July 11, 2019

FCC FACT SHEET*
Digital Opportunity Data Collection
Report and Order and Second Further Notice of Proposed Rulemaking – WC Docket Nos. 19-195, 11-10

Background:

Precise broadband deployment data is critical to the Commission's efforts to bridge the digital divide. Effectively targeting federal and state efforts to bring broadband to those areas most in need of it means understanding where broadband is available and where it is not. The Commission's current census-block level broadband deployment reporting has been an effective tool for helping the Commission target universal service support to the least-served areas of the country, but more granular data is needed to direct funding to fill the "gaps" in broadband coverage—those areas where some, but not all, homes and businesses have access to modern communications services.

What the *Report and Order* Would Do:

- Establish the Digital Opportunity Data Collection—a new data collection that will collect geospatial broadband coverage maps from Internet service providers, specifically aimed at advancing the Commission's universal service goals;

- Adopt a process to collect public input, commonly known as "crowdsourcing," on the accuracy of service providers' broadband maps; and

- Make targeted changes to the existing Form 477 data collection to reduce reporting burdens for all filers and modify the collection to incorporate new technologies.

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

- Seek comment on additional technical standards for fixed broadband providers that could ensure greater precision for the Digital Opportunity Data Collection deployment reporting and on ways the Commission can incorporate location-specific fixed broadband deployment data in this new data collection;

- Seek comment on incorporating the collection of accurate, reliable mobile wireless voice and broadband coverage data into the Digital Opportunity Data Collection; and

- Seek comment on sunsetting the Form 477 broadband deployment collection following the creation of the Digital Opportunity Data Collection.

* 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 Collection	)	WC Docket No. 19-195
	)	
	)	
Modernizing the FCC Form 477 Data Program	)	WC Docket No. 11-10
	)	

REPORT AND ORDER AND SECOND FURTHER NOTICE OF PROPOSED RULEMAKING[*]

Adopted: [] **Released: []**

Comment Date: [30 days after publication in the Federal Register]
Reply Comment Date: [45 days after publication in the Federal Register]

By the Commission:

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Heading Paragraph #

[*] This document has been circulated for tentative consideration by the Commission at its August 2019 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.

APPENDIX B – FINAL REGULATORY FLEXIBILTY ANALYSIS
APPENDIX C – INITIAL REGULATORY FLEXIBILITY ANALYSIS

I. INTRODUCTION

1. Accurate broadband deployment data is critical to the Commission's efforts to bridge the digital divide. Effectively targeting federal and state spending efforts to bring broadband to those areas most in need of it means understanding where broadband is available and where it is not.[1] The census-block level fixed broadband service availability reporting the Commission currently requires has been an effective tool for helping the Commission target universal service support to the least-served areas of the country, but has made it difficult for the Commission to direct funding to the "gaps" in broadband coverage—those areas where some, but not all, homes and businesses have access to modern communications services.

2. We therefore initiate a new data collection, the Digital Opportunity Data Collection, that is distinct from the existing Form 477 collection and that will gather geospatial broadband service availability data specifically targeted toward advancing our universal service goals. Pursuant to the Digital Opportunity Data Collection, we require all broadband service providers to submit granular maps of the areas where they have broadband-capable networks and make service available. Given the Commission's ongoing investigation into the coverage maps of one or more major mobile operators,[2] we limit the new data collection obligations to fixed broadband providers at present and seek comment on how best to incorporate mobile wireless coverage data into the Digital Opportunity Data Collection.

3. Service providers—who are uniquely situated to know where their own networks are deployed—must determine in the first instance the availability of broadband in their service areas, taking into account their individual circumstances and their on-the-ground knowledge and experience. At the same time, to complement this granular broadband availability data, we adopt a process to begin collecting public input, sometimes known as "crowdsourcing," on the accuracy of service providers' broadband deployment data. Through this new tool, State, local, and Tribal governmental entities and members of the public will be able to submit fixed broadband availability data, leveraging their experience concerning service availability. In addition, because we leave in place for now the existing Form 477 data collection, we make targeted changes to reduce reporting burdens for all providers by removing and clarifying certain requirements and modifying the collection.

4. In the Second Further Notice of Proposed Rulemaking (*Second Notice*), we seek comment on certain aspects of the Digital Opportunity Data Collection to enhance the accuracy and usefulness of broadband deployment reporting. We also seek comment on ways that we can incorporate the filing of location-specific fixed broadband deployment data in this new data collection, as the Commission already requires participants in our high-cost universal service program to report in the High-Cost Universal Broadband portal (HUBB). With respect to mobile wireless coverage, we seek comment on how to align the Digital Opportunity Data Collection with changes in mobile broadband

[1] *See* Letter from Mike Saperstein, Vice President Law & Policy, USTelecom, to Marlene Dortch, Secretary, FCC, WC Docket Nos. 11-10, 10-90, at 1 (filed Mar. 8, 2019) ("USTelecom stressed the importance of granular data to make federal funding programs, including CAF 3, as targeted as possible; we will only be able to close the digital divide through an efficient use of limited funds."); Letter from S. Jenell Trigg, Counsel to WISPA, to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 11-10, 10-90, at 1-2 (filed Oct. 22, 2018) (WISPA Oct. 22, 2018 *Ex Parte* Letter) ("Congress, Tribal policymakers, the U.S. Department of Agriculture and state agencies have a critical need for accurate deployment data, especially for improvements in deployment in rural areas and to administer state and federal government funding such as the Commission's Connect America Fund ("CAF") and the Rural Utilities Service's Broadband e-Connectivity Fund Pilot Program established pursuant to the Consolidated Appropriations Act of 2018." (footnotes omitted)).

[2] 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.

deployment technology, markets, and policy needs. The questions asked, and proposals made in the *Second Notice*, build a framework for addressing these and other issues. Finally, the *Second Notice* also seeks comment on how we can improve the satellite broadband deployment data given the unique characteristics of satellites.

II. BACKGROUND

5. First established in 2000, the Commission's Form 477 began as a collection of subscription and connection data for local telephone and broadband services that helped the Commission to, among other things, meet statutory annual reporting obligations and monitor local voice competition.[3] Over time, the Form 477 data collection has evolved into the primary data source for many Commission actions, including reporting to Congress and the public about the availability of broadband services, informing transaction reviews, and supporting our universal service policies.[4] At the same time, it has become increasingly clear that the fixed and mobile broadband deployment data collected on the Form 477 are not sufficient to understanding where universal service support should be targeted and supporting the imperative of our broadband-deployment policy goals.[5]

6. For purposes of broadband deployment reporting, the Commission currently requires fixed providers to report the census blocks in which their broadband service is available.[6] Fixed broadband connections are available in a census block "if the provider does, or could, within a service interval that is typical for that kind of connection—that is, without an extraordinary commitment of resources—provision two-way data transmission to and from the Internet with *advertised* speeds exceeding 200 kbps in at least one direction to *end-user premises* in the census block."[7] However, census-block based fixed deployment data have limitations—providers report whether or not fixed broadband service is available in at least some part of each census block, but not whether there is availability at all areas within a block.[8]

7. Providers of fixed voice and broadband service report on their end-user subscriptions by submitting the total number of connections in each census tract in which they provide service. Providers

[3] *See* 47 U.S.C. § 1302(b) (Section 706 of the Telecommunications Act of 1996 requires the FCC 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) (*2000 Data Gathering Order*).

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

[5] *See* Letter from Michael R. Romano, Senior Vice President, NTCA, to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 10-90, 11-10, at 1 (filed Apr. 30, 2019) (NTCA Apr. 30, 2019 *Ex Parte* Letter) (stating that "false positives" from Form 477 reporting can lead to the "denial or withdrawal of federal USF support in areas where support is in fact needed to reach unserved locations, dooming those locations to a lack of service for years to come").

[6] FCC, FCC Form 477, Local Telephone Competition and Broadband Reporting Instructions, at 5-8 (Dec. 5, 2016) (*FCC Form 477 Instructions*), https://transition.fcc.gov/form477/477inst.pdf.

[7] *Id.* at 17 (italics in original).

[8] *See* Letter from Steven F. Morris, Vice President and Deputy General Counsel, NCTA, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 11-10, at 1 (filed May 3, 2019) (NCTA May 3, 2019 *Ex Parte* Letter); Letter from John P. Janka and Jarrett S. Taubman, Counsel to Viasat, Inc., to Marlene H. Dortch, Secretary, FCC, WC Docket No. 11-10, at 1 (filed July 16, 2018) (Viasat July 16, 2018 *Ex Parte* Letter).

of mobile voice and broadband service report their total subscribers for each state in which they provide service to customers.[9] Facilities-based providers of mobile broadband service report on deployment by submitting, for each technology and frequency band employed, polygons in geographic information system (GIS) mapping files that digitally represent the geographic areas in which a customer could expect to receive the minimum speed the service provider advertises for that area.[10] In addition, mobile service providers must report the census tracts in which their service is advertised and available to potential customers.[11]

8. In establishing the Form 477 as its primary vehicle for collecting information about the deployment of broadband services, the Commission predicted that the data from the Form 477 would "materially improve" its ability to develop, evaluate, and revise broadband policy, as well as provide valuable benchmarks for Congress, the Commission, other policy makers, and consumers.[12] In its comments in this proceeding, the National Telecommunications and Information Administration (NTIA) states that its analysts "routinely refer to the Commission's Form 477 data, including both deployment and subscription data, to help inform policymakers and enhance [its] technical support of broadband infrastructure investment."[13] The Commission has used aggregate broadband data reported by providers on Form 477 to, among other things: (1) meet our statutory obligation to annually report on the state of broadband availability; (2) update our universal service policies and monitor whether our universal service goals are being achieved in a cost-effective manner; (3) meet our public safety obligations; and (4) maintain coverage maps to inform stakeholders, including industry and the public.[14]

9. In an effort to collect and develop better quality, more useful, and more granular broadband deployment data, the Commission adopted the *2017 Data Collection Improvement FNPRM* in August 2017.[15] In the *2017 Data Collection Improvement FNPRM*, the Commission sought comment on: (1) ways in which the Commission might increase the quality and accuracy of the broadband information we collect; and (2) ways in which the Commission might streamline its broadband reporting requirements and thereby reduce the burdens on filers.[16] The Commission also noted that one of its primary objectives is to ensure that the data collected will be closely aligned with the uses to which they will be put, and sought comment on those uses to inform our analysis.[17] In response, we received a voluminous amount

[9] *FCC Form 477 Instructions* at 25-27.

[10] *Id.* at 24.

[11] *Id.* at 26.

[12] *2000 Data Gathering Order*, 15 FCC Rcd at 7718, para. 1 ("Form 477 collects data that are 'a critical precursor' to the Commission's ability to fulfill its statutory duties, and provides the Commission with 'a set of data of uniform quality and reliability' superior to other publicly available information sources."); *see also* Letter from Kathy D. Smith, Chief Counsel, NTIA, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 11-10, at 3 (filed Jan. 2, 2018) (NTIA *Ex Parte*) ("The Form 477 program draws a diverse audience of data users, encompassing federal policymakers, national business leaders, local government, businesses, and community groups and anchor institutions, and more traditional academic and think-tank researchers."); National Digital Inclusion Alliance Comments at 2 (listing examples of local and regional research and analysis efforts that rely on Form 477 data).

[13] NTIA *Ex Parte* at 2 (noting that states, nonprofits, and other stakeholders also use Form 477 data); *see also* Communications Workers of America (CWA) Reply at 1 ("CWA is among the organizations that often use Commission and third-party analyses of Form 477 data to inform our policy analysis.").

[14] *See 2013 Form 477 Order*, 28 FCC Rcd at 9892-93, para. 14; Deere Reply at 1-2; Small Company Coalition Comments at 2 (Form 477 data is used in USF programs, CAF Phase II auction, CAF Broadband Loop Support Program, and the Connect America Cost Model).

[15] *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*).

[16] *Id*. at 6331, para. 6.

[17] *Id.* at 6331, para. 7.

of comments, reply comments, and ex parte presentations with specific recommendations on how best to improve our broadband reporting process.

III. REPORT AND ORDER

10. As the record in this proceeding amply demonstrates, there is a compelling and immediate need to develop granular, high-quality fixed broadband deployment data to improve our ability to target support from our Universal Service Fund (USF) programs. It has become increasingly clear that the fixed and mobile broadband deployment data collected on the Form 477 are not sufficient to support the specific imperative of our USF policy goals.[18] We conclude that in order to continue to advance our statutory universal service obligations, it is necessary to create a new data collection, calculated to produce broadband deployment maps that will allow the Commission to precisely target scarce universal service dollars to where broadband service is lacking. In the *2017 Data Collection Improvement FNPRM*, the Commission sought comment on requiring more granularity in fixed broadband deployment data, noting that it collected location-level data from recipients of USF funding to assess whether they are meeting their buildout requirements, and that this more granular data had been "extremely useful" in understanding issues surrounding fixed broadband deployment in these contexts.[19] We find that establishing a new collection requiring fixed providers to submit maps of the areas in which their service is available is the best way to meet those needs expeditiously.[20]

11. We therefore direct the Universal Service Administrative Company (USAC), under the oversight of the Commission's Office of Economics and Analytics (OEA), the Wireline Competition Bureau (WCB), and the International Bureau (IB), to develop a new portal to accept broadband coverage maps (polygons) from fixed providers, as well as public feedback on the accuracy of these broadband maps.[21] For the time being, we leave the current Form 477 in place, subject to several modifications that eliminate collection of unnecessary data and seek comment on whether we should sunset some or all of Form 477.

A. Establishing Granular Maps of Fixed Broadband Service Availability

12. We require all fixed providers[22] to submit broadband coverage polygons depicting the areas where they actually have broadband-capable networks and make fixed broadband service available

[18] *See* NTCA Apr. 30, 2019 *Ex Parte* Letter at 1 (stating that "false positives" from Form 477 reporting can lead to the "denial or withdrawal of federal USF support in areas where support is in fact needed to reach unserved locations, dooming those locations to a lack of service for years to come").

[19] *2017 Data Collection Improvement FNPRM*, 32 FCC Rcd at 6341, para. 37.

[20] *See, e.g.*, Letter from Brent Legg, Vice President, Government Affairs, Connected Nation, Inc., to Marlene H. Dortch, Secretary, FCC, WC Docket No. 11-10, at 2 (filed May 17, 2019) (Connected Nation May 17, 2019 *Ex Parte* Letter) (asserting that "the generation of shapefiles that depict granular service footprints derived from broadband infrastructure capabilities has been a proven path forward in states like Minnesota, where the resulting map is used to guide the state's Border-to-Border Grant Program"); NCTA May 3, 2019 *Ex Parte* Letter at 1 (supporting modifying "the Form 477 regime for reporting broadband availability by moving from the current census-block-based approach to a framework based on submission of shapefiles that represent the area where each provider makes service available").

[21] In this item, "broadband coverage polygons," "coverage polygons," and "polygons" refer to broadband coverage areas or footprints—captured in GIS-compatible formats—delineating the areas in which a provider's network meets the requirements detailed in this order and as defined by the Commission.

[22] In this item, "fixed providers" refers to facilities-based wireline providers (e.g., incumbent and competitive local exchange carriers, cable television system operators) fixed terrestrial wireless providers (e.g., wireless Internet service providers (WISPs)), and satellite providers providing fixed broadband connections to end users. We define a fixed broadband connection as a wired line or fixed wireless channel whether terrestrial or satellite that terminates at an end-user location and enables the end user to receive information from and/or send information to the Internet at information transfer rates exceeding 200 kilobits per second (kbps) in at least one direction.

to end-user locations. The filings must reflect the maximum download and upload speeds actually made available in each area, the technology used to provide the service, and a differentiation between residential-only, business-only, or residential-and-business broadband services. Fixed providers in the new collection must submit a broadband coverage polygon for each combination of download speed, upload speed, and technology. Where fixed providers offer different maximum speeds to residential and business customers, even if using the same network facilities, they must file separate polygons. Where the offered speed varies by location or distance from network facilities, fixed providers must submit separate polygons to reflect those differing maximum offered speeds.

13. For purposes of the Digital Opportunity Data Collection, service is actually available in an area if the reporting fixed provider has a current broadband connection or it could provide such a connection within ten business days of a customer request and without an extraordinary commitment of resources or construction costs exceeding an ordinary service activation fee.[23] The filer must be able to establish a connection within this timeframe to every end-user location contained in the reported broadband coverage polygon. Under this standard, a fixed provider must have fiber or cable in place proximate, if not connected, to the locations within its reported polygons—for example, we expect a residence would be included only if the utility pole or conduit on the right of way adjacent to the residence is already wired and awaiting just a drop cable. A fixed wireless provider must have already installed enough base stations to cover and meet reasonably anticipated customer capacity demands; the installation of an additional base station, for example, would constitute an extraordinary commitment of resources. Fixed broadband services are not actually available for purposes of the Digital Opportunity Data Collection in any area where the filer does not meet this standard.

14. Although we agree with commenters that it would be ideal for providers to have more precise technical standards to follow in determining whether fixed broadband is available in an area (for example, defining availability based on specific proximity to network facilities),[24] we find insufficient evidence currently in the record to prescribe such technical standards. Without additional information, we risk setting under- and over-inclusive technical standards, likely to result in us drawing less accurate maps.[25] We therefore seek comment in the *Second Notice* about what standards fixed providers should use to establish the broadband coverage polygons.

