

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

In the Matter of)	
)	
Connect America Fund)	WC Docket No. 10-90
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COMMENTS OF ADTRAN, INC.

ADTRAN, Inc. (“ADTRAN”) takes this opportunity to make some general observations with regard to the *Public Notice* seeking to update the record concerning the measurement and reporting of fixed broadband speed and latency performance by Connect America Fund (“CAF”) recipients.¹ ADTRAN believes that when broadband services are being subsidized under the CAF program, both the Commission and subscribers have a legitimate interest in ensuring that the subsidized services actually meet the minimum standards prescribed by the Commission. On the other hand, imposing burdensome and unnecessary monitoring and reporting requirements benefits no one, and diverts resources that could be much better spent facilitating even wider broadband deployment. The Commission should strike a balance to achieve effective but efficient monitoring and reporting obligations.

ADTRAN, founded in 1986 and headquartered in Huntsville, Alabama, is a leading global manufacturer of networking and communications equipment, with an innovative portfolio including solutions for use in the last-mile of today’s telecommunications networks.

ADTRAN’s last-mile equipment is deployed by some of the world’s largest service providers, as

¹ *Public Notice*, “Comment Sought On Performance Measures For Connect America High-Cost Universal Service Support Recipients,” WC Docket No. 10-90, DA 17-1085, released November 6, 2017 (hereafter cited as “*Public Notice*”).

well as distributed enterprises and small and medium businesses and schools. ADTRAN has been an active participant in the Measuring Broadband America program and the Connect America Fund proceedings, and has previously commented on the issue of defining and measuring broadband for purposes of the subsidy program.² Thus, ADTRAN is well-positioned to comment on the *Public Notice*.

As an initial matter, you cannot establish the particular parameters of compliance testing obligations to determine if the CAF requirements are being met without clarity on what those requirements are. In creating the various CAF subsidy programs, the Commission did specify minimum broadband speeds, as well as more general obligations with regard to latency, capacity and prices.³ And acting on delegated authority, the Wireline Competition Bureau (WCB), the Wireless Telecommunications Bureau (together, the Bureaus), and the Office of Engineering and Technology (OET) subsequently detailed how these latter three obligations could be demonstrated.⁴

But with respect to the specification of measurement details for the speed metrics, the Bureaus and OET issued a subsequent Public Notice seeking comment on some proposals,⁵ and

² E.g., Comments of ADTRAN in WC Docket No. 10-90, filed December 22, 2014; Comments of ADTRAN in WC Docket No. 10-90 *et. al.*, filed August 8, 2014; Comments of ADTRAN in WC Docket No. 10-90, filed March 28, 2013; Comments of ADTRAN in WC Docket No. 10-90 *et. al.*, filed January 18, 2012; Comments of ADTRAN in WC Docket No. 10-90 *et. al.*, filed April 18, 2011.

³ *Connect America Fund et al.*, WC Docket No. 10-90 *et al.*, Report and Order and Further Notice of Proposed Rulemaking, 26 FCC Rcd 17663 (2011) at ¶¶ 90-108.

⁴ See also *Connect America Fund*, Report and Order, WC Docket No. 10-90, Report and Order, 28 FCC Rcd 15060 (WCB 2013) .

⁵ *Wireline Competition Bureau, Wireless Telecommunications Bureau, and the Office of Engineering and Technology Seek Comment on Proposed Methodology for Connect America High-Cost Universal Service Support Recipients to Measure and Report Speed and Latency Performance to Fixed Locations*, Public Notice, 29 FCC Rcd 12623 (WCB 2014) (2014

the current *Public Notice* seeks to update the record in that proceeding in light of the time that has elapsed and advances in technology. While the Commission left the specifics of measurement to be specified subsequently by the Bureaus and OET, the decision adopting the broadband speed minimums seemingly indicates that the speed minimums must be provided to every customer location. However, the Commission's decision was somewhat vague, and the current and 2014 Public Notices seeking comment on the measurement details imply that some lesser standard might apply.⁶

In the order adopting the speed metrics, the Commission in a footnote observed that “[r]equiring 4 Mbps/1 Mbps to be provided to all locations, including the more distant locations on a landline network and regardless of the served location’s position in a wireless network, implies that customers located closer to the wireline switch or wireless tower will be capable of receiving service in excess of this minimum standard.”⁷ And the Commission in that decision also indicated that “[t]o ensure that consumers are getting the full benefit of broadband, we require funding recipients to provide broadband that meets performance metrics for actual

Broadband Measurement and Reporting Public Notice).

⁶ E.g., Public Notice at ¶ 7 (proposes to require that “95 percent of the observations to be at or above the specified minimum speed”); *Wireline Competition Bureau, Wireless Telecommunications Bureau, and the Office of Engineering and Technology Seek Comment on Proposed Methodology for Connect America High-Cost Universal Service Support Recipients to Measure and Report Speed and Latency Performance to Fixed Locations*, Public Notice, 29 FCC Rcd 12623 (WCB 2014) at ¶ 12:

We seek to augment the record received in response to the 2011 USF/ICC Transformation Order FNPRM based on the considerations outlined above. Specifically, parties such as AT&T and Alaska Communications Systems argued that the testing mechanism should not require measuring service at all end-user locations. A testing mechanism for speed similar to that adopted for latency would only require testing at a certain number of locations.

