

FACT SHEET*

Establishing the Digital Opportunity Data Collection

Second Report and Order and Third Further Notice of Proposed Rulemaking – WC Docket No. 19-195;
Modernizing the FCC Form 477 Data Program – WC Docket No. 11-10

Background: Granular and precise maps of where broadband service is available, and where it is not, are key to closing the digital divide and connecting every American to digital opportunity. The Commission has made great strides toward bringing broadband to areas that the Commission’s current data show are wholly unserved. But to continue that work, the Commission must have maps that can identify those Americans living in areas where some, but not all, have service. In 2019, the Commission adopted the Digital Opportunity Data Collection and set out a three-pronged approach to developing nationwide broadband coverage maps with unprecedented granularity by collecting detailed coverage data from service providers, comparing it against a database of all locations that are, or could be, connected to broadband, and allowing consumers, along with state, local, and Tribal governments and other entities, to provide feedback on the accuracy of coverage maps directly to the Commission. In March 2020, Congress enacted the Broadband DATA Act largely ratifying the Digital Opportunity Data Collection’s approach to broadband mapping. The *Second Report and Order and Third Further Notice of Proposed Rulemaking* would take the next step in developing the new broadband maps and implement key provisions of the Broadband DATA Act.

What the *Second Report and Order* Would Do:

- Adopt specific reporting and disclosure requirements for fixed and mobile broadband availability and quality of service data;
- Require fixed and mobile wireless providers to submit standardized propagation maps, propagation model details, and infrastructure information;
- Establish a common dataset of all broadband-serviceable locations in the United States;
- Create a process for verifying the accuracy of broadband availability data submitted by broadband providers, collecting crowdsourced broadband availability data, and collecting verified data from state, local and Tribal entities, for use in the coverage maps; and
- Ensure the privacy, confidentiality, and security of sensitive service provider information.

What the *Third Further Notice of Proposed Rulemaking* Would Do:

- Seek comment on additional processes for verifying broadband availability and providing technical assistance to service providers;
- Propose a process to allow consumers and other parties to challenge the accuracy of the maps;
- Seek comment on implementing the fabric of broadband-serviceable locations; and
- Implement other requirements of the Broadband DATA Act and propose targeted reforms to FCC Form 477.

* This document is being released as part of a “permit-but-disclose” proceeding. Any presentations or views on the subject expressed to the Commission or to its staff, including by email, must be filed in WC Docket Nos. 19-195 and 11-10, which may be accessed via the Electronic Comment Filing System (<https://www.fcc.gov/ecfs/>). Before filing, participants should familiarize themselves with the Commission’s ex parte rules, including the general prohibition on presentations (written and oral) on matters listed on the Sunshine Agenda, which is typically released a week prior to the Commission’s meeting. See 47 CFR § 1.1200 *et seq.*

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

In the Matter of)
Establishing the Digital Opportunity Data) WC Docket No. 19-195
Collection)
Modernizing the FCC Form 477 Data Program) WC Docket No. 11-10

SECOND REPORT AND ORDER AND THIRD FURTHER NOTICE
OF PROPOSED RULEMAKING*

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TABLE OF CONTENTS

I. INTRODUCTION..... 1
II. BACKGROUND..... 4
III. SECOND REPORT AND ORDER..... 9
A. Requirements for the Submission of Fixed Broadband Internet Access Service
Availability and Quality of Service Data..... 13
1. Maximum Buffers for Wireline Broadband Service Reporting 16
2. Fixed Wireless Broadband Service Availability Reporting Standards..... 21
B. The Collection and Reporting of Data for Mobile Broadband Internet Access Service..... 29
1. Standardized Predictive Propagation Maps for Mobile Service..... 35
2. Collecting Infrastructure Information..... 55
C. Establishment of the Fabric 55
D. Timing of Collection Filings..... 58
E. Processes for Verifying Broadband Availability Data Submitted by Providers 59
1. Verifying Fixed Broadband Data Using HUBB Data 60
2. Commission Audits 61
3. Certification of Filings 64

* This document has been circulated for tentative consideration by the Commission at its July 2020 open meeting. The issues referenced in this document and the Commission’s ultimate resolution of those issues remain under consideration and subject to change. This document does not constitute any official action by the Commission. However, the Chairman has determined that, in the interest of promoting the public’s ability to understand the nature and scope of issues under consideration, the public interest would be served by making this document publicly available. The FCC’s ex parte rules apply and presentations are subject to “permit-but-disclose” ex parte rules. See, e.g., 47 C.F.R. §§ 1.1206, 1.1200(a). Participants in this proceeding should familiarize themselves with the Commission’s ex parte rules, including the general prohibition on presentations (written and oral) on matters listed on the Sunshine Agenda, which is typically released a week prior to the Commission’s meeting. See 47 CFR §§ 1.1200(a), 1.1203.

4. Process for Collecting Crowdsourced Data..... 65

F. Enforcement..... 80

G. Creation of Coverage Maps Depicting Availability of Broadband Internet Access Service and Sharing Mapping Data 81

H. Collection of Verified Broadband Data from Government Entities and Third Parties for Use in the Coverage Maps..... 86

I. Data Confidentiality and Privacy..... 87

J. Updating the Data Collection..... 90

IV. THIRD FURTHER NOTICE OF PROPOSED RULEMAKING..... 91

A. Service Providers Subject to the Collection of Broadband Internet Access Service Data..... 92

B. Standards for Reporting Availability and Quality of Service Data for Fixed Broadband Internet Access Service..... 93

C. Additional Standards for Collection and Reporting of Data for Mobile Broadband Internet Access Service..... 99

D. Processes for Verifying Broadband Availability Data Submitted by Providers 104

1. Verifying Mobile Data 105

2. Engineering Certification of Biannual Filings 111

3. Collection and Use of Verified Data 114

4. Additional Options for Collecting Verified Data on Mobile Service..... 118

E. Challenge Process 128

1. Online Tracking System..... 129

2. Consumer Challenge Process 130

3. Challenges by Governmental and Other Entities 146

4. Public Availability of Information Filed in the Challenge Process..... 166

F. Broadband Serviceable Location Database..... 168

G. Enforcement..... 175

H. Details on the Creation of Coverage Maps 185

I. Technical Assistance..... 186

J. Form 477 Reforms 189

1. Mobile Subscriber Data..... 190

2. Sunsetting FCC Form 477 Census Block Reporting for Fixed Providers..... 192

V. PROCEDURAL MATTERS..... 193

VI. ORDERING CLAUSES..... 200

APPENDIX A – FINAL RULES

APPENDIX B – PROPOSED RULES

APPENDIX C – FINAL REGULATORY FLEXIBILITY ANALYSIS

APPENDIX D – INITIAL REGULATORY FLEXIBILITY ANALYSIS

I. INTRODUCTION

1. Closing the digital divide and connecting every American to broadband no matter where he or she lives is the Commission’s highest priority. But to bring broadband to every unserved part of the country means knowing where broadband is available, and where it is not. The Commission has made significant advances in bringing broadband to areas that the Commission’s current data show are wholly unserved. To maintain that momentum, the Commission needs more granular, precise maps that will allow it to target support to Americans living in those areas where some, but not all, have access. Accurate and precise broadband maps are of enormous importance not only to the Commission, but also other federal policy makers, state policy makers, and consumers alike. Today’s actions follow the pivotal step we took in 2019 when we adopted the Digital Opportunity Data Collection (Collection), laying out a three-pronged approach to developing a nationwide broadband map that will have unprecedented detail: Internet service providers, who have the most intimate knowledge of where their networks reach, provide granular and detailed coverage data; that coverage data is compared against a fabric of locations that are,

or could be, serviced by a broadband connection; and consumers, plus state, local, and Tribal government entities, provide feedback on the accuracy of the broadband coverage data directly to the Commission.

2. Congress has likewise recognized that accurate and granular maps are essential to closing the digital divide. Congress passed the Broadband DATA Act in March 2020, largely codifying the Commission's overall approach to the Digital Opportunity Data Collection. The Broadband DATA Act requires the Commission, among other things, to issue final rules for collecting granular data from providers on the availability and quality of broadband Internet access service, to create publicly available coverage maps, to establish processes for members of the public and other entities to challenge and verify the coverage maps, and to create a common dataset of all locations where fixed broadband Internet access service can be installed.

3. This *Second Report and Order and Further Notice of Proposed Rulemaking* takes the next step in developing the new broadband coverage maps by adopting specific coverage reporting and disclosure requirements for fixed and mobile broadband providers, filing and certification requirements, measures for determining the accuracy of broadband availability data (including audits and collecting crowdsourced data), standards for collecting and incorporating verified data for use in the coverage maps from governmental entities and certain third parties, and establishing the Broadband Serviceable Location Fabric (Fabric). We also seek comment on several narrow issues relating to implementing the challenge and verification processes for coverage data, implementing the Fabric, and certain other specific requirements of the Broadband DATA Act outside the scope of the *Digital Opportunity Data Collection Order and Further Notice*.

II. BACKGROUND

4. The Commission's prior work collecting information about broadband availability has a lengthy history beginning in 2000 with FCC Form 477, originally a collection of subscription and connection data for local telephone and broadband services.¹ The Commission's broadband data collection efforts evolved over time, and in 2013 the Commission adopted the current Form 477 requirement that service providers report a list of census blocks in which they provide access to broadband.² That block-level reporting, while imperfect, was a valuable data source that allowed the Commission to identify the least-served parts of the country and was incorporated into many Commission proceedings and actions, including reporting to Congress and the public about the availability of broadband services, informing transaction reviews, and supporting our universal service policies.³ However, in 2017, the Commission recognized the need to collect and develop better quality, more useful, and more granular broadband deployment data to inform our policymaking.⁴

5. In August 2019, the Commission recognized "a compelling and immediate need" for

¹ 47 U.S.C. § 1302(b) (Section 706 of the Telecommunications Act of 1996 requires the Commission to determine and report annually on "whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion"); *Local Competition and Broadband Reporting*, CC Docket No. 99-301, Report and Order, 15 FCC Rcd 7717, 7719-20, para. 3 (2000).

² *Modernizing the FCC Form 477 Data Program*, WC Docket No. 11-10, Report and Order, 28 FCC Rcd 9887, 9902, para. 32 (2013).

³ *Modernizing the FCC Form 477 Data Program*, WC Docket No. 11-10, Report and Order, 28 FCC Rcd 9887, 9895, para. 16 (2013); *Local Telephone Competition and Broadband Reporting*, WC Docket No. 04-141, Report and Order, 19 FCC Rcd 22340, 22341, paras. 1-2 (2004); *Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Services to All Americans, Improvement of Wireless Broadband Subscriberhip Data, and Development of Data on Interconnected Voice over Internet Protocol Subscriberhip*, WC Docket No. 07-38, Report and Order and Further Notice of Proposed Rulemaking, 23 FCC Rcd 9691, 9692, paras. 1-2 (2008).

⁴ See *Modernizing the FCC Form 477 Data Program*, WC Docket No. 11-10, Further Notice of Proposed Rulemaking, 32 FCC Rcd 6329, 6331, para. 6 (2017) (*2017 Data Collection Improvement FNPRM*).

better broadband deployment data, and adopted the *Digital Opportunity Data Collection Order and Further Notice* that: (1) established the Digital Opportunity Data Collection in order to obtain geospatial broadband coverage maps from fixed broadband providers; (2) adopted a process to collect public input, commonly known as “crowdsourcing,” on the accuracy of fixed providers’ broadband maps; and (3) made targeted changes to the existing Form 477 data collection to reduce reporting burdens for all filers and to incorporate new technologies.⁵ The Commission also indicated that it would pursue the development of a uniform national locations dataset on which provider deployment data could be overlaid to produce a highly accurate and precise picture of broadband deployment.⁶ The *Digital Opportunity Data Collection Order and Further Notice* directed the Universal Service Administrative Company—the Administrator of the Commission’s Universal Service Fund—under the oversight of the Commission’s Office of Economics and Analytics (OEA), the Wireline Competition Bureau (WCB), the Wireless Telecommunications Bureau (WTB), and the International Bureau (IB), to develop the portal for collecting the broadband coverage maps from fixed providers as well as public input on the accuracy of the maps.⁷

6. At that time, we also sought comment on: (1) the additional technical standards for fixed broadband providers that could ensure greater precision for the Collection deployment reporting; (2) the ways in which the Commission could incorporate crowdsourced and location-specific fixed broadband deployment data into the Collection; and (3) how the Commission could incorporate the collection of accurate, reliable mobile voice and broadband coverage data into the Collection.⁸

7. Following adoption of the *Digital Opportunity Data Collection Order and Further Notice*, Congress passed the Broadband DATA Act,⁹ which requires the Commission to take steps to improve our broadband deployment data collection and the related maps documenting broadband availability in the United States.¹⁰ The Broadband DATA Act requires the Commission, within 180 days of its enactment, to issue final rules to: (1) require the biannual collection and dissemination of granular data relating to the availability and quality of service of fixed and mobile broadband Internet access service for the Commission to use in conjunction with creating broadband coverage maps;¹¹ (2) establish processes for the Commission to verify and protect the data collected;¹² (3) establish a process for collecting verified data for use in the coverage maps from State, local, and Tribal governmental entities, from other federal agencies, and, if the Commission deems it in the public interest, from third parties;¹³ (4) establish the Fabric to serve as a foundation on which fixed broadband availability is overlaid;¹⁴ (5) establish a user-friendly challenge process through which the public and State, local, and Tribal governmental entities can challenge the accuracy of the coverage maps, provider availability data, or information in the Fabric;¹⁵ and (6) develop a process through which entities or individuals in the United States may submit specific information about the deployment and availability of broadband Internet

⁵ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7506, 7521, paras. 2, 3, 35.

⁶ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7519, para. 31.

⁷ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7509, para. 11.

⁸ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7506, para. 4.

⁹ Broadband Deployment Accuracy and Technology Availability Act, Pub. L. No. 116-130, 134 Stat. 228 (2020) (codified at 47 U.S.C. §§ 641-646) (Broadband DATA Act).

¹⁰ S. Rep. No. 116-174, at 1 (2019) (*Senate Report*).

¹¹ 47 U.S.C. § 642(a)(1)(A).

¹² 47 U.S.C. § 642(a)(1)(B)(i).

¹³ 47 U.S.C. §§ 642(a)(2)(A)-(C).

¹⁴ 47 U.S.C. § 642(b)(1)(B).

¹⁵ 47 U.S.C. §§ 642(a)(1)(B)(iii), (b)(5)(A).

access service in the United States on an ongoing basis.¹⁶ The Broadband DATA Act also requires that the Commission adopt rules that include uniform standards for reporting mobile and fixed broadband service availability data.¹⁷

8. Within 180 days of the effective date of those rules, the Commission also must reform the Form 477 broadband deployment collection in a manner that achieves the purposes of the Broadband DATA Act and that allows for the comparison of data produced before and after the implementation of the Broadband DATA Act's requirements.¹⁸ The Commission, after consulting with the Federal Geographic Data Committee, must create a map that depicts the extent and availability of broadband Internet access service in the United States, without regard to whether the service is fixed or mobile, as well as the areas of the United States that remain unserved (the Broadband Map).¹⁹ The Commission also must create, in consultation with the Federal Geographic Data Committee, certain other coverage maps, which must depict the extent of availability of fixed and mobile broadband Internet access services and the areas that remain unserved.²⁰ The Commission must update the maps at least biannually and make them available to the public at an appropriate level of granularity²¹ and to other federal agencies upon request.²²

III. SECOND REPORT AND ORDER

9. Based on the record before us and consistent with the requirements of the Broadband DATA Act, in this *Second Report and Order* we take steps to implement collection and verification requirements for fixed and mobile broadband service availability and quality of service data. We largely build on the filing requirements we previously adopted or proposed for broadband service providers, and comments submitted in response to the *Digital Opportunity Data Collection Order and Further Notice*. Many of the requirements and proposals are encompassed in the structure of the Broadband DATA Act. Indeed, Congress recognized the value of the Commission's earlier work on the Digital Opportunity Data Collection and provided that "[i]f the Commission, before the date of enactment of this title, has taken an action that, in whole or in part, implements this title, the Commission shall not be required to revisit such action to the extent that such action is consistent with this title."²³

10. Certain other requirements adopted in the *Digital Opportunity Data Collection Order and Further Notice* are inconsistent with the terms of the statute. For example, it established a role for USAC to develop and maintain the infrastructure for accepting and managing submissions from service providers along with challenges and crowdsourced data from consumers, government entities, and other third parties, which the Broadband DATA Act prohibits.²⁴ Although we lack necessary funding to

¹⁶ 47 U.S.C. §§ 642(a)(1)(B)(iv), 644(b). The Broadband DATA Act generally refers to this submission of data as a "crowdsourcing" process, 47 U.S.C. § 644(b), but does not define "crowdsourced data." For the purposes of this item (and unless expressly stated otherwise), "crowdsourced data" includes any data generated by consumer mobile broadband users who voluntarily download speed test apps on their mobile devices, whether submitted by consumers through the portal or by State, local, or Tribal governmental entities.

¹⁷ 47 U.S.C. § 642(b)(2).

¹⁸ 47 U.S.C. § 642(b)(6)(A).

¹⁹ Pursuant to the Broadband DATA Act, the Broadband Map must depict the extent of broadband Internet access service availability in the United States, which must be based on data collected by the Commission from all broadband providers, as well as the areas of the United States that remain unserved. 47 U.S.C. § 642(c)(1)(A).

²⁰ 47 U.S.C. §§ 642(c)(1)(A)-(C).

²¹ 47 U.S.C. § 642(c)(4).

²² 47 U.S.C. § 642(c)(5).

²³ 47 U.S.C. § 646(e).

²⁴ 47 U.S.C. § 646(c)(2).

currently implement the Digital Opportunity Data Collection maps under the Broadband DATA Act, we take these steps to complete the rulemaking required within the statutory deadline and in anticipation of receiving necessary funding in the future so that we can begin developing these granular, precise broadband service availability maps as quickly as possible.

11. In light of these and other minor inconsistencies, we will not seek Paperwork Reduction Act approval for the Part 54 rules adopted in the *Digital Opportunity Data Collection Order and Further Notice*. Instead, we adopt certain measures to implement aspects of the Broadband DATA Act for which we have no discretion or that are consistent with the Broadband DATA Act and for which we have a sufficient record in this proceeding. We also seek comment in the *Third Notice* on how best to implement the remaining requirements in the Broadband DATA Act through a new set of rules in accordance with the 180-day timetable contemplated in the Act. We intend to implement the remaining requirements of the Act in light of further comments received in response to our *Third Notice*. We note that the Act exempts this rulemaking from review of its information collection requirements under the Paperwork Reduction Act.²⁵

A. Requirements for the Submission of Fixed Broadband Internet Access Service Availability and Quality of Service Data

12. We require providers of terrestrial fixed, fixed wireless, and satellite broadband Internet access service to report availability and quality of service data that document the areas (1) where they have actually built out their broadband network infrastructure, such that they are able to provide service, and (2) where they could perform a standard broadband installation. In establishing these requirements, we adopt and incorporate the Broadband DATA Act's definitions of "broadband Internet access service,"²⁶ "propagation model,"²⁷ "provider,"²⁸ "quality of service,"²⁹ "shapefile,"³⁰ and "standard broadband installation,"³¹ which shall apply to the submission of the required data. All terrestrial fixed and satellite service providers must report either polygon shapefiles or lists of addresses or locations that constitute their service areas. We further require terrestrial fixed wireless providers to report either their shapefiles in the form of propagation maps and propagation model details that reflect the speeds and latency of their service, or a list of addresses or locations that reflect their service areas. All fixed providers must disclose the details of how they generated their coverage polygons or lists of addresses or locations when they submit them. In particular, we require providers to submit an explanation of the methodology or combination of methodologies used and how they implemented those methodologies, including the distances from aggregation points and drop distances used, to the extent relevant. We will make such information publicly available, subject to individual requests for confidential treatment of this information.

13. In the *Digital Opportunity Data Collection Order and Further Notice*, the Commission required all fixed broadband service providers to submit "granular coverage maps (polygons)" of the

²⁵ 47 U.S.C. § 646(b).

²⁶ Broadband Internet access service is defined as "a mass-market retail service by wire or radio that provides the capability to transmit data to and receive data from all or substantially all Internet endpoints, including any capabilities that are incidental to and enable the operation of the communications service, but excluding dial-up Internet access service. This term also encompasses any service that the Commission finds to be providing a functional equivalent of the service described in the previous sentence or that is used to evade the protections set forth in this part." 47 U.S.C. § 641(1); 47 CFR § 8.1(b).

²⁷ 47 U.S.C. § 641(10).

²⁸ 47 U.S.C. § 641(11).

²⁹ 47 U.S.C. § 641(12).

³⁰ 47 U.S.C. § 641(13).

³¹ 47 U.S.C. § 641(14).

areas where they have broadband-capable networks and can make service available to end-user locations.³² The Commission explained that “broadband coverage polygons,” “coverage polygons,” and “polygons” as used in the *Digital Opportunity Data Collection Order and Further Notice* refer to “broadband areas or footprints—captured in GIS-compatible formats—delineating the areas in which a provider’s network meets the requirements detailed in [the *Digital Opportunity Data Collection Order and Further Notice*] and as defined by the Commission.”³³ The *Digital Opportunity Data Collection Order and Further Notice* further required all fixed providers to submit broadband coverage polygons that reflect the maximum download and upload speeds available in each area, the technology used to provide the service, and a differentiation among residential-only, business-only, or residential-and-business broadband services.³⁴ Service would be considered “actually available” in an area in which a provider had a current broadband connection or could provide such a connection within ten business days of a request, without an extraordinary commitment of resources and without construction charges or fees exceeding an ordinary service activation fee.³⁵

14. The Broadband DATA Act takes a similar approach to fixed broadband service reporting, requiring the Commission’s rules to provide uniform standards for the reporting of broadband Internet access service data,³⁶ including “information regarding download and upload speeds, at various thresholds established by the Commission, and, if applicable, latency with respect to broadband Internet access service that the provider makes available,” and that “can be georeferenced to the GIS data in the Fabric”³⁷ Also, with regard to fixed broadband services, the data collected must document where the provider “has actually built out network infrastructure . . . such that the provider is able to provide service; and [where it] could provide that service, as determined by where the provider is capable of performing a standard broadband installation”³⁸ The Broadband DATA Act defines a “standard broadband installation” as “the initiation of service in an area in which the provider has not previously offered that service, with no charges or delays attributable to the extension of the network of the provider,”³⁹ as well as “the initiation of fixed broadband Internet access service through routine installation that can be completed not later than ten business days after the date on which the service request is submitted.”⁴⁰

15. The Commission must further allow providers of terrestrial fixed and satellite service to report availability data in the form of polygon shapefiles,⁴¹ defined as “a digital storage format containing geospatial or location-based data and attribute information regarding the availability of broadband Internet access service[,] and that can be viewed, edited, and mapped in GIS software.”⁴² With regard to data collected from terrestrial fixed wireless providers, the rules must provide for reporting propagation maps and propagation model details that satisfy standards similar to those applicable to mobile services, taking into account differences between the two types of services.⁴³ The maps and model data reported

³² *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7510-11, paras. 12-13.

³³ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7509 & n.22.

³⁴ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7510, para. 12.

³⁵ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7510, para. 13.

³⁶ 47 U.S.C. § 642(b)(2).

³⁷ 47 U.S.C. §§ 642(b)(2)(A)(ii), (iii).

³⁸ 47 U.S.C. § 642(b)(2)(a)(i).

³⁹ 47 U.S.C. § 641(14)(A).

⁴⁰ 47 U.S.C. § 641(14)(B).

⁴¹ 47 U.S.C. § 642(b)(2)(A)(iv)(II)(aa).

⁴² 47 U.S.C. § 641(13).

⁴³ 47 U.S.C. § 642(b)(2)((A)(iv)(I)(aa)(AA).

for fixed wireless service must also reflect the speed and latency of the services they depict.⁴⁴ For all fixed services, the Broadband DATA Act provides that the Commission also may permit, but not require, providers to report fixed broadband service availability using a “list of addresses or locations” in lieu of shapefiles or propagation maps and model details, but requires the Commission to provide a method for providers to use such address or location-based reporting in Tribal areas.⁴⁵

1. Maximum Buffers for Wireline Broadband Service Reporting

16. The *Digital Opportunity Data Collection Order and Further Notice* sought comment on whether to adopt additional reporting requirements for similarly-situated fixed wired providers in order to provide consistently reliable results.⁴⁶ The Commission asked whether fixed “buffers,” or a specified distance around network facilities such as the location of distribution or coaxial plant, should be established to define coverage for specific fixed technologies. Commenters provided a range of recommendations. For example, Verizon and NCTA oppose a one-size-fits-all approach and propose allowing providers to use distances that are already used internally for commercial purposes and which accurately reflect business practices.⁴⁷ Verizon additionally proposes setting a range of acceptable buffers up to several hundred meters and requiring the narrower of the provider’s own buffer or the outside end of the range.⁴⁸ The Broadband Mapping Coalition proposes that the Commission establish “safe harbors” based on an appropriate buffer zone related to the density of a geographic area.⁴⁹

17. We adopt the requirement for use of specific maximum buffers around network facilities for wired technologies. Specifically, we adopt—for providers using Hybrid-Fiber Coax (HFC or cable), Fiber to the Premises (FTTP or fiber), and Digital Subscriber Line (DSL) technologies—the use of both a maximum distance from the aggregation point and a maximum drop distance.⁵⁰ For all three technologies, we adopt a maximum distance of 6,600 route feet (or 2,000 route meters) from the aggregation point and a maximum drop distance of 240 feet. We direct OEA, in coordination with WCB and OET, to update these values via notice and comment rulemaking in the future as necessary to ensure accuracy and to account for technological and other developments.

18. The maximum buffers we adopt here are, as the name implies, *maximums*. Wireline fixed broadband providers reporting service availability should not consider these maximum buffers safe harbors; rather, service providers may only report those areas they know to be serviceable by their networks. That is, if the locations that a provider can *actually* serve fall within a smaller distance from the aggregation point or a smaller drop distance, either within a particular geographic area or throughout its network, then the provider should report only those smaller areas or set of locations. Providers must ensure that their polygons, the outer edges of which represent the outer perimeter of a service area, encompass only locations that meet the standards for service provision established in the Broadband DATA Act. We expect that in many areas and under many varying conditions, a provider’s actual maximum distance from the aggregation point to a served location or its actual maximum drop distance to

⁴⁴ 47 U.S.C. § 642(b)(2)(A)(iv)(I)(aa)(BB).

⁴⁵ 47 U.S.C. §§ 642(b)(2)(A)(iv)(I)(bb), (II)(bb).

⁴⁶ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7538, para. 79.

⁴⁷ NCTA Comments at 6; Verizon Comments at 3.

⁴⁸ Verizon Comments at 3.

⁴⁹ Broadband Mapping Coalition Comments at 21-22.

⁵⁰ The aggregation point would be the point in the network at which traffic is aggregated and disbursed from a central location, such as a headend (in a cable network), Digital Subscriber Line Access Multiplexer (DSLAM) (in a DSL network), or central office (in fiber networks). The drop distance is the distance from the provider’s in-ground or above-ground last-mile distribution network, consisting of fiber-optic cable, hybrid-fiber coaxial cable, and/or copper, to the customer’s premises.

a served location, would be lower than the maximum buffer. In such circumstances, the provider's coverage polygon must reflect the *actual* buffer size or other methodology used to generate the polygon that accurately depicts the area it serves. Providers may also use a different methodology than buffering around network plant to determine and depict their coverage areas. However, subject to the specific exceptions set forth below, locations included in a provider's coverage polygon may not be outside of the maximum buffers established by the Commission, irrespective of the methodology used by the provider. We believe that the use of maximum buffers will result in more accurate, standardized, and cohesive data on broadband availability by wired providers using fiber, cable, and DSL technologies.⁵¹

19. These maximum buffer values are approximately 20% larger than the maximum route feet and the maximum drop distance specified in the Connect America Cost Model (CACM) for fiber deployment.⁵² The maximum drop distance of 240 feet is also larger than the 150-foot drop distance used by New York state in its New NY Broadband Program.⁵³ We adopt maximum distances that are larger to allow for variance between the actual practices of providers and the values assumed in the CACM and by New York, and to account for the fact that technologies have likely evolved since those assumptions were made and could now allow for longer distances. In addition, the Commission's 2010 National Broadband Plan reported that DSL speeds exceeding 25/3 Mbps could be attained in a lab environment at a distance of 5,000 feet from the DSLAM using pair-bonded, vectored VDSL2/2+ on a heavy gauge wire.⁵⁴ Given that, speeds at or below 25/3 Mbps could likely be provided at distances greater than 5,000 feet, and we therefore adopt a higher maximum buffer size of 6,600 feet from the DSLAM for DSL providers.

20. We also adopt several limited exceptions to the use of these maximum buffers to promote greater accuracy in the map. First, if a provider has a current subscriber at a location beyond the bounds of the applicable maximum buffer, then that location must be included in its coverage polygon or list of addresses or locations, as applicable. Second, if a provider previously had a broadband subscriber, using the same technology, at a location beyond the bounds of the maximum buffer, then the location must be included in the provider's coverage polygon or list of addresses or locations.⁵⁵ Third, if a provider is receiving or has received universal service support to provide broadband service in a particular geographic area—or has other federal, state, or local obligations to make service available in the area—and the provider has begun to make service available in that area, then the provider must include all of the deployed locations in that area in its polygon or list of addresses or locations, regardless of whether they are within or beyond the bounds of the maximum buffer. Finally, in cases where a provider asserts that it could serve a location beyond the bounds of the applicable maximum buffer for a reason not already

⁵¹ For this reason, we disagree with Alexicon's argument that "requiring polygon-based broadband availability reporting based on a buffer zone or on homes passed may present additional difficulties (burden) on small carriers." Alexicon Comments at 4-5. To the contrary, we conclude that the use of maximum buffers will provide greater flexibility to wired broadband providers and result in more accurate, standardized, and cohesive broadband availability data for all wired providers.

⁵² See FCC, Connect America Cost Model (CACM) Methodology, CACM Version 4.2 (revised Dec. 22, 2104), <https://transition.fcc.gov/wcb/CAM%20v.4.2%20Methodology.pdf>. The Commission began development of the Connect America Cost Model in 2012 to ultimately generate support amounts that were offered to price cap carriers as part of Connect America Fund Phase II. *Wireline Competition Bureau Announces Availability of Version One of the Connect America Fund Phase II Cost Model*, WC Docket No. 10-90, Public Notice, 27 FCC Rcd 15356 (WCB 2012).

⁵³ 16 NYCRR § 895.5(b)(3).

⁵⁴ FCC, *The Broadband Availability Gap*, OBI Technical Paper No. 1, at 100 (April 2010), <https://transition.fcc.gov/national-broadband-plan/broadband-availability-gap-paper.pdf>. Real-world results can be smaller. *Id.* at 98-99.

⁵⁵ The fact that such a location previously had a subscription provides evidence that the provider has built out its broadband network infrastructure to, and is capable of providing a standard broadband installation at, that location.

addressed under the exceptions described herein, then the provider must submit a waiver request explaining where and how it provides service to such areas or locations.

2. Fixed Wireless Broadband Service Availability Reporting Standards

21. We also adopt standards for fixed wireless providers that report availability using propagation maps and propagation model details, as required by the Broadband DATA Act.⁵⁶ The Broadband DATA Act requires that propagation maps and model details reported by fixed wireless providers: (1) satisfy standards similar to those set for mobile broadband service, taking into account “material differences” between fixed and mobile services; and (2) reflect the speeds and latency of the service.⁵⁷ In the *Digital Opportunity Data Collection Order and Further Notice*, the Commission sought comment on a variety of issues associated with reporting coverage polygons for terrestrial fixed wireless broadband service. In particular, we asked whether there are “fundamental differences between fixed wireless and mobile technologies that would caution against using mobile wireless standards for fixed wireless deployment reporting (e.g., fixed wireless use of fixed, high-powered antennas that could result in a different link budget than for mobile service, or the use of unlicensed spectrum by some fixed wireless providers).”⁵⁸ The Commission further sought comment on whether, based on differences between mobile and terrestrial fixed services, it would be appropriate to adopt different standards or parameters for reporting, for example, a different probability of cell-edge throughput or utilization rate for unlicensed spectrum.⁵⁹ The Commission also sought comment on factors it should use to validate the fixed wireless mapping methodology, identifying as possible examples “cell-site and receive site engineering and technical details and locations, RF propagation characteristics, [and] signal strength.”⁶⁰

22. In response to the *Digital Opportunity Data Collection Order and Further Notice*, commenters argued that different standards should be used for fixed wireless given the technological, operational, and usage differences between the services.⁶¹ In addition, two parties, AT&T and WISPA, proposed frameworks for reporting fixed wireless coverage.⁶² Following passage of the Broadband DATA Act, USTelecom and WISPA submitted a joint proposal modifying earlier proposals.⁶³ Specifically, USTelecom and WISPA urged the Commission to adopt a 50% loading factor for fixed broadband service coverage reporting, consistent with the loading factor established for mobile service by the Broadband DATA Act.⁶⁴ USTelecom and WISPA, however, argued for the adoption of a 75% cell edge probability for fixed services, rather than the 90% cell edge probability established in the Broadband DATA Act for mobile broadband services.⁶⁵ USTelecom and WISPA explained that “[a] fixed wireless provider often controls the base station and receiver and thus can often customize an installation or adjust a radio to enable successful signal reception even when a model predicts only a 75% probability of

⁵⁶ The Broadband DATA Act permits us to allow submission of fixed broadband service availability data using list of addresses or locations (*see* 47 U.S.C. §§ 642(b)(2)(A)(iv)(I)(bb)), and we have determined to adopt this method in all areas (*see supra* para. 12).

⁵⁷ 47 U.S.C. § 642(b)(2)(A)(iv)(I)(aa).

⁵⁸ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7539, para. 80.

⁵⁹ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7539, para. 80.

⁶⁰ *Id.*

⁶¹ AT&T Comments at 2-3; WISPA Comments at Attach. 1-2 (WISPA citation to specific parameters).

⁶² AT&T Comments at 6-8; WISPA Comments at Attach. 1-2 (WISPA citation to specific parameters).

⁶³ Letter from B. Lynn Follansbee, Vice Pres.—Policy & Advocacy, USTelecom to Marlene Dortch, Secretary, FCC, WC Docket No. 19-195, at 1-3 (filed May 14, 2020) (USTelecom/WISPA May 14, 2020 *Ex Parte* Letter).

⁶⁴ *Id.* at 2.

⁶⁵ *Id.* at 2-3.

success.”⁶⁶ USTelecom and WISPA contrast this with mobile wireless providers, who “have no control over the location or movement of a user’s phone and thus a higher probability is necessary to predict a consistent connection.”⁶⁷

23. We agree with USTelecom and WISPA that there are fundamental similarities between mobile and fixed wireless service that warrant collecting common elements in the coverage reporting for each technology, but that certain differences warrant collecting different information, as contemplated by the Broadband DATA Act. Accordingly, given the material differences between the two types of service, as set out in the record, we adopt some of the standards for fixed wireless broadband service reporting by propagation maps and models proposed by USTelecom and WISPA, including a 75% cell edge probability a 50% cell loading factor, and a receiver height of four to seven meters.⁶⁸ We agree with USTelecom and WISPA that given the stationary nature of fixed wireless customer installations and the ability to manage the base stations and receivers to maximize coverage at fixed locations, it is appropriate to adopt a lower cell edge probability than we otherwise require for mobile broadband coverage. In addition, fixed wireless propagation modeling appears to use the cell edge probability parameter in a different way than mobile, often having it reflect existing locations in a point-to-point network configuration.⁶⁹ Given these material differences and the inaccuracies that could potentially result from a higher cell edge probability for fixed wireless, we adopt the 75% cell edge parameter for the reporting of fixed wireless broadband availability using propagation maps and model details. In addition, we adopt the use of a 50% cell loading factor, given that it is the value specified in the Broadband DATA Act for mobile and that there is no basis in the record for using a different standard for fixed wireless services. Finally, we require fixed wireless providers to use a receiver height value ranging from four to seven meters in their propagation modeling. USTelecom and WISPA claimed this range this reasonable for fixed wireless receiver heights and suggested that the Commission establish it.⁷⁰

24. Like in the case of wireline fixed broadband networks, we also provide for certain exceptions for serviceable locations outside the coverage area depicted by a provider’s propagation model. Fixed wireless service providers must include locations with current and former subscribers. In the case of former subscribers, providers should not report those locations that they no longer believe to be serviceable due to subsequent changes in the network. Likewise, if a provider is receiving or has received universal service support to provide broadband service in a particular geographic area—or has other federal, state, or local obligations to make service available in the area—and the provider has begun to make service available in that area, then the provider must include all of the deployed locations, regardless of whether they are within or beyond the bounds of the maximum buffer. In adopting these standards, we confirm that the availability of fixed wireless service at a given location may ultimately be determined through the challenge process and other determinations based on facts on the ground.

⁶⁶ *Id.* at 2.

⁶⁷ *Id.*

⁶⁸ USTelecom/WISPA May 14, 2020 *Ex Parte* Letter at 1-2.

⁶⁹ *Id.* USTelecom and WISPA explained that fixed wireless providers often develop their coverage maps by first determining which locations in an area they serve or are seeking to serve, and then use a propagation model to create an area-based map that includes those point locations—a methodology that reflects their typical use of point-to-point and point-to-multipoint configurations in their network design. They further assert that, in developing an area-based map from a propagation model, WISPs often start with a 50% cell edge probability and then add a certain amount of path loss so that the contour eventually reflects the locations in their service area and network design. The amount of path loss added decreases the contour from the starting point such that it typically equates to a cell edge probability of 75%. The parties argue that adding additional path loss to produce a contour that reflects a 90% cell edge probability would remove locations that the provider serves (both existing and potential customers) with its network.

⁷⁰ USTelecom/WISPA May 14, 2020 *Ex Parte* Letter at n.3.

Therefore, we will require a fixed wireless provider to remove from its broadband availability data areas or locations that a successful challenge or Commission inquiry has shown to be unserved by that provider.

25. Although we could prescribe additional propagation modeling parameters for fixed wireless providers, we are concerned that doing so would risk making the maps less accurate. The specific parameters we adopt above will allow providers to use their internal modeling standards and practices in a way that will best reflect the service they are capable of providing, and the service providers are in the best position to determine where their service is available. However, to facilitate public feedback, a robust challenge process, and ease of analysis by Commission staff, we also adopt the USTelecom and WISPA proposal to require fixed wireless providers submitting propagation maps and propagation model details to disclose the several of the parameters and details used to create their propagation maps and models.

26. *First*, service provider must identify the radio network planning tool(s) used, along with information including: (1) the name of the planning tool; (2) the version number of the planning tool; (3) the name of the planning tool's developer; (4) the granularity of the model (e.g., 3-arc-second square points); and (5) affirmation that the coverage model has been validated and calibrated using on-the-ground testing and/or other real-world measurements. *Second*, service providers must submit base station information including: (1) frequency band(s) used to provide service being mapped; (2) carrier aggregation; (3) radio technologies used on each band (e.g., 802.11 ac-derived OFDM, proprietary OFDM, LTE); (4) elevation above ground for each base station; and (5) coordinates of each base station.⁷¹ *Third*, service providers must submit information on the height and power values used for receivers/CPE antennas in their modeling (height must be within a range of four to seven meters). *Finally*, service providers must submit terrain and clutter information including the name and vintage of the dataset used, the resolution of clutter data, and a list of clutter categories used with a description of each, along with a description of the link budget and parameters including predicted signal strength.

27. We believe that this information will assist us in determining whether the fixed wireless broadband data that we collect is granular and accurate, consistent with the requirements and purpose of the Broadband DATA Act.⁷² It will also promote participation from the public and from other government entities and third parties to ensure that the resulting maps are as accurate as possible. For example, interested parties may be able to use this information to identify poorly calibrated propagation models which will obviate the need for a lengthier case-by-case challenge process and give filers an opportunity to correct their coverage data more quickly. It similarly will provide Commission staff with an opportunity to identify possible concerns with filers' model parameters and most efficiently target the Commission's auditing and verification efforts. At the same time, it provides filers the greatest ability to ensure their coverage data best reflects the realities on the ground without being constrained to unnecessarily prescriptive modeling requirements that could increase cost and burden with little consequent benefit to the accuracy of broadband maps.

28. USTelecom and WISPA assert that certain categories of the information we are collecting from terrestrial fixed wireless providers may be commercially sensitive or raise security concerns.⁷³ Other information -- such as the frequency bands used to provide service, carrier aggregation, radio technologies used, terrain and clutter information, base station elevation, and CPE height and power information -- do not appear to raise confidentiality concerns. We will treat this information as presumptively public and will treat the remaining information as presumptively non-public. We believe

⁷¹ While this information was not included as an element of the USTelecom/WISPA proposal, we find that it is critical to our ability to assess providers' coverage maps and that, without it, the value of other information included in proposal, for example, elevation above ground for each base station, would be limited. We are therefore including base station coordinates in the required information.

⁷² See 47 U.S.C. § 642(b)(2)(A)(v).

⁷³ USTelecom/WISPA May 14, 2020 *Ex Parte* Letter at 3.

there is a strong public interest in having as much access to this information as possible in order to facilitate public review and input on its accuracy, but we acknowledge the potential sensitivities and believe this approach best balances the two interests.

B. The Collection and Reporting of Data for Mobile Broadband Internet Access Service

29. We require mobile broadband providers to submit propagation maps and propagation model details based on minimum specified parameters. Service providers will be required to submit propagation maps reflecting technology-specific user download and upload speeds given prescribed minimum cell edge probabilities, cell loading factors, and modeling resolution. We otherwise allow service providers to choose other propagation modeling parameters that reflect each provider's particular network configurations, deployed infrastructure, and geographic characteristics of each area. Service providers must submit to the Commission modeling parameters they use in modeling the prescribed network performance standards which will be available for public review. Providing flexibility to select modeling parameters combined with public disclosure of those parameters will ensure that submitted propagation maps reflect on-the-ground performance while fostering transparency and confidence in modeled performance. As AT&T points out, "The answer is not to prescribe *how* providers should create their maps, but rather to clearly define *what the map must represent*, and then to require transparency."⁷⁴

30. In addition to requiring mobile broadband providers to use propagation modeling to generate and to submit maps showing their 4G LTE coverage, we additionally require providers to submit information, data, and coverage maps for existing 3G networks and next-generation 5G-NR networks. By requiring technology-specific maps, this approach provides information about the availability of the three most widely deployed generations of mobile wireless technology and will make it easier to compare the services that different mobile broadband providers offer. Commenters previously have expressed support for this approach.⁷⁵

31. Under current Form 477 reporting requirements, facilities-based mobile broadband providers must report on mobile broadband deployment by submitting, for each technology, polygons in GIS mapping files that digitally represent the geographic areas in which a customer should expect to receive the minimum upload and download speed the mobile provider advertises for that area or, if the provider does not advertise such speeds, the minimum upload and download speeds users should expect to receive within the polygon.⁷⁶

⁷⁴ AT&T Comments at 3.

⁷⁵ See, e.g., AT&T Oct. 10, 2017 Comments at 5; AT&T Comments at 4 ("as a first step to obtaining more accurate propagation maps from mobile and fixed wireless providers, the FCC should define the level of service to be mapped" and noting that "the mobile map would be developed by different wireless technologies (e.g., 3G, 4G or 4G LTE, and 5G-NR)"); New York City Comments at 2 (expressing support for establishing technical standards for broadband reporting for "4G LTE and future generation mobile broadband technologies"); *but see* AT&T Reply at 5 (refining proposal to recommend that the Commission require "mobile providers to report on their broadband networks by speed capability rather than technology," and proposing that mobile providers report "their mobile voice and broadband coverage with coverage maps depicting two service levels: (1) voice and broadband service below 5 Mbps download and 1 Mbps upload, and (2) voice and broadband service at or above 5 Mbps download and 1 Mbps upload"); Letter from Mary L. Henze, Asst. Vice Pres., AT&T Services, Inc., to Marlene Dortch, Secretary, FCC, WC Docket No. 19-195, at 2 (filed May 15, 2020) (AT&T May 15, 2020 *Ex Parte* Letter) (recommending two-service level maps for demonstrating 4G LTE and 5G-NR coverage). While we require mobile providers to submit coverage maps showing their 3G, 4G LTE, and 5G-NR coverage, we also require that coverage maps reflect minimum speed thresholds associated with each technology.

⁷⁶ See FCC Form 477, Local Telephone Competition and Broadband Reporting Instructions, at 25 (*FCC Form 477 Instructions*), <https://us-fcc.app.box.com/v/Form477Instructions>.

32. In the *Digital Opportunity Data Collection Order and Further Notice*, the Commission sought comment on incorporating mobile voice and broadband coverage into the Collection and on what additional steps the Commission should take to obtain more accurate and reliable mobile broadband deployment data.⁷⁷ The Commission asked commenters to refresh the record on the potential use of radio frequency (RF) signal prediction, including the mutual use (by the Commission and stakeholders) of a standardized RF propagation prediction model and standardized coverage maps for mobile services.⁷⁸ The Commission asked commenters to discuss their experience in the Mobility Fund Phase II proceeding, including the lessons the Commission should draw from the standardized parameters it established for propagation models in that proceeding and whether standardized RF signal strength prediction and technical parameters including download speed, cell loading, and cell edge coverage probability are sufficient to demonstrate coverage.⁷⁹ The Commission also asked whether any additional parameters are necessary and whether 5G technology requires different standardized parameters.⁸⁰ Providers, to varying degrees, supported the use of propagation models with standardized parameters, though all commenters who opined on the issue supported 4G LTE parameters defined by a cell edge probability of 90% and a cell loading factor of 50%.⁸¹

33. On December 4, 2019, the Rural Broadband Auctions Task Force released a report on the results of its investigation of purported inaccuracies in the mobile broadband coverage data submitted by mobile providers for the one-time collection of 4G LTE coverage data in the Mobility Fund Phase II proceeding (*Mobility Fund Phase II Investigation Staff Report* or *Report*).⁸² The *Report* included recommendations on how the Commission could improve its collection of mobile broadband coverage data, including recommendations for standardizing many of the parameters carriers should use to generate propagation maps. In particular, the *Report* recommended that propagation models be based on standardized parameters for reference signal received power (RSRP) value and/or minimum downlink and uplink speeds, standard cell loading factors and cell edge coverage probabilities, and maximum terrain and clutter bin sizes, among other parameters.⁸³ The *Report* also recommended that the Commission collect specific information used in propagation models, including the locations and characteristics of certain cell sites used for mobile wireless service, the modeling software used, the entire link budget, the

⁷⁷ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7549, para 112.

⁷⁸ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7550, para. 116.

⁷⁹ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7550, para. 116. In 2017, in the Mobility Fund Phase II proceeding, the Commission separately instituted a new, one-time collection of data to determine the deployment of 4G LTE for purposes of establishing the areas eligible for universal service support in the Mobility Fund Phase II auction. *Connect America Fund, Universal Service Reform—Mobility Fund*, WC Docket No. 10-90, WT Docket No. 10-208, Order on Reconsideration and Second Report and Order, 32 FCC Rcd 6282, 6296, para. 28 (2017) (*Mobility Fund II Order on Reconsideration and Second Report and Order*).

⁸⁰ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7550-51, para. 116.

⁸¹ See, e.g., CCA Comments at 5-6, CTIA Comments at 5, Verizon Comments at 9, Verizon Reply at 5, U.S. Cellular Comments at 15.

⁸² Rural Broadband Auctions Task Force Staff Report, Mobility Fund Phase II Coverage Maps Investigation Staff Report (2019), <https://docs.fcc.gov/public/attachments/DOC-361165A1.pdf> (*Mobility Fund Phase II Investigation Staff Report*). In December 2018, the Commission suspended the Mobility Fund Phase II challenge process and launched an investigation into potential violations of challenge process rules by one or more major providers. News Release, FCC, FCC Launches Investigation Into Potential Violations of Mobility Fund Phase II Mapping Rules (Dec. 7, 2018), <https://docs.fcc.gov/public/attachments/DOC-355447A1.pdf>.

⁸³ *Mobility Fund Phase II Investigation Staff Report* at 3, para. 9. The *Report* also recommended that the Commission consider requiring that providers assume the minimum values for any additional parameters that would be necessary to accurately determine the area where a handset should achieve download and upload speeds no less than the minimum throughput requirement for any modeling that includes such a requirement. *Id.*

sources of terrain and clutter data, and clutter values.⁸⁴ The Commission subsequently placed the *Report* into the record of this proceeding.