15. We direct OEA, WCB, and IB to oversee USAC in developing the new online portal and the filing processes that will enable fixed providers to submit broadband coverage polygons. We also direct OEA, in consultation with WCB, IB, and USAC, to carry out the implementation details of the new collection including (but not limited to): (1) issuing an order designating the precise specifications for the broadband coverage polygons, subject to the constraints laid out herein; (2) modifying (as needed) the list

[23] *See* NTIA *Ex Parte* at 7 ("NTIA recommends that covered Census block data only include areas currently served and areas that the provider expects to serve or could serve, upon request, within a maximum timeframe of several weeks or months, at the reasonable expense of the provider."); *see also* Letter from Ola Oyefusi, Director, Federal Regulatory, AT&T, to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 11-10, 10-90, at 4 (filed Oct. 12, 2018) (AT&T Oct. 12, 2018 *Ex Parte* Letter) (suggesting that the Commission use the same "'can provide' or 'served' standard adopted for CAF purposes which defines a location as 'served' if a carrier could provide broadband service to a customer within 10 business days of a request"); National States Geographic Information Council Comments at 1 (stating that "the best data format for mapping broadband service depicts the actual physical boundaries in which a provider has the ability to deliver service within a reasonable service order time frame (e.g. 5-10 business days)").

[24] *See* NTCA Apr. 30, 2019 *Ex Parte* Letter at 5 (arguing that "the Commission should take steps to standardize how providers assess the scope of their coverage").

[25] *See* Letter from Thomas Cohen and J. Bradford Currier, Counsel to ACA, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 11-10, at 6 (filed Oct. 19, 2018) (ACA Oct. 19, 2018 *Ex Parte* Letter (urging the FCC to give providers flexibility in determining whether service is available, as opposed to the FCC providing detailed, prescriptive rules); Verizon Comments at 11 (asserting that "each broadband provider is likely to rely on its own, similarly complex systems and approaches in making its own predictions concerning availability").

of fixed-broadband technologies that should be reported in the new collection; and (3) defining the GIS compatible file format(s) in which fixed providers will be required to submit their polygons.[26]

16. This new data collection will take effect after USAC issues a notice announcing the availability of the new collection platform and the reporting deadlines. Fixed broadband service providers must file initial service availability reports within six months of USAC's notice announcing availability of the new collection platform. Fixed providers also must submit updates within six months of completing any broadband deployments or otherwise acquiring new broadband-capable network facilities that affect the data submitted on their Digital Opportunity Data Collection filings. Service providers that become subject to filing requirements subsequent to the initial filing deadline must file initial service availability reports within six months of becoming so obligated. Failure to timely file the new collection data may lead to enforcement action and/or penalties as set forth in the Communications Act and other applicable laws. In addition, fixed providers must revise their filings any time they discover a significant reporting error in the original broadband deployment data that they submit. An appropriate official of each filer must include with any filing a certification that the filer's service availability data is true and accurate to the best of the certifying official's knowledge and must report the title of the certifying official. Filers must additionally certify on or before June 30 of each calendar year that as of December 31 of the previous year, all of the filer's service availability data continues to be accurate, irrespective of whether the filer's data has been updated during that calendar year.

17. In order to ensure an accurate and detailed picture of broadband deployment, we require all fixed providers to make the required Digital Opportunity Data Collection filings, although we direct WCB, in coordination with OEA and IB, to determine whether any category of very small fixed providers (e.g., those with less than 250 subscribers and who are not eligible telecommunications carriers (ETCs) under the USF program) should have additional time in filing their initial reports. We note that any service provider must nevertheless timely file in order to be eligible to participate in any USF program and those that fail to file in a timely manner risk their service areas being deemed unserved in future USF decisions.

18. *Incorporating Public Input into Broadband Coverage Maps.* Collecting broadband coverage polygons will allow fixed providers to apply their expertise concerning their networks and service areas to define their service coverages in the first instance. However, 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.[27] We therefore direct OEA, WCB, and IB to work with USAC to create an online portal for local, state, 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. This input will identify

[26] In the context of reporting fixed broadband deployment data, parties in the record have referred to GIS file formats as a "shapefile" collection. However, shapefiles are just one possible GIS file format, albeit one that is widely used. *See* Letter from B. Lynn Follansbee, Vice President – Law & Policy, USTelecom, Michael J. Jacobs, Vice President Regulatory Affairs, ITTA, and Claude Aiken, President & CEO, WISPA, to Marlene H. Dortch, Secretary, FCC, at 2 (filed Apr. 12, 2019) (BMC Apr. 12, 2019 *Ex Parte* Letter) ("A shapefile is a container for a number of other data files such as, in the case of a coverage area, the geometric (e.g., polygons) and geographical (e.g., latitude and longitude) information needed to render the data in a map."). As noted, we direct OEA to set the GIS file format and data type that it ultimately determines is most advantageous for broadband reporting. We find that OEA's adoption of these rules would comply with the requirements of the APA. *See, e.g.*, *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, 6298, para. 33 (2017).

[27] 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) (NCTA Apr. 10, 2019 *Ex Parte* Letter) ("[I]n a regime with shapefile-based reporting, consumers should have a greater expectation that areas identified as served are, in fact, served. A crowdsourcing tool would enable consumers to report concerns about areas that they believe are incorrectly reported as served.").

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. We also seek comment in the *Second Notice* about the types of data to be collected through this portal, how to treat crowdsourced data, and the procedures that fixed providers should follow if their broadband coverage polygons are disputed.

19. We believe 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. We therefore direct USAC to make public the information about the location that is the subject of the dispute—including the street address and/or coordinates (latitude and longitude) provided by the complainant, along with the name of the service provider(s) and any relevant details concerning the basis for challenging the reported fixed broadband coverage.

20. We direct USAC to make the crowdsourced data publicly available as soon as is practical after submission and direct OEA, WCB, and IB to work with USAC to establish an appropriate method for doing so. We do not specify a timeline for making such data publicly available but expect that there will be regular releases of crowdsourcing data. We direct USAC not to make publicly available private information[28] submitted with the challenges. USAC may share such information (for example with the fixed provider about whom the dispute is being made) only to the extent it will be helpful to improve the quality of fixed broadband data reporting. We also direct USAC to develop mechanisms in the new platform to prevent malicious or unreliable filings, including automated mass filings.

21. *Benefits of Reporting Service Availability Maps Clearly Outweigh the Filing Burdens on Fixed Providers*. In establishing the Digital Opportunity Data Collection, we are cognizant of the need to ensure that the benefits resulting from use of the data outweigh the reporting burdens imposed on filers.[29] We agree with commenters who contend that broadband coverage polygons will allow more granular analysis than the census-block data currently collected in the Form 477—and will do so with reasonable costs and burdens on fixed providers.[30] We find that the approach we adopt, in which fixed providers will create broadband coverage polygons that depict their actual service areas, would, as NCTA asserts, "be a significant improvement over census-block reporting because *unserved* areas within served census blocks would no longer be counted as served."[31] In turn, more granular data about areas where broadband is available will enable us to target unserved locations more precisely, especially in many rural areas that

[28] *See* 47 CFR § 0.457(f).

[29] *See* ACA Reply at 2; WTA Reply at 2; AT&T Reply at 2; WISPA Reply at 1-4; Sacred Wind Communications Comments at 1-2; Lightower Comments at 5; Verizon Comments at 10-13; Comcast Comments at 10-11; GCI Comments at 4; Alaska Communications Comments at 4-5.

[30] *See, e.g.*, Connected Nation May 17, 2019 *Ex Parte* Letter at 2 ("implementing a shapefile-based reporting regime is reasonable and less burdensome than some alternatives, particularly considering that providers already incur some costs to provide the Commission with Form 477 data"); NCTA May 3, 2019 *Ex Parte* Letter at 1 ("By requiring submitted shapefiles to be based on each provider's service area, NCTA's proposal would address the problem of unserved areas being inaccurately treated as served if they are located within served census blocks."); Letter from Rosa Mendoza, President & CEO, ALLvanza, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 11-10 et al., at 2 (filed May 23, 2019) (ALLvanza May 23, 2019 *Ex Parte* Letter) ("NCTA's proposal would fix many of the issues with reporting and mapping in an efficient and timely manner."); WISPA Oct. 22, 2018 *Ex Parte* Letter at 3 (contending that geospatial data (polygons of coverage submitted via GIS files) would provide more accurate deployment data for broadband services, especially in rural areas); Viasat July 16, 2018 *Ex Parte* Letter at 1-2 ("The GIS shapefile would provide an efficient way to succinctly capture coverage over broad geographic areas without the burden of listing every census block within that area.").

[31] NCTA May 3, 2019 *Ex Parte* Letter at 3 (italics in original); *see also* Letter from C. Douglas Jarrett, Counsel to NRECA, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 11-10, at 1 (filed Mar. 7, 2019) (NRECA Mar. 7, 2019 *Ex Parte* Letter) ("NRECA is deeply concerned with potentially significant overstatement of fixed broadband deployment as a result of the current Form 477 Guidelines.").

continue to lack broadband service.[32]

22. For now, we continue to maintain the collection of fixed broadband deployment data on Form 477 in census-block format. While there will be additional reporting burdens for fixed providers to supply broadband deployment data as part of the new collection and through the Form 477, this approach will ensure that we have continuous access to broadband deployment data for the purposes for which we require it.[33] Given that service providers are already accustomed to submitting census-block level data, and the census-block data is much less detailed than their Digital Opportunity Data Collection filings will be, the burden of continuing to also file census-block level data will be minimal.

23. We find that any additional burdens imposed by our new reporting approach will be relatively light for fixed providers in comparison to the significant benefit to be gained from more precise broadband deployment data. As an initial matter, many fixed providers already are familiar with the use of geospatial data because of its use in other contexts by the Commission and other federal and state agencies, thus making the transition reasonably simple.[34] As Connected Nation notes, some fixed providers already have either internal GIS capabilities or have vendor relationships for the production of GIS files.[35] In addition, Connected Nation suggests several online resources that can help fixed providers "create their own polygons of service availability, such as ESRI's ArcGIS software."[36] We disagree with commenters, such as the Broadband Mapping Coalition, who contend that a map-based approach is a burdensome and insufficient fix to the problem of fixed broadband mapping.[37]

24. With regard to the benefits to be realized from the new collection, we find that the adoption of polygon-based reporting will enable crowdsourcing and similar approaches to act as a check on the deployment data submitted by fixed providers, which is not possible with census-block reporting.[38] Rather than listing the census blocks where a fixed provider's broadband service is available, broadband

[32] *See* Letter from Mark Klausner, President, Board of Directors, and Joe Mattingley, General Manager, The Galena Territory Association, Inc., WC Docket No. 11-10, at 2 (filed Nov. 9, 2017) (Galena Territory Nov. 9, 2017 *Ex Parte* Letter).

[33] *See, e.g.*, NCTA Apr. 10, 2019 *Ex Parte* Letter at 4-5 (recommending that "for an interim period" the FCC calculate the number of homes served in a census block both using GIS-based polygons as well as the current approach that assumes a partially-served census block is fully served in order to monitor "year-to-year trends in deployment that are not associated with the shift in reporting methods").

[34] *See* NTCA Apr. 30, 2019 *Ex Parte* Letter at 3; Letter from Steven F. Morris, Vice President & Associate General Counsel, NCTA, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 11-10, at 1 (filed Feb. 27, 2019) (NCTA Feb. 27, 2019 *Ex Parte* Letter); Letter from Elizabeth Andrion, Senior Vice President, Regulatory Affairs, Charter, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 11-10, at 1-2 (filed Mar. 18, 2019) (Charter Mar. 18, 2019 *Ex Parte* Letter); Letter from Tim Stelzig, Federal Regulatory Attorney, General Communication, Inc., to Marlene H. Dortch, Secretary, FCC, WC Docket No. 11-10, at 1 (filed Feb. 28, 2019) (GCI Feb. 28, 2019 *Ex Parte* Letter) ("Shapefiles are used in multiple other contexts which demonstrates that any technical and operational challenges could be overcome."); U.S. Dep't of Agriculture, RUS Broadband Mapping Tool Help Guide, at 16 (June 25, 2015), https://broadbandsearch.sc.egov.usda.gov/bsa/servlet/resources/BSAHelp.pdf (indicating that various RUS programs require submission of service area maps as GIS file polygons); *FCC Form 477 Instructions* at 26 (indicating that mobile voice deployment requires the submission of polygons in a shapefile format).

[35] Connected Nation May 17, 2019 *Ex Parte* Letter at 2 (pointing to the generation of GIS files for clients in 16 states and Puerto Rico).

[36] *Id.* at 2.

[37] *See* BMC Apr. 12, 2019 *Ex Parte* Letter at 3-4.

[38] *See* NCTA May 3, 2019 *Ex Parte* Letter at 1 (supporting crowdsourcing to supplement the verification process and to create a permanent feedback loop designed to continually improve the accuracy of broadband mapping); Letter from C. Douglas Jarrett, Counsel to NRECA, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 11-10, at 2 (filed Feb. 28, 2019).

coverage polygons will show the actual service areas covered by fixed broadband providers. This, in turn, will result in more precise information about where fixed broadband is available.[39] The use of crowdsourcing to verify the polygon coverage areas submitted by fixed providers will further improve the validity of broadband deployment data.[40]

25. Another critical benefit of transitioning to a polygon-based reporting format is the speed in which such a solution can be implemented. We are mindful of concerns voiced by commenters such as USTelecom that without a database of broadband-addressable locations (which USTelecom terms a "Broadband Serviceable Location Fabric"), broadband coverage polygons provide no information on how many, and which, specific locations in the service area do not actually have service available.[41] However, we disagree with the Broadband Mapping Coalition that the submission of coverage polygons should wait until after a process has been established to identify and geolocate all of the broadband serviceable locations that exist in a given area.[42] Instead, we agree with commenters, such as Connected Nation, that GIS data such as polygons will "provide significant granularity without the need to first create an underlying dataset of structures/locations with which the data can be paired."[43]

26. We agree with commenters who argue that timing is crucial in getting more granular fixed broadband deployment data.[44] We also agree that the mandatory collection of broadband coverage polygons best achieves the objectives of greater granularity in fixed broadband reporting within the shortest timeframe.[45] As Connected Nation states, "implementing a system based on shapefile reporting would most likely result in the creation of a new more granular National Broadband Map in the shortest amount of time so that Federal agencies can more quickly utilize the map to guide funding decisions and support broadband buildout to the places that still desperately need it."[46] We also disagree with Microsoft's contention that we should delay implementation of a polygon-based approach while NTIA identifies other third-party data sources and develops information that may increase the accuracy of

[39] NTCA Apr. 30, 2019 *Ex Parte* Letter at 6 (asserting that "the migration toward more granular maps . . . should help in focusing and narrowing challenges much more than they are today when entire census blocks are reported as served even though all involved know that is not the case"); *see also* NCTA Apr. 10, 2019 *Ex Parte* Letter at 4 ("[I]n a regime with shapefile-based reporting, consumers should have a greater expectation that areas identified as served are, in fact, served. A crowdsourcing tool would enable consumers to report concerns about areas that they believe are incorrectly reported as served.").

[40] NTCA Apr. 30, 2019 *Ex Parte* Letter at 7.

[41] Letter from B. Lynn Follansbee, Vice President – Policy & Advocacy, USTelecom, to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 10-90 and 11-10, at 3-4 (filed May 28, 2019) (BMC May 28, 2019 *Ex Parte* Letter); Letter from Thomas Cohen and J. Bradford Currier, Counsel to ACA, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 11-10, at 2 (filed Feb. 25, 2019) (ACA Feb. 25, 2019 *Ex Parte* Letter) (arguing that GIS files are less precise in identifying specific locations).

[42] *See* BMC May 28, 2019 *Ex Parte* Letter at 3.

[43] *See* Connected Nation May 17, 2019 *Ex Parte* Letter at 2; Charter Mar. 18, 2019 *Ex Parte* Letter at 1.

[44] *See* Connected Nation May 17, 2019 *Ex Parte* Letter at 2; NCTA May 3, 2019 *Ex Parte* Letter at 2.

[45] *See* Charter Mar. 18, 2019 *Ex Parte* Letter at 1-2; GCI Feb. 28, 2019 *Ex Parte* Letter at 1 (arguing that a polygon approach "would allow the Commission relatively quickly to significantly improve the accuracy of its broadband coverage data"); ALLvanza May 23, 2019 *Ex Parte* Letter at 2; NCTA Feb. 27, 2019 *Ex Parte* Letter at 2 (arguing that a GIS file-based approach "could lead to improved reporting and mapping as early as next year," while the location-based proposals "would require the Commission to engage in a costly and time-consuming exercise to create a database of every address in America before improved data would be collected").

[46] Connected Nation May 17, 2019 *Ex Parte* Letter at 2; *see also* NCTA Feb. 27, 2019 *Ex Parte* Letter at 2 (stating that "NCTA's shapefile-based approach could lead to improved reporting and mapping as early as next year," while other proposals to revamp Form 477 would "create a serious risk that the Commission will not have improved broadband data when Connect America Fund (CAF) Phase II model-based funding ends beginning in 2020").

broadband deployment mapping.[47] We find instead that collecting broadband coverage polygons offers the best approach to more granular broadband deployment data, and that we have an opportunity to move forward quickly to significantly improve the data collection in the near term.[48]

27. *Public Availability of Service Availability Data*. We agree with NTIA that the Commission should release broadband deployment datasets with more public information, particularly "with tables, charts and maps, granular visualization tools for both localized areas and specific technologies, and other mechanisms that summarize the information."[49] To better allow for crowdsourcing, mapping, and other uses of fixed broadband deployment data, all service provider information filed as part of the Digital Opportunity Data Collection will be presumed to be non-confidential unless the Commission specifically directs that it be withheld. Filers seeking confidential treatment of data submitted as part of the new collection must submit a request that the data be treated as confidential, along with the reasons for withholding the information from the public.[50] The Commission will make decisions regarding non-disclosure of confidential information.[51] We find 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.

