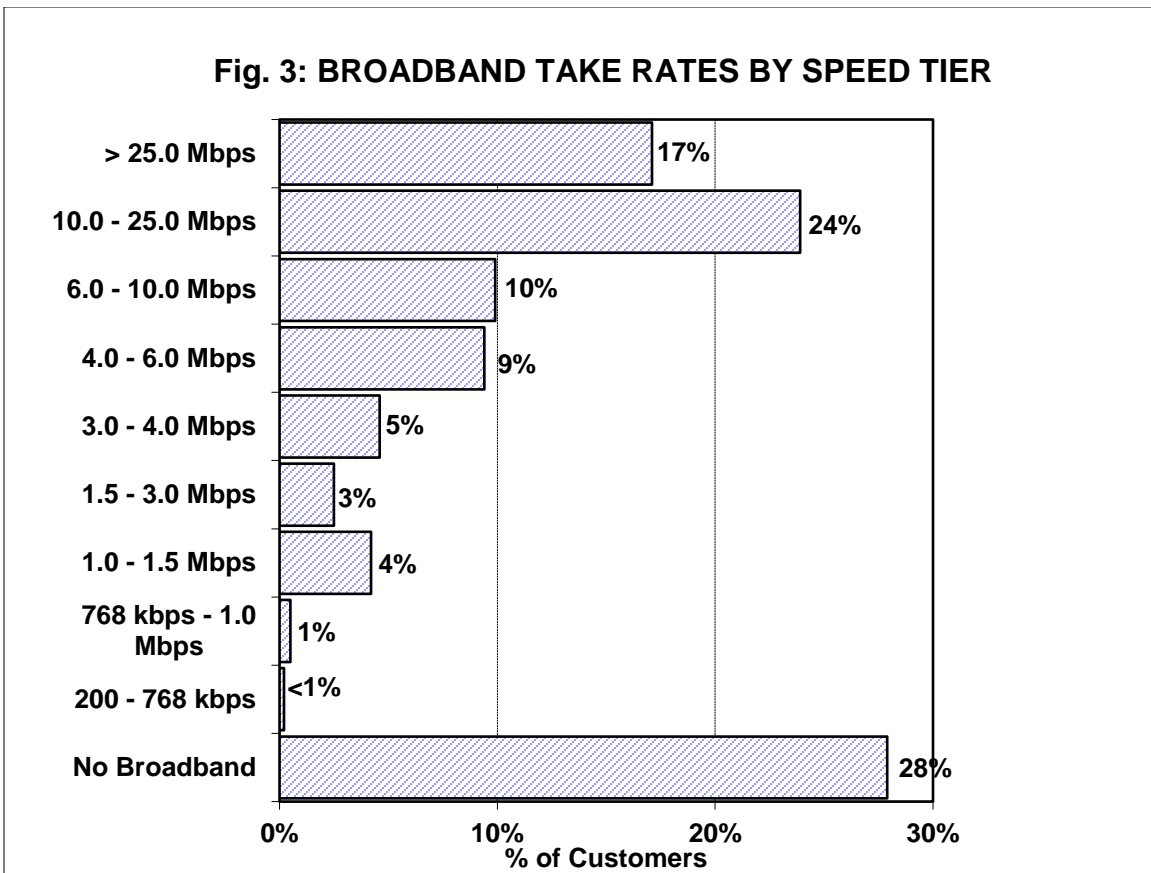


Approximately 0.3% of respondents' customers can subscribe to a maximum speed 768 kbps to 1.0 megabits per second (Mbps) service; 0.8% to 1.0 to 1.5 Mbps; 2% to 1.5 to 3.0 Mbps; 1% to 3.0 to 4.0 Mbps; 3% to 4.0 to 6.0 Mbps; 7% to 6.0 to 10.0 Mbps; 20% to 10.0 to 25.0 Mbps; and 67% to greater than 25 Mbps service. (See Figure 2.)