34. Several of the requirements of the Broadband DATA Act are similar to proposals and recommendations from the *Digital Opportunity Data Collection Order and Further Notice* and the *Mobility Fund Phase II Investigation Staff Report*. The Act requires the Commission to collect from each mobile broadband provider propagation maps and propagation model details that indicate a provider's current 4G LTE coverage based on certain minimum specified parameters.⁸⁵ The maps must "take into consideration the effect of clutter," and must reflect "a download speed of not less than 5 megabits per second and an upload speed of not less than 1 megabit per second with a cell edge probability of not less than 90%" and "cell loading of not less than 50%," as well as "any other parameter that the Commission determines to be necessary to create a map . . . that is more precise than the map produced" under the Mobility Fund Phase II data collection.⁸⁶

1. Standardized Predictive Propagation Maps for Mobile Service

35. At the outset we prescribe the same cell edge probability, cell loading, and clutter factors for each of the mobile broadband technologies—3G, 4G, and 5G-NR—for providers' propagation model results. These parameters also will apply to the propagation models providers use to generate the shapefiles that depict the coverage of their voice services.⁸⁷ While commenters support consistent parameters in the context of 4G LTE, we conclude that certain uniform minimum parameter values are equally important for demonstrating 3G and 5G-NR coverage as well as voice coverage and that they will help the Commission assess and compare coverage maps among providers for each technology.⁸⁸

36. *First*, as noted above, we require each coverage map to reflect coverage areas where users should expect to receive the minimum required download and upload speeds with not less than a 90% cell edge coverage probability and a cell loading of not less than 50%. The Broadband DATA Act set these requirements for 4G LTE data submissions, and we find that they are appropriate metrics to use for 3G and 5G-NR data submissions and voice submissions as well. We agree with commenters that by

⁸⁴ *Mobility Fund Phase II Investigation Staff Report* at 3, para. 10.

⁸⁵ 47 U.S.C. § 642(b)(2)(B).

⁸⁶ 47 U.S.C. § 642(b)(2)(B).

⁸⁷ The Commission sought comment on incorporating mobile wireless voice into the Digital Opportunity Data Collection in the *Digital Opportunity Data Collection Order and Further Notice*. *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7549, para. 112; *see also 2017 Data Collection Improvement FNPRM*, 32 FCC Rcd at 6333, paras. 12-13 (seeking comment on how standardization of minimum parameters could allow "more meaningful comparisons among service providers' mobile broadband deployment").

⁸⁸ *See, e.g.*, CTIA Comments at 4, 8 (recommending that the Commission adopt a standardized framework for coverage maps that reflects consumer experience but contending that it is premature to adopt standardized parameters for 5G); CTIA Reply at 4 (noting that "service-level parameters for estimating 4G LTE coverage" will "enable the Commission to aggregate and compare coverage maps across wireless providers"); Verizon Comments at 9 (noting that the Commission can address most of the concerns that have been expressed about the Form 477 mobile deployment data "simply by adopting standardized modeling parameters for 4G LTE propagation models (but not for 5G, for which the adoption of standardized parameters is premature)"). *See also* AT&T Oct. 10, 2017 Comments at 5 (recommending required parameters "with a standard cell edge probability of attaining specific download speeds for each technology (3G/4G, 4G LTE, and 5G) . . ."); Connected Nation Oct. 10, 2017 Comments at 10 (" . . . [t]he Commission should require filers to use specified predictive propagation models to prepare their Form 477 deployment filings. . . . Each carrier should submit, in addition to a certified propagation model, a ReadMe.txt file that explains each of the variables that were used in the development of the model. As the Commission examines speeds available by platform, it is important to understand all services that are available. For rural America, this is especially important to understand since some areas may still only have access to 2G or 3G services).

adopting the stricter coverage probability and network loading parameters that many providers themselves use to design their networks, we will help ensure that the coverage maps providers submit do not overestimate coverage and that they more closely match real consumer experience.⁸⁹ We adopt the Broadband DATA Act’s definitions of the terms “cell edge probability” and “cell loading.”⁹⁰

37. *Second*, we require that mobile service providers generate coverage maps with a spatial resolution of 100 meters or better.⁹¹ The Broadband DATA Act defines clutter as “a natural or man-made surface feature that affects the propagation of a signal from a base station”⁹² and requires that the Commission develop rules that require providers to account for the effect of clutter as part of the propagation models and coverage maps for 4G LTE service.⁹³ When predicting mobile coverage using a propagation model, it is standard practice to incorporate digital terrain information so that propagation models predict those instances when the radio signal will likely be blocked on the ground. Similarly, it is common practice to include location-specific data for clutter which can also attenuate and scatter radio waves as they propagate.⁹⁴

38. For consistency between submissions, and to implement the Broadband DATA Act’s requirement that providers account for the effect of clutter in producing their propagation models, we specify a baseline resolution requirement for the terrain and clutter data used for modeling and producing

⁸⁹ See, e.g., CCA Comments at 5-6 (“... a map defined by at least 90 percent cell edge probability and 50 percent cell loading factor will prevent against an overstatement of network coverage and help ensure that rural communities are provided adequate mobile broadband service”); Verizon Comments at 9 (noting that 90 percent cell edge probability and 50 percent loading factor parameters “. . . are more robust than those adopted by the Commission in the Mobility Fund proceeding, and thus should make it less likely that actual user experience falls short of that predicted by the model”); U.S. Cellular comments at 15 (expressing support for 90% cell edge probability and 50% cell loading parameters). See also AT&T May 15, 2020 *Ex Parte* Letter at 2 (expressing support for applying same coverage probability and cell loading parameters to 5G services, “the first map would indicate where a provider has a 90% probability of delivering 7Mbps/1Mbps at the cell edge (as proposed for the 5G Fund) with 50% loading. The second map could display where 5G service provided a 90% probability of 1Mbps at the cell edge with 50% loading”). The California PUC opposed the use of propagation modeling based on concerns about the potential inaccuracy of results. California PUC Comments at 8. We expect that the coverage probability, cell loading, and clutter parameters we adopt today will help ensure reliability of the data we collect. 47 U.S.C. § 642(b)(2)(B).

⁹⁰ We adopt the Broadband DATA Act’s definitions of “cell edge probability” and “cell loading” verbatim. Under the Broadband DATA Act “cell edge probability” is defined to mean “the likelihood that the minimum threshold download and upload speeds with respect to broadband Internet access service will be met or exceeded at a distance from a base station that is intended to indicate the ultimate edge of the coverage area of a cell.” 47 U.S.C. § 641(3). “Cell loading” is defined to mean “the percentage of the available air interface resources of a base station that are used by consumers with respect to broadband Internet access service.” 47 U.S.C. § 641(4). In response to CTIA’s request for clarification, we clarify that we intend the term “cell loading” to refer to the percentage of available air interface resources for both the serving cell and neighboring cells. See Letter from Matthew Gerst, Vice Pres., Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 11-10, 19-195, at 2 (filed May 18, 2020) (CTIA May 18, 2020 *Ex Parte* Letter). To the extent providers estimate cell loading on neighboring cells to calculate an interference margin as part of their link budgets, we would expect providers to use a 50% cell loading factor for neighboring cells.

⁹¹ “Spatial resolution of 100 meters or better” refers to the maximum spacing between calculated values which form a grid of 100 meters by 100 meters. Higher spatial resolution data (e.g. less than 100 meters grid sizes) are composed with a greater number of grids to yield more details than those of lower spatial resolutions (e.g. greater than 100 meters grid sizes).

⁹² 47 U.S.C. § 641(5).

⁹³ 47 U.S.C. § 642(b)(2)(B).

⁹⁴ See, e.g., AT&T Comments at 7 (“Different wireless carriers obtain terrain and clutter information from different sources The Commission should require filers to provide a complete list of the clutter categories used in their propagation model, along with a detailed description of each clutter category”).

maps. We adopt the Broadband DATA Act's definition of the term clutter for purposes of the collection.⁹⁵ Without sufficient resolution for terrain and clutter data, natural obstructions to radio propagation can be missed and cause propagation models to misrepresent cellular coverage. The *Mobility Fund Phase II Investigation Staff Report* recommended that our data specifications include maximum terrain and clutter bin sizes and noted that failure to adequately model local clutter and terrain may have contributed to inaccuracies in carrier propagation models in the Mobility Fund Phase II proceeding.⁹⁶ Several commenters support requiring carriers to report the clutter factors they use across their coverage areas and requiring the use of terrain and clutter data with a resolution of 100 meters or better.⁹⁷ We find that establishing a baseline terrain and clutter bin value of 100 meters or better will help improve the overall accuracy and comparability of the data we collect.

39. Our decision to require reporting for 3G, 4G LTE, and 5G-NR networks is consistent with the requirements of the Broadband DATA Act and the streamlining measures the Commission adopted in the *Digital Opportunity Data Collection Order and Further Notice*. Such a requirement should serve the public interest by providing accurate, granular data on the availability of the most prevalent generations of mobile broadband service. We reject arguments that we lack legal authority to establish mapping parameters for 5G-NR services or that it would be premature to do so.⁹⁸

40. Our decision to adopt reporting parameters for 5G-NR services implements the Broadband DATA Act requirement that the Commission, if it determines that it is necessary to revise reporting standards to collect accurate propagation maps with respect to future generations of mobile broadband technologies, shall immediately commence a rulemaking to adopt new reporting standards for those technologies.⁹⁹ We require mobile providers to submit coverage maps reflecting 5G-NR deployment based on different speed thresholds than the Broadband DATA Act requires for 4G LTE services because we find that the 4G LTE speed thresholds specified in the Act are insufficient to

⁹⁵ Clutter and terrain bin size refers to a spatial resolution unit of the data.

⁹⁶ *Mobility Fund Phase II Investigation Staff Report* at 3, 53 paras. 9, 79.

⁹⁷ CCA Comments at 7 (expressing support for requiring carriers to report the clutter factors they use across their coverage areas, but noting that “[w]ith varied geographic features across the country, clutter factors should match local environments, and accordingly clutter factors cannot be standardized”); CTIA Comments at 5 & n.16; AT&T May 15, 2020 *Ex Parte* Letter at 2; Letter from Matthew Gerst, Vice Pres. Regulatory Affairs, CTIA, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 19-195, at 1 (filed May 29, 2020) (CTIA May 29, 2020 *Ex Parte* Letter); (supporting “use of appropriate clutter factors and terrain data with a resolution of 100 meters or better”); Letter from Alexi Maltas, CCA, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 19-195, at 3 (filed May 28, 2020) (CCA May 28, 2020 *Ex Parte* Letter) (noting that CCA supports “the disclosure of terrain and clutter factor at a resolution of 100 meters or less, but with the caveat that any requirement needs to account for what data is available in a particular location”). We agree. We are not requiring that carriers use a single clutter factor for their entire service area. We only specify that carriers (1) incorporate terrain and clutter factors into their propagation model, and (2) use terrain and clutter data with a resolution of 100 meters or better.

⁹⁸ See CCA May 28, 2020 *Ex Parte* Letter at 3 (“the Commission is currently seeking comment on whether to adopt 7 Mbps/1 Mbps for 5G in the Establishing a 5G Fund for Rural America proceeding. CCA looks forward to offering its perspective on that question”); Verizon Comments at 9 (“The Commission can, however, address most of the concerns that have been expressed about the Form 477 mobile broadband deployment data simply by adopting standardized modeling parameters for 4G LTE propagation models (but not for 5G, for which the adoption of standardized parameters is premature . . .”); CTIA May 18, 2020 *Ex Parte* Letter at 3 (“ . . . the Broadband DATA Act requires the Commission to make a ‘determin[ation]’ that the specifications above are ‘insufficient’ to collect accurate propagation maps and propagation model details. And, after such finding, the Act requires the Commission to ‘immediately commence a rule making to adopt new reporting standards with respect to those technologies.’ Consistent with this directive, the Commission should seek further input on any specifications for mapping 5G that deviate from the Broadband DATA Act’s standardized parameters”).

⁹⁹ 47 U.S.C. § 642(b)(3).

accurately reflect 5G-NR coverage.¹⁰⁰ In the *Digital Opportunity Data Collection Order and Further Notice*, the Commission specifically asked whether 5G technology would require different standardized parameters.¹⁰¹ Moreover, and as noted above, nationwide providers have deployed 5G networks in different areas throughout the country and additional rollouts are planned.¹⁰² The Commission needs reliable and accurate information about the scope of these 5G-NR deployments as they occur and the parameters we establish today are appropriate for assessing service quality and consumer experience for all mobile technologies, including 5G-NR. Because we do not prescribe extensive modeling parameters and provide flexibility to providers to select and disclose appropriate parameters that reflect the configuration of their networks, commenters' concerns here are largely mooted.

41. *Third*, we prescribe technology-specific user download and upload speeds that users should expect in light of the cell edge probabilities and cell loading factors described above. For 4G LTE, as specified in the Broadband DATA Act, we will require mobile broadband service providers to submit propagation maps and propagation model details that demonstrate where mobile wireless users should expect to receive minimum user speeds of 5/1 Mbps at the cell edge, with a cell edge probability of not less than 90% and a cell loading of not less than 50%.¹⁰³ The speed thresholds must represent the expected user experience, as measured at the application layer.

42. For 5G-NR networks, we will require service providers to submit maps that model 5G-NR service using two distinct minimum speed thresholds, both of which must be modeled using a cell edge probability of 90% and cell loading of 50%. First, we require service providers to submit 5G-NR deployment data using a minimum speed threshold of 7/1 Mbps at the cell edge. We anticipate that a 7/1 Mbps speed metric is realistically attainable and will reflect the minimum desired typical user experience across broad 5G-NR coverage areas.¹⁰⁴ In particular, this speed threshold is likely to be attainable by mobile broadband service providers deploying 5G-NR service over smaller channel blocks of low-band spectrum¹⁰⁵ finds support in the record.¹⁰⁶ Second, we require service providers to submit 5G-NR deployment data based on a higher, 35/3 Mbps minimum speed threshold (at the cell edge). The Commission previously adopted 35/3 Mbps for universal service supported 5G deployments in Puerto Rico and the U.S. Virgin Islands.¹⁰⁷ The two-tiered approach we adopt today for mapping 5G-NR service will provide the best information to end users on where they can expect to receive 5G-NR services capable of supporting a variety of potential use cases.

¹⁰⁰ Accordingly, we reject CTIA's argument that it is premature to adopt any parameters for 5G-NR services that are different from those specified in the Act. *See* CTIA May 18, 2020 *Ex Parte* Letter at 3.

¹⁰¹ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7550-51, para. 116.

¹⁰² *See* 2020 *Broadband Deployment Report*, FCC 20-50, at 47, para. 91; *Establishing a 5G Fund for Rural America*, GN Docket No. 20-32, et al., Notice of Proposed Rulemaking and Order, 35 FCC Rcd 3994, 4000, para. 16 (2020) (*5G Fund NPRM*).

¹⁰³ 47 U.S.C. § 642(b)(2)(B).

¹⁰⁴ *See* *5G Fund NPRM*, 35 FCC Rcd at 4027, para. 98.

¹⁰⁵ The spectral efficiency gains afforded by 5G-NR technology could be expected to allow for deployment of mobile broadband service at speeds of 7/1 Mbps using the same amount of spectrum required by a 4G LTE network to deliver 5/1 Mbps service.

¹⁰⁶ AT&T May 15, 2020 *Ex Parte* Letter at 2 (outlining potential two service-level approach to map rollout of 5G NR services, where "the first map would indicate where a provider has a 90% probability of delivering 7Mbps/1Mbps at the cell edge (as proposed for the 5G Fund) with 50% loading.").

¹⁰⁷ *PR-USVI Fund Report and Order*, 34 FCC Rcd at 9172, para. 124. In the *PR-USVI Fund Report and Order*, the Commission required 35 Mbps download speed because "the minimum performance requirements of 5G technology, using a typical 10 MHz channel bandwidth, including other system efficiencies such as Multiple Input Multiple Output (MIMO) should permit service providers to meet this speed requirement." *PR-USVI Fund Report and Order*, 34 FCC Rcd at 9172, para. 124. *See also* *5G Fund NPRM*, 35 FCC Rcd at 4027, para. 97.

43. We find it appropriate to adopt requirements for reporting 5G-NR coverage at this time based on the current state of these commercial deployments. The Commission sought comment on reporting standards for 5G networks in the *Digital Opportunity Data Collection Order and Further Notice*, and several commenters expressed support for adopting reporting standards for 5G mobile service.¹⁰⁸ Major U.S. wireless carriers have deployed, or are deploying, commercial 5G networks throughout the country.¹⁰⁹ In view of the Commission's previous request for comment and the record it received on this issue, we disagree with those commenters that argue we should seek additional comment before adopting reporting standards for 5G-NR services.¹¹⁰

44. We adopt minimum expected user speeds of 200/50 kbps at the cell edge for 3G network deployments at the prescribed cell edge probability and cell loading.¹¹¹ These speeds are consistent with the speed thresholds for 3G service used by the Commission in the Mobility Fund I context,¹¹² and represent a useful baseline for mapping 3G mobile network coverage. In the *Digital Opportunity Data Collection Order and Further Notice*, the Commission noted that commenters had previously expressed support for applying standardized parameters to coverage maps for each mobile broadband technology, including 3G, and it asked commenters to refresh the record on that issue.¹¹³ Although the transition to networks capable of supporting 5G technology is underway nationwide, we recognize that many mobile broadband network service providers continue to operate 3G networks—particularly providers that serve customers in rural areas of the country.¹¹⁴

45. *Third*, we require providers to disclose to the Commission details of their propagation models and of the link budgets they use for modeling cell edge network throughput (both uplink and downlink). The *Mobility Fund Phase II Investigation Staff Report* recommended that the Commission require providers to include detailed information in their filing related to how they developed their coverage maps, such as the locations and specific characteristics of cell sites, the modeling software used, the entire link budget and values, and terrain source data.¹¹⁵ Commenters expressed support for requiring providers to disclose similar information.¹¹⁶ We agree that requiring providers to submit detailed data

¹⁰⁸ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7550, para. 116 (seeking comment on requiring providers to submit coverage maps using standardized parameters and asking whether 5G technology would require different parameters); New York City Comments at 2 (arguing “. . . a standardized propagation model for 4G LTE and future generation mobile broadband technology . . . is needed”).

¹⁰⁹ *Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, GN Docket No. 14-285, 2020 Broadband Deployment Report, FCC 20-50, at 47, para. 91 (Apr. 25, 2020) (2020 Broadband Deployment Report); *5G Fund NPRM*, 35 FCC Rcd at 4000, para. 16.

¹¹⁰ See CCA May 28, 2020 *Ex Parte* Letter at 2 (arguing that “. . . the record does not establish the appropriate speeds at the cell edge for other technologies, such as 5G”).

¹¹¹ 3G network deployments include both CDMA and GSM deployments. See *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7525, para. 46.

¹¹² *Connect America Fund et al.*, Report and Order and Further Notice of Proposed Rulemaking, 26 FCC Rcd 17663, 11791-92, para. 361 (2011).

¹¹³ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7550, para. 114 (citing AT&T Oct. 10, 2017 Comments at 5).

¹¹⁴ See generally Form 477 data, <https://www.fcc.gov/mobile-deployment-form-477-data>.

¹¹⁵ *Mobility Fund Phase II Investigation Staff Report* at 53, para. 81.

¹¹⁶ AT&T May 15, 2020 *Ex Parte* Letter at 2 (proposing list of parameters that should be disclosed with every propagation map); AT&T Reply at 1 (arguing that “the Commission should adopt an approach based on mapping to Commission-defined service levels, with full transparency regarding the modeling parameters that filers use to generate their maps, including detailed link budgets”); AT&T Comments at 6 (recommending that “[a]long with each service level coverage map, the Commission should require filers to submit the specific parameters used in producing each coverage contour, including a detailed link budget . . .”); CCA Comments at 4-7 (recommending

(continued....)

about their propagation models and link budgets will help the Commission verify the accuracy of their propagation models. Accordingly, we require providers to disclose the following information regarding their radio network planning tools: (1) the name of the planning tool; (2) the version number used to produce the map; (3) the name of the developer of the planning tool; (4) an affirmation that the coverage model has been validated and calibrated using drive test and/or other real-world measurements, (the affirmation should include a brief summary of the process used for calibration and date of calibration); (5) the propagation models used, including a description of the conditions for use (such as model X in urban areas, model Y in rural areas), and any sites where conditions deviate; and (6) the granularity of the models used (e.g., 3-arc-second square points, bin sizes (subject to the baseline requirements adopted here), and other parameters).¹¹⁷

46. In addition, we also require providers to submit: (1) all applicable link-budgets used to design their networks and provide service at the defined speeds, and all parameters and parameter values included in those link budgets; (2) a description of how the carrier developed its link budget(s) and the rationale for using specific values in the link budget(s); and (3) the name and vintage of the terrain and clutter datasets used, the specific resolution of the data (subject to the minimum requirements adopted in this *Order*), a list of clutter categories used, and a description of each category and clutter factor.¹¹⁸ For each of the categories of required data, we require providers to submit reasonable parameter values and propagation models consistent with how they model their services when designing their networks. In no case may any provider omit link budget parameters or otherwise fail to account for constraints on their coverage projections.¹¹⁹ We also require that the above-described information be made public, subject to individual requests for confidential treatment, so that it is available to those who wish to challenge provider-submitted coverage maps.¹²⁰

47. We require service providers to submit their coverage maps in vector format.¹²¹ There are two predominant forms for storing and displaying map information digitally. Raster format provides a grid of individual points that, together, represent an image. Vector format produces an image by storing and displaying a set of connected lines in the form of the start and end points, rather than the individual pixels of the line as would be done with raster-format data. When taken together, the set of lines form the boundaries for different colors within a map or, more generally, an image. While raster format arguably provides for more detail, it involves significantly more data. There are differing views in the record about whether to require raster format. Some commenters argue that raster format would improve consistency

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factors that should be included as part of “detailed Radio Frequency Link Budget submission”); CTIA May 18, 2020 *Ex Parte* Letter at 4 (arguing that “[w]hile the Commission should refrain from adopting standardized mapping parameters beyond the requirements of the Broadband DATA Act based on the current record, the Commission could gain valuable experience by adopting a framework under which mobile broadband providers would disclose to the Commission, with protections for confidentiality, other values”).

¹¹⁷ See AT&T May 15, 2020 *Ex Parte* Letter at 2.

¹¹⁸ See AT&T May 15, 2020 *Ex Parte* Letter at 2-3.

¹¹⁹ *Mobility Fund Phase II Investigation Staff Report* at 19-20, para. 50 & nn.98-99 (explaining that it is unreasonable for a provider to omit unspecified parameters when generating mobile coverage data).

¹²⁰ See AT&T May 15, 2020 *Ex Parte* Letter at 2 (proposing list of parameters that should be disclosed with every propagation map and recommending that providers be able to request confidentiality as needed).

¹²¹ In the *Digital Opportunity Data Collection Order and Further Notice*, the Commission sought comment on whether providers should be required to submit standardized coverage maps in vector or raster format, on whether raster-formatted data would improve the Commission’s ability to verify the accuracy of deployment data, and on which of the two formats is the least burdensome. *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7551-52, para. 118.

and comparability of provider data.¹²² Others argue that requiring raster format would be burdensome.¹²³ We find that requiring the submissions in vector format will facilitate efficient and effective collection of data while minimizing burdens for providers. We are not persuaded that the benefits of requiring raster format outweigh the potential added burdens for some providers.¹²⁴ Requiring submission of raster files would not only increase burdens on service providers, but also expend significant Commission resources needed to process the greater volume of data associated with raster-formatted submissions. In addition, we find that the evidence in the record fails to demonstrate that requiring providers to use raster format for their submissions is necessary for the Commission to be able to verify mobile broadband coverage. Instead, we anticipate that the other verification measures we propose in the *Third Notice* would be more useful for verifying provider submissions.

48. Taken together, we expect that the minimum parameter values we establish will improve the accuracy, comparability, and reliability of the mobile broadband data we collect. As discussed above, the Broadband DATA Act gives the Commission the authority to adopt any other parameters it determines are necessary to create a map that is “more precise than the map produced as a result of the submissions under the Mobility Fund Phase II information collection.”¹²⁵ In accordance with this authority, we direct OEA and WTB to modify the speed, probability, and loading parameters as necessary to account for improvements in mobile broadband service over time.¹²⁶ This will continue to allow the Commission to ensure the collection of accurate, comparable, and granular broadband data maps in the future.

2. Collecting Infrastructure Information

49. In the *Digital Opportunity Data Collection Order and Further Notice*, we proposed to collect certain types of network infrastructure information to be submitted by providers upon Commission request, and we sought comment on whether the Commission should require mobile service providers to submit infrastructure information to verify providers’ broadband network coverage.¹²⁷ In this *Second Report and Order*, we require that mobile providers submit, on an annual basis, the proposed mobile infrastructure information that was described in the *Digital Opportunity Data Collection Order and Further Notice* as well as other infrastructure information that will help the Commission to independently verify the accuracy of provider coverage propagation models and maps. Specifically, we require that mobile providers submit the following information: (1) the geographic location of cell sites; (2) the site ID number of each transmitter; (3) the latitude and longitude of each transmitter; (4) the ground elevation above mean sea level (AMSL) of the site (in meters); (5) the number of sectors at each cell site; (6) the capacity (Mbps) and type of backhaul used at each cell site; (7) the per site classification (e.g., urban, suburban, or rural); (8) the Effective Isotropic Radiated Power (EIRP, in dBm) of the transmitter; (9) the elevation above ground level for each base station antenna (in meters) and other transmit antenna

¹²² See, e.g., NYC Comments at 2 (noting that raster format would allow consistency and ease of comparability among shapefiles); ACT—The App Association Comments at 5 (supporting raster format to provide visual representations of actual service areas).

¹²³ See, e.g., U.S. Cellular Comments at 17 (claiming that a raster format would be burdensome because it currently relies on vector-formatted data to create its propagation maps).

¹²⁴ See, e.g., U.S. Cellular Comments at 17 (noting that it “relies on vector-formatted data to create its propagation maps, and has therefore developed all of its mapping related processes based upon its utilization of this vector-formatted data” and that a requirement to use raster format would “would force upon U.S. Cellular the burdensome task of reprogramming all of the tools and processes it currently relies upon to produce its coverage maps”).

¹²⁵ 47 U.S.C. § 642(b)(2)(B)(ii)(II).

¹²⁶ See also 47 U.S.C. § 642(b)(3).

¹²⁷ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7552, paras. 119-20.

specifications;¹²⁸ (10) operating radiated transmit power of the radio equipment at each cell site; (11) frequency band(s) used to provide service being mapped including channel bandwidth (in megahertz); (12) throughput and associated required signal strength and signal to noise ratio; (13) cell loading factors; (14) radio technologies used on each band;¹²⁹ and (15) the areas enabled with carrier aggregation and a list of band combinations.¹³⁰

50. While the Broadband DATA Act does not specifically require the Commission to collect infrastructure data, it does require the Commission to establish “processes through which the Commission can verify the accuracy of data” mobile providers submit.¹³¹ In the *Digital Opportunity Data Collection Order and Further Notice*,¹³² we sought comment on whether the Commission should require service providers to submit mobile infrastructure information to assist the Commission in verifying the accuracy of providers’ broadband network coverage data, and we proposed collecting certain types of network infrastructure information to be submitted upon Commission request.¹³³ We also sought comment on whether the infrastructure information in our proposal would be sufficient to evaluate providers’ mobile coverage and speed or whether we should require the submission of additional infrastructure information.¹³⁴ Several parties, including USTelecom and AT&T, support requiring providers to disclose certain site-specific data used in producing their propagation maps, including the frequency band(s) used to provide the service being mapped, the radio technologies used on each band, and the elevation above ground level for each base station.¹³⁵ In light of the Broadband DATA Act collection requirements, staff analysis, and review of the record, we find that the adoption of specific requirements for the collection of mobile infrastructure information on an annual basis will help the Commission in verifying the reliability of providers’ propagation models and should contribute to the Commission’s development of a process to verify the accuracy and reliability of mobile providers’ coverage data.

51. We find that adopting an annual reporting requirement, unlike a requirement to submit infrastructure data upon Commission request, will best achieve our purpose of collecting the data necessary to systematically verify the accuracy of provider coverage propagation models and maps. Collecting these data routinely and systematically will allow for more uniform and reliable data. Routine collection will better position the Commission to evaluate and compare the different service provider data across time and across various geographic areas, which will be particularly useful in rural areas. These data also will be used in conjunction with the other mobile verification data the Commission will collect, and data compiled through the challenge process. We expect that, not only will the quality of data

¹²⁸ The required specifications for each antenna are the make and model, beamwidth (in degrees), and orientation (azimuth and any electrical and/or mechanical down-tilt in degrees) at each cell site.

¹²⁹ For example, 802.11ac-derived OFDM, proprietary OFDM, LTE Release 13, and NR Release 15.

¹³⁰ The use of carrier aggregation must also disclose the percentage of handset population capable of using this band combination.

¹³¹ 47 U.S.C. § 642(a)(1) (B); *see also* 47 U.S.C. § 642(b)(4) (“With respect to a provider that submits information to the Commission under paragraph (2) . . . (B) the Commission shall verify the accuracy and reliability of the information in accordance with measures established by the Commission.”).

¹³² In December 2019, following the *Digital Opportunity Data Collection Order and Further Notice*, the Commission’s Rural Broadband Auctions Task Force released its staff report investigating mobile providers’ submitted coverage maps; that report recommended that detailed information on propagation model parameters and deployed infrastructure needed to be collected in order to verify fully the engineering assumptions inherent in mobile coverage maps created using propagation modeling. *Mobility Fund Phase II Investigation Staff Report* at 3, para. 10. Our experience in reviewing providers’ submissions as part of the Mobility Fund Phase II data collection revealed that detailed information on the characteristics of cell sites could prove useful.

¹³³ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7552, paras. 119-20.

¹³⁴ *Id.* at 7552, para. 120.

¹³⁵ *See, e.g.*, USTelecom/WISPA May 14, 2020 *Ex Parte* Letter at 3; AT&T May 15, 2020 *Ex Parte* Letter at 2.

improve over time, but annual collection will not be significantly more burdensome than data submitted on a case-by-case basis because of the anticipated highly automated process of routine infrastructure data collection. Once Commission staff has an annual reporting process in place for collecting infrastructure data, providers will benefit from the experience of preparing and submitting the required data, and subsequently, the process of updating the information will be less burdensome than if the data were required on an ad hoc basis.

52. We recognize that certain commenters expressed concern that producing mobile network infrastructure data could burden providers.¹³⁶ We find, however, that the benefits of collecting such data outweigh the likely costs service providers will incur in collecting and submitting these data on an annual basis. As an initial matter, we agree with the *Mobility Fund Phase II Investigation Staff Report's* conclusion that accurately verifying mobile broadband coverage requires collecting these data.¹³⁷ We similarly conclude that collecting such data is necessary in light of the Broadband DATA Act's requirement that we verify the accuracy and reliability of submitted coverage data.¹³⁸ Moreover, improving the accuracy of mobile broadband coverage data also will help us more precisely target our high-cost universal service support to areas that lack adequate mobile broadband, thus avoiding the misallocation of limited funds.

53. In the *Digital Opportunity Data Collection Order and Further Notice*, we recognized that mobile service providers may view the infrastructure information we proposed to collect as commercially sensitive information.¹³⁹ In response to our requests for comment, several commenters asserted that the collection of infrastructure information could raise commercial sensitivity and national security concerns.¹⁴⁰ We find that certain non-sensitive types of infrastructure information, such as frequency band(s) used to provide service, radio technologies used on each band, and terrain and clutter information, could be made publicly available because such information would not raise these or other serious concerns. Further, the publicly disclosed information would be available to entities and individuals should they decide to supplement or challenge the accuracy of coverage maps submitted by providers. To the extent service providers find certain infrastructure information to be confidential, such as the location of cell sites, they should submit individual requests for confidential treatment.

54. We direct OEA and WTB to implement this infrastructure data collection, including the necessary data reporting specifications and the format in which the data are submitted to Commission staff. We also direct OEA and WTB to modify this collection over time in the event OEA and WTB

¹³⁶ AT&T contends that it could significantly burden providers to produce infrastructure location information (particularly larger providers with thousands of sites) and may require more than the 30 days response time. AT&T Comments at 8-9; *see also* Verizon Comments at 11. CTIA similarly maintains that it would burden providers to compile the proposed types of detailed infrastructure, such as the "height (above ground and sea level), type, and directional orientation of all transmit antennas at each cell site" nationwide. CTIA Comments at 13; CTIA Reply at 8-9. U.S. Cellular suggests that in response to a Commission request, the Commission should follow a three-step process, which narrows the submission of information to that which the provider believes will demonstrate the accuracy of its data and to give at least 60 days for the submission. U.S. Cellular Comments at 15-16.

¹³⁷ *Mobility Fund Phase II Investigation Staff Report* at 3, para. 10 (determining that "detailed information on propagation model parameters and deployed infrastructure is necessary to fully verify the engineering assumptions inherent in mobile coverage data").

¹³⁸ 47 U.S.C. § 642(b)(4)(B).

¹³⁹ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7552, para. 120.

¹⁴⁰ *See, e.g.*, AT&T Comments at 8-9; AT&T Reply at 2 & n.5; CTIA Comments at 13-14; CTIA Reply at 8-9; Verizon Comments at 11. In a recent *ex parte*, AT&T suggested that some data submitted by providers could be made public and provided a list of parameters that included certain infrastructure information, asserting that "transparency is the most effective means to ensure that providers make a genuine good faith effort to create high quality maps." AT&T May 15, 2020 *Ex Parte* Letter at 2-3; *see also* USTelecom/WISPA May 14, 2020 *Ex Parte* Letter at 3.

determine it is necessary to modify the types of infrastructure data needed to verify service providers' coverage data. We find that directing OEA and WTB to adopt the specifications, format, filing deadline, and modify the collection, after notice and opportunity to comment, will provide greater flexibility to adjust and improve our collection process over time, after the Commission begins the verification process required under the Broadband DATA Act and has an opportunity to review the data providers submit. We find this data requirement constitutes a critical element of our ability to verify coverage data.

C. Establishment of the Fabric

55. The Broadband DATA Act requires the Commission to create “a common dataset of all locations in the United States where fixed broadband Internet access service can be installed, as determined by the Commission.”¹⁴¹ The Act also requires the Commission to establish the Fabric, which must contain “geocoded information” for all of the locations identified in the common dataset.¹⁴² In addition, the Fabric must serve as the foundation on which all other fixed broadband Internet access service availability data collected under the Broadband DATA Act are layered,¹⁴³ it must be compatible with commonly used geographic information system (GIS) software,¹⁴⁴ and the Commission must update the Fabric at least every six months.¹⁴⁵ The Broadband DATA Act also prescribes constraints for the Commission in contracting for assistance in the creation of the Fabric.¹⁴⁶

56. In the *Digital Opportunity Data Collection Order and Further Notice*, the Commission stated its intention to develop a national, broadband-serviceable location database, to be maintained by the Administrator, that would be incorporated into the Collection database.¹⁴⁷ In the *Digital Opportunity Data Collection Order and Further Notice*, the Commission sought comment on multiple issues associated with the development and implementation of such a database, including what kinds of locations should be included as being “broadband-serviceable,”¹⁴⁸ how locations should be defined in the location database, and how it should manage and verify the quality of the data.¹⁴⁹

57. Consistent with our stated intentions in the *Digital Opportunity Data Collection Order and Further Notice*, and the substantially overlapping requirements of the Broadband DATA Act, we adopt the Fabric, along with these basic elements as required by the Act. Specifically, we conclude that the Fabric will consist of a single, nationwide fabric that will contain geocoded locations for all locations where a broadband connection can be installed. However, we find that it is appropriate in the *Third Notice* to seek additional comment on certain aspects of developing the Fabric. We also note that the Broadband DATA Act specifically authorizes the Commission to contract with an entity with GIS expertise to create and maintain the Fabric,¹⁵⁰ but we have not yet been appropriated funding to implement the Fabric and other measures required by the Broadband DATA Act and therefore cannot begin to implement them. We find, however, that determining to establish the Fabric now will enable us to commence promptly the processes necessary to contract for its creation and operation once funding is

¹⁴¹ 47 U.S.C. § 642(b)(1)(A)(i).

¹⁴² 47 U.S.C. § 642(b)(1)(B)(i).

¹⁴³ 47 U.S.C. § 642(b)(1)(B)(ii).

¹⁴⁴ 47 U.S.C. § 642(b)(1)(B)(iii).

¹⁴⁵ 47 U.S.C. § 642(b)(1)(B)(iv).

¹⁴⁶ 47 U.S.C. § 642(b)(1)(A)(ii).

¹⁴⁷ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7518, para. 30.

¹⁴⁸ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7545-46, para. 101.

¹⁴⁹ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7546, para. 104.

¹⁵⁰ 47 U.S.C. § 642(b)(1)(A)(ii).

available, subject to the provisions of the Federal Acquisition Regulation and other requirements established in the Broadband DATA Act.¹⁵¹

D. Timing of Collection Filings

58. As required by the Broadband DATA Act,¹⁵² we establish a biannual schedule for collection of broadband Internet access service availability and quality of service data. For this purpose, we establish filing deadlines of March 1 and September 1 each year. The March filing would reflect data as of December 31 of the previous calendar year, while the September filing would reflect data as of June 30 of the then-current calendar year. We direct OEA to issue a public notice announcing the initial filing deadline at least six months prior to that deadline, and fixed and mobile service providers must file their initial reports by that initial filing deadline.¹⁵³ Finally, providers that become subject to the Collection's filing requirements after the initial filing deadline must file data initially for the reporting period in which they become eligible.

E. Processes for Verifying Broadband Availability Data Submitted by Providers

59. Pursuant to the Broadband DATA Act, we adopt rules for processes through which the Commission will be able to "verify the accuracy and reliability" of the broadband Internet access service availability data submitted by providers.¹⁵⁴ In addition to the infrastructure data that fixed and mobile wireless providers must submit to verify their network coverage data,¹⁵⁵ we also adopt (1) a process that uses data contained in the Administrator's High Cost Universal Broadband (HUBB) portal¹⁵⁶ to cross-check fixed broadband coverage data; (2) the use of audits as a means of verifying coverage data accuracy; (3) a certification requirement for all biannual provider submissions, and (4) processes for collecting crowdsourced and verified third-party data. We seek comment in the *Third Notice* on other methods for verifying the broadband availability and quality of service data submitted by providers, some of which are mandated by the Broadband DATA Act.

1. Verifying Fixed Broadband Data Using HUBB Data

60. We will independently verify fixed broadband coverage data submitted by providers by integrating the geolocation data contained in the HUBB portal with the submitted fixed broadband coverage polygons submitted.¹⁵⁷ As part of its Universal Service Fund oversight responsibilities, USAC maintains the HUBB portal through which high-cost universal service support recipients report the coordinates, address, deployment date, speed, and number of units for every location where fixed broadband service is available.¹⁵⁸ The Commission found in the *Digital Opportunity Data Collection Order and Further Notice* that cross-checking broadband availability data with HUBB data "will benefit our overall understanding of how high-cost support dollars are used in conjunction with overall broadband deployment and will aid the data collection verification effort."¹⁵⁹ As a result, we will use

¹⁵¹ 47 U.S.C. § 642(b)(1)(A)(ii).

¹⁵² 47 U.S.C. § 642(a)(1)(A).

¹⁵³ See, e.g., *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7512, para. 16 ("Fixed broadband service providers must file initial service availability reports within six months of the public notice announcing availability of the new collection platform.").

¹⁵⁴ 47 U.S.C. §§ 642(a)(1)(B)(i), (b)(4)(B).

¹⁵⁵ See *supra* Section III.C.2.

¹⁵⁶ See USAC, *The HUBB Portal*, <https://www.usac.org/high-cost/annual-requirements/submit-data-in-the-hubb/> (last visited May 1, 2020).

¹⁵⁷ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7517-18, para. 28.

¹⁵⁸ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7517, para. 28.

¹⁵⁹ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7518, para. 28.

HUBB data to verify provider-submitted data, but note that USAC will not have a role in this process. Since HUBB data include location coordinates, we will use the data to cross-check any location data submitted by fixed broadband providers or to determine whether any locations served according to the HUBB are outside any service polygons submitted. We will require filers whose data in the HUBB conflict with their availability data to submit conforming or corrective information after determining which information is in error.

2. Commission Audits

61. The Broadband DATA Act requires the Commission to “conduct regular audits of information submitted by providers . . . to ensure that the providers are complying with [the Act].”¹⁶⁰ For all fixed providers, this information includes (1) the availability of broadband Internet access service; (2) download and upload speeds and, if applicable, latency; and (3) location data that can be georeferenced in the Fabric.¹⁶¹ For fixed wireless providers, such information includes any propagation maps and propagation model details, or lists of addresses or locations that constitute a provider’s service area.¹⁶² For terrestrial fixed and satellite providers, such information includes polygon shapefiles or a list of addresses or locations that constitute a provider’s service area.¹⁶³ For mobile providers, such information includes propagation maps and propagation model details that indicate a provider’s mobile 4G-LTE broadband Internet access service coverage.¹⁶⁴

62. In the *Digital Opportunity Data Collection Order and Further Notice*, we sought comment on the use of such tools such as audits, field tests, and statistical analyses to confirm the accuracy of broadband availability data submitted by providers.¹⁶⁵ We agree with commenters such as Connected Nation that “the DODC would benefit significantly from having a mechanism for field validation in place at the outset of the first data collection so that there is a means of auditing the data and investigating where evidence suggests the resulting maps may be incorrect.”¹⁶⁶

63. Accordingly, we will conduct audits involving information submitted by all types of providers of broadband Internet access service (e.g., terrestrial fixed, fixed and mobile wireless, satellite). Subject to our receipt of sufficient appropriations, audit tools will include field surveys, investigations, and annual random audits to verify data accuracy. In addition, audits may be initiated based on an unusual number of crowdsourced complaints, the details of which we seek comment in the *Third Notice*.¹⁶⁷

3. Certification of Filings

64. The Broadband DATA Act requires that each provider must include as part of its filing “a certification from a corporate officer of the provider that the officer has examined the information contained in the submission and that, to the best of the officer’s actual knowledge, information, and belief, all statements of fact contained in the submission are true and correct.”¹⁶⁸ The format of this

¹⁶⁰ 47 U.S.C. § 644(a).

¹⁶¹ 47 U.S.C. § 642(b)(2).

¹⁶² 47 U.S.C. § 642(b)(2)(A)(iv)(I).

¹⁶³ 47 U.S.C. § 642(b)(2)(A)(iv)(II).

¹⁶⁴ 47 U.S.C. § 642(b)(2)(B).

¹⁶⁵ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7540, para. 83.

¹⁶⁶ See Letter from Brent Legg, V.P. Government Affairs, Connected Nation, to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 19-195, 11-10, at 2 (filed July 25, 2019).

¹⁶⁷ See *infra* Section IV.F.4.

¹⁶⁸ 47 U.S.C. § 642(b)(4).

certification is slightly different from the certification requirement adopted for fixed providers in the *Digital Opportunity Data Collection Order and Further Notice*,¹⁶⁹ but we conclude that the plain language of the Broadband DATA Act now requires us to adopt this new standard (for both fixed and mobile service providers) and we do so here.

4. Process for Collecting Crowdsourced Data

65. The Broadband DATA Act requires that the Commission develop a crowdsourcing process “through which entities or individuals . . . may submit specific information about the deployment and availability of broadband Internet access service . . . on an ongoing basis so that the information may be used to verify and supplement information submitted by providers . . . for inclusion in the [broadband coverage] maps.”¹⁷⁰ The Act further directs the Commission to “prioritize the consideration of data provided by data collection applications used by consumers that the Commission has determined: (i) are highly reliable; and (ii) have proven methodologies for determining network coverage and network performance.”¹⁷¹ In the *Digital Opportunity Data Collection Order and Further Notice*, the Commission adopted a crowdsourcing process for fixed services to begin collecting public input on the accuracy of service providers’ broadband deployment data.¹⁷² We further stated, “Consistent with the public feedback mechanism we adopt for fixed providers in the Digital Opportunity Data Collection, we propose to collect similar crowdsourced data for purposes of improving the quality of mobile broadband deployment data and seek comment on how to incorporate such data into data quality analysis.”¹⁷³ We noted that third-party crowdsourced data for mobile service can serve as an important supplement to the information we collect from service providers by independently measuring mobile broadband speed and availability.¹⁷⁴ In addition to our proposal to collect such data, we sought comment on how to treat crowdsourced data and the procedures that we should follow.¹⁷⁵ In this *Second Report and Order*, we adopt the requirements from the Broadband DATA Act and our proposals from the *Digital Opportunity Data Collection Order and Further Notice* to collect crowdsourced data.

66. As an initial matter, consistent with comments received in response to the *Digital Opportunity Data Collection Order and Further Notice*¹⁷⁶ and the differences spelled out in the Broadband DATA Act,¹⁷⁷ we determine that the crowdsourcing process should be administered as

¹⁶⁹ There, we required an appropriate official of each filer to include a certification that the filer’s service availability data is true and accurate to the best of the certifying official’s knowledge. *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7512, para. 16.

¹⁷⁰ 47 U.S.C. §§ 642(a)(1)(B)(iv), 644(b)(1).

¹⁷¹ 47 U.S.C. § 644(b)(2)(A).

¹⁷² *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7506, 7513, paras. 3, 18.

¹⁷³ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7553-54, para. 123.

¹⁷⁴ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7553-54, para. 123.

¹⁷⁵ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7553-54, paras. 123-24.

¹⁷⁶ Many providers supported a two-pronged approach to disputing the Collection filings of providers: “challenges” (requiring a provider response) versus crowdsource “complaints” (no response required unless an investigation uncovers pattern of misreporting). See, e.g., NTCA Reply at 5-6 (crowdsourced data can and should be used as part of an ongoing process to help identify and evaluate trends in coverage reports, as a complement to a challenge process); GeoLinks Reply at 9-10 (use crowdsourced data for informational purposes only and consider crowdsourcing “a complement to, and [not] a substitute for, robust and meaningful evidentiary challenge processes”); Broadband Mapping Coalition Comments at 27-28; Verizon Comments at 6-7; WTA Comments at 12-13; Alaska Communications Comments at 12; NCTA Reply at 9; AT&T Reply at 7-8; GVNW Consulting Reply at 2-3, 5.

¹⁷⁷ While the challenge process allows individuals and entities to formally challenge the accuracy of coverage maps, Fabric information, and broadband Internet access service availability data submitted by providers (47 U.S.C. §

(continued....)

separate and distinct from the challenge process. As a result, as set forth herein, we adopt distinct processes for collecting data for crowdsourcing and challenges. In addition, in connection with crowdsourced data on mobile service availability, we distinguish between mobile crowdsourced data collected by app developers, such as Ookla,¹⁷⁸ and information (including individual speed test results) submitted by consumers through the online portal for crowdsourced filings, as described below.

a. Scope of Crowdsourced Data Filings

67. The Broadband DATA Act requires the Commission to establish a process that allows individuals and entities to submit specific information about the “deployment and availability” of broadband Internet access service in the United States on an ongoing basis.¹⁷⁹ We adopt a process that will allow for submission of information falling within this defined scope.

68. In the *Digital Opportunity Data Collection Order and Further Notice*, the Commission noted that it has used mobile crowdsourced data, such as speed test data generated by mobile consumer speed test apps, to inform various Commission reports.¹⁸⁰ We recognized, however, that such data have certain limitations.¹⁸¹ For example, bias is often introduced into speed test data because tests are performed only at specific times and places, potentially providing a less accurate snapshot of mobile broadband performance. We also noted that the methods by which different speed test apps collect data can vary and may not use techniques that control for certain variables.¹⁸² Although we recognize the potential limitations of crowdsourced data, we nonetheless believe that third-party crowdsourced data can serve as an important supplement to the information we collect from service providers by independently measuring mobile broadband speed and availability.

69. We direct OET, OEA, WCB, and WTB to develop and refine a process for entities and individuals to submit third-party fixed and mobile crowdsourced data consistent with the Broadband DATA Act’s requirements and the Commission’s policies. In accordance with the Act’s requirements, these Bureaus and Offices will develop the process by which we will prioritize the consideration of crowdsourced data submitted through data collection applications used by consumers, and other entities, that are determined to be “highly reliable” and that “have proven methodologies for determining network coverage and network performance.”¹⁸³ In applying this standard, these Bureaus and Offices may consider: (1) whether the application uses metrics and methods that comply with current Bureau and Office requirements for submitting network coverage and speed data in the ordinary course; (2) whether

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642(b)(5)(A)), the crowdsourcing process allows for individual and entities to submit specific information about the deployment and availability of broadband Internet access service so that the information may be used to verify and supplement information submitted by providers for inclusion in the coverage maps (47 U.S.C. § 644(b)(1)).

¹⁷⁸ Ookla gathers crowdsourced mobile speed data through its Speedtest mobile app. Speedtest, *Speedtest Apps for Mobile*, <http://www.speedtest.net/mobile/> (last visited June 4, 2020).

¹⁷⁹ 47 U.S.C. § 644(b)(1).

¹⁸⁰ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7553-54, para. 123. See also, e.g., *Communications Marketplace Report et al.*, GN Docket No. 18-231 et al., Report, 33 FCC Rcd 12558, 12579, para. 25 (2018); *Implementation of Section 6002(B) of the Omnibus Budget Reconciliation Act of 1993*, WT Docket No. 17-69, Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services, 32 FCC Rcd 8968, 9034-37, paras. 90-92 (2017); 2020 Broadband Deployment Report, FCC 20-50, at 8-9, paras. 16-17.

