

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

In the Matter of)	
)	
Inquiry Concerning Deployment of Advanced)	GN Docket No. 18-238
Telecommunications Capability to All Americans)	
in a Reasonable and Timely Fashion)	

FOURTEENTH BROADBAND DEPLOYMENT REPORT NOTICE OF INQUIRY

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I. INTRODUCTION

1. Section 706 of the Telecommunications Act of 1996, as amended (1996 Act), requires us to determine and report annually on “whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion.”¹ Accelerating deployment of such capability by removing barriers to infrastructure investment and by promoting competition in the telecommunications

¹ 47 U.S.C. § 1302(b). For simplicity in past inquiries, the Commission has sometimes used the term “broadband” to refer to “advanced telecommunications capability.” However, “advanced telecommunications capability” is a statutory term with a definition that is narrower than the term “broadband.” See 47 U.S.C. § 1302(d)(1) (“The term ‘advanced telecommunications capability’ is defined, without regard to any transmission media or technology, as high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology.”). As this definition makes clear, while all services providing advanced telecommunications capability are “broadband,” not all broadband services provide advanced telecommunications capability.

marketplace enables providers to extend the reach of their networks to provide all Americans with access to numerous employment, education, entertainment, and health care opportunities.

2. With this Notice of Inquiry (*Inquiry*), we initiate the next annual assessment of the “availability of advanced telecommunications capability to all Americans in a reasonable and timely fashion,” and solicit comment and information to help guide our analysis.² We encourage individual consumers, broadband providers, consumer advocates, policy institutes, governmental entities, and other interested parties to provide comment as we complete this statutorily mandated task. The information we gather in this proceeding will help ensure that our broadband policies are well-informed and backed by sound data analysis as we strive to close the digital divide and encourage the deployment of advanced telecommunications capability to all Americans in a reasonable and timely fashion.

II. BACKGROUND

3. The Commission released the *2018 Broadband Deployment Report (2018 Report)* on February 2, 2018, finding that advanced telecommunications capability was being deployed to all Americans in a reasonable and timely fashion.³ Since the Commission’s negative finding in the *2016 Report*,⁴ the Commission acted aggressively to facilitate broadband deployment by reducing regulatory barriers to the deployment of wireline and wireless infrastructure and taking a number of other measures to improve the regulatory environment and incent deployment.⁵ Thus, in the *2018 Report*, the Commission concluded that its policy efforts “are now encouraging the deployment on a reasonable and timely basis of advanced telecommunications capability.”⁶ Consistent with the statutory text, the Commission refocused its analysis in the *2018 Report* on the progress made year-over-year in the deployment of fixed and mobile services.⁷

4. Although the *2018 Report* concluded that advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion, the Commission also found that too many Americans remain unable to access high-speed broadband and that, absent universal deployment, we must continue our efforts to close the digital divide.⁸ As the *2018 Report* stated, “[s]ection 706(a) mandates that we promote the deployment of advanced telecommunications capability in general, and we believe that continued forward progress toward universal deployment is imperative if all Americans are to enjoy the full promise of our economy,”⁹ including those in rural areas, on Tribal lands and in schools and classrooms.¹⁰ Thus, the *2018 Report* reasoned, a finding that deployment of advanced

² 47 U.S.C. § 1302(b).

³ *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, GN Docket No. 17-199, *2018 Broadband Deployment Report*, 33 FCC Rcd 1660, 1662, 1708, paras. 6, 94 (2018) (*2018 Report*).

⁴ *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*, 31 FCC Rcd 699, 701, para. 2 (2016) (*2016 Report*).

⁵ *2018 Report*, 33 FCC Rcd at 1708, para. 96.

⁶ *Id.* at 1708, para. 95.

⁷ *Id.* at 1663-64, paras. 10-13.

⁸ *Id.* at 1662, 1708, 1709, paras. 6, 94, 98.

⁹ *Id.* at 1664, para. 13 (internal citation omitted).

¹⁰ *Id.* at 1662, para. 6.

telecommunications capability is reasonable and timely does not suggest that we should lessen our efforts to enable further gains in deployment.¹¹

5. *RAY BAUM'S ACT of 2018*. On March 23, 2018, the President signed into law the Consolidated Appropriations Act of 2018, which included the Repack Airwaves Yielding Better Access for Users of Modern Services Act of 2018 (RAY BAUM'S Act of 2018).¹² Title IV of RAY BAUM'S Act of 2018 amends section 13 of the Communications Act of 1934, and requires the Commission, "in the last quarter of every even numbered year" to publish a "Communications Marketplace Report," that, among other things, "assess[es] the state of deployment of communications capabilities, including advanced telecommunications capability (as defined in section 706 of the Telecommunications Act of 1996 (47 U.S.C. [section]1302)), regardless of the technology used for such deployment."¹³ While section 402 of the RAY BAUM'S Act of 2018 makes several conforming edits to the Communications Act and other communications-related statutes, it does not amend section 706 of the 1996 Act.¹⁴ Therefore, the Commission's charge to "annually . . . initiate a notice of inquiry concerning the availability of advanced telecommunications capability to all Americans,"¹⁵ is unchanged except that in even numbered years, the Broadband Deployment Report will be included as part of the Communications Marketplace Report.

III. STATUTORY FRAMEWORK FOR BROADBAND DEPLOYMENT INQUIRY

A. Evaluating Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion

1. Progress in Deployment

6. The *2018 Report* reviewed whether advanced telecommunications capability was being deployed to all Americans in a reasonable and timely fashion by evaluating progress—specifically, comparing deployment of fixed and mobile services as of December 31, 2016, to deployment for those services since 2012.¹⁶ The Commission reasoned that the expression "is being deployed," as well as the language requiring an evaluation of whether the deployment is "reasonable and timely" indicated that Congress intended the Commission to evaluate the current state of deployment to all Americans and did not require each and every American be served at that moment.¹⁷ We propose to use this progress-based approach for this next Broadband Deployment Report and seek comment on doing so.