28. *USAC Verification of Broadband Coverage Maps*. In addition to incorporating feedback from state, local, and Tribal governmental entities, along with the public, we conclude that we must also take steps to independently verify coverage data submitted by service providers. As part of its Connect America Fund (CAF) responsibility, USAC maintains the High Cost Universal Broadband (HUBB) portal. CAF support recipients report through the HUBB portal latitude and longitude coordinates, address, deployment date, speed, and number of units for every location where service is available. This information forms the foundation for the Connect America Fund Broadband Map.[52] We direct USAC to integrate the geolocation data contained in the HUBB with the broadband coverage polygons submitted pursuant to the Digital Opportunity Data Collection. Doing so 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.

29. In the CAF context, USAC performs real-time validation of the CAF data submitted to the HUBB through a series of automated checks of the information (e.g., that the latitude/longitude falls within an eligible area and that the location is not a duplicate of one already submitted). The HUBB also provides USAC the platform to conduct verification reviews to "substantiate broadband deployment and confirm that carriers are in fact building out service that meets the FCC's minimum performance standards to the locations reported."[53] Many elements of the process USAC uses for the CAF could

[47] *See* Letter from Paul Garnett, Senior Director, Microsoft, et al., to Marlene H. Dortch, Secretary, FCC, WC Docket No. 11-10, at 5 (filed Aug. 2, 2018) (Microsoft Aug. 2, 2018 *Ex Parte* Letter). *See also* NCTA Apr. 10, 2019 *Ex Parte* Letter at 4 (asserting that a "crowdsourcing tool would enable consumers to report concerns about areas that they believe are incorrectly reported as served" and concerns could be passed along to the provider); NTCA Apr. 30, 2019 *Ex Parte* Letter at 7 (stating that "any party with relevant and credible information regarding coverage should be permitted to come forward to present that data and have it considered by the Commission").

[48] *See* NCTA May 3, 2019 *Ex Parte* Letter at 2.

[49] NTIA *Ex Parte* at 7, 10.

[50] *See* 47 CFR § 0.459.

[51] *See, e.g.*, 47 CFR § 1.7001(d)(4).

[52] *See* USAC, *The HUBB Portal*, https://www.usac.org/hc/annual-requirements/hubb.aspx (last visited July 8, 2019); USAC, *Connect America Fund Broadband Map*, https://data.usac.org/publicreports/caf-map/ (last visited July 9, 2019).

[53] *See* USAC, *Connect America Fund Verification Reviews*, https://www.usac.org/hc/tools/hubb/caf-verification.aspx (last visited July 8, 2019).

potentially be used for verifying broadband deployment data as part of the Digital Opportunity Data Collection.[54] We therefore direct USAC to propose and submit a plan to WCB for independently verifying the fixed broadband coverage polygons filed pursuant to the Digital Opportunity Data Collection. The verification process it proposes to use could parallel how USAC currently verifies deployment data submitted by CAF support recipients' in the HUBB. USAC should propose other appropriate means of verifying the accuracy of filers' broadband coverage polygons, including site visits.

30. *Location-Based Fixed Broadband Reporting*. We note that our decision to require coverage area maps does not rule out the use of location-specific coverage data in the future. We agree with NTCA that the submission of broadband coverage polygons "would certainly improve granularity in the near-term . . . but another significant benefit is the prospect of integrating this approach seamlessly with broader, longer-term efforts to identify availability or lack thereof on a location basis."[55] Location-based proposals such as the one put forth by the Broadband Mapping Coalition [56] are "designed to produce the most accurate, precise data available, and be a flexible, long-term solution" to the problem of fixed broadband deployment accuracy and granularity.[57]

31. While the proposals for a location-based submission of broadband deployment data are potentially worthwhile projects,[58] we find that they there is no benefit to delaying the data collection while we make a determination of how best to incorporate location-specific data.[59] We agree with commenters like ACA who argue that location-specific reporting will impose substantial costs and complexity on fixed broadband providers, especially smaller providers, and will take significant time to complete.[60] We estimate that it may take several years to implement such an approach[61]—and we agree

[54] *See id.*

[55] NTCA Apr. 30, 2019 *Ex Parte* Letter at 4; *see also* Letter from Brent Legg, Vice President, Government Affairs, Connected Nation, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 11-10, at 1 (filed June 7, 2019) (Connected Nation June 7, 2019 *Ex Parte* Letter) (stating that "there is a viable path forward that can involve both a polygon shapefile-driven reporting approach (including propagation modeling for wireless services), as well as the option to report addresses or ID numbers instead"); Broadband Census LLC and Microband Media LLC Comments at 6-7; California Public Utilities Commission Comments at 4 (contending that "address level data would greatly increase the accuracy of deployment data"); West Virginia Broadband Enhancement Council Comments at 2-3.

[56] Letter from B. Lynn Follansbee, Vice President – Law & Policy, USTelecom, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 11-10 et al. (filed Mar. 21, 2019) (USTelecom Mar. 21, 2019 *Ex Parte* Letter).

[57] BMC Apr. 12, 2019 *Ex Parte* Letter at 4.

[58] *See* BMC May 28, 2019 *Ex Parte* Letter at 2 ("[T]he creation of a national broadband serviceable location fabric is not only not 'theoretical,' it is realistic and necessary to ensure that we have an accurate map of where rural consumers are located, which will enable more granular reporting of where broadband service is available or is not."); AT&T Oct. 12, 2018 *Ex Parte* Letter at 2; *see also* NTCA Apr. 30, 2019 *Ex Parte* Letter at 4 ("NTCA welcomes and is hopeful for the efforts initiated by USTelecom to explore creation of a 'serviceable location fabric' that could ultimately enable identification of individual locations that either have or lack access to broadband.").

[59] NCTA May 3, 2019 *Ex Parte* Letter at 4-5; NTCA Apr. 30, 2019 *Ex Parte* Letter at 4 (asserting that "work to improve granularity (and important policy and funding decisions) should not and cannot await the potential outcomes of that longer-term effort"); Letter from Beth Choroser, Vice President Regulatory Affairs, Comcast, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 11-10, at 1-2 (filed Nov. 28, 2018) (Comcast Nov. 28, 2018 *Ex Parte* Letter) ("There are a number of practical concerns associated with measuring broadband deployment through the collection of nationwide address-level data that make this approach infeasible in the near future.").

[60] ACA Feb. 25, 2019 *Ex Parte* Letter at 2-3.

[61] *See, e.g.*, NCTA May 3, 2019 *Ex Parte* Letter at 4-5 ("The [Broadband Mapping Coalition] is just starting its pilot project and it will then have to submit a report to the Commission explaining what was tested and what the results were. The Commission presumably would invite comment on whether such an approach should be pursued on a nationwide basis and, if it chooses to adopt such an approach, it would then issue a Request for Proposals to hire a

(continued….)

with NCTA that USTelecom's location-based proposal is not nearly as ready to implement as the approach we adopt today.[62] As a result, we find it is prudent to take this next step to improve the fixed broadband deployment data we collect in the near term, so as to better inform our important decisions on where to spend valuable resources on broadband deployment for the next several years. We seek comment in the *Second Notice*, however, on the best and fastest way to implement a location-based approach to fixed broadband deployment reporting.

32. *Alternatives Not Adopted.* We decline to adopt the approach set forth by Comcast and ACA to collect fixed broadband deployment data at the street segment level.[63] According to ACA, while large providers have the capability and resources to collect broadband deployment data at a more granular level, smaller providers will face much greater burdens reporting deployment data with more precision.[64] We find that a street-level approach to fixed broadband deployment reporting has the same problem with granularity as the current census-block approach, especially in rural areas.[65] Specifically, fixed providers claiming broadband service availability on an entire street, when only part of the street actually is served, would overstate broadband deployment much more so than a GIS file-based approach.[66] We also agree with WISPA that a street-segment approach is not appropriate for fixed wireless providers, as streets and roads do not dictate how or where fixed wireless service is constructed, and consequently where service is provided and where it is available.[67] Finally, given the familiarity that fixed providers have with GIS files, we find that is the better approach.[68]

33. In addition, we find that NTIA's recommendation to collect sub-census-block level

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qualified contractor. After the contractor completes this work, the Commission then would need to solicit comment on how the Form 477 filing process should be reformed so that broadband providers could submit data on top of the location fabric. While the [Broadband Mapping Coalition] suggests that all of this can be done in two years, based on past experience that timeline is highly implausible." (footnotes omitted)); *see also* BMC May 28, 2019 *Ex Parte* Letter at 2 (estimating at least a year to complete the first step in the creation of a national "fabric"); AT&T Oct. 12, 2018 *Ex Parte* Letter at 5 (estimating 18 months to create location-specific broadband reporting database).

[62] NCTA May 3, 2019 *Ex Parte* Letter at 6-7; NTCA Apr. 30, 2019 *Ex Parte* Letter at 4.

[63] *See, e.g.*, ACA Feb. 25, 2019 *Ex Parte* Letter at 1; Comcast Nov. 28, 2018 *Ex Parte* Letter at 1.

[64] ACA Feb. 25, 2019 *Ex Parte* Letter at 2.

[65] *See, e.g.*, Letter from Michael J. Jacobs, Vice President Regulatory Affairs, ITTA, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 11-10, at 1 (filed Nov. 5, 2018) (discussing concerns with the costs and accuracy of a broadband deployment data collection based on road segments); Letter from Julie A. Veach, Counsel to GCI Communications, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 11-10, at 2 (filed Oct. 25, 2018) (GCI Oct. 25, 2018 *Ex Parte* Letter) (noting in some areas road segments can be more than 10 miles long, meaning that fixed broadband reporting along these road segments would also be at granularity of 10 miles); WISPA Oct. 22, 2018 *Ex Parte* Letter at 3 ("A road segment (or a street address) is not an indicator in a rural area of where the actual house or building that needs broadband service is located; a house or other structure could be miles away from the actual road or street address."); AT&T Oct. 12, 2018 *Ex Parte* Letter at 5 ("A road segment database would display the roads where broadband is available, but it would not provide any information on the locations and characteristics of areas that are unserved."); Utah Governor's Office of Economic Development Comments at 8 (arguing that "the use of road centerlines to express broadband service availability would be a cumbersome and otherwise mediocre solution at best").

[66] *See, e.g.*, ACA Oct. 19, 2018 *Ex Parte* Letter at 7 (arguing that GIS files can produce more granular broadband deployment information than street segments).

[67] *See* WISPA Oct. 22, 2018 *Ex Parte* Letter at 2.

[68] *See, e.g.*, ACA Oct. 19, 2018 *Ex Parte* Letter at 7 (noting that the FCC already accepts deployment information in GIS file format in other contexts and that for some operators GIS files could be less burdensome than producing street segment data).

broadband deployment data only for larger census blocks does not go far enough.[69] While we understand NTIA's desire to keep burdens low for filers, especially for small providers, we find that it is crucial to determine unserved broadband areas wherever they may be—in large, medium, or small census blocks.[70] We do not agree with NTIA's assertion that we should only require more granular broadband deployment reporting in large census blocks—deployment data are critical for all areas and will allow federal and state governments (and providers) to determine with better particularity where broadband funding and buildout is most needed.[71] In fact, the data suggest that there are likely unserved locations within even small blocks that are reported as served on Form 477.[72] Granular reporting for all areas also would reduce customer confusion when attempting to determine broadband availability on a map produced from GIS-based data.[73]

34. We also decline to adopt Connected Nation's proposal to establish a neutral, third-party clearinghouse for the collection of fixed broadband deployment data.[74] We conclude that such a clearinghouse would be largely redundant in light of the revised framework for collecting and reporting fixed deployment data that we adopt in this *Report and Order*.

B. Improving the Existing Form 477 Data Collection

35. As USAC begins undertaking the Digital Opportunity Data Collection, we will continue to use Form 477 for certain intended uses, such as evaluating local telephone competition, gathering broadband deployment and voice subscription data, and collecting certain public safety information. However, we propose in the *Second Notice* to transition the collection of mobile broadband-capable network deployment data to the same USAC-administered portal created for fixed data and seek comment on sunsetting Form 477. We maintain the Commission's current Form 477 data collection for mobile broadband and voice data in the interim and take several actions to reduce the burden on service providers required to submit the form.

36. Publish Minimum Advertised or Expected Speed Data and Provider-Specific Coverage Data for Mobile Broadband Services. We adopt our proposal from the 2017 Data Collection Improvement FNPRM to no longer treat as confidential service providers' minimum advertised or expected speed data for mobile broadband services.[75] After review of the record and considering what

[69] *See* NTIA *Ex Parte* at 11.

[70] *See, e.g.*, Galena Territory Nov. 9, 2017 *Ex Parte* Letter at 2 (arguing that more granular data would permit funding to be targeted to all unserved locations and provide the FCC with a more accurate view of broadband availability in rural areas); NTCA Apr. 30, 2019 *Ex Parte* Letter at 1 (arguing that sub-census-block reporting "would reduce greatly the number of unserved locations 'swept in' as served merely by virtue of sharing an arbitrary census block with a location that is in fact served").

[71] *See* Connected Nation May 17, 2019 *Ex Parte* Letter at 2.

[72] *See, e.g.*, FCC, *Analysis of Rural Served & Unserved Price Cap CBs*, https://ecfsapi.fcc.gov/file/10624097909042/Copy%20of%20PC%2025_3%20Unserved%20Rural%20HU%20Analysis_061919_PUBLIC_1%20(004).pdf (last visited July 9, 2019) (showing that, for the sample data, 29% of locations in small blocks may lack service availability).

[73] *See* NTCA Apr. 30, 2019 *Ex Parte* Letter at 4. For the same reasons, we decline to adopt Hughes' proposal to use four major geographic census regions as reporting blocks for satellite providers as not granular enough. Hughes Network Systems, LLC Comments at 2-4 (Hughes Comments); Letter from Jodi Goldberg, Associate Corporate Counsel, Regulatory Affairs, Hughes Network Systems, LLC, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 11-10, at 3-4 (filed Nov. 2, 2017).

[74] Connected Nation Reply at 1-7 ("This clearinghouse would carry out broadband data collection and analysis; map broadband availability, platforms, and speeds using GIS; track where federal investments have been made to improve access; and process feedback submitted by consumers and conduct on-site field validation where necessary to ensure continual refinement of the maps.").

[75] *2017 Data Collection Improvement FNPRM*, 32 FCC Rcd at 6346, para. 51.

service providers already make public on their websites, we conclude that minimum advertised or expected speed data filed for mobile broadband services will not be treated as confidential and, therefore, such data will be publicly released for all subsequent filings. Currently, the bulk of the speed data that providers file relating to minimum advertised or expected speeds is treated as confidential because most, if not all, providers choose to check the non-disclosure box that is available to them on the form. This box allows providers to claim confidential treatment for what is otherwise publicly available speed information.[76] Doing so, however, unnecessarily limits the ability of consumers and policy makers to effectively analyze the data submitted.

37. We also conclude that provider-specific coverage data will be publicly released for all subsequent Form 477 filings. This action is necessary to ensure that consumers can easily use the information that is disclosed to the public, including minimum advertised or expected speed data, because such information is only beneficial if consumers know where service coverage is available. Because the Commission already makes provider-specific coverage data publicly available on its website by publishing each provider's shapefiles, filers will no longer be permitted to request confidential treatment for such information upon filing.[77]

38. We expect that disclosing minimum advertised or expected speed data, combined with already publicly available coverage information, will serve the public interest by promoting a more informed, transparent, and efficient marketplace. The dissemination of such information will allow consumers to determine what services are offered in specific geographic areas. It will also enable consumers to compare competing service offerings and make informed decisions regarding service plans and providers.[78] In addition, it will provide consumers with the opportunity to review the data to ensure its accuracy.[79]

39. We are not persuaded that this coverage and speed data is competitively sensitive. Providers routinely publish and advertise the expected upload and download speeds they offer.[80] Because coverage and speed data are already publicly available, we find that such information is not commercially sensitive, and conclude that its public release will not cause competitive harm to service providers. Most commenters agree that service providers often publicize this information by including it on their websites or in their advertising materials,[81] which shows that they do not consider such information to be

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[76] *See* preexisting 47 CFR § 1.7001(d)(2)(i) & (ii); *FCC Form 477 Instructions* at 32. *See also* preexisting 47 CFR § 1.7001(d)(4) (providers may request confidential treatment of other data pursuant to section 0.459).

[77] *See* FCC, *Mobile Deployment Form 477 Data*, https://www.fcc.gov/general/mobile-broadband-deployment-data-provider-form-477 (last visited July 9, 2019). We amend § 1.7001(d) of the rules to clarify the procedures for public disclosure and requests for confidential treatment of certain categories of information reported on Form 477. First, new paragraph (d)(1) lists types of data that will not be made routinely available for public inspection (*i.e.*, emergency operations contact information and other information typically treated as confidential under rule § 0.457). Second, the Commission will disclose provider-specific subscription information as a general matter, but providers may request confidential treatment by checking a box on the form (new paragraph (d)(2)(i) of rule § 1.7001). Third, providers may request confidential treatment of provider-specific subscription information by checking a box on the form (new paragraph (d)(2)(i)), but the Commission will disclose—and will not entertain requests for confidential treatment of—data regarding providers' mobile broadband deployment and advertised or expected speeds (new paragraph (d)(2)(ii)).

[78] *2013 Form 477 Order*, 28 FCC Rcd at 9923, para. 82.

[79] *Id.*

[80] *See, e.g.*, AT&T Comments at 19 ("AT&T acknowledges that the speeds included in its 477 deployment submissions mirror the speeds it posts on its website, which represents the range of speeds consumers can expect to receive at the CMA level"); Verizon Comments at 14 (stating that a provider's minimum advertised speeds could be publicly disclosed since "providers already inform customers of the typical expected wireless broadband speeds").