¹⁸¹ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7553-54, para. 123.

¹⁸² *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7553-54, para. 123. There also could be a small sample size problem, particularly in rural areas where there may be very few speed tests. *Id.* Additionally, speed test apps report failed tests differently, thus potentially decreasing the reliability of speed test data in unserved areas where no signal is available and speed tests are more likely to fail.

¹⁸³ 47 U.S.C. § 644(b)(2)(A).

the speed application has enough users that it produces a dataset to provide statistically significant results for a particular provider in a given area; and (3) whether the application is designed so as not to introduce bias into test results. The Bureaus and Offices will issue specific rules by which we will prioritize the consideration of crowdsourced data in advance of the time that the online portal is available. This will allow filers to take these rules into account in submitting crowdsourced data. As noted above, the Commission has used mobile crowdsourced data to inform various Commission reports, such as in the 2020 Broadband Deployment Report where the Commission supplemented Form 477 data with Ookla crowdsourced speed test data in assessing access to advanced telecommunications capability for mobile services.¹⁸⁴ The Commission currently receives some crowdsourced data through its Measuring Mobile Broadband in America (MMBA) program; we do not, however, intend to restrict crowdsourcing broadband data collection efforts to the product of any one specific entity. Further, the industry or commenter may identify a number of alternative applications that satisfy the aims of crowdsourcing in this context.

70. We also direct OET, OEA, WCB, and WTB to modify the process for the collection of fixed and mobile crowdsourced data over time in the event that these Bureaus and Offices determine it is necessary. We recognize that there may be changes in technology, different types of crowdsourced data, or other considerations that may require reevaluation and possible modifications of the Bureaus' and Offices' initial determinations in order that they may satisfy the Act's provisions for submitting crowdsourced data on an ongoing basis. We find that directing these Bureaus and Offices to implement the collection of fixed and mobile crowdsourced data will provide greater flexibility to adjust and improve our data collection process over time.

b. Establishment of an Online Portal for Crowdsourced Data Filings

71. Consistent with the requirements in the Broadband DATA Act¹⁸⁵ and similar to the requirement in the *Digital Opportunity Data Collection Order and Further Notice*,¹⁸⁶ we will establish and use an online portal for crowdsourced data filings and will use that same portal for challenge filings.¹⁸⁷ We find that a single platform would be the most beneficial approach for the public, challengers, and providers to use for crowdsourced data and challenge filings. We direct the Offices and Bureaus to implement the crowdsourced data collection and to create a portal for the receipt of crowdsourced data.

c. Information Included in Crowdsourced Data Filings

72. Similar to our proposal in the *Digital Opportunity Data Collection Order and Further Notice*,¹⁸⁸ we require that crowdsourced data filings contain the contact information of the filer (e.g.,

¹⁸⁴ See *supra* para. 68 & n.183.

¹⁸⁵ 47 U.S.C. § 644(b)(1).

¹⁸⁶ We note the similar requirement from the *Digital Opportunity Data Collection Order and Further Notice* directing OEA to work with USAC to create an online portal for State, local, and Tribal governmental entities and members of the public to review and dispute the broadband coverage polygons filed by fixed providers under the new collection. *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7513, para. 18.

¹⁸⁷ We also sought comment on this issue in the *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7542, para. 89 (proposing a system to track complaints about the accuracy of fixed broadband coverage polygons—such a system could be similar to the Commission's existing consumer-complaints database). As described above, we requested comment on our proposal to collect mobile crowdsourced data in the *Digital Opportunity Data Collection Order and Further Notice*, consistent with the public feedback mechanism we adopted for fixed service providers in the Digital Opportunity Data Collection. We received comments regarding the creation of an online portal for fixed and mobile crowdsourced data filings. See, e.g., Verizon Comments at 5-7.

¹⁸⁸ Following our proposal to collect mobile crowdsourced data, we sought comment on the steps the Commission should take to ensure that the crowdsourced data it uses are statistically valid and provide accurate information. *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7553-54, paras. 123-24.

name, address, phone number, and e-mail), the location that is the subject of the filing (including the street address and/or GPS coordinates of the location), the name of the provider, and any relevant details about the deployment and availability of broadband Internet access service at the location.¹⁸⁹ With regard to crowdsourced input from existing speed-test applications, we currently collect the location and identifying information that is part of the normal operation of the application, and the Commission will only accept tests that use the device's location services to determine latitude and longitude to ensure precise location data.

73. In addition, crowdsourced data filers must certify that, to the best of the filer's actual knowledge, information, and belief, all statements in the filing are true and correct.¹⁹⁰ This is similar to the certification required under the Broadband DATA Act for providers when making their biannual filings,¹⁹¹ as well as the certification for parties when submitting data in the challenge process. We believe that such a requirement will discourage frivolous or malicious crowdsourced data filings.¹⁹²

d. Treatment of Crowdsourced Data Filings

74. As an initial matter, the crowdsourced data portal will alert providers when crowdsourced filings are made concerning their data, and providers may, but will generally not be required, absent a Commission inquiry, to respond to crowdsourced data filings.¹⁹³ In response to the *Digital Opportunity Data Collection Order and Further Notice*, many providers objected to a proposed requirement that they respond to all crowdsourced data filings.¹⁹⁴ We note that a crowdsourced data filer can file a challenge if it seeks a more formal response to a dispute pursuant to a challenge process, on which we seek comment in the *Third Notice*.

75. We will use crowdsourced data to inform, but not decide, a provider's claimed deployment and availability of broadband Internet access service—and as an important part of verification options that include Commission audits, cross-checking with HUBB data, a challenge process, and data from government entities and third parties.¹⁹⁵ When we sought comment in the *Digital*

¹⁸⁹ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7542, para. 91 (“We propose to have USAC collect the following data from entities disputing coverage: the address of the location at which coverage is disputed and/or its coordinates (latitude and longitude); the fixed provider whose service coverage is in dispute; the download and upload speeds available for subscription; the technology reported at that location by the provider; and contact information from the submitting party (e-mail address and/or phone number.”); *see also* Alaska Communications Comments at 13.

¹⁹⁰ In response to our proposed collection of both fixed and mobile crowdsourced data in the *Digital Opportunity Data Collection Order and Further Notice*, Verizon asserted that crowdsourced data filers should certify certain information to authenticate customers as part of the Commission's measures to protect the integrity of its process for collecting such data. Verizon Comments at 6.

¹⁹¹ 47 U.S.C. § 642(b)(4).

¹⁹² *See Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7513, para. 20 (directing USAC to develop mechanisms in the new platform to prevent malicious or unreliable crowdsourced filings).

¹⁹³ *See, e.g.*, ACA Connects Reply at 13-15 (arguing that providers be sent validated crowdsource filings and providers should have the option of responding to individual filings).

¹⁹⁴ Broadband Mapping Coalition Comments at 28 (arguing that crowdsource reports do not require the provider's response in all cases); NCTA Reply at 9 (stating that, given the less credible and precise nature of the data submitted, providers should not be obligated to respond to every complaint); AT&T Reply at 7-8 (arguing that providers should not be expected to respond to each and every filing submitted via crowdsourcing); *see also* Connected Nation Comments at 6-7 (arguing that it would be unreasonable and impractical for providers to be required to respond to every complaint that is filed); WTA Comments at 13 (agreeing that crowdsource reports should not require a provider response in all cases).

¹⁹⁵ *See, e.g.*, NTCA Comments at 11; GeoLinks Reply at 9-10 (agreeing with WTA that crowdsource data should be used for informational purposes only).

Opportunity Data Collection Order and Further Notice on the use of crowdsourced data,¹⁹⁶ many providers argued that such data should be used only when there is a systematic problem with a provider's reporting in a given area.¹⁹⁷ We adopt an approach similar to that advocated by commenters and limit the use of crowdsourced data to identifying trends and trouble-spotting, rather than addressing every individual claim.¹⁹⁸ Specifically, Commission staff will use crowdsourced data to identify individual instances or patterns of potentially inaccurate or incomplete deployment or availability data that warrant further investigation or review.

76. In response to our requests for comment on mobile crowdsourced data, parties generally agree that service providers represent the best source of mobile broadband deployment and availability data and that crowdsourced data should only be used as a supplement to the information that the Commission collects from providers.¹⁹⁹ Some commenters assert that public feedback from actual broadband consumers and entities can improve the accuracy and granularity of the coverage maps or identify inadvertent errors, while also emphasizing that caution is necessary in relying on crowdsourced data. They maintain that such data must be carefully calibrated both to promote greater accuracy and to protect providers from unnecessary burdens.²⁰⁰ Several commenters urge the Commission not to require providers to respond to each individual crowdsourced data submission; they argue that it would be an unnecessary burden and may not materially improve the development of accurate coverage maps.²⁰¹ Some commenters point out that crowdsourced data are not collected under controlled conditions or in a statistically significant manner.²⁰² In particular, CTIA proposes a limited pilot program to evaluate the utility of tools such as crowdsourced data for verifying mobile broadband coverage before the Commission takes more steps to expand the use of such data.²⁰³

77. In response to the *Digital Opportunity Data Collection Order and Further Notice*, commenters suggested a range of thresholds above which the Commission should investigate

¹⁹⁶ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7544, para. 95.

¹⁹⁷ NCTA Reply at 5-6 (arguing that crowdsourced data can serve to provide the Commission with "heat maps" highlighting where a confluence of reports indicates persistent broadband gaps notwithstanding reporting on a more granular basis pursuant to common technical standards); NCTA Reply at 9 (agreeing that data submitted as part of the crowdsourcing process should "be used to detect trends with respect to coverage claims"); AT&T Reply at 7-8 (arguing that provider responses only should be required where the trends in crowdsourced data identify a problem); Connected Nation Comments at 6-7 (requesting that crowdsourcing complaints be tracked in the aggregate for the purpose of identifying areas on the resulting maps that warrant further refinement or investigation).

¹⁹⁸ Verizon Comments at 6-7; WTA Comments at 12-13 (arguing that crowdsourced data should only be used to identify areas for further investigation purposes); ACA Connects Reply at 13-15 ("If the WCB finds that there is a critical mass of valid filings over a limited time about a particular provider on a specific issue, it should investigate further."); State of Colorado Comments at 8 ("Crowdsourced data would be collected and utilized proactively by the FCC and compared to provider reported data as a validation mechanism, as opposed to solely using a complaint-based, reactive process for a specific area in question.").

¹⁹⁹ See, e.g., AT&T Reply at 2, 7-8; Verizon Comments at 5-7, 11-12; Verizon Reply at 6; U.S. Cellular Comments at 4-5; CTIA Comments 8-9; CTIA Reply at 5.

²⁰⁰ See, e.g., Verizon Comments at 5, 11-12; CTIA Comments at 8-9; U.S. Cellular Comments at 4; see also City of New York Comments at 4 (supporting Commission's efforts to elicit voluntary speed testing by consumers and local governments, but discourages overreliance on verification via crowdsourcing alone); GVNW Consulting Comments at 5 (contending that input from consumers or government entities could be a "double-edged sword" given that crowdsourcing has the potential for inaccurate or bad-faith disputes).

²⁰¹ See, e.g., Verizon Comments at 5-7; AT&T Reply at 7-8; CTIA Reply at 6; see also U.S. Cellular Comments at 4 (crowdsourced data is important because it can identify outliers that merit further investigation).

²⁰² See, e.g., Verizon Comments at 8-9, 12; Verizon Reply at 6; CTIA Comments at 9.

²⁰³ CTIA Comments at 3, 8-11; CTIA Reply at 2, 5-8; see also Verizon Reply at 6; AT&T Reply at 7-8.

crowdsourced data complaints—from “one half of one percent of the number of premises covered,” as suggested by Next Century Cities, to at least 75% of submitted results in an area suggesting that coverage is overstated, as requested by WTA—Advocates for Rural Broadband (WTA).²⁰⁴ We decline to establish specific thresholds to use when deciding whether to evaluate providers’ filings where crowdsourced data suggest that a certain percentage of the locations reported in a census block, or a certain percentage of the provider’s total locations, are inaccurate. Instead, we agree with commenters such as ACA Connects that Commission staff should initiate inquiries when a “critical mass of” crowdsourced filings suggest that a provider has submitted inaccurate or incomplete data.²⁰⁵ We direct our Bureaus and Offices to provide guidance to providers when inquiries based on crowdsourced filings could be initiated. We also reserve the right to investigate filings in instances that do not meet the thresholds if warranted by the specific circumstances of a crowdsourced data filing.

e. Remedies for Inaccurate Data Identified by Crowdsourced Data Filings

78. Similar to our proposal in the *Digital Opportunity Data Collection Order and Further Notice*,²⁰⁶ once staff have evaluated a particular crowdsourced data submission and established the need to take a closer look at a provider’s data, staff will contact the provider and offer it an opportunity to explain any discrepancies between its data and the Commission’s analysis.²⁰⁷ If the provider agrees with staff analysis, then it will be required to refile updated and corrected data within 30 days of agreeing with that determination.²⁰⁸ If the provider disputes the staff analysis, staff will review the provider’s response and consider whether further inquiry is necessary to resolve the discrepancy.²⁰⁹ This could include, for example, beginning a formal audit of the provider’s data or engaging in informal dispute resolution.²¹⁰ If staff ultimately conclude that the provider’s filing is not reliable with respect to the areas covered by the

²⁰⁴ See, e.g., Next Century Cities Comments at 5-6; WTA Comments at 13-14; see also Alexicon Comments at 7 (a “statistically significant” number of complaints about a provider’s specific area).

²⁰⁵ ACA Connects Comments at 12-14 (arguing that action should be required when “there is a critical mass of complaints indicating a material and immediate problem exists about a distinct and similar issue in the reported data from a provider”); see also NCTA Comments at 15-16 (“if USAC or the FCC saw an exceptional level of feedback in a particular area or for a particular provider, they could investigate to determine whether there is a reporting problem that the provider should correct”).

²⁰⁶ Regarding the collection of mobile crowdsourced data, we requested comment on the actions that the Commission should take as part of its process to ensure accurate crowdsourced data, and in particular, how the Commission should handle cases in which crowdsourced data show that service is unavailable in an area where a provider claims broadband availability. *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7554, para. 124. Several commenters suggested certain processes to evaluate whether the mobile crowdsourced data would merit further analysis and under what circumstances generally providers should be expected to respond. See, e.g., AT&T Reply at 7-8; Verizon Comments at 5-7; U.S. Cellular Comments at 4.

²⁰⁷ In the *Digital Opportunity Data Collection Order and Further Notice*, we proposed that “USAC track coverage disputes, follow-up with providers to ascertain whether there is agreement that there is a problem with the data and ensure that providers refile updated and corrected data in a timely fashion.” *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7542, para. 89.

²⁰⁸ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7542-43, paras. 89, 93 (“In instances where the provider agrees that its original filing was in error, USAC could track the error and ensure that the provider corrects its data.”).

²⁰⁹ See, e.g., ACA Connects Comments at 12-14 (“Where a provider disputes the complaints, the WCB (and not USAC) can decide whether to investigate further.”).

²¹⁰ See, e.g., Connected2Fiber Comments at 5 (arguing that a specific review process, and/or a third-party quality auditor inspecting routes, locations and coverage should be initiated if the crowdsourced data identify any anomalies).

crowdsourced filing, staff will require the provider to refile its fixed or mobile coverage data excluding the locations or areas in question.

f. Public Availability of Information Filed in the Crowdsourcing Process

79. We will make public all information submitted as part of the crowdsourcing process, with the exception of personally identifiable information and any data required to be confidential under section 0.457 of our rules.²¹¹ We note that the information that we adopt for crowdsourced data filers to provide is the same information that we required be made publicly available in the *Digital Opportunity Data Collection Order and Further Notice*.²¹² We find that this information will be sufficient to inform the public about the nature of a crowdsourced data filing, while protecting legitimate privacy or other interests. Similar to the requirement we adopted in the *Digital Opportunity Data Collection Order and Further Notice*, we direct OEA to make crowdsourced data publicly available as soon as is practicable after submission and to establish an appropriate method for doing so.²¹³ While we do not establish a specific timeline for making such data publicly available, we expect that there will be regular releases of crowdsourced data.²¹⁴

F. Enforcement

80. Under the Broadband DATA Act, it is unlawful to willfully and knowingly, or recklessly, submit information or data that is materially inaccurate or incomplete with respect to the availability or the quality of broadband Internet access service.²¹⁵ We adopt this requirement, but seek comment in the *Third Notice* on several aspects of the Broadband DATA Act's enforcement requirement.

G. Creation of Coverage Maps Depicting Availability of Broadband Internet Access Service and Sharing Mapping Data

81. Pursuant to the Broadband DATA Act, the Commission must issue final rules that require the dissemination of granular data that the Commission must use to compile coverage maps that depict the availability of broadband Internet access service and be made publicly available.²¹⁶ This requirement is different from the process we adopted in the *Digital Opportunity Data Collection Order and Further Notice*, which required broadband service providers to submit granular maps of the areas where they have broadband-capable networks and make service available.²¹⁷ Pursuant to the Broadband DATA Act, it is now the Commission's responsibility to take the granular availability data for broadband Internet access service submitted by providers and others and create, after consultation with the Federal Geographic Data Committee: (1) the Broadband Map, which must depict areas of the country that remain unserved by providers and depict the extent of availability of fixed and mobile broadband Internet access service; (2) a map that depicts the availability of fixed broadband Internet access service; and (3) a map that depicts the availability of mobile broadband Internet access service.²¹⁸

²¹¹ 47 CFR § 0.457; see also *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7513, para. 20 (directing USAC not to make publicly available private information pursuant to 47 CFR § 0.457(f)).

²¹² *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7513, para. 19.

²¹³ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7513, para. 20 (directing USAC, working with OEA, to establish procedures for the release of crowdsourced data).

²¹⁴ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7513, para. 20.

²¹⁵ 47 U.S.C. § 643.

²¹⁶ 47 U.S.C. § 642(a)(1)(A)(ii).

²¹⁷ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7506, para. 2.

²¹⁸ 47 U.S.C. § 642(c)(1).

82. We will establish the Broadband Map as a map that depicts the extent of the availability of broadband Internet access service, as well as areas that are unserved, overlaid onto the fixed service Fabric data.²¹⁹ The Broadband DATA Act provides that this Broadband Map must depict the availability of broadband “without regard to whether that service is fixed or mobile.”²²⁰ Pursuant to the Act, we also will create separate maps depicting fixed coverage and mobile coverage.²²¹ Coverage depicted on the Broadband Map and the fixed and mobile coverage maps will be defined by providers’ reported availability data, as revised by the outcome of successful challenges under the challenge process and the outcomes of Commission investigations and inquiries, which may be informed by crowdsourced data.²²²

83. Further, the Broadband DATA Act requires that we update the coverage maps at least biannually using the most recent data collected from providers.²²³ In concert with our adoption herein of the biannual collection of broadband Internet access service data, we will update our coverage maps with new provider availability data at least biannually with data submitted by providers, as well as with any updates or corrections. Doing so will meet the Broadband DATA Act’s requirement that we use the most recent data collected from providers.²²⁴ We direct OEA to update the coverage maps as quickly as possible after the biannual submission deadlines and to update the maps on a continuing basis based on the outcomes of challenges and Commission investigations and inquiries, including those informed by verified data and crowdsourced data as that information becomes available.²²⁵

84. The Broadband DATA Act also has two requirements with regard to the public availability of the coverage maps: (1) that we make them available to any federal agency, upon request; and (2) that we make them public at an appropriate level of granularity, along with the supporting data collected by us with respect to the availability and quality of broadband Internet access service.²²⁶ Based on the clear language of the Act, we adopt these two requirements and direct OEA, WTB, IB, and WCB to determine the appropriate level of granularity for these publicly-available maps.

85. Finally, the Act requires the Commission to consult with various federal agencies in connection with creating and providing access to the coverage maps.²²⁷ First, the Broadband DATA Act requires the Commission to consult with the Federal Geographic Data Committee before creating the three coverage maps.²²⁸ Second, the Broadband DATA Act requires the Commission to consult with the Secretary of Agriculture and with NTIA to enable those entities to consult the coverage maps when considering the awarding of funds for the deployment of broadband Internet access service under any program administered by the Administrator of the Rural Utilities Service or the Administration, respectively.²²⁹ In addition, the Commission must establish a process to make the data collected from providers pursuant to the Collection available to NTIA.²³⁰ We direct OEA, WTB, IB, and WCB to carry out these requirements.

²¹⁹ 47 U.S.C. § 642(c)(1)(A).

²²⁰ 47 U.S.C. § 642(c)(1)(A).

²²¹ 47 U.S.C. §§ 642(c)(1)(B), (C).

²²² 47 U.S.C. §§ 642(c)(1), (b)(5)(C)(ii), 644(b)(1).

²²³ 47 U.S.C. § 642(c)(3).

²²⁴ 47 U.S.C. § 642(c)(3).

²²⁵ 47 U.S.C. §§ 642(c)(1), (b)(5)(C)(ii), 644(b)(1).

²²⁶ 47 U.S.C. §§ 642(c)(5)-(6).

²²⁷ 47 U.S.C. §§ 642(c)(1), (4).

²²⁸ 47 U.S.C. § 642(c)(1).

²²⁹ 47 U.S.C. § 642(c)(4).

²³⁰ 47 U.S.C. § 642(b)(7).

H. Collection of Verified Broadband Data from Government Entities and Third Parties for Use in the Coverage Maps.

86. The Broadband DATA Act requires the Commission to develop a process to collect verified data for use in the coverage maps from: (1) State, local, and Tribal governmental entities primarily responsible for mapping or tracking broadband Internet access service coverage in their areas; (2) third parties, if the Commission determines it is in the public interest to use their data in the development of the coverage maps or in the verification of data submitted by providers; and (3) other federal agencies.²³¹ We adopt this requirement and direct the Bureaus and Offices to implement the details of the process. We will treat such data as “primary” availability data “for use in the coverage maps” on par with the availability data submitted by providers in their biannual Collection filings. We seek comment in the *Third Notice* on other details associated with the process, including such issues as the meaning of “verified” data, how to reconcile this data with data submitted by providers in their biannual filings, collecting verified data for mobile service, and the parameters of the Commission’s public interest determination to use third-party data.

I. Data Confidentiality and Privacy

87. The Broadband DATA Act requires that the rules we adopt establish “processes and procedures through which the Commission and, as necessary, other entities or individuals submitting non-public or competitively sensitive information, can protect the security, privacy, and confidentiality of such information,” including: (1) information contained in the Fabric, (2) the dataset supporting the Fabric, and (3) availability data submitted pursuant to section 802(b)(2) of the Broadband DATA Act.²³² In the *Digital Opportunity Data Collection Order and Further Notice*, the Commission determined that all fixed broadband service provider information, comprising shapefiles depicting areas covered at each offered speed, would be presumed to be non-confidential unless the Commission specifically directed that it be withheld.²³³ We required all filers seeking confidential treatment of data submitted as part of the Collection to submit a request at the time of the filing that the data be treated as confidential, along with the reasons for withholding the information from the public.²³⁴ The Commission noted that it would make decisions on requests for confidential treatment on a case-by-case basis.²³⁵ The Commission similarly determined that mobile broadband service provider coverage maps would presumptively be treated as non-confidential.²³⁶ Specifically, we decided that the Commission will release the following information in Collection filings to the public, and providers may not request confidential treatment of such information: (1) provider-specific mobile deployment data; (2) data regarding minimum advertised or expected speed for mobile broadband Internet access services; and (3) location information that is

²³¹ 47 U.S.C. § 642(a)(2). Section 801(8) of the Broadband DATA Act states: “The term ‘Indian Tribe’ has the meaning given the term ‘Indian tribe’ in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 5304).” 47 U.S.C. § 642(a)(8). Section 5304(3) of The Indian Self-Determination Act, in turn, defines “Indian Tribe” as “any Indian tribe, band, nation, or other organized group or community, including any Alaska Native village or regional or village corporation as defined in or established pursuant to the Alaska Native Claims Settlement Act (85 Stat. 688) [43 U.S.C. §§ 1601 et seq.], which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians.” 25 U.S.C. § 5304(e).

²³² 47 U.S.C. § 642(a)(1)(B)(ii). We discuss the confidentiality of mobile infrastructure data in section IV.D.1. *infra*.

²³³ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7517, para. 27.

²³⁴ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7517, para. 27.

²³⁵ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7517, para. 27.

²³⁶ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7521-22, paras. 36-40.

necessary to permit accurate broadband mapping, including as part of the crowdsourcing or challenge processes.²³⁷

88. We found in the *Digital Opportunity Data Collection Order and Further Notice* that to better allow for crowdsourcing, mapping, and other uses of fixed broadband deployment data, all fixed service provider information filed as part of the Collection will be presumed to be non-confidential unless the Commission specifically directs that it be withheld.²³⁸ We also found that this approach “strikes an appropriate balance between the protection of confidential information and the need for public disclosure of fixed broadband deployment data to help with crucial crowdsourcing functionality and mapping capabilities.”²³⁹ We find these rationales continue to apply²⁴⁰ and accordingly adopt the requirements from the *Digital Opportunity Data Collection Order and Further Notice* to the treatment of both fixed and mobile availability data and expand the requirements to include information contained in the Fabric and the dataset supporting the Fabric.²⁴¹

89. We expect the Fabric will include at least some proprietary information that we will acquire commercially, which will be subject to licensing or other agreements that limit the extent to which it can be made available.²⁴² We also anticipate that we will receive information from individuals or entities concerning the accuracy of availability data and information in the Fabric. Accordingly, we will withhold from routine public inspection all data required to be kept confidential pursuant to section 0.457 of our rules and all personally identifiable information, including names, email addresses, and telephone numbers submitted in connection with availability data and the data in the Fabric.²⁴³ However, we will entertain requests for disclosure if the public interest in disclosure outweighs the interests listed in section 0.457 of our rules.²⁴⁴ Subject to contractual or license restrictions, we will make public all other information received about the status of broadband Internet access service availability at specific locations, including geographic coordinates and street addresses, whether a provider has reported availability at a location, and whether the owner or occupant has disputed a report of broadband Internet access service availability at such location.²⁴⁵ We also will make publicly available all shapefiles, propagation maps, lists of addresses or locations for both fixed and mobile service, and on-the-ground mobile data, including data submitted by mobile providers to verify their coverage maps, subject to individual requests for confidential treatment.

²³⁷ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7521-22, paras. 36-40.

²³⁸ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7517, para. 27.

²³⁹ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7517, para. 27.

²⁴⁰ We note that no party has filed for reconsideration of this issue in the *Digital Opportunity Data Collection Order and Further Notice*.

²⁴¹ See, e.g., Broadband Mapping Coalition Comments at 11-12 (noting that the BMC contemplated that the information concerning broadband serviceable locations would be viewable by the public, “so that crowdsourcing or look-up capabilities would be available to consumers seeking to determine which providers serve their home or business. Because the FCC has stated that it wants to include crowdsourcing as part of this effort, it is hard to imagine how crowdsourcing could possibly be effective without some public disclosure of the BSLF and reported data.”).

²⁴² See Broadband Mapping Coalition Comments at 12 (noting that creating the Fabric using proprietary data would result in a “superior product at a lower estimated cost and would allow for public viewing with the following caveat—while information on the location of broadband serviceable locations would be viewable, *the entire dataset* would *not* be available for download by the public.” (emphasis in original)).

²⁴³ 47 CFR § 0.457.

²⁴⁴ 47 CFR § 0.457.

²⁴⁵ See California PUC Comments at 3-4 (“Public access to the Fabric’s underlying location data would allow public feedback to correct any errors, increasing accuracy of the data.”).

J. Updating the Data Collection

90. Consistent with the requirement in the Broadband DATA Act,²⁴⁶ and similar to the requirement that we adopted (but have not implemented) in the *Digital Opportunity Data Collection Order and Further Notice*,²⁴⁷ we direct IB, WTB, WCB, and OEA to (1) update the specific content of data to be submitted pursuant to the Collection to reflect changes over time in technologies, spectrum usage, GIS and other data storage and processing functionalities, and other related matters; (2) ensure the accuracy of propagation models; (3) improve the usefulness of the coverage maps; and (4) implement any technical improvements or other clarifications to the filing mechanism and forms.

IV. THIRD FURTHER NOTICE OF PROPOSED RULEMAKING

91. In this *Third Notice*, we seek comment on what steps are necessary to implement certain other provisions of the Broadband DATA Act. In doing so, we note that section 806(e) of the Broadband DATA Act provides that “[i]f the Commission, before the date of enactment of this title, has taken an action that, in whole or in part, implements this title, the Commission shall not be required to revisit such action to the extent that such action is consistent with this title.”²⁴⁸ Accordingly, we ask that commenters address the extent to which measures already adopted by the Commission meet the requirements of the Broadband DATA Act, as well as what new measures may be necessary.

A. Service Providers Subject to the Collection of Broadband Internet Access Service Data

92. Under the Broadband DATA Act, the Commission must issue rules for the collection of broadband Internet access service data from each “provider” of broadband Internet access service, with “provider” being defined as “a provider of fixed or mobile broadband Internet access service.”²⁴⁹ We propose that the providers subject to the requirements adopted in the *Second Report and Order* be limited to “facilities-based providers,” as defined in 47 CFR § 1.7001(a)(2).²⁵⁰ We believe this definition is consistent with the Broadband DATA Act because the Act requires each provider to report where it “has actually built out the broadband network infrastructure,”²⁵¹ and a facilities-based provider, rather than a reseller of the facilities-based provider’s services or capacity, is in the best position to know and report such information. If resellers were to report information on broadband availability, it is likely that such information would be less accurate than the data reported by facilities-based providers. In addition, the availability footprints of resold service would overlap those reported by facilities-based providers, given that resellers, by definition, provide service in all or a portion of the same footprint as the facilities-based providers. Further, the definition of facilities-based provider that we propose to use is the same as that adopted for fixed providers in the *Digital Opportunity Data Collection Order and Further Notice*,²⁵² and it currently applies to providers required to file Form 477 fixed and mobile broadband deployment data.²⁵³ As such, defining “provider” in the same way in the Collection will enable “the comparison of data and

²⁴⁶ 47 U.S.C. § 642(a)(3).

²⁴⁷ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7565, Appx. A, Final Rules (47 CFR § 54.1403).

²⁴⁸ 47 U.S.C. § 646(e).

²⁴⁹ 47 U.S.C. § 641(11).

²⁵⁰ See 47 CFR § 1.7001(a)(2). The definition is further clarified in the Form 477 Instructions. See *FCC Form 477 Instructions* at 6-7.

²⁵¹ 47 U.S.C. § 642(b)(2)(A)(i)(I).

²⁵² *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7510, para. 12 & n.23.

²⁵³ See 47 CFR § 1.7001(a)(2).

maps” produced under Form 477 with those produced under the Broadband DATA Act, which the Act requires the Commission to do.²⁵⁴

B. Standards for Reporting Availability and Quality of Service Data for Fixed Broadband Internet Access Service

93. The Broadband DATA Act requires that rules issued by the Commission provide for uniform standards for the reporting of broadband Internet access service data.²⁵⁵ We believe that, except as noted below, the reporting requirements previously adopted in the *Digital Opportunity Data Collection Order and Further Notice* for fixed broadband service data are consistent with the Broadband DATA Act’s requirements for reporting on the availability of such services. In particular, we believe that it is consistent with the Broadband DATA Act to require providers of broadband Internet access service at advertised speeds exceeding 200 kbps in at least one direction to report broadband availability data under the rules established for the Collection. The 200 kbps speed threshold is the same as that adopted in the *Digital Opportunity Data Collection Order and Further Notice* and currently required for Form 477.²⁵⁶

94. *Business-Only Service.* The *Digital Opportunity Data Collection Order and Further Notice* required fixed providers to differentiate in their coverage polygons among service that was residential-only, business-only, or business-and-residential.²⁵⁷ However, given the focus on the availability and quality of mass-market retail service data in the Broadband DATA Act²⁵⁸ and the use of such data to establish coverage maps that must be consulted when making any new award of funding with respect to the deployment of broadband Internet access service intended for use by residential and mobile customers,²⁵⁹ we believe there is less of a need to collect business-only broadband data as part of the Collection and that the benefits of collecting such data are outweighed by the burdens on providers having to track and report such data. As a result, we seek comment on excluding from the Digital Opportunity Data Collection business-only service and instead requiring only a distinction between “residential-only” and “business-and-residential” services by fixed providers.²⁶⁰ We seek comment on this approach. In the alternative, should the Commission require the collection of business-only services, including non-mass-market business data services, though not required to do so by the Broadband DATA Act? Would there be a benefit to the Commission having data about the availability of broadband service for businesses and organizations that do not buy mass-market services, including healthcare organizations, schools, libraries, and other government entities? Would business-only availability data be particularly helpful for informing, for example, E-rate or universal service programs that support health care? Would having a business-only category successfully segregate business-focused providers from providers that generally serve non-mass-market business customers but might be willing to serve mass-market (including, e.g., small or home office) customers?

95. *Speed Information for Fixed Services.* As a component of their availability reporting under the Broadband DATA Act, fixed broadband providers must submit “information regarding

²⁵⁴ 47 U.S.C. § 642(b)(6)(A)(i)(II)(aa).

²⁵⁵ 47 U.S.C. § 642(b)(2).

²⁵⁶ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7510, para. 12 & n.23; 47 CFR § 1.7001(a)(1).

²⁵⁷ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7510, para 12.

²⁵⁸ 47 U.S.C. § 801(1); 47 CFR § 8.1(b).

²⁵⁹ 47 U.S.C. §§ 642(c)(2)(B), (c)(4)(A)-(B);

²⁶⁰ Adoption of this approach also would effectively render moot the Petition for Reconsideration filed by INCOMPAS in this proceeding wherein it argued that business data competitors using the last-mile facilities of wholesale providers should not file broadband coverage polygons. See INCOMPAS, Petition for Reconsideration, WC Docket Nos. 19-195, 11-10, at 9 (filed Sep. 23, 2019).

download and upload speeds, at various thresholds.”²⁶¹ The *Digital Opportunity Data Collection Order and Further Notice* required all fixed providers to submit broadband coverage polygons that reflect the maximum download and upload speeds available in each area, as well as the technology used to provide the service and a differentiation among residential-only, business-only, or residential-and-business broadband services.²⁶² We propose that all fixed broadband providers be required to report the maximum advertised download and upload speeds associated with the broadband Internet access service that a provider offers in an area. However, for service offered at speeds below 25/3 Mbps, we propose the use of two speed tiers: one for speeds greater than 200 kbps in at least one direction and less than 10/1 Mbps, and another for speeds greater than or equal to 10/1 Mbps and less than 25/3. For speeds greater than or equal to 25/3 Mbps, we propose that providers report the maximum advertised download and upload speeds associated with the broadband Internet access service provided in an area. We seek comment on these proposals.

96. *Latency Information for Fixed Services.* We also seek comment on whether and how to collect latency information for fixed broadband services. Latency refers to the time it takes for a data packet to travel from one point to another in a network, whereas a round-trip latency refers to the time it takes for a data packet to travel from one point to another and then back again.²⁶³ The *Digital Opportunity Data Collection Order and Further Notice* sought comment on whether fixed providers should be required to report latency levels along with other parameters in their coverage polygons.²⁶⁴ The Broadband DATA Act provides that latency information shall be collected from fixed broadband providers “if applicable,”²⁶⁵ and specifically requires that propagation model-based coverage maps submitted by fixed wireless providers reflect the “speeds and latency” of the service offered by the provider.²⁶⁶ We propose to require all fixed broadband service providers to report latency data by indicating whether the network round-trip latency associated with the service offered by each technology and each maximum speed combination in a particular geographic area is less than or equal to a particular threshold. We propose to use 100 milliseconds (ms)—based on the 95th percentile of measurements—as that threshold, since that is the latency benchmark that recipients of Connect America Fund Phase II model-based support, as well as Connect America Fund Phase II auction support recipients in the Low Latency tier, are required to meet.²⁶⁷ We propose to update that benchmark for the Collection if and when the benchmark is updated in the universal service context. We seek comment on this proposal and ask whether a lower value should be used as a latency threshold independent of any changes made in the universal service context.

97. As an alternative to having all fixed providers submit latency information, should we determine that the collection of latency data is only applicable to providers of certain types of fixed service?²⁶⁸ Further, should a more limited set of providers be required to submit more granular data on latency? Would such requirements be consistent with the Broadband DATA Act? For instance, should

²⁶¹ 47 U.S.C. § 642(b)(2)(A)(ii).

²⁶² *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7510, para. 12.

²⁶³ See FCC, Office of Engineering and Technology, *Eighth Measuring Broadband America Fixed Broadband Report* (Dec. 14, 2018), <https://www.fcc.gov/reports-research/reports/measuring-broadband-america/measuring-fixed-broadband-eighth-report> (*Eighth Measuring Broadband America Fixed Broadband Report*).

²⁶⁴ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7510, para. 12.

²⁶⁵ 47 U.S.C. § 642(b)(2)(A)(ii).

²⁶⁶ 47 U.S.C. § 642(b)(2)(A)(iv)(I)(aa)(BB).

²⁶⁷ See *Connect America Fund*, WC Docket No. 10-90, Report and Order, 28 FCC Rcd 15060, 15070, paras. 22-23 (WCB 2013); *Connect America Fund et al.*, WC Docket Nos. 10-90 et al., Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 5949, 5960, para. 29 (2016).

²⁶⁸ See 47 U.S.C. § 642(b)(2)(A)(ii).

we require only fixed wireless providers submitting propagation maps to file data indicating the 95th percentile latency values for the services they offer? Should we extend this requirement to satellite providers, given the notable differences in latency values between satellite providers and other fixed providers?²⁶⁹ Should any latency requirements of satellite providers be limited to non-geostationary-orbit satellites and should such providers report latency values specifically for the apogee of satellites' orbits or for the greatest path distance between a satellite and ground station? We propose to direct OEA, in consultation with WCB, IB, and OET, to issue specific guidance to providers on how to measure their network latency for purposes of reporting such information in the Collection. We seek comment on these proposals regarding the collection of latency information and ask commenters to provide detailed explanations for any alternative recommendations, including any alternative latency benchmarks.

98. *Satellite Availability Reporting.* In the *Digital Opportunity Data Collection Order and Further Notice*, the Commission sought comment on how, for the purposes of the Collection, we could improve upon the existing satellite broadband data collection to reflect more accurately current satellite broadband service availability.²⁷⁰ The Commission sought comment on whether satellite broadband deployment data reporting near nationwide deployment²⁷¹ could be improved by requiring additional information, including the number and location of satellite beams, the capacity used to provide service by an individual satellite to consumers at various speeds, and the number of subscribers served at those speed levels.²⁷² The Satellite Industry Association and Hughes oppose such reporting and argue that neither beam location nor capacity would provide additional granular information about the reach of the networks or where satellite broadband providers make service available.²⁷³ We continue to seek comment on how we could improve upon the existing satellite broadband data collection. Assuming *arguendo* that requiring the reporting of such supply side data is not useful or practical, should the Commission require additional reporting on the demand side by requiring any satellite provider submitting nationwide broadband coverage also to identify the census tracts with at least one reported subscriber? Should we require reporting of where the satellite operator is actively marketing its broadband services?²⁷⁴ If concrete proposals are not provided to more reasonably represent satellite broadband deployment, we would rely on other mechanisms outlined in this *Second Report and Order* and *Third Notice* including standards for availability reporting, crowdsourced data checks, certifications, audits, and enforcement, potentially as well as currently reported subscriber data,²⁷⁵ in assessing the accuracy of satellite provider claims of broadband deployment.

C. Additional Standards for Collection and Reporting of Data for Mobile Broadband Internet Access Service

99. In the *Second Report and Order*, we require that a mobile provider's propagation model results for 3G, 4G and 5G-NR mobile broadband technologies be based on standardized parameter values

²⁶⁹ See *Eighth Measuring Broadband America Fixed Broadband Report*.

²⁷⁰ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7540-42, paras. 85-87.

²⁷¹ For instance, according to currently reported data, satellite service offering 25 Mbps/3 Mbps speeds is available to all but 0.03% of the U.S. population. *Id.* at 7540, para. 85.

²⁷² *Id.* at 7540-41, para. 85.

²⁷³ See Letter from Tom Stroup, Satellite Industry Association, to Marlene Dortch, Secretary, FCC, WC Docket No. 19-195, at 1 (filed Feb. 25, 2020). See also Hughes Network Systems, LLC Comments at 4 (Hughes) ("In designing their networks to reflect reasonable assumptions about network loading, satellite broadband providers are no different from other types of network providers who are not required to report on network capacity for this purpose."); Hughes Reply at 4-7 (arguing the record does not support special reporting requirements by satellite providers but not other technologies).

²⁷⁴ See Free Press Comments at 16.

²⁷⁵ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7541, para. 86.

for cell edge probability, cell loading, and clutter that meet or exceed certain specified minimum values. We also require mobile providers to submit infrastructure information and to disclose propagation model details and link budget parameters. In this *Third Notice*, we seek comment on whether we should require providers to make additional disclosures concerning the input data, assumptions, and parameter values underlying their propagation models and on whether any additional parameters are necessary to ensure that we collect accurate mobile broadband deployment data.

100. First, we seek comment on requiring providers to disclose to the Commission additional details of their propagation models and of the link budgets they use for modeling cell edge network throughput (both uplink and downlink). Specifically, we seek comment on requiring providers to submit a description of sites or areas in their network where drive testing or other verification mechanisms demonstrate measured deviations from the input parameter values or output values included in the link budget(s) submitted to the Commission, and a description of each deviation and its purpose. We seek comment on whether requiring providers to include this additional information will help the Commission more fully understand and assess propagation model coverage predictions.

101. We also seek comment on whether we should prescribe propagation modeling standards, such as a minimum value for Reference Signal Received Power (RSRP)²⁷⁶ or Received Signal Strength Indicator (RSSI).²⁷⁷ A map showing where the RSRP or RSSI meets or exceeds a minimum value could assist with the verification of expected user speeds. The *Mobility Fund Phase II Investigation Staff Report* discussed the role of signal strength in measuring mobile broadband performance and found “a strong positive relationship between the RSRP signal strength recorded and the percentage of 4G LTE speed tests that achieved a download speed of at least 5 Mbps”²⁷⁸ Several parties discussed signal strength in their comments in response to the *Digital Opportunity Data Collection Order and Further Notice* and expressed differing views on whether a standardized or minimum signal strength parameter value is necessary.²⁷⁹ We seek additional comment to inform our determination of whether a minimum signal strength parameter value is appropriate. We recognize that RSRP or RSSI values may vary based on factors such as spectrum band, network design, or device operating capabilities, but seek comment on whether we can establish a minimum signal strength parameter value that accommodates such variation. For example, should we adopt CCA’s suggestion that we define a minimum signal strength parameter by technology (e.g., LTE or 5G), spectrum band, and channel size?²⁸⁰ If so, we seek comment on what values would be appropriate. Alternatively, in view of the variety of factors that affect signal strength, would it be preferable to adopt an approach that uses a range of signal strength data to verify propagation model coverage predictions? Under such an approach, the Commission could require, for each of the propagation maps submitted, a second set of maps showing RSSI or RSRP signal levels, measured at 1.5

²⁷⁶ RSRP is a standard measure of reference or synchronization signal power for 4G LTE and 5G-NR technologies. Providers must use this metric instead of RSSI for 4G LTE and 5G-NR.

²⁷⁷ RSSI is a measure of total power within the signal operating bandwidth for all technologies.

²⁷⁸ *Mobility Fund Phase II Investigation Staff Report* at 47, para. 65.

²⁷⁹ Cf. Deere & Co. Comments at 9 (expressing support for a -85 dBm RSSI parameter); CCA Comments at 5 (recommending that the Commission require carriers to “report a standard RSRP level controlled for individual carriers’ varied spectrum portfolio and use” and that “a -120 dBm level per 5 megahertz channel could register that a consumers’ [sic] device is connected to LTE service, but nevertheless provide for a poor connection that fails to support many applications or functions”); CCA May 28, 2020 *Ex Parte* Letter at 2 (“CCA has long maintained that the Commission should define minimum reference signal received power (‘RSRP’), standardized by technology (e.g., LTE, 5G), spectrum band, and channel size”) with Verizon Comments at 9-10 (arguing that the Commission should not standardize a specific signal strength level); CTIA Reply at 7 (urging the Commission not to prescribe RSRP value and stating that “a cell edge speed and probability factor, not signal strength will better reflect consumer experience”); CTIA May 29, 2020 *Ex Parte* Letter at 2 (contending that “[a] strong RSRP, for example, does not ensure high through-put and thus is of little value to a user on the ground”).

²⁸⁰ CCA May 28, 2020 *Ex Parte* Letter at 2.

meters above ground level (AGL), from each active cell site. These maps could form color coded “heat maps” showing RSSI or RSRP gradient levels in 10 dB increments from -40 dBm to -120 dBm. We seek comment on this approach and whether it would be an effective method for verifying coverage predictions. We seek comment on whether the signal strength maps should be required to reflect outdoor coverage only. If so, should outdoor environments include both pedestrians using their phones and users traveling in vehicles with their phones next to the window?

102. We also seek comment on whether we should adopt any other minimum values for particular model parameters not otherwise specified above. For example, the *Mobility Fund Phase II Investigation Staff Report* concluded that the Commission “should be able to obtain more accurate mobile coverage data by specifying additional technical parameters,”²⁸¹ and it recommended that the Commission adopt standard fading statistics as one parameter for standardized mobile broadband coverage data specifications.²⁸² Based on this finding, should we require carriers to report the fading standard deviation they use to set a fade margin or otherwise incorporate into their link budgets or propagation models? Should we set minimum values or standardize values for any of the additional parameters we would require carriers to submit? Commenters advocating for the Commission to require reporting (or standardization) of a particular parameter should provide detailed technical justifications for why the parameter or value is necessary or important for the Commission to verify carriers’ propagation models and coverage maps.

103. Finally, we ask whether we should require mobile providers to submit additional coverage maps based on different speed, cell edge probability, or cell loading values. Are there particular use cases or categories of subscribers, such as Machine-to-Machine or Internet-of-Things users, that might benefit from information on 4G LTE or 5G-NR service availability at speeds below the thresholds set forth in the Broadband DATA Act and adopted in the *Second Report and Order*; or are there use cases for which higher thresholds for broadband speed or utilization might make sense? For example, should providers report coverage with cell loading values set to 30% and 70%, in addition to 50%, where all other values were held constant? Having different maps (or map layers) based on these different assumptions could show how the likelihood of establishing or maintaining a mobile broadband connection may change when the network is experiencing different utilization rates. Rather than setting uniform cell-loading values, should we instead require carriers to submit, on a per-cell basis, propagation maps that incorporate a cell-loading value based on busy-hour utilization? We note that this requirement would be in addition to the requirements we adopt in the *Second Report and Order* that carriers submit maps based on minimum speed, cell-edge probability, and cell loading metrics. Assuming the Commission requires mobile providers to submit additional coverage maps, how should the Commission incorporate this information into the maps it creates pursuant to the Broadband DATA Act? Are there any steps the Commission would need to take to avoid confusing consumers and help ensure that they are able to make reasonable comparisons between mobile broadband providers’ coverage areas?

D. Processes for Verifying Broadband Availability Data Submitted by Providers

104. Pursuant to the Broadband DATA Act, the Commission must issue final rules that establish processes through which we can “verify the accuracy and reliability” of the broadband Internet access service availability data submitted by providers.²⁸³ These requirements are set out in distinct provisions of the Broadband DATA Act, separate from other requirements to establish processes for improving data accuracy and reliability, such as processes for receiving verified data from third parties and governmental mapping entities,²⁸⁴ crowdsourcing,²⁸⁵ and a challenge process.²⁸⁶ Accordingly, we

²⁸¹ *Mobility Fund Phase II Investigation Staff Report* at 53, para. 80.

²⁸² *Mobility Fund Phase II Investigation Staff Report* at 3, 53, paras. 9, 80.

²⁸³ 47 U.S.C. §§ 642(a)(1)(B)(i), (b)(4)(B).

²⁸⁴ 47 U.S.C. §§ 642(a)(2)(A)-(C).

find that these verification processes are intended to be in addition to other requirements, though there may be overlap and interrelationships between them. We note, for example, that information received through the crowdsourcing required under section 804(b) of the Broadband DATA Act is to be used to “verify and supplement” availability data collected under section 802(b)(2)(B) of the Act.²⁸⁷ We seek comment on this finding.

1. Verifying Mobile Data

105. In this *Second Report and Order*, we require mobile service providers, as part of their obligations under the Broadband DATA Act, to submit detailed infrastructure information to verify the accuracy of their broadband network coverage data. In this section, we propose requiring mobile providers to submit a statistically valid sample of on-the-ground data (i.e., both mobile and stationary drive-test²⁸⁸ data) as an additional method to verify mobile providers’ coverage maps. We seek comment on ways to develop a statistically valid methodology for the submission and collection of such data as well as how to implement such a requirement in a way that is not cost prohibitive for providers, particularly for small service providers. Further, we request comment on directing OEA and WTB to determine whether to develop a statistically valid methodology that will be used for determining the locations and frequency for on-the-ground testing as well as the technical parameters for standardizing on-the-ground data, and we seek comment on potential considerations for developing such a methodology. Finally, we request comment on whether and how the Commission should use signal strength information submitted by carriers to verify providers’ coverage maps.