7. The *2018 Report* employed a holistic approach by evaluating a variety of broadband services. The Commission examined five years of data on fixed terrestrial services meeting the 25 Mbps/3 Mbps speed benchmark and mobile LTE services with a minimum advertised speed of 5 Mbps/1 Mbps, and three years of data on actual speed test data for mobile LTE services with a median speed of

¹¹ *Id.* at 1664, para. 13.

¹² Consolidated Appropriations Act, 2018, Pub. L. No. 115-141, Div. P-RAY BAUM'S Act of 2018, §§ 401-404, 132 Stat. 348, 1087-90 (2018) (RAY BAUM'S Act of 2018).

¹³ 47 U.S.C. § 163 (a), (b)(2).

¹⁴ RAY BAUM'S Act of 2018 § 402, 132 Stat. at 1089-90. Section 402 of the RAY BAUM'S Act of 2018 did, however, amend language affecting the International Broadband Data Report, required by section 103(b)(1) of the Broadband Data Improvement Act (BDIA). *See* RAY BAUM'S Act of 2018 § 402(c), 132 Stat. at 1089; 47 U.S.C. § 163; 47 U.S.C. § 1303(b)(1). Section 402 removed the obligation to include the International Broadband Data Report as part of the annual section 706 assessment, but instead requires that that Report will be part of the Communications Marketplace Report, which is now due in the last quarter of every even numbered year. The Act does not amend the statutory requirements regarding the content of the International Broadband Data Report.

¹⁵ 47 U.S.C. § 1302(b).

¹⁶ *2018 Report*, 33 FCC Rcd at 1663, para. 10. We continue to believe that "any analysis that did not include both [fixed and mobile] services would be incomplete and flawed." *Id.* at 1666, para. 17.

¹⁷ *Id.* at 1663, para. 11.

10 Mbps/3 Mbps.¹⁸ We propose to conduct an evaluation of fixed and mobile services using the same four categories for evaluation that were presented in the *2018 Report*: (1) fixed services only; (2) mobile LTE services only; (3) fixed *and* mobile LTE services; and (4) fixed *or* mobile LTE services. We also propose to rely again on a 5-year time period (2013-2017) in our analysis.¹⁹ We seek comment on these proposals. The *2018 Report* presented deployment figures for three speed tiers for fixed services, specifically our 25 Mbps/3 Mbps speed benchmark, 10 Mbps/1 Mbps, and 50 Mbps/5 Mbps; and for two speed tiers for mobile LTE, specifically 5 Mbps/1 Mbps and 10 Mbps/3 Mbps. We seek comment on whether our upcoming report should report on any additional speed tiers and, if so, which speed tiers. Considering our decision to use the Broadband Deployment Report to fulfill the Commission's broadband deployment reporting responsibility required in the RAY BAUM'S ACT of 2018,²⁰ would it be sufficient in the RAY BAUM'S ACT report to examine the same speeds as in the *2018 Report* or would we need to report on additional speeds? If additional speeds are required, what speeds should be reported?

2. Defining Advanced Telecommunications Capability

8. The *2018 Report* found that the current speed benchmark of 25 Mbps/3 Mbps was the appropriate measure to assess whether fixed services provides advanced telecommunications capability.²¹ The Commission concluded that fixed services meeting this speed benchmark satisfy the statutory requirement to "enable[] users to originate and receive high-quality voice, data, graphics and video telecommunications."²² We propose to maintain the 25 Mbps/3 Mbps benchmark, and we seek comment on this proposal.

9. The *2018 Report* found that, in the mobile environment, adoption of a single speed benchmark was unworkable given the inherent variability of the mobile experience,²³ combined with data limitations and methodological issues.²⁴ The Commission presented, as a starting point, LTE coverage data based on the Form 477 minimum advertised speeds of 5 Mbps/1 Mbps.²⁵ The *2018 Report* noted, however, that 5 Mbps/1 Mbps was not a mobile advanced telecommunications capability benchmark.²⁶ Because these Form 477 data can only provide an understanding of the minimum speeds that consumers can expect to receive, the Commission supplemented the analysis with Ookla's actual speed test data at a median speed of 10 Mbps/3 Mbps or higher.²⁷ The Commission found that the Form 477 data, when supplemented with Ookla data, showed that in those geographical areas where most consumers live,

¹⁸ *Id.* at 1680-86, paras. 49-56. Actual speed test data for mobile LTE services were only available since 2014.

¹⁹ The Commission's holistic approach in the *2018 Report* considered improvements to deployment over time; however, the data for 2012 and 2013 are not directly comparable to the data collected by the Commission since 2014. *Id.* at 1678, paras. 45-46. *See infra*, Section IV (discussing the data sources for fixed and mobile services).

²⁰ 47 U.S.C. § 163(b)(2).

²¹ *2018 Report*, 33 FCC Rcd at 1667-68, para. 21.

²² *Id.* at 1667-68, para. 21.

²³ *Id.* at 1670, 1673-74, paras. 27, 34. The Commission noted that network speed is one of the key characteristics of mobile wireless performance, and mobile broadband speeds experienced by consumers may vary greatly with a number of factors, including the service provider's received signal quality, cell traffic loading, and network capacity in different locations. In addition, mobile broadband speeds can vary with the capability of consumers' devices. *Id.* at 1672, para. 30.

²⁴ *Id.* at 1673-74, para. 34.

²⁵ *Id.* at 1670-71, para. 27.

²⁶ *Id.* at 1673, para. 32.