[81] *See, e.g.*, Verizon Comments at 14 ("A provider's minimum advertised speeds could, as the Commission suggests, (continued….)

confidential or commercially sensitive.[82] Other commenters support the proposal with limited, specific reservations.[83]

40. When balancing the public and private interests at stake, we conclude that public release of this data will not result in competitive harm and that the public interest in releasing coverage and speed information substantially outweighs any interest that service providers have in keeping confidential information that is already publicly available.[84] Accordingly, going forward we will publish nationwide, provider-specific coverage maps depicting minimum advertised or expected speed data.[85]

41. *Eliminating Requirement to Report Separately on Each Spectrum Band.* Under the current Form 477 reporting framework, mobile facilities-based providers are required to submit separate coverage maps depicting their broadband network coverage areas for each transmission technology and each frequency band.[86] Eliminating this requirement is necessary to enhance focus on aspects of the data that are more important while decreasing burdens, so we therefore eliminate this unnecessary requirement.[87]

42. The Commission had hoped that collecting deployment information by spectrum band

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be disclosed publicly since providers already inform customers of the typical expected wireless broadband speeds."); Connected Nation Comments at 9 ("The FCC should make minimum advertised/expected speeds publicly available… because it is advertised by service providers."); CPUC Comments at 9 ("The CPUC strongly supports these proposals to release publicly minimum advertised or expected speed data and non-commercially sensitive data"); Institute for Local Self-Reliance Comments at 2-3 (arguing that minimum advertised or expected speed data should not be considered commercially-sensitive because it is "already available from other sources, such as advertisements and providers' websites").

[82] T-Mobile Comments at 3 (stating that T-Mobile supports the public disclosure of speed data if the Commission eliminates the requirement that mobile broadband providers submit their broadband deployment data by spectrum band).

[83] Some commenters expressed concerns that the Commission will create new requirements on how speed information is disclosed, or force providers to disclose the information in a new or different manner. *See, e.g.*, Verizon Comments at 15; AT&T Comments at 19.

[84] *See 2013 Form 477 Order*, 28 FCC Rcd at 9911, para. 48 (weighing the burdens of the filing requirement against the public interest benefits). Our decision to release this information is consistent with our long-established authority to release even otherwise confidential information after a balancing of the public and private interests at stake. *See* 47 U.S.C. § 154(j); *Schreiber v. FCC*, 381 U.S. 279, 291-92 (1965); *Examination of Current Policy Concerning the Treatment of Confidential Information Submitted to the Commission*, GC Docket No. 96-55, Notice of Inquiry and Notice of Proposed Rulemaking, 11 FCC Rcd 12406, 12414-15, para. 15 (1996). The Supreme Court's recent decision in *Food Marketing Institute*, (*Food Mktg. Inst. v. Argus Leader Media*, No. 18-481, 2019 WL 2570624 (U.S. June 24, 2019) (*FMI*)), does not affect this authority. In *FMI*, the Court addressed what showing was necessary to *permit* the agency to withhold confidential commercial and financial information from disclosure under the Freedom of Information Act (FOIA). The Court found that information qualified as confidential "[a]t least where commercial or financial information is both customarily and actually treated as private by its owner and provided to the government under an assurance of privacy," slip op. at 12, without reaching the issue of whether government assurances of privacy were necessary, slip op. at 6. Here, the issue is whether the Commission is *required* to withhold Form 477 filings from public review. We believe that even if the data at issue is "customarily and actually treated as private by its owner," and thus might qualify for protection under Exemption 4 of the FOIA, this finding alone, without a further showing of harm, is not a private interest sufficient to outweigh the public benefits identified above. Here, no provider has made such a showing.

[85] *See FCC Form 477 Instructions* at 12, 24.

[86] *2013 Form 477 Order*, 28 FCC Rcd at 9908, para. 42; *FCC Form 477 Instructions* at 24.

[87] Consistently, we amend section 1.7001 of our rules by deleting the text in paragraph (d)(2)(ii) regarding requests that provider-specific deployment data regarding spectrum parameters for internal network planning purposes be withheld from public disclosure. This provision is unnecessary because such data will no longer be collected.

would enable it "to analyze deployment in different spectrum bands," but that has not come to pass.[88] We agree with commenters that eliminating this requirement will streamline the reporting process and reduce the number of coverage maps (and the associated underlying data processing) that reporting entities must submit.[89] As Verizon notes, the Commission usually requests band-specific information directly from licensees in the context of analyzing build-out and license renewal representations, and does not look at the current data collected.[90] The burdens of submitting this data outweigh the benefits, particularly in light of the Commission's limited use of this data.[91]

43. We disagree that the Commission and consumer advocates may find it difficult to monitor providers' buildout requirements without this information.[92] We are also not persuaded by Institute for Local Self-Reliance's (ILSR) unsupported argument that we should continue to collect information that might be useful in the future.[93] ILSR provides no meaningful examples of how the Commission might use these data. We also disagree with ILSR's claim that information on deployment by spectrum band is "essential" to determine if mobile providers are offering mobile broadband service of 10 Mbps download and 1 Mbps upload.[94] Mobile broadband service providers already separately provide deployment data, including information on minimum advertised speeds. Moreover, given that service providers are deploying technologies (e.g., LTE) in multiple bands,[95] we find this information is even less useful today than it was in 2013 when we originally imposed this requirement. We should not impose collection burdens based solely on the possibility that we might use the information at some point in the future.

44. *Adding a 5G-NR Technology Code.* In the *2017 Data Collection Improvement FNPRM*, the Commission sought comment on whether it should require separate reporting of 5G mobile broadband deployment and, if so, whether and how it should define 5G for the purposes of the Form 477 data collection.[96] Given the industry's increasing deployment of 5G and our goal of facilitating 5G services to consumers, we will now require providers to report 5G technology deployments as part of their filings.[97]

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[88] *2013 Form 477 Order*, 28 FCC Rcd at 9910, para. 45.

[89] *See, e.g.*, CTIA Comments at 9 (reporting by spectrum band requires providers to create and maintain additional shapefiles, which costs providers time and resources); RWA Comments at 4 (eliminating the requirement to submit mobile broadband service availability data by spectrum band would "greatly streamline the filing process and reduce the burden on mobile service providers"); T-Mobile Comments at 4-5 ("Eliminating the requirements that providers report their coverage by spectrum band will limit the number of maps providers must create and maintain, thereby reducing burdens").

[90] Verizon Comments at 4-5 (explaining how the Commission can eliminate this requirement because the Commission monitors spectrum use through other processes); *see also* GCI Comments at 2 (noting that the carrier "also reports wireless coverage as required by the Commission's buildout reporting requirements in certain wireless service and bands." (citing 47 CFR § 27.14(l)). The Commission requires spectrum licensees to demonstrate compliance with performance requirements through the filing of applications in the Universal Licensing System (ULS) database. *See* FCC, *Universal Licensing System*, https://www.fcc.gov/wireless/systems-utilities/universal-licensing-system (last visited July 9, 2019).

[91] However, as discussed in the *Second Notice*, we seek comment on a proposal to collect infrastructure data from providers, including channel bandwidth (in megahertz) by spectrum band.

[92] New America's Open Technology Institute (OTI) Comments at 9.

[93] ILSR Comments at 3.

[94] *Id.*

[95] Mike Dano, *The Spectrum Bands Carrying the Most Data, Broken Down by Carrier* (Nov. 28, 2018), https://www.fiercewireless.com/wireless/exclusive-spectrum-bands-carrying-most-data-broken-down-by-carrier.

[96] *2017 Data Collection Improvement FNPRM*, 32 FCC Rcd at 6329, para. 15.

[97] *See* Linda Hardesty, *Sprint turns on 'true' mobile 5G with Massive MIMO and ENDC* (May 30, 2019), https://www.fiercewireless.com/5g/sprint-turns-true-mobile-5g-using-massive-mimo-and-endc; Natt Garun, *Verizon*

(continued….)

Gathering 5G deployment data for all areas of the country as well as creating 5G deployment maps based on such data is necessary so that consumers can understand where they can receive such services and to help guide us for future policies on 5G technology.[98] We find that adding 5G technology deployments to our mobile broadband data collection and maps—and specifically defining it for purposes of Form 477 collection—is consistent with the Commission's goal of tailoring its policies to evolution in technologies.[99] We therefore adopt the 5G-NR (New Radio) technology standards developed by the 3rd Generation Partnership Project (3GPP)[100] with Release 15 and require providers to submit 5G deployment data that meet the specifications of Release 15 (or any successor release that may be adopted by the Bureaus).[101]

45. We disagree with some commenters' claims that requiring submission of 5G deployment data would lead to inconsistent results based on an absence of 5G industry standards.[102] The 3GPP 5G-NR technology standards provide adequate guidance for filers to determine which deployments meet the 5G-NR technology definition.[103] We reject CTIA's suggestion that providers be allowed to voluntarily report 5G deployments.[104] To ensure that both the Commission and consumers have an accurate account of 5G deployments, we will make such submissions mandatory.[105]

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begins deploying its 5G mobile network in parts of Chicago and Minneapolis (Apr. 3, 2019), https://www.theverge.com/2019/4/3/18293773/verizon-5g-wireless-network-rollout-chicago-minneapolis; Dan Jones, *5G in the USA: More Mobile Steps* (May 14, 2019), https://www.lightreading.com/5g-in-the-usa-more-mobile-steps/d/d-id/751436.

[98] *See* Utah Governor's Office of Economic Development Comments at 3 (supporting collection of 5G mobile deployment data); AT&T Comments at 7 (supporting the proposal to require providers to file coverage maps for 5G deployment).

[99] *2013 Form 477 Order*, 28 FCC Rcd at 9910, para. 45.

[100] 3GPP unites seven telecommunications standard development organizations, including the Alliance for Telecommunications Industry Solutions (the standards development organization that applies 3GPP standards in the United States). 3GPP, *About 3GPP*, https://www.3gpp.org/about-3gpp (last visited July 8, 2019). 3GPP "covers cellular telecommunications network technologies, including radio access, the core transport network, and service capabilities" "and thus provides complete system specifications." *Id.*

[101] Recommendation ITU-R M.2083-0 (09/2015), *IMT Vision – Framework and overall objective of the future development of IMT for 2020 and beyond* (2015), https://www.itu.int/dms_pubrec/itu-r/rec/m/R-REC-M.2083-0-201509-I!!PDF-E.pdf; 3GPP, *Release 15* (Apr. 26, 2019), https://www.3gpp.org/release-15. "While initial specifications enabled 'non-standalone' 5G radio systems integrated in previous-generation LTE networks, the scope of Release 15 expands to cover 'standalone' 5G, with a new radio system complemented by a next-generation core network. It also embraces enhancements to LTE . . . ." 3GPP, *Release 15* (Apr. 26, 2019), https://www.3gpp.org/release-15. For Form 477 reporting purposes, 5G-NR includes both non-standalone and standalone configurations.

[102] *See, e.g.*, T-Mobile Comments at 3, 12-13 (requiring providers to report on 5G deployments would be premature given the lack of industry standards and the nascency of such technologies). CTIA argues that any Commission definition may fail to capture the full range of 5G deployments. CTIA Comments at 10. Verizon echoes CTIA's position, arguing that the Commission should "not prematurely try to define or limit 5G technologies as they are developing." Verizon Comments at 6; *see also* Utah Governor's Office of Economic Development Comments at 3; T-Mobile Comments at 3, 12-13.

[103] Recommendation ITU-R M2083-0 (09/2015), *IMT Vision – Framework and overall objective of the future development of IMT for 2020 and beyond* (2015), https://spectrum.ieee.org/telecom/wireless/3gpp-release-15-overview..

[104] CTIA Comments at 10.

[105] Our requirement to report 5G deployments that meet the 5G-NR standards addresses the concerns of commenters arguing that the lack of a 5G standard is a reason not to require mandatory reporting of 5G data. *See* CTIA
(continued….)

46. *Eliminating Outdated Technology Codes.* In the *2017 Data Collection Improvement FNPRM*, the Commission sought comment on whether to eliminate or modify the requirement that mobile broadband providers report coverage information for each technology deployed in their networks.[106] Specifically, the Commission asked whether reporting entities should provide coverage maps for four categories of technology—3G, 4G non-LTE, 4G LTE, and 5G—rather than the nine mobile broadband technology codes that it currently uses and, if so, how the Commission should define these four categories.[107] Based on our experience with data gathered under the nine different mobile broadband technologies that the form specifies and on commenters' support for limiting the number of technologies, we modify the requirement to limit the required submission to four categories of technology—"5G-NR (New Radio)," "LTE (Long Term Evolution)," "CDMA-based," and "GSM-based."[108]

47. For broadband data submissions going forward, 5G-NR reported technology should comply with the current industry standards.[109] Similarly, we adopt the LTE standards developed by 3GPP in Release 8 through Release 14, and deployment reported under LTE should be consistent with such standards.[110] The "CDMA-based" category aggregates the CDMA and EVDO/EVDO Rev A categories in the current form, and the "GSM-based" category combines the GSM, WCDMA/UMTS/HSPA, and HSPA+ categories.[111] We will eliminate collection of deployment data under the Analog and WiMAX categories because both technologies are no longer in widespread use and have been decommissioned by several mobile providers.[112] The categories we adopt today will more meaningfully reflect information that is useful to consumers.

48. Several commenters suggest modifications to the proposal in the *2017 Data Collection*

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Comments at 10; Verizon Comments at 6; Utah Governor's Office of Economic Development Comments at 3; T-Mobile Comments at 3, 12-13.

[106] *2017 Data Collection Improvement FNPRM*, 32 FCC Rcd at 6335-36, para. 20.

[107] *Id.*

[108] *See, e.g.*, AT&T Comments at 7 (suggesting filing under three technology categories); Verizon Comments at 6 (supporting proposal to limit collection by technology but also noting the Commission should update as necessary); CTIA Comments at 9-10 &n. 23.

[109] *See Recommendation* ITU-R M2083-0 (09/2015), *IMT Vision – Framework and overall objective of the future development of IMT for 2020 and beyond* (2015), https://www.itu.int/dms_pubrec/itu-r/rec/m/R-REC-M.2083-0-201509-I!!PDF-E.pdf; 3GPP, *Release 15* (Apr. 26, 2019), https://www.3gpp.org/release-15.

[110] *See* 3GPP, *Release 8*, https://www.3gpp.org/specifications/releases/72-release-8 (last visited June 24, 2019); 3GPP, *Release 9*, https://www.3gpp.org/specifications/releases/71-release-9 (last visited June 24, 2019); 3GPP, *Release 10*, https://www.3gpp.org/specifications/releases/70-release-10 (last visited June 24, 2019); 3GPP, *Release 11*, https://www.3gpp.org/specifications/releases/69-release-11 (last visited June 24, 2019); 3GPP, *Release 12*, https://www.3gpp.org/specifications/releases/68-release-12 (last visited June 24, 2019); 3GPP, *Release 13*, https://www.3gpp.org/release-13 (last visited June 24, 2019); 3GPP, *Release 14*, https://www.3gpp.org/release-14 (last visited June 24, 2019).

[111] We specify the standards governing each technology category to provide clarity and consistency for filers and users of data collected. *See* Utah Governor's Office of Economic Development Comments at 4 (recommending that the Commission "specify which technologies fit into each category so that data users can understand the data collection method").

[112] *See* David Chartier, *Can you hear me now? Analog cellular networks shutting down next week* (Feb. 15, 2009), https://arstechnica.com/uncategorized/2008/02/can-you-hear-me-now-analog-cellular-networks-shutting-down-next-week/ (stating that both AT&T and Verizon, the only two major providers with nationwide analog networks, were shutting down their analog networks in February 2008); Sean Kinney, *Today is the last day of Sprint WiMAX service* (Mar. 31, 2016), https://www.rcrwireless.com/20160331/network-infrastructure/today-last-day-sprint-wimax-service-tag17 (explaining that Sprint was shutting down its WiMAX network in March 2016).

Improvement FNPRM.[113] We reject AT&T's suggestion that we require "providers to file coverage maps for only three technology categories, 3G/4G, 4G LTE and 5G."[114] As some commenters observe, modifying the requirement will fail to capture deployment of mobile technologies that predate LTE and 5G when parts of the country are still reliant on such technologies.[115] To address in part the concerns of GCI, Connected Nation, and the CPUC, we do not adopt AT&T's proposal. Instead, we modify the proposal from the *2017 Data Collection Improvement FNPRM* to retain aggregated collection under the "CDMA-based" and "GSM-based" categories of mobile broadband deployment data under technologies that predate LTE and 5G-NR (with the exception of WiMAX and Analog) because important uses remain for such data.[116] Aggregated collection under the "CDMA-based" and "GSM-based" categories, combined with collection of LTE and 5G-NR deployment, will ensure that areas of the country covered by at least 3G technology and entirely unserved areas of the country are captured, and will allow the Commission and other policymakers to evaluate those areas most in need.[117]

49. Given the extent of LTE deployment across the country, the importance of capturing mobile broadband deployment data under nine technology codes has been significantly reduced.[118] In 2017, "approximately 92% of the U.S. population lived in census blocks with LTE coverage by at least four service providers," "AT&T and Verizon each provided LTE coverage to census blocks containing approximately 98% of the population, T-Mobile provided LTE coverage to approximately 96% of the population, while Sprint provided LTE coverage to approximately 91% of the population." [119] Thus, with providers' increased reliance on LTE to provide mobile broadband across the country, capturing mobile broadband deployment under nine technology codes has become outdated and unnecessary.[120] The four codes that we adopt in this item will reduce burdens on filers while providing adequate information for

[113] *See* CTIA Comments at 9-10, n. 23 (arguing that the Commission should limit the required filing by technology to two categories—3G/4G and 4G LTE—and allow voluntary reporting of 5G technology); GCI Comments at 10-11 (stating that the four categories proposed will capture relevant differences in technology, and recommending maintaining a category of 2G/voice to distinguish areas that are entirely unserved from areas that have voice). However, Connected Nation and the California Public Utilities Commission (CPUC) discourage us from eliminating the requirement for filers to report mobile broadband coverage for each category of technology deployed in their networks. Connected Nation Comments at 11; CPUC Comments at 7.