106. *On-the-Ground Service Provider Data.* The *2017 Data Collection Improvement FNPRM* sought comment on requiring mobile broadband providers to submit speed test data to supplement their model-based data.²⁸⁹ In the *Digital Opportunity Data Collection Order and Further Notice*, we sought further comment on this issue and asked whether providers already collect such data in the ordinary course of business.²⁹⁰ In response to the *2017 Data Collection Improvement FNPRM* and the *Digital Opportunity Data Collection Order and Further Notice*, some commenters supported using drive-test data as a means of verifying broadband coverage.²⁹¹ Providers, on the other hand, argued that collecting such data over their entire network would be unduly burdensome and unnecessary.²⁹² The *Mobility Fund Phase II Investigation Staff Report*, however, found that drive testing can play an important role in auditing, verifying, and investigating the accuracy of mobile broadband coverage maps submitted to the

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²⁸⁵ 47 U.S.C. § 644(b).

²⁸⁶ 47 U.S.C. § 642(b)(5).

²⁸⁷ 47 U.S.C. §§ 644(b), 642(b)(2)(B).

²⁸⁸ As we have previously explained, “[d]rive tests refer to tests analyzing network coverage for mobile services in a given area, i.e., measurements taken from vehicles traveling on roads in the area.” *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7555, para. 125 & n.310.

²⁸⁹ *2017 Data Collection Improvement FNPRM*, 32 FCC Rcd at 6333-34, para. 14.

²⁹⁰ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7553, para. 122.

²⁹¹ See, e.g., City of New York Comments at 4; CPUC Comments at 6, 8; Comments of Connected Nation, Inc., WC Docket No. 11-10, at 11 (filed Sept. 14, 2017). These commenters diverged on who should perform the drive testing; Connected Nation and the City of New York recommended that carriers perform the drive testing, while the California PUC argued that the FCC or an independent third party should conduct the testing.

²⁹² See, e.g., CTIA Comments at 12 (noting that these data are readily available through third parties); Verizon Comments at 8-9, 11 (arguing that it would be prohibitively expensive for providers to drive test their entire network and that such testing is impractical because statistically significant results can be obtained only by performing a very large number of measurements under controlled conditions).

Commission.²⁹³ The *Mobility Fund Phase II Investigation Staff Report* recommended that the Commission require providers to “submit sufficient actual speed test data sampling that verifies the accuracy of the propagation model used to generate the coverage maps. Actual speed test data is critical to validating the models used to generate the maps.”²⁹⁴

107. We propose requiring mobile service providers to submit on-the-ground test data—from a combination of mobile and stationary tests—as a tool to help the Commission verify their voice and broadband coverage submissions. The Broadband DATA Act requires the Commission to verify the accuracy and reliability of mobile broadband coverage data that mobile providers submit to the Commission,²⁹⁵ and we believe that on-the-ground test data from mobile providers could be a critical component of our verification process.²⁹⁶ We anticipate, however, that requiring providers to test their entire network would be prohibitively expensive; accordingly, we propose to require mobile providers to collect a statistically valid, unbiased sample of on-the-ground test data annually to verify their coverage maps. Industry commenters have indicated either that providers do not collect on-the-ground test data in the ordinary course of business or that they do so only to calibrate their propagation models.²⁹⁷ Accordingly, we expect that collecting a sample would be more effective in verifying coverage than on-the-ground test data already collected in the ordinary course of business.

108. In order to help verify the accuracy of mobile providers’ submitted coverage maps, we propose that carriers submit evidence of network performance based on a sample of on-the-ground tests that is statistically appropriate for the area tested. We propose at a minimum that the speed tests include downlink, uplink, latency, and signal strength measurements and that they be performed using an end-user application that measures performance between the mobile device and specified test servers. We propose that speed tests must be taken outdoors. We propose requiring a combination of mobile and stationary tests to accurately verify the coverage speed maps. We also seek comment on how we should compare the two types of tests. We request comment on the parameters that should be specified, such as the time of day within which the tests should be performed and whether we should set limits on the height at which the tests must be conducted. In the case of mobile speed tests, we request comment on whether we should set limits on vehicle speed and whether we should accept unmanned aircraft system tests. We also seek comment on how we ensure that providers submit a statistically valid and unbiased sample of tests. For example, how should the tests be distributed between urban and rural areas? How can we ensure that the speed test measurements represent the typical user case for the area covered? How, for example, can we prevent providers from performing their tests close to their towers where signal strength is greatest? In developing our methodology, should we specify the types of equipment that providers can use, including the handsets and any other special equipment necessary for the testing? Should we specify

²⁹³ *Mobility Fund Phase II Investigation Staff Report* at 52, para. 77 (recommending that the Commission seek appropriations from Congress to carry out drive testing as part of its efforts to audit, verify, and investigate the accuracy of mobile broadband coverage maps submitted to the Commission).

²⁹⁴ *Mobility Fund Phase II Investigation Staff Report* at 53, para. 81.

²⁹⁵ 47 U.S.C. § 642(b)(4)(B).

²⁹⁶ City of New York, California PUC, and Connected Nation have asserted that on-the-ground data, such as drive-test data, are critical to verifying service providers’ coverage data. *See* City of New York Comments at 4; CPUC Comments at 6, 8; Comments of Connected Nation, Inc., WC Docket No. 11-10, at 11 (filed Sept. 14, 2017). California PUC asserted that “drive tests [are] the most effective measure of actual mobile broadband service speeds.” CPUC Comments at 6 (internal quotations omitted). As part of its comments on the *Digital Opportunity Data Collection Order and Further Notice*, California PUC submitted results from twelve statewide drive tests measuring actual mobile broadband service speed and quality user experience for the four nationwide carriers, interpolated statewide, to show that providers’ shapefiles may have overstated actual coverage. CPUC Comments at 6-8. CTIA, which opposed the mandatory submission of on-the-ground data, nonetheless acknowledged that these data “may be a useful resource to help validate propagation data . . .” CTIA Comments at 12.

²⁹⁷ *See, e.g.*, CTIA Comments at 12; Verizon Comments at 11.

where to place such equipment during the testing? Although we eliminated the requirement to report network coverage on Form 477 by spectrum band in the *Digital Opportunity Data Collection Order and Further Notice*,²⁹⁸ we propose, for verification purposes, to require providers to indicate spectrum bands and bandwidths in submitted mobile and stationary test data.²⁹⁹

109. We seek comment on the costs of requiring mobile providers to submit a statistically valid sample of on-the-ground data to verify their network coverage. We recognize both that it may be difficult to develop a statistically valid methodology governing mobile and stationary tests that eliminates or minimizes selection bias and that on-the-ground testing may prove burdensome and expensive. We request comment on the potential costs of developing a statistically valid methodology for on-the-ground testing. In addition, we seek comment on the potential costs for providers to implement such methodology, particularly in light of our proposal to require only a sample of a mobile provider's network. What are the costs of requiring providers to submit both mobile stationary test data? To what extent should we modify our requirements for small providers, if at all?

110. We request comment on the type of confidentiality protections that we should apply to any on-the-ground data that mobile providers submit. The Broadband DATA Act's privacy provision does not clearly apply to the collection of data submitted to verify the accuracy of coverage data.³⁰⁰ Should these data be subject to disclosure pursuant to the private-public balancing test in sections 0.457 and 0.461 of our rules? Should these data be available to the public during the challenge process?³⁰¹

2. Engineering Certification of Biannual Filings

111. While the Broadband DATA Act requires that each provider must include as part of its filing a certification from a corporate officer,³⁰² the *Mobility Fund Phase II Investigation Staff Report* included a similar recommendation that the Commission require service providers to include an engineering certification with all data submissions.³⁰³

112. In the *Second Report and Order*, as required by the Broadband DATA Act, we require providers to submit a certification from a corporate officer that the statements of fact contained in its biannual submissions are true and correct.³⁰⁴ We propose requiring mobile providers in addition to submit a certification of the accuracy of their submissions from a qualified engineer. We also propose to require public filing of these certifications. The *Mobility Fund Phase II Investigation Staff Report* recommended that the Commission require providers to include an engineering certification. It found that requiring an engineering certification would help improve the accuracy of submissions by ensuring that providers take into account network performance data showing actual service availability in different

²⁹⁸ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7523, para. 41.

²⁹⁹ In the context of eliminating the requirement to submit separate Form 477 coverage maps by spectrum band, the Commission acknowledged that it had not yet used such data to analyze deployment in different spectrum bands and that such data were unnecessary to confirm buildout requirements or to determine deployment speeds, as such information was typically provided by mobile providers through other means. *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7523-24, paras. 42-43. For on-the-ground test data, however, spectrum band data are essential to be able to understand and analyze mobile providers' on-the-ground submissions and to use them as a tool to verify mobile coverage maps.

³⁰⁰ See 47 U.S.C. § 642(a)(1)(B)(ii).

³⁰¹ Section 642(b)(5) of the Broadband DATA Act indicates that entities may challenge the accuracy of "any information submitted by a provider regarding the availability of broadband Internet access service," which could include verification information. See 47 U.S.C. § 642(b)(5).

³⁰² 47 U.S.C. § 642(b)(4).

³⁰³ *Mobility Fund Phase II Investigation Staff Report* at 53, para. 80.

³⁰⁴ See *supra* section III.E.3.

areas across the country.³⁰⁵ We seek comment on the *Report's* recommendation and on whether requiring both an engineering certification and a certification from a corporate officer would help improve accuracy of provider submissions. To the extent a corporate officer (e.g., a Chief Technology Officer) is both an engineer and has the requisite knowledge required under the Broadband DATA Act, we propose to require the mobile filer to submit a single certification, which would also attest to the corporate officer's engineering qualifications. We propose requiring that this certification state that the certified professional engineer or a corporate engineering officer that is employed by the service provider has direct knowledge of, or responsibility for, the generation of the service provider's Commission-filed coverage maps. We propose requiring that the certified professional engineer or corporate engineering officer certify that he or she has examined the information contained in the submission and that, to the best of the engineer's actual knowledge, information, and belief, all statements of fact contained in the submission are true and correct, and in accordance with the service provider's ordinary course of network design and engineering.

113. We also seek comment on whether we should require an engineering certification for biannual filings for fixed broadband service providers, as we propose to do with certifications for mobile service providers. We believe that this step would improve the accuracy of data on availability of fixed services by requiring providers to focus on network performance in certifying the accuracy of their filings, but seek comment on whether the same considerations would apply to fixed services so as to warrant this step. We also seek comment on any potential penalties for violating the certification.

3. Collection and Use of Verified Data

114. We seek comment on how best to implement the Broadband DATA Act's requirement to collect and use "verified" data from third parties and government entities. As an initial matter, we seek comment on what constitutes "verified" data. If the data are produced by the entity submitting them, should the entity be required to explain the methodology for collecting and producing the data? If the entity gathers the data from providers or other third parties, should the entity be required to attest to the reliability of the data? Also, how should these verified data be "used" in the coverage maps to provide a useful resource? If the provider agrees with the data submitted by the government entity or third party, then we propose to "use" such data by including the data in the coverage maps. We seek comment on a process for getting the provider's assessment of this data. We also seek comment on these proposals and seek ideas on other approaches to verifying and using such data.

115. We propose requiring third party and governmental entities to attempt to resolve any inconsistent data with the providers. If the third party or governmental provider successfully reconciles its data with the provider, then we would allow those data to be used in the coverage maps. If the third-party or governmental data cannot be reconciled with the provider after a period of 60 days, then the data would be made publicly available and its status noted, but the data would not be included as part of the official coverage maps. We seek comment on this approach and whether it is consistent with the Broadband DATA Act's mandate that such data be used in the coverage maps. We seek comment on any other methods for resolving inconsistencies between a provider's data and data submitted by third parties and government entities.

116. In addition, we seek comment on how we should handle instances in which an external data format used by the third party is incompatible with the data submitted by providers—for example, if a state provides data based on geocoded addresses, but the provider submits availability data using shapefiles. We propose to make publicly available, and note the status of, such incompatible data from governments and third parties, but not to include them in producing the coverage maps. Is this a viable proposal and consistent with the Broadband DATA Act? What else could we do to resolve the incompatibility in formats so that the data can be useful for the coverage maps?

³⁰⁵ *Mobility Fund Phase II Investigation Staff Report* at 3, 53, paras. 10, 80 & n.126.

117. We seek comment on the flexibility in the Broadband DATA Act to collect third-party availability data when the Commission determines that it is in the public interest to use such data in the development of the coverage maps or the verification of data submitted by providers. We propose to accept broadband Internet access service availability data from any third party that is able to demonstrate that it has employed a sound and reliable methodology in collecting, organizing, and verifying coverage data or location data, but we propose to use such data only if the Commission in its discretion determines that the data would make the coverage maps (or the data underlying the coverage maps) more accurate. We seek comment on this proposal and on any alternatives where collecting and using third-party data would improve the coverage maps or the underlying provider-submitted data. For example, should we use third-party data only to verify the availability data submitted by providers? Also, what factors should drive our public interest determination to accept and use the third-party data? We propose to use factors such as whether the third party specializes in gathering and/or analyzing broadband availability data, the format and type of data submitted (are they compatible and comparable with the providers' data), and the extent to which the entity demonstrates that its collection, organization, and verification methodologies are sound and would appreciably improve the accuracy and reliability of the coverage maps. Finally, we propose to require third parties submitting verified data to certify that the information it is submitting is true and accurate to the best of their actual knowledge, information, and belief, consistent with the certification requirements we propose to apply to providers in connection with their availability data.

4. Additional Options for Collecting Verified Data on Mobile Service

118. As discussed above, we propose to require mobile providers to submit on-the-ground test data to assist the Commission in verifying their data submissions. In this section, we propose to collect voluntarily-submitted "verified" on-the-ground data on mobile service from "[s]tate, local, and Tribal governmental entities that are primarily responsible for mapping or tracking broadband Internet access service" and from Federal agencies for use in the mobile coverage maps the Commission creates.³⁰⁶ We also seek comment on whether to collect voluntarily-submitted "verified" on-the-ground data from other third parties, including other non-federal government entities and mobile providers that submit data unrelated to their own networks, for use in the coverage maps. In addition, to meet the Broadband DATA Act's mandate to conclude a process that tests the feasibility of partnering with one or more Federal agencies to collect information to verify and supplement broadband information submitted by providers,³⁰⁷ we propose to launch a pilot program with a Federal agency with a delivery fleet, such as the United States Postal Service (USPS). We seek comment on how to implement this pilot program.

119. *On-the-Ground Data from Government Entities and Third Parties.* We seek to refresh the record on accepting on-the-ground data from certain state, local, and Tribal governmental entities as well as from other third parties. The *Digital Opportunity Data Collection Order and Further Notice* sought comment on whether to contract with third parties to deliver speed test data.³⁰⁸ In response to the *Digital Opportunity Data Collection Order and Further Notice*, the California PUC argued that the Commission or third parties not affiliated with providers should conduct nationwide drive-testing and that the Commission should accept data collected through tests conducted by states or their contractors.³⁰⁹ The City of New York also supported submission of voluntary speed-test data produced by local governments.³¹⁰ Verizon maintained that, if the Commission were to obtain third-party sources of test data, including structured sample data, it would be reasonable to *supplement* providers' submissions but

³⁰⁶ 47 U.S.C. § 642(a)(2)(A).

³⁰⁷ 47 U.S.C. §§ 644(b)(1)-(2).

³⁰⁸ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7555, para. 126.

³⁰⁹ California PUC Comments at 8; *see also* California PUC Comments, WC Docket No. 11-10, at 6 (filed Sept. 14, 2017) (arguing that state level drive test data provides "the most effective measure of actual mobile broadband service speeds").

³¹⁰ City of New York Comments at 4.

unreasonable to use such data to *validate* providers' submissions, given inherent *variability* in such data.³¹¹

120. We seek comment on whether we should adopt standards or requirements that these data must satisfy. We also seek comment on whether the Commission has discretion, under the Act, not to use such data if it determines that such data is not reliable or helpful for creation of the coverage maps. We also seek comment on whether, and under what conditions, the Commission should accept verified on-the-ground data from other third parties. We propose to define "other third parties" to include all entities not mentioned in section 642(a)(2)(A) and (C) of the Act,³¹² including non-federal governmental entities that are not primarily responsible for mapping or tracking broadband Internet access service, service providers that submit data on other providers' network coverage and performance, and other entities, such as third-party entities that routinely collect on-the-ground data. We seek comment on this proposed definition. Would data from other third parties help the Commission develop more accurate mobile coverage maps and verify providers' submitted data?³¹³ If we collect data from other third parties, should we specify the procedures and parameters for on-the-ground testing that the Commission will accept, as discussed in more detail above? Should the third-party be required to certify the methods by which the data were collected? We seek comment on whether establishing required procedures and standards will ensure the accuracy of these data. Will third parties be able to manipulate the procedures to generate inaccurate coverage data?

121. We seek comment on whether we can set technical standards for on-the-ground data that we collect from government and third parties, and if so, what standards we should require for such data. In the *Digital Opportunity Data Collection Order and Further Notice*, the Commission sought comment on ways to define a drive-testing process that would yield a useful dataset to verify provider data.³¹⁴ We note that the data speed that users experience depends on both the deployed network and the performance capabilities of the device. We believe that adopting standardized methodologies, testing parameters, and minimum device performance capabilities that apply equally to on-the-ground data submitted by providers to verify their network (as discussed in section IV.D.1., above) and to on-the-ground data voluntarily submitted by state, local, and Tribal governmental entities, other third parties, and Federal agencies (including through a pilot program) will assist the Commission in collecting verified data. Accordingly, we propose that any standardized requirements should be the same as those we adopt for service providers submitting on-the-ground data to verify their coverage data, as discussed above. For government and third-party on-the-ground test data, should we set parameters and methodologies such as equipment standards, requirements for placement of equipment, and time-of-day testing requirements? Should we require a combination of mobile and stationary test data? To the extent we adopt methodologies and parameters, can parties still manipulate such tests to generate inaccurate results? What, if anything, can the Commission do to prevent such manipulation?

³¹¹ Verizon Comments at 11-12. Verizon's comments were in the context of crowdsourced data generally, and not specific to drive test data from government entities or third parties that typically conduct drive test data. *Id.*

³¹² 47 U.S.C. §§ 642(a)(2)(A), (C).

³¹³ *See, e.g.*, 47 U.S.C. § 642(a)(2).

³¹⁴ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7555, para. 126. We considered designating a defined set of points nationwide for drive testing that we could use as part of a structured sampling method. *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7555, para. 126. We also sought comment on steps the Commission could take to address concerns about the meaningfulness and statistical validity of any provider-submitted on-the-ground data. *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7555, para. 122. We inquired whether the Commission should specify the methodology and parameters that providers must use to collect on-the-ground data. *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7555, para. 122. We also asked whether the Commission should require providers to use specific measurement equipment or software applications to measure mobile broadband speeds. *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7555, para. 126.

122. Should the Commission consider accepting any other forms of verified on-the-ground data besides mobile and/or stationary test data? In the *Digital Opportunity Data Collection Order and Further Notice*, we sought comment on the use of aerial drone testing and other technologies to verify data accuracy, with a particular emphasis on using such technologies to conduct sample audits of provider-submitted mobile deployment data, but few commenters addressed this issue.³¹⁵ We seek to refresh the record on the extent to which the Commission could verify and use such data in the creation of its mobile broadband maps. Are such data sufficiently reliable for use in the mobile broadband coverage maps? Would third parties have an interest in submitting such data for use in the Commission's coverage maps?

123. *Federal Agency Delivery Fleet Pilot Program.* Section 644(b)(2)(B) of the Broadband DATA Act requires the Commission, within one year of the Act's enactment, to "conclude a process that tests the feasibility of partnering with Federal agencies that operate delivery fleet vehicles, including the United States Postal Service, to facilitate the collection and submission" of data that can be used to verify and supplement broadband coverage information.³¹⁶ After the feasibility testing, the Commission must publish a report determining "whether the partnerships with Federal agencies . . . are able to facilitate the collection and submission of information" to verify and supplement mobile broadband data submitted by providers.³¹⁷ We seek comment on how best to comply with these mandates.

124. We believe that we should study the feasibility of partnering with Federal agencies by seeking to develop a pilot program that would install drive-test hardware on last-mile federal delivery fleet vehicles in certain sample markets to perform drive tests during a typical delivery route. How can we develop a cost-effective pilot program with USPS or another Federal agency that would yield useful data? What steps could the Commission take to address concerns about the validity of drive-test data more generally?³¹⁸ For example, should the Commission focus its pilot program on rural areas, where there are greater concerns with mobile coverage, or on markets where coverage is disputed? We seek comment on whether the pilot program should also incorporate stationary testing.

125. What other considerations should guide the Commission's decisions in establishing a pilot program with a federal agency that operates delivery fleet vehicles, such as USPS? For instance, in a Government Accountability Office (GAO) Report that considered the feasibility of USPS delivery vehicles collecting mobile wireless coverage and performance data, GAO identified two potential limitations: large up-front costs and complex technical specifications.³¹⁹ We seek comment on the likely costs of a pilot program. What procedures could the Commission implement to address concerns with requiring delivery workers to perform technically complex tasks?³²⁰ Can drive-testing be automated so that delivery vehicles can collect data passively? We seek comment on possible best practices for obtaining reliable drive-test data, including whether technicians would be required to install and calibrate test equipment; whether drivers would have to be trained to perform tests; and whether, in order to ensure

³¹⁵ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7555-57, paras. 127-30.

³¹⁶ 47 U.S.C. § 644(b)(2)(B).

³¹⁷ 47 U.S.C. § 644(b)(2)(C)(i).

³¹⁸ 47 U.S.C. § 644(b)(2)(C); *see also, e.g.*, CTIA Comments at 12.

³¹⁹ Government Accountability Office, Report to Ranking Member, Committee on Homeland Security and Governmental Affairs, S. Senate, "U.S. Postal Service, Offering Nonpostal Services through Its Delivery Network Would Likely Present Benefits and Limitations," GAO-20-190, at 31-32 (Dec. 2019), available at <https://www.gao.gov/assets/710/703324.pdf> (GAO USPS Report).

³²⁰ GAO USPS Report at 31 (noting that several technical factors must be controlled for when collecting data, which could pose a challenge to USPS implementation). The GAO Report considered collecting mobile wireless coverage as a potential revenue stream for USPS; as such, the report considered USPS collecting data that it could offer to providers, rather than collecting data through a Commission partnership. *See, e.g.*, GAO USPS Report at 32.

a statistically valid sample, multiple drive-tests would be required on the same route. Would there be any legal or other constraints inherent in partnering with USPS for such a pilot program?³²¹ For example, USPS Rural Carrier Associates “serv[e] thousands of families and businesses in rural and suburban areas while traveling millions of miles daily” but typically use their own vehicles for mail delivery.³²² Are there challenges to deploying drive testing equipment in vehicles not owned by the USPS? Are there other Federal agencies “that operate delivery fleet vehicles,” as the Broadband DATA Act states?³²³

126. Finally, should we also consider exploring a pilot program with a private entity that operates a large fleet of delivery vehicles, such as UPS or Federal Express? Are private entities better equipped than Federal agencies to operate such a program? Are there other private entities that routinely cover a high enough percentage of the roads?

E. Challenge Process

127. In the *Digital Opportunity Data Collection Order and Further Notice*, the Commission explained that “input from the people who live and work in the areas that a service provider purports to serve also plays a vital role in ensuring the quality of these maps, helping to identify areas where the data submitted do not align with the reality on the ground.”³²⁴ We seek comment on how best to implement a user-friendly challenge process consistent with the Broadband DATA Act.

128. Pursuant to the Broadband DATA Act, the Commission must establish a user-friendly challenge process through which consumers, State, local, and Tribal governmental entities, and other entities or individuals may submit coverage data to challenge the accuracy of the coverage maps, broadband availability information submitted by providers, or information included in the Fabric.³²⁵ In establishing the rules for the challenge process, the Commission must take into consideration a number of factors, including: (1) the types and granularity of information to be provided in a challenge; (2) the need to mitigate time and expense in submitting or responding to a challenge; (3) the costs to consumers and providers from misallocating funds based on outdated or inaccurate information in coverage maps; (4) lessons learned from comments submitted in the Mobility Fund Phase II challenge process; and (5) the need for user-friendly submission formats to promote participation in the process.³²⁶ The process also must include the verification of data submitted through the challenge process and allow providers to respond to challenges to their data.³²⁷ The Commission must develop an online mechanism for submitting challenges: (1) that is integrated into the coverage maps, (2) that allows an eligible entity or individual to submit a challenge, (3) that makes challenge data available in both GIS and non-GIS formats, and (4) that clearly identifies broadband availability and speeds as reported by providers.³²⁸ The rules establishing the challenge process also must include processes for the speedy resolution of challenges and for updating the Commission’s coverage maps and data as challenges are resolved.³²⁹

³²¹ GAO USPS Report at 1 (“USPS noted legal and other constraints to offering new non-postal services that leverage USPS’s last mile network”).

³²² See USPS, Publication 181—Join Our Team! Rural Carrier Associate at 1, 2 (Oct. 2007), <https://about.usps.com/publications/pub181.pdf> (last visited Apr. 29, 2020).

³²³ 47 U.S.C. § 644(b)(2)(B).

³²⁴ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7513, para. 18 (quoting Letter from Steven F. Morris, Vice President & Deputy General Counsel, NCTA, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 11-10, at 4 (filed Apr. 10, 2019)).

³²⁵ 47 U.S.C. §§ 642(a)(1)(B)(iii), (b)(5).

³²⁶ 47 U.S.C. §§ 642(b)(5)(B)(i)(V)-(VI).

³²⁷ 47 U.S.C. §§ 642(b)(5)(B)(ii), (iii).

³²⁸ 47 U.S.C. §§ 642(b)(5)(B)(ii)-(iv).

³²⁹ 47 U.S.C. § 642(b)(5)(C).

1. Online Tracking System

129. In the *Digital Opportunity Data Collection Order and Further Notice*, we directed OEA to work with the Administrator to create an online portal for State, local, and Tribal governmental entities and members of the public to review and dispute the broadband coverage data filed by fixed providers under the new Collection.³³⁰ The Broadband DATA Act does not permit USAC to develop the new portal, however, and, as described above, the portal must be flexible enough to handle broadband Internet access service mapping, availability, and location challenges for both fixed and mobile providers. We propose that the online mechanism for receiving and tracking challenges be accessible through the same portal that we propose to use for crowdsourced submissions, and that it provide easy, direct access to the challenge data as well as broadband availability data we collect from providers, including speed and latency data.³³¹ We seek comment on this proposal and on any alternatives for tracking challenges. For example, in the *Digital Opportunity Data Collection Order and Further Notice*, we asked whether the tracking portal could be similar to the Commission's existing consumer complaints database.³³² We also seek comment on the best user-friendly format for filing, responding to, and tracking challenges,³³³ as well as on what other steps may be required to ensure that the challenge portal complies with the requirements of the Broadband DATA Act.

2. Consumer Challenge Process

130. The challenge process must be available for consumers, as well as for State, local, and Tribal governmental entities and other entities. We anticipate that the issues raised in individual consumer challenges may differ from those raised by entities, so we propose to establish separate sets of requirements and procedures for consumer challengers.

a. Consumer Challenges of Fixed Data

131. *Service Availability and Coverage Map Data.* We propose to collect the following information from consumers seeking to challenging coverage map data or the availability of service at a particular location:³³⁴ (1) the name and contact information of the challenger (e.g., address, phone number, and/or e-mail); (2) the street address and geographic coordinates (latitude/longitude) of the location(s) at which the consumer is disputing the availability of broadband Internet access service; (3) a representation that the challenger owns or resides at the location or is authorized to request and receive service there; (4) the name of the provider whose coverage is being disputed; (5) a category of availability dispute, selected from pre-established options on the portal (e.g., no actual service offering at location; provider failed to install within ten business days of valid order for service; provider denied request for service; installation attempted but unsuccessful; reported speed not available); and (6) text and documentary evidence and details of a request for service (or attempted request for service), including the

³³⁰ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7513, 7542, paras. 18, 89 (“This input would identify locations where a member of the public or a governmental entity indicates that the fixed provider is not able to provision broadband service despite the location being within a broadband coverage polygon.”); *see also id.* at 7542, para. 89.

³³¹ *See supra* section IV.F.2.

³³² *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7542, para. 89.

³³³ In establishing a challenge process, the Broadband DATA Act specifically requires the Commission to consider the need for user-friendly challenge submission formats that will promote participation in the challenge process. *See* 47 U.S.C. § 642(b)(5)(B)(i)(VI).

³³⁴ The challenge process proposed for fixed service availability and coverage map data is designed to allow consumers and other parties to challenge whether coverage maps accurately reflect the *availability* of broadband service from a particular provider using the technology and at the maximum advertised speeds reported by the provider. This challenge process is not meant to address disputes that subscribers have with their broadband provider about quality of service issues, such as actual speeds and latencies received at a particular location.

date, method, and content of the request and details of the response from the provider. In addition, we propose that the challenger certify to the accuracy of the information submitted with the challenge and that such certification be equivalent to the certification required of providers in submitting their data. As required by the Broadband DATA Act, the platform for this submission would be integrated with the coverage maps so that the challenger would have ready access to broadband availability information reported at the location that is subject to the challenge.

132. We conclude that collecting this information would appropriately balance the burden on the challenger and provider, would facilitate challenge participation, and would adequately verify the information collected, as required by the Broadband DATA Act. We seek comment on this conclusion.

133. We also seek comment on the information that we propose to collect for challenges to fixed service availability and coverage data. Is there additional information that we should collect or are any of the proposed types of information not needed to present a clear picture of a challenge? Is the information we propose to collect comprehensive enough to cover all challenges considered by the Broadband DATA Act? We also believe that requiring detailed information to support a challenge will inhibit the submission of frivolous or malicious filings.³³⁵ We seek comment on this assumption.

134. Regarding the information requested from a consumer challenger, we seek comment on the specificity we should require for contact information and whether there are any privacy concerns with requesting this information (e.g., whether we should require both telephone numbers and email addresses). With regard to geographic coordinates, we propose to require that challenges be brought only on a location-specific basis, whether the challenge be for coverage maps, availability, or the Fabric. We seek comment on this proposal and on any better alternatives.

135. Also, in order to ensure the reliability of the data submitted, we propose that an individual, or an authorized officer or signatory of an entity, certify that the person examined the information contained in the challenge and that, to the best of the person's actual knowledge, information, and belief, all statements of fact contained in the submission are true and correct. Because providers must certify in a similar fashion with regard to their availability filings,³³⁶ we believe it is appropriate that a challenge to the substance of such filings be supported with certification that have comparable terms.³³⁷ We also propose that, if allowed to challenge multiple locations at once, the challenger must certify that this is true for each of the locations. We seek comment on these proposals.

136. Once a challenge is submitted to the online portal, the Broadband DATA Act requires the Commission to allow providers to respond.³³⁸ As an initial matter, we propose that the Commission's

³³⁵ We note that in the *Digital Opportunity Data Collection Order and Further Notice*, we directed USAC to develop mechanisms in the Collection to prevent malicious or unreliable filings. *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7513, para. 20 (“[w]e want to avoid bad-faith or malicious challenges to coverage data, such as a dispute to every address in a fixed provider’s footprint via an automated tool or bot. In order for this tool to be effective, it is essential that we safeguard the integrity of the data submitted through it.”).

³³⁶ See 47 U.S.C. § 642(b)(4).

³³⁷ See Broadband Mapping Coalition Comments at 34; NCTA Comments at 12-13 (arguing that “a challenging party should be required to certify to the accuracy of the data they are submitting just as providers certify to the accuracy of the data they must report”). We are requesting comment in this *Third Notice* on whether to require an engineering certification from providers of fixed and mobile broadband Internet access services regarding the availability and quality of their services. See *supra* section IV.D.2. We do not propose to require engineering showings or certifications as part of consumer challenges, but we will accept and consider them as part of resolving challenges should a challenger wish to submit them.

³³⁸ 47 U.S.C. § 642(b)(5)(B)(iii).

online portal should automatically notify a provider that a challenge has been filed against it.³³⁹ We believe that sending an automatic notification to providers is appropriate as it should promote active engagement, awareness, and responsiveness by providers.³⁴⁰ We seek comment on this proposal and on any alternatives to alerting providers to the filing of a challenge in the portal.

137. We propose requiring providers to submit a reply to a challenge in the online portal within 30 days of being notified of the challenge. We further propose that a provider's failure to submit a reply within the required period, or its acceptance of the assertions in the challenge, result in removal of the location from the Commission's official coverage map. We seek comment on this approach and on alternative time periods and alternative approaches. For example, NTCA has proposed a 60-day reply period for providers.³⁴¹ Any timetable for a provider response must balance the burdens on the provider versus the public's interest in rapid resolution of disputes so that the Commission has the best broadband Internet access service deployment data available for funding decisions and reporting. We also want to assess the burdens on providers (especially small providers) in responding to challenges.

138. We propose that a provider disputing a challenge must provide evidence in its reply to the challenger that it has either verified the existence of service or evaluated its capability of provisioning service at the location of the dispute and that it is currently providing service or is willing and able to provide service to the challenger at that location. Once a provider submits its objection to the challenge, the location will be identified on the public coverage maps as "in dispute/pending resolution." The challenger and provider would then have 60 days from the provider's reply to resolve the dispute. If the parties are unable to reach consensus within those 60 days, then the Commission will review the evidence and make a determination (based on a preponderance of the evidence, with the burden on provider to demonstrate service availability), either: (1) in favor of the challenger, in which case the provider must remove the location from its Collection polygon within 30 days of the decision; or (2) in favor of the provider, in which case the location will no longer be subject to the "in dispute/pending resolution" designation on the coverage maps. A provider failing to respond to a challenge, or a challenger failing to respond to a provider's reply, would result in a finding for the other party. We seek comment on this multi-step dispute resolution proposal and the timelines therein.

139. We also seek comment on our proposed use of the "preponderance of the evidence" standard in resolving disputes between challengers and providers.³⁴² Based on this evidentiary standard, we would weigh the presented evidence and determine whether the challenger had initially established evidence of a lack of service and, if so, whether the service provider has shown by the greater weight of the evidence that it makes service available at the challenger's location. We seek comment on potential alternatives. For example, in response to the *Digital Opportunity Data Collection Order and Further Notice*, the Broadband Mapping Coalition proposed a "clear and convincing" evidence standard, with the burden of proof on the challenger, for resolving challenges, which "is intermediate, being more than mere preponderance, but not to extent of such certainty as is required beyond reasonable doubt as in criminal

³³⁹ See, e.g., *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7542, para. 89 ("[h]aving a tracking system would allow USAC to pass the complaints along to the appropriate provider").

³⁴⁰ See Broadband Mapping Coalition Comments at 28 (highlighted the Commission's proposed procedure of notifying providers regarding challenges, but opposed an alternative method that would require providers to check periodically for challenges to their data—this "alternative could substantially increase provider burdens, especially for smaller providers, and in so doing, create an atmosphere more conducive to challenges slipping through the cracks").

³⁴¹ NTCA Comments at 9-10.

³⁴² See, e.g., *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7544, para. 95 ("What evidentiary standard should the Commission establish to resolve such disputes: preponderance of evidence, clear and convincing evidence, or another standard?").

cases.”³⁴³ NCTA recommends that the dispute resolution framework “should be an evidence-based challenge process that places substantive evidentiary requirements on the party submitting the challenge, requires a response from the provider, and leads to a decision by the Commission if there is no resolution between the parties.”³⁴⁴ We seek comment on the dispute resolution framework and whether we should put the burden of proof in the challenge process on the challenger.³⁴⁵

140. One of the benefits of the proposed approach is that it balances the interest in avoiding unreliable or malicious availability and location disputes with the need to have finality in disputes to enhance the accuracy of the provider’s data and coverage maps. We believe the process we propose would encourage the sharing of information and opportunities for cooperation that will result in many challenges being resolved promptly without the need for Commission intervention. Our goal is to establish a dispute resolution process that achieves the Broadband DATA Act’s objectives while minimizing burdens on the parties and conserving valuable Commission resources to the maximum extent possible.

141. *Consumer Challenge of Fabric Data.* We propose a different process for consumers to challenge information in the Fabric. We anticipate that challenges to location information in the Fabric would not generally require the involvement of a broadband provider. We propose, however, that challenges to the Fabric data will be filed on the same portal as challenges of availability and coverage map data, with the submission of much of the same information. As with consumer challenges to availability and coverage map data, for challenges to the Fabric, we propose to provide a selection of pre-established categories of disputes, including, for example: placement of location on the map is wrong (geocoder/broadband serviceable location); location is not broadband serviceable (e.g., condemned, not a habitable structure); or serviceable location is not reflected in the Fabric. We also propose to provide an “other” option, along with the opportunity in the portal for submitting text or documentary evidence in support of the challenge. We propose that the challenge process platform provide each challenger with an acknowledgement of its submission and information about the process, including expected timing, and we propose that the portal notify any affected providers of the challenge and allow, but not require, them to submit information relating to the Fabric challenge. We propose to establish a goal of resolving challenges to the Fabric within 60 days of receipt of the challenge and seek comment on that proposal.

b. Consumer Challenges of Mobile Coverage Data

142. We seek comment on how to create a user-friendly challenge process that encourages participation to maximize the accuracy of the maps, while also accounting for the variable nature of wireless service. However, we recognize that resolving challenges to mobile coverage maps presents unique challenges not present with regard to fixed broadband availability challenges.

143. For consumers seeking to challenge mobile broadband coverage map data, we propose to collect the following information: (1) the name and contact information of challenger (e.g., address, phone number, and/or e-mail address); (2) the street address or geographic coordinates (latitude/longitude) of the location(s) at which mobile broadband Internet access service coverage is disputed; (3) the name of the provider whose coverage is being disputed; (4) a representation that the challenger is a subscriber of the provider that is the subject of the challenge; (5) a category of dispute, selected from pre-established options on the portal (e.g., no mobile broadband signal at a location; mobile broadband speed below defined technology speed parameter at a location); and (6) information regarding

³⁴³ Broadband Mapping Coalition Comments at 33; *see also* GVNW Consulting Comments at 4 (“Such a challenge would require a carrier to provide supporting documentation that provides clear and convincing evidence that the reported broadband service for that particular area is inaccurate.”).

³⁴⁴ NCTA Comments at 12-13.

³⁴⁵ *See* Broadband Mapping Coalition Comments at 33 (arguing that the burden of proof must reside with the consumer or entity filing the challenge).

the available mobile broadband service. We seek comment about whether the information we propose to collect from consumer challengers would cover all the potential challenges authorized by the Act and facilitate participation in the challenge process, while being detailed enough to discourage frivolous filings. Would it be enough to verify the legitimacy of the challenge and provide enough information for the challenged party to respond? Should the Commission require the submission of other information or should it not require the submission of certain information listed above? Consistent with our proposed process for consumer challenges in the fixed context, we propose that a mobile challenger certify that an authorized person has examined the information contained in the challenge and that, to the best of the person's actual knowledge, information, and belief, all statements of fact contained in the submission are true and correct.

144. In addition to challenges regarding the availability of mobile broadband service, we propose to allow challenges by consumers based on quality of service metrics such as delivered user speeds. We believe that allowing such challenges would help us verify the accuracy of mobile coverage maps by providing us with a source of on-the-ground data that reflects consumer experience in areas across the country. We seek comment on our proposal. What are the advantages and disadvantages of permitting consumers to make such challenges? We propose requiring consumers who are challenging quality of service metrics (such as download or upload speeds) to submit speed test evidence. For consumers using third-party mobile speed test applications to collect data for their challenges, we propose to adopt the same procedures for qualifying applications as the Commission uses for receiving crowdsource data. Alternatively, we seek comment on whether we should require the use of a specific speed test application, such as the FCC Speed Test application or another application. Would requiring the submission of speed test data be consistent with the Broadband DATA Act's requirement that the Commission develop an online mechanism to receive challenges?³⁴⁶ Alternatively, should we limit challenges in the mobile context to those based only on evidence of a lack of service availability? Would doing so be consistent with the requirements of the Broadband DATA Act?³⁴⁷ We also seek comment on whether and how the Commission should use signal strength information submitted by carriers, assuming the Commission adopts such a requirement, as part of the challenge process. As noted above, end user throughput can be affected by factors other than signal strength, but often signal strength correlates to expected throughput. Based on this relationship between signal strength and throughput, we seek comment on the role signal strength information could play in the challenge process. Should the Commission adopt a different evidentiary standard or burden of proof in cases where a party submits a challenge in an area where the carrier's RSRP/RSSI falls below a specified threshold? If so, then what RSRP/RSSI value would be appropriate?

145. We propose to use generally the same processes and timeframes for mobile service providers to respond to challenges in the mobile context as we propose to use in the fixed context. Consistent with our proposal for fixed services, we propose that the Commission's dispute tracking portal automatically push notifications through to mobile providers regarding filings made against them and that providers seeking to dispute a challenge be required to submit a reply to a challenge in the online portal within 30 days of being notified of the challenge. We seek comment on this proposal. For challenges involving the delivered speeds associated with a mobile broadband service, we propose that a provider disputing a challenge from a mobile consumer must provide evidence in its reply to the challenger that it has evaluated the speed of its service at the location of the dispute and determined that the delivered speeds of the service match the speeds indicated on the provider's coverage map. We propose that the

³⁴⁶ Section 642(b)(5)(B)(iv) requires the Commission to develop an online mechanism that (1) is integrated into the coverage maps; (2) allows an entity to submit a challenge; (3) makes challenge data available in GIS and non-GIS formats; and (4) clearly identifies the areas in which BIAS is available and the upload/download speeds. 47 U.S.C. § 642(b)(5)(B)(iv).

³⁴⁷ Section 642(b)(5)(A)(ii) authorizes challenges to the accuracy of "any information submitted by a provider regarding the availability" of broadband Internet access service. 47 U.S.C. § 642(b)(5)(A)(ii).

rest of the challenge process for consumers follow the same approach as for consumer challenges in the fixed context. We seek comment on this approach and on any better alternatives to ensure that the Commission and the provider have complete and accurate information about the challenge. Additionally, we seek comment on whether the rules for consumer challenges should require uniform measurements per grid cell similar to what we propose to adopt for challenges by governmental and other non-consumer entities as set forth below.³⁴⁸

3. Challenges by Governmental and Other Entities

a. Challenges by Governmental and Other Entities to Fixed Data

146. *Challenges by Governmental and Other Entities to Service Availability and Coverage.* We also propose to establish two processes for challenges to fixed data by State, local, or Tribal governmental entities or other entities: one for availability and coverage map challenges and one for challenges to Fabric data. These entities will not under normal circumstances be consumers of mass-market broadband services and so we anticipate that the challenges they initiate will be typically in the form of bulk challenges of provider availability, coverage map, or Fabric data. We seek comment on this conclusion. We propose to establish a portal for entity challenges on the same platform used for consumer challenges.

147. While government organizations or other entities (e.g., businesses, trade groups, other organizations) can be customers of a provider at a location (and follow the challenge process above laid out for customers (or potential customers) at a specific location), we propose to allow them also to file challenges for locations where they are not customers or potential customers. In those situations, we propose to require some of the same information from the challenger as for consumer availability challenges, including: (1) the name and contact information for the challenger; (2) the geographic coordinates (latitude/longitude) or the street addresses of the location(s) at which coverage is disputed; (3) the name[s] of the provider[s] whose availability data are being disputed; (4) narrative description of dispute (e.g., no actual service offering at location; provider failed to install within ten business days of valid order for service; provider denied request for service; installation[s] attempted but unsuccessful; reported speed not available for purchase); (5) evidence/details supporting dispute, including (a) methodology, (b) basis for determinations underlying the challenge, and (c) communications with provider, if any, and outcome; and (6) a certification that the information submitted with the challenge is accurate, equivalent to the certification made by providers in submitting their availability data. We also propose that the processes and timeframes for provider replies and dispute resolution follow the same approach as for consumer challenges to availability and coverage. We seek comment on this approach and on any better alternatives to ensure that the Commission and the provider have complete and accurate information about the challenge.

148. *Challenges by Governmental and Other Entities to the Fabric.* We propose that governmental and other entities' challenges to locations in the Fabric be initiated on the same portal as their challenges to availability, with the same filing requirements as consumer challenges to the Fabric, including the name and contact information for the challenger and the geographic coordinates (latitude/longitude) or the street addresses of the location(s) for which the entity disputes the Fabric data, as well as a description of the disputed information and evidence/details that support the challenge. As with consumer challenges to Fabric data, we propose to establish a goal of resolving disputes of data in the Fabric within 60 days of receipt of the challenge and seek comment on that proposal.

149. We seek comment on these proposals and specifically on whether they would appropriately balance the considerations the Broadband DATA Act requires us to take into account in establishing the challenge process.

³⁴⁸ See *infra* para. 153.

b. Challenges by Governmental and Other Entities to Mobile Data

150. *Minimum Requirements for Challengers.* Consistent with our proposal for consumers in the mobile context, we propose to allow challenges from governmental and other entities based on both mobile broadband service availability and quality of service metrics such as delivered speeds. For challenges involving delivered speeds, however, we propose that governmental and other entities follow a different process for submitting standardized challenge data.

151. In the Mobility Fund Phase II proceeding, we required challengers to submit proof of lack of 4G LTE coverage in the form of actual outdoor download throughput speed test measurements to reflect actual consumer experience throughout the entire challenged area.³⁴⁹ In particular, the Commission adopted a requirement that a challenger must take measurements that were no more than one-half of a kilometer apart from one another in each challenged area and required challengers to demonstrate measured speeds falling below the applicable parameters in 75% of the challenged area.³⁵⁰ Challengers also faced additional evidentiary requirements, including a requirement to use pre-approved handset models, to purchase a service plan from each provider in the challenged area, and to conduct speed tests during a specified timeframe.³⁵¹

152. In response to the *Digital Opportunity Data Collection Order and Further Notice*, at least one commenter argued that the evidentiary standards the Commission adopted for the Mobility Fund challenge process were burdensome and difficult to meet, particularly for small entities.³⁵² CCA explained that collecting drive test data to dispute coverage was a significant challenge because “many rural areas that could be challenged have thousands of square kilometer blocks that must be separately analyzed to determine whether any carrier is providing service.”³⁵³ CCA also claimed that the requirement to provide evidence demonstrating lack of coverage in 75% of the area being challenged limited small provider participation because as many as half of rural blocks did “not have enough drivable roads to meet the Commission’s 75-percent benchmark.”³⁵⁴ While WTA expressed support for a challenge process generally, it noted that establishing a challenge process in the mobile context is difficult because of the need to collect evidence of mobile broadband performance over vast areas.³⁵⁵

153. We propose to adopt an approach for governmental and other non-consumer entities submitting challenge data that is similar to the process for demonstrating compliance with performance requirements that the Commission has proposed in the *5G Fund NPRM*.³⁵⁶ Under such an approach, we would overlay a uniform grid of one square kilometer (1 km by 1 km) grid cells on each carrier’s propagation model-based coverage maps.³⁵⁷ We would then require governmental and other entities interested in challenging the accuracy of a carrier’s map to submit user speed test measurement data showing measured user throughput speeds in the area they wish to challenge. For example, we could

³⁴⁹ *Mobility Fund II Order on Reconsideration and Second Report and Order*, 32 FCC Rcd at 6306, 6308, paras. 47, 50. For purposes of the MF-II challenge process, “4G LTE” meant service with a measured download throughput speed of 5 Mbps and “outdoor” meant not inside of a building.

³⁵⁰ *Procedures for the Mobility Fund Phase II Challenge Process*, WC Docket No. 10-90, WT Docket No. 10-208, Public Notice, 33 FCC Rcd 1985, 1996, para. 21 (rel. Feb. 27, 2018); *Mobility Fund II Order on Reconsideration and Second Report and Order*, 32 FCC Rcd at 6309, 6310, paras. 51, 55.

³⁵¹ *Mobility Fund II Order on Reconsideration and Second Report and Order*, 32 FCC Rcd at 6308-09, paras. 50-51.

³⁵² See generally CCA Comments.

³⁵³ CCA Comments at 8.

³⁵⁴ CCA Comments at 9.

³⁵⁵ WTA Comments at 9-10.

³⁵⁶ See *5G Fund NPRM*, 35 FCC Rcd at 4033, para. 113.

³⁵⁷ *5G Fund NPRM*, 35 FCC Rcd at 4033, para. 113.

require challengers to submit at least 3 speed test measurements per square kilometer grid cell in the disputed area demonstrating that measured throughput speeds do not match reported service levels.³⁵⁸ Measurement data indicating speed levels below applicable parameters in the challenged area would constitute evidence that a provider's coverage map may not be accurate. We seek comment on the feasibility of this approach for governmental and other entities in the context of our challenge process. We seek comment on the minimum number of measurements that should be required in each grid cell. Would a minimum testing requirement of 3 speed test measurements per square kilometer grid cell in the challenged area provide sufficient data while minimizing costs and logistical burdens for challengers? Do we need to adopt any requirements concerning the three speed tests, such as requiring a minimum distance between tests? Or, should the Commission require a different number of speed test measurements? Are there other types of drive tests that can be conducted with more frequent observations? Alternatively, should the Commission require challengers to submit speed test measurements in a defined percentage of grid cells in a challenged area? What percentage of grid cells would provide a representative sample of coverage in an area? Should we require challengers to submit measurements in 15% of grid cells in the challenged area?³⁵⁹ Would doing so provide a sufficient sample size on which to base a challenge filing? Are there alternative approaches that would not require challengers to submit speed test data?

154. We propose that tests must be conducted using a device certified by the service provider that is the subject of the challenge as compatible with its service. We further propose that each speed test be taken between the hours of 6:00 AM and 12:00 AM (midnight) local time and that each test be taken outdoors. We propose to require challengers to provide test data from a combination of mobile and stationary tests. For in-vehicle tests, we seek comment about whether we should specify the maximum vehicle speed during which tests may be taken and whether challengers should be required to report the speed of the vehicle at the time of the measurements. If tests are conducted with the device in the vehicle, we propose that the measurements must be calibrated to accurately represent outdoor operation and that the calibration procedures be provided with the analysis.³⁶⁰ We also propose to require that speed test data be substantiated by the certification of a qualified engineer or official. To the extent governmental or other non-consumer entities use third-party applications to collect data used for their challenge process, we propose that the Commission will adopt the same procedures for qualifying applications as it uses for receiving crowdsource data and consumer challenge data. We seek comment on this proposal. We also seek comment on whether and how a challenger might game the results of a challenge. If so, how might the Commission prevent such gaming?

155. We acknowledge that a mobile service provider might have different motives for challenging a competitor's propagation models and coverage maps than governmental entities and other third parties that do not provide competing mobile broadband Internet access service. Should we allow competing mobile service providers to submit challenges, and if so, should we adopt different evidentiary standards for mobile service providers than for governmental agencies and other third parties that are not service providers? We also seek comment on whether to establish different evidentiary standards or permit challengers to use different measurements methods in rural areas. We seek comment on our proposals and ask commenters to discuss any other measures the Commission should adopt to help ensure that it receives useful data while minimizing the time, expense, and administrative burden for both challengers and providers.

³⁵⁸ *5G Fund NPRM*, 35 FCC Rcd at 4033, para. 113.

³⁵⁹ *5G Fund NPRM*, 35 FCC Rcd at 4033-34, para. 114.

³⁶⁰ Often, drive tests are conducted with the test device connected to an external antenna and the additional losses for the external antenna calibrated. Tests conducted using the device's internal antenna require much more rigorous calibration methods to verify the vehicle penetration loss for the exact location and orientation of the device within the vehicle.

156. Lastly, we seek comment on whether the minimum requirements and other standardization procedures we propose here for challenging mobile broadband coverage data, if adopted, would ensure the reliability of the data sufficient to satisfy our obligations under the Broadband DATA Act.³⁶¹ If not, then what other processes would be necessary for the Commission to verify and ensure the reliability of the challenge process data in accordance with the Act?

157. *Challenge Responses.* We propose to generally use the same challenge response processes and timeframes for challenges by governmental and other entities as we propose to use for challenges by those entities involving fixed services. For cases where a mobile provider seeks to rebut a governmental or other entity's allegation regarding delivered speeds, however, we propose the following. We will allow the provider to submit comprehensive on-the-ground data, or a statistically valid and sufficient sample of such data to verify its coverage maps in the challenged area. We also propose that the Bureaus have the option to require carriers to submit other data as necessary. We further propose that mobile service providers be subject to the same speed test measurement parameters we ultimately adopt for challengers. We seek comment on our proposals.

158. In order to facilitate the resolution of challenges in the mobile context, we seek comment on requiring providers to submit a standardized "challenge evaluation map" of specific geographic areas being challenged using a Commission-approved propagation model. In the *Second Report and Order* above, we require that a provider's propagation model results be based on certain standardized parameters (and their corresponding minimum values) that we establish for cell edge probability, cell loading, and clutter. We also require that providers must use the same optimized propagation models and parameters that they use in their normal course of network planning and design. Notwithstanding these standardized parameters, there remain many differences among the propagation models used by providers which may result in coverage maps that are difficult for potential challengers to analyze and contrast across providers and different RF environments. Moreover, the propagation models used by providers in their normal course of business contain RF network engineering parameters that are proprietary and unique, which may make it more difficult for Commission staff to resolve challenges to the results produced by these propagation models.

159. To address these issues, we seek comment on whether to require providers, as part of the challenge process, to produce a standardized "challenge evaluation map" of specific geographic areas being challenged using a Commission-approved propagation model (e.g., Longley-Rice, or E-Hata), so that third parties and the Commission are able to analyze the technical and statistical factors that lead to variations in actual coverage and user experience. Such a Commission-approved standard model, implemented by the service provider(s), would produce signal strength predictions, as well as predictions of expected minimum downlink and uplink user speeds, based on provider specific system parameters (such as spectrum band and bandwidth deployed, transmit power, etc.). We believe that the use of such a standardized propagation model would afford the Commission and challengers additional insight into the expected minimum coverage and speed performance, to resolve the challenge of validating providers' claims beyond what is provided in the maps produced using providers' proprietary and unique RF parameters, especially in challenged areas. However, by requiring coverage prediction in specific geographic areas through the use of a standardized propagation model, we recognize that there may be an additional information collection burden associated with requesting this additional information from licensees. Therefore, we seek comment on the costs and benefits of this proposed requirement and whether adopting it would be consistent with the Broadband DATA Act requirement that the Commission consider ". . . the need to mitigate the time and expense incurred by, and the administrative burdens placed on, entities and individuals in . . . responding to challenges."³⁶²

³⁶¹ 47 U.S.C. § 642(b)(5)(B)(ii).

³⁶² 47 U.S.C. § 632(b)(5)(B)(i)(III)(bb).

160. Are there other alternatives that would achieve the results of balancing the desired outcome of having more transparent maps and predictions with less calibration error and uncertainty? Can a standard model be produced by providers without undue additional burden, given the more extensive and detailed normal-course-of-business RF propagation modeling that providers perform using proprietary tools?

161. For commenters who favor the Commission's adopting a standardized propagation model, we seek comment on the appropriate open RF propagation model(s) and its applicability to meet the accuracy expectations of this proceeding. Is Longley-Rice and/or E-Hata appropriate for the Commission to use for this purpose? How could such models be calibrated, such as through the use of clutter databases and models, to be adequately reflective of their effects on propagation in specific geographic areas? For example, path loss exponents and/or other modeling parameters such as clutter loss may be geographically dependent on the propagation path between two points (between transmitter and receiver) and significantly influence predicted coverage and performance. Commenters should specify how their recommended model(s) would provide the Commission and challengers the insight necessary to evaluate the coverage maps and performance claims produced by providers in their normal course of network planning and design.

162. Could a public dataset(s) of geospatial RF propagation parameters be developed and used, so that a standard evaluation model, or models, may be calibrated for the public benefit? Are there incentives and policies that the Commission should promote to encourage greater transparency and the development of trusted public propagation data in the public's interest? Commenters should specify which parameters should or should not be disclosed to the Commission with supporting reasons for their position on each parameter.

163. We also seek comment on when in the process providers should be required to submit these new coverage maps, if we adopt this requirement to standardize challenge evaluation maps. Should providers submit such maps on a calendar basis or only when coverage and performance is challenged in a specific area? Could the use of standardized challenge evaluation maps reduce the need and cost burden of measurement test campaigns? What other methods or processes can be used to evaluate providers' coverage maps under a challenge process? We seek comment on the above, as well as the relative costs and benefits of these alternative approaches.

164. *Framework for Verifying Data.* We seek comment on the data that should be used in the framework and how such data should be analyzed in ways not otherwise proposed in this *Third Notice*. What metrics from on-the-ground test results and crowdsourced data should be analyzed in the framework and how? To improve our ability to verify provider data, we propose that the framework require results from a certain number of on-the-ground or crowdsourced tests in an area. How many tests are needed to adequately assess coverage in a particular grid cell, set of grid cells, the area covered by a cell site, or a larger portion of a network? In assessing this number, we must consider that test results will be from particular points or lines within a grid cell, while coverage maps depict much larger areas. How often should test results be taken (i.e., across a range of dates and times of day)? How should we account for peak hour or other time-based variations in network traffic?

165. What, if any, additional infrastructure data should we include in the framework? We propose to obtain busy hour metrics for individual cell sites and include that data, as well as backhaul speed and technology, into our analysis. Are there other metrics and data sources that the framework should incorporate? We also propose to include population data and roadway traffic patterns. Should traffic pattern data be used to assess the level of cell loading on the network? If a mobile connection can be established in an area at one point, or one point in time, but not another, especially if the lack of a connection can be explained by high traffic or another factor, should the map of coverage in that area be deemed accurate and reliable? We propose to include a confidence rating within the framework, given the amount of data and level of network traffic variation to account for. We propose that the framework treat urban and rural areas differently. We seek comment on this proposal. We ask that commenters

provide in-depth explanations of how various types of on-the-ground tests, crowdsourced data, infrastructure data, and other data can be used to verify mobile coverage pursuant to this framework.

4. Public Availability of Information Filed in the Challenge Process

166. The Broadband DATA Act requires the Commission to establish processes and procedures whereby entities or individuals submitting non-public or competitively sensitive information can protect the security, privacy, and confidentiality of that information with regard to Fabric data and broadband Internet access service data that they submit.³⁶³ While the Broadband DATA Act does not expressly require the Commission to extend such protection to data submitted as part of the challenge process, we propose to do so in a limited capacity. In the *Digital Opportunity Data Collection Order and Further Notice*, we stated that “public input on fixed broadband service coverage will be most effective if some types of data collected in this process are routinely made available to the public.”³⁶⁴ As a result, we directed USAC to make public information about the location that is the subject of the challenge (including the street address and/or coordinates (latitude and longitude)), the name of the provider, and any relevant details concerning the basis for challenging the reported broadband coverage.³⁶⁵ We propose to adopt the same requirements for information submitted as part of our proposed challenge process (with the exception of the Administrator’s involvement), and we seek comment on that approach and any better alternatives. Specifically, we ask whether the information to be made public is too much or too little to adequately inform the public about the nature of a challenge. We also propose to keep all other challenge information private, unless disclosure “would be helpful to improve the quality of broadband data reporting.”³⁶⁶ We seek comment on the extent of this exception and under what circumstances we would make any other challenge information available to the public.

167. In the *Digital Opportunity Data Collection Order and Further Notice*, we also directed that any input from the public on broadband coverage service data be made available as soon as is practical after submission.³⁶⁷ We did not specify a timeline for making such data publicly available, but expected that there would be regular releases of data.³⁶⁸ We seek comment on the procedures and timing for making available the public data submitted as part of the challenge process. One option would be to make such information available and searchable in the Collection, without any official release of data. Another option would be to regularly issue public notices with the appropriate information. We seek comment on the best option for accomplishing our goal of making public challenge data available.

F. Broadband Serviceable Location Database

168. In the *Second Report and Order*, we adopted the Fabric as required by section 642(b) of the Broadband DATA Act, along with other basic Fabric elements prescribed in the Act.³⁶⁹ As noted in the *Second Report and Order*, the Broadband DATA Act authorizes the Commission to contract for the creation and maintenance of the Fabric, subject to Federal Acquisition Regulations, but we have not been appropriated funding to cover the cost of implementing the Fabric.³⁷⁰ We intend to initiate a procurement process promptly once adequate funding has been appropriated, and we expect to address many of the technical aspects of the Fabric in the course of that process.

³⁶³ 47 U.S.C. § 642(a)(1)(B)(ii).

³⁶⁴ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7513, para. 19.

³⁶⁵ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7513, para. 19.

³⁶⁶ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7513, para. 20.

³⁶⁷ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7513, paras. 19-20.

³⁶⁸ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7513, para. 20.

³⁶⁹ See *supra* section III.B.

³⁷⁰ 47 U.S.C. § 642(b)(1)(A)(ii).

169. In the *Digital Opportunity Data Collection Order and Further Notice*, we sought comment on a number of issues related to the implementation of a comprehensive location database, including how we should define a broadband serviceable location, how to treat multi-structure parcels and multi-tenant environments, and the best way to check the quality of the database.³⁷¹ While technical issues related to the Fabric can be addressed in the procurement process, we seek comment on certain proposals related to the Fabric.

170. The Broadband DATA Act requires that the Fabric include “all locations in the United States where fixed broadband Internet access service can be installed.”³⁷² In order to create the Fabric, we will need to provide greater specificity on the criteria to determine whether a location can have fixed broadband service installed at it. In the context of the Connect America Fund (CAF), a “location” is a residential or business location to which providers would extend mass market broadband and voice services.³⁷³ Carriers are directed to base residential locations served on the Census Bureau’s definition of a “housing unit,” and to report “the locations of businesses that they would expect to demand consumer-grade broadband services, which typically are small businesses.”³⁷⁴ We propose to adopt the CAF approach and seek comment on this proposal.

171. As the Commission has done in the CAF context, we propose to have the Fabric reflect a location as a single point, defined by both geographic coordinates (latitude and longitude) and street address. As we stated in the *Digital Opportunity Data Collection Order and Further Notice*, “[w]e anticipate that this would be the coordinates of a building on a parcel,”³⁷⁵ to which broadband can be installed. In cases where there are multiple buildings on a parcel, we propose that all of the buildings on a parcel to which broadband can be installed, and only those buildings, be included in the Fabric. We believe that recording each location as a single point has an advantage over reporting the outlines of each building (i.e., a polygon for each location), the latter of which will increase the difficulty of creating the database and the amount of data required, without meaningfully improving the quality of the database. We seek comment on this proposal.

172. Because the Commission specified that a residential location should be based on the definition of a housing unit, locations in the CAF context include the individual units in Multi-Tenant Environments (MTEs), such as an apartment building or office building, not simply the buildings themselves.³⁷⁶ We seek comment on whether to use the same approach for the Fabric, particularly given that fixed providers likely would not offer service only to some units in an MTE. Should each unit in a

³⁷¹ After the adoption of the *Digital Opportunity Data Collection Order and Further Notice*, but before the enactment of the Broadband DATA Act, USAC issued a Request for Information (RFI), titled “Database of Broadband-Addressable Locations,” seeking information on how to generate, collect, and publicly share location information. USAC withdrew the RFI on March 25, 2020, due to the enactment of the Broadband DATA Act, but some responses to the RFI were submitted into the record in this proceeding.

³⁷² 47 U.S.C. § 642(b)(1)(A)(i).

³⁷³ See *Wireline Competition Bureau Provides Guidance to Carriers Receiving Connect America Fund Support Regarding Their Broadband Location Reporting Obligations*, WC Docket No. 10-90, Public Notice, 31 FCC Rcd 12900, 12903 (WCB 2016) (*CAF Public Notice*); *Connect America Fund et al.*, WC Docket No. 10-90 et al., Order on Reconsideration, 33 FCC Rcd 1380, 1390, para. 27 (2018).

³⁷⁴ See *CAF Public Notice*, 31 FCC Rcd at 12903.

³⁷⁵ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7546, para. 103; Broadband Mapping Coalition Comments at 12-13 (“Regarding the determination of which locations should be defined as ‘serviceable,’ the BMC agree with the FCC that recording each location as a single point has an advantage over reporting the outlines of each building. Reporting building outlines would increase the complexity of the database without meaningfully improving its quality.”).

³⁷⁶ The Commission requires providers to report buildings as individual records, but then to report the number of units in each building.

building be assigned a unique identifier, or should the building be assigned a unique identifier and the number of units recorded, which is more analogous to the process used for the Connect America Fund? Is it feasible to record the location of each individual unit within an MTE? What are the trade-offs of identifying a separate latitude/longitude (and perhaps altitude) point for each unit versus recording a single point for the building and its total number of units? We are concerned that the added complexity of identifying individual units as individual locations—far more locations and the need to differentiate not just latitude and longitude, but also potentially altitude—would outweigh any benefits. We seek comment on this assumption.

173. Further, we seek comment on whether to identify each location as a residential or business location, which the Broadband Mapping Coalition claims to be a “critical step to ensure that datasets can be appropriately selected and calibrated.”³⁷⁷

174. We also seek comment on how to ensure the quality of the Fabric. We note that there are different types of errors possible in such a database, for example, incorrectly counting a structure that cannot have a broadband service installation as a location, such as a dilapidated house or a shed. Another type of error could be to exclude locations that should be included, such as a home in a heavily forested area that does not appear on satellite imagery. Finally, there also could be errors about the characteristics of a location, such as identifying the wrong building from among several on a parcel as the one that is broadband serviceable. Given the potential for errors, what data sources and methods can the Commission staff use to verify the accuracy of the Fabric? Should 2020 Census data, the National Address Database, Open Address Database, and/or other sources be used? Should staff manually verify a statistically valid sample of locations in the database? If so, what methods should they use for that verification? We seek comment on these and other approaches to ensure that the Fabric is accurate.

G. Enforcement

175. In the *Second Report and Order*, we adopt the Broadband DATA Act requirement that it is unlawful to willfully and knowingly, or recklessly, submit information or data that is materially inaccurate or incomplete with respect to the availability or the quality of broadband Internet access service.³⁷⁸ We seek comment on several aspects of the Broadband DATA Act’s enforcement requirement. As an initial matter, how should we determine whether an entity or individual “willfully and knowingly” or “recklessly” submitted inaccurate or incomplete information?

176. “Willfully and knowingly” seems to presume that such information was submitted intentionally, and we seek comment on the evidence needed to prove an entity or individual’s intent.³⁷⁹ The Commission has generally found intent in cases where a false statement is “coupled with proof that the party . . . [knew] of its falsity.”³⁸⁰ In addition, we note that other statutes that we enforce include a similar standard of proof. For example, section 510(a) of the Communications Act similarly provides that the United States may seize equipment that is used or sold “with willful and knowing intent to violate” section 301 or 302a of the Communications Act. Should we apply “willfully and knowingly” in the same manner in this context? “Recklessly” suggests something less than intent yet more than mere negligence.

³⁷⁷ Broadband Mapping Coalition Comments at 14-15.

³⁷⁸ 47 U.S.C. § 643.

³⁷⁹ See, e.g., Next Century Cities Comments at 5 (arguing that it is difficult to enforce a willful misrepresentation standard because it is too ambiguous and a recipe for “no accountability”).

³⁸⁰ *Riverside Youth*, 23 FCC Rcd 10360 (MB 2008) (quoting *David Ortiz Radio Corp. v. FCC*, 941 F.2d 1253, 1260 (D.C. Cir. 1991), quoting *Leflore Broadcasting Co. v. FCC*, 636 F.2d 454, 462 (D.C. Cir. 1980)); see also *SBC Communications, Inc.*, 16 FCC Rcd 19091, 19115, para. 66 (2001) (stating that intent is a “factual question that may be inferred if other evidence shows that a motive or logical desire to deceive exists,” quoting *Black Television Workshop*, 8 FCC Rcd 4192, 4198, n.41 (1993) (subsequent history omitted)).

What evidence would we need to show that an entity or individual recklessly submitted materially inaccurate or incomplete information?

177. We also seek comment on the definition of “materially inaccurate or incomplete.”³⁸¹ What level of inaccuracy or incompleteness does the information submitted to us have to reach before it should be considered material? Could it involve just one location or must there be multiple locations involved for the inaccurate or incomplete information to be material? We ask whether we should adopt a quantitative or qualitative standard for determining materiality and what that standard should be. In addition, we note that section 1.17 of the Commission’s rules requires that truthful and accurate statements be provided to the Commission in investigatory and adjudicatory matters. Specifically, section 1.17(a)(2) makes it unlawful to “provide material factual information that is incorrect or omit material information.”³⁸² The Commission has held that a false statement may constitute an actionable violation of that rule, even absent an intent to deceive, if it is provided without a reasonable basis for believing that the statement is correct and not misleading.³⁸³

178. We seek comment on the scope of the information subject to the enforcement requirements. The Broadband DATA Act makes it unlawful to submit “information or data . . . that is materially inaccurate or incomplete information or data with respect to availability of broadband Internet access or the quality of service with respect to broadband Internet access service.”³⁸⁴ Because these are the only two types of information required to be reported under the Broadband DATA Act,³⁸⁵ should enforcement of the prohibition in the Broadband DATA Act be limited to any data or information supplied in biannual Collection filings? Or, could enforcement be brought against availability and quality of service data submitted in other contexts (e.g., the challenge process, the crowdsource process, by governments or third parties pursuant to 47 U.S.C. § 642(a)(2))? We also seek comment on whether the reference in section 803 of the Broadband DATA Act to the submission of “information and data under this title” applies to filings that are not specifically contemplated by the Act (e.g., the proposed mandatory submission of speed-test data by providers).

179. *Penalties for the submission of materially inaccurate or incomplete data.* We also seek comment on the scope of appropriate penalties for submitting materially inaccurate or incomplete information, including any civil penalties under the Commission’s rules or other applicable statutes and rules. Should we establish a base forfeiture amount, subject to adjustment pursuant to section 503(b) of the Act? If so, what should that base amount be? We seek comment on the recommendation from the State of Colorado that enforcement actions should include making the provider ineligible to receive USF funds and/or a forfeiture of previously committed USF funds.³⁸⁶ We also seek comment on the proposal of the Next Century Cities that we should set a “simple and transparent standard that offers multiple warnings before an escalating set of sanctions that takes into account the geographic reach of a provider.”³⁸⁷ Would such an approach send an appropriate signal to filers regarding the importance of their filings and the need for them to ensure their accuracy? Alternatively, should we look at a provider’s filing as a singular whole or do we need to consider whether a filing could have multiple omissions or inaccurate data that could each be considered a separate violation?

³⁸¹ 47 U.S.C. § 643.

³⁸² 47 CFR 1.117(a)(2).

³⁸³ See, e.g., *Amendment of Section 1.17 Order*, 18 FCC Rcd 4016, 4016-4017, 4021, paras. 1-2, 12 (2003); see also *Aura Holdings of Wisconsin, Inc.*, Notice of Apparent Liability for Forfeiture, 33 FCC Rcd 3688, 3692, para.14 (2018), *aff’d*, Forfeiture Order, 34 FCC Rcd 2540 (2019).

³⁸⁴ 47 U.S.C. § 643.

³⁸⁵ 47 U.S.C. § 642(a)(1)(A).

³⁸⁶ State of Colorado Comments at 8-9.

³⁸⁷ Next Century Cities Reply at 6.

180. We propose to adopt an approach that properly distinguishes between those entities that make a conscientious, good faith effort to provide accurate data and those that fail to take their reporting obligations seriously or affirmatively manipulate the data being reported.³⁸⁸ We agree with the Broadband Mapping Coalition that reporting entities that make a good faith effort to comply fully and carefully with reporting obligations should not be sanctioned if their data prove to be flawed in some way, provided that any errors be quickly and appropriately addressed.³⁸⁹ We also agree with commenters who argue that, while providers are responsible for submitting accurate Collection data, an excessively aggressive enforcement stance could lead providers to be overly cautious in their filings and possibly distort the coverage maps.³⁹⁰ We seek comment on this approach.

181. Finally, we seek comment on whether section 803 of the Broadband DATA Act is an exclusive remedy for all actions under that law or whether behavior that may be actionable under existing provisions of the Communications Act or our rules remain subject to enforcement under our general section 503 authority. For example, under rule 1.17(a)(2), provision of written information to the Commission without a reasoned basis is actionable under the Commission's existing authority today. How should this, and other existing provisions, apply?

182. *Penalties for failure to file.* Similar to the conclusion that we reached in the *Digital Opportunity Data Collection Order and Further Notice*, we propose that a failure to timely file required data in the new Collection may lead to enforcement action and/or penalties as set forth in the Communications Act and other applicable laws.³⁹¹ We seek comment on the specific penalties that should be imposed if a provider fails to timely submit its Collection filings. In instances in which enforcement action and/or penalties are appropriate, should we propose higher fine levels for either failures to file or for misrepresentation of material data?³⁹² How should we address the extent of untimeliness?

³⁸⁸ See, e.g., Connected Nation Comments at 6 (arguing for a tiered penalty structure for demonstrated intentional misreporting and chronic misreporting); NCTA Comments at 5 (“When errors are identified, the Commission should focus on correcting data so that its future maps are as accurate as possible, not punishing providers for good-faith mistakes.”); Alaska Communications Comments at 11 (arguing for no penalties when “reporting entities are attempting in good faith to file accurate and timely information and promptly update it when they become aware of errors”); Broadband Mapping Coalition Reply at 18-19 (penalize filers only for errors that result from willful misrepresentation or repeated negligence); Microsoft Reply at 12 (does not support penalties for filers that in good faith submit data that proves to be inaccurate, but supports penalties only for recklessly or intentionally submitted inaccurate mapping data); ACA Connects Reply at 10 (arguing that the Commission should severely sanction any provider that intentionally and persistently submits inaccurate data); AT&T Reply at 8-9 (arguing that the Commission's compliance mechanism should focus on ensuring accurate data rather than imposing penalties for non-willful errors).

³⁸⁹ Broadband Mapping Coalition Comments at 25.

³⁹⁰ See Broadband Mapping Coalition Comments at 25 (“A more forgiving approach also encourages providers to submit their data promptly rather than delaying submission for fear of making a costly error.”); ACA Connects Reply at 10 (arguing that it would be more productive for the Commission to encourage and facilitate compliance than adopt a strict enforcement regime and that severe penalties should only be imposed where a provider's reports were intentionally and persistently inaccurate); GeoLinks Reply at 7-8 (“the risk of enforcement action for *any* mistakes, even if unintentional, will only serve to encourage service providers to underreport service availability to avoid the potential of having something challenged” (emphasis in original)).

³⁹¹ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7512, para. 16.

³⁹² We note that we have the discretion to upwardly or downwardly adjust from the base forfeiture, taking into account the particular facts of each individual case. *The Commission's Forfeiture Policy Statement and Amendment of Section 1.80 of the Rules to Incorporate the Forfeiture Guidelines*, Report and Order, 12 FCC Rcd 17087, 17098-99, para. 22 (1997) (noting that “[a]lthough we have adopted the base forfeiture amounts as guidelines to provide a measure of predictability to the forfeiture process, we retain our discretion to depart from the guidelines and issue

(continued....)

183. *Filing corrected data.* We propose that providers must revise their Collection filings any time they discover an inaccuracy, omission, or significant reporting error in the original data that they submit, whether through self-discovery, the crowdsource process, Commission discovery, or otherwise.³⁹³ In the *Digital Opportunity Data Collection Order and Further Notice*, we sought comment on how quickly providers should be required to correct any data where they do not refute a lack of coverage.³⁹⁴ While several commenters argued that providers should be allowed to file any corrections at their next Collection filing opportunity,³⁹⁵ we propose instead that providers should file corrections within 45 days of their discovery of incorrect data. We propose that any corrected filings be accompanied by the same level of certifications that accompany the original filings and further propose that, for calculation of the statute of limitations, the one-year limit would begin to accrue on the date of the corrected filing, where the correction was timely under our rules. We believe that this timing would help ensure that the most accurate data possible are available at any particular time. We seek comment on this proposal and on any better alternatives.

184. *Scope of required corrections.* We asked in the *Digital Opportunity Data Collection Order and Further Notice* whether providers should be required to refile earlier Collection reports where it is determined that current availability data are incorrect.³⁹⁶ Based on that record, we propose that corrections generally should be forward-looking only, although providers must reflect in their next biannual filing any corrections made as a result of the challenge or crowdsource processes.³⁹⁷ We seek comment on this proposal and any better alternatives.

H. Details on the Creation of Coverage Maps

185. In the *Second Report and Order*, we adopt requirements pursuant to the Broadband DATA Act to take the granular broadband availability data submitted by providers and others and create the Broadband Map and two different maps depicting the availability of, respectively, fixed and mobile broadband Internet access service.³⁹⁸ The Broadband DATA Act requires that the Broadband Map depict “the extent of the availability of broadband Internet access service in the United States, without regard to whether that service is fixed broadband Internet access service or mobile broadband Internet access service, which shall be based on data collected by the Commission from all providers.”³⁹⁹ We propose to implement this by publishing aggregated broadband availability data in the Broadband Map that does not distinguish between fixed or mobile data. With regard to the other two maps, we propose to create maps that identify carrier-specific fixed and mobile coverage data, including reported technologies and speeds by provider.⁴⁰⁰ We seek comment on these proposals and if there are other steps we should take to ensure

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forfeitures on a case-by-case basis, under our general forfeiture authority contained in Section 503 of the Act”), *recons. denied*, Memorandum Opinion and Order, 15 FCC Rcd 303 (1999).

³⁹³ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7512, para. 16.

³⁹⁴ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7543, para. 93.

³⁹⁵ See Broadband Mapping Coalition Comments at 29-30; NCTA Comments at 16; Verizon Comments at 7; GeoLinks Comments at 4; Alaska Communications Comments at 14.

³⁹⁶ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7544, para. 94.

³⁹⁷ See, e.g., Broadband Mapping Coalition Comments at 30 (“cannot perceive any compelling reason for the FCC to require the provider to backfile earlier reports”); GeoLinks Comments at 4 (sees no value in resubmitting old data that may be outdated anyway); NCTA Comments at 16 (“The Commission should not require providers to refile old data if there are mistakes.”); ACA Connects Comments at 13 (recommending that the Commission only require a provider to fix its current report because of the time and expense required to amend prior filings).

³⁹⁸ 47 U.S.C. § 642(c)(1).

³⁹⁹ 47 U.S.C. § 642(c)(1)(A).

⁴⁰⁰ 47 U.S.C. §§ 642(c)(1)(A)-(B).

that we fulfill the requirements of the Broadband DATA Act in connection with these maps. Are there other features or datasets that would be helpful to inform the Commission and the public with regard to broadband availability?

I. Technical Assistance

186. Pursuant to the Broadband DATA Act, the Commission must hold annual workshops for Tribal governments in each of the 12 Bureau of Indian Affairs regions to provide technical assistance with the collection and submission of data. In addition, every year the Commission, in consultation with the Tribes, must review the need for continued workshops. We seek comment on the type of technical assistance the Tribes will need to help them collect and submit data under the Broadband DATA Act's provision allowing State, local, and Tribal government entities that are primarily responsible for mapping or tracking broadband Internet access service coverage in their areas to provide verified data for use in the coverage maps.

187. The Broadband DATA Act also requires the Commission to establish a process in which a provider that has fewer than 100,000 active broadband Internet access service connections may request and receive assistance from the Commission with respect to GIS data processing to ensure that the provider is able to comply with the Broadband DATA Act in a timely and accurate manner. In response to the *Digital Opportunity Data Collection Order and Further Notice*, we received several comments asking for us to provide technical assistance to small providers. Subject to receiving adequate funding to support it, we propose to make service-desk help available, as well as providing clear instructions on the form for the Collection, to aid providers in making their Collection filings. We seek comment on the extent of such technical assistance and any other help that small providers will need to comply with the Broadband DATA Act.

188. Pursuant to the Broadband DATA Act, the Commission also must provide technical assistance to consumers and State, local, and Tribal governments with respect to the challenge process, which must include detailed tutorials and webinars and the provision of Commission staff to provide assistance throughout the challenge process. We seek comment on the type of technical assistance with the challenge process that we should provide pursuant to this requirement, taking into account the current lack of funding for the Commission to implement the provisions of the Broadband DATA Act.

J. Form 477 Reforms

189. Pursuant to the Broadband DATA Act, not later than 180 days after the Commission's broadband Internet access service collection rules take effect, the Commission must: (1) reform the Form 477 broadband deployment service availability collection process to achieve the purposes of the Broadband DATA Act in a manner that enables the comparison of data and coverage maps produced before the implementation of the Broadband DATA Act with data and coverage maps produced after implementation of the Broadband DATA Act and maintains the public availability of broadband Internet access service deployment data; and (2) harmonize reporting requirements and procedures regarding the deployment of broadband Internet access service that are in effect before the new rules are effective with those in effect after the new rules are effective.⁴⁰¹ The measures we propose in this *Third Notice* would only increase the granularity of broadband availability data that we collect so that comparison of new availability data with the data currently collected would only require the aggregation of the new data to the geographic scale currently employed. We propose to publish the new broadband availability data we collect in aggregated forms, so as to allow comparisons with the data we collect now. We believe that these measures will comply with the requirements under the Broadband DATA Act concerning the ability to compare the new and existing data. We seek comment on this conclusion and, to the extent that commenters disagree, we seek comment on any measures we should adopt to ensure compliance with this requirement of the Broadband DATA Act.

⁴⁰¹ 47 U.S.C. § 642(b)(6)(A).

1. Mobile Subscriber Data

190. In the *Digital Opportunity Data Collection Order and Further Notice*, the Commission made several changes to its collection of mobile voice and broadband subscriber data in order to obtain more granular data and to improve the usefulness of such data.⁴⁰² The Commission required mobile providers to submit broadband and voice subscriber information at the census-tract level based on the subscriber's place of primary use for postpaid subscribers and based on the subscriber's telephone number for prepaid and resold subscribers.⁴⁰³ Under the *Digital Opportunity Data Collection Order and Further Notice*, the revised mobile broadband and voice subscription reporting requirements were to take effect for submissions filed on June 30, 2020.⁴⁰⁴ The Broadband DATA Act directs the Commission to "continue to collect and publicly report subscription data that the Commission collected through the Form 477 broadband deployment service availability process, as in effect on July 1, 2019."⁴⁰⁵

191. We interpret the plain language of the Broadband DATA Act as requiring the collection of Form 477 subscription information pursuant to the rules in effect on July 1, 2019, which is before the date the *Digital Opportunity Data Collection Order and Further Notice* was adopted. We therefore propose that for Form 477 filings as of December 31, 2020 and beyond, mobile providers report subscription data under the rules in effect on July 1, 2019 and not under the rule changes adopted in the *Digital Opportunity Data Collection Order and Further Notice*. While the Broadband DATA Act generally addresses reporting requirements for broadband and not voice service, in order to avoid having potentially inconsistent reporting requirements for mobile broadband and voice subscriptions,⁴⁰⁶ we propose that, going forward, both mobile voice and mobile broadband subscribership data be reported under the Form 477 rules in effect on July 1, 2019.⁴⁰⁷ We seek comment on this proposal and our interpretation of the Broadband DATA Act.

2. Sunsetting FCC Form 477 Census Block Reporting for Fixed Providers

192. In order to ensure continuity in our fixed broadband deployment data, we propose to continue the current census-based deployment data collection under Form 477 for at least one reporting cycle after the new granular reporting collection commences. We seek comment on sunsetting the census-block broadband deployment reporting in the FCC Form 477 and the timing of doing so.

⁴⁰² *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7530, para. 58. The Commission found that state-level aggregation of subscription data significantly limited its usefulness, and that collection of census-tract level data would substantially improve our ability to conduct more accurate mobile competition analysis, particularly in secondary market transactions.

⁴⁰³ *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7530, para. 58.

⁴⁰⁴ The mobile subscription reporting requirements under the *Digital Opportunity Data Collection Order and Further Notice* were subject to approval by OMB and would have been effective 30 days after the announcement in the Federal Register of OMB approval. *Digital Opportunity Data Collection Order and Further Notice*, 34 FCC Rcd at 7561, para. 145. OMB approved the collection on March 27, 2020. See Office of Management and Budget, OMB Control No. 3060-0816 (Mar. 27, 2020).

⁴⁰⁵ 47 U.S.C. § 642(b)(6)(B). Section 642(b)(6) of the Broadband DATA Act provides: "(B) CONTINUED COLLECTION AND REPORTING.—On and after the date on which the Commission carries out subparagraph (A), the Commission shall continue to collect and publicly report subscription data that the Commission collected through the Form 477 broadband deployment service availability process, as in effect on July 1, 2019." Broadband DATA Act, Pub. L. No. 116-130, § 642(b)(6)(B), 134 Stat. 228, 235 (2020) (emphasis added).

⁴⁰⁶ 47 U.S.C. § 642(b)(6)(B).

⁴⁰⁷ No changes to fixed subscribership data were adopted in the *DODC Second Report and Order*.

V. PROCEDURAL MATTERS

193. *Ex Parte Rules.* This proceeding shall be treated as a “permit-but-disclose” proceeding in accordance with the Commission’s *ex parte* rules.⁴⁰⁸ 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, then 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 47 CFR § 1.1206(b). In proceedings governed by 47 CFR § 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.

194. *Final Regulatory Flexibility Analysis.* The Regulatory Flexibility Act (RFA)⁴⁰⁹ requires that an agency prepare a regulatory flexibility analysis for notice and comment rulemakings, unless the agency certifies that “the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities.”⁴¹⁰ Accordingly, we have prepared a Final Regulatory Flexibility Analysis (FRFA) concerning the possible impact of the rule changes contained in this *Second Report and Order* on small entities. The FRFA is set forth in Appendix C.

195. *Initial Regulatory Flexibility Analysis.* Pursuant to the RFA,⁴¹¹ the Commission has prepared an Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on small entities of the policies and actions considered in the *Third Notice*. The text of the IRFA is set forth in Appendix D. Written public comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments on the *Third Notice*. The Commission’s Consumer and Governmental Affairs Bureau, Reference Information Center, will send a copy of the *Third Notice*, including the IRFA, to the Chief Counsel for Advocacy of the Small Business Administration.⁴¹²

196. *Paperwork Reduction Act.* The initial rulemaking required under the Broadband DATA Act is exempt from review by OMB and from the requirements of the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13.⁴¹³ As a result, the *Second Report and Order* will not be submitted to OMB for review under section 3507(d) of the PRA.

⁴⁰⁸ 47 CFR. §§ 1.1200 *et seq.*

⁴⁰⁹ 5 U.S.C. §§ 601–612. The RFA has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

⁴¹⁰ 5 U.S.C. § 605(b).

⁴¹¹ 5 U.S.C. § 603.

⁴¹² *See* 5 U.S.C. § 603(a).

⁴¹³ 47 U.S.C. § 646(b).

197. *Congressional Review Act.* The Commission will send a copy of the *Second Report and Order* to Congress and the Government Accountability Office pursuant to the Congressional Review Act. See 5 U.S.C. § 801(a)(1)(A).

198. *Filing of Comments and Reply Comments.* 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) or by paper.⁴¹⁴

- Electronic Filers: Comments may be filed electronically using the Internet by accessing the ECFS: <https://www.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, filers must submit two additional copies for each additional docket or rulemaking number.

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

- Filings by commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701.
- Filings by U.S. Postal Service first-class, Express, and Priority mail must be addressed to 445 12th Street, SW, Washington DC 20554.
- 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).

199. *Contact Person.* For further information about this proceeding, contact Kirk Burgee, FCC Wireline Competition Bureau, Competition Policy Division, Room 5-C354, 445 12th Street, S.W., Washington, D.C. 20554, (202) 418-1599, Kirk.Burgee@fcc.gov, or Garnet Hanly, FCC Wireless Telecommunications Bureau, Competition Policy Division, Room 6-A160, 445 12th Street, S.W., Washington, D.C. 20554, (202) 418-0995, Garnet.Hanly@fcc.gov.

VI. ORDERING CLAUSES

200. Accordingly, IT IS ORDERED that, pursuant to sections 1-4, 7, 201, 254, 301, 303, 309, 319, 332, and 641-646 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151-154, 157, 201, 254, 301, 303, 309, 319, 332, and 641-646, this *Second Report and Order and Third Further Notice of Proposed Rulemaking* IS ADOPTED.

201. IT IS FURTHER ORDERED that Part 1 of the Commission's rules IS AMENDED as set forth in Appendix A.

202. IT IS FURTHER ORDERED that the *Second Report and Order* SHALL BE effective 30 days after publication in the Federal Register.

203. IT IS FURTHER ORDERED that the Commission's Consumer & Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of the *Second Report and Order* to

⁴¹⁴ In response to the COVID-19 pandemic, the Commission has closed its current hand-delivery filing location at FCC Headquarters. We encourage outside parties to take full advantage of the Commission's electronic filing system. Any party that is unable to meet the filing deadline due to the building closure may request a waiver of the comment or reply comment deadline, to the extent permitted by law. *FCC Announces Closure of FCC Headquarters Open Window and Change in Hand-Delivery Filing*, Public Notice, DA 20-304 (rel. Mar. 19, 2020), <https://www.fcc.gov/document/fcc-closes-headquarters-open-window-and-changes-hand-delivery-policy>.

Congress and the Government Accountability Office pursuant to the Congressional Review Act, *see* 5 U.S.C. § 801(a)(1)(A).

204. IT IS FURTHER ORDERED that the Commission's Consumer & Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this *Second Report and Order and Third Further Notice of Proposed Rulemaking*, including the Final Regulatory Flexibility Analysis and the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A

Final Rules

Part 1 – Practice and Procedure

1. The authority citation for part 1 continues to read as follows:

Authority: 47 U.S.C. chs. 2, 5, 9, 13; 28 U.S.C. 2461, unless otherwise noted.

2.. Amend the caption of Part 1, Subpart V to read as follows:

Subpart V - Commission Collection of Advanced Telecommunications Capability Data, Broadband Internet Access Service Data, and Local Exchange Competition Data

2. Amend section 1.7000 to read as follows:

The purposes of this subpart are to set out the terms by which certain commercial and government-controlled entities report data to the Commission concerning (a) the provision of wired and wireless local telephone services and interconnected Voice over Internet Protocol services, ~~and~~ (b) the deployment of advanced telecommunications capability, as defined in 47 U.S.C. 1302, and services that are competitive with advanced telecommunications capability, **and (c) the availability and quality of service of broadband Internet access service.**

3. Amend section 1.7001 by revising paragraph (a) to read as follows:

§ 1.7001 Scope and content of filed reports.

(a) *Definitions.* Terms used in this subpart have the following meanings:

* * * * *

(6) *Broadband Internet access service.* Has the meaning given the term in §8.1(b) of this chapter, or any successor regulation.

(7) *Broadband map.* The map created by the Commission under 47 U.S.C. 642(c)(1)(A).

(8) *Cell edge probability.* The likelihood that the minimum threshold download and upload speeds with respect to broadband Internet access service will be met or exceeded at a distance from a base station that is intended to indicate the ultimate edge of the coverage area of a cell.

(9) *Cell loading.* The percentage of the available air interface resources of a base station that are used by consumers with respect to broadband Internet access service.

(10) *Clutter.* A natural or man-made surface feature that affects the propagation of a signal from a base station.

(11) *Fabric.* The Broadband Serviceable Location Fabric established under 47 U.S.C. 642(b)(1)(B).

(12) *FCC Form 477.* Form 477 of the Commission relating to local telephone competition and broadband reporting.

(13) *Indian Tribe.* Has the meaning given the term ‘Indian tribe’ in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 5304).

(14) *Mobility Fund Phase II.* The second phase of the proceeding to provide universal service support from the Mobility Fund (WC Docket No. 10–90; WT Docket No. 10–208).

(15) *Propagation model.* A mathematical formulation for the characterization of radio wave propagation as a function of frequency, distance, and other conditions.

(16) *Provider.* A provider of fixed or mobile broadband Internet access service.

- (17) *Quality of service*. With respect to broadband Internet access service, the download and upload speeds, and latency if applicable, with respect to that service, as determined by, and to the extent otherwise collected by, the Commission.
- (18) *Shapefile*. A digital storage format containing geospatial or location-based data and attribute information regarding the availability of broadband Internet access service and that can be viewed, edited, and mapped in geographic information system software.
- (19) *Standard broadband installation*. The initiation by a provider of fixed broadband Internet access service in an area in which the provider has not previously offered that service, with no charges or delays attributable to the extension of the network of the provider, and includes the initiation of fixed broadband Internet access service through routine installation that can be completed not later than 10 business days after the date on which the service request is submitted.

4. Add sections 1.7004-1.7010 as follows:

§ 1.7004 Scope, content, and frequency of Digital Opportunity Data Collection filings.

- (a) All providers shall make biannual filings with the Commission in the Digital Opportunity Data Collection portal in accordance with the Commission's rules and the instructions to the Digital Opportunity Data Collection.
- (b) Digital Opportunity Data Collection filings shall be made each year on or before March 1 (reporting data as of December 31 of the prior year) and September 1 (reporting data as of June 30 of the current year). Providers becoming subject to the provisions of § 1.7004 for the first time shall file data initially for the reporting period in which they become eligible.
- (c) Providers shall include in their filings data relating to the availability and quality of service of their broadband Internet access service in accordance with the Commission's rules and the instructions to the Digital Opportunity Data Collection.
- (1) Each provider of terrestrial fixed, fixed wireless, or satellite broadband internet access service must submit coverage maps or lists of addresses or locations that document the areas (1) where they have actually built out their broadband network infrastructure, such that they are able to provide service, and (2) where they could perform a standard broadband installation. Each provider's submission must include the details of how they generated their coverage polygons or lists of addresses or locations.
- (i) Fixed wireline providers using Hybrid-Fiber Coax, Fiber to the Premises, and Digital Subscriber Line technologies may not report coverage that exceeds a maximum distance from the aggregation point of 6,600 route feet (or 2,000 route meters), or a maximum drop distance of 240 feet, except to the extent that:
- (A) a provider has a current subscriber at a location beyond the bounds of the applicable maximum buffer;
- (B) a provider previously had a broadband subscriber, using the same technology, at a location beyond the bounds of the maximum buffer;
- (C) a provider is receiving or has received universal service support to provide broadband service in a particular geographic area—or has other federal, state, or local obligations to make service available in the area—and the provider has begun to make service available in that area.
- (D) a provider receives a waiver.
- (ii) Fixed wireless service providers that submit coverage maps must submit propagation maps and propagation model details based on the following parameters:

- (A) a cell edge probability of not less than 75% of receiving the maximum advertised download and upload speeds,
 - (B) a cell loading factor of not less than 50%, and
 - (C) receiver heights within a range of four to seven meters.
- (2) Fixed wireless service providers that submit coverage maps must provide the following information with their propagation maps and models:
- (i) the name of the radio network planning tool(s) used, along with information including:
 - A the version number of the planning tool;
 - (B) the name of the planning tool's developer;
 - (C) the granularity of the model (e.g., 3-arc-second square points); and
 - (D) affirmation that the coverage model has been validated and calibrated using on-the-ground testing and/or other real-world measurements.
 - (ii) the following base station information:
 - (A) frequency band(s) used to provide the service being mapped;
 - (B) information about whether and how carrier aggregation is used;
 - (C) the radio technologies used on each frequency band (e.g., 802.11ac-derived OFDM, proprietary OFDM, LTE);
 - (D) the elevation above ground for each base station; and
 - (E) the geographic coordinates of each base station
 - (iii) the following terrain and clutter information:
 - (A) the name and vintage of the datasets used,
 - (B) the resolution of clutter data, and
 - (C) a list of clutter categories used with a description of each
 - (D) the link budget and a description of the other parameters used in the propagation model, including predicted signal strength.
- (3) Mobile providers must submit coverage maps based on the following specified parameters:
- (i) For 3G services—a minimum expected user download speed of 200 kbps and user upload speed of 50 kbps at the cell edge; for 4G LTE services—a minimum expected user download speed of 5 Mbps and user upload speed of 1 Mbps at the cell edge; for 5G-NR services—a minimum expected user download speed of 7 Mbps and user upload speed of 1 Mbps, and a minimum expected user download speed of 35 Mbps and user upload speed of 3 Mbps at the cell edge.
 - (ii) For each of the mobile broadband technologies, 3G, 4G LTE, and 5G-NR, and for mobile voice services, the provider's coverage maps must reflect coverage areas where users should expect to receive the minimum required download and upload speeds with cell edge coverage probability of not less than 90% and a cell loading of not less than 50%.
 - (iii) For each of the mobile broadband technologies, 3G, 4G LTE, and 5G-NR, and for mobile voice services, the provider's coverage maps must account for terrain and clutter and use terrain and clutter data with a resolution of 100 meters or better. Each coverage map must have a resolution of 100 meters or better.

(iv) For each of the mobile broadband technologies, 3G, 4G LTE, and 5G-NR, and for mobile voice services, the provider's coverage maps must be submitted in vector format.

(4) Mobile providers must disclose the following information regarding their radio network planning tools:

(i) The name of the planning tool;

(ii) The version number used to produce the map;

(iii) The name of the developer of the planning tool;

(iv) An affirmation that the coverage model has been validated and calibrated using drive test and/or other real-world measurements, to include a brief summary of the process and date of calibration; and

(v) The propagation models used, including a description of the conditions for use (such as model X in urban areas, model Y in rural areas), and disclosure of any sites where conditions deviate; and

(vi) The granularity of the models used (e.g., 3-arc-second square points, bin sizes, and other parameters).

(5) Mobile providers must disclose all applicable link-budgets used to design their networks and provide service at the defined speeds, and all parameters and parameter values included in those link budgets, including the following information:

(i) A description of how the provider developed the link budget(s) and the rationale for using specific values in the link budget(s); and

(ii) The name and vintage of the terrain and clutter datasets used, the specific resolution of the data, and a list of clutter categories used and a description of each category and clutter factor.