²⁷ *Id.* at 1670-71, 1672-74, paras. 27, 31-34.

speeds appear to be well above 5 Mbps/1 Mbps, with a median of 10 Mbps/3 Mbps or higher.²⁸ The *2018 Report* further recognized that more consumers are receiving these higher speeds and minimum speeds will likely increase over time as network configurations, technology, and consumer demands evolve.²⁹ We seek comment on whether to take a similar approach when evaluating mobile speed data in the next report.

10. We also seek comment on a methodology the Commission could use to update the benchmarks. The Commission has in the past sought public input on finding “a consistent, objective framework using predictable, reliable, and regularly-released public data” to establish an objective benchmark.³⁰ In the *2018 Report* however, the Commission noted the challenge of arriving at a updating methodology given the lack of granularity in mobile data.³¹ We seek comment on whether this is still the case.

11. We also seek comment on whether and to what extent fixed and mobile services of similar functionality are substitutes for each other. The *2018 Report* found that mobile services are not “currently full substitutes for fixed service,” but both fixed and mobile service “clearly provide[] capabilities that satisfy the statutory definition of advanced telecommunications capability, and are important services that provide different functionalities, tailored to serve different consumer needs.”³² However, we seek comment on whether since the *2018 Report* there have been developments that would support a different conclusion about substitutability. We recognize that network speed is often one distinguishing characteristic between mobile and fixed networks but to the extent that mobile services are able to offer equivalent functionality as fixed services either now or in the future, we seek comment on whether or not and in what circumstances, if any, mobile and fixed services should be considered substitutes. We also seek comment on whether or not we should consider other non-fixed technologies as possible substitutes for fixed service.

B. Schools and Classrooms

12. Section 706 also requires an evaluation of the availability of advanced telecommunications capability in elementary and secondary schools and classrooms.³³ In the *2018 Report*, the Commission continued to measure the availability of advanced telecommunications capability in schools and classrooms by using the Commission’s short term goal of 100 Mbps per 1,000 students and staff and the long-term goal of 1 Gbps per 1,000 students and staff.³⁴ We propose to use these goals for the upcoming report and seek comment on doing so.

C. Tribal Lands

13. The Commission has long recognized the need to promote and encourage access to broadband on Tribal lands.³⁵ The *2018 Report* showed deployment of advances telecommunications

²⁸ *Id.* at 1673-74, para. 34.

²⁹ *Id.*

³⁰ *Id.*

³¹ *Id.*

³² *Id.* at 1666-67, para. 18.

³³ 47 U.S.C. § 1302(b).

³⁴ *2018 Report*, 33 FCC Rcd at 1697, para.70. The Commission adopted these goals in 2014. See *Modernizing the E-rate Program for Schools and Libraries*, WC Docket No. 13-184, Report and Order and Further Notice of Proposed Rulemaking, 29 FCC Rcd 8870, 8885, para. 34 (2014).

³⁵ RAY BAUM’S Act of 2017 requires the Commission to evaluate and report on broadband coverage on Tribal lands in advance of conducting a proceeding to address unserved Tribal areas. RAY BAUM’S Act of 2018, § 508.

capability on Tribal lands lags deployment in other geographic areas.³⁶ Tribal lands are often rural, high-cost areas, presenting significant obstacles to broadband deployment as the remote and often insular nature of Tribal lands increases the cost of entry and reduces the profitability of providing service.³⁷ Additional challenges include the lack of infrastructure, a predominance of low-income residential customers rather than business subscribers, jurisdictional issues involving States and sovereign Tribal Governments, the complexity of obtaining access on Tribal lands, and cultural and language barriers.³⁸

14. The Universal Service Fund (USF) helps achieve the Commission's goal of increasing the availability of fixed and mobile broadband services on Tribal lands.³⁹ In establishing or revising rules governing USF programs, the Commission relies on a combination of deployment measures, both percentage of population served and percentage of geography served, to determine if fixed and mobile service is being deployed in a timely manner.⁴⁰ Are these measures appropriate when considering deployment on Tribal Lands for this proceeding? In addition to the higher costs of provisioning services on Tribal Lands, are there other considerations, such as rights-of-way or interconnection, preventing deployment that would otherwise occur? Are there additional ways the Commission should be tracking the deployment of advanced telecommunications capability on Tribal Lands?

D. Disaster Affected Areas

15. The Commission normally measures broadband deployment progress under the assumption that existing infrastructure will be built upon and expanded. However, natural disasters can dramatically reduce levels of broadband deployment in affected areas. For example, the government of Puerto Rico estimates that in 2017 Hurricanes Irma and Maria caused approximately \$1.5 billion of damage to Puerto Rico's communications network.⁴¹ We seek comment on how to address natural disasters in reporting on the progress of deploying broadband. How should our inquiry take into account efforts by the Commission and other parties to restore networks in the wake of a natural disaster? Are there other particular factors we should take into consideration in natural disaster-affected areas when evaluating deployment progress, such as the recognition that funding will largely support operations rather than deployment soon after the disaster? How should we take into consideration such things as storm hardening when conducting our inquiry?

IV. DATA SOURCES AND ANALYSIS

16. *Deployment Data for Fixed Services.* The 2018 Report found that our Form 477 deployment data for fixed technologies are the most reliable and comprehensive data to assess the availability of fixed services to Americans.⁴² Given that the Form 477 data report service at the census block level, and a whole census block is classified as served if the Form 477 data indicate that service is

³⁶ 2018 Report, 33 FCC Rcd at 1681-86, paras. 50-57.

³⁷ *Connect America Fund et al.*, Report and Order and Further Notice of Proposed Rulemaking, 26 FCC Rcd 17663, 17818-19, para. 479 (2011) (*USF/ICC Transformation Order*), *aff'd sub nom, In re: FCC 11-161*, 753 F.3d 1015 (10th Cir. 2014); *see also Connect America Fund et al.*, Report and Order, Order and Order on Reconsideration, and Further Notice of Proposed Rulemaking, 31 FCC Rcd 3087 (2016) (*Rate-of-Return Reform Order*).