[114] AT&T Comments at 7.

[115] *See* GCI Comments at 10-11; CPUC Comments at 7; Connected Nation Comments at 11.

[116] GCI points out that portions of Alaska still depend on 2G/voice technology. *See* GCI Comments at 10-11. Under the rule changes adopted today, the Commission will continue to collect 2G voice deployment data under its "Other" category of reporting. *See infra*, para. 52. Our continued collection of 2G voice deployment data should minimize—if not alleviate entirely—GCI's concerns.

[117] *See* GCI Comments at 10-11; s*ee also* Connected Nation Comments at 11; CPUC Comments at 7.

[118] In fact, some providers already have started the process of sunsetting certain 3G mobile broadband technologies. *See, e.g.*, Mike Dano, *Verizon stops activating CDMA 3G devices as network shutdown looms* (July 17, 2018), https://www.fiercewireless.com/wireless/verizon-stops-activating-cdma-3g-devices-as-network-shutdown-looms; Drew Fitzgerald, *AT&T Gives 3G Service Three Years to Live* (Feb. 21, 2019), https://www.wsj.com/articles/at-t-gives-3g-service-three-years-to-live-11550765221.

[119] *Communications Marketplace Report, 33 FCC Rcd at 12592, paras. 41-42.*

[120] In recent years, the Commission has been able to measure the state of wireless broadband deployment without separately needing deployment data for each of the nine technology codes. *See generally Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, GN Docket No. 18-238, 2019 Broadband Deployment Report, FCC 19-44, 2019 WL 2336551 (rel. May 29, 2019) (*2019 Broadband Deployment Report*); *Communications Marketplace Report*; *Implementation of Section 6002(B) of the Omnibus Budget Reconciliation Act of 1993*; *Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services*, GN Docket No. 17-69, Twentieth Report, 32 FCC Rcd 8968 (2017) (*Twentieth CMRS Competition Report*).

the Commission to continue to "assess the wireless marketplace to ensure that our spectrum and competition policies accommodate growing demand and evolving technologies in the provision of mobile broadband services."[121]

50. The new 5G-NR, LTE, CDMA-based, and GSM-based technology codes also lessen the likelihood that filers may adopt and file under their own definitions of technology deployments, leading to confusion and decreasing the usefulness of the data gathered.[122] Given that there are industry standards for 5G technology and LTE, we find it unnecessary to continue to require individual submissions under each of the previous nine codes.[123]

51. Finally, requiring deployment data to be submitted under four, instead of nine, technology codes will ease burdens on filers who must currently submit shapefiles for each technology.[124] We find that the limited usefulness and practical application of the nine technology codes that Form 477 currently requires do not outweigh the burdens that they generate for filers.[125]

52. *Simplifying Mobile Voice Deployment Data Collection*. We eliminate the requirement to submit mobile voice data by spectrum band for the same reasons that we eliminate this requirement for mobile broadband data: The Commission has yet to use this spectrum band information in its mobile voice coverage analysis and the requirement poses an additional burden on filers. We also streamline the technology filing requirement to four main voice-technology categories: 5G-NR, VoLTE, GSM-based, and CDMA-based.[126] GSM-based voice technologies include GSM or a subsequent generation of GSM, such as the current technology codes GSM, WCDMA/UMTS/HSPA, and HSPA+.[127] CDMA-based voice technologies include CDMA or a subsequent generation of CDMA, such as the current technology codes CDMA and EVDO/EVDO Rev A.[128]

53. In filing nationwide voice-service coverage data, facilities-based mobile voice providers are required to submit shapefiles representing geographic coverage by technology (e.g., LTE, CDMA, analog) and spectrum band of the service providers' voice coverage.[129] In the *2017 Data Collection Improvement FNPRM*, the Commission, while noting the importance of tracking where mobile voice services are available to consumers, sought comment on how it might streamline this collection.[130] Specifically, the Commission asked whether it should eliminate the submission of voice coverage by both technology and spectrum band[131] and whether it should continue to collect data for voice over LTE

[121] *2013 Form 477 Order*, 28 FCC Rcd at 9910, para. 45; *see also* Connected Nation Comments at 11.

[122] *See* CTIA Comments at 10; T-Mobile Comments at 3, 12-13.

[123] *Cf.* CTIA Comments at 9 n.23.

[124] *See* T-Mobile Comments at 4-5 (stating that it "must generate and submit 14 different coverage maps based on different technology, spectrum band, and speed combinations" and that "[t]his is a significant undertaking"); CTIA Comments at 9-10 (simplifying the categories of technologies reported would "ease burdens on providers while making the information more relevant to stakeholders").

[125] *See 2013 Form 477 Order*, 28 FCC Rcd at 9911, para. 48 (weighing the burdens of the filing requirement against the public interest benefits).

[126] We note that we will continue to require a Form 477 collection for "Other" to include any technology not captured by our classifications above.

[127] *FCC Form 477 Instructions* at 31.

[128] *Id*.

[129] *FCC Form 477 Instructions* at 26; *2013 Form 477 Order*, 28 FCC Rcd at 9912, para. 53. This requirement is the same for the mobile broadband service reporting, except that providers do not submit minimum speed information for voice deployments. *Compare 477 Instructions* at 24 with *477 Instructions* at 26.

[130] *2017 Data Collection Improvement FNPRM*, 32 FCC Rcd at 6336, para. 24.

[131] *Id*. at 6336, para. 24.

(VoLTE) separately.[132]

54. In the *2013 Form 477 Order*, the Commission stated that voice deployment data filed by spectrum band and technology type would (1) enable the Commission to analyze the extent of deployment in different spectrum bands; (2) help the Commission project market trends and adjust its spectrum and competition policies; and (3) assist in the Commission's efforts in the areas of emergency response and disaster relief by identifying the providers that typically serve an affected area.[133] The Commission no longer finds it useful, however, to examine voice deployment data by spectrum band for the purpose of adjusting its spectrum and competition policies, because service providers currently deploy voice and broadband technologies across multiple bands.[134] We also address the Commission's need to determine which provider's networks are available during an emergency, by retaining the requirement to submit data for VoLTE deployment. For example, VoLTE data coverage information demonstrates comprehensive technological compatibility among providers and aids the Commission in identifying where networks are available during natural disasters.

55. Multiple commenters observe that several maps must be generated to meet this filing requirement, with little corresponding benefit.[135] In balancing these interests, we find that more streamlined coverage maps depicting each provider's nationwide voice coverage area based on the technology categories outlined above allows consumers (and the Commission) to know where they can receive voice service from a given provider. We agree with the argument that continuing a separate collection for certain voice technologies is necessary because, for instance, consumers with a GSM-only phone may not be able to complete a call when roaming in an area where only CDMA is available.[136] Providers have or will soon sunset their older voice technologies, replacing them with VoLTE networks.[137] However, continuing to collect the voice technology deployment data we outline in this order is necessary for tracking where remaining legacy voice technologies are decommissioned, to ensure that coverage gaps in mobile calling do not arise.[138]

56. While we are streamlining the filing of voice-deployment data, we find facilities-based mobile-voice providers should continue to submit VoLTE-deployment data, and going forward, 5G voice deployment data under the new 5G-NR category.[139] These data are valuable because they represent

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[132] *2017 Data Collection Improvement FNPRM*, 32 FCC Rcd at 6337, para. 25.

[133] *See 2013 Form 477 Order*, 28 FCC Rcd at 9912-9913, paras. 52-55.

[134] Mike Dano, *The Spectrum Bands Carrying the Most Data, Broken Down by Carrier* (Nov. 28, 2018), https://www.fiercewireless.com/wireless/exclusive-spectrum-bands-carrying-most-data-broken-down-by-carrier.

[135] *See, e.g.*, AT&T Comments at 8-9; T-Mobile Comments at 4-5; Verizon Comments at 7.

[136] *See* RWA Comments at 5-6; Utah Governor's Office of Economic Development Comments at 4.

[137] *See, e.g.*, Verizon, CDMA Network Activation Retirement, https://www.verizonwireless.com/support/knowledge-base-218813/ ("Verizon Wireless is retiring its CDMA (3G) network."); AT&T, Frequently Asked Questions (2019), https://www.business.att.com/content/dam/attbusiness/briefs/3G-faq-messaging.pdf ("Our [3G] network optimization efforts have already begun and will continue between now and until about February 2022."); John Donovan, AT&T, Technology Blog, *2G Sunset Brings Faster Speeds, Newer Technologies* (Jan. 16, 2017) (observing that AT&T shut down its 2G network on January 1, 2017); Dennis Bournique, *Time to Upgrade Your Phone—T-Mobile Replacing 1900 MHz 3G with LTE in 31 Markets*, Prepaid Phone News (July 19, 2017), https://www.prepaidphonenews.com/2017/07/tmo-lte-spectrum-update.html.

[138] *But see* Verizon Comments at 7 (noting that incompatibilities among older technologies are less meaningful due to VoLTE).

[139] The current requirement for facilities-based mobile voice providers is that they supply their deployment data by technology, which includes "LTE." FCC, How Should I Format My Mobile Voice Deployment Data 1 (rvsd Dec. 5, 2016), https://transition.fcc.gov/form477/MVD/formatting_mvd.pdf. This requirement will now be "VoLTE" and "Other," until such time as the Wireless Telecommunications Bureau further revises the requirement.

potential universal technical compatibility among mobile-voice providers, which could significantly aid emergency response, and other efforts facilitated by such compatibility.[140] For example, VoLTE coverage could better facilitate a customer's ability to complete a 911 call while roaming, particularly in rural areas where other voice technologies are not available.[141] VoLTE is not yet ubiquitous.[142] The filing of 5G-NR and VoLTE coverage data will allow the Commission to monitor how these deployments fill in and expand upon the current voice-coverage footprint. We direct WCB and OEA, in consultation with the Wireless Telecommunications Bureau (WTB), to change which mobile voice service technology data are collected going forward, as they evolve.

57. *Collect Mobile Broadband and Voice Subscription Data at the Census Tract Level.* Facilities-based mobile-broadband and voice providers are currently required to submit their subscriber numbers by state.[143] Providers must include their own prepaid and postpaid customers in addition to those of resellers.[144] Currently, providers are instructed to assign a subscriber to a particular state based on the area code of the device's phone number or "by using some other method that best reflects the subscriber's locations, such as billing address or place of primary use address."[145]

58. To provide more granular data, the *2017 Data Collection Improvement FNPRM* proposed changing the subscribership data by requiring service providers to submit subscriber data at the census-tract level, attributed to the subscriber's billing address.[146] Based on the record and the Commission's needs for more granular data, we now require providers to submit broadband and voice subscriber data at the census-tract level based on the subscriber's place of primary use. We find that state-level aggregation of subscription data significantly limits the data's usefulness, and that census-tract level data would substantially improve our ability to conduct more accurate mobile competition analysis, particularly in secondary market transactions.[147] For instance, the Commission analyzes competition by Cellular Market Area to determine the impact of removing a competitor in a proposed license transfer.[148] While the

[140] *See, e.g.*, *Connect America Fund et al*., Report and Order and Further Notice of Proposed Rulemaking, 32 FCC Rcd 2152, 2156-57, paras. 11-15 (2017) (seeking to advance the deployment of 4G LTE where it does not already exist); *see also* Verizon Comments at 7 (noting that incompatibilities among older technologies are less meaningful due to VoLTE).

[141] RWA Comments at 5-6, n.12.

[142] *See, e.g.*, *Sprint is Launching Voice over LTE in 15 Cities*, CIO Bulletin (Oct. 5, 2018), http://www.ciobulletin.com/telecom/sprint-launches-volte.

[143] *FCC Form 477 Instructions* at 25-27; *2013 Form 477 Order*, 28 FCC Rcd at 9914, para 57*; 2017 Data Collection Improvement FNPRM*, 32 FCC Rcd at 6337, para. 26.

[144] *FCC Form 477 Instructions* at 25-27; *See Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Services to All American, Improvement of Wireless Broadband Subscribership Data, and Development of Data on Interconnected Voice over Internet Protocol (VoIP) Subscribership*, Report and Order and Further Notice of Proposed Rulemaking, 23 FCC Rcd 9691, 9706, para. 16 (2008) (retaining mobile subscribership data by state); *2013 Form 477 Order*, 28 FCC Rcd at 9914, para. 57.

[145] *FCC Form 477 Instructions* at 28; *2004 Broadband Data Gathering Order*, Report and Order, 19 FCC Rcd at 22387, Line A.I-8 (requiring reporting of subscribers whose billing addresses are within the mobile provider's reported areas of availability).

[146] *2017 Data Collection Improvement FNPRM*, 32 FCC Rcd at 6337-38, para. 28.

[147] *Id.* at 6337, para. 27 (noting the Commission's ability to provide more accurate mobile competition analyses using census-tract level data, particularly in secondary market transactions review).

[148] *See, e.g.*, *SprintCom, Inc., Shenandoah Personal Communications, LLC, and NTELOS Holdings Corp.*, Memorandum Opinion and Order, 31 FCC Rcd 3631, 3641, para. 21 n.66 (2016) (using NRUF data for a competitive market analysis). *See also Communications Marketplace Report*, 33 FCC Rcd at 12583, para. 30 n.94 (using NRUF data to assess competition per Economic Area); *2017 Data Collection Improvement FNPRM*, 32 FCC Rcd at 6337, para. 26; CTIA Comments at 11.

Commission receives subscriber data from service providers to assess competition in relevant market areas in a pending transaction, it does not contain information about the other competitors in the market.[149] Having the same census-tract level subscribership data from all providers facilitates the Commission's ability to conduct comparative analysis in license transfer proceedings.

59. The Commission today relies on the telephone number-based Number Resource Utilization/Forecast information as a proxy for filer-submitted subscriber numbers when conducting competitive market analyses because of shortcomings in state-level subscriber data.[150] Number Resource Utilization/Forecast subscriber data indicate the number of assigned phone numbers that a service provider has in a particular rate center, out of the 18,000 rate centers across the country.[151] All service providers must report to the Commission the quantity of their phone numbers assigned to end users, which permits the Commission to calculate the total number of mobile wireless subscribers.[152] When a geographical analysis is required, rate center data can be associated with a geographic point within a county boundary.[153]

60. Number Resource Utilization/Forecast data, however, have limitations, like providing only the quantity of mobile wireless connections that have a telephone number, rather than the number of consumers subscribed to mobile broadband or voice service.[154] If a mobile broadband or voice subscriber uses a device that does not have a telephone number assigned to it (e.g., a tablet), then that subscriber will not be recorded in Number Resource Utilization/Forecast data.[155] These data also do not reflect when consumers move to a different state and retain the same telephone number.[156]

61. We find that both the Commission's need for more precise data for competitive analyses

[149] *See* CTIA Comments at 11 (arguing that the Commission could merely ask applicants in a transaction for subscriber data in a particular market).

[150] *2017 Data Collection Improvement FNPRM*, 32 FCC Rcd at 6337-38, para. 26; *Communications Marketplace Report*, 33 FCC Rcd at 12583, para. 30 n.9394; *Twentieth CMRS Competition Report*, 32 FCC Rcd at 8977-78 .

[151] *Communications Marketplace Report*, 33 FCC Rcd at 12583, para. 30 n.94 ("[Number Resource Utilization/Forecast] subscriber data indicate the number of assigned phone numbers that a wireless service provider has in a particular rate center (there are approximately 18,000 rate centers in the country)).

[152] *Id.*

[153] *Id.*

[154] *Twentieth CMRS Competition Report*, 32 FCC Rcd at 8977-78 n.65 (noting that NRUF data is increasing out of date the less each distinct device relies on a particular phone number).

[155] *See 2017 Data Collection Improvement FNPRM*, 32 FCC Rcd at 6337, para. 26 n.38.

[156] *See Id.*, at 6337, para. 26 n.38. For example, a consumer that received an 812 area code because he or she initially subscribed to mobile voice service in southern Indiana, but moved to California, is attributed to southern Indiana in NRUF data. That same consumer would continue to be attributed to southern Indiana, even if he or she never moves back to Indiana. As another example, an analysis of NRUF data in New Orleans following Hurricane Katrina overinflated subscribership by accounting for subscribers who left the area because of the disaster. *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993 et al., Annual Report and Analysis of Competitive Market Conditions with respect to Commercial Mobile Services*, Twelfth Report, 23 FCC Rcd 2241, 2369, 2372 (2008) (*Twelfth CMRS Competition Report*). Because the subscribers did not change their telephone numbers, the data reflected that they remained in New Orleans. *Twelfth Mobile Competition Report*, 23 FCC Rcd at 2372. ("One explanation for this may be that, after the flooding, people leaving the area took their cell phones (and cell phone numbers) with them. Thus, those numbers may still be associated with New Orleans rate centers, even though the people actually no longer live anywhere near there."); *compare id*. at 2369 (showing 100% penetration) *with Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993 et al., Annual Report and Analysis of Competitive Market Conditions with respect to Commercial Mobile Services*, Eleventh Report, 21 FCC Rcd 10947, 11046 (2007) (*Eleventh CMRS Competition Report*) (showing 77% penetration in New Orleans). *See 2017 Data Collection Improvement FNPRM*, 32 FCC Rcd at 6337, para. 26 n.38.

and the limitations of Number Resource Utilization/Forecast data outweigh industry concerns about the burden of the collection.[157] We believe that filer-supplied data at the census-tract level are superior to Number Resource Utilization/Forecast data because they are generated by the operators and based on the operator-determined location of its subscribers. Use of such data require the Commission to estimate the location of subscribers based on the rate centers associated with telephone numbers, and this can cause problems.[158] Mobile subscriber data at the census-tract level provides a dataset needed for our analyses, instead of introducing error by relying on Number Resource Utilization/Forecast data in a manner that it was not intended to be used.