(6) For each of the categories of data providers must disclose to the Commission, providers must submit reasonable parameter values and propagation models consistent with how they model their services when designing their networks. In no case may any provider omit link budget parameters or otherwise fail to account for constraints on their coverage projections.

(7) On an annual basis, mobile facilities-based providers must submit the following network infrastructure information:

(i) Geographic location of cell sites;

(ii) Site ID number of each transmitter;

(iii) Latitude and longitude of each transmitter;

(iv) Ground elevation above mean seal level (AMSL) of the site (in meters);

(v) Number of sectors at each cell site;

(vi) Capacity (Mbps) and type of backhaul used at each cell site;

(vii) Per site classification (e.g., urban, suburban, or rural);

(viii) Effective Isotropic Radiated Power (EIRP, in dBm) of the transmitter;

(ix) Elevation above ground level for each base station antenna (in meters);

(x) Make and model of antenna;

(xi) Beamwidth of antenna;

(xii) Orientation (azimuth and any electrical and/or mechanical down-tilt in degrees) at each cell site;

- (xiii) Operating radiated transmit power of the radio equipment at each cell site;
 - (ix) Frequency band(s) used to provide service being mapped including channel bandwidth (in megahertz);
 - (xiv) Throughput and associated required signal strength and signal to noise ratio;
 - (xv) Cell loading factors;
 - (xvi) Radio technologies used on each band (e.g., 802.11ac-derived OFDM, proprietary OFDM, LTE Release 13, and NR Release 15);
 - (xvii) Areas enabled with carrier aggregation and a list of band combinations; and
 - (xviii) Use of carrier aggregation must also disclose the percentage of handset population capable of using the band combination.
- (d) Providers shall include in each Digital Opportunity Data Collection filing a certification signed by a corporate officer of the provider that the officer has examined the information contained in the submission and that, to the best of the officer's actual knowledge, information, and belief, all statements of fact contained in the submission are true and correct.

§ 1.7005 Disclosure of data in the Fabric and Digital Opportunity Data Collection filings.

- (a) The Commission shall protect the security, privacy, and confidentiality of non-public or competitively sensitive information submitted by entities or individuals, including information contained in the Fabric, the dataset supporting the Fabric, and availability data submitted pursuant to § 1.7004, by:
- (1) Withholding from public inspection all data required to be kept confidential pursuant to § 0.457 of this chapter and all personally identifiable information submitted in connection with the information contained in the Fabric, the dataset supporting the Fabric, and availability data submitted pursuant to § 1.7004; and
 - (2) Subject to contractual or license restrictions, making public all other information received about the status of broadband Internet access service availability at specific locations, including geographic coordinates and street addresses, whether a provider has reported availability at a location, and whether an entity or individual has disputed a report of broadband Internet access service availability at such location.
- (b) Providers may request that provider-specific subscription information in Digital Opportunity Data Act filings be treated as confidential and be withheld from public inspection by so indicating on the filing at the time that they submit such data.
- (c) Providers seeking confidential treatment of any other data contained in their Digital Opportunity Data Collection filings must submit a request that the data be treated as confidential with the submission of their filing, along with their reasons for withholding the information from the public, pursuant to § 0.459 of this chapter.
- (d) The Commission shall make all decisions regarding non-disclosure of provider-specific information.
- (e) The Commission shall release the following information in Digital Opportunity Data Collection filings to the public, and providers may not request confidential treatment of such information:
- (1) Provider-specific mobile deployment data;
 - (2) Data regarding minimum advertised or expected speed for mobile broadband Internet access services; and

- (3) Location information that is necessary to permit accurate broadband mapping, including as part of the crowdsourcing or challenge processes.

§ 1.7006 Data Verification.

- (a) *Audits.* The Commission shall conduct regular audits of the information submitted by providers in their Digital Opportunity Data Collection filings. The audits:
- (1) May be random, as determined by the Commission; or
 - (2) Can be required in cases where there may be patterns of filing incorrect information, as determined by the Commission.
- (b) *Crowdsourcing process.* Entities or individuals may submit in the Commission's Digital Opportunity Data Collection portal specific information regarding the deployment and availability of broadband Internet access service so that it may be used to verify and supplement information submitted by providers for potential inclusion in the coverage maps.
- (1) Crowdsourced data filers shall provide:
 - (i) Contact information of the filer (e.g., name, address, phone number, and e-mail);
 - (ii) The location that is the subject of the filing, including the street address and/or coordinates (latitude and longitude) of the location;
 - (iii) The name of the provider;
 - (iv) Any relevant details disputing the deployment and availability of broadband Internet access service at the location; and
 - (v) A certification that to the best of the filer's actual knowledge, information, and belief, all statements in the filing are true and correct.
 - (2) The Digital Opportunity Data Collection portal shall notify a provider of a crowdsourced data filing against it, but a provider is not required to respond to a crowdsourced data filing.
 - (3) If, as a result of a crowdsourced data filing, the Commission determines that a provider's Digital Opportunity Data Collection information is not accurate, then the provider shall refile updated and corrected data information within 30 days of agreeing with the Commission's determination.
 - (4) All information submitted as part of the crowdsourcing process shall be made public, with the exception of personally identifiable information and any data required to be confidential under § 0.457 of this chapter.

§ 1.7007 Establishing the Fabric.

- (a) The Commission shall create the Fabric, a common dataset of all locations in the United States where fixed broadband Internet access service can be installed. The Fabric shall:
- (1) Contain geocoded information for each location where fixed broadband Internet access service can be installed;
 - (2) Serve as the foundation upon which all data relating to the availability of fixed broadband Internet access service collected pursuant to the Digital Opportunity Data Collection shall be overlaid;
 - (3) Be compatible with commonly used GIS software; and
 - (4) Be updated every 6 months by the Commission.
- (b) The Commission shall prioritize implementing the Fabric for rural and insular areas of the United States.

§ 1.7008 Creation of Broadband Internet Access Service Coverage Maps.

(a) After consultation with the Federal Geographic Data Committee, the Commission shall use the availability and quality of service data submitted by providers in the Digital Opportunity Data Collection to create:

(1) The Broadband Map, which shall depict areas of the country that remain unserved by providers and depict the extent of availability of broadband Internet access service;

(2) A map that depicts the availability of fixed broadband Internet access service; and

(3) A map that depicts the availability of mobile broadband Internet access service.

(b) The Commission shall use the maps created in paragraph (a) to determine areas where broadband Internet access service is and is not available and when making any funding award for broadband Internet access service deployment for residential and mobile customers.

(c) Based on the most recent Digital Opportunity Data Collection information collected from providers, the Commission shall update the maps created in paragraph (a) at least biannually using the data collected from providers\.

(d) *Data reporting from government entities and third parties for use in the coverage maps.* The Commission shall develop a process through which it can collect verified data for use in the coverage maps from: (1) State, local, and Tribal entities primarily responsible for mapping or tracking broadband Internet access service coverage in their areas; (2) third parties, if the Commission determines it is in the public interest to use their data in the development of the coverage maps or the verification of data submitted by providers; and (3) other federal agencies. Such government entities and third parties shall follow the same filing process as providers submitting their broadband Internet access service data in the Digital Opportunity Data Collection portal.

§ 1.7009 Enforcement.

It shall be unlawful for an entity or individual to willfully and knowingly, or recklessly, submit information or data as part of the Digital Opportunity Data Collection that is materially inaccurate or incomplete with respect to the availability or the quality of broadband Internet access service.

§ 1.7010 Authority to update the Digital Opportunity Data Collection.

The International Bureau, Wireless Telecommunications Bureau, Wireline Competition Bureau, and Office of Economics and Analytics may update the specific content of data to be submitted pursuant to the Digital Opportunity Data Collection to reflect changes over time in technologies, spectrum usage, Geographical Information Systems (GIS) and other data storage and processing functionalities, and other related matters, and may implement any technical improvements or other clarifications to the filing mechanism and forms.

APPENDIX B**Proposed Rules**

We propose the following rule changes, subject to comment in the *Third Notice*:

1. Amend section 1.7006 by adding paragraph (c)

§ 1.7006 Data Verification.

* * * * *

(c) *Challenge process.* Consumers; State, local, and Tribal governmental entities; and other entities or individuals may submit coverage data in the Digital Opportunity Data Collection portal to challenge the accuracy at a location of the coverage maps; any information submitted by a provider regarding the availability of broadband Internet access service; or the Fabric.

(1) Challengers must provide in their submissions:

(i) Name and contact information (e.g., address, phone number, e-mail);

(ii) The street address or geographic coordinates (latitude/longitude) of the location(s) at which broadband Internet access service coverage is being challenged;

(iii) Name of provider being challenged;

(iv) Category of dispute, selected from pre-established options on the portal;

(v) For customers or potential customers challenging availability or the coverage maps, evidence and details of a request for service (or attempted request for service), including the date, method, and content of the request and details of the response from the provider, while for non-customers challenging availability or the coverage maps, evidence showing no availability at the disputed location (e.g., screen shot, e-mails). For consumers seeking to challenge mobile broadband coverage map data, information regarding the available mobile broadband service;

(vi) For challengers disputing locations in the Broadband Location Fabric, details and evidence about the disputed location;

(vii) For customer or potential customer availability or coverage map challengers, a representation that the challenger resides or does business at the location of the dispute or is authorized to request service there. For consumers seeking to challenge mobile broadband coverage map data, a representation that the challenger is a subscriber of the provider who is the subject of the challenge;

(viii) A certification from an individual or an authorized officer or signatory of a challenger that the person examined the information contained in the challenge and that, to the best of the person's actual knowledge, information, and belief, all statements of fact contained in the challenge are true and correct; and

(ix) For consumers disputing mobile broadband throughput speeds, speed test evidence. For governmental and other entities disputing mobile broadband throughput speeds, speed test measurement data showing measured throughput speeds in the area they wish to challenge. Governmental and other entities must conduct speed tests using a device certified by the service provider that is the subject of the challenge as compatible with its service and must conduct speed tests outdoors and between the hours of 6:00 AM and 12:00 AM (midnight) local time. Governmental and other entities must also substantiate speed test data by the certification of a qualified engineer or official.

(2) The Digital Opportunity Data Collection portal shall alert a provider if there has been a challenge submitted against it.

- (3) For availability and coverage map challenges, within 30 days of receiving an alert, a provider shall reply in the portal by:
- (i) Accepting the allegation(s) raised by the challenger, in which case the provider shall submit a correction for the challenged location in the Digital Opportunity Data Collection portal within 30 days of its portal response; or
 - (ii) Denying the allegation(s) raised by the challenger, in which case the provider shall, within 60 days after providing notice of its rejection in the portal:
 - (A) Provide evidence to the challenger that the provider serves (or could serve) the challenged location. For consumer challenges involving the delivered speeds associated with a mobile broadband service, provide evidence that the provider has evaluated the speed of its service at the location of the dispute and determined that the delivered speeds of the service match the speeds indicated on the provider's coverage map. For governmental and other entity challenges involving the delivered speeds associated with a mobile broadband service, provide comprehensive on-the-ground data, or a statistically valid and sufficient sample of such data to verify coverage maps in the challenged area ;
 - (B) Indicate in the Digital Opportunity Data Collection portal that such communication to the challenger was made; and
 - (C) Attempt to resolve the dispute with the challenger.
- (4) Failure to respond to the challenger within the applicable timeframes shall result in a default finding against the provider, resulting in mandatory corrections to the provider's Digital Opportunity Data Collection information as requested by the challenger. Providers shall submit any such corrections within 30 days of the missed reply deadline or the Commission will make the corrections on its own and incorporate such change into the coverage maps or Broadband Location Fabric.
- (5) Once a provider submits its response, the location shall be identified on the coverage maps as "in dispute/pending resolution."
- (6) If the parties are unable to reach consensus within 60 days after submission of the provider's reply in the portal, then the Commission will review the evidence and make a determination, based on a preponderance of the evidence standard with the burden of proof on the challenger, either:
- (i) In favor of the challenger, in which case the provider shall update its Digital Opportunity Data Collection information within 30 days of the decision; or
 - (ii) In favor of the provider, in which case the location will no longer be subject to the "in dispute/pending resolution" designation on the coverage maps.
- (7) For challenges to the Fabric, the Commission shall resolve such challenges within 60 days of receiving the filing.
- (8) The provider shall retain for its records, for at least six months after the challenge dispute is resolved, any evidence showing that it actually serves (or could serve) the location being challenged, as well as documentation regarding its communication with the challenger.
- (9) Government entities (State, local, Tribal) may file challenges in bulk, but each challenge must contain the requirements set forth in (c)(1) of this section.
- (10) The Commission shall make public information about the location that is the subject of the challenge (including the street address and/or coordinates (latitude and longitude)), the name of the provider, and any relevant details concerning the basis for the challenge.

2. Amend section 1.7009 by amending paragraph (a) and adding paragraph (b):

§ 1.7009 Enforcement.

- (a) * * * * Such action may lead to enforcement action and/or penalties as set forth in the Communications Act and other applicable laws.
- (b) Failure to make the Digital Opportunity Data Collection filing in accordance with the Commission's rules and the instructions to the Digital Opportunity Data Collection may lead to enforcement action pursuant to the Communications Act of 1934, as amended, and any other applicable law.

APPENDIX C

Final Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA), an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the *Digital Opportunity Data Collection Order and Further Notice* released in August 2019 in this proceeding. The Commission sought written public comment on the proposals in the FNPRM, including comments on the IRFA. No comments were filed specifically in response to the IRFA. This Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.¹

A. Need for, and Objectives of, the Proposed Rules

2. With the *Second Report and Order*, the Commission takes steps to adopt certain requirements mandated by the Broadband DATA Act, as well as adopting improvements to the collection of data. Specifically, we establish reporting and disclosure requirements for fixed and mobile broadband providers, filing and certification requirements. We adopt the use of the Fabric to serve as the foundation upon which all data relating to fixed broadband Internet access service availability must be overlaid. We also adopt certain rules for the collection and reporting of data mobile broadband Internet access service. For mobile providers, we implement the requirements of the Broadband DATA Act by requiring them to submit propagation maps and propagation model details based on specified minimum parameters. In addition to requiring mobile broadband providers to use propagation modeling to generate and submit maps showing their 4G LTE coverage, we require providers to submit data and coverage maps for existing 3G networks and next-generation (5G-NR) networks. We also adopt requirements to collect crowdsourced data as well as a process for verifying broadband availability. We believe these actions in the *Second Report and Order* will increase the usefulness of broadband deployment data to the Commission, Congress, the industry, and the public, and satisfy the requirements of the Broadband DATA Act.

B. Summary of Significant Issues Raised by Public Comments in Response to the IRFA

3. None.

C. Response to Comments by the Chief Counsel for Advocacy of the Small Business Administration

4. Pursuant to the Small Business Jobs Act of 2010, which amended the RFA, the Commission is required to respond to any comments filed by the Chief Counsel for Advocacy of the Small Business Administration (SBA) and to provide a detailed statement of any change made to the proposed rules as a result of those comments.²

5. The Chief Counsel did not file comments in response to the proposed rules in this proceeding.

D. Description and Estimate of the Number of Small Entities to Which the Proposed Rules Will Apply

6. The RFA directs agencies to provide a description of and, where feasible, an estimate of the number of small entities that may be affected by the rules adopted herein.³ The RFA generally defines the term “small entity” as having the same meaning as the terms “small business,” “small organization,” and “small governmental jurisdiction.”⁴ In addition, the term “small business” has the

¹ See 5 U.S.C. § 604.

² 5 U.S.C. § 604(a)(3).

³ 5 U.S.C. § 604(a)(4).

⁴ 5 U.S.C. § 601(6).

same meaning as the term “small-business concern” under the Small Business Act.”⁵ A “small-business concern” is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).⁶

7. *Small Businesses, Small Organizations, Small Governmental Jurisdictions.* Our actions, over time, may affect small entities that are not easily categorized at present. We therefore describe here, at the outset, three comprehensive small entity size standards that could be directly affected herein.⁷ First, while there are industry-specific size standards for small businesses that are used in the regulatory flexibility analysis, according to data from the SBA’s Office of Advocacy, in general a small business is an independent business having fewer than 500 employees.⁸ These types of small businesses represent 99.9% of all businesses in the United States which translates to 28.8 million businesses.⁹

8. Next, the type of small entity described as a “small organization” is generally “any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.”¹⁰ Nationwide, as of August 2016, there were approximately 356,494 small organizations based on registration and tax data filed by nonprofits with the Internal Revenue Service (IRS).¹¹

9. Finally, the small entity described as a “small governmental jurisdiction” is defined generally as “governments of cities, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand.”¹² U.S. Census Bureau data from the 2012 Census of Governments¹³ indicate that there were 90,056 local governmental jurisdictions consisting of general

⁵ 5 U.S.C. § 601(3) (incorporating by reference the definition of “small-business concern” in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies “unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register.”

⁶ 15 U.S.C. § 632.

⁷ See 5 U.S.C. § 601(3)-(6).

⁸ See SBA, Office of Advocacy, *Frequently Asked Questions, Question 1 – What is a small business?*, https://www.sba.gov/sites/default/files/advocacy/SB-FAQ-2016_WEB.pdf (June 2016).

⁹ See SBA, Office of Advocacy, *Frequently Asked Questions, Question 2- How many small businesses are there in the U.S.?*, https://www.sba.gov/sites/default/files/advocacy/SB-FAQ-2016_WEB.pdf (June 2016).

¹⁰ 5 U.S.C. § 601(4).

¹¹ Data from the Urban Institute, National Center for Charitable Statistics (NCCS) reporting on nonprofit organizations registered with the IRS was used to estimate the number of small organizations. Reports generated using the NCCS online database indicated that as of August 2016 there were 356,494 registered nonprofits with total revenues of less than \$100,000. Of this number, 326,897 entities filed tax returns with 65,113 registered nonprofits reporting total revenues of \$50,000 or less on the IRS Form 990-N for Small Exempt Organizations and 261,784 nonprofits reporting total revenues of \$100,000 or less on some other version of the IRS Form 990 within 24 months of the August 2016 data release date. See <http://nccs.urban.org/sites/all/nccs-archive/html/tablewiz/tw.php> where the report showing this data can be generated by selecting the following data fields: Report: “The Number and Finances of All Registered 501(c) Nonprofits”; Show: “Registered Nonprofits”; By: “Total Revenue Level (years 1995, Aug to 2016, Aug)”; and For: “2016, Aug” then selecting “Show Results”.

¹² 5 U.S.C. § 601(5).

¹³ See 13 U.S.C. § 161. The Census of Government is conducted every five (5) years compiling data for years ending with “2” and “7”. See also Program Description Census of Government, <https://factfinder.census.gov/faces/affhelp/jsf/pages/metadata.xhtml?lang=en&type=program&id=program.en.CO.G#>.

purpose governments and special purpose governments in the United States.¹⁴ Based on this data, we estimate that at least 49,316 local government jurisdictions fall in the category of “small governmental jurisdictions.”¹⁵

1. Broadband Internet Access Service Providers

10. The broadband Internet access service provider industry has changed since the definition was introduced in 2007. The data cited below may therefore include entities that no longer provide broadband Internet access service and may exclude entities that now provide such service. To ensure that this FRFA describes the universe of small entities that our action might affect, we discuss in turn several different types of entities that might be providing broadband Internet access service. We note that, although we have no specific information on the number of small entities that provide broadband Internet access service over unlicensed spectrum, we included these entities in our Initial Regulatory Flexibility Analysis.

11. *Internet Service Providers (Broadband)*. Broadband Internet service providers include wired (e.g., cable, DSL) and VoIP service providers using their own operated wired telecommunications infrastructure and fall in the category of Wired Telecommunication Carriers.¹⁶ Wired Telecommunications Carriers are comprised of establishments primarily engaged in operating and/or providing access to transmission facilities and infrastructure that they own and/or lease for the transmission of voice, data, text, sound, and video using wired telecommunications networks. Transmission facilities may be based on a single technology or a combination of technologies.¹⁷ The SBA size standard for this category classifies a business as small if it has 1,500 or fewer employees.¹⁸ U.S. Census data for 2012 show that there were 3,117 firms that operated that year. Of this total, 3,083 operated with fewer than 1,000 employees.¹⁹ Consequently, under this size standard the majority of firms in this industry can be considered small.

12. *Internet Service Providers (Non-Broadband)*. Internet access service providers such as Dial-up Internet service providers, VoIP service providers using client-supplied telecommunications connections, and Internet service providers using client-supplied telecommunications connections (e.g., dial-up ISPs) fall in the category of All Other Telecommunications. The SBA has developed a small business size standard for All Other Telecommunications, which consists of all such firms with gross annual receipts of \$32.5 million or less.²⁰ For this category, U.S. Census data for 2012 shows that there were 1,442 firms that operated for the entire year. Of these firms, a total of 1,400 had gross annual

¹⁴ See U.S. Census Bureau, 2012 Census of Governments, Local Governments by Type and State: 2012 - United States-States, <https://factfinder.census.gov/bkmk/table/1.0/en/COG/2012/ORG02.US01>. Local governmental jurisdictions are classified in two categories - General purpose governments (county, municipal and town or township) and Special purpose governments (special districts and independent school districts).

¹⁵ *Id.*

¹⁶ See 13 CFR § 121.201. The Wired Telecommunications Carrier category formerly used the NAICS code of 517110. As of 2017, the U.S. Census Bureau definition shows the NAICS code as 517311 for Wired Telecommunications Carriers. See, U.S. Census Bureau, 2017 NAICS Definition, <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517311&search=2017>.

¹⁷ *Id.*

¹⁸ *Id.*

¹⁹ U.S. Census Bureau, *Estab & Firm Size: Employment Size of Firms for the U.S. 2012*, https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_22SSSZ2&prodType=table.

²⁰ 13 CFR § 121.201; NAICS Code 517919.

receipts of less than \$25 million.²¹ Consequently, under this size standard a majority of “All Other Telecommunications” firms can be considered small.

2. Wireline Providers

13. *Wired Telecommunications Carriers.* The U.S. Census Bureau defines this industry as “establishments primarily engaged in operating and/or providing access to transmission facilities and infrastructure that they own and/or lease for the transmission of voice, data, text, sound, and video using wired communications networks. Transmission facilities may be based on a single technology or a combination of technologies. Establishments in this industry use the wired telecommunications network facilities that they operate to provide a variety of services, such as wired telephony services, including VoIP services, wired (cable) audio and video programming distribution, and wired broadband Internet services. By exception, establishments providing satellite television distribution services using facilities and infrastructure that they operate are included in this industry.”²² The SBA has developed a small business size standard for Wired Telecommunications Carriers, which consists of all such companies having 1,500 or fewer employees.²³ U.S. Census Bureau data for 2012 show that there were 3,117 firms that operated that year.²⁴ Of this total, 3,083 operated with fewer than 1,000 employees.²⁵ Thus, under this size standard, the majority of firms in this industry can be considered small.

14. *Local Exchange Carriers (LECs).* Neither the Commission nor the SBA has developed a size standard for small businesses specifically applicable to local exchange services. The closest applicable NAICS Code category is Wired Telecommunications Carriers.²⁶ Under the applicable SBA size standard, such a business is small if it has 1,500 or fewer employees.²⁷ According to Commission data, U.S. Census data for 2012 show that there were 3,117 firms that operated that year.²⁸ Of this total, 3,083 operated with fewer than 1,000 employees.²⁹ Thus under this category and the associated size standard, the Commission estimates that the majority of local exchange carriers are small entities.

15. *Incumbent Local Exchange Carriers (Incumbent LECs).* Neither the Commission nor the SBA has developed a small business size standard specifically for incumbent local exchange services.

²¹ U.S. Census Bureau, *Estab & Firm Size: Receipts Size of Firms for the U.S. 2012*, <https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>.

²² See 13 CFR § 121.201. The Wired Telecommunications Carrier category formerly used the NAICS code of 517110. As of 2017, the U.S. Census Bureau definition shows the NAICS code as 517311 for Wired Telecommunications Carriers. See U.S. Census Bureau, *2017 NAICS Definition*, <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517311&search=2017>.

²³ See 13 CFR § 120.201, NAICS Code 517110.

²⁴ See U.S. Census Bureau, *2012 Economic Census of the United States*, Table No. EC1251SSSZ5, *Information: Subject Series - Estab & Firm Size: Employment Size of Firms: 2012* (517110 Wired Telecommunications Carriers). https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ5//naics~517110.

²⁵ *Id.*

²⁶ See 13 CFR § 121.201. The Wired Telecommunications Carrier category formerly used the NAICS code of 517110. As of 2017, the U.S. Census Bureau definition shows the NAICS code as 517311 for Wired Telecommunications Carriers. See, U.S. Census Bureau, *2017 NAICS Definition*, <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517311&search=2017>.

²⁷ *Id.*

²⁸ See U.S. Census Bureau, *2012 Economic Census of the United States*, Table No. EC1251SSSZ5, *Information: Subject Series - Estab & Firm Size: Employment Size of Firms: 2012* (517110 Wired Telecommunications Carriers). https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ5//naics~517110.

²⁹ *Id.*

The closest applicable NAICS Code category is Wired Telecommunications Carriers.³⁰ Under the applicable SBA size standard, such a business is small if it has 1,500 or fewer employees.³¹ According to U.S. Census Bureau data for 2012, 3,117 firms operated in that year.³² Of this total, 3,083 operated with fewer than 1,000 employees.³³ Consequently, the Commission estimates that most providers of incumbent local exchange service are small businesses that may be affected by our actions. According to Commission data, 1,307 Incumbent LECs reported that they were incumbent local exchange service providers.³⁴ Of this total, an estimated 1,006 have 1,500 or fewer employees.³⁵ Thus, using the SBA's size standard, the majority of Incumbent LECs can be considered small entities.

16. Competitive Local Exchange Carriers (Competitive LECs), Competitive Access Providers (CAPs), Shared-Tenant Service Providers, and Other Local Service Providers. Neither the Commission nor the SBA has developed a small business size standard specifically for these service providers. The appropriate NAICS Code category is Wired Telecommunications Carriers and under that size standard, such a business is small if it has 1,500 or fewer employees.³⁶ U.S. Census Bureau data for 2012 indicate that 3,117 firms operated during that year.³⁷ Of that number, 3,083 operated with fewer than 1,000 employees.³⁸ Based on these data, the Commission concludes that the majority of Competitive LECs, CAPs, Shared-Tenant Service Providers, and Other Local Service Providers, are small entities. According to Commission data, 1,442 carriers reported that they were engaged in the provision of either competitive local exchange services or competitive access provider services.³⁹ Of these 1,442 carriers, an estimated 1,256 have 1,500 or fewer employees.⁴⁰ In addition, 17 carriers have reported that they are Shared-Tenant Service Providers, and all 17 are estimated to have 1,500 or fewer employees.⁴¹ Also, 72 carriers have reported that they are Other Local Service Providers.⁴² Of this total, 70 have 1,500 or fewer employees.⁴³ Consequently, based on internally researched FCC data, the Commission estimates that

³⁰ See 13 CFR § 121.201. The Wired Telecommunications Carrier category formerly used the NAICS Code of 517110. As of 2017 the U.S. Census Bureau definition shows the NAICS Code as 517311 for Wired Telecommunications Carriers. See <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517311&search=2017>.

³¹ *Id.*

³² U.S. Census Bureau, *2012 Economic Census of the United States*, Table No. EC1251SSSZ5, *Information: Subject Series - Estab & Firm Size: Employment Size of Firms: 2012* (517110 Wired Telecommunications Carriers). https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ5/naics~517110.

³³ *Id.*

³⁴ See Federal Communications Commission, Wireline Competition Bureau, Industry Analysis and Technology Division, Trends in Telephone Service at Table 5.3 (Sept. 2010) (*Trends in Telephone Service*).

³⁵ *Id.*

³⁶ See, 13 CFR § 121.201. The Wired Telecommunications Carrier category formerly used the NAICS code of 517110. As of 2017 the U.S. Census Bureau definition shows the NAICS code as 517311 for Wired Telecommunications Carriers. See, U.S. Census Bureau, *2017 NAICS Definition*, <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517311&search=2017>.

³⁷ U.S. Census Bureau, *2012 Economic Census of the United States*, Table No. EC1251SSSZ5, *Information: Subject Series - Estab & Firm Size: Employment Size of Firms: 2012* (517110 Wired Telecommunications Carriers). https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ5/naics~517110.

³⁸ *Id.*

³⁹ See *Trends in Telephone Service*, at tbl. 5.3.

⁴⁰ See *id.*

⁴¹ *Id.*

⁴² *Id.*

most providers of competitive local exchange service, competitive access providers, Shared-Tenant Service Providers, and Other Local Service Providers are small entities.⁴⁴

17. *Interexchange Carriers (IXCs)*. Neither the Commission nor the SBA has developed a definition for Interexchange Carriers. The closest NAICS Code category is Wired Telecommunications Carriers.⁴⁵ The applicable size standard under SBA rules consists of all such companies having 1,500 or fewer employees.⁴⁶ U.S. Census Bureau data for 2012 indicate that 3,117 firms operated during that year.⁴⁷ Of that number, 3,083 operated with fewer than 1,000 employees.⁴⁸ According to internally developed Commission data, 359 companies reported that their primary telecommunications service activity was the provision of interexchange services.⁴⁹ Of this total, an estimated 317 have 1,500 or fewer employees.⁵⁰ Consequently, the Commission estimates that the majority of interexchange service providers are small entities.

18. *Operator Service Providers (OSPs)*. Neither the Commission nor the SBA has developed a small business size standard specifically for operator service providers. The closest applicable size standard under SBA rules is the category of Wired Telecommunications Carriers.⁵¹ Under the size standard for Wired Telecommunications Carriers, such a business is small if it has 1,500 or fewer employees.⁵² U.S. Census Bureau data for 2012 show that there were 3,117 firms that operated that year.⁵³ Of this total, 3,083 operated with fewer than 1,000 employees.⁵⁴ Thus, under this size standard, the majority of firms in this industry can be considered small.

(Continued from previous page) _____

⁴³ *Id.*

⁴⁴ We have included small incumbent LECs in this present RFA analysis. As noted above, a “small business” under the RFA is one that, *inter alia*, meets the pertinent small business size standard (e.g., a telephone communications business having 1,500 or fewer employees), and “is not dominant in its field of operation.” The SBA’s Office of Advocacy contends that, for RFA purposes, small incumbent LECs are not dominant in their field of operation because any such dominance is not “national” in scope. We have therefore included small incumbent LECs in this RFA analysis, although we emphasize that this RFA action has no effect on Commission analyses and determinations in other, non-RFA contexts.

⁴⁵ See, 13 CFR § 121.201. The Wired Telecommunications Carrier category formerly used the NAICS code of 517110. As of 2017 the U.S. Census Bureau definition shows the NAICS code as 517311 for Wired Telecommunications Carriers. See, U.S. Census Bureau, *2017 NAICS Definition*, <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517311&search=2017>.

⁴⁶ *Id.*

⁴⁷ See U.S. Census Bureau, *2012 Economic Census of the United States*, Table No. EC1251SSSZ5, *Information: Subject Series - Estab & Firm Size: Employment Size of Firms: 2012* (517110 Wired Telecommunications Carriers). https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ5//naics~517110.

⁴⁸ *Id.*

⁴⁹ See *Trends in Telephone Service*, at tbl. 5.3.

⁵⁰ *Id.*

⁵¹ See 13 CFR § 121.201. The Wired Telecommunications Carrier category formerly used the NAICS Code of 517110. As of 2017, the U.S. Census Bureau definition shows the NAICS Code as 517311 for Wired Telecommunications Carriers. See, U.S. Census Bureau, *2017 NAICS Definition*, <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517311&search=2017>.

⁵² *Id.*

⁵³ See U.S. Census Bureau, *2012 Economic Census of the United States*, Table No. EC1251SSSZ5, *Information: Subject Series - Estab & Firm Size: Employment Size of Firms: 2012* (517110 Wired Telecommunications Carriers). https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ5//naics~517110.

⁵⁴ *Id.*

19. According to Commission data, 33 carriers have reported that they are engaged in the provision of operator services.⁵⁵ Of these, an estimated 31 have 1,500 or fewer employees and two have more than 1,500 employees.⁵⁶ Consequently, the Commission estimates that the majority of OSPs are small entities.

20. *Other Toll Carriers.* Neither the Commission nor the SBA has developed a definition for small businesses specifically applicable to Other Toll Carriers. This category includes toll carriers that do not fall within the categories of interexchange carriers, operator service providers, prepaid calling card providers, satellite service carriers, or toll resellers. The closest applicable size standard under SBA rules is for Wired Telecommunications Carriers and the applicable small business size standard under SBA rules consists of all such companies having 1,500 or fewer employees.⁵⁷ U.S. Census data for 2012 indicate that 3,117 firms operated during that year.⁵⁸ Of that number, 3,083 operated with fewer than 1,000 employees.⁵⁹ According to Commission data, 284 companies reported that their primary telecommunications service activity was the provision of other toll carriage.⁶⁰ Of these, an estimated 279 have 1,500 or fewer employees.⁶¹ Consequently, the Commission estimates that most Other Toll Carriers are small entities.

3. Wireless Providers—Fixed and Mobile

21. The broadband Internet access service provider category covered by these new rules may cover multiple wireless firms and categories of regulated wireless services.⁶² Thus, to the extent the wireless services listed below are used by wireless firms for broadband Internet access service, the actions may have an impact on those small businesses as set forth above and further below. In addition, for those services subject to auctions, we note that, as a general matter, the number of winning bidders that claim to qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Also, the Commission does not generally track subsequent business size unless, in the context of assignments and transfers or reportable eligibility events, unjust enrichment issues are implicated.

22. *Wireless Telecommunications Carriers (except Satellite).* This industry comprises establishments engaged in operating and maintaining switching and transmission facilities to provide communications via the airwaves. Establishments in this industry have spectrum licenses and provide services using that spectrum, such as cellular services, paging services, wireless Internet access, and

⁵⁵ *Trends in Telephone Service*, tbl. 5.3.

⁵⁶ *Id.*

⁵⁷ See 13 CFR § 121.201. The Wired Telecommunications Carrier category formerly used the NAICS Code of 517110. As of 2017, the U.S. Census Bureau definition shows the NAICS Code as 517311 for Wired Telecommunications Carriers. See U.S. Census Bureau, *2017 NAICS Definition*, <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517311&search=2017>.

⁵⁸ See U.S. Census Bureau, *2012 Economic Census of the United States*, Table No. EC1251SSSZ5, *Information: Subject Series - Estab & Firm Size: Employment Size of Firms: 2012 (517110 Wired Telecommunications Carriers)*. https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ5//naics~517110.

⁵⁹ *Id.*

⁶⁰ *Trends in Telephone Service*, at tbl. 5.3.

⁶¹ *Id.*

⁶² This includes, among others, the approximately 800 members of WISPA, including those entities who provide fixed wireless broadband service using unlicensed spectrum. See WISPA, *About WISPA*, <https://www.wispa.org/About-Us/Mission-and-Goals> (last visited June 27, 2019). We also consider the impact to these entities today for the purposes of this IRFA, by including them under the “Wireless Providers – Fixed and Mobile” category.

wireless video services.⁶³ The appropriate size standard under SBA rules is that such a business is small if it has 1,500 or fewer employees.⁶⁴ For this industry, U.S. Census data for 2012 show that there were 967 firms that operated for the entire year.⁶⁵ Of this total, 955 firms had employment of 999 or fewer employees and 12 had employment of 1000 employees or more.⁶⁶ Thus, under this category and the associated size standard, the Commission estimates that the majority of wireless telecommunications carriers (except satellite) are small entities.

23. The Commission's own data—available in its Universal Licensing System—indicate that, as of August 31, 2018, there are 265 Cellular licensees that will be affected by our actions.⁶⁷ The Commission does not know how many of these licensees are small, as the Commission does not collect that information for these types of entities. Similarly, according to internally-developed Commission data, 413 carriers reported that they were engaged in the provision of wireless telephony, including cellular service, Personal Communications Service (PCS), and Specialized Mobile Radio (SMR) Telephony services.⁶⁸ Of this total, an estimated 261 have 1,500 or fewer employees, and 152 have more than 1,500 employees.⁶⁹ Thus, using available data, we estimate that the majority of wireless firms can be considered small.

24. *Wireless Communications Services.* This service can be used for fixed, mobile, radiolocation, and digital audio broadcasting satellite uses. The Commission defined “small business” for the wireless communications services (WCS) auction as an entity with average gross revenues of \$40 million for each of the three preceding years, and a “very small business” as an entity with average gross revenues of \$15 million for each of the three preceding years.⁷⁰ The SBA has approved these small business size standards.⁷¹ In the Commission's auction for geographic area licenses in the WCS, there were seven winning bidders that qualified as “very small business” entities and one that qualified as a “small business” entity.

⁶³ U.S. Census Bureau, *2012 NAICS Definitions, 517210 Wireless Telecommunications Carriers (Except Satellite)*, <https://factfinder.census.gov/faces/affhelp/jsf/pages/metadata.xhtml?lang=en&type=ib&id=ib.en./ECN.NAICS2012.517210>.

⁶⁴ 13 CFR § 121.201, NAICS code 517210.

⁶⁵ U.S. Census Bureau, *2012 Economic Census of the United States, Table EC1251SSSZ5, Information: Subject Series: Estab and Firm Size: Employment Size of Firms for the U.S.: 2012, NAICS Code 517210*, https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ5//naics~517210.

⁶⁶ *Id.* Available census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is for firms with “1000 employees or more.”

⁶⁷ See <http://wireless.fcc.gov/uls>. For the purposes of this FRFA, consistent with Commission practice for wireless services, the Commission estimates the number of licensees based on the number of unique FCC Registration Numbers.

⁶⁸ *Trends in Telephone Service* at Table 5.3.

⁶⁹ *Id.*

⁷⁰ *Amendment of the Commission's Rules to Establish Part 27, the Wireless Communications Service (WCS)*, GN Docket No. 96-228, Report and Order, 12 FCC Rcd 10785, 10879, para. 194 (1997).

⁷¹ See Public Notice, FCC, Comment Sought on Small Business Size Standards (Jan. 13, 1999), at Attach. A, Letter from Aida Alvarez, Administrator, SBA, to Amy Zoslov, Chief, Auctions and Industry Analysis Division, Wireless Telecommunications Bureau, FCC (filed Dec. 2, 1998) (*Alvarez Letter 1998*), <https://ecfsapi.fcc.gov/file/6006142119.pdf>.

25. *1670–1675 MHz Services.* This service can be used for fixed and mobile uses, except aeronautical mobile.⁷² An auction for one license in the 1670–1675 MHz band was conducted in 2003. One license was awarded. The winning bidder was not a small entity.

26. *Wireless Telephony.* Wireless telephony includes cellular, personal communications services, and specialized mobile radio telephony carriers. The closest applicable SBA category is Wireless Telecommunications Carriers (except Satellite).⁷³ Under the SBA small business size standard, a business is small if it has 1,500 or fewer employees.⁷⁴ For this industry, U.S. Census Bureau data for 2012 show that there were 967 firms that operated for the entire year.⁷⁵ Of this total, 955 firms had fewer than 1,000 employees and 12 firms had 1000 employees or more.⁷⁶ Thus, under this category and the associated size standard, the Commission estimates that a majority of these entities can be considered small. According to Commission data, 413 carriers reported that they were engaged in wireless telephony.⁷⁷ Of these, an estimated 261 have 1,500 or fewer employees and 152 have more than 1,500 employees.⁷⁸ Therefore, more than half of these entities can be considered small.

Broadband Personal Communications Service. The broadband personal communications services (PCS) spectrum is divided into six frequency blocks designated A through F, and the Commission has held auctions for each block. The Commission initially defined a “small business” for C- and F-Block licenses as an entity that has average gross revenues of \$40 million or less in the three previous calendar years.⁷⁹ For F-Block licenses, an additional small business size standard for “very small business” was added and is defined as an entity that, together with its affiliates, has average gross revenues of not more than \$15 million for the preceding three calendar years.⁸⁰ These standards, defining “small entity” in the context of broadband PCS auctions, have been approved by the SBA.⁸¹ No small businesses within the SBA-approved small business size standards bid successfully for licenses in Blocks A and B. There were 90 winning bidders that claimed small business status in the first two C-Block auctions. A total of 93 bidders that claimed small business status won approximately 40% of the 1,479 licenses in the first auction for the D, E, and F Blocks.⁸² On April 15, 1999, the Commission completed the reauction of 347

⁷² 47 CFR § 2.106; *see generally* 47 CFR §§ 27.1-27.70.

⁷³ U.S. Census Bureau, *2012 NAICS Definitions*, “517210 Wireless Telecommunications Carriers (Except Satellite),” *See*, <https://factfinder.census.gov/faces/affhelp/jsf/pages/metadata.xhtml?lang=en&type=ib&id=ib.en./ECN.NAICS2012.517210>.

⁷⁴ 13 CFR § 121.201, NAICS Code 517210.

⁷⁵ U.S. Census Bureau, *2012 Economic Census of the United States*, Table EC1251SSSZ5, *Information: Subject Series: Estab and Firm Size: Employment Size of Firms for the U.S.: 2012*, NAICS Code 517210 (rel. Jan. 8, 2016). https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ5//naics~517210.

⁷⁶ *Id.* Available census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is for firms with “1000 employees or more.”

⁷⁷ *Trends in Telephone Service*, tbl. 5.3.

⁷⁸ *Id.*

⁷⁹ *See Amendment of Parts 20 and 24 of the Commission’s Rules – Broadband PCS Competitive Bidding and the Commercial Mobile Radio Service Spectrum Cap; Amendment of the Commission’s Cellular/PCS Cross-Ownership Rule*, Report and Order, 11 FCC Rcd 7824, 7850-52, paras. 57-60 (1996) (*PCS Report and Order*); *see also* 47 CFR § 24.720(b).

⁸⁰ *See PCS Report and Order*, 11 FCC Rcd at 7852, para. 60.

⁸¹ *See Alvarez Letter 1998*.

⁸² *See Broadband PCS, D, E and F Block Auction Closes*, Public Notice, Doc. No. 89838 (rel. Jan. 14, 1997).

C-, D-, E-, and F-Block licenses in Auction No. 22.⁸³ Of the 57 winning bidders in that auction, 48 claimed small business status and won 277 licenses.

27. On January 26, 2001, the Commission completed the auction of 422 C and F Block Broadband PCS licenses in Auction No. 35. Of the 35 winning bidders in that auction, 29 claimed small business status. Subsequent events concerning Auction 35, including judicial and agency determinations, resulted in a total of 163 C and F Block licenses being available for grant. On February 15, 2005, the Commission completed an auction of 242 C-, D-, E-, and F-Block licenses in Auction No. 58. Of the 24 winning bidders in that auction, 16 claimed small business status and won 156 licenses. On May 21, 2007, the Commission completed an auction of 33 licenses in the A, C, and F Blocks in Auction No. 71. Of the 12 winning bidders in that auction, five claimed small business status and won 18 licenses. On August 20, 2008, the Commission completed the auction of 20 C-, D-, E-, and F-Block Broadband PCS licenses in Auction No. 78. Of the eight winning bidders for Broadband PCS licenses in that auction, six claimed small business status and won 14 licenses.

28. *Specialized Mobile Radio Licenses.* The Commission awards “small entity” bidding credits in auctions for Specialized Mobile Radio (SMR) geographic area licenses in the 800 MHz and 900 MHz bands to firms that had revenues of no more than \$15 million in each of the three previous calendar years.⁸⁴ The Commission awards “very small entity” bidding credits to firms that had revenues of no more than \$3 million in each of the three previous calendar years.⁸⁵ The SBA has approved these small business size standards for the 900 MHz Service.⁸⁶ The Commission has held auctions for geographic area licenses in the 800 MHz and 900 MHz bands. The 900 MHz SMR auction began on December 5, 1995, and closed on April 15, 1996. Sixty bidders claiming that they qualified as small businesses under the \$15 million size standard won 263 geographic area licenses in the 900 MHz SMR band. The 800 MHz SMR auction for the upper 200 channels began on October 28, 1997, and was completed on December 8, 1997. Ten bidders claiming that they qualified as small businesses under the \$15 million size standard won 38 geographic area licenses for the upper 200 channels in the 800 MHz SMR band.⁸⁷ A second auction for the 800 MHz band conducted in 2002 and included 23 BEA licenses. One bidder claiming small business status won five licenses.⁸⁸

29. The auction of the 1,053 800 MHz SMR geographic area licenses for the General Category channels was conducted in 2000. Eleven bidders won 108 geographic area licenses for the General Category channels in the 800 MHz SMR band and qualified as small businesses under the \$15 million size standard.⁸⁹ In an auction completed in 2000, a total of 2,800 Economic Area licenses in the lower 80 channels of the 800 MHz SMR service were awarded.⁹⁰ Of the 22 winning bidders, 19 claimed

⁸³ See *C, D, E, and F Block Broadband PCS Auction Closes*, Public Notice, 14 FCC Rcd 6688 (WTB 1999). Before Auction No. 22, the Commission established a very small standard for the C Block to match the standard used for F Block. See *Amendment of the Commission’s Rules Regarding Installment Payment Financing for Personal Communications Services (PCS) Licensees*, Fourth Report and Order, 13 FCC Rcd 15743, 15768, para. 46 (1998).

⁸⁴ 47 CFR § 90.814(b)(1).

⁸⁵ *Id.*

⁸⁶ See Letter from Aida Alvarez, Administrator, SBA, to Thomas Sugrue, Chief, Wireless Telecommunications Bureau, Federal Communications Commission (filed Aug. 10, 1999) (*Alvarez Letter 1999*).

⁸⁷ See *Correction to Public Notice DA 96-586, FCC Announces Winning Bidders in the Auction of 1020 Licenses to Provide 900 MHz SMR in Major Trading Areas*, Public Notice, 18 FCC Rcd 18367 (WTB 1996).

⁸⁸ See *Multi-Radio Service Auction Closes*, Public Notice, 17 FCC Rcd 1446 (WTB 2002).

⁸⁹ See *800 MHz Specialized Mobile Radio (SMR) Service General Category (851–854 MHz) and Upper Band (861–865 MHz) Auction Closes; Winning Bidders Announced*, Public Notice, 15 FCC Rcd 17162 (2000).

⁹⁰ See *800 MHz SMR Service Lower 80 Channels Auction Closes; Winning Bidders Announced*, Public Notice, 16 FCC Rcd 1736 (2000).

small business status and won 129 licenses. Thus, combining all four auctions, 41 winning bidders for geographic licenses in the 800 MHz SMR band claimed status as small businesses.

30. In addition, there are numerous incumbent site-by-site SMR licenses and licensees with extended implementation authorizations in the 800 and 900 MHz bands. We do not know how many firms provide 800 MHz or 900 MHz geographic area SMR service pursuant to extended implementation authorizations, nor how many of these providers have annual revenues of no more than \$15 million. One firm has over \$15 million in revenues. In addition, we do not know how many of these firms have 1,500 or fewer employees, which is the SBA-determined size standard.⁹¹ We assume, for purposes of this analysis, that all of the remaining extended implementation authorizations are held by small entities, as defined by the SBA.

31. *Lower 700 MHz Band Licenses.* The Commission previously adopted criteria for defining three groups of small businesses for purposes of determining their eligibility for special provisions such as bidding credits.⁹² The Commission defined a “small business” as an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding \$40 million for the preceding three years.⁹³ A “very small business” is defined as an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than \$15 million for the preceding three years.⁹⁴ Additionally, the lower 700 MHz Service had a third category of small business status for Metropolitan/Rural Service Area (MSA/RSA) licenses—“entrepreneur”—which is defined as an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than \$3 million for the preceding three years.⁹⁵ The SBA approved these small size standards.⁹⁶ An auction of 740 licenses (one license in each of the 734 MSAs/RSAs and one license in each of the six Economic Area Groupings (EAGs)) commenced on August 27, 2002, and closed on September 18, 2002. Of the 740 licenses available for auction, 484 licenses were won by 102 winning bidders. Seventy-two of the winning bidders claimed small business, very small business, or entrepreneur status and won a total of 329 licenses.⁹⁷ A second auction commenced on May 28, 2003, closed on June 13, 2003, and included 256 licenses: 5 EAG licenses and 476 Cellular Market Area licenses.⁹⁸ Seventeen winning bidders claimed small or very small business status and won 60 licenses, and nine winning bidders claimed entrepreneur status and won 154 licenses.⁹⁹ On July 26, 2005, the Commission completed an auction of 5 licenses in the Lower 700 MHz band (Auction No. 60). There were three winning bidders for five licenses. All three winning bidders claimed small business status.

32. In 2007, the Commission reexamined its rules governing the 700 MHz band in the *700 MHz Second Report and Order*.¹⁰⁰ An auction of 700 MHz licenses commenced January 24, 2008 and closed on March 18, 2008, which included, 176 Economic Area licenses in the A Block, 734 Cellular

⁹¹ See generally 13 CFR § 121.201, NAICS Code 517210.

⁹² See *Reallocation and Service Rules for the 698–746 MHz Spectrum Band (Television Channels 52–59)*, Report and Order, 17 FCC Rcd 1022 (2002) (*Channels 52–59 Report and Order*).

⁹³ See *id.* at 1087-88, para. 172.

⁹⁴ See *id.*

⁹⁵ See *id.*, at 1088, para. 173.

⁹⁶ See *Alvarez Letter 1999*.

⁹⁷ See *Lower 700 MHz Band Auction Closes*, Public Notice, 17 FCC Rcd 17272 (WTB 2002).

⁹⁸ See *id.*

⁹⁹ See *id.*

¹⁰⁰ *Service Rules for the 698–746, 747–762 and 777–792 MHz Band; Revision of the Commission’s Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems et al.*, Second Report and Order, 22 FCC Rcd 15289, 15359 n. 434 (2007) (*700 MHz Second Report and Order*).

Market Area licenses in the B Block, and 176 EA licenses in the E Block.¹⁰¹ Twenty winning bidders, claiming small business status (those with attributable average annual gross revenues that exceed \$15 million and do not exceed \$40 million for the preceding three years) won 49 licenses. Thirty-three winning bidders claiming very small business status (those with attributable average annual gross revenues that do not exceed \$15 million for the preceding three years) won 325 licenses.

33. *Upper 700 MHz Band Licenses.* In the *700 MHz Second Report and Order*, the Commission revised its rules regarding Upper 700 MHz licenses.¹⁰² On January 24, 2008, the Commission commenced Auction 73 in which several licenses in the Upper 700 MHz band were available for licensing: 12 Regional Economic Area Grouping licenses in the C Block and one nationwide license in the D Block.¹⁰³ The auction concluded on March 18, 2008, with three winning bidders claiming very small business status (those with attributable average annual gross revenues that do not exceed \$15 million for the preceding three years) and winning five licenses.

34. *700 MHz Guard Band Licensees.* In 2000, in the *700 MHz Guard Band Order*, the Commission adopted size standards for “small businesses” and “very small businesses” for purposes of determining their eligibility for special provisions such as bidding credits and installment payments.¹⁰⁴ A small business in this service is an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding \$40 million for the preceding three years.¹⁰⁵ Additionally, a very small business is an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than \$15 million for the preceding three years.¹⁰⁶ SBA approval of these definitions is not required.¹⁰⁷ An auction of 52 Major Economic Area licenses commenced on September 6, 2000, and closed on September 21, 2000.¹⁰⁸ Of the 104 licenses auctioned, 96 licenses were sold to nine bidders. Five of these bidders were small businesses that won a total of 26 licenses. A second auction of 700 MHz Guard Band licenses commenced on February 13, 2001, and closed on February 21, 2001. All eight of the licenses auctioned were sold to three bidders. One of these bidders was a small business that won a total of two licenses.¹⁰⁹

35. *Air-Ground Radiotelephone Service.* The Commission has previously used the SBA’s small business size standard applicable to Wireless Telecommunications Carriers (except Satellite).¹¹⁰ The appropriate size standard under SBA rules is that such a business is small if it has 1,500 or fewer

¹⁰¹ See *Auction of 700 MHz Band Licenses Closes*, Public Notice, 23 FCC Rcd 4572 (WTB 2008).

¹⁰² *700 MHz Second Report and Order*, 22 FCC Rcd 15289.

¹⁰³ See *Auction of 700 MHz Band Licenses Closes*, Public Notice, 23 FCC Rcd 4572 (WTB 2008).

¹⁰⁴ See *Service Rules for the 746–764 MHz Bands, and Revisions to Part 27 of the Commission’s Rules*, Second Report and Order, 15 FCC Rcd 5299 (2000) (*746–764 MHz Band Second Report and Order*).

¹⁰⁵ See *id.* at 5343, para. 108.

¹⁰⁶ See *id.*

¹⁰⁷ See *id.* at 5343, para. 108 n.246 (for the 746–764 MHz and 776–794 MHz bands, the Commission is exempt from 15 U.S.C. § 632, which requires Federal agencies to obtain SBA approval before adopting small business size standards).

¹⁰⁸ See *700 MHz Guard Bands Auction Closes: Winning Bidders Announced*, Public Notice, 15 FCC Rcd 18026 (WTB 2000).

¹⁰⁹ See *700 MHz Guard Bands Auction Closes: Winning Bidders Announced*, Public Notice, 16 FCC Rcd 4590 (WTB 2001).

¹¹⁰ U.S. Census Bureau, *2012 NAICS Definitions, 517210 Wireless Telecommunications Carriers (Except Satellite)*, <https://factfinder.census.gov/faces/affhelp/jsf/pages/metadata.xhtml?lang=en&type=ib&id=ib.en./ECN.NAICS2012.517210>.

employees.¹¹¹ For this industry, U.S. Census Bureau data for 2012 show that there were 967 firms that operated for the entire year. Of this total, 955 firms had fewer than 1,000 employees and 12 had employment of 1,000 employees or more.¹¹² There are approximately 100 licensees in the Air-Ground Radiotelephone Service, and we estimate that almost all of them qualify as small entities under the SBA definition.

36. For purposes of assigning Air-Ground Radiotelephone Service licenses through competitive bidding, the Commission has defined “small business” as an entity that, together with controlling interests and affiliates, has average annual gross revenues for the preceding three years not exceeding \$40 million.¹¹³ A “very small business” is defined as an entity that, together with controlling interests and affiliates, has average annual gross revenues for the preceding three years not exceeding \$15 million.¹¹⁴ These definitions were approved by the SBA.¹¹⁵ In May 2006, the Commission completed an auction of nationwide commercial Air-Ground Radiotelephone Service licenses in the 800 MHz band (Auction No. 65). On June 2, 2006, the auction closed with two winning bidders winning two Air-Ground Radiotelephone Services licenses. Neither of the winning bidders claimed small business status.

37. AWS Services (1710–1755 MHz and 2110–2155 MHz bands (AWS-1); 1915–1920 MHz, 1995–2000 MHz, 2020–2025 MHz and 2175–2180 MHz bands (AWS-2); 2155–2175 MHz band (AWS-3)). For the AWS-1 bands,¹¹⁶ the Commission has defined a “small business” as an entity with average annual gross revenues for the preceding three years not exceeding \$40 million, and a “very small business” as an entity with average annual gross revenues for the preceding three years not exceeding \$15 million. For AWS-2 and AWS-3, although we do not know for certain which entities are likely to apply for these frequencies, we note that the AWS-1 bands are comparable to those used for cellular service and personal communications service. The Commission has not yet adopted size standards for the AWS-2 or AWS-3 bands but proposes to treat both AWS-2 and AWS-3 similarly to broadband PCS service and AWS-1 service due to the comparable capital requirements and other factors, such as issues involved in relocating incumbents and developing markets, technologies, and services.¹¹⁷

38. *3650–3700 MHz band.* In March 2005, the Commission released a *Report and Order and Memorandum Opinion and Order* that provides for nationwide, non-exclusive licensing of terrestrial operations, using contention-based technologies, in the 3650 MHz band (i.e., 3650–3700 MHz). As of April 2010, more than 1,270 licenses have been granted and more than 7,433 sites have been registered. The Commission has not developed a definition of small entities applicable to 3650–3700 MHz band

¹¹¹ 13 CFR § 121.201, NAICS Code 517210.

¹¹² *Id.* Available census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is for firms with “1000 employees or more.”

¹¹³ *Amendment of Part 22 of the Commission’s Rules to Benefit the Consumers of Air-Ground Telecommunications Services et al.*, WT Docket No. 03-103 et al., Order on Reconsideration and Report and Order, 20 FCC Rcd 19663, paras. 28-42 (2005).

¹¹⁴ *Id.*

¹¹⁵ See Letter from Hector V. Barreto, Administrator, SBA, to Gary D. Michaels, Deputy Chief, Auctions and Spectrum Access Division, Wireless Telecommunications Bureau, Federal Communications Commission (filed Sept. 19, 2005).

¹¹⁶ The service is defined in section 90.1301 *et seq.* of the Commission’s Rules, 47 CFR § 90.1301 *et seq.*

¹¹⁷ See *Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands*, Report and Order, 18 FCC Rcd 25162, Appx. B (2003), modified by *Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands*, Order on Reconsideration, 20 FCC Rcd 14058, Appx. C (2005); *Service Rules for Advanced Wireless Services in the 1915–1920 MHz, 1995–2000 MHz, 2020–2025 MHz and 2175–2180 MHz Bands*; *Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands*, Notice of Proposed Rulemaking, 19 FCC Rcd 19263, Appx. B (2005); *Service Rules for Advanced Wireless Services in the 2155–2175 MHz Band*, Notice of Proposed Rulemaking, 22 FCC Rcd 17035, Appx. (2007).

nationwide, non-exclusive licenses. However, we estimate that the majority of these licensees are Internet Access Service Providers (ISPs) and that most of those licensees are small businesses.

39. *Fixed Microwave Services.* Microwave services include common carrier,¹¹⁸ private-operational fixed,¹¹⁹ and broadcast auxiliary radio services.¹²⁰ They also include the Local Multipoint Distribution Service (LMDS),¹²¹ the Digital Electronic Message Service (DEMS),¹²² and the 24 GHz Service,¹²³ where licensees can choose between common carrier and non-common carrier status.¹²⁴ At present, there are approximately 36,708 common carrier fixed licensees and 59,291 private operational-fixed licensees and broadcast auxiliary radio licensees in the microwave services. There are approximately 135 LMDS licensees, three DEMS licensees, and three 24 GHz licensees. The Commission has not yet defined a small business with respect to microwave services. The closest applicable SBA category is Wireless Telecommunications Carriers (except Satellite)¹²⁵ and the appropriate size standard for this category under SBA rules is that such a business is small if it has 1,500 or fewer employees.¹²⁶ For this industry, U.S. Census Bureau data for 2012 show that there were 967 firms that operated for the entire year.¹²⁷ Of this total, 955 firms had fewer than 1,000 employees and 12 had employment of 1,000 employees or more.¹²⁸ Thus, under this SBA category and the associated size standard, the Commission estimates that a majority of fixed microwave service licensees can be considered small.

40. The Commission does not have data specifying the number of these licensees that have more than 1,500 employees, and thus is unable at this time to estimate with greater precision the number of fixed microwave service licensees that would qualify as small business concerns under the SBA's small business size standard. Consequently, the Commission estimates that there are up to 36,708 common carrier fixed licensees and up to 59,291 private operational-fixed licensees and broadcast auxiliary radio licensees in the microwave services that may be small and may be affected by the rules and policies adopted herein. We note, however, that the common carrier microwave fixed licensee category does include some large entities.

¹¹⁸ See 47 CFR Part 101, Subparts C and I.

¹¹⁹ See 47 CFR Part 101, Subparts C and H.

¹²⁰ Auxiliary Microwave Service is governed by Part 74 of Title 47 of the Commission's Rules. See 47 CFR Part 74. Available to licensees of broadcast stations and to broadcast and cable network entities, broadcast auxiliary microwave stations are used for relaying broadcast television signals from the studio to the transmitter, or between two points such as a main studio and an auxiliary studio. The service also includes mobile TV pickups, which relay signals from a remote location back to the studio.

¹²¹ See 47 CFR Part 101, Subpart L.

¹²² See 47 CFR Part 101, Subpart G.

¹²³ See *id.*

¹²⁴ See 47 CFR §§ 101.533, 101.1017.

¹²⁵ U.S. Census Bureau, *2012 NAICS Definitions, 517210 Wireless Telecommunications Carriers (Except Satellite)*, <https://factfinder.census.gov/faces/affhelp/jsf/pages/metadata.xhtml?lang=en&type=ib&id=ib.en./ECN.NAICS2012.517210>.

¹²⁶ See 13 CFR § 121.201, NAICS Code 517210.

¹²⁷ U.S. Census Bureau, *2012 Economic Census of the United States, Table EC1251SSSZ5, Information: Subject Series, "Estab and Firm Size: Employment Size of Firms for the U.S.: 2012, NAICS Code 517210 (Jan. 8, 2016)*, https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ5//naics~517210.

¹²⁸ *Id.* Available census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is for firms with "1000 employees or more."

41. *Broadband Radio Service and Educational Broadband Service.* Broadband Radio Service systems, previously referred to as Multipoint Distribution Service (MDS) and Multichannel Multipoint Distribution Service (MMDS) systems and “wireless cable,” transmit video programming to subscribers and provide two-way high-speed data operations using the microwave frequencies of the Broadband Radio Service (BRS) and Educational Broadband Service (EBS) (previously referred to as the Instructional Television Fixed Service (ITFS)).¹²⁹

42. *BRS*— In connection with the 1996 BRS auction, the Commission established a small business size standard as an entity that had annual average gross revenues of no more than \$40 million in the previous three calendar years.¹³⁰ The BRS auctions resulted in 67 successful bidders obtaining licensing opportunities for 493 Basic Trading Areas (BTAs). Of the 67 auction winners, 61 met the definition of a small business. BRS also includes licensees of stations authorized prior to the auction. At this time, we estimate that of the 61 small business BRS auction winners, 48 remain small business licensees. In addition to the 48 small businesses that hold BTA authorizations, there are approximately 392 incumbent BRS licensees that are considered small entities.¹³¹ After adding the number of small business auction licensees to the number of incumbent licensees not already counted, we find that there are currently approximately 440 BRS licensees that are defined as small businesses under either the SBA or the Commission’s rules.

43. In 2009, the Commission conducted Auction 86, the sale of 78 licenses in the BRS areas.¹³² The Commission offered three levels of bidding credits: (1) a bidder with attributed average annual gross revenues that exceed \$15 million and do not exceed \$40 million for the preceding three years (small business) received a 15% discount on its winning bid; (2) a bidder with attributed average annual gross revenues that exceed \$3 million and do not exceed \$15 million for the preceding three years (very small business) received a 25% discount on its winning bid; and (3) a bidder with attributed average annual gross revenues that do not exceed \$3 million for the preceding three years (entrepreneur) received a 35% discount on its winning bid.¹³³ Auction 86 concluded in 2009 with the sale of 61 licenses.¹³⁴ Of the ten winning bidders, two bidders that claimed small business status won four licenses; one bidder that claimed very small business status won three licenses; and two bidders that claimed entrepreneur status won six licenses.

44. *EBS*—The SBA’s Cable Television Distribution Services small business size standard is applicable to EBS. There are presently 2,436 EBS licensees. All but 100 of these licenses are held by educational institutions. Educational institutions are included in this analysis as small entities.¹³⁵ Thus,

¹²⁹ *Amendment of Parts 21 and 74 of the Commission’s Rules with Regard to Filing Procedures in the Multipoint Distribution Service and in the Instructional Television Fixed Service and Implementation of Section 309(j) of the Communications Act—Competitive Bidding*, Report and Order, 10 FCC Rcd 9589, 9593, para. 7 (1995).

¹³⁰ 47 CFR § 21.961(b)(1).

¹³¹ 47 U.S.C. § 309(j). Hundreds of stations were licensed to incumbent MDS licensees prior to implementation of Section 309(j) of the Communications Act of 1934, 47 U.S.C. § 309(j). For these pre-auction licenses, the applicable standard is SBA’s small business size standard of 1,500 or fewer employees.

¹³² *Auction of Broadband Radio Service (BRS) Licenses, Scheduled for October 27, 2009, Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments, and Other Procedures for Auction 86*, Public Notice, 24 FCC Rcd 8277 (2009).

¹³³ *Id.* at 8296, para. 73.

¹³⁴ *Auction of Broadband Radio Service Licenses Closes, Winning Bidders Announced for Auction 86, Down Payments Due November 23, 2009, Final Payments Due December 8, 2009, Ten-Day Petition to Deny Period*, Public Notice, 24 FCC Rcd 13572 (2009).

¹³⁵ The term “small entity” within SBREFA applies to small organizations (nonprofits) and to small governmental jurisdictions (cities, counties, towns, townships, villages, school districts, and special districts with populations of less than 50,000). 5 U.S.C. §§ 601(4)-(6). We do not collect annual revenue data on EBS licensees.

we estimate that at least 2,336 licensees are small businesses. Since 2007, Cable Television Distribution Services have been defined within the broad economic census category of Wired Telecommunications Carriers. Wired Telecommunications Carriers are comprised of establishments primarily engaged in operating and/or providing access to transmission facilities and infrastructure that they own and/or lease for the transmission of voice, data, text, sound, and video using wired telecommunications networks. Transmission facilities may be based on a single technology or a combination of technologies.”¹³⁶ The SBA’s small business size standard for this category is all such firms having 1,500 or fewer employees.¹³⁷ U.S. Census data for 2012 show that there were 3,117 firms that operated that year. Of this total, 3,083 operated with fewer than 1,000 employees. Thus, under this size standard, the majority of firms in this industry can be considered small.

4. Satellite Service Providers

45. *Satellite Telecommunications.* This category comprises firms “primarily engaged in providing telecommunications services to other establishments in the telecommunications and broadcasting industries by forwarding and receiving communications signals via a system of satellites or reselling satellite telecommunications.”¹³⁸ Satellite telecommunications service providers include satellite and earth station operators. The category has a small business size standard of \$32.5 million or less in average annual receipts, under SBA rules.¹³⁹ For this category, U.S. Census Bureau data for 2012 show that a total of 333 firms operated for the entire year.¹⁴⁰ Of this total, 299 firms had annual receipts of less than \$25 million.¹⁴¹ Consequently, we estimate that the majority of satellite telecommunications providers are small entities.

46. *All Other Telecommunications.* The “All Other Telecommunications” category is comprised of establishments that are primarily engaged in providing specialized telecommunications services, such as satellite tracking, communications telemetry, and radar station operation.¹⁴² This industry also includes establishments primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems.¹⁴³ Establishments providing Internet services or voice over Internet protocol (VoIP) services via client-supplied telecommunications connections are also included in this industry.¹⁴⁴ The SBA has developed a small business size standard for “All Other Telecommunications,” which consists of all such firms with gross

¹³⁶ U.S. Census Bureau, *2017 NAICS Definitions, 517311 Wired Telecommunications Carriers*, (partial definition), <http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517311&search=2017>.

¹³⁷ See 13 CFR § 121.201. The Wired Telecommunications Carrier category formerly used the NAICS Code of 517110. As of 2017 the U.S. Census Bureau definition shows the NAICS Code as 517311 for Wired Telecommunications Carriers. See <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?input=517311&search=2017+NAICS+Search&search=2017>.

¹³⁸ U.S. Census Bureau, *2012 NAICS Definitions, 517410 Satellite Telecommunications*, <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?input=517410&search=2017+NAICS+Search&search=2017>.

¹³⁹ 13 CFR § 121.201, NAICS Code 517410.

¹⁴⁰ U.S. Census Bureau, *2012 Economic Census of the United States*, Table EC1251SSSZ4, *Information: Subject Series - Estab and Firm Size: Receipts Size of Firms for the United States: 2012*, NAICS Code 517410, http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_51SSSZ4&prodType=table.

¹⁴¹ *Id.*

¹⁴² See U.S. Census Bureau, *2017 NAICS Definitions, NAICS Code 517919 All Other Telecommunications*, <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?input=517919&search=2017+NAICS+Search&search=2017>

¹⁴³ *Id.*

¹⁴⁴ *Id.*

annual receipts of \$32.5 million or less.¹⁴⁵ For this category, U.S. Census Bureau data for 2012 show that there were 1,442 firms that operated for the entire year.¹⁴⁶ Of these firms, a total of 1,400 had gross annual receipts of less than \$25 million.¹⁴⁷ Consequently, a majority of “All Other Telecommunications” firms potentially affected by our action can be considered small.

5. Cable Service Providers

47. Because section 706 of the Act requires us to monitor the deployment of broadband using any technology, we anticipate that some broadband service providers may not provide telephone service. Accordingly, we describe below other types of firms that may provide broadband services, including cable companies, MDS providers, and utilities, among others.

48. *Cable and Other Subscription Programming.* This industry comprises establishments primarily engaged in operating studios and facilities for the broadcasting of programs on a subscription or fee basis. The broadcast programming is typically narrowcast in nature (e.g. limited format, such as news, sports, education, or youth-oriented). These establishments produce programming in their own facilities or acquire programming from external sources. The programming material is usually delivered to a third party, such as cable systems or direct-to-home satellite systems, for transmission to viewers.¹⁴⁸ The SBA size standard for this industry establishes as small, any company in this category that has annual receipts of \$38.5 million or less.¹⁴⁹ According to 2012 U.S. Census Bureau data, 367 firms operated for the entire year.¹⁵⁰ Of that number, 319 operated with annual receipts of less than \$25 million a year and 48 firms operated with annual receipts of \$25 million or more.¹⁵¹ Based on this data, the Commission estimates that the majority of firms operating in this industry are small.

49. *Cable Companies and Systems (Rate Regulation).* The Commission has developed its own small business size standards for the purpose of cable rate regulation. Under the Commission's rules, a “small cable company” is one serving 400,000 or fewer subscribers nationwide.¹⁵² Industry data indicate that there are currently 4,600 active cable systems in the United States.¹⁵³ Of this total, all but eleven cable operators nationwide are small under the 400,000-subscriber size standard.¹⁵⁴ In addition, under the Commission's rate regulation rules, a “small system” is a cable system serving 15,000 or fewer subscribers.¹⁵⁵ Current Commission records show 4,600 cable systems nationwide. Of this total, 3,900

¹⁴⁵ 13 CFR § 121.201; NAICS Code 517919.

¹⁴⁶ U.S. Census Bureau, *2012 Economic Census of the United States*, Table EC1251SSSZ4, *Information: Subject Series - Estab and Firm Size: Receipts Size of Firms for the United States: 2012*, NAICS Code 517919, https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ4//naics~517919.

¹⁴⁷ *Id.*

¹⁴⁸ See U.S. Census Bureau, *2012 NAICS Definitions, 515210 Cable and other Subscription Programming*, <https://factfinder.census.gov/faces/affhelp/jsf/pages/metadata.xhtml?lang=en&type=ib&id=ib.en./ECN.NAICS2012.515210#>.

¹⁴⁹ See 13 C.F.R. 121.201, NAICS Code 515210.

¹⁵⁰ See U.S. Census Bureau, *2012 Economic Census of the United States*, Table EC1251SSSZ4, *Information: Subject Series - Estab & Firm Size: Receipts Size of Firms for the U.S.: 2012*, NAICS Code 515210, https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ4//naics~515210.

¹⁵¹ *Id.* Available census data does not provide a more precise estimate of the number of firms that have receipts of \$38.5 million or less.

¹⁵² 47 CFR § 76.901(e).

¹⁵³ See FCC, Media Bureau, August 15, 2015 Report based on data contained in the Commission's Cable Operations and Licensing System (COALS), <https://apps.fcc.gov/coals/>.

¹⁵⁴ Data obtained from SNL Kagan database on April 19, 2017.

¹⁵⁵ 47 CFR § 76.901(c).

cable systems have fewer than 15,000 subscribers, and 700 systems have 15,000 or more subscribers, based on the same records.¹⁵⁶ Thus, under this standard as well, we estimate that most cable systems are small entities.

50. *Cable System Operators (Telecom Act Standard)*. The Communications Act of 1934, as amended, also contains a size standard for small cable system operators, which is “a cable operator that, directly or through an affiliate, serves in the aggregate fewer than 1% of all subscribers in the United States and is not affiliated with any entity or entities whose gross annual revenues in the aggregate exceed \$250,000,000.”¹⁵⁷ There are approximately 52,403,705 cable video subscribers in the United States today.¹⁵⁸ Accordingly, an operator serving fewer than 524,037 subscribers shall be deemed a small operator if its annual revenues, when combined with the total annual revenues of all its affiliates, do not exceed \$250 million in the aggregate.¹⁵⁹ Based on available data, we find that all but nine incumbent cable operators are small entities under this size standard.¹⁶⁰ We note that the Commission neither requests nor collects information on whether cable system operators are affiliated with entities whose gross annual revenues exceed \$250 million.¹⁶¹ Although it seems certain that some of these cable system operators are affiliated with entities whose gross annual revenues exceed \$250 million, we are unable at this time to estimate with greater precision the number of cable system operators that would qualify as small cable operators under the definition in the Communications Act.

6. All Other Telecommunications

51. *Electric Power Generators, Transmitters, and Distributors*. This U.S. industry is comprised of establishments that are primarily engaged in providing specialized telecommunications services, such as satellite tracking, communications telemetry, and radar station operation. This industry also includes establishments primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems. Establishments providing Internet services or voice over Internet protocol (VoIP) services via client-supplied telecommunications connections are also included in this industry.¹⁶² The closest applicable SBA category is “All Other Telecommunications.” The SBA’s small business size standard for “All Other Telecommunications” consists of all such firms with gross annual receipts of \$32.5 million or less.¹⁶³ For this category, U.S. Census data for 2012 show that there were 1,442 firms that operated for the entire year. Of these firms, a total of 1,400 had gross annual receipts of less than \$25 million.¹⁶⁴ Consequently, we estimate that under this category and the associated size standard the majority of these firms can be considered small entities.

¹⁵⁶ See FCC, Media Bureau, August 5, 2015 report based on its research in COALS, <https://apps.fcc.gov/coins/>.

¹⁵⁷ 47 CFR § 76.90(f) and notes ff. 1, 2, and 3.

¹⁵⁸ See SNL KAGAN at <http://www.snk.com/interactivex/MultichannelIndustryBenchmarks.aspx>.

¹⁵⁹ 47 CFR § 76.901(f) and notes ff. 1, 2, and 3.

¹⁶⁰ See SNL KAGAN at <http://www.snk.com/interactivex/TopCableMSOs.aspx>.

¹⁶¹ The Commission does receive such information on a case-by-case basis if a cable operator appeals a local franchise authority’s finding that the operator does not qualify as a small cable operator pursuant to section 76.901(f) of the Commission’s rules. See 47 CFR § 76.901(f).

¹⁶² See U.S. Census Bureau, <http://www.census.gov/cgi-bin/sssd/naics/naicsrch>.

¹⁶³ 13 CFR § 121.201; NAICS Code 517919.

¹⁶⁴ U.S. Census Bureau, *Estab & Firm Size: Receipts Size of Firms for the U.S., 2012*, http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_51SSSZ4&prodTtype=table.

E. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities

52. We expect the rules adopted in the *Second Report and Order* will impose new or additional reporting, recordkeeping, and/or other compliance obligations on small entities. We establish reporting and disclosure requirements for fixed and mobile broadband providers, filing and certification requirements. In an effort to comply with the Broadband DATA Act and develop better quality, more useful, and more granular broadband deployment data to advance our statutory obligations, we conclude it is necessary to adopt these rules to produce broadband deployment maps that will allow the Commission to precisely target scarce universal service dollars to where broadband service is lacking. We are cognizant of the need to ensure that the benefits resulting from use of the data outweigh the reporting burdens imposed on filers and believe the establishment of the broadband serviceable location fabric will benefit small entities as well as other providers. Further, the Broadband DATA Act requires the Commission to collect from each mobile broadband Internet access service provider propagation maps and propagation model details that indicate coverage based on specified parameters which we conclude will improve the accuracy and reliability of the mobile broadband data we collect. We also adopt requirements to collect crowdsourced data. We find that any additional burdens imposed by our revised reporting approach for providers in comparison are outweighed by the significant benefit to be gained from more precise broadband deployment data. Although the Commission cannot quantify the cost of compliance with the requirements in the *Second Report and Order*, we believe the reporting requirements are necessary to comply with the Broadband DATA Act and complete accurate broadband coverage maps.

F. Steps Taken to Minimize the Significant Economic Impact on Small Entities, and Significant Alternatives Considered

53. The RFA requires an agency to describe any significant, specifically small business, alternatives that it has considered in reaching its approach, which may include the following four alternatives (among others): (1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance or reporting requirements under the rule for small entities; (3) the use of performance, rather than design, standards; and (4) an exemption from coverage of the rule, or any part thereof, for small entities.¹⁶⁵ The Commission's actions in the *Second Report and Order* are primarily in response to the legislative enactment of the Broadband DATA Act and to develop better quality, more useful, and more granular broadband deployment data. In considering the comments in the record, we were mindful of the time, money, and resources that some small entities incur to complete these requirements.

G. Report to Congress

54. The Commission will send a copy of the *Second Report and Order*, including this FRFA, in a report to Congress pursuant to the Congressional Review Act.¹⁶⁶ In addition, the Commission will send a copy of the *Second Report and Order*, including this FRFA, to the Chief Counsel for Advocacy of the SBA. A copy of the *Second Report and Order* and FRFA (or summaries thereof) will also be published in the Federal Register.¹⁶⁷

¹⁶⁵ 5 U.S.C. § 603(c)(1)-(4).

¹⁶⁶ See 5 U.S.C. § 801(a)(1)(A).

¹⁶⁷ See 5 U.S.C. § 604(b).

APPENDIX D**Initial Regulatory Flexibility Analysis**

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),¹ the Commission has prepared this Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on a substantial number of small entities from the policies and rules proposed in this *Third Notice*. The Commission requests written public comment on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments on the *Third Notice*. The Commission will send a copy of the *Third Notice*, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).² In addition, the *Third Notice* and IRFA (or summaries thereof) will be published in the Federal Register.³

A. Need for, and Objectives of, the Proposed Rules

2. The Commission continues its ongoing efforts to collect accurate and granular broadband deployment data so that we can bring broadband to those areas most in need of it. In the *Third Notice*, the Commission raises issues for consideration and seeks comment on additional steps we can take to obtain more reliable data on the availability and quality of service of broadband Internet access service and how we should implement the requirements in the Broadband DATA Act. Specifically, we seek comment about the standards for collecting and disseminating availability and quality of service data from providers on a biannual basis. Further, we ask about a range of options for verifying the data submitted by providers, including a challenge process, an engineering certification for biannual filers, and obtaining data from government entities and certain third parties. We also provide tentative conclusions and seek comment on how to implement provider coverage map verification methods for mobile services and on how best to use mobile data. While some of the tools we request comment on are required by the Broadband DATA Act, we also inquire about various ways to use other data sources to verify the accuracy of provider coverage maps. Further, we seek comment on the details for establishing the Broadband Serviceable Location Fabric (Fabric) and for the creation of coverage maps depicting broadband availability. Finally, we ask about enforcement issues if providers either fail to make their required filings or they submit materially inaccurate or incomplete data.

B. Legal Basis

3. The proposed action is authorized pursuant to sections 1-5, 201-206, 214, 218-220, 251, 252, 254, 256, 303(r), 332, 403, and 405 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151-155, 201-206, 214, 218-220, 251, 252, 254, 256, 303(r), 332, 403, and 405.

C. Description and Estimate of the Number of Small Entities to Which the Proposed Rules Would Apply

4. The RFA directs agencies to provide a description of, and where feasible, an estimate of the number of small entities that may be affected by the proposed rules, if adopted.⁴ The RFA generally defines the term “small entity” as having the same meaning as the terms “small business,” “small organization,” and “small governmental jurisdiction.”⁵ In addition, the term “small business” has the

¹ See 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. §§ 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

² See 5 U.S.C. § 603(a).

³ *Id.*

⁴ See 5 U.S.C. § 603(b)(3).

⁵ See 5 U.S.C. § 601(6).

same meaning as the term “small-business concern” under the Small Business Act.⁶ A “small-business concern” is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).⁷

1. Total Small Entities

5. *Small Businesses, Small Organizations, Small Governmental Jurisdictions.* Our actions, over time, may affect small entities that are not easily categorized at present. We therefore describe here, at the outset, three broad groups of small entities that could be directly affected herein.⁸ First, while there are industry-specific size standards for small businesses that are used in the regulatory flexibility analysis, according to data from the SBA’s Office of Advocacy, in general a small business is an independent business having fewer than 500 employees.⁹ These types of small businesses represent 99.9% of all businesses in the United States, which translates to 28.8 million businesses.¹⁰

6. Next, the type of small entity described as a “small organization” is generally “any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.”¹¹ Nationwide, as of August 2016, there were approximately 356,494 small organizations based on registration and tax data filed by nonprofits with the Internal Revenue Service (IRS).¹²

7. Finally, the small entity described as a “small governmental jurisdiction” is defined generally as “governments of cities, counties, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand.”¹³ U.S. Census Bureau data from the 2012 Census of Governments¹⁴ indicate that there were 90,056 local governmental jurisdictions consisting of general

⁶ See 5 U.S.C. § 601(3) (incorporating by reference the definition of “small-business concern” in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies “unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register.”

⁷ See 15 U.S.C. § 632.

⁸ See 5 U.S.C. § 601(3)-(6).

⁹ See SBA, Office of Advocacy, *Frequently Asked Questions, Question 1 – What is a small business?*, https://www.sba.gov/sites/default/files/advocacy/SB-FAQ-2016_WEB.pdf (June 2016).

¹⁰ See *id.*

¹¹ 5 U.S.C. § 601(4).

¹² Data from the Urban Institute, National Center for Charitable Statistics (NCCS) reporting on nonprofit organizations registered with the IRS were used to estimate the number of small organizations. Reports generated using the NCCS online database indicated that as of August 2016 there were 356,494 registered nonprofits with total revenues of less than \$100,000. Of this number, 326,897 entities filed tax returns with 65,113 registered nonprofits reporting total revenues of \$50,000 or less on the IRS Form 990-N for Small Exempt Organizations and 261,784 nonprofits reporting total revenues of \$100,000 or less on some other version of the IRS Form 990 within 24 months of the August 2016 data release date. See <http://nccs.urban.org/sites/all/nccs-archive/html/tablewiz/tw.php> where the report showing this data can be generated by selecting the following data fields: Report: “The Number and Finances of All Registered 501(c) Nonprofits”; Show: “Registered Nonprofits”; By: “Total Revenue Level (years 1995, Aug to 2016, Aug)”; and For: “2016, Aug” then selecting “Show Results”.

¹³ 5 U.S.C. § 601(5).

¹⁴ See 13 U.S.C. § 161. The Census of Government is conducted every five (5) years compiling data for years ending with “2” and “7”. See also Program Description Census of Government, <https://factfinder.census.gov/faces/affhelp/jsf/pages/metadata.xhtml?lang=en&type=program&id=program.en.CO.G#>.

purpose governments and special purpose governments in the United States.¹⁵ Based on this data, we estimate that at least 49,316 local government jurisdictions fall in the category of “small governmental jurisdictions.”¹⁶

2. Broadband Internet Access Service Providers

8. To ensure that this IRFA describes the universe of small entities that our action might affect, we discuss in turn several different types of entities that might be providing broadband Internet access service.

9. *Internet Service Providers (Broadband)*. Broadband Internet service providers include wired (e.g., cable, DSL) and VoIP service providers using their own operated wired telecommunications infrastructure fall in the category of Wired Telecommunication Carriers.¹⁷ Wired Telecommunications Carriers are comprised of establishments primarily engaged in operating and/or providing access to transmission facilities and infrastructure that they own and/or lease for the transmission of voice, data, text, sound, and video using wired telecommunications networks. Transmission facilities may be based on a single technology or a combination of technologies.¹⁸ The SBA size standard for this category classifies a business as small if it has 1,500 or fewer employees.¹⁹ U.S. Census Bureau data for 2012 show that there were 3,117 firms that operated that year.²⁰ Of this total, 3,083 operated with fewer than 1,000 employees.²¹ Consequently, under this size standard the majority of firms in this industry can be considered small.

10. *Internet Service Providers (Non-Broadband)*. Internet access service providers such as Dial-up Internet service providers, VoIP service providers using client-supplied telecommunications connections, and Internet service providers using client-supplied telecommunications connections (e.g., dial-up ISPs) fall in the category of All Other Telecommunications.²² The SBA has developed a small business size standard for All Other Telecommunications, which consists of all such firms with gross annual receipts of \$32.5 million or less.²³ For this category, U.S. Census Bureau data for 2012 show that there were 1,442 firms that operated for the entire year.²⁴ Of these firms, a total of 1,400 had gross

¹⁵ See U.S. Census Bureau, 2012 Census of Governments, Local Governments by Type and State: 2012 - United States-States, <https://factfinder.census.gov/bkmk/table/1.0/en/COG/2012/ORG02.US01>. Local governmental jurisdictions are classified in two categories - General purpose governments (county, municipal and town or township) and Special purpose governments (special districts and independent school districts).

¹⁶ *Id.*

¹⁷ See 13 CFR § 121.201. The Wired Telecommunications Carrier category formerly used the NAICS Code of 517110. As of 2017, the U.S. Census Bureau definition shows the NAICS Code as 517311 for Wired Telecommunications Carriers. See U.S. Census Bureau, 2017 NAICS Definition, <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517311&search=2017>.

¹⁸ *Id.*

¹⁹ *Id.*

²⁰ U.S. Census Bureau, 2012 Economic Census of the United States, Table No. EC1251SSSZ5, *Information: Subject Series - Estab & Firm Size: Employment Size of Firms: 2012* (517110 Wired Telecommunications Carriers). https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ5//naics~517110.

²¹ *Id.*

²² See U.S. Census Bureau, 2017 NAICS Definitions, NAICS Code 517919 All Other Telecommunications, <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?input=517919&search=2017+NAICS+Search&search=2017>.

²³ 13 CFR § 121.201; NAICS Code 517919.

²⁴ U.S. Census Bureau, 2012 Economic Census of the United States, Table EC1251SSSZ4, *Information: Subject Series - Estab and Firm Size: Receipts Size of Firms for the United States: 2012*, NAICS Code 517919, https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ4//naics~517919.

annual receipts of less than \$25 million.²⁵ Consequently, under this size standard, a majority of firms in this industry can be considered small.

3. Wireline Providers

11. *Wired Telecommunications Carriers.* The U.S. Census Bureau defines this industry as “establishments primarily engaged in operating and/or providing access to transmission facilities and infrastructure that they own and/or lease for the transmission of voice, data, text, sound, and video using wired communications networks. Transmission facilities may be based on a single technology or a combination of technologies. Establishments in this industry use the wired telecommunications network facilities that they operate to provide a variety of services, such as wired telephony services, including VoIP services, wired (cable) audio and video programming distribution, and wired broadband Internet services. By exception, establishments providing satellite television distribution services using facilities and infrastructure that they operate are included in this industry.”²⁶ The SBA has developed a small business size standard for Wired Telecommunications Carriers, which consists of all such companies having 1,500 or fewer employees.²⁷ U.S. Census Bureau data for 2012 show that there were 3,117 firms that operated that year.²⁸ Of this total, 3,083 operated with fewer than 1,000 employees.²⁹ Thus, under this size standard, the majority of firms in this industry can be considered small.

12. *Local Exchange Carriers (LECs).* Neither the Commission nor the SBA has developed a size standard for small businesses specifically applicable to local exchange services. The closest applicable NAICS Code category is Wired Telecommunications Carriers.³⁰ Under the applicable SBA size standard, such a business is small if it has 1,500 or fewer employees.³¹ According to Commission data, U.S. Census data for 2012 show that there were 3,117 firms that operated that year.³² Of this total, 3,083 operated with fewer than 1,000 employees.³³ Thus, under this category and the associated size standard, the Commission estimates that the majority of local exchange carriers are small entities.

13. *Incumbent Local Exchange Carriers (Incumbent LECs).* Neither the Commission nor the SBA has developed a small business size standard specifically for incumbent local exchange services.

²⁵ *Id.*

²⁶ *See*, 13 CFR § 121.201. The Wired Telecommunications Carrier category formerly used the NAICS Code of 517110. As of 2017 the U.S. Census Bureau definition shows the NAICS Code as 517311 for Wired Telecommunications Carriers. *See*, U.S. Census Bureau, 2017 NAICS Definition, <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517311&search=2017>.

²⁷ *See* 13 CFR § 120.201, NAICS Code 517110.

²⁸ *See* U.S. Census Bureau, 2012 Economic Census of the United States, Table No. EC1251SSSZ5, *Information: Subject Series - Estab & Firm Size: Employment Size of Firms: 2012* (517110 Wired Telecommunications Carriers). https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ5//naics~517110.

²⁹ *Id.*

³⁰ *See* 13 CFR § 121.201. The Wired Telecommunications Carrier category formerly used the NAICS Code of 517110. As of 2017 the U.S. Census Bureau definition shows the NAICS Code as 517311 for Wired Telecommunications Carriers. *See* U.S. Census Bureau, 2017 NAICS Definition, <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517311&search=2017>.

³¹ *Id.*

³² *See* U.S. Census Bureau, 2012 Economic Census of the United States, Table No. EC1251SSSZ5, *Information: Subject Series - Estab & Firm Size: Employment Size of Firms: 2012* (517110 Wired Telecommunications Carriers). https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ5//naics~517110.

³³ *Id.*

The closest applicable NAICS Code category is Wired Telecommunications Carriers.³⁴ Under the applicable SBA size standard, such a business is small if it has 1,500 or fewer employees.³⁵ According to U.S. Census Bureau data for 2012, 3,117 firms operated in that year.³⁶ Of this total, 3,083 operated with fewer than 1,000 employees.³⁷ Consequently, the Commission estimates that most providers of incumbent local exchange service are small businesses that may be affected by our actions. According to Commission data, 1,307 Incumbent LECs reported that they were incumbent local exchange service providers.³⁸ Of this total, an estimated 1,006 have 1,500 or fewer employees.³⁹ Thus, using the SBA's size standard, the majority of Incumbent LECs can be considered small entities.

14. Competitive Local Exchange Carriers (Competitive LECs), Competitive Access Providers (CAPs), Shared-Tenant Service Providers, and Other Local Service Providers. Neither the Commission nor the SBA has developed a small business size standard specifically for these service providers. The appropriate NAICS Code category is Wired Telecommunications Carriers and under that size standard, such a business is small if it has 1,500 or fewer employees.⁴⁰ U.S. Census Bureau data for 2012 indicate that 3,117 firms operated during that year.⁴¹ Of that number, 3,083 operated with fewer than 1,000 employees.⁴² Based on these data, the Commission concludes that the majority of Competitive LECs, CAPs, Shared-Tenant Service Providers, and Other Local Service Providers, are small entities. According to Commission data, 1,442 carriers reported that they were engaged in the provision of either competitive local exchange services or competitive access provider services.⁴³ Of these 1,442 carriers, an estimated 1,256 have 1,500 or fewer employees.⁴⁴ In addition, 17 carriers have reported that they are Shared-Tenant Service Providers, and all 17 are estimated to have 1,500 or fewer employees.⁴⁵ Also, 72 carriers have reported that they are Other Local Service Providers.⁴⁶ Of this total, 70 have 1,500 or fewer

³⁴ See, 13 CFR § 121.201. The Wired Telecommunications Carrier category formerly used the NAICS Code of 517110. As of 2017 the U.S. Census Bureau definition shows the NAICS Code as 517311 for Wired Telecommunications Carriers. See, <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517311&search=2017>.

³⁵ *Id.*

³⁶ U.S. Census Bureau, *2012 Economic Census of the United States*, Table No. EC1251SSSZ5, *Information: Subject Series - Estab & Firm Size: Employment Size of Firms: 2012* (517110 Wired Telecommunications Carriers). https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ5//naics~517110.

³⁷ *Id.*

³⁸ See Federal Communications Commission, Wireline Competition Bureau, Industry Analysis and Technology Division, Trends in Telephone Service at Table 5.3 (Sept. 2010) (*Trends in Telephone Service*).

³⁹ *Id.*

⁴⁰ See 13 CFR § 121.201. The Wired Telecommunications Carrier category formerly used the NAICS Code of 517110. As of 2017 the U.S. Census Bureau definition shows the NAICS Code as 517311 for Wired Telecommunications Carriers. See, U.S. Census Bureau, *2017 NAICS Definition*, <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517311&search=2017>.

⁴¹ U.S. Census Bureau, *2012 Economic Census of the United States*, Table No. EC1251SSSZ5, *Information: Subject Series - Estab & Firm Size: Employment Size of Firms: 2012* (517110 Wired Telecommunications Carriers). https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ5//naics~517110

⁴² *Id.*

⁴³ See *Trends in Telephone Service*, at tbl. 5.3.

⁴⁴ *Id.*

⁴⁵ *Id.*

⁴⁶ *Id.*

employees.⁴⁷ Consequently, based on internally researched FCC data, the Commission estimates that most providers of competitive local exchange service, competitive access providers, Shared-Tenant Service Providers, and Other Local Service Providers are small entities.⁴⁸

15. *Interexchange Carriers (IXCs)*. Neither the Commission nor the SBA has developed a definition for Interexchange Carriers. The closest NAICS Code category is Wired Telecommunications Carriers.⁴⁹ The applicable size standard under SBA rules consists of all such companies having 1,500 or fewer employees.⁵⁰ U.S. Census Bureau data for 2012 indicate that 3,117 firms operated during that year.⁵¹ Of that number, 3,083 operated with fewer than 1,000 employees.⁵² According to internally developed Commission data, 359 companies reported that their primary telecommunications service activity was the provision of interexchange services.⁵³ Of this total, an estimated 317 have 1,500 or fewer employees.⁵⁴ Consequently, the Commission estimates that the majority of interexchange service providers are small entities.

16. *Operator Service Providers (OSPs)*. Neither the Commission nor the SBA has developed a small business size standard specifically for operator service providers. The closest applicable size standard under SBA rules is the category of Wired Telecommunications Carriers.⁵⁵ Under the size standard for Wired Telecommunications Carriers, such a business is small if it has 1,500 or fewer employees.⁵⁶ U.S. Census Bureau data for 2012 show that there were 3,117 firms that operated that year.⁵⁷ Of this total, 3,083 operated with fewer than 1,000 employees.⁵⁸ Thus, under this size standard, the majority of firms in this industry can be considered small.

⁴⁷ *Id.*

⁴⁸ We have included small incumbent LECs in this present RFA analysis. As noted above, a “small business” under the RFA is one that, *inter alia*, meets the pertinent small business size standard (e.g., a telephone communications business having 1,500 or fewer employees) and “is not dominant in its field of operation.”⁴⁸ The SBA’s Office of Advocacy contends that, for RFA purposes, small incumbent LECs are not dominant in their field of operation because any such dominance is not “national” in scope. We have therefore included small incumbent LECs in this RFA analysis, although we emphasize that this RFA action has no effect on Commission analyses and determinations in other, non-RFA contexts.

⁴⁹ See, 13 CFR § 121.201. The Wired Telecommunications Carrier category formerly used the NAICS Code of 517110. As of 2017 the U.S. Census Bureau definition shows the NAICS code as 517311 for Wired Telecommunications Carriers. See, U.S. Census Bureau, 2017 NAICS Definition, <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517311&search=2017>.

⁵⁰ *Id.*

⁵¹ See U.S. Census Bureau, 2012 Economic Census of the United States, Table No. EC1251SSSZ5, *Information: Subject Series - Estab & Firm Size: Employment Size of Firms: 2012* (517110 Wired Telecommunications Carriers). https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ5//naics~517110.

⁵² *Id.*

⁵³ See *Trends in Telephone Service*, at tbl. 5.3.

⁵⁴ *Id.*

⁵⁵ See, 13 CFR § 121.201. The Wired Telecommunications Carrier category formerly used the NAICS Code of 517110. As of 2017 the U.S. Census Bureau definition shows the NAICS Code as 517311 for Wired Telecommunications Carriers. See, U.S. Census Bureau, 2017 NAICS Definition, <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517311&search=2017>.

⁵⁶ *Id.*

⁵⁷ See U.S. Census Bureau, 2012 Economic Census of the United States, Table No. EC1251SSSZ5, *Information: Subject Series - Estab & Firm Size: Employment Size of Firms: 2012* (517110 Wired Telecommunications Carriers). https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ5//naics~517110.

17. According to Commission data, 33 carriers have reported that they are engaged in the provision of operator services.⁵⁹ Of these, an estimated 31 have 1,500 or fewer employees and two have more than 1,500 employees.⁶⁰ Consequently, the Commission estimates that the majority of OSPs are small entities.

18. *Other Toll Carriers.* Neither the Commission nor the SBA has developed a definition for small businesses specifically applicable to Other Toll Carriers. This category includes toll carriers that do not fall within the categories of interexchange carriers, operator service providers, prepaid calling card providers, satellite service carriers, or toll resellers. The closest applicable size standard under SBA rules is for Wired Telecommunications Carriers and the applicable small business size standard under SBA rules consists of all such companies having 1,500 or fewer employees.⁶¹ U.S. Census data for 2012 indicate that 3,117 firms operated during that year.⁶² Of that number, 3,083 operated with fewer than 1,000 employees.⁶³ According to Commission data, 284 companies reported that their primary telecommunications service activity was the provision of other toll carriage.⁶⁴ Of these, an estimated 279 have 1,500 or fewer employees.⁶⁵ Consequently, the Commission estimates that most Other Toll Carriers are small entities.

4. Wireless Providers – Fixed and Mobile

19. The broadband Internet access service provider category covered by this Order may cover multiple wireless firms and categories of wireless services.⁶⁶ Thus, to the extent the wireless services listed below are used by wireless firms for broadband Internet access service, the proposed actions may have an impact on those small businesses as set forth above and further below. In addition, for those services subject to auctions, we note that, as a general matter, the number of winning bidders that claim to qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Also, the Commission does not generally track subsequent business size unless, in the context of assignments and transfers or reportable eligibility events, unjust enrichment issues are implicated.

20. *Wireless Telecommunications Carriers (except Satellite).* This industry comprises establishments engaged in operating and maintaining switching and transmission facilities to provide communications via the airwaves. Establishments in this industry have spectrum licenses and provide

(Continued from previous page) _____

⁵⁸ *Id.*

⁵⁹ See *Trends in Telephone Service* at Table 5.3.

⁶⁰ *Id.*

⁶¹ See, 13 CFR § 121.201. The Wired Telecommunications Carrier category formerly used the NAICS Code of 517110. As of 2017, the U.S. Census Bureau definition shows the NAICS Code as 517311 for Wired Telecommunications Carriers. See, U.S. Census Bureau, 2017 NAICS Definition, <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517311&search=2017>.

⁶² See U.S. Census Bureau, 2012 Economic Census of the United States, Table No. EC1251SSSZ5, *Information: Subject Series - Estab & Firm Size: Employment Size of Firms: 2012* (517110 Wired Telecommunications Carriers). https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ5//naics~517110.

⁶³ *Id.*

⁶⁴ *Trends in Telephone Service*, at tbl. 5.3.

⁶⁵ *Id.*

⁶⁶ This includes, among others, the approximately 800 members of WISPA, including those entities who provide fixed wireless broadband service using unlicensed spectrum. See WISPA, *About WISPA*, <https://www.wispa.org/About-Us/Mission-and-Goals> (last visited June 27, 2019). We also consider the impact to these entities today for the purposes of this IRFA, by including them under the “Wireless Providers – Fixed and Mobile” category.

services using that spectrum, such as cellular services, paging services, wireless Internet access, and wireless video services.⁶⁷ The appropriate size standard under SBA rules is that such a business is small if it has 1,500 or fewer employees.⁶⁸ For this industry, U.S. Census data for 2012 show that there were 967 firms that operated for the entire year.⁶⁹ Of this total, 955 firms had employment of 999 or fewer employees and 12 had employment of 1000 employees or more.⁷⁰ Thus, under this category and the associated size standard, the Commission estimates that the majority of wireless telecommunications carriers (except satellite) are small entities.

21. The Commission's own data—available in its Universal Licensing System—indicate that, as of August 31, 2018, there are 265 Cellular licensees that will be affected by our actions.⁷¹ The Commission does not know how many of these licensees are small, as the Commission does not collect that information for these types of entities. Similarly, according to internally-developed Commission data, 413 carriers reported that they were engaged in the provision of wireless telephony, including cellular service, Personal Communications Service (PCS), and Specialized Mobile Radio (SMR) Telephony services.⁷² Of this total, an estimated 261 have 1,500 or fewer employees, and 152 have more than 1,500 employees.⁷³ Thus, using available data, we estimate that the majority of wireless firms can be considered small.

22. *Wireless Communications Services.* This service can be used for fixed, mobile, radiolocation, and digital audio broadcasting satellite uses. The Commission defined “small business” for the wireless communications services (WCS) auction as an entity with average gross revenues of \$40 million for each of the three preceding years, and a “very small business” as an entity with average gross revenues of \$15 million for each of the three preceding years.⁷⁴ The SBA approved these small business size standards.⁷⁵ In the Commission's auction for geographic area licenses in the WCS there were seven winning bidders that qualified as “very small business” entities, and one that qualified as a “small business” entity.

⁶⁷ U.S. Census Bureau, *2012 NAICS Definitions, 517210 Wireless Telecommunications Carriers (Except Satellite)*, <https://factfinder.census.gov/faces/affhelp/jsf/pages/metadata.xhtml?lang=en&type=ib&id=ib.en./ECN.NAICS2012.517210>.

⁶⁸ 13 CFR § 121.201, NAICS Code 517210.

⁶⁹ U.S. Census Bureau, *2012 Economic Census of the United States, Table EC1251SSSZ5, Information: Subject Series: Estab and Firm Size: Employment Size of Firms for the U.S.: 2012*, NAICS Code 517210, https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ5//naics~517210.

⁷⁰ *Id.* Available census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is for firms with “1000 employees or more.”

⁷¹ See FCC, Universal Licensing System, <https://www.fcc.gov/wireless/systems-utilities/universal-licensing-system>. For the purposes of this IRFA, consistent with Commission practice for wireless services, the Commission estimates the number of licensees based on the number of unique FCC Registration Numbers.

⁷² *Trends in Telephone Service*, tbl. 5.3.

⁷³ See *id.*

⁷⁴ *Amendment of the Commission's Rules to Establish Part 27, the Wireless Communications Service (WCS)*, GN Docket No. 96-228, Report and Order, 12 FCC Rcd 10785, 10879, para. 194 (1997).

⁷⁵ See Public Notice, FCC, Comment Sought on Small Business Size Standards (Jan. 13, 1999), at Attach. A, Letter from Aida Alvarez, Administrator, SBA, to Amy Zoslov, Chief, Auctions and Industry Analysis Division, Wireless Telecommunications Bureau, FCC (Dec. 2, 1998) (*Alvarez Letter 1998*), <https://ecfsapi.fcc.gov/file/6006142119.pdf>.

23. *1670–1675 MHz Services.* This service can be used for fixed and mobile uses, except aeronautical mobile.⁷⁶ An auction for one license in the 1670–1675 MHz band was conducted in 2003. One license was awarded. The winning bidder was not a small entity.

24. *Wireless Telephony.* Wireless telephony includes cellular, personal communications services, and specialized mobile radio telephony carriers. The closest applicable SBA category is Wireless Telecommunications Carriers (except Satellite).⁷⁷ Under the SBA small business size standard, a business is small if it has 1,500 or fewer employees.⁷⁸ For this industry, U.S. Census Bureau data for 2012 show that there were 967 firms that operated for the entire year.⁷⁹ Of this total, 955 firms had fewer than 1,000 employees and 12 firms had 1000 employees or more.⁸⁰ Thus, under this category and the associated size standard, the Commission estimates that a majority of these entities can be considered small. According to Commission data, 413 carriers reported that they were engaged in wireless telephony.⁸¹ Of these, an estimated 261 have 1,500 or fewer employees and 152 have more than 1,500 employees.⁸² Therefore, more than half of these entities can be considered small.

25. *Broadband Personal Communications Service.* The broadband personal communications services (PCS) spectrum is divided into six frequency blocks designated A through F, and the Commission has held auctions for each block. The Commission initially defined a “small business” for C- and F-Block licenses as an entity that has average gross revenues of \$40 million or less in the three previous calendar years.⁸³ For F-Block licenses, an additional small business size standard for “very small business” was added and is defined as an entity that, together with its affiliates, has average gross revenues of not more than \$15 million for the preceding three calendar years.⁸⁴ These small business size standards, in the context of broadband PCS auctions, have been approved by the SBA.⁸⁵ No small businesses within the SBA-approved small business size standards bid successfully for licenses in Blocks A and B. There were 90 winning bidders that claimed small business status in the first two C-Block auctions. A total of 93 bidders that claimed small business status won approximately 40% of the 1,479 licenses in the first auction for the D, E, and F Blocks.⁸⁶ On April 15, 1999, the Commission completed

⁷⁶ 47 CFR § 2.106; *see generally* 47 CFR §§ 27.1-27.70.

⁷⁷ U.S. Census Bureau, *2012 NAICS Definitions*, “517210 Wireless Telecommunications Carriers (Except Satellite),”)”, <https://factfinder.census.gov/faces/affhelp/jsf/pages/metadata.xhtml?lang=en&type=ib&id=ib.en./ECN.NAICS2012.517210>.

⁷⁸ 13 CFR § 121.201, NAICS Code 517210.

⁷⁹ U.S. Census Bureau, *2012 Economic Census of the United States*, Table EC1251SSSZ5, *Information: Subject Series: Estab and Firm Size: Employment Size of Firms for the U.S.: 2012*, NAICS Code 517210 (rel. Jan. 8, 2016). https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ5//naics~517210.

⁸⁰ *Id.* Available census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is for firms with “1000 employees or more.”

⁸¹ *Trends in Telephone Service*, tbl. 5.3.

⁸² *Id.*

⁸³ *See Amendment of Parts 20 and 24 of the Commission’s Rules – Broadband PCS Competitive Bidding and the Commercial Mobile Radio Service Spectrum Cap; Amendment of the Commission’s Cellular/PCS Cross-Ownership Rule*; WT Docket No. 96-59, GN Docket No. 90-314, Report and Order, 11 FCC Rcd 7824, 7850-52, paras. 57-60 (1996) (PCS Report and Order); *see also* 47 CFR § 24.720(b).

⁸⁴ *See PCS Report and Order*, 11 FCC Rcd at 7852, para. 60.

⁸⁵ *See Alvarez Letter 1998*.

⁸⁶ *See Broadband PCS, D, E and F Block Auction Closes*, Public Notice, Doc. No. 89838 (rel. Jan. 14, 1997).

the reauction of 347 C-, D-, E-, and F-Block licenses in Auction No. 22.⁸⁷ Of the 57 winning bidders in that auction, 48 claimed small business status and won 277 licenses.

26. On January 26, 2001, the Commission completed the auction of 422 C and F Block Broadband PCS licenses in Auction No. 35. Of the 35 winning bidders in that auction, 29 claimed small business status.⁸⁸ Subsequent events concerning Auction 35, including judicial and agency determinations, resulted in a total of 163 C and F Block licenses being available for grant. On February 15, 2005, the Commission completed an auction of 242 C-, D-, E-, and F-Block licenses in Auction No. 58. Of the 24 winning bidders in that auction, 16 claimed small business status and won 156 licenses.⁸⁹ On May 21, 2007, the Commission completed an auction of 33 licenses in the A, C, and F Blocks in Auction No. 71.⁹⁰ Of the 12 winning bidders in that auction, five claimed small business status and won 18 licenses.⁹¹ On August 20, 2008, the Commission completed the auction of 20 C-, D-, E-, and F-Block Broadband PCS licenses in Auction No. 78.⁹² Of the eight winning bidders for Broadband PCS licenses in that auction, six claimed small business status and won 14 licenses.⁹³

27. *Specialized Mobile Radio Licenses.* The Commission awards “small entity” bidding credits in auctions for Specialized Mobile Radio (SMR) geographic area licenses in the 800 MHz and 900 MHz bands to firms that had revenues of no more than \$15 million in each of the three previous calendar years.⁹⁴ The Commission awards “very small entity” bidding credits to firms that had revenues of no more than \$3 million in each of the three previous calendar years.⁹⁵ The SBA approved these small business size standards for the 900 MHz Service.⁹⁶ The Commission held auctions for geographic area licenses in the 800 MHz and 900 MHz bands. The 900 MHz SMR auction began on December 5, 1995, and closed on April 15, 1996. Sixty bidders claiming that they qualified as small businesses under the \$15 million size standard won 263 geographic area licenses in the 900 MHz SMR band. The 800 MHz SMR auction for the upper 200 channels began on October 28, 1997, and was completed on December 8, 1997. Ten bidders claiming that they qualified as small businesses under the \$15 million size standard won 38 geographic area licenses for the upper 200 channels in the 800 MHz SMR band.⁹⁷ A second

⁸⁷ See *C, D, E, and F Block Broadband PCS Auction Closes*, Public Notice, 14 FCC Rcd 6688 (WTB 1999). Before Auction No. 22, the Commission established a very small standard for the C Block to match the standard used for F Block. *Amendment of the Commission’s Rules Regarding Installment Payment Financing for Personal Communications Services (PCS) Licensees*, WT Docket No. 97-82, Fourth Report and Order, 13 FCC Rcd 15743, 15768, para. 46 (1998).

⁸⁸ See *C and F Block Broadband PCS Auction Closes; Winning Bidders Announced*, Public Notice, 16 FCC Rcd 2339 (2001).

⁸⁹ See *Broadband PCS Spectrum Auction Closes; Winning Bidders Announced for Auction No. 58*, Public Notice, 20 FCC Rcd 3703 (2005).

⁹⁰ See *Auction of Broadband PCS Spectrum Licenses Closes; Winning Bidders Announced for Auction No. 71*, Public Notice, 22 FCC Rcd 9247 (2007).

⁹¹ *Id.*

⁹² See *Auction of AWS-1 and Broadband PCS Licenses Closes; Winning Bidders Announced for Auction 78*, Public Notice, 23 FCC Rcd 12749 (WTB 2008).

⁹³ *Id.*

⁹⁴ 47 CFR § 90.814(b)(1).

⁹⁵ *Id.*

⁹⁶ See Letter from Aida Alvarez, Administrator, SBA, to Thomas Sugrue, Chief, Wireless Telecommunications Bureau, Federal Communications Commission (filed Aug. 10, 1999) (*Alvarez Letter 1999*).

⁹⁷ See Correction to Public Notice DA 96-586, *FCC Announces Winning Bidders in the Auction of 1020 Licenses to Provide 900 MHz SMR in Major Trading Areas*, Public Notice, 18 FCC Rcd 18367 (WTB 1996).

auction for the 800 MHz band was held on January 10, 2002, and closed on January 17, 2002, and included 23 BEA licenses. One bidder claiming small business status won five licenses.⁹⁸

28. The auction of the 1,053 800 MHz SMR geographic area licenses for the General Category channels was conducted in 2000. Eleven bidders won 108 geographic area licenses for the General Category channels in the 800 MHz SMR band and qualified as small businesses under the \$15 million size standard.⁹⁹ In an auction completed in 2000, a total of 2,800 Economic Area licenses in the lower 80 channels of the 800 MHz SMR service were awarded.¹⁰⁰ Of the 22 winning bidders, 19 claimed small business status and won 129 licenses. Thus, combining all four auctions, 41 winning bidders for geographic licenses in the 800 MHz SMR band claimed status as small businesses.

29. In addition, there are numerous incumbent site-by-site SMR licenses and licensees with extended implementation authorizations in the 800 and 900 MHz bands. We do not know how many firms provide 800 MHz or 900 MHz geographic area SMR service pursuant to extended implementation authorizations, nor how many of these providers have annual revenues of no more than \$15 million. One firm has over \$15 million in revenues. In addition, we do not know how many of these firms have 1,500 or fewer employees, which is the SBA-determined size standard.¹⁰¹ We assume, for purposes of this analysis, that all of the remaining extended implementation authorizations are held by small entities, as defined by the SBA.

30. *Lower 700 MHz Band Licenses.* The Commission previously adopted criteria for defining three groups of small businesses for purposes of determining their eligibility for special provisions such as bidding credits.¹⁰² The Commission defined a “small business” as an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding \$40 million for the preceding three years.¹⁰³ A “very small business” is defined as an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than \$15 million for the preceding three years.¹⁰⁴ Additionally, the lower 700 MHz Service had a third category of small business status for Metropolitan/Rural Service Area (MSA/RSA) licenses—“entrepreneur”—which is defined as an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than \$3 million for the preceding three years.¹⁰⁵ The SBA approved these small size standards.¹⁰⁶ An auction of 740 licenses (one license in each of the 734 MSAs/RSAs and one license in each of the six Economic Area Groupings (EAGs)) commenced on August 27, 2002, and closed on September 18, 2002. Of the 740 licenses available for auction, 484 licenses were won by 102 winning bidders. Seventy-two of the winning bidders claimed small business, very small business, or entrepreneur status and won a total of 329 licenses.¹⁰⁷ A second auction commenced on May 28, 2003, closed on June

⁹⁸ See *Multi-Radio Service Auction Closes, Public Notice*, 17 FCC Rcd 1446 (WTB 2002).

⁹⁹ See *800 MHz Specialized Mobile Radio (SMR) Service General Category (851–854 MHz) and Upper Band (861–865 MHz) Auction Closes; Winning Bidders Announced, Public Notice*, 15 FCC Rcd 17162 (2000).

¹⁰⁰ See *800 MHz SMR Service Lower 80 Channels Auction Closes; Winning Bidders Announced, Public Notice*, 16 FCC Rcd 1736 (2000).

¹⁰¹ See generally 13 CFR § 121.201, NAICS code 517210.

¹⁰² See *Reallocation and Service Rules for the 698–746 MHz Spectrum Band (Television Channels 52–59)*, GN Docket No. 01-74, Report and Order, 17 FCC Rcd 1022 (2002) (*Channels 52–59 Report and Order*).

¹⁰³ See *id.* at 1087-88, para. 172.

¹⁰⁴ See *id.*

¹⁰⁵ See *id.*, at 1088, para. 173.

¹⁰⁶ See *Alvarez Letter 1999*.

¹⁰⁷ See *Lower 700 MHz Band Auction Closes, Public Notice*, 17 FCC Rcd 17272 (WTB 2002).

13, 2003, and included 256 licenses: 5 EAG licenses and 476 Cellular Market Area licenses.¹⁰⁸ Seventeen winning bidders claimed small or very small business status and won 60 licenses, and nine winning bidders claimed entrepreneur status and won 154 licenses.¹⁰⁹ On July 26, 2005, the Commission completed an auction of five licenses in the Lower 700 MHz band (Auction No. 60). There were three winning bidders for the five licenses. All three winning bidders claimed small business status.

31. In 2007, the Commission reexamined its rules governing the 700 MHz band in the *700 MHz Second Report and Order*.¹¹⁰ An auction of 700 MHz licenses commenced January 24, 2008, and closed on March 18, 2008, which included 176 Economic Area licenses in the A Block, 734 Cellular Market Area licenses in the B Block, and 176 EA licenses in the E Block.¹¹¹ Twenty winning bidders, claiming small business status (those with attributable average annual gross revenues that exceed \$15 million and do not exceed \$40 million for the preceding three years) won 49 licenses. Thirty-three winning bidders claiming very small business status (those with attributable average annual gross revenues that do not exceed \$15 million for the preceding three years) won 325 licenses.

32. *Upper 700 MHz Band Licenses*. In the *700 MHz Second Report and Order*, the Commission revised its rules regarding Upper 700 MHz licenses.¹¹² On January 24, 2008, the Commission commenced Auction 73 in which several licenses in the Upper 700 MHz band were available for licensing: 12 Regional Economic Area Grouping licenses in the C Block, and one nationwide license in the D Block.¹¹³ The auction concluded on March 18, 2008, with 3 winning bidders claiming very small business status (those with attributable average annual gross revenues that do not exceed \$15 million for the preceding three years) and winning five licenses.

33. *700 MHz Guard Band Licensees*. In 2000, in the 700 MHz Guard Band Order, the Commission adopted size standards for “small businesses” and “very small businesses” for purposes of determining their eligibility for special provisions such as bidding credits and installment payments.¹¹⁴ A small business in this service is an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding \$40 million for the preceding three years.¹¹⁵ Additionally, a very small business is an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than \$15 million for the preceding three years.¹¹⁶ SBA approval of these definitions is not required.¹¹⁷ An auction of 52 Major Economic Area licenses commenced on September 6, 2000, and closed on September 21, 2000.¹¹⁸ Of the 104 licenses auctioned, 96 licenses were sold to

¹⁰⁸ See *id.*

¹⁰⁹ See *id.*

¹¹⁰ *Service Rules for the 698–746, 747–762 and 777–792 MHz Band et al.*, WT Docket No. 07-166 et al., Second Report and Order, 22 FCC Rcd 15289, 15359 n. 434 (2007) (*700 MHz Second Report and Order*).

¹¹¹ See *Auction of 700 MHz Band Licenses Closes*, Public Notice, 23 FCC Rcd 4572 (WTB 2008).

¹¹² *700 MHz Second Report and Order*, 22 FCC Rcd 15289.

¹¹³ See *Auction of 700 MHz Band Licenses Closes*, Public Notice, 23 FCC Rcd 4572 (WTB 2008).

¹¹⁴ See *Service Rules for the 746–764 MHz Bands, and Revisions to Part 27 of the Commission’s Rules*, WT Docket No. 99-168, Second Report and Order, 15 FCC Rcd 5299 (2000) (*746–764 MHz Band Second Report and Order*).

¹¹⁵ See *id.* at 5343, para. 108.

¹¹⁶ See *id.*

¹¹⁷ See *id.* at 5343, para. 108 n.246 (for the 746–764 MHz and 776–794 MHz bands, the Commission is exempt from 15 U.S.C. § 632, which requires federal agencies to obtain SBA approval before adopting small business size standards).

¹¹⁸ See *700 MHz Guard Bands Auction Closes: Winning Bidders Announced*, Public Notice, 15 FCC Rcd 18026 (WTB 2000).

nine bidders. Five of these bidders were small businesses that won a total of 26 licenses. A second auction of 700 MHz Guard Band licenses commenced on February 13, 2001, and closed on February 21, 2001. All eight of the licenses auctioned were sold to three bidders. One of these bidders was a small business that won a total of two licenses.¹¹⁹

34. *Air-Ground Radiotelephone Service.* The Commission previously used the SBA's small business size standard applicable to Wireless Telecommunications Carriers (except Satellite) for this service.¹²⁰ The appropriate size standard under SBA rules is that such a business is small if it has 1,500 or fewer employees.¹²¹ For this industry, U.S. Census Bureau data for 2012 show that there were 967 firms that operated for the entire year. Of this total, 955 firms had fewer than 1,000 employees and 12 had employment of 1,000 employees or more.¹²² There are approximately 100 licensees in the Air-Ground Radiotelephone Service, and we estimate that almost all of them qualify as small entities under the SBA definition.

35. For purposes of assigning Air-Ground Radiotelephone Service licenses through competitive bidding, the Commission has defined "small business" as an entity that, together with controlling interests and affiliates, has average annual gross revenues for the preceding three years not exceeding \$40 million.¹²³ A "very small business" is defined as an entity that, together with controlling interests and affiliates, has average annual gross revenues for the preceding three years not exceeding \$15 million.¹²⁴ The SBA approved these definitions.¹²⁵ In May 2006, the Commission completed an auction of nationwide commercial Air-Ground Radiotelephone Service licenses in the 800 MHz band (Auction No. 65). On June 2, 2006, the auction closed with two winning bidders winning two Air-Ground Radiotelephone Services licenses. Neither of the winning bidders claimed small business status.

36. Advanced Wireless Services (AWS) (1710–1755 MHz and 2110–2155 MHz bands (AWS-1); 1915–1920 MHz, 1995–2000 MHz, 2020–2025 MHz and 2175–2180 MHz bands (AWS-2); 2155–2175 MHz band (AWS-3)). For the AWS-1 bands,¹²⁶ the Commission defined a "small business" as an entity with average annual gross revenues for the preceding three years not exceeding \$40 million, and a "very small business" as an entity with average annual gross revenues for the preceding three years not exceeding \$15 million. For AWS-2 and AWS-3, although we do not know for certain which entities are likely to apply for these frequencies, we note that the AWS-1 bands are comparable to those used for cellular service and personal communications service. The Commission has not yet adopted size

¹¹⁹ See *700 MHz Guard Bands Auction Closes: Winning Bidders Announced*, Public Notice, 16 FCC Rcd 4590 (WTB 2001).

¹²⁰ U.S. Census Bureau, *2012 NAICS Definitions*, "517210 Wireless Telecommunications Carriers (Except Satellite)", <https://factfinder.census.gov/faces/affhelp/jsf/pages/metadata.xhtml?lang=en&type=ib&id=ib.en/ECN.NAICS2012.517210>.

¹²¹ 13 CFR § 121.201, NAICS Code 517210.

¹²² *Id.* Available census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is for firms with "1000 employees or more."

¹²³ *Amendment of Part 22 of the Commission's Rules to Benefit the Consumers of Air-Ground Telecommunications Services, Biennial Regulatory Review—Amendment of Parts 1, 22, and 90 of the Commission's Rules, Amendment of Parts 1 and 22 of the Commission's Rules to Adopt Competitive Bidding Rules for Commercial and General Aviation Air-Ground Radiotelephone Service*, Order on Reconsideration and Report and Order, 20 FCC Rcd 19663, paras. 28-42 (2005).

¹²⁴ *Id.*

¹²⁵ See Letter from Hector V. Barreto, Administrator, SBA, to Gary D. Michaels, Deputy Chief, Auctions and Spectrum Access Division, Wireless Telecommunications Bureau, Federal Communications Commission (filed Sept. 19, 2005).

¹²⁶ The service is defined in section 90.1301 *et seq.* of the Commission's Rules, 47 CFR § 90.1301 *et seq.*

standards for the AWS-2 or AWS-3 bands but proposes to treat both AWS-2 and AWS-3 similarly to broadband PCS service and AWS-1 service due to the comparable capital requirements and other factors, such as issues involved in relocating incumbents and developing markets, technologies, and services.¹²⁷

37. *3650–3700 MHz band.* In March 2005, the Commission released a *Report and Order and Memorandum Opinion and Order* that provides for nationwide, non-exclusive licensing of terrestrial operations, using contention-based technologies, in the 3650 MHz band (i.e., 3650–3700 MHz).¹²⁸ As of April 2010, more than 1,270 licenses have been granted and more than 7,433 sites have been registered. The Commission has not developed a definition of small entities applicable to 3650–3700 MHz band nationwide, non-exclusive licensees. However, we estimate that the majority of these licensees are Internet Access Service Providers (ISPs) and that most of those licensees are small businesses.

38. *Fixed Microwave Services.* Microwave services include common carrier,¹²⁹ private-operational fixed,¹³⁰ and broadcast auxiliary radio services.¹³¹ They also include the Local Multipoint Distribution Service (LMDS),¹³² the Digital Electronic Message Service (DEMS),¹³³ and the 24 GHz Service,¹³⁴ where licensees can choose between common carrier and non-common carrier status.¹³⁵ At present, there are approximately 36,708 common carrier fixed licensees and 59,291 private operational-fixed licensees and broadcast auxiliary radio licensees in the microwave services. There are approximately 135 LMDS licensees, three DEMS licensees, and three 24 GHz licensees. The Commission has not yet defined a small business with respect to microwave services. The closest applicable SBA category is Wireless Telecommunications Carriers (except Satellite),¹³⁶ and the appropriate size standard for this category under SBA rules is that such a business is small if it has 1,500 or fewer employees.¹³⁷ For this industry, U.S. Census Bureau data for 2012 show that there were 967

¹²⁷ See *Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands*, WT Docket No. 02-353, Report and Order, 18 FCC Rcd 25162, Appx. B (2003), modified by *Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands*, WT Docket No. 02-353, Order on Reconsideration, 20 FCC Rcd 14058, Appx. C (2005); *Service Rules for Advanced Wireless Services in the 1915–1920 MHz, 1995–2000 MHz, 2020–2025 MHz and 2175–2180 MHz Bands*; *Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands*, WT Docket Nos. 04-356, 02-353, Notice of Proposed Rulemaking, 19 FCC Rcd 19263, Appx. B (2005); *Service Rules for Advanced Wireless Services in the 2155–2175 MHz Band*, WT Docket No. 07-195, Notice of Proposed Rulemaking, 22 FCC Rcd 17035, Appx. (2007).

¹²⁸ *Wireless Operations in the 3650-3700 MHz Band Rules for Wireless Broadband*, ET Docket No. 04-151, Report and Order and Memorandum Opinion and Order, 20 FCC Rcd 6502, 6530, ¶ 75 (2005) (*3650-3700 MHz Band R&O*).

¹²⁹ See 47 CFR Part 101, Subparts C and I.

¹³⁰ See 47 CFR Part 101, Subparts C and H.

¹³¹ Auxiliary Microwave Service is governed by Part 74 of Title 47 of the Commission's Rules. See 47 CFR Part 74. Available to licensees of broadcast stations and to broadcast and cable network entities, broadcast auxiliary microwave stations are used for relaying broadcast television signals from the studio to the transmitter or between two points such as a main studio and an auxiliary studio. The service also includes mobile TV pickups, which relay signals from a remote location back to the studio.

¹³² See 47 CFR Part 101, Subpart L.

¹³³ See 47 CFR Part 101, Subpart G.

¹³⁴ See *id.*

¹³⁵ See 47 CFR §§ 101.533, 101.1017.

¹³⁶ U.S. Census Bureau, *2012 NAICS Definitions, 517210 Wireless Telecommunications Carriers (Except Satellite)*, <https://factfinder.census.gov/faces/affhelp/jsf/pages/metadata.xhtml?lang=en&type=ib&id=ib.en./ECN.NAICS2012.517210>.

¹³⁷ See 13 CFR § 121.201, NAICS Code 517210.

firms that operated for the entire year.¹³⁸ Of this total, 955 firms had fewer than 1,000 employees and 12 had employment of 1,000 employees or more.¹³⁹ Thus, under this SBA category and the associated size standard, the Commission estimates that a majority of fixed microwave service licensees can be considered small.

39. The Commission does not have data specifying the number of these licensees that have more than 1,500 employees, and thus is unable at this time to estimate with greater precision the number of fixed microwave service licensees that would qualify as small business concerns under the SBA's small business size standard. Consequently, the Commission estimates that there are up to 36,708 common carrier fixed licensees and up to 59,291 private operational-fixed licensees and broadcast auxiliary radio licensees in the microwave services that may be small and may be affected by the rules and policies adopted herein. We note, however, that the common carrier microwave fixed licensee category does include some large entities.

40. *Broadband Radio Service and Educational Broadband Service.* Broadband Radio Service systems, previously referred to as Multipoint Distribution Service (MDS) and Multichannel Multipoint Distribution Service (MMDS) systems and "wireless cable," transmit video programming to subscribers and provide two-way high speed data operations using the microwave frequencies of the Broadband Radio Service (BRS) and Educational Broadband Service (EBS) (previously referred to as the Instructional Television Fixed Service (ITFS)).¹⁴⁰ In connection with the 1996 BRS auction, the Commission established a small business size standard as an entity that had annual average gross revenues of no more than \$40 million in the previous three calendar years.¹⁴¹ The BRS auctions resulted in 67 successful bidders obtaining licensing opportunities for 493 Basic Trading Areas (BTAs). Of the 67 auction winners, 61 met the definition of a small business. BRS also includes licensees of stations authorized prior to the auction. At this time, we estimate that of the 61 small business BRS auction winners, 48 remain small business licensees. In addition to the 48 small businesses that hold BTA authorizations, there are approximately 392 incumbent BRS licensees that are considered small entities.¹⁴² After adding the number of small business auction licensees to the number of incumbent licensees not already counted, we find that there are currently approximately 440 BRS licensees that are defined as small businesses under either the SBA or the Commission's rules.

41. In 2009, the Commission conducted Auction 86, the sale of 78 licenses in the BRS areas.¹⁴³ The Commission offered three levels of bidding credits: (1) a bidder with attributed average annual gross revenues that exceed \$15 million and do not exceed \$40 million for the preceding three years (small business) received a 15% discount on its winning bid; (2) a bidder with attributed average

¹³⁸ U.S. Census Bureau, *2012 Economic Census of the United States*, Table EC1251SSSZ5, *Information: Subject Series, Estab and Firm Size: Employment Size of Firms for the U.S.: 2012*, NAICS Code 517210 (rel. Jan. 8, 2016). https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ5//naics~517210.

¹³⁹ *Id.* Available census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is for firms with "1000 employees or more."

¹⁴⁰ *Amendment of Parts 21 and 74 of the Commission's Rules with Regard to Filing Procedures in the Multipoint Distribution Service and in the Instructional Television Fixed Service and Implementation of Section 309(j) of the Communications Act—Competitive Bidding*, MM Docket No. 94-131, PP Docket No. 93-253, Report and Order, 10 FCC Rcd 9589, 9593, para. 7 (1995).

¹⁴¹ 47 CFR § 21.961(b)(1).

¹⁴² 47 U.S.C. § 309(j). Hundreds of stations were licensed to incumbent MDS licensees prior to implementation of Section 309(j) of the Communications Act of 1934, 47 U.S.C. § 309(j). For these pre-auction licenses, the applicable standard is SBA's small business size standard of 1,500 or fewer employees.

¹⁴³ *Auction of Broadband Radio Service (BRS) Licenses, Scheduled for October 27, 2009, Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments, and Other Procedures for Auction 86*, AU Docket No. 09-56, Public Notice, 24 FCC Rcd 8277 (2009).

annual gross revenues that exceed \$3 million and do not exceed \$15 million for the preceding three years (very small business) received a 25% discount on its winning bid; and (3) a bidder with attributed average annual gross revenues that do not exceed \$3 million for the preceding three years (entrepreneur) received a 35% discount on its winning bid.¹⁴⁴ Auction 86 concluded in 2009 with the sale of 61 licenses.¹⁴⁵ Of the ten winning bidders, two bidders that claimed small business status won 4 licenses; one bidder that claimed very small business status won three licenses; and two bidders that claimed entrepreneur status won six licenses.

42. In addition, the SBA's Cable Television Distribution Services small business size standard is applicable to EBS. There are presently 2,436 EBS licensees. All but 100 of these licenses are held by educational institutions. Educational institutions are included in this analysis as small entities.¹⁴⁶ Thus, we estimate that at least 2,336 licensees are small businesses. Since 2007, Cable Television Distribution Services have been defined within the broad economic census category of Wired Telecommunications Carriers; that category is defined as follows: "This industry comprises establishments primarily engaged in operating and/or providing access to transmission facilities and infrastructure that they own and/or lease for the transmission of voice, data, text, sound, and video using wired telecommunications networks. Transmission facilities may be based on a single technology or a combination of technologies."¹⁴⁷ The SBA has developed a small business size standard for this category, which is: all such firms having 1,500 or fewer employees. To gauge small business prevalence for these cable services we must, however, use the most current census data that are based on the previous category of Cable and Other Program Distribution and its associated size standard: all such firms having \$13.5 million or less in annual receipts.¹⁴⁸ For this industry, U.S. Census data for 2012 show that there were 3,117 firms that operated that year.¹⁴⁹ Of this total, 3,083 operated with fewer than 1,000 employees.¹⁵⁰ Thus, the majority of these firms can be considered small.

5. Satellite Service Providers

43. *Satellite Telecommunications Providers.* This category comprises firms "primarily engaged in providing telecommunications services to other establishments in the telecommunications and broadcasting industries by forwarding and receiving communications signals via a system of satellites or reselling satellite telecommunications."¹⁵¹ Satellite telecommunications service providers include satellite and earth station operators. The category has a small business size standard of \$32.5 million or less in

¹⁴⁴ *Id.* at 8296, para. 73.

¹⁴⁵ *Auction of Broadband Radio Service Licenses Closes, Winning Bidders Announced for Auction 86, Down Payments Due November 23, 2009, Final Payments Due December 8, 2009, Ten-Day Petition to Deny Period*, Public Notice, 24 FCC Rcd 13572 (2009).

¹⁴⁶ The term "small entity" within SBREFA applies to small organizations (nonprofits) and to small governmental jurisdictions (cities, counties, towns, townships, villages, school districts, and special districts with populations of less than 50,000). 5 U.S.C. §§ 601(4)-(6). We do not collect annual revenue data on EBS licensees.

¹⁴⁷ U.S. Census Bureau, *2012 NAICS Definitions, 517110 Wired Telecommunications Carriers* (partial definition), <http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517110&search=2012>.

¹⁴⁸ 13 CFR § 121.201, NAICS code 517110.

¹⁴⁹ See U.S. Census Bureau, *2012 Economic Census of the United States*, Table No. EC1251SSSZ5, *Information: Subject Series - Estab & Firm Size: Employment Size of Firms: 2012* (517110 Wired Telecommunications Carriers), https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ5//naics~517110.

¹⁵⁰ *Id.*

¹⁵¹ U.S. Census Bureau, *2017 NAICS Definitions, 517410 Satellite Telecommunications*, <http://www.census.gov/naics/2007/def/ND517410.HTM>, <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?input=517410&search=2017+NAICS+Search&search=2017>.

average annual receipts, under SBA rules.¹⁵² For this category, U.S. Census Bureau data for 2012 show that there were a total of 333 firms that operated for the entire year.¹⁵³ Of this total, 299 firms had annual receipts of less than \$25 million.¹⁵⁴ Consequently, we estimate that the majority of satellite telecommunications providers are small entities.

44. *All Other Telecommunications.* The “All Other Telecommunications” category is comprised of entities that are primarily engaged in providing specialized telecommunications services, such as satellite tracking, communications telemetry, and radar station operation.¹⁵⁵ This industry also includes establishments primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems.¹⁵⁶ Establishments providing Internet services or voice over Internet protocol (VoIP) services via client-supplied telecommunications connections are also included in this industry.¹⁵⁷ The SBA has developed a small business size standard for “All Other Telecommunications,” which consists of all such firms with gross annual receipts of \$32.5 million or less.¹⁵⁸ For this category, U.S. Census Bureau data for 2012 show that there were 1,442 firms that operated for the entire year.¹⁵⁹ Of these firms, a total of 1,400 had gross annual receipts of less than \$25 million.¹⁶⁰ Consequently, a majority of “All Other Telecommunications” firms potentially affected by our action can be considered small.

6. Cable Service Providers

45. Because section 706 of the Act requires us to monitor the deployment of broadband using any technology, we anticipate that some broadband service providers may not provide telephone service. Accordingly, we describe below other types of firms that may provide broadband services, including cable companies, MDS providers, and utilities, among others.

46. *Cable and Other Subscription Programming.* This industry comprises establishments primarily engaged in operating studios and facilities for the broadcasting of programs on a subscription or fee basis. The broadcast programming is typically narrowcast in nature (e.g., limited format, such as news, sports, education, or youth-oriented). These establishments produce programming in their own facilities or acquire programming from external sources. The programming material is usually delivered to a third party, such as cable systems or direct-to-home satellite systems, for transmission to viewers.¹⁶¹

¹⁵² 13 CFR § 121.201, NAICS Code 517410.

¹⁵³ U.S. Census Bureau, *2012 Economic Census of the United States*, Table EC1251SSSZ4, *Information: Subject Series - Estab and Firm Size: Receipts Size of Firms for the United States: 2012*, NAICS Code 517410, https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ4//naics~517410.

¹⁵⁴ *Id.*

¹⁵⁵ See U.S. Census Bureau, 2017 NAICS Definitions, NAICS Code “517919 All Other Telecommunications”, <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?input=517919&search=2017+NAICS+Search&search=2017>

¹⁵⁶ *Id.*

¹⁵⁷ *Id.*

¹⁵⁸ 13 CFR § 121.201; NAICS Code 517919.

¹⁵⁹ U.S. Census Bureau, *2012 Economic Census of the United States*, Table EC1251SSSZ4, *Information: Subject Series - Estab and Firm Size: Receipts Size of Firms for the United States: 2012*, NAICS Code 517919, https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ4//naics~517919.

¹⁶⁰ *Id.*

¹⁶¹ See U.S. Census Bureau, *2012 NAICS Definitions, 515210 Cable and other Subscription Programming*, <https://factfinder.census.gov/faces/affhelp/jsf/pages/metadata.xhtml?lang=en&type=ib&id=ib.en/ECN.NAICS2012.515210#>.

The SBA size standard for this industry establishes as small, any company in this category which has annual receipts of \$38.5 million or less.¹⁶² According to 2012 U.S. Census Bureau data, 367 firms operated for the entire year.¹⁶³ Of that number, 319 operated with annual receipts of less than \$25 million a year and 48 firms operated with annual receipts of \$25 million or more.¹⁶⁴ Based on this data, the Commission estimates that the majority of firms operating in this industry are small.

47. *Cable Companies and Systems (Rate Regulation)*. The Commission has developed its own small business size standards for the purpose of cable rate regulation. Under the Commission's rules, a "small cable company" is one serving 400,000 or fewer subscribers nationwide.¹⁶⁵ Industry data indicate that there are currently 4,600 active cable systems in the United States.¹⁶⁶ Of this total, all but nine cable operators nationwide are small under the 400,000-subscriber size standard.¹⁶⁷ In addition, under the Commission's rate regulation rules, a "small system" is a cable system serving 15,000 or fewer subscribers.¹⁶⁸ Current Commission records show 4,600 cable systems nationwide.¹⁶⁹ Of this total, 3,900 cable systems have fewer than 15,000 subscribers, and 700 systems have 15,000 or more subscribers, based on the same records.¹⁷⁰ Thus, under this standard as well, we estimate that most cable systems are small entities.

48. *Cable System Operators (Telecom Act Standard)*. The Communications Act of 1934, as amended, also contains a size standard for small cable system operators, which is "a cable operator that, directly or through an affiliate, serves in the aggregate fewer than 1% of all subscribers in the United States and is not affiliated with any entity or entities whose gross annual revenues in the aggregate exceed \$250,000,000."¹⁷¹ There are approximately 52,403,705 cable video subscribers in the United States today.¹⁷² Accordingly, an operator serving fewer than 524,037 subscribers shall be deemed a small operator if its annual revenues, when combined with the total annual revenues of all its affiliates, do not exceed \$250 million in the aggregate.¹⁷³ Based on available data, we find that all but nine incumbent cable operators are small entities under this size standard.¹⁷⁴ We note that the Commission neither requests nor collects information on whether cable system operators are affiliated with entities whose

¹⁶² See 13 C.F.R. 121.201, NAICS Code 515210.

¹⁶³ See U.S. Census Bureau, *2012 Economic Census of the United States*, Table EC1251SSSZ4, *Information: Subject Series - Estab & Firm Size: Receipts Size of Firms for the U.S.: 2012*, NAICS Code 515210, https://factfinder.census.gov/bkmk/table/1.0/en/ECN/2012_US/51SSSZ4/naics~515210.

¹⁶⁴ *Id.* Available census data do not provide a more precise estimate of the number of firms that have receipts of \$38.5 million or less.

¹⁶⁵ 47 CFR § 76.901(e).

¹⁶⁶ The number of active, registered cable systems comes from the Commission's Cable Operations and Licensing System (COALS) database on August 15, 2015. See FCC, *Cable Operations and Licensing System (COALS)*, www.fcc.gov/coals (last visited Oct. 25, 2016).

¹⁶⁷ See SNL KAGAN, *Top Cable MSOs*, <https://www.snl.com/Interactivex/TopCableMSOs.aspx>.

¹⁶⁸ 47 CFR § 76.901(c).

¹⁶⁹ See *March 31, 2013 Broadcast Station Totals Press Release*.

¹⁷⁰ See FCC, *Cable Operations and Licensing System (COALS)*, www.fcc.gov/coals (last visited Oct. 25, 2016).

¹⁷¹ 47 CFR § 76.90(f) and ns. 1, 2, and 3.

¹⁷² See SNL KAGAN at <http://www.snl.com/interactivex/MultichannelIndustryBenchmarks.aspx>.

¹⁷³ 47 CFR § 76.901(f) and ns. 1, 2, and 3.

¹⁷⁴ See SNL KAGAN at <http://www.snl.com/interactivex/TopCableMSOs.aspx>.

gross annual revenues exceed \$250 million.¹⁷⁵ Although it seems certain that some of these cable system operators are affiliated with entities whose gross annual revenues exceed \$250 million, we are unable at this time to estimate with greater precision the number of cable system operators that would qualify as small cable operators under the definition in the Communications Act.

7. All Other Telecommunications

49. *Electric Power Generators, Transmitters, and Distributors.* This U.S. industry is comprised of establishments that are primarily engaged in providing specialized telecommunications services, such as satellite tracking, communications telemetry, and radar station operation. This industry also includes entities primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems. Entities providing Internet services or voice over Internet protocol (VoIP) services via client-supplied telecommunications connections are also included in this industry.¹⁷⁶ The closest applicable SBA category is “All Other Telecommunications”. The SBA’s small business size standard for “All Other Telecommunications,” consists of all such firms with gross annual receipts of \$32.5 million or less.¹⁷⁷ For this category, U.S. Census data for 2012 show that there were 1,442 firms that operated for the entire year. Of these firms, a total of 1,400 had gross annual receipts of less than \$25 million.¹⁷⁸ Consequently, we estimate that under this category and the associated size standard the majority of these firms can be considered small entities.

D. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities

50. The potential modifications proposed in the *Third Notice*, if adopted, would impose some new reporting, recordkeeping, or other compliance requirements on some small entities. Specifically, in addition to information adopted in the *Second Report and Order*, we propose that providers of broadband Internet access service submit latency information (for fixed providers), backhaul speed and technology for each base station (for fixed wireless providers), and details of their propagation models (for mobile providers). All providers of broadband Internet access service would be required to provide a certification from a qualified engineer that the information provided in their biannual Collections filings are true and correct. They also would be able to challenge the broadband coverage maps, providers’ availability data, or data in the Fabric.

51. In addition, as a means of improving the accuracy and reliability of broadband Internet access service data, the Commission proposes a number of methods to verify the information in the providers’ filings, including a challenge process and receiving verified data from third parties and governmental mapping entities. We also seek comment on how to implement provider coverage map verification and enhancement tools for mobile services, including on-the-ground data, infrastructure data, and a challenge process. The adoption of any of these verification processes could subject small entities and other providers to additional submission, recordkeeping, and compliance requirements.

52. In addition, since the Broadband DATA Act grants fixed broadband Internet access service providers the ability to submit availability data using a list of addresses or locations, the

¹⁷⁵ The Commission does receive such information on a case-by-case basis if a cable operator appeals a local franchise authority’s finding that the operator does not qualify as a small cable operator pursuant to section 76.901(f) of the Commission’s rules. See 47 CFR § 76.901(f).

¹⁷⁶ See NAICS Association, *NAICS Code Description*, <https://www.naics.com/naics-code-description/?code=517919>.

¹⁷⁷ 13 CFR § 121.201; NAICS Code 517919.

¹⁷⁸ See U.S. Census Bureau, *American Fact Finder*, http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_51SSSZ4&prodType=table.

Commission seeks comment on how to implement a location-based reporting requirement for small entities and other providers. We also seek comment on whether to impose penalties for providers that file materially inaccurate or incomplete data related to availability or quality of broadband Internet access service. We also ask about the scope and timing of filing corrected data when it is determined that a provider's Collection information is inaccurate or incomplete. If adopted, any of these requirements could impose additional reporting, recordkeeping, or other compliance obligations on small entities.

53. The issues raised for consideration and comment in the *Third Notice* may require small entities to hire attorneys, engineers, consultants, or other professionals. At this time, however, the Commission cannot quantify the cost of compliance with any potential rule changes and compliance obligations for small entities that may result from the *Third Notice*. We expect our requests for information on potential burdens on small entities associated with matters raised in the *Third Notice* will provide us with information to assist with our evaluation of the cost of compliance on small entities of any reporting, recordkeeping, or other compliance requirements we adopt.

E. Steps Taken to Minimize the Significant Economic Impact on Small Entities and Significant Alternatives Considered

54. The RFA requires an agency to describe any significant, specifically small business, alternatives that it has considered in reaching its proposed approach, which may include (among others) the following four alternatives: (1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance or reporting requirements under the rule for small entities; (3) the use of performance, rather than design, standards; and (4) an exemption from coverage of the rule, or any part thereof, for small entities.¹⁷⁹

55. As an initial matter, we propose to limit the providers required to make biannual Collection filings to only facilities-based providers. This limitation, if adopted, will save some small entities from having to make Collection filings. In addition, we propose to eliminate the collection of business-only broadband data which, if adopted, would save small entities from having to track and report such data.

56. To assist the Commission's evaluation of the economic impact on small entities as a result of actions that may result from proposals and issues raised for consideration in the *Third Notice*, and to better explore options and alternatives, the Commission has sought comment from the public on how best to implement the requirements in the Broadband DATA Act. More specifically, the Commission seeks comment on what burdens are associated with the potential requirements discussed in collecting broadband Internet access service data and how such burdens can be minimized for small entities. For example, the Commission has sought comment on the potential burdens on small providers associated with: (1) requiring providers to submit on-the-ground data to validate mobile broadband coverage; and (2) encouraging small providers to participate in the challenge process.

57. In addition, we seek comment on how best to ensure the collection of high-quality broadband availability and quality of service data as part of the Collection. The Broadband DATA Act requires the Commission to establish a process in which a provider that has fewer than 100,000 active broadband Internet access service connections may request and receive assistance from the Commission with respect to GIS data processing to ensure that the provider is able to comply with the Broadband DATA Act in a timely and accurate manner.¹⁸⁰ We also propose to make service-desk help available, as well as providing clear instructions on the form for the Collection, to aid small providers in making their Collection filings. In response to the *Digital Opportunity Data Collection Order and Further Notice*, we

¹⁷⁹ 5 U.S.C. § 603(c).

¹⁸⁰ 47 U.S.C. § 644(d).

received several comments asking for us to provide technical assistance to small providers,¹⁸¹ and we seek comment on the extent of such technical assistance and any other help that small providers will need to comply with the Broadband DATA Act.

58. More generally, the proposals and questions laid out in the *Third Notice* were designed to enable the Commission to understand the benefits, impact, and potential burdens associated with the different approaches that the Commission can pursue to achieve its objective of improving accuracy and reliability of its data collections. Before reaching its final conclusions and taking action in this proceeding, the Commission expects to review the comments filed in response to the *Third Notice* and more fully consider the economic impact on small entities and how any impact can be minimized.

F. Federal Rules that May Duplicate, Overlap, or Conflict with the Proposed Rules

59. None.

¹⁸¹ See Connected Nation Comments at 5 (requesting GIS processing assistance for providers under a certain size—perhaps those with fewer than 20,000 connections); WTA Comments at 4 (agreeing with Connected Nation’s comments); ACA Connects Reply at 6 (arguing that help desk support will only be useful for smaller providers (those with fewer than 100,000 subscribers) if the Commission provides technical assistance in helping them create shapefiles).