Survey results indicate an overall broadband take rate from NTCA member companies of 72%, approximately the same as 73% a year ago. By far, the most popular speed tier among survey respondents' broadband subscribers is between 10.0 Mbps and 25.0 Mbps—24% of survey respondents' customers subscribe to this level of service. Next most popular is greater than 25.0 Mbps (17%), followed by 6.0 Mbps to 10.0 Mbps (10%), 4.0 Mbps to 6.0 Mbps (9%), 3.0 to 4.0 Mbps (5%), 1.0 Mbps to 1.5 Mbps (4%), and 1.5 Mbps to 3.0 Mbps (3%) Non-broadband subscribers make up 28% of survey respondents' customer base. (See Fig. 3.)

Fig. 3: BROADBAND TAKE RATES BY SPEED TIER



Typical prices charged range from \$34.95 to \$44.95 for cable modem service, \$29.95 to \$49.95 per month for DSL service, \$39.95 to \$49.95 for wireless broadband service, and \$39.95 to \$59.95 for fiber-based broadband service.

Forty-two percent of survey respondents indicated their customers may purchase so-called “stand-alone DSL”—broadband service without a voice component. Take rates for stand-alone DSL service are relatively low, however, with the majority of those respondents offering stand-alone DSL reporting take rates of 10% or less, although some have take rates between 15 and 25%.

Twenty-seven percent of respondents estimate that they could bring all of their customers currently receiving service below 25 Mbps up to that speed for between \$1 million and \$10 million in additional capital investment. An additional 27% could do so for between \$20 million and \$50 million, 21% at a cost of \$10 to \$20 million, 18% for \$1 million or less, and 7% estimate the total cost would be more than \$50 million.

Survey respondents provide critically important broadband service to anchor institutions in their communities. The median respondent serves four public service entities (police,

fire, etc.); three primary/secondary schools; one public library; one hospital or medical clinic; as well as 911 call centers, post offices and city halls.

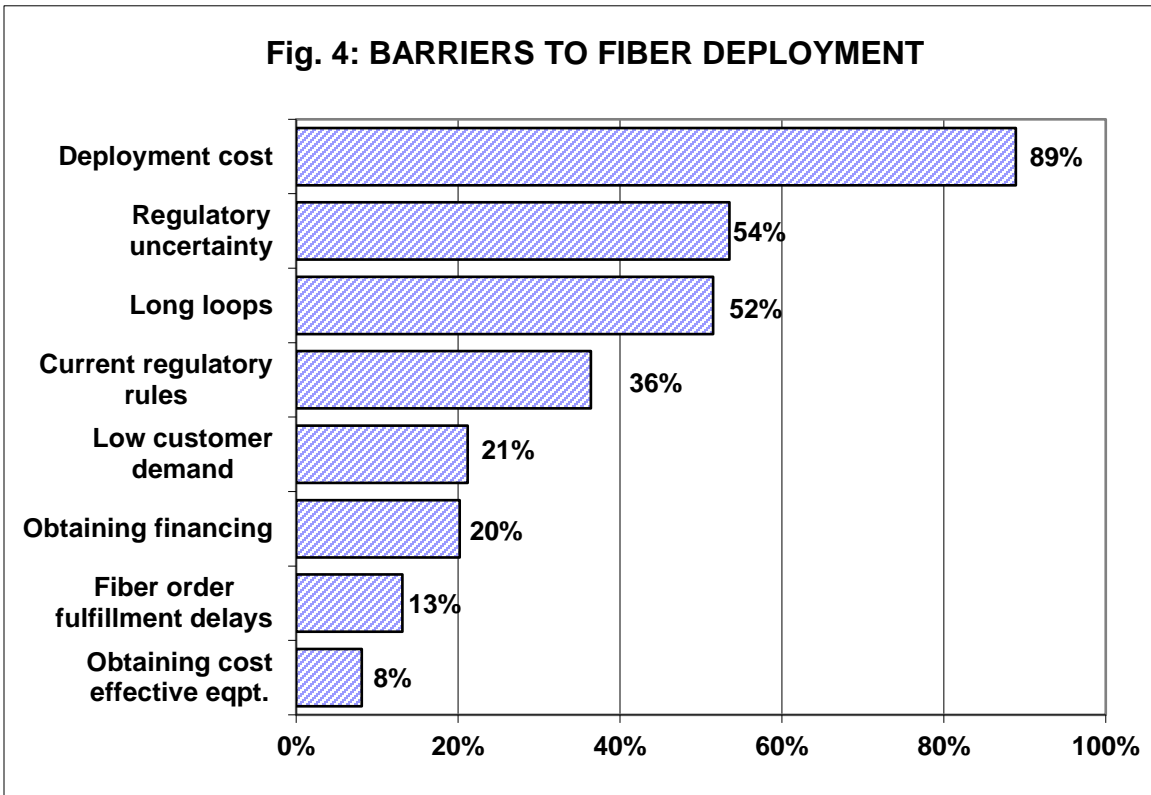
Fiber Deployment

Fifty-two percent of those survey respondents currently deploying fiber serve at least 50% of their customers using fiber to the home (down from 55% last year), while 24% serve 20% of their customer base or less with fiber to the home (FTTH) technology (down from 26%.)

Survey respondents described their companies' plans to deploy fiber to the node (FTTN) and/or FTTH to their customers. Eighty-two percent of survey respondents indicated that they have a long-term fiber deployment strategy. Thirty-nine percent of those survey respondents with a fiber deployment strategy expect to offer fiber to the node to more than 75% of their customers by the end of 2019. Sixty-six percent of respondents expect to be able to provide FTTH to at least half of their customers by year-end 2019. An additional 31% have already completed fiber deployment to all of their customers.

Eighty-nine percent of survey respondents identified the cost of fiber deployment as a significant barrier to widespread deployment. Regulatory uncertainty was the number two barrier (54%, down from 79% last year), followed by long loops (52%), current regulatory rules (36%, down from 56%), obtaining financing (20%), low customer demand (21%), fiber order fulfillment delays (13%) and obtaining cost-effective equipment (8%).⁵ (See Figure 4.)

⁵ Totals exceed 100% as respondents were allowed to select more than one barrier.



Internet Backbone

Survey respondents are, on average, 68 miles from their primary internet connection; the median distance is 38 miles. Eighty-eight percent of those respondents who recently switched internet backbone access providers did so for price reasons, while 25% switched due to quality of service concerns and 25% for other reasons, such as the ability to add redundant routes.⁶ Seventy-three percent of respondents indicated they are generally satisfied with their current backbone access provider, while 27% are generally dissatisfied. Fifty-five percent of all survey respondents expect to need additional backbone capacity in one year or less.

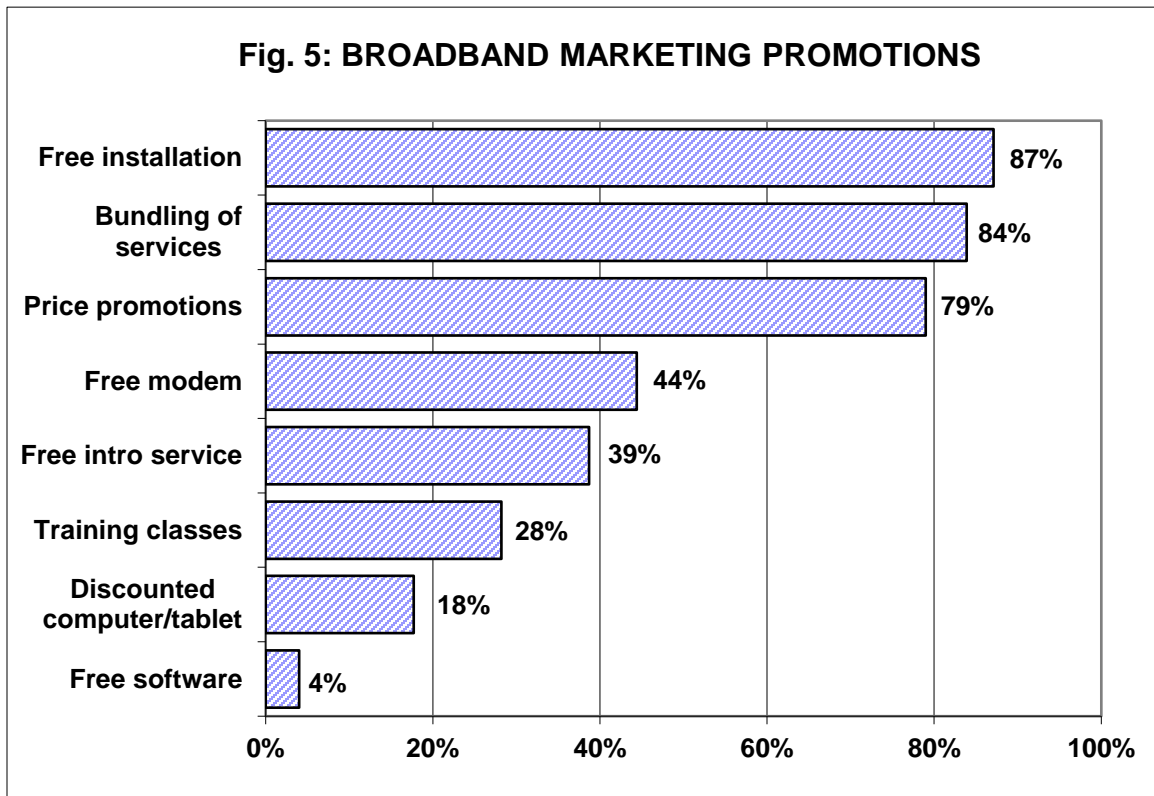
Competition/Marketing

Virtually all survey respondents indicated that they face competition from at least one other service provider in some portion of their service area. Survey respondents typically compete with national ISPs, fixed and/or mobile wireless internet service providers

⁶ Totals exceed 100% as respondents were allowed to select more than one reason for switching providers.

(WISPs) and satellite broadband providers. Other potential competitors include cable companies, electric utilities, local ISPs and neighboring cooperatives.

Rural incumbent local exchange carriers are taking numerous steps in the marketing arena to increase broadband take rates. Eighty-seven percent are offering free installation, 84% are bundling services, 79% are offering price promotions, 44% are offering free modems, 39% are offering free service for an introductory time period (such as 30 days), 28% are offering free education/training classes, 18% are offering discounted computers or tablets, and 4% are offering free software.⁷ (See Figure 5.) Respondents consider their price promotions, bundling of services, and free installation to be their most effective marketing promotions.



⁷ Totals exceed 100% as respondents' companies may be offering more than one marketing promotion.

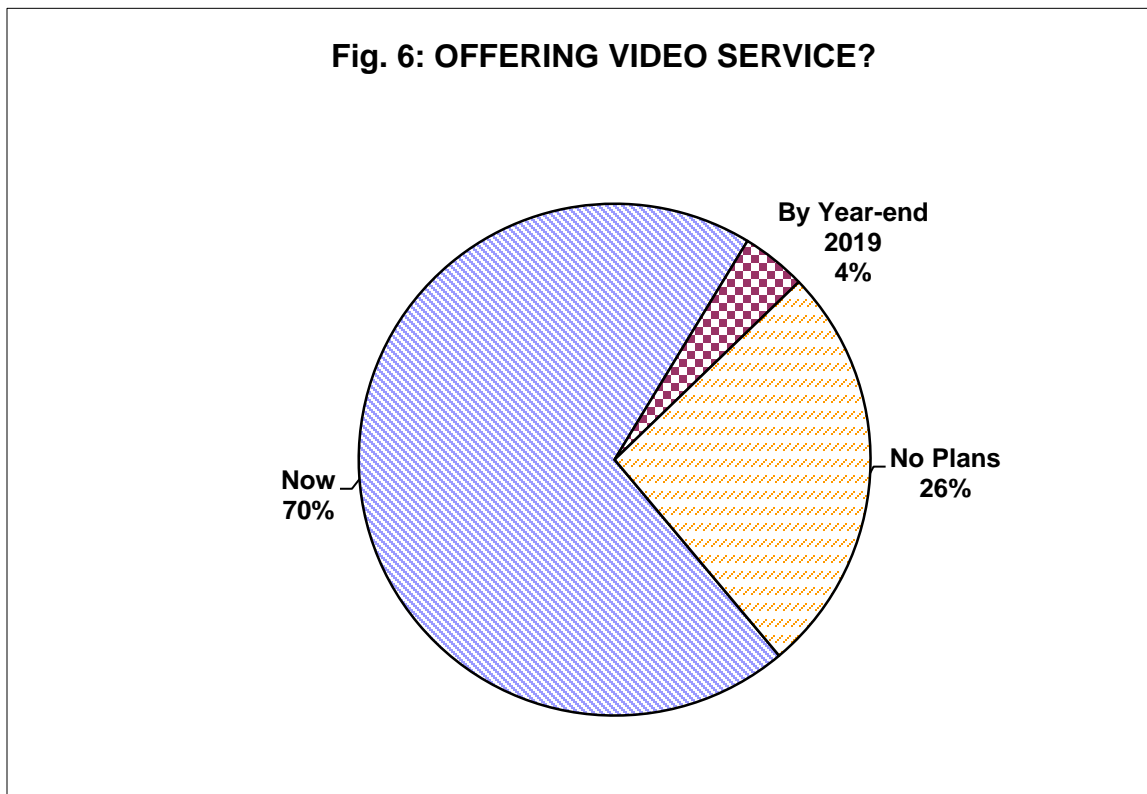
Other Services

- **VoIP**

Thirty-three percent of survey respondents currently offer VoIP service to their customers, up slightly from 31% one year ago. Forty-seven percent of those respondents not currently offering VoIP have plans to do so in the foreseeable future, up from 38% last year.

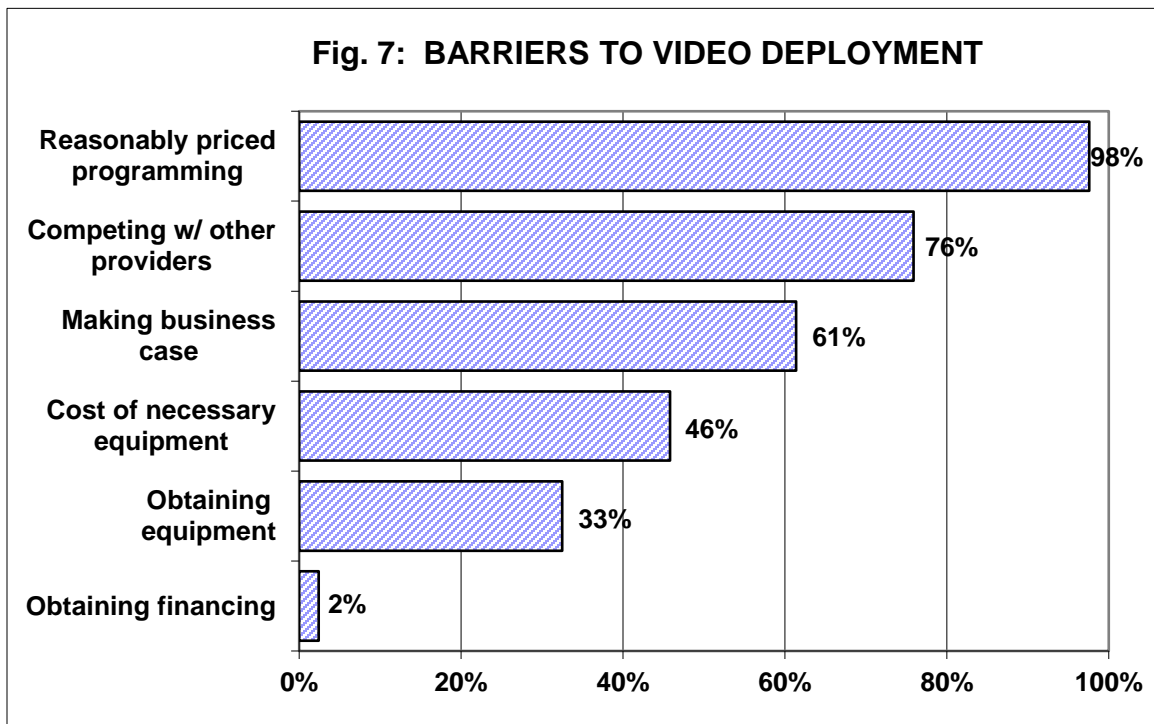
- **Video**

Seventy percent of survey respondents offer video service to their customers. Fourteen percent of those respondents not currently offering video (4% of all respondents) plan to do so by year-end 2019. The remaining 86% of those not currently offering video (26% of all respondents) currently have no plans to offer video service. (See Figure 6.) Seventy-eight percent of those planning a future video offering intend to offer internet protocol television (IPTV) service in the foreseeable future.



Of those respondents currently offering video services, 86% offer IPTV, and 51% offer legacy coax (CATV) service.⁸ Twenty-nine percent of those providing CATV service use an analog system, while 71% use a digital system. The average respondent offers their customers three “tiers” of entertainment television packages from which to choose, unchanged from last year. Seventy-eight percent of the customers of those survey respondents offering video are able to watch programming on multiple devices, both inside and outside their home (i.e., “TV everywhere”), about the same as last year.

The main barrier facing those survey respondents providing video service is access to reasonably priced programming, as cited by 98% of survey respondents. Seventy-six percent cited difficulty competing with other providers, 61% the challenge of making a business case for video service, 46% the cost of necessary equipment, 33% difficulty obtaining necessary equipment, and 2% difficulty obtaining necessary financing.⁹ (See Fig. 7.)



⁸ Totals exceed 100% as respondents may offer more than one type of video service.

⁹ Totals exceed 100% as respondents may be facing more than one barrier.

Miscellaneous

Survey respondents were asked what specific obstacles they have encountered in their efforts to deploy fiber to their customers, and how conditions would need to change to allow them to successfully overcome those obstacles. Their responses are presented in Appendix A of this report.

CONCLUSIONS

Respondents' customers are subscribing to faster broadband speeds. While the overall broadband take rate is generally the same (72% this year versus 73% last year), subscribers are moving up to higher speeds. This year, 17% of respondents' customers subscribed to broadband service in excess of 25 Mbps, versus 8% a year ago. Sixty percent subscribe to service of 4 Mbps or greater, versus 55% a year ago. And only 12% subscribe to service between 1 and 4 Mbps, versus 16%. Consumers are moving up the broadband speed chain; providers need to be prepared to offer them the level of service they demand.

While concerns about regulatory uncertainty have eased somewhat, they remain substantial. Fifty-four percent of survey respondents cited regulatory uncertainty as a significant barrier to broadband deployment, down from 79% in last year's survey. This is at least partially a result of steps taken by the FCC to attempt to ease the uncertainty. However, recent events have shown that small, rural providers are still subject to unforeseen and drastic changes to their support levels—clearly, much more remains to be done.

The pursuit of reasonably-priced video programming remains a nearly-universal struggle. Virtually all survey respondents offering video—98%—cited their ability to access affordably-priced programming as a significant impediment to their ongoing video operations. Unless this issue can be adequately addressed in the very near-term future, the ability of these providers to offer their customers high-quality, reasonably-priced video service will be seriously challenged.

Survey respondents provide critically important broadband service to community anchor institutions. These small providers serve public service entities (such as police and fire), primary and secondary schools, public libraries, hospitals and medical clinics, and numerous other important anchor institutions. In so doing, they make significant contributions to the safety, health and overall well-being of their customers. Their service helps facilitate the overall viability of rural America.

APPENDIX A

Q: What specific obstacles have you encountered in your efforts to deploy fiber to your customers, and how would conditions need to change to allow you to successfully overcome these obstacles?

New financial dynamics (viability) given new regulatory environment.

Cost of construction, regulatory environment

If grants were available to help with cost we would deploy fiber.

Cost of construction. We are ACAM so we are spending there, but without it we would have to have a business case and that is difficult in our very rural areas.

Less regulatory constraints.

Have been 100% FTTH since 2011. Very expensive to construct and operate, but delivers the bandwidth for future services.

We have completed fiber to all customers, trying to recover the build out costs, will take time, due to increasing expense cost to provide all services.

Length of subscriber loops and cost of fiber deployment.

Cost for deployment and customers don't want to pay more for higher speeds

Large service area. Lot of money to extend our fiber plant.

Reduced USF

It is expensive. Doing it in the rural area (2 customers/mile) has no hope on return on investment.

Some customers just don't want it because they feel a cell phone is enough

Cost and financing.

Once fiber is deployed, the cost of the customer premise equipment per location.

I have deployed 100% but construction costs are the biggest obstacle to deploying fiber. Increased penetration will justify costs eventually.

Time and money is issue. Selected ACAM and working to meet obligations and offer better service.

Rate of Return rules and FCC Obstacles

Reduction in support dollars due to fiber penetration. Broadband only support not realistic. Reduction in HCLS dollars.

Obtaining sufficient and sustainable cost recovery. You need the right people who support the availability of a wired network for the benefit of Rural Consumers.

I would like the FCC to stop chipping away at my recovery. Get more money in the USF budget to fund this. My other issue is pricing standalone broadband competitively and still being able to maximize recovery/profit.

The only way to deploy fiber in rural areas is to have some level of support for cost recovery.

We are a high cost area dependent on support for infrastructure build, at the time we need the support the most it has been reduced due to inaccurate data and insufficient challenge process giving no consideration for carriers in areas with COLR obligations as well as lack of choices for the rural consumer

Money, money, money. Shorter loops or un-capped USF programs.

Cost. Long loops.

Cost, Long Loops, Time to install

Money and time

Price barriers. Customers not interested in paying higher prices for fiber rate plans with greater speeds. Copper lines provide speeds with affordable plans.

High construction costs. TVA Electric Cooperatives have very high pole attachment rates and there needs to be some way for these costs to come down to reasonable levels.

Terrain adds to costs. Budget Control Mechanisms contained in the USF reforms have cut the amount of capital we have for fiber builds. These budget controls should be removed and the FCC should full fund the program to meet the demand of rural consumers and ensure they have services that are comparable and as affordable as urban Americans.

Money

Costs due to population density and number of subscribers

We have nearly 100% build out but financing was an issue. We received stimulus funds in the form of a grant and a loan. Without financial help, it wouldn't have been possible.

Financial cost to deploy

Not having the capital resources to deploy. However, the recent FCC A-CAM Model-based support will help us deploy fiber from 65% - 75% of our customer service base over 10 years. Would like to see the FCC extended the Model-based program to allow companies to be able to reach 100% of their customer service base.

We have built the lease expensive customers. Now faced by longer loop costs. Limited by FCC per location limit and effect of budget control mechanism

The cost of construction, conversion costs, and the cost of additional equipment.

We average 1/2 customer per square mile with extremely rough and rocky terrain. Cost of construction is prohibitive.

The sparse population in our service area when compared to the cost of deployment does not give us a business plan to do it. The regulatory environment would need to change to cover those costs either through some mechanism.

Long loops.

We are 100% deployed

1. Difficult terrain 2. Existing utility congestion within easements. Changes needed: We need regulatory certainty that if one borrows money to complete the fiber build out, the support needed to repay that debt will not be taken away.

Regulatory uncertainty and cost recovery over time. Took the chance anyway, \$10M for 973 customers for FTTH

Overall cost of the build and decreasing support dollars to pay back loans for that buildout

None

Having the cash flow to continue our phases of constructing and deploying FTTH. USF or any other support mechanism.

None

Increasing broadband adoption rates would help us (figuring out if it is on-line literacy, computer equipment in the home, or other factors that would increase take-rates)

Take rate and need for affordable financing options are our largest obstacles. Cost. Additionally, as long as broadband only support remains broken we will continue to be unable to compete with encroaching cable companies like Time Warner/Spectrum.

Sufficient cost recovery is the biggest obstacle.

Rights of way is becoming harder to obtain.

Availability of fiber, cost, overcoming regulatory obstacles to serve other areas petitioning for fiber

NTCA 2017 USF Budget Control Impact Survey Results

OVERVIEW OF THE SURVEY

In June of 2017, NTCA–The Rural Broadband Association surveyed its members on the impact that the USF budget controls would have on their company and their ability to serve their customers. Responses were received from 183 member companies, a 33% response rate.

SURVEY RESULTS

Q: Is your company receiving non-model-based USF support (CAF-BLS and/or HCLS)?

Yes – 79.7%

No – 20.3%

Q: If your company is receiving non-model-based support, how much (in dollars) is the budget control on such support forecasted to reduce your USF support from July 2017 through June 2018?

<u>Mean</u>	<u>Median</u>
\$536,084	\$332,852

Q: As a result of your reduction in support, will you be reducing future network investment efforts over the next 12 months?

Yes – 64.0%

No – 36.0%

Q: If yes, how much will the reduction in future investments be (\$ value of projects)?

<u>Mean</u>	<u>Median</u>
\$943,418	\$500,000

Q: If yes, estimate how many customers overall will be denied greater broadband speeds than they receive today due to the declined/delayed future investment?

<u>Mean</u>	<u>Median</u>
854	250

Q: If yes, estimate the PERCENTAGE reduction of your customers to whom you would construct new broadband capable of:

	<u>Mean</u>	<u>Median</u>
10 to 25 Mbps down (%):	34%	25%
26 to 50 Mbps down (%):	31%	10%
51 to 100 Mbps down (%):	30%	5%



Q: If you will be required to charge your customers higher broadband prices because of the reduction in support due to the budget control, how much more do you believe that you will need to charge per month for broadband (whether on a standalone basis or as part of a bundle)?

\$0.01 to \$5.00:	18.5%
\$5.01 to \$10.00:	33.8%
\$10.01 to \$25.00:	33.8%
\$25.01 to \$50.00:	7.7%
More than \$50.00:	6.2%

Q: If you offer standalone broadband, what is your monthly charge for that?

<u>Mean</u>	<u>Median</u>
\$83	\$72

Q: If you do NOT offer standalone broadband, what do you estimate your standalone broadband rates would be if you offered it given the budget control?

<u>Mean</u>	<u>Median</u>
\$126	\$120

Q: How much do you believe your standalone broadband product would cost customers if the budget control did not apply?

<u>Mean</u>	<u>Median</u>
\$70	\$52

Q: Have you received any estimates from advisors regarding the magnitude of the budget controls in future periods (i.e., for periods AFTER the next 12 months?)

Yes – 31.4%
No – 68.6%

Q: If “Yes,” what are those estimates for 2018-2019 (stated as a % of USF support)?

<u>Mean</u>	<u>Median</u>
17%	12%

DISCLAIMER: Data from the survey has been presented as reported.

To get more information on this report please contact Rick Schadelbauer at NTCA (703-351-2019, rschadelbauer@ntca.org)