62. Census-tract level reporting of mobile subscription data strikes the proper balance between more useful, granular data, while reducing artificial precision that could be introduced by getting too granular with mobile service use. Some commenters support the requirement to file subscriber data by census block.[159] OTI states that census-block level data would help digital literacy programs better target their efforts, because many households subscribing to these programs rely on mobile broadband as their primary means of accessing the Internet.[160] Using census tracts is consistent with our previous finding that this level of granularity corresponds to actual locations and can be correlated with valuable demographic census data.[161] Moreover, subscription data at the census-tract level would be useful for analyzing competition by market and would be more useful than rate-center based Number Resource Utilization/Forecast data. While customers are attributed to a particular address for their place of primary use, unlike fixed, the mobile nature of the service inherently makes such attribution to too small an area artificial.[162] The census-tract level maintains the balance of being useful for our analyses while reducing any artificial granularity.

63. We are not convinced that the burdens on reporting entities are so high that the Commission should continue to rely on Number Resource Utilization/Forecast data. We disagree with commenters who contend that we should continue to rely on Number Resource Utilization/Forecast data as the primary source of mobile broadband connections and voice service subscriptions.[163] The Commission must move forward with a more accurate mobile subscription collection to meet its goals and track subscribership data. Nothing in the record indicates that a census-tract collection is any more burdensome for mobile filers than for fixed filers, whom are already required to provide subscriber data at the census-tract level.[164]

64. To ensure consistency among submissions, we also require providers to submit census tract subscribership data by "place of primary use," which is defined in the United States Code as "the

[157] AT&T Comments at 9-10; CTIA Comments at 11-12; T-Mobile Comments at 9-10; Verizon Comments at 8-9; AT&T Reply at 2; GCI Reply at 5.

[158] *Communications Marketplace Report*, 33 FCC Rcd at 12583, para. 30 n.94; *see also 2017 Data Collection Improvement FNPRM*, 32 FCC Rcd at 6337, para. 26 n.38.

[159] CPUC Comments at 5; NTCA Comments at 9 n.12; OTI Comments at 6; West Virginia Broadband Enhancement Council Comments at 2; Deere Reply at 3 (arguing that since address-level data is collected anyway, the Commission should require subscriber-level data by census block).

[160] OTI Comments at 6.

[161] *2013 Form 477 Order*, 28 FCC Rcd at 9917, para. 67; *see also* OTI Comments at 7. *Cf* CWA Reply at 3 (stating if the Commission disaggregates data, then it needs to ensure that the data be disaggregated to a census-recognized boundary so that the data can be correlated with census data for demographic analyses).

[162] Verizon Comments at 8-9 (arguing that the more disaggregated mobile data the Commission collects, the more artificial precision and inaccuracy are introduced).

[163] *See* CTIA Comments at 11 (arguing that the Commission could use NRUF data instead of subscriber data); T-Mobile Comments at 2, 8-10.

[164] *2013 Form 477 Order*, 28 FCC Rcd at 9916-18, paras. 64-68.

street address representative of where the customer's use of the mobile telecommunications service primarily occurs," and must be the "the residential street address or the primary business street address of the customer" and "within the licensed service area of the home service provider."[165]

65. We find persuasive the concerns expressed by commenters that the use of billing address does not reflect where subscribers primarily use their mobile broadband and voice services.[166] Certain subscriber groups, such as seasonal workers, college students, business accounts, and prepaid subscribers, could be misreported if billing address is used to represent where they primarily use their service.[167] The "place of primary use" best addresses all of these concerns. This definition focuses on where the service is primarily used, not billed, and allows for inclusion of prepaid subscribers. Facilities-based mobile service providers[168] must also obtain and maintain this information for tax purposes, thus decreasing the burden of collecting and storing this subscriber data.[169] To the extent that providers do not currently have a system that associates a primary place of use with a census tract,[170] providers should obtain and keep this information in the normal course of business going forward.[171] While the place of primary use may not reflect all locations that subscribers may use their service, we believe it is the best proxy given the benefits and burdens commenters identified.[172]

66. *Eliminating Collection of Mobile Retail Availability*. We conclude it is appropriate to no longer collect census-tract level mobile retail availability data. The current form requires facilities-based mobile broadband providers to submit a list of census tracts in which the provider advertises its mobile wireless broadband service and in which the service is available to actual and potential subscribers.[173] These retail availability data were used as a proxy for mobile broadband deployment data before the Commission required submission of such data.[174] When the Commission began collecting deployment

[165] 4 U.S.C. § 124(8) (defining "place of primary use"); *see also 2017 Data Collection Improvement FNPRM*, 32 FCC Rcd at 6338, para. 29 & n.42 (seeking comment on "place of primary use").

[166] Connected Nation Comments at 12; GCI Comments at 15; T-Mobile Comments at 9; Verizon Comments at 8-9; *but see* CPUC Comments at 5 (advocating for billing address over "place of use," as the latter is not always determinable).

[167] GCI Comments at 15; Verizon Comments at 8-9; T-Mobile Comments at 9; Connected Nation Comments at 12.

[168] *See* 4 U.S.C. § 124(5) (defining "home service provider" as "the facilities-based carrier or reseller with which the customer contracts for the provision of mobile telecommunications services").

[169] 4 U.S.C. § 122 (requiring home service providers to obtain and maintain customer's primary place of use for taxing jurisdictions).

[170] AT&T Comments at 9-10. AT&T predicts that disaggregating subscriber data to the census-tract level would add 30-45 days to the filing requirement. AT&T Comments at 10. Verizon argues that providers do not maintain customer records by census tract, and that providers would need to create new systems and processes to map billing addresses to census tracts. Verizon Comments at 9.

[171] 4 U.S.C. § 122 (requiring providers collect and maintain subscriber's primary place of use).

[172] *See* T-Mobile Comments at 9 (arguing that subscribers use their mobile broadband and telephony services hundreds or even thousands of miles away from their billing addresses, whether running errands, at work, visiting friends and family locally or out-of-state, or retaining their number when moving to another state). *See also* Connected Nation Comments at 12; GCI Comments at 15; Verizon Comments at 8-9.

[173] *FCC Form 477 Instructions* at; *2013 Form 477 Order*, 28 FCC Rcd at 9909-10, paras. 44-45.

[174] The *2004 Broadband Data Gathering Order* required filers reporting mobile wireless broadband subscribers to provide the Zip Codes representing the filer's mobile wireless broadband coverage areas. *2004 Broadband Data Gathering Order*, 19 FCC Rcd at 22349-50, para. 18. The accompanying instructions stated that providers should report the Zip Codes where the mobile wireless broadband service provider's service "is advertised and available to actual and potential subscribers." *Id*. at 22393.

data, it decided to retain the retail availability collection,[175] on the basis that such data are necessary to indicate where, within a service provider's coverage area, the provider actually has a local retail presence.[176] The Commission concluded that collection of retail availability data would complement the deployment data by allowing the Commission to better understand where service is "advertised and available" to subscribers within the provider's deployment footprint.[177]

67. The *2017 Data Collection Improvement NPRM* proposed to eliminate the collection of retail availability data, given that, as time passed, the data did not in actuality provide useful, additional information about where service providers have a local retail presence.[178] Based on the record, we now eliminate the mobile retail availability collection.[179] We agree with commenters that this collection creates an additional filing burden but does not yield useful data.[180]

68. We are not persuaded by those commenters that support retention or improvement of the retail availability filing requirement. The California PUC argues that we should continue collecting this information, but does not explain how it is useful beyond what is also collected for deployment data.[181] The West Virginia Office of the GIS State Coordinator states that we should revise the collection and require providers to submit their local retail presence, which would aid in determining how to serve consumers not located in retail service areas.[182] However, most (if not all) consumers can still subscribe to service despite the lack of a retail presence in a location, if a provider's network covers that location.[183] We find that deployment information, which service providers must continue to submit, is much more useful to consumers and policymakers than retail availability information, and accordingly we eliminate the mobile retail availability collection.

69. *Eliminating the Committed Information Rate Collection for Fixed-Broadband Deployment*. Form 477 currently requires fixed providers offering business/enterprise/government services to report the maximum downstream and upstream contractual or guaranteed data throughput rate (committed information rate) available in each reported census block.[184] However, the record in this proceeding supports discontinuing the collection of committed information rate data. We agree with commenters such as Alaska Communications that committed information rate data is "not a useful

[175] The Commission began collecting fixed and mobile service provider deployment information in 2013. *See 2013 Form 477 Order*, 28 FCC Rcd at 9922, para. 81 ("We are collecting deployment data for the first time . . ."). *Id.* at 9909-10, para. 44 (keeping the requirement but eliminating the reporting by speed tiers).

[176] *See 2017 Data Collection Improvement FNPRM*, 32 FCC Rcd at 6336, para. 21; *2013 Form 477 Order*, 28 FCC Rcd at 9909-10, para. 44.

[177] *See 2017 Data Collection Improvement FNPRM*, 32 FCC Rcd at 6336, para. 21; *2013 Form 477 Order*, 28 FCC Rcd at 9909-10, para. 44.

[178] *2017 Data Collection Improvement FNPRM*, 32 FCC Rcd at 6336, para. 22.

[179] *See* preexisting 47 CFR § 1.7001(d)(2)(i) & (ii); *FCC Form 477 Instructions* at 32. *See also* preexisting 47 CFR section 1.7001(d)(4) (providers may request confidential treatment of other data pursuant to rule § 0.459).

[180] Connected Nation Comments at 11 (agreeing that the availability data collection does not reflect providers' local retail presence); T-Mobile Comments at 5 (noting that the availability requirement is a burden without a benefit); Verizon Comments at 7.

[181] CPUC Comments at 7 (arguing the Commission should retain the availability requirement).

[182] West Virginia Office of the GIS State Coordinator Comments at 5.

[183] *See* Verizon Comments at 5 (arguing that providers are eager to provide service wherever they have coverage and there are a variety of means to subscribe to serve, other than through a local retail outlet).

[184] *2013 Form 477 Order*, 28 FCC Rcd at 9906, para. 38. *FCC Form 477 Instructions* at 2.

category of data" and "imposes significant burdens",[185] and with ACA, who argues that any rationale there was to adopt the requirement no longer exists because "small- and medium-sized end-users increasingly do not distinguish" between best-efforts or committed information rate "as broadband service performance for best-efforts is enhanced."[186] Verizon also agrees with eliminating the committed information rate requirement because "relying on the maximum upload and download speed should sufficiently describe the services that are available to business customers in an area."[187] AT&T supports elimination and asks that the Commission "limit the collection to the maximum best efforts speed offered, and maintain the indicators for consumer and business data."[188] Other commenters also are in agreement with eliminating the committed information rate reporting requirement.[189]

70. Only Windstream supports keeping the collection of committed information rate data, arguing that such data "enable the Commission to evaluate trends in the competitive landscape for the provision of Business Data Services . . . ."[190] Windstream, in fact, urges the Commission not only to keep but also to expand the collection and require reporting of the following CIR ranges at the census-block level: (1) 10 Mbps and below; (2) 11 to 50 Mbps; (3) 51 to 100 Mbps; (4) 101 Mbps to 1 GB; and (5) above 1GB.[191] Windstream contends that these data "are crucial for the Commission to evaluate whether its predictions prove accurate or whether different action is necessary to ensure competitive [business data service] markets."[192]

71. We disagree. Specific measures of a committed information rate are not required to evaluate the business data services market per the competitive market test that the Commission adopted in 2017 for price cap areas (prior to the *2017 Data Collection Improvement FNPRM*) and in 2018 for certain rate-of-return areas.[193] Accordingly, discontinuing the committed information rate collection lacks any relationship to our ability to "evaluate trends in the competitive landscape for the provision of [business data services]," as Windstream claims.[194] The competitive market test depends on reported service speeds (specifically, a minimum of 10/1 Mbps).[195] As long as we collect service speeds for upload and

[185] *See* Alaska Communications Comments at 2, 3 (Commission should "rely instead on price lists and similar sources of generally available terms for available speed in enterprise offerings").

[186] ACA Comments at 13.

[187] Verizon Comments at 7.

[188] AT&T Comments at 11.

[189] Comcast Comments at 17 (supports elimination, citing the Commission's sentiment that the CIR data do not provide "additional useful insight."); USTelecom Comments at 11 (supports elimination, believing it "may be more accurate to simply report whether a provider offers BDS, but no longer require that it report any speed data.") ITTA Comments at 2 (the CIR data does not provide "additional useful insight" and supports elimination); NCTA Comments at 3 (supports elimination for the reasons cited by the Commission); Sacred Wind Communications, Inc. Comments at 3 (agrees with eliminating the requirement because CIR data "provides no meaningful purpose" especially in rural areas where broadband speeds generally do not vary between residential and business/enterprise as both are provided "best efforts").

[190] Windstream Comments at 2; Windstream Reply at 2-5.

[191] Windstream Comments at 3.

[192] Windstream Comments at 3.

[193] *See Business Data Services in an Internet Protocol Environment et al.*, WC Docket No. 16-143 et al., Report and Order, 32 FCC Rcd 3459, 3527-29, paras. 145-52 (2017); *Regulation of Business Data Services for Rate-of-Return Local Exchange Carriers et al.*, WC Docket No. 17-144, Report and Order, Second Further Notice of Proposed Rulemaking, and Further Notice of Proposed Rulemaking, 33 FCC Rcd 10403, 10439-40, paras. 103-04 (2018) (*A-CAM Rate-of-Return BDS Order*).

[194] Windstream Comments at 3.

[195] *A-CAM Rate-of-Return BDS Order*, 33 FCC Rcd at 10436, paras. 90-91.

download, all the information necessary for an analysis using the competitive market test remains available. Therefore, we disagree with Windstream and decline to expand the collection of committed information rate data as requested.

72. *Permitting Company-Specific Fixed-Voice-Subscription Data at the Study-Area Level for Incumbent Local Exchange Companies*. In the *2017 Form 477 NPRM*, the Commission proposed to use the Form 477 fixed voice subscription data, in conjunction with Study Area Boundary data, to develop and publish aggregated voice line counts for every rate-of-return carrier study area.[196] The Commission's proposal stemmed from the fact that, at the time, rate-of-return carriers switching to the Alternative Connect America Cost Model and Alaska Plan carriers were no longer required to report such data to USAC for its legacy study area boundaries.[197] However, in the *December 2018 Rate-of-Return Reform Order*, the Commission reinstated the requirement so the Commission can once again collect the line count information (through FCC Form 507), thereby maintaining a frequently-used data set.[198] Consequently, we decline to adopt the proposal to replace the FCC Form 507 data with the Form 477 fixed voice subscription data (plus Study Area Boundary data) because the underlying rationale for the Commission's proposal no longer exists (i.e., the proposal is moot).

73. *Non-Substantive Clarifying Rule Amendments.* Finally, we adopt amendments to clarify our rules, correct inaccurate references, and delete superfluous text, without changing the substantive requirements.[199] First, we modify the rules to more clearly identify the categories of service providers required to submit data. The Commission has required facilities-based providers of broadband service to submit Form 477 since 2000,[200] but the existing rules do not define the key term "broadband." We remedy this gap by incorporating the form Instructions' definition of "broadband connection" into the rule.[201] Moreover, facilities-based providers of mobile voice service have been required to file since the form's inception;[202] but the rules do not make clear that mobile voice service providers can be defined as

[196] *2017 Data Collection Improvement NPRM*, 31 FCC Rcd at 6346, para. 50.

[197] *See Id.* at 6346, para. 50; *see also Connect America Fund; ETC Annual Reports and Certifications; Developing a Unified Intercarrier Compensation Regime*, Report and Order, Order and Order on Reconsideration, and Further Notice of Proposed Rulemaking, 31 FCC Rcd 3087 (2016); *Connect America Fund; Universal Service Reform – Mobility Fund; Connect America Fund – Alaska Plan*, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 10139 (2016).

[198] *See Connect America Fund; ETC Annual Reports and Certifications; Establishing Just and Reasonable Rates for Local Exchange Carriers; Developing a Unified Intercarrier Compensation Regime;* WC Docket Nos. 10-90, 14-58, and 07-135, CC Docket No. 01-92; Report and Order, Further Notice of Proposed Rulemaking, and Order on Reconsideration, 33 FCC Rcd 11893, 11937-38, para. 151 (2018) (*December 2018 Rate-of-Return Reform Order*).

[199] We find that there is good cause for adopting these clarifying revisions, which make our rules easier to understand without causing any substantive changes to the scope or application of our existing requirements. *See Util. Solid Waste Activities Grp. v. EPA*, 236 F.3d 749, 755 (D.C. Cir. 2001) (stating that notice and comment is "unnecessary" when it involves a "routine determination, insignificant in nature and impact, and inconsequential to the industry and to the public" (internal quotation marks omitted)).

[200] *See 2000 Data Gathering Order*, 15 FCC Rcd at 7750, para. 66 (form gathers information about "broadband lines and wireless channels that deliver in excess of 200 Kbps to a subscriber environment over the respondent's own facilities, or over unbundled network elements (UNEs), special access lines, and other leased lines and wireless channels that the respondent has obtained… and equipped to provide broadband service").

[201] *See FCC Form 477 Instructions* at 6 (defining "broadband connection" as a "wired line or wireless channel that terminates at an end-user location and enables the end user to receive information from and/or send information to the Internet at information transfer rates exceeding 200 kilobits per second (kbps) in at least one direction"). We modify this text by adding "or mobile device" after "end user location" so that broadband connections include data transmission channels to and from end users' mobile devices, which are not limited to a single "end user location."

[202] *See 2000 Data Gathering Order*, 15 FCC Rcd at 7736, para. 32 ("In addition to… providers of local telephone services, we require facilities-based providers of mobile telephony services" to submit data).

"facilities-based providers" or that only those that qualify as "facilities-based" must file.[203] We correct these anomalies by broadening the definition of "facilities-based providers" to encompass mobile voice service providers as well as broadband connections.[204]

74. We also consolidate the separate rule sections that establish Form 477 filing requirements for broadband service providers (sections 1.7000 *et seq.*) and local voice service providers (section 43.11) into a single set of rules. It is no longer necessary to retain two separate sets of rules regarding submission of the same form, particularly because any given entity may provide both types of services and thus is subject to both rules.[205] Furthermore, we revise text in section 1.7001(a) that inaptly refers to facilities-based providers' rights to use spectrum in terms of ownership rather than licensing.[206] Instead, we use the more precise and accurate text of the Form 477 Instructions to make clear that fixed wireless and mobile voice and broadband service providers are "facilities-based," for these purposes, if they: (1) use spectrum for which they have a license; (2) manage or lease spectrum from another licensee pursuant to our rules; or (3) operate over unlicensed spectrum that is lawfully available for its use.[207] We also delete unnecessary text.[208]

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[203] *See* preexisting 47 CFR § 1.7001(a)(1) (defining "facilities-based providers" exclusively in context of broadband), preexisting section 43.11(a) (listing categories of voice service providers required to file but omitting the qualifier "facilities-based" before "commercial mobile radio service (CMRS) provider").

[204] The new version of section 1.7001(a)(2) defines "facilities-based provider" in a manner that applies to providers of both mobile voice telephony and broadband: as an entity that provides service over "facilities that the entity owns or obtained the right to use from other entities in forms such as dark fiber, satellite transponder capacity Unbundled Network Elements (UNEs) and other leased lines (replacing the separate definition of "own facilities" in preexisting section 1.7001(a)(3)), as well as wireless spectrum for which the entity holds a license, spectrum it has obtained the right to use from another licensee, or unlicensed spectrum.

[205] The only substantive difference is that paragraph (a) of preexisting section 43.11(a) identifies categories of voice service providers required to file while paragraphs (a) and (b) of section 1.7001 establish definitions and identify broadband providers required to file. All other text in the two rule sections is identical (paragraphs (b)-(e) in preexisting section 43.11 are the same as paragraphs (c)-(f) in section 1.7001, respectively) and therefore superfluous. Thus, we are moving the list of local voice communications service providers required to file from section 43.11(a) into new section 1.7001(b)(2), (3), and (4) making clear in the revised section 1.7001(b) that both "facilities-based providers of broadband connections" (paragraph (b)(1)) and "facilities-based providers of mobile telephony" (paragraph (b)(3)) are required to file; and deleting the rest of section 43.11. We are also modifying section 1.7000 and the caption of Part 1, Subpart V, to establish that the purpose of the now-consolidated rules is to collect data on local telephone competition as well as broadband deployment.

[206] *See, e.g.,* existing section 1.7001(a)(1) (defining "facilities-based providers" to include those that provide service over their "own facilities" or "wireless channels that the entity obtains…"); existing section 1.7001(a)(3).(defining "own facilities" to include "wireless channels the entity actually owns"). Entities do not "own" wireless channels and cannot "obtain" or possess them. *See* 47 U.S.C. § 301 (purpose of the Act is to "maintain the control of the United States over all the channels of radio transmission; and to provide for the use of such channels, *but not the ownership thereof,* for limited periods of time, under licenses granted by Federal authority") (emphasis added).

[207] *See* Appendix A, new section 1.7001(a)(2)(iv) & (v); *cf. FCC Form 477 Instructions* at 5 ("An entity is a facilities-based provider if any of the following conditions are met:… (3) it provisions/equips a broadband wireless channel to the end-user premises over licensed or unlicensed spectrum; or (4) it provides terrestrial mobile wireless service using its own network facilities and spectrum for which it holds a license, manages, or has obtained the right to use via a spectrum leasing arrangement."). We will now require fixed wireless providers to indicate on the new Form 477, whether they operate over unlicensed spectrum.

[208] The text in preexisting section 1.7001(b) preceding the phrase "facilities-based providers" ("All commercial and government-controlled entities, including but not limited to common carriers and their affiliates…, cable television companies, terrestrial fixed wireless providers, terrestrial mobile wireless providers, satellite providers, utilities, and others") is superfluous because an entity's filing obligations depend on the types of facilities it uses and the services it provides, not its identity or affiliation. *Cf. 2000 Data Gathering Order*, 15 FCC Rcd at 7750, para. 64 (data to be collected regarding "service to consumers[,] irrespective of technology deployed in the [provider's] network"). We

(continued….)

75. Finally, we direct WCB, together with IB, WTB, and OEA, to modify Form 477 and the Instructions to the form to reflect changes in technologies over time and to update coverage resolution, network or transmission technologies, and related matters reported on Form 477 as necessary.[209]

IV. SECOND FURTHER NOTICE OF PROPOSED RULEMAKING

76. We take steps today in the *Order* to improve our broadband data collection and reporting by directing USAC, under the supervision of OEA, WCB, IB, and WTB, to undertake the Digital Opportunity Data Collection, an entirely new collection targeted specifically at identifying unserved areas with greater precision in order to advance our universal service goals. In this *Second Notice*, we seek comment on additional issues to continue our ongoing efforts to ensure that the Digital Opportunity Data Collection will evolve to align with changes to technology, markets, and policy needs.

A. Improving Broadband Data

77. Even with public input to improve the quality of the Digital Opportunity Data Collection over time, it is essential that we receive reliable fixed broadband availability data from filers of this new collection at the outset. Although we are cognizant of the potential burdens that greater precision in reporting can entail, commenters have indicated in the record that the approach we adopt today—to collect coverage polygons of fixed-broadband service availability—will allow providers to submit more precise data with reasonable burdens.[210] Nonetheless, we seek comment on steps the Commission can take to improve the quality of fixed broadband coverage polygons while minimizing the associated reporting burdens.

1. Additional Technical Standards for Fixed Broadband Reporting

78. As part of the Digital Opportunity Data Collection, the Commission is directing OEA, in consultation with WCB and IB, to provide guidance to fixed providers regarding how to develop the polygons depicting fixed broadband coverage. In this section, we seek comment on additional input that OEA and the Bureaus could use to inform that guidance.[211]

79. We seek comment on whether Commission staff should prescribe rules for reporting fixed wired broadband deployment that will provide consistently reliable results for similarly-situated filers? For example, should we establish fixed buffers around network facilities to define coverage for

(Continued from previous page)
also delete preexisting section 1.7001(a)(3) because it defines a term ("One-way broadband lines or wireless channels") that is not used elsewhere in the subpart.

[209] *2013 Form 477 Order*, 28 FCC Rcd at 9909, para. 43. No amendments to our rules are necessary to implement this change or the other modified reporting requirements adopted in this Report & Order; they will be implemented via revisions to the Form 477 Instructions and the form itself. We affirm the authority delegated to IB, WCB, WTB and OEA to update the technology codes in the future, which will address Verizon's concerns that codes may become outdated as technology evolves. *See* Verizon Comments at 6. We adopt a new rule section 1.7003, which also clarifies and affirms IB, WCB, WTB, and OEA's authority to "update the specific content of data to be submitted on FCC Form 477 as necessary to reflect changes over time in transmission technologies, spectrum usage, Geographical Information Systems (GIS) and other data storage and processing functionalities, and other related matters." This new rule also clarifies and affirms IB, WCB, WTB, and OEA's authority to "implement any technical improvements or other clarifications to the filing mechanism and forms." *See infra* Appendix A (revised rules).

[210] *See* NTCA Apr. 30, 2019 *Ex Parte* Letter at 3 ("other than some transitional efforts, the relative ongoing burden of reporting availability via shapefiles as compared to the current census block-based approach should be reasonable"); NCTA Apr. 10, 2019 *Ex Parte* Letter at 6 ("NCTA's proposal to move to a broadband reporting regime based on shapefiles offers the promise of far more accurate data without undue time or expense").

[211] We intend for this section of the *Further Notice* to help develop a record on which OEA, WCB, and IB can issue the technical guidance we have directed them to issue above, and we clarify that they need not wait for further Commission action to do so.

specific fixed technologies (e.g., 200-meter buffers around the location of distribution or coaxial plant)? Would this promote consistency and reliability among submissions? We note that applying such buffers or other constraints may foreclose consideration of individual network characteristics. Are there ways to mitigate or address this risk? What other methodologies for developing polygons should we permit fixed providers to use? For example, would polygons based on homes passed or addresses served by the fixed provider produce equally reliable polygons? How much flexibility should we afford fixed providers in selecting a methodology to creating broadband coverage polygons? Would any globally-applied constraint be too likely to over- or under-state service availability? How should broadband coverage polygons account for transport capacity? That is, how should we ensure that fixed providers are capable of serving every location covered by a polygon? We recognize that determining the area served by a broadband network is highly idiosyncratic and determined by multiple factors. For example, different companies might take different approaches in the same circumstance, while a single company might take a different approach in different markets depending on the level of local government regulation (e.g., local franchise agreements that include build-out requirements). In addition, coverage can depend on very local conditions like access to rights-of-way along one route and not another or the ability to serve the edge of franchise or service areas.

80. We also seek comment on establishing standards for reporting coverage polygons for terrestrial fixed wireless broadband service. In the *2017 Data Collection Improvement FNPRM*, the Commission sought comment on setting standards for mobile coverage polygons.[212] Separately, it adopted a set of standards for determining mobile coverage using a propagation model for the Mobility Fund Phase-II (MF-II) LTE data collection.[213] If the Commission adopts standards for reporting mobile broadband deployment, should we require terrestrial-fixed wireless providers to report broadband deployment using similar standards? Are there 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)? If so, would it be appropriate to adopt different standards (e.g., probability of cell-edge throughput) or parameters (e.g., a different utilization rate for unlicensed spectrum) for fixed wireless? Further, what factors should Commission staff consider to independently validate the fixed wireless mapping methodology (e.g., cell-site and receive-site engineering and technical details and locations, RF propagation characteristics, signal strength).

81. We also seek comment on whether fixed broadband providers should include latency levels along with the other parameters in reporting their coverage polygons. Latency is the time it takes for a data packet to travel across a network from one point on the network to another.[214] The Commission considers latency levels as relevant in the provision of universal service support.[215] If latency is to be included in reporting fixed broadband coverage, how should it be included? For instance, how and at what point in the network should the provider measure latency? Would we need to be more specific than how we considered latency in the context of awarding Connect America Fund Phase II support or would the same approach be appropriate?

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[212] *2017 Data Collection Improvement FNPRM*, 32 FCC Rcd at 6333, paras. 12-13.

[213] *Connect America Fund, Universal Service Reform – Mobility Fund*, Order on Reconsideration and Second Report and Order, WC Docket No. 10-90, WT Docket No. 10-208, 32 FCC Rcd 6282, 6298, para. 34 (2017) (*Mobility Fund II Order on Reconsideration and Second Report and Order)*.

[214] *See* Eighth Measuring Broadband America, Fixed Broadband Report at 8, https://data.fcc.gov/download/measuring-broadband-america/2018/2018-Fixed-Measuring-Broadband-America-Report.pdf.

[215] *Connect America Fund Phase II Auction Scheduled for July 24, 2018, Notice and Filing Requirements and Other Procedures for Auction 903*, AU Docket No. 17-182, WC Docket No. 10-90, Public Notice 33 FCC Rcd 1428 (2018).

82. We seek comment on what steps the Commission can or should to take to support the production of high-quality data and ways the Commission provide incentives to improve the quality of the data filed? Are there steps that fixed providers can take to ensure better quality broadband deployment data and, if so, what will the cost of those steps likely be? Does the technology deployed or the size of the fixed provider matter? If so, how? Is there a size or type of fixed provider that will be able to file high-quality data without any additional support or added cost? Are there unique burdens on smaller fixed providers that would not be burdens for larger fixed providers? In general, what will the cost be on the fixed broadband industry to produce reliable deployment data? Also, is there anything that can be done to lessen reporting burdens on all filers as part of the new collection, especially ways to harmonize filing procedures and requirements from other collections to reduce duplication of efforts?

83. We emphasize that the introduction of crowdsourced data does not alleviate a fixed provider's obligation to conduct thorough assessments of service availability before submitting broadband deployment data. We propose to use a variety of methods, including audits and statistical analyses, to confirm that the fixed broadband deployment data submitted by providers are accurate. Put simply, if a location falls within the coverage polygon submitted by a fixed provider, then it must either already receive fixed broadband service or be capable of receiving such service within ten days and without extraordinary expense. We seek comment on the best method (or mix of methods) to ensure the submission of accurate fixed broadband deployment data. What penalties would be appropriate upon a finding of inaccurate data and should there be more severe penalties for chronic filers of bad data? Should the Commission treat differently those coverage polygons submitted by providers that have a certain number of public filings disputing their accuracy? Is there an appropriate threshold or methodology to identify unreliable filings that should be treated differently, and if so, how should the Commission treat those filings?

84. *Improving Satellite Broadband Data.* We seek comment on how, for purposes of the Digital Opportunity Data Collection, we can improve upon the existing satellite broadband data collection to reflect more accurately current satellite broadband service availability. The Commission has recognized there are issues with the quality of the satellite broadband data that are currently reported under the existing Form 477. 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.[216] However, while satellite signal coverage may enable operators to offer services to wide swaths of the country, overall satellite capacity may limit the number of consumers that can actually subscribe to satellite service at any one time.[217] Given that the coverage geographies reported by satellite providers based on satellite beams are likely to remain larger than those reported by terrestrial fixed providers based on their network facilities, we seek comment generally on how to improve the satellite broadband data reported in the new data collection. Geostationary orbit (GSO) satellites are unique in that they have the relatively large beam coverage area over which service is provided, have inherent flexibility in using wide-area beams and spot beams, and face relative difficulty in adding new capacity.[218] For instance, given these characteristics of GSO satellite service, should the Commission require GSO satellite providers to report network capacity as well? Would additional information, including the number and location of satellite beams, the capacity

[216] *2019 Broadband Deployment Report* at paras. 28 & n.97.

[217] *2019 Broadband Deployment Report* at para. 28 & n.98; *see also Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, GN Docket No. 17-199, 2018 Broadband Deployment Report, 33 FCC Rcd 1660, 1681 at para. 51, n.148 (2018) (*2018 Broadband Deployment Report*). Indeed, the Commission has presented satellite data separately from other fixed services in its last two annual Broadband Deployment Reports. *See, e.g., 2019 Broadband Deployment Report* at paras. 28, 34, n.98, Appx. 9; *2018 Broadband Deployment Report*, 33 FCC Rcd at 1681, 1684-85, paras. 51, 54, 56, n.148.

[218] *See* Hughes Networks Systems, LLC Comments at 3 ("Geostationary orbit ('GSO') satellites provide wide-area coverage that do not merely cross multiple census blocks, but rather provide coverage of up to one-third of the earth's surface from a given orbital position."); Viasat July 16, 2018 *Ex Parte* Letter at 2.

used to provide service by individual satellite to consumers at various speeds and the number of subscribers served at those levels, improve the quality and usefulness of the satellite broadband availability data?[219]

85. We also seek comment on whether we could rely on other data to improve the reliability of the satellite broadband availability data reported in the new data collection. For example, would examining the presence of existing subscribers provide greater insight into where satellite broadband service is available than does satellite beam coverage data alone? Could we meaningfully validate a satellite provider's availability data based on the presence of subscribers above a *de minimis* level in the census tract in which the census block is located? For instance, should we use an absolute number and/or percentage of households or subscribers in a census tract? We seek comment on these methods and any other analysis to obtain a more meaningful representation of the deployment of satellite capacity in a geographic area.

86. We also seek comment on whether there are any other limitations that we should place on the reporting of fixed satellite broadband service. Current fixed satellite broadband service relies on GSO satellites, and customers' satellite earth stations therefore need a clear view of the southern sky to connect to such services. Should satellite broadband providers that rely on GSO satellites exclude from their reported coverage polygons any area where terrain blocks a clear view of their satellites (i.e., where it is not physically possible to deliver the service)? [220] We note that the Commission has recently authorized several non-geostationary satellite constellations (NGSOs) that contemplate providing low-earth-orbit, low latency satellite broadband services in the future.[221] What issues should be addressed for these satellite services in the new data collection as they begin to be offered?

2. Use of Crowdsourcing

87. In the *Order*, the Commission directs USAC to begin collecting information from state governments, including state public utility commissions, and local and Tribal governmental entities, as well as members of the public about the accuracy of the coverage polygons gathered from fixed providers and to make certain data publicly available. In this section, we seek comment about steps the Commission and USAC can take to make the best use of such data to improve the quality of the service-availability dataset going forward.

88. At a high level, we propose 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. We propose that USAC create a system to track complaints about the accuracy of fixed broadband coverage polygons. This functionality could be similar

[219] We recognize that certain information for satellite providers may involve issues of confidentiality. Viasat July 16, 2018 *Ex Parte* Letter at 3 (stating "information that may be of interest to the Commission—*e.g.*, relating to satellite network beam coverage, capacity, provisioning rates, and related technologies—is highly proprietary" and "operators could not reasonably be required to submit such information if the Commission could not ensure that it would be treated as confidential and exempt from public disclosure"). Could the Commission assess satellite broadband coverage, so long as it does not disclose data in a way that reveals confidential commercial information? Would the publication of nationwide, rather than location specific, data address confidentiality concerns?

[220] Viasat notes that it does not determine in advance whether a given location is likely to experience "line-of-sight" issues because these issues are extremely rare. Viasat July 16, 2018 *Ex Parte* Letter at 3.

[221] *See, e.g.*, *WorldVu Satellites Limited; Petition for a Declaratory Ruling Granting Access to the U.S. Market for the OneWeb NGSO FSS System*, Order and Declaratory Ruling, 32 FCC Rcd 5366 (2017); *Telesat Canada; Petition for Declaratory Ruling to Grant Access to the U.S. Market for Telesat's NGSO Constellation*, Order and Declaratory Ruling, 32 FCC Rcd 9663 (2017); *Space Exploration Holdings, LLC; Application For Approval for Orbital Deployment and Operating Authority for the SpaceX NGSO Satellite System; Application For Approval For Orbital Deployment And Operating Authority for the SpaceX NGSO Satellite System Supplement*, Memorandum Opinion, Order and Authorization, 33 FCC Rcd 3391 (2018).

to the Commission's existing consumer-complaints database.[222] Having a tracking system would allow USAC to pass the complaints along to the appropriate provider and track whether the person filing the complaint received a response. In instances where the provider agreed that its original filing was in error, USAC could track the error and ensure that the provider corrects its data. Alternatively, USAC could simply publish the complaints it receives and require providers to periodically check complaints about their filings. Is this a reasonable burden to place on providers? How could USAC efficiently track which of the complaints should be and ultimately are addressed through data corrections?

89. 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; if the challenging party subscribes to service, the download and upload speeds obtained by their test; the technology reported at that location by the provider; and contact information from the submitting party (e-mail address and/or phone number). Are these types of data appropriate for this collection and are there other types of data USAC should ask for to make this collection an effective tool for USAC, the Commission, industry, and the public? For example, should USAC collect qualitative information such as whether the individual has already contacted the provider against whom they are filing the complaint? Would it be helpful to gather information about nearby areas where service is available (if the individual knows)?

90. The Commission has noted that overall broadband deployment in Indian country remains significantly behind deployment on non-Tribal lands[223] due to several long-recognized barriers to broadband deployment on Tribal lands.[224] Given these additional challenges, we recognize the importance of Tribal participation in the Digital Opportunity Data Collection's public feedback mechanism. We seek comment on how best to incorporate input of Tribal governments on broadband coverage maps, given the special importance of collecting accurate and complete broadband availability information for Tribal lands. For example, we propose to have USAC or Commission staff conduct outreach directly with Tribal governments to facilitate their involvement in the dispute process and to provide technical assistance to them as needed. We seek comment on these proposals and how we could implement them most effectively. We also seek comment on any additional issues specific to Tribal governments that we should take into account in connection with any disputes concerning coverage data. Finally, we seek comment on whether we should expand these proposals to include other Tribal entities, such as inter-Tribal organizations.

91. We seek comment about how quickly fixed providers should be required to correct any data where they do not refute the alleged lack of coverage. Should USAC require that fixed providers either establish coverage or file updated coverage polygons within a specific number of days following submission of an uncontested dispute? If so, what number of days would provide a reasonable balance between the burden placed on fixed providers and the need for policy-makers to have the most accurate data possible? On the other hand, would it be overly burdensome for fixed providers to re-file data addressing each individual error, particularly if the provider's coverage is the subject of multiple pending complaints? Should USAC allow for fixed providers to batch any corrections into weekly or monthly updates, as needed? How can USAC balance the need for corrected data against provider burden? We

[222] *See* FCC, Consumer Complaint Center, https://consumercomplaints.fcc.gov/hc/en-us.

[223] *See Report on Broadband Deployment in Indian Country, Pursuant to the Repack Airwaves Yielding Better Access for Users of Modern Services Act of 2018* (CGB/WCB/WTB rel. May 1, 2019), *available at* https://docs.fcc.gov/public/attachments/DOC-357269A1.pdf (*Tribal Broadband Report*). *See also Consolidated Appropriations Act, 2018*, Pub. L. No. 115-141, Div. P—RAY BAUM'S Act of 2018, § 508(a)(1), 132 Stat. 348, 1095-96 (2018) (RAY BAUM'S Act of 2018).

[224] *See Federal-State Joint Board on Universal Service, Promoting Deployment and Subscribership in Unserved and Underserved Areas, Including Tribal and Insular Areas, Petitions for Designation as an Eligible Telecommunications Carrier and for Related Waivers to Provide Universal Service*, Twelfth Report and Order, 15 FCC Rcd 12208, 12220, para. 20 (2000); *USF/ICC Transformation Order*, 26 FCC Rcd at 17818-19, para. 479

note that NCTA proposes that fixed providers would correct the data in the next filing window,[225] which would leave the original data in place for as many as six months even after an agreement that the original filing was in error. Is that approach reasonable?

92. When the public files a complaint about the fixed broadband coverage polygons, there is a time lag between the date of the filing under the new collection and the date that the complaint is filed. We believe there are only very limited circumstances in which a provider would have previously had broadband service of a given quality (technology, upload speed and download speed) but removed it (e.g., copper retirement). Thus, if there is a complaint that the fixed broadband coverage polygons are incorrect, we believe it is likely that the data are incorrect for earlier time periods as well. Is this a reasonable assumption and should USAC require providers to resubmit all earlier datasets for the affected areas? Doing so would provide a more accurate view on the evolution of service-availability coverage over time. On the other hand, it will also involve a greater burden for providers. In addition, it is unclear whether the time-series data would be useful in targeting USF support. We seek comment on the relative benefit (better time series data) compared to the provider burden.

93. We also seek comment on how USAC should handle cases in which providers and the stakeholders disagree about whether the broadband coverage polygons are correct—that is, whether service is actually available at a given location.[226] How should USAC implement any dispute resolution process? Providers should have a period of time within which to refute any complaint and, in the absence of a timely and compelling response, USAC could require the fixed provider to submit a coverage polygon that excludes the disputed location. What types of evidence would be appropriate for providers to submit? How can USAC reliably and efficiently adjudicate conflicting claims in such circumstances? What evidentiary standard should USAC use to resolve such disputes, preponderance of evidence, clear and convincing evidence, or another standard? In situations indicating pervasive reporting errors, bad faith, or a refusal to refile a coverage polygon that has been found to contain an inaccurate location, USAC could take additional steps, such as referring the matter to the FCC for enforcement action. What remedies would be appropriate in such an enforcement action? If one possibility were monetary forfeitures, what would be an appropriate base forfeiture amount and what would be appropriate increments in the case of repeated or more egregious violations? Are there other approaches USAC should take to areas where there is disagreement?

94. We believe there could be instances of dispute between a member of the public filing a complaint and a fixed provider where both parties can credibly claim that they are correct. For example, a consumer may find a fixed provider is not available in its building because the building owner is not allowing that provider entry into the building.[227] If the excluded provider could meet the service-reporting requirements (e.g., with respect to time to service), should USAC consider such a location as served by that provider or not? Would it be beneficial to identify, as part of any tracking process for public feedback on the data collection, instances where a provider is willing and able to provide service but is not able to do so due to circumstances beyond its control? Would USAC need to verify or validate such claims and, if so, how? Or, in the alternative, should USAC require that providers remove from the coverage polygons they file small areas to represent those buildings in which they are prohibited from offering service for any reason?

95. Finally, we seek comment on whether USAC should accept the upload of bulk

[225] NCTA Apr. 10, 2019 *Ex Parte* Letter at 4.

[226] We note that in the Connect America Fund Phase II challenge process, there were 180,000 census blocks where there was disagreement. *Connect America Fund, Connect America Phase II Challenge Process*, WC Docket Nos. 10-90, 14-93, Order, 30 FCC Rcd 2718, 2718, para. 2 (2015). https://ecfsapi.fcc.gov/file/60001041943.pdf

[227] *See generally Competitive Broadband Access to Multiple Tenant Environments*, GN Docket No. 17-142, Notice of Inquiry, 32 FCC Rcd 5383, 5387, para. 8 (2017); *Improving Competitive Broadband Access to Multiple Tenant Environments*, GN Docket No. 17-142, MB Docket No. 17-91, Notice of Proposed Rulemaking and Declaratory Ruling, FCCCIRC 1907-04, paras. 21-22, 24-29, 36-37 (2019).

complaints data. We 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. On the other hand, we can see there could be value in allowing local or state governments to provide data in bulk where they have already investigated and so want to consider whether and how USAC could allow for the collection of bulk data.

96. To address these issues, should USAC limit permissible bulk filings to certain authenticated users, such as states or state commissions, local governments, and Tribal entities? If so, how should it approach authentication? What entities should be entitled to become authenticated users—for example, should USAC limit it to just state government entities? Are there parts of state governments, like public-utility commissions, or mapping or broadband offices, that would be more likely to provide meaningful input? Should USAC track and resolve disputes involving bulk complaints in the same manner as individual complaints? Or, in the alternative, should USAC accept complaints as accurate and shift the burden of proof onto providers to submit convincing data to refute the crowdsourced data? We seek comment on these issues.

3. Incorporating Location Information into the Digital Opportunity Data Collection

97. In the accompanying *Order*, we adopt the reporting of coverage polygons for fixed-broadband services, a step that will result in more precise deployment data. Parties have correctly pointed out, however, that simply knowing what parts of a census block lack broadband service does not provide enough information by itself to identify the specific locations within that census block that lack fixed broadband availability.[228] We agree that there are likely benefits to incorporating nationwide location data into the Digital Opportunity Data Collection. We therefore seek comment on how USAC can collect and incorporate such data. What data does USAC need and how could it get access to it? We believe that broadband coverage polygons submitted by service providers could be overlaid on nationwide location data in order to precisely identify the homes and small businesses that have and do not have access to broadband services, and seek comment on this view.

98. We note that the first step in incorporating location data is to establish a process where all broadband-serviceable locations (e.g., houses, businesses, structures) are mapped using a single methodology, providing a harmonized reference point for fixed broadband reporting.[229] Toward that end, the Broadband Mapping Coalition is in the process of testing a "Broadband Serviceable Location Fabric" to demonstrate the viability of a location-based proposal.[230] The Broadband Mapping Coalition's testing represents a concrete effort to identify the issues facing USAC in moving to a location-based collection.

99. We propose to create and integrate a broadband-serviceable location tool into the Digital Opportunity Data Collection. As an initial matter, what kinds of locations should we include as broadband-serviceable? For example, we could designate a parcel as the definition of a location on the theory that a fixed provider that offers service to one part of the parcel would be willing to serve anywhere on that parcel.[231] We seek comment on how to define the location of a parcel (e.g. as the centroid of a parcel or as the location of a building on a parcel). Alternatively, we could determine that a broadband addressable location should be defined as a building. The Broadband Mapping Coalition work

[228] *See* BMC Apr. 12, 2019 *Ex Parte* Letter at 2-4; USTelecom Mar. 21, 2019 *Ex Parte* Letter at 1; NTCA Apr. 30, 2019 *Ex Parte* Letter at 4.

[229] USTelecom Mar. 21, 2019 *Ex Parte* Letter at 2.

[230] USTelecom Mar. 21, 2019 *Ex Parte* Letter at 2.

[231] *See, e.g.*, 47 CFR § 68.105(b).

has shown that it is generally possible to identify individual buildings as locations.[232] We note, however, that there can be multiple buildings on a parcel and question whether it would be advisable to treat each of those buildings as a distinct location. We believe a provider is likely to run a single connection (drop) from its network to, for example, a farm, rather than individual connections to all of the structures on the parcel (e.g., the farmhouse and each garage, barn, chicken coop, storage shed, etc.). We seek comment on alternatives for defining a broadband-serviceable location.

100. Should we decide that, for residential users, the location would be the individual housing unit?[233] For residential Multi-Tenant Environments (e.g., apartment buildings), this could mean treating each individual apartment or unit as a separate broadband-serviceable location. We do not believe this approach is appropriate for determining fixed broadband coverage in a Multi-Tenant Environment—fixed providers likely would not offer service only to some units in a Multi-Tenant Environment. Additionally, we are concerned that the added complexity—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.

101. With regard to defining a location, we propose to have the database record a single point, defined by a combination of latitude and longitude, for that location. We anticipate that this would be the coordinates of a building on a parcel. 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 approach.

102. We also seek comment on how we would approach the quality of such a broadband-serviceable location database. We note that there are different types of errors possible in such a database, for example incorrectly counting a structure that does not need a broadband connection as a broadband-serviceable location, such as an abandoned house or a shed. Including such locations might lead us to mistakenly direct USF support to a location that does not need broadband service. 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. Such missed locations would not appear in the data collection at all and could be excluded from any USF support. Finally, there also could be errors about the characteristics of a location, for example, designating a residential location as a business or identifying the wrong building from among several on a given property. We seek comment on how best to account for these and other possible challenges in building an accurate location-based database.

103. We note that there are a limited number of data sources against which USAC could check such a dataset. The U.S. Census Bureau publishes block-level data, including the number of housing units, but only every ten years and Census data do not generally include business locations.[234] We seek comment on whether the less granular county-level housing estimates the Census publishes yearly could be used as a data source for dataset verification.[235] Furthermore, if we define a location as a parcel or

[232] BMC May 28, 2019 Ex Parte Letter at 3-4 ("the [Broadband Serviceable Location Fabric] methodology utilizes multiple algorithms to automatically process satellite imagery of building structures combined with parcel and land attribute data, address data, and other sources to identify and geocode structures that are broadband serviceable locations").

[233] *See* U.S. Census Bureau, *Definitions and Explanations*, https://www.census.gov/housing/hvs/definitions.pdf, (lasted visited Jul. 9, 2019) ("A housing unit is a house, an apartment, a group of rooms, or a single room occupied or intended for occupancy as separate living quarters.").

[234] *See* U.S. Census Bureau, *Economic Census*, https://www.census.gov/ec17faqs#par_textimage_0 (last visited Jul. 9, 2019) (the Economic Census provides information on business locations, the workforce, and trillions of dollars of sales by product and service type every five years for years ending in '2' and '7.').

[235] *See, e.g.*, U.S. Census Bureau, National State, and County Housing Unit Totals: 2010-2018, https://www.census.gov/data/tables/time-series/demo/popest/2010s-total-housing-units.html (last visited Jul. 9, 2019).

building (rather than a housing unit), we would not expect the counts to match the Census data. The National Address Database and Open Address Database each provide a list of addresses and point locations for areas where they have coverage.[236] Neither is a complete nationwide dataset, though they could be useful for checking areas where they have data. Each of these datasets has challenges, however. For example, the data in the National Address Database do not appear to be updated on a regular schedule and often have multiple points for a given address (e.g., from state, county and local government), making it hard to get a count of points in a given area. We seek comment on whether or how we can make use of such data sources. We also seek input on whether there are other sources we should be aware of that could be useful as a check of a broadband-addressable location database.

104. As an alternative, we could take a statistically valid sample of the data points as a way to keep the database updated and accurate.[237] We seek comment on how to stratify such a sample (are there distinct categories in the data—urban, suburban, rural, residential, business, Tribal, non-Tribal—that warrant distinct samples?). We also seek comment about how to evaluate the quality of the sampled data. Is it sufficient to look at satellite imagery or would we need to inspect locations in person?

105. In addition, the Commission must consider the level of quality that it seeks to attain in using any database. How should the Commission consider the trade-off between the time to improve the database's accuracy against the risks posed by any inaccuracies in the data? Would any of these approaches or sources identified above, or others, be helpful in determining particular types of errors in the location database? Should we incorporate public feedback, as we are doing with regard to broadband service availability polygons, in order to improve the accuracy of such a broadband-serviceable location database? And if so, how should we incorporate that data effectively?

106. With regard to the Broadband Mapping Coalition's location-based proposal, we seek comment on the use of two distinct data products used by the Broadband Mapping Coalition: a database of broadband-serviceable locations and a "lookup" tool for integrating provider addresses data into the locations database. We seek comment on whether the lookup tool would be necessary given our adoption of availability-map reporting in the accompanying *Order*. In other words, if fixed providers have invested the resources to create accurate polygons that depict the areas where their service is available, is an address-based lookup necessary at all? In the event such a lookup is necessary, should USAC be responsible for creating that lookup? And if USAC does develop a lookup, how can it ensure its accuracy? The Broadband Mapping Coalition has noted that there are reliability problems with geocoders,[238] particularly in rural areas.[239] What steps can USAC take to ensure that this lookup avoids some of the pitfalls the Broadband Mapping Coalition has observed? For example, matching a provider's address data to the Broadband Mapping Coalition's address data might require matching several data fields, such as the street number and name, any prefix or suffix, the city or town, state, and zip code, each

[236] *See, e.g.*, U.S. Department of Transportation, *National Address Database*, https://www.transportation.gov/gis/national-address-database/national-address-database-0 (last visited Jul. 9, 2019); *Open Addresses*, https://openaddresses.io/ (last visited Jul. 9, 2019).

[237] *See* Letter from James W. Stegeman, President/CEO, CostQuest Associates, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 11-10, Attach. at 15-16 (filed Nov. 16, 2018) (describing "Managed Visual Review … a process of using various managed human resources… to visually inspect, and/or review specified data.").

[238] Geocoding is the process of transforming a description of a location—such as a pair of coordinates, an address, or a name of a place—to a location on the earth's surface. Geocoding is typically implemented through geocoder software that performs the task of taking a location or address as an input and searching for it within a GIS. Geocoding then interpolates the position of the location or address in formal geographical coordinates (including the longitude and latitude of the searched location or address). *See* Techopedia, Geocoding (last visited June 19, 2019), https://www.techopedia.com/definition/12809/geocoding.

[239] BMC May 28, 2019 *Ex Parte* Letter at 3.

with substantial possible variations.[240] Should USAC accept only strict matches in order to avoid making mistakes, such as suggesting that a provider offers service in a location where it does not because of a too-loose matching approach? Is the risk greater of accepting low-quality matches, that is, identifying that service is available when it is not, or in rejecting too many matches for failing to meet quality criteria, potentