Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
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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. 16-245

To: The Commission

COMMENTS OFTHE
UTILITIES TECHNOLOGY COUNCIL

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SUMMARY

The Commission should consider updating its current speed benchmark for broadband, increasing it to 50 mpbs or higher. The Commission is also right to be considering non-speed benchmarks for latency and jitter, and it should also consider the impact of data caps on broadband availability. Lower latency (sub 100 ms) and jitter, and the elimination of data caps will promote broadband availability and adoption by improving the quality of broadband services. Finally, the Commission should continue to consider fixed and mobile broadband separately, considering they are distinct and provide fundamentally different and complementary services.

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The Utilities Technology Council (UTC) hereby submits its Comments in response to the Twelfth Broadband Progress Notice of Inquiry.[1] UTC urges the Commission to consider updating the current benchmark of 25/3 mbps, increasing it to 50 mbps or higher. UTC applauds the Commission for considering the adoption of non-speed benchmarks, as well. In that regard, UTC supports a benchmark for roundtrip latency that is less than 100 ms; requirements for service consistency (i.e. jitter); and the elimination of data caps in order to ensure that consumers are receiving services, as advertised. Finally, UTC believes that the Commission should continue to separate fixed from mobile broadband and measure them differently, recognizing that they are distinctly different and complementary services.

[1] *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. 16-245, Twelfth Broadband Progress Notice of Inquiry, FCC 16-100, rel. August 4, 2016 (the NOI or Notice of Inquiry).

I. Introduction and Background.

UTC is the international association for the telecommunications and information technology interests of electric, gas and water utilities, pipeline companies and other critical infrastructure industries.[2] Its members include large investor-owned utilities that may serve millions of customers across multi-state service territories, as well as smaller cooperatively-organized or municipal utilities that may serve only a few thousand customers in remote areas or isolated communities. These members all have extensive communications infrastructure and networks that they use in support of their core services. An increasing number of the members of UTC are providing broadband or considering doing so, and UTC created the Rural Broadband Council in 2012 to support this growing movement towards utility broadband. Today, there are many utilities who are offering robust, reliable and affordable broadband services in previously unserved areas across the country.

In its *2016 Broadband Progress Report*, the Commission found that "advanced telecommunications capability is not being deployed to all Americans in a reasonable and timely fashion."[3] In the Report, the Commission stated that "approximately ten percent of the population – nearly 34 million Americans – lacked access to fixed advanced telecommunications capability."[4] Of particular importance to many UTC members -- especially to the rural electric cooperative members of UTC who are deploying fiber-to-the-home broadband to their members -- is the persistent urban-rural divide. Thirty-nine percent (about 24 million) of Americans living in rural areas lack access to advanced telecommunications capability, as compared to four percent of Americans living in urban areas -- making Americans living in a rural area ten times

[2] www.utc.org

[3] *2016 Broadband Progress Report*, 31 FCC Rcd at 701, 750-51, ¶¶4, 120-24 (hereinafter "Report").

[4] *Id*. at 750, ¶120.

more likely to be denied access to 25 Mbps/3 Mbps broadband.[5] Lack of access to broadband also restricts consumers in these communities from access to jobs and higher wages. Furthermore, adoption of broadband is linked to economic growth.[6] Utilities are deploying broadband to stem population losses in rural areas and isolated communities by providing opportunities for economic growth for local businesses and younger residents, who have bitterly complained about the lack of robust, reliable and affordable broadband in rural America.[7]

Rural areas and isolated communities are sick of waiting for price cap carriers and cable companies to offer them robust, reliable and affordable broadband.[8] Despite generous subsidies in the form of decades of Universal Service Fund payments that price cap carriers have received, many areas of rural America still lack broadband access, including access to critical government services.[9] Consumers want access to broadband services that are reasonably comparable to the quality and price of broadband services that are available in urban areas, and utilities have filed testimonials from their customers who want and need access to robust, reliable and affordable

[5] *Id*. at 731-32, ¶79, Tbl. 1.

[6] *See* Bruce Whiteacre, Robert Gallardo, and Sharon Stover, *Does rural broadband impact jobs and income? Evidence from spatial and first-differenced regressions* (Nov. 2014) *visited at* http://link.springer.com/article/10.1007/s00168-014-0637-x (stating that "in non-metro counties [is] positively related to the number of firms and total employees in those counties.")

[7] *See also* Cecilia Kang, *How to Give Rural America Broadband? Look to the Early 1900s, visited at* http://www.nytimes.com/2016/08/08/technology/how-to-give-rural-america-broadband-look-to-the-early-1900s.html?_r=0 *See also* United States Department of Agriculture, *Rural America at a Glance, visited at* http://www.ers.usda.gov/media/1952235/eib145.pdf (reporting that, "[r]ural areas continue to experience population loss, higher poverty rates, and lower educational attainment than urban areas.")

[8] Tech Dirt, *AT&T's 'IP Transition' Will Make U.S. Broadband Even Less Competitive*, *visited at* https://www.techdirt.com/articles/20140303/04235226402/ats-ip-transition-will-make-us-broadband-even-less-competitive.shtml.

[9] "From Social Security to FAFSA, government services are transitioning to online access. Tax forms and services are being increasingly streamlined through online portals and tools, and with limited broadband speed, rural America may struggle to access these services." https://www.brookings.edu/blog/techtank/2016/07/18/rural-and-urban-america-divided-by-broadband-access/.

broadband services.[10] These testimonials reflect the reality that non-speed factors, such as data caps, latency and service consistency are also important to consumers. As such, UTC applauds the Commission for assessing non-speed factors as well as raw throughput as part of this installment of the Broadband Progress Report, and it is pleased to provide the perspective of utilities on the issue of broadband access.

II. Speed Benchmarks

Utilities are responding to pent up demand for broadband, and have participated in the Rural Broadband Experiment program, offering broadband services of 25/3 mbps.[11] They are proving both 1) that consumers in rural areas will adopt broadband, and 2) that it is possible to cost-effectively deploy fiber-to-the-home networks even in remote areas where customer density is low. Customer adoption of broadband services is relatively high, and utilities have reported take rates of 40-50% in some areas. This proves that consumers in these rural areas will adopt broadband, particularly where they have access to robust, reliable and affordable broadband services that are being provided by utilities. On that point, utilities have been able to cost-effectively deploy future-proof broadband networks in rural areas, such that they are providing gigabit services for less than $100/month in some cases. One of these utilities has gone cash-flow positive in their first three years of providing service. Another utility is now offering 10 Gbps service.[12]

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[10] *See e.g.* Comments of Midwest Energy Cooperative in WC Docket No. 10-90 (filed Aug. 8, 2014)(stating that "[r]ural Americans need the same access to quality and affordable broadband that our urban neighbors have" and "[w]e need broadband in small towns and rural areas. If we can get one, that is our only choice. Some can't even get one. It needs to be offered to everyone at a cheaper price and one that works all the time. We need it for education, business, everything in our lives."), visited at https://ecfsapi.fcc.gov/file/7521752379.pdf#viewer.action=download.

[11] Federal Communications Commission, *"FCC Launches Rural Broadband Expansion Experiments"*, Public Notice, visited at https://apps.fcc.gov/edocs_public/attachmatch/DOC-328170A1.pdf

[12] Tech Times, "The City of Chattanooga Now Offering 10 Gbps", *visited at* http://www.techtimes.com/articles/95911/20151018/the-city-of-chattanooga-is-now-offering-10-gbps-internet.htm. Other utilities that are offering gigabit services include: Co-Mo Connect offering 1Gbps for $99.95 per month,

Utilities are deploying future-proof technologies that are scalable to keep pace with increasing demands by cost-effectively upgrading electronics rather than completely changing out the network. UTC submits that it makes more sense to invest once at the front-end than to take an incremental approach to broadband deployment, which will require additional investments as demand exceeds capacity and technologies are rendered quickly obsolete. Utilities are finding that consumers are generally subscribing to broadband services of 50 mbps where utilities are offering broadband. Given that customer expectations and demand for higher speeds appears to already exceed the current FCC benchmark for broadband, and given that it makes economic sense to deploy networks that are scalable to keep pace with increasing consumer demands, UTC encourages the Commission to consider updating the definition of broadband to recognize these realities.

The Commission would be well advised to recognize that advanced telecommunications capabilities are not built for a snapshot in time that is already out of date by the time it is analyzed and communicated. Gamers, families with multiple connected devices while streaming high definition video and small businesses using data intensive applications are constantly pushing the boundaries of the broadband speed envelope. Today's 25 Mbps/3 Mbps will seem as inadequate tomorrow as does yesterday's 4 Mbps/ 1 Mbps now.[13] Considering the speed of technological progress, this benchmark will have to be adjusted in subsequent reports by the Commission, as more and more bandwidth-hungry appliances and applications come into general

visited at http://broadbandnow.com/Co-Mo-Connect; Douglas FastNet offering 1Gbps down service for 89.99 per month, visited at http://dfn.net/fiber-in-the-home; and Bolt Fiber offering 1 Gbps down service for $255.98, visited at http://boltfiber.com/plans-packages/.

[13] Marguerite Reardon, *Google's Fiber Effect: Fuel for a Broadband Explosion* http://www.cnet.com/news/googles-fiber-effect-fuel-for-a-broadband-explosion/

use and the Internet of Things becomes a fact of daily life.[14] On average there are seven connected devices per household today, which can include multiple high-quality HD video streams or a small business processing online transactions.[15]

III. Non-Speed Benchmarks

Besides speed, the Commission also seeks comment on non-speed performance measures, such as latency and consistency of service.[16] UTC believes that the current latency benchmark of 100 ms may also need to be updated in addition to the benchmark for speed. Speed may be a misleading indicator of the quality of service, if latency on the network is high. The quality of service for interactive applications may be poor if latency is high, even though the raw throughput of the network is relatively high. Networks that are not built for tomorrow's broadband needs will necessarily be susceptible to disruptions, high latency and poor consistency of service.

As noted above, UTC's electric cooperative and municipal utility members are deploying future-proof fiber-to-the-home networks that can be easily upgraded by exchanging the passive optical network electronics. These fiber networks offer low-latency communications, as well as low jitter. As noted above, bandwidth is important but without corresponding low latency and jitter rates, many time-sensitive applications will not work properly. Considering that almost all Americans (96%) living in urban areas have access to speeds of 50 Mbps/5 Mbps, the fact that a

[14] Consider also that a single Netflix ultra HD quality stream requires at least 25 mbps by itself and the current benchmark is dangerously close to being out-of-date and also highlight the need to impose a ban on letting broadband providers impose artificial data caps. https://help.netflix.com/en/node/306

[15] *Sandvine Report: North American Homes Average Seven Active Connected Devices*, *visited at* https://www.sandvine.com/pr/2016/8/24/sandvine-report-north-american-homes-average-seven-active-connected-devices.html (stating that "The average household now has over seven active devices in use each day, with 6% of households having more than 15 active devices").

[16] Notice of Inquiry at ¶¶9-10, 20-35.

mere 55% of Americans living in rural areas have the opportunity to subscribe to fixed broadband at that speed is in itself a clear indication that advanced telecommunications services are not deployed to all Americans in a reasonable and timely fashion.[17] On the topic of fixed broadband latency, UTC encourages the Commission to make stricter the current proposal for a benchmark of 100 ms for latency, and create a separate benchmark for jitter to ensure that sensitive applications like VoIP calls, videoconferences or online games work as intended.[18]

Why do latency and jitter matter? The Commission need look no farther than the importance of latency and jitter for voice services, particularly in the context of the IP-transition.[19] UTC submits that Americans deserve to receive the same quality of service for their voice calls over broadband networks as over the legacy public switched telecommunications network, whether they are in rural or urban areas. There is a very real danger that as price cap carriers transition to IP networks and discontinue services in rural areas either on a *de jure* or *de facto* basis that consumers in these areas will be left with voice services that do not meet quality of service requirements in terms of latency and jitter. In order to achieve this goal, the Commission should set minimum standards for latency and jitter to ensure that conversations are not disrupted by poor quality of service. In addition to voice, latency is also important for utility and other Machine-to-Machine (M2M) applications, which require latency well below 40 ms in

[17] *See* Notice of Inquiry at ¶16 (stating, "[w]hile 96 percent of Americans living in urban areas have access to fixed broadband services at speeds of 50 Mbps/5 Mbps, only 55 percent of Americans living in rural areas have access to such services. And although fixed services at speeds of 100 Mbps/10 Mbps are available to 74 percent of Americans living in urban areas, only 30 percent of Americans living in rural areas have access to such services.")

[18] *See* Notice of Inquiry at ¶32 (asking, whether "a round-trip latency benchmark of 100 ms or below [would] be necessary to ensure that consumers have high-quality access to interactive voice, data, graphics, and/or video applications, and whether a lower benchmark [would] be appropriate?") http://www.speedtest.net/articles/what-is-ping-what-is-latency/ and http://www.speedtest.net/articles/what-is-jitter/

[19] *Technology Transitions et al.*, GN Docket No. 13-5 et al., Report and Order, Order on Reconsideration, and Further Notice of Proposed, FCC 15-97 (rel. Aug. 7, 2015).

some cases.[20] In that regard, UTC supports the adoption of lower latency benchmarks that are necessary to support M2M applications in general and utility applications specifically.

In addition to latency, the Commission should also consider the imposition of data caps (i.e. usage allowances) by broadband providers when evaluating the current state of broadband. Utilities offering broadband do not impose data caps and don't have to because they are deploying fiber-based networks that are not bandwidth constrained. Moreover, utilities view data caps as running contrary to consumer freedom to use the Internet, and limiting the power of broadband to promote economic growth. Data caps discourage entrepreneurs and small businesses, and act as hidden charges on residential consumers.[21] As such, it would be appropriate for the Commission to recognize data caps as a barrier to broadband adoption, and recommend policies to eliminate them.

Contrary to Congressional intent, artificial data caps pose a barrier to the deployment of advanced telecommunications services to all Americans in a reasonable and timely fashion.[22] Flat rate pricing has led to consumer expectations against surcharges for exceeding data caps. Moreover, data caps discourage cord cutters from migrating to over-the-top online video platforms, which has the ancillary effect of reducing consumer adoption of broadband services.[23]

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[20] *See e.g.* RAD Communications, visited at http://www.rad.com/Media/33329_Teleprotection-over-Carrier-IP-App-Brief.pdf. (stating that "[t]eleprotection systems are critical for electric power utilities because they control their transmission grids. In this case, the electric company […] requires low jitter and latency (less than 10 ms one way, end-to-end).") *And see* TC Communications, visited at http://www.tccomm.com/Content/pdf/IndustrialEthernetSolutions/Teleprotection-Success-Stories.pdf (stating that "Tucson Electric Power utilizes a teleprotection solution that has typical readings of less than 3 msec.").

[21] Bill Snyder, CIO from IDG, "What big ISPs don't want you to know about data caps" (May 27, 2016) visited at http://www.cio.com/article/3075975/internet-service-providers/what-big-isps-dont-want-you-to-know-about-data-caps.html.

[22] 47 U.S.C. §706. *See also* Notice of Inquiry at ¶52 (inquiring about the impact of data caps on access to streaming video and inquiring whether there are other ways in which data allowances or other non-speed metrics may affect the availability of advanced telecommunications capability.)

Finally, data caps also affect consumers with multiple connected devices connected to the home's WiFi network, as well as home office applications and other applications that are not compatible with data caps. In these ways, data caps very much act as a barrier to the adoption of broadband.

UTC agrees with the Commission's assessment that fixed and mobile broadband are often used in conjunction and are not functional equivalents.[24] And the Commission is not alone in that determination. Recently, the California Public Utilities Commission argued that terrain variability in mobile network deployments, speed, capacity and price all clearly favored fixed broadband deployments.[25] Likewise, a study using firm-level panel data from three major telecommunications carriers concluded that "the estimated price elasticities of demand indicate that mobile broadband is a (week) [sic] substitute for fixed broadband while fixed broadband is complementary to mobile broadband.[26] Importantly, that same study notes that "the diffusion of fixed broadband boosts the demand for mobile broadband access," which further supports the goals of the Commission. Another study supports these same findings by concluding "that mobile broadband demand is stimulated by a high demand for fixed broadband services [and that] the majority of consumers does not view fixed broadband as a substitute for mobile broadband but rather complement their fixed broadband access with a mobile access.[27] As such,

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[23] Thomas Gryta and Shalini Ramachandran, Wall Street Journal, "Broadband Data Caps Pressure 'Cord Cutters'" (Apr. 21, 2016), visited at http://www.wsj.com/articles/broadband-data-caps-pressure-cord-cutters-1461257846.

[24] Notice of Inquiry at ¶37.

[25] Steven Blum, "Four good reasons to favor FTTH over wireless broadband, CPUC says" (June 2, 2016), visited at http://www.tellusventure.com/blog/four-good-reasons-to-favor-ftth-over-wireless-broadband-cpuc-says/.

[26] Jinsoo Bae, et al "Fixed and mobile broadband: Are they substitutes or complements?" (July 2014) visited at ftp://ftp.repec.org/opt/ReDIF/RePEc/yon/wpaper/2014rwp-68.pdf.

[27] *See* IEEE Xplore Digital Library, visited at http://ieeexplore.ieee.org/document/6480013/.

UTC agrees with the Commission that fixed broadband should be considered separately from mobile broadband, when assessing the current state of broadband deployment.

In this regard, UTC notes that utilities have increasing fixed and mobile broadband communications needs. While some utilities use commercial communications service providers to support some utility applications, generally utilities rely on their own private internal communications networks to meet their high standards to support mission critical communications requirements. UTC emphasizes the spectrum needs of utilities as well as commercial communications service providers in order to support the need for utilities to have reliable broadband communications to support their own private internal communications networks that ensure the safe, reliable and secure delivery of essential electric, gas and water services to the public at large. UTC also reminds the Commission that commercial communications systems rely on commercial power, and in this context, access to spectrum for utility private internal communications will also help to support commercial communications networks.

IV. Conclusion

For all the foregoing reasons, the Commission should adopt the above-referenced recommendations in order to ensure that that advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion.

Respectfully submitted,

By: **/s/**

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