³⁸ *USF/ICC Transformation Order*, 26 FCC Rcd at 17820, para. 482; *Connect America Fund*, Report and Order, FCC 18-37, para. 2 (2018) (*Rate-of-Return Tribal Funding Order*).

³⁹ *USF/ICC Transformation Order*, 26 FCC Rcd. at 17668-69, paras. 1-5.

⁴⁰ *See Connect America Fund et al.*, Report and Order, Further Notice of Proposed Rulemaking, 31 FCC Rcd. 5949, 5964, para. 40 (2016) (*CAF II Auction Order*) (requiring carriers receiving support to meet clear and specific deployment obligations over the term of support: 40% of supported locations must be deployed by the end of the third funding year, with an additional 20% of locations in the subsequent years).

⁴¹ Letter from Sandra E. Torres López, Chairwoman, Puerto Rico Telecommunications Regulatory Board, to Ajit Pai, Chairman, FCC, WC Docket No. 10-90, at 1 (filed Dec. 13, 2017) (PRTRB Letter).

⁴² *Id.* at 1678, para. 45. *See also 2016 Report*, 31 FCC Rcd at 730, para. 75.

being provided anywhere in a given block, the *2018 Report* acknowledged that our FCC Form 477 deployment data for fixed services may overstate the deployment of services throughout an area.⁴³ We propose to use the Form 477 data for deployment data in 2014 and later, and, as the Commission did in the *2018 Report*, rely on State Broadband Initiative (SBI) data for deployment data prior to 2014.⁴⁴ We seek comment on this proposal.

17. We propose to present deployment estimates for satellite broadband as we did in the *2018 Report*. Based upon June 2017 FCC Form 477 data, fixed terrestrial broadband with speeds of at least 25 Mbps/3 Mbps has been deployed to approximately 93 percent of all Americans, including approximately 98 percent of Americans in urban areas and 70 percent of Americans in rural areas.⁴⁵ The *2018 Report* provided deployment estimates for fixed terrestrial services in the report's tables and provided deployment estimates for all fixed services, including satellite, in the text immediately following the tables.⁴⁶ We seek comment on this treatment of satellite service, including how the Commission should take into account any possible limitations, such as satellite capacity, in the geographic scope of reported satellite coverage.

18. *Deployment Data for Mobile Services.* The Commission based its analysis of mobile broadband services in the *2018 Report* upon multiple data sources. The *2018 Report* reported deployment estimates based upon SBI data for 2012 and 2013, and Form 477 deployment data for 2014 through 2016.⁴⁷ In the context of mobile services, the SBI data differ from the FCC Form 477 data in that: (1) the SBI data were collected by predetermined speed tiers that do not match up with the current FCC Form 477 deployment data collection; (2) the SBI data do not specify the type of mobile technology while the Form 477 data are collected by technology and spectrum band; and (3) the SBI data for mobile services are for a *maximum* advertised speed whereas the current FCC Form 477 deployment data for mobile services are for a *minimum* advertised speed.⁴⁸ For 2014 through 2016, the *2018 Report* presented results from two sets of estimates. First, the report analyzed FCC Form 477 mobile LTE deployment data with a minimum advertised speed of 5 Mbps/1 Mbps using the centroid methodology as has previously been done by the

⁴³ *2018 Report*, 33 FCC Rcd at 1677, para. 43 & n.128. See, e.g., *2016 Report*, 31 FCC Rcd at 730, para. 75, & n.234; *Modernizing the FCC Form 477 Data Program*, WC Docket No. 11-10, Report and Order, 28 FCC Rcd 9887, 9904, para. 35 (*Modernizing FCC Form 477 Data*) (reporting fixed broadband deployment by census block appropriately balances the burdens of reporting this information to the Commission with the level of granularity required to carry out our statutory duties). On August 3, 2017, the Commission adopted a Further Notice of Proposed Rulemaking seeking comment on ways to improve the quality and accuracy of deployment data for fixed services collected on Form 477, including ways to assess more accurately providers' ability to provision services to consumers in a census block. See *Modernizing the FCC Form 477 Data Program*, WC Docket No. 11-10, Further Notice of Proposed Rulemaking, 32 FCC Rcd 6329, 6339-40, paras. 33-34, (2017) (*Modernizing FCC Form 477 Data Further Notice*). This proceeding has not yet completed and modifications to the FCC Form 477 Data collection will require review by the Office of Management and Budget. Thus, any modifications to the FCC's Form 477 data collection adopted in that proceeding will not be completed in time for this year's inquiry.

⁴⁴ Prior to the Commission's revision of the Form 477 data collection, SBI data were the most comprehensive and geographically granular deployment data publicly available. *2018 Report*, 33 FCC Rcd at 1677, para. 43.

⁴⁵ Staff analysis of FCC Form 477 Data, as of June 30, 2017, and FCC population estimates, as of June 30, 2017. These estimates may overstate or understate the estimate of Americans with access to fixed advanced telecommunications services. See Federal Communications Commission, Staff Block Estimates, <https://www.fcc.gov/reports-research/data/staff-block-estimates>.

⁴⁶ See *2018 Report*, 33 FCC Rcd at 1681, 1683-85, paras. 50-51, 53-56, n.148.

⁴⁷ *Id.* at 1678-79, para. 46.

⁴⁸ *Id.* at 1678-79, para. 46. SBI data are not available for 5 Mbps/1 Mbps, so the *2018 Report's* analysis of the 2012 and 2013 data used maximum advertised speeds of 6 Mbps/768 kbps, which are the most comparable speeds reported. *Id.*

Commission.⁴⁹ Similar to the analysis of fixed services, the *2018 Report* considered a given census block to be covered if there was at least one service provider serving that census block that reported 5 Mbps/1 Mbps as the minimum advertised speed based on their submitted Form 477 data.⁵⁰ Second, the *2018 Report* supplemented this analysis by analyzing Ookla speed test data,⁵¹ primarily because Ookla data provided the greatest number of observations of actual speeds that customers receive.⁵² The *2018 Report*'s analysis of Ookla data considered only those counties with a sufficient number of Ookla speed test observations in each time frame covered by the 2018 Report.⁵³ Although the Commission did not have reliable on-the-ground speed data for every county in the United States, the available data covered well over 90 percent of the population of the United States.⁵⁴ We propose to use the same methodologies used in the *2018 Report* for the next Broadband Deployment Report and seek comment on this proposal. We also seek comment on whether there are improvements to these methodologies that we should make.

19. *Calculation of Americans with Access to Advanced Telecommunications Services.* The *2018 Report*'s analysis began with determining whether there is at least one provider of services in each census block with the capability to provide advanced telecommunications services.⁵⁵ The *2018 Report* used FCC staff population estimates to calculate the number of Americans with access to fixed advanced telecommunications capability by summing the population of all of the census blocks with at least one provider of services, whether the calculation is considering fixed terrestrial services, all fixed services, mobile LTE services, a combination of fixed and mobile LTE services, or a combination of fixed or mobile LTE services.⁵⁶ We propose to use this methodology for the upcoming report and seek comment on this proposal.

⁴⁹ *Id.* at 1678-79, para. 46.

⁵⁰ *Id.*

⁵¹ The data collected by the Ookla Speedtest mobile app include test results for download speed, upload speed, and latency, as well as other information, such as the location of the test and operating system of the handset. The results presented in the *2018 Report* were based on tests that were executed in the second half of 2014, second half of 2015, and second half of 2016, on the smartphone's cellular connection, and using LTE technology. The *2018 Report* dropped any test with a reported download or upload speed equal to or less than zero, or greater than 100 Mbps. It also dropped any test without GPS location data. The report used the median speed for any phone when multiple tests were performed on the phone in the same locality and in the same day. *2018 Report*, 33 FCC Rcd at 1679-80, para. 47.

⁵² *Id.* at 1679-80, para. 47.

⁵³ The *2018 Report* considered a county to have a sufficient sample size if there were at least 300 total observations after cleaning the data as described above. Any county with less than 300 observations during the second half of 2014, the second half of 2015 or the second half of 2016 were excluded. The Commission viewed the 300 observation requirement as a conservative estimate, and it was based on a general mean and median sample size analysis. *Id.* at 1679-80, para. 47, n.142. The Commission's process permitted it to evaluate actual median upload and download speeds at the county level, in each year of the three-year time period, for counties in which approximately 93 percent of the U.S. population live (not including the U.S. Territories). If a census block had LTE coverage of at least 5 Mbps/1 Mbps based on the Form 477 minimum advertised speeds, the Commission assigned the median upload and download speeds that were calculated for the county in which it was located. This allowed the Commission to evaluate the mobile broadband speeds for each census block within the United States. *Id.* at 1679-80, para. 47.

⁵⁴ *Id.* at 1679-80, para. 47.

⁵⁵ See, e.g., *id.* at 1677, para. 43; *Thirteenth Section 706 Report Notice of Inquiry*, 32 FCC Rcd at 7041, para. 41.

⁵⁶ The census block population estimates are based upon the 2010 U.S. Census Data that the Commission staff has updated to account for population growth. Staff have updated the 2010 census block population estimates based upon annual U.S. Census mid-year county (or county-equivalent) level population and housing unit estimates for the fifty states, the District of Columbia, and Puerto Rico. Staff use these data in conjunction with U.S. Census Bureau Tiger data to indicate new roads, i.e., new housing development, to distribute population amongst the census blocks

20. *Deployment Data for Schools.* To evaluate developments in the deployment of advanced telecommunications capability to America's elementary and secondary public schools, the *2018 Report* relied upon publicly available data from EducationSuperHighway's *2017 State of the States Report* and the Consortium for School Networking (CoSN) *2017 Annual Infrastructure Survey Report*.⁵⁷ We propose to rely on these sources for the next report and seek comment on this proposal.

21. *Deployment Data for Tribal Lands.* The *2018 Report* found that 64.6 percent of Americans residing on Tribal lands lack access to fixed terrestrial 25 Mbps/3 Mbps services.⁵⁸ The *2018 Report*'s deployment figures for Tribal lands examined deployment in the census blocks that have been identified as federally recognized Tribal lands for the 2010 Census.⁵⁹ We seek comment on whether there are other sources of information that we could use to examine deployment on Tribal lands. Furthermore, for purposes of presentation of the data, our analysis of federally recognized Tribal lands groups these areas into four groups.⁶⁰ We seek comment on whether we should summarize the deployment data on a more disaggregated basis, and whether there are other more informative categories that could be used to present this data.

22. *Disaster Affected Areas.* The *2018 Report*'s deployment figures for the United States as a whole excluded data from the U.S. Territories, because the 2016 data did not account for damage to infrastructure caused by hurricanes in 2017 and thus may have significantly overstated current deployment in Puerto Rico and the U.S. Virgin Islands. We seek comment on whether we should exclude in our next report the U.S. Territories from our deployment figures for the U.S. as a whole and only report data from the territories separately as was done in the last report. If we include the U.S. Territories in our deployment estimates, we seek comment on how we should account for the prolonged and extensive damage to the communications infrastructure and electrical grid in Puerto Rico and the U.S. Virgin Islands in reporting deployment figures in the next report. Are there other areas of the country affected by disasters in 2017 where there was extensive damage to the communications infrastructure and electrical grid such that the Form 477 data for 2017 is unlikely to account for such damage? If so, how should we account for these areas in reporting data in the next report? What types of methods can the Commission use in the wake of disasters to measure the extent of communications infrastructure damage?

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comprising each county (or county-equivalent). FCC, Staff Block Estimates, <https://www.fcc.gov/reports-research/data/staff-block-estimates>.

⁵⁷ *2018 Report*, 33 FCC Rcd at 1680, para. 48. CoSN's report summarizes the results of its survey of a much smaller number of school districts regarding the current state of broadband and technology infrastructure in U.S. school systems. Comments of the Consortium for School Networking (CoSN) at 3, WC Docket 13-184 (filed Nov. 7, 2017).

⁵⁸ *Id.* at 1681, para. 50.

⁵⁹ *Id.* at 1716, Appx C, para 12. These areas fall into one of the seven AIANHHCC categories: (1) Joint Use Areas; (2) legal federally recognized American Indian area consisting of reservation and associated off-reservation trust land; (3) legal federally recognized American Indian area consisting of reservation only; (4) legal federally recognized American Indian area consisting of off-reservation trust land only; (5) statistical American Indian area defined for a federally recognized Tribe that does not have reservation or off-reservation trust land, specifically a Tribal designated statistical area (TDSA) or Oklahoma Tribal Statistical Area (OTSA); (6) Alaskan Native village statistical area; and (7) Hawaiian Home Lands established by the Hawaiian Homes Commission Act of 1921. We exclude state-recognized areas from the analysis of Tribal lands. *Id.*

⁶⁰ Tribal Lands in the Lower 48 States include: Joint Use Areas; legal federally recognized American Indian area consisting of reservation and associated off-reservation trust land; legal federally recognized American Indian area consisting of reservation only; and legal federally recognized American Indian area consisting of off-reservation trust land. Tribal statistical areas include all statistical American Indian areas defined for a federally recognized Tribe that does not have reservation or off-reservation trust land, specifically a Tribal designated statistical area (TDSA) or Oklahoma Tribal Statistical Area (OTSA). Alaskan Villages include Alaskan Native village statistical areas; and Hawaiian Home Lands include Hawaiian Home Lands established by the Hawaiian Homes Commission Act of 1921. *Id.* at 1716, Appx C, para 13.

Are there sources of data that we can rely upon to accurately determine where broadband infrastructure has been damaged?

V. COMMISSION EFFORTS TO CLOSE THE DIGITAL DIVIDE

23. The *2018 Report* described the many actions the Commission has taken to encourage deployment of advanced telecommunications capability and close the digital divide.⁶¹ These actions were central to the Commission's finding in the *2018 Report* that its policy efforts are now encouraging the deployment on a reasonable and timely basis of advanced telecommunications capability.⁶² The next report will examine the Commission's actions since issuing the *2018 Report* to spur broadband deployment and close the digital divide.⁶³ We seek comment on the ongoing effects of these efforts in spurring broadband deployment and additional efforts the Commission might undertake.

24. *Reducing barriers to investment.* To close the digital divide, it is essential for us to remove regulatory barriers to investment. Such barriers may unnecessarily delay a provider's broadband buildout, or its transition from legacy networks and services to next-generation networks, or impede wireless infrastructure projects to deploy advanced networks. To further expand next-generation networks and services, the Commission recently adopted a *Second Report and Order* eliminating unnecessary impediments and costs to timely network upgrades, continuing from last year's reforms to our pole attachment, copper retirement, network change disclosure, and discontinuance processes, while maintaining protections for consumers and enabling providers to invest in next-generation networks.⁶⁴ Earlier this year, the Commission adopted new rules streamlining the wireless infrastructure siting review process to facilitate the rapid and efficient deployment of next-generation wireless facilities, reducing regulatory impediments to deploying small cells needed for 5G, throughout the United States.⁶⁵ We seek comment on how our efforts thus far have stimulated broadband deployment and whether there are other actions that we could undertake to speed deployment of next-generation wireline and wireless facilities.

25. *Universal Service Funding.* The Commission's USF provides funding to increase the availability of fixed and mobile broadband services in unserved and rural areas.⁶⁶ The Fund targets support to these areas through four main programs, including: High-Cost, Lifeline, E-Rate, and Rural Health Care.⁶⁷ The Commission routinely considers how to maximize the impact of available funding to support broadband deployment.⁶⁸ For example, the Commission's Connect America Fund Phase II

⁶¹ See *id.* at 1703-08, para. 80-93.

⁶² *Id.* at 1708, para. 95-96.

⁶³ Consistent with the RAY BAUM'S Act of 2018, the next report will "describe the agenda of the Commission for the next 2-year period" to spur the deployment of communications capability, including advanced telecommunications capability. See 47 U.S.C. §163(b)(4).

⁶⁴ *Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment*, WC Docket No. 17-84, Second Report and Order, FCC 18-74 (June 8, 2018); *Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment*, Report and Order, Declaratory Ruling, and Further Notice of Proposed Rulemaking, 32 FCC Rcd 11128 (2017);

⁶⁵ *Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment*, WC Docket No. 17-79, Second Report and Order, FCC 18-30 (Mar. 30, 2018).

⁶⁶ *Connect America Fund et al.*, Report and Order and Further Notice of Proposed Rulemaking, 26 FCC Rcd 17663, 17668-69, paras. 1-5 (2011) (*USF/ICC Transformation Order*), *aff'd sub nom*, *In re: FCC 11-161*, 753 F.3d 1015 (10th Cir. 2014).

⁶⁷ *Id.*

⁶⁸ *Connect America Fund, et al.*, Report and Order, Third Order on Reconsideration, and Notice of Proposed Rulemaking, FCC 18-29, para. 4 (2018) (taking several steps to increase broadband deployment in rural areas through the High Cost program, including maximizing available funding for broadband networks); *Bridging the Digital Divide for Low-Income Americans*, Fourth Report and Order, Order on Reconsideration, Memorandum Opinion and Order, Notice of Proposed Rulemaking, Notice of Inquiry, 32 FCC Rcd. 10475, para. 1 (2018)

auction which will provide up to nearly \$2 billion over the next decade to expand fixed, high-speed Internet service to unserved rural areas is set to conclude the auction stage in 2018.⁶⁹ The Commission provided rate-of-return carriers with over \$500 million to promote more high-speed broadband deployment in rural areas.⁷⁰ In addition, the Commission increased the funding cap for the Rural Healthcare program to \$571 million to prevent pro-rata funding reductions that could have disproportionately impacted rural health care providers, especially those in Alaska.⁷¹ We seek comment on the effectiveness of USF funding in driving the deployment of advanced telecommunications capability. Has targeting USF funding to decrease the cost of network deployment proven to be an effective driver in increasing deployment and in providing more broadband service choices to all Americans?

26. *Access to spectrum.* Since the release of the *2018 Report*, the Commission has continued its efforts to expand access to spectrum to support or supplement wireless and satellite broadband services. For example, the Commission has initiated several proceedings aimed at either facilitating the efficient and effective use of spectrum, such as the *2.5 GHz* rulemaking proceeding, or increasing the amount of spectrum that may be used to enhance bandwidth and capacity, such as the *Spectrum Frontiers* proceeding.⁷² In another proceeding, the Commission is moving towards quickly making more mid-band spectrum available for more intense terrestrial use.⁷³ With respect to satellite, the Commission approved the first U.S.-licensed satellite constellation to provide broadband services using a new generation of low-Earth orbit satellite technologies in the *SpaceX Authorization Order*.⁷⁴ The Commission also granted O3b

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(directing Lifeline funds to the areas in which they are most needed, to encourage investment in broadband-capable networks); *Promoting Telehealth in Rural America*, Report and Order, FCC 18-82, para. 1 (2018) (increased the funding cap for the Rural Healthcare program to \$571 million to prevent pro-rata funding reductions that could have disproportionately impacted rural health care providers, especially those in Alaska).

⁶⁹ *Connect America Fund Phase II Auction Scheduled for July 24, 2018 Notice and Filing Requirements and Other Procedures for Auction 903*, WC Docket Nos. 10-90, 17-182, 33 FCC Rcd. 1428 (2018); *see 220 Applicants Qualified to Bid in the Connect America Fund Phase II Auction (Auction 903); Bidding to Begin on July 24, 2018*, WC Docket Nos. 10-90, 17-182, DA 18-658 (WCB/WTB June 25, 2018) (announcing the qualified bidders for the auction and confirming timing).

⁷⁰ *Connect America Fund, et al.*, Report and Order, Third Order on Reconsideration, and Notice of Proposed Rulemaking, WC Docket Nos. 10-90, 14-58, 07-135, CC Docket No. 01-92, FCC 18-29, para. 4 (Mar. 23, 2018).

⁷¹ *Promoting Telehealth in Rural America*, Report and Order, WC Docket No. 17-310, FCC 18-82, para. 1 (June 25, 2018).

⁷² *Amendment of Parts 1, 21, 73, 74 and 101 of the Commission's Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands; Transforming the 2.5 GHz Band*, WT Docket No. 03-66 (Terminated) and WT Docket No. 18-120, Notice of Proposed Rulemaking, FCC 18-59 (May 10, 2018), 2018 WL 2192430 (2.5 GHz); *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services, et al.*, GN Docket No. 14-177, Third Report and Order, Memorandum Opinion and Order, and Third Further Notice of Proposed Rulemaking, FCC 18-73 (June 8, 2018), 2018 WL 2932188 (Spectrum Frontiers).

⁷³ *In re Expanding Flexible Use of the 3.7 to 4.2 GHz Band; Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz; Petition for Rulemaking to Amend and Modernize Parts 25 and 101 of the Commission's Rules to Authorize and Facilitate the Deployment of Licensed Point-to-Multipoint Fixed Wireless Broadband Service in the 3.7-4.2 GHz Band; Fixed Wireless Communications Coalition, Inc., Request for Modified Coordination Procedures in Band Shared Between the Fixed Service and the Fixed Satellite Service*, GN Docket No. 18-22, GN Docket No. 17-183 (Terminated), RM 11791, RM-11778, Public Version at paras. 5 and 144 (Released June 21, 2018) (noting that mid-band spectrum is well-suited for next generation wireless broadband services and seeking comment on whether this band should be included in the Commission's spectrum screen).

⁷⁴ *Space Exploration Holdings, LLC; Application For Approval for Orbital Deployment and Operating Authority for the SpaceX NGSO Satellite System; Application For Approval For Orbital Deployment And Operating Authority for the SpaceX NGSO Satellite System Supplement*, Memorandum Opinion, Order and Authorization, FCC 18-38 (Mar. 29, 2018), 2018 WL 1559848 (*SpaceX Authorization Order*); *see also WorldVu Satellites Limited, Petition for a Declaratory Ruling Granting Access to the U.S. Market for the OneWeb NGSO FSS System*, Order and Declaratory

Limited's request to expand its grant of U.S. market access for its NGSO constellation.⁷⁵ These actions promise to expand broadband to communities across the United States. We seek comment on these efforts and whether there are any other ways to expand access to spectrum for wireless and satellite broadband services.

VI. PROCEDURAL MATTERS

27. *Ex Parte Rules.* This proceeding shall be treated as a “permit-but-disclose” proceeding in accordance with the Commission’s *ex parte* rules.⁷⁶ Persons making *ex parte* presentations must file a copy of any written presentation or a memorandum summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine period applies). Persons making oral *ex parte* presentations are reminded that memoranda summarizing the presentation must (1) list all persons attending or otherwise participating in the meeting at which the *ex parte* presentation was made, and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter’s written comments, memoranda or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memoranda, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to Commission staff during *ex parte* meetings are deemed to be written *ex parte* presentations and must be filed consistent with Rule 1.1206(b). In proceedings governed by Rule 1.49(f) or for which the Commission has made available a method of electronic filing, written *ex parte* presentations and memoranda summarizing oral *ex parte* presentations, and all attachments thereto, must be filed through the electronic comment filing system available for that proceeding, and must be filed in their native format (e.g., .doc, .xml, .ppt, searchable .pdf). Participants in this proceeding should familiarize themselves with the Commission’s *ex parte* rules.

28. *Comment Filing Procedures.* Pursuant to Sections 1.415 and 1.419 of the Commission’s rules, 47 CFR §§ 1.415, 1.419, interested parties may file comments and reply comments on or before the dates indicated on the first page of this document. Comments may be filed using the Commission’s Electronic Comment Filing System (ECFS). See *Electronic Filing of Documents in Rulemaking Proceedings*, 63 FR 24121 (1998).

- ☐ Electronic Filers: Comments may be filed electronically using the Internet by accessing the ECFS: <http://apps.fcc.gov/ecfs/>.
- ☐ Paper Filers: Parties who choose to file by paper must file an original and one copy of each filing. If more than one docket or rulemaking number appears in the caption of this proceeding,

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Ruling, 32 FCC Rcd 5366 (2017); *Space Norway AS, Petition for a Declaratory Ruling Granting Access to the U.S. Market for the Arctic Satellite Broadband Mission*, Order and Declaratory Ruling, 32 FCC Rcd 9649 (2017); *Telesat Canada, Petition for Declaratory Ruling to Grant Access to the U.S. Market for Telesat’s NGSO Constellation*, Order and Declaratory Ruling, 32 FCC Rcd 9663 (2017).

⁷⁵ *O3b Limited; Request for Modification of U.S. Market Access for O3b Limited’s Non-Geostationary Satellite Orbit System in the Fixed-Satellite Service and in the Mobile-Satellite Service*, Order and Declaratory Ruling, FCC 18-70 (June 6, 2018), 2018 WL 3046987.

⁷⁶ 47 CFR § 1.1200(a). Although the Rules do not generally require *ex parte* presentations to be treated as “permit but disclose” in Notice of Inquiry proceedings, see 47 CFR § 1.1204(b)(1), we exercise our discretion in this instance, and find that the public interest is served by making *ex parte* presentations available to the public, in order to encourage a robust record. See 47 CFR § 1.1200(a). In past section 706 inquiries, we have treated *ex parte* presentations similarly. See, e.g., *Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, 32 FCC Rcd 7029, 7046, para. 56 (2017); *Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, 31 FCC Rcd 9140, 9174, para. 86 (2016); *Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, 30 FCC Rcd 8823, 8852, para. 89 (2015).

filers must submit two additional copies for each additional docket or rulemaking number.

Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.

- ☐ All hand-delivered or messenger-delivered paper filings for the Commission's Secretary must be delivered to FCC Headquarters at 445 12th St., SW, Room TW-A325, Washington, DC 20554. The filing hours are 8:00 a.m. to 7:00 p.m. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes and boxes must be disposed of before entering the building.
- ☐ Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9300 East Hampton Drive, Capitol Heights, MD 20743.
- ☐ U.S. Postal Service first-class, Express, and Priority mail must be addressed to 445 12th Street, SW, Washington DC 20554.

29. *Availability of Documents.* Comments, reply comments, and *ex parte* submissions will be publicly available online via ECFS.⁷⁷ These documents will also be available for public inspection during regular business hours in the FCC Reference Information Center, which is located in Room CY-A257 at FCC Headquarters, 445 12th Street, SW, Washington, DC 20554. The Reference Information Center is open to the public Monday through Thursday from 8:00 a.m. to 4:30 p.m. and Friday from 8:00 a.m. to 11:30 a.m.

30. *People with Disabilities.* To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer & Governmental Affairs Bureau at 202-418-0530 (voice), 202-418-0432 (tty).

31. *Contact Person.* For further information about this proceeding, please contact Celia Lewis, FCC Wireline Competition Bureau, Competition Policy Division, 445 12th Street, S.W., Washington, D.C. 20554, (202) 418-7456, Celia.Lewis@fcc.gov.

VII. ORDERING CLAUSE

32. Accordingly, IT IS ORDERED, that pursuant to section 706 of the Telecommunications Act of 1996, as amended, 47 U.S.C. § 1302, and section 13 of the Communications Act of 1934, as amended, 47 U.S.C. § 163, this Notice of Inquiry IS ADOPTED.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

⁷⁷ Documents will generally be available electronically in ASCII, Microsoft Word, and/or Adobe Acrobat.

**DISSENTING STATEMENT OF
COMMISSIONER JESSICA ROSENWORCEL**

Re: *Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, GN Docket No. 18-238.

I believe the future belongs to the connected. No matter who you are or where you live in this country, you need access to modern communications to have a fair shot at 21st century success.

This is why the annual Broadband Deployment Report from the Federal Communications Commission is so important. However, I fear that today's inquiry sets the stage for an unfortunate repeat of last year's Broadband Deployment Report. That report found—despite clear evidence of 24 million Americans without high-speed service—that broadband deployment nationwide is both reasonable and timely. It ignored too many people in too many places struggling to access high-speed service and dealing with connectivity that falls short of what is necessary for full participation in the digital age.

Moreover, this inquiry fundamentally errs by proposing to keep our national broadband standard at 25 Megabits per second. I believe this goal is insufficiently audacious. It is time to be bold and move the national broadband standard from 25 Megabits to 100 Megabits per second. When you factor in price, at this speed the United States is not even close to leading the world. That is not where we should be and if in the future we want to change this we need both a more powerful goal and a plan to reach it. Our failure to commit to that course here is disappointing. I regretfully dissent.