⁷ *Connect America Fund et al.*, WC Docket No. 10-90 et al., Report and Order and Further Notice of Proposed Rulemaking, 26 FCC Rcd 17663 (2011) at n. 143.

speeds, measured as described below, rather than ‘advertised’ or ‘up to’ metrics.’”⁸ ADTRAN thus believes that the methodology for measuring broadband services’ performance should be designed to provide confidence that every CAF-subsidized customer location will actually experience performance at least as good as the maximum latency and minimum speeds specified by the Commission as the best reading of the performance metrics.

In order for the Commission to avoid the need to mandate measurements to every customer location, however, designing the testing program to allow sampling to demonstrate compliance with the requirement that the CAF recipients provide the minimum speed and maximum latency to every subsidized location does mean that the Commission should take into consideration the technology or technologies that the Internet service provider will be utilizing. For example, DSL and wireless technology performance varies based on the distance of the copper loop for DSL or the distance from the tower for the wireless service. In addition, where the technology uses shared capacity for the last mile – such as most wireless technologies -- the performance any one individual experiences will be dependent on whether others served by that same tower are also concurrently using that service. Thus, measuring performance that does not appropriately weight peak period usage would not provide an accurate assessment of “actual” performance.

ADTRAN also observes that an ISP could be using a mix of technologies that exhibit different performance characteristics. All of these variables can affect the speed or latency that a particular customer will enjoy. ADTRAN believes the measurement specifications should be

⁸ *Ibid.* at ¶ 92. *See also*, ¶ 104, where in addressing the issue of what qualifies as an unsubsidized competitor meeting the speed minimums so as to preclude eligibility for support, the Commission indicated that “[a] wireless provider that currently offers mobile service can become an ‘unsubsidized competitor,’ however, by offering a fixed wireless service that guarantees speed, capacity, and latency minimums will be met at all locations within the relevant area.”

technology neutral – whereby every customer is enjoying at least the Commission-specified performance minimums -- regardless of technology.

Even with the requirement that an ISP meet the performance metrics for each customer, ADTRAN recognizes that it is not efficient or necessary to conduct the speed and latency testing to each and every customer location at all times. Testing on a statistically significant sample size should suffice to demonstrate compliance. On the other hand, the testing methodology specified by the Commission needs to account for the variability that could occur, depending on the technologies deployed by the ISPs. The Commission’s testing methodology specified for latency does this, to some extent, by ensuring that measurements are taken during peak periods, since concurrent usage by others will affect the latency a customer experiences. Under the specified latency measurement program, the ISP must demonstrate that results below the maximum latency are observed for 95% of the measurements during the peak period. Similar requirements should be established for speed metrics to ensure that network congestion is reflected in the sampled speed measurements.

Measurement parameters for the speed metrics should similarly also ensure that the “worst case” deployments are captured in any sampling of customer locations using technologies where distance affects performance. Thus, a sample group that only includes customer locations for DSL or wireless customers within a short distance from the switch or tower would not be an accurate demonstration that all of the ISP’s subsidized customer locations are getting the minimum speeds specified by the Commission. In order to provide a true assessment of compliance, the sampling technique must therefore include representative measurements taken at some of the customer locations farthest from the switch or tower.

Likewise, if an ISP deploys a mix of different technologies, a failure to include a

representative sampling of each of the different technologies could result in the masking of inadequate service. As an example, an incumbent ISP under CAF Phase II providing service to most of its customers using fiber-to-the-curb, but using GEO satellite service to reach its most remote customers, could “pass” the latency test if five percent or fewer of the sampled customers were served by satellite, despite the fact that none of that ISP’s satellite-served customers were receiving service that meets the Commission’s requirements. Thus, the Commission must ensure that where an ISP uses different technologies, a statistically significant number of locations for each of those technologies are included in the compliance testing.

Finally, ADTRAN urges the Commission not to mandate the equipment used for measuring broadband performance. The CAF support recipients should have the latitude to use any number of options including, for example, residential gateways (RGs) implementing measurement agents as defined in IETF RFC 7594 (A Framework for Large-Scale Measurement of Broadband Performance).⁹ A separate test device connected to the RG is also feasible, so long as it contains a means of detecting customer activity (*e.g.*, via all customer traffic traversing the test device, or via a control signal from the RG) as well as a feature that postpones testing if customer traffic is detected.

In sum, ADTRAN urges the Commission to adopt a measurement program that produces accurate results without being overly burdensome by recognizing that different broadband technologies have different performance characteristics, but what matters most is the customers’ actual experiences. Such a measurement program will provide the Commission with confidence

⁹ See, <https://datatracker.ietf.org/doc/rfc7594/>.

that the CAF subsidies are producing broadband service that meets the specified metrics, and thus best serve the public interest.

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Respectfully submitted,
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Dated: December 6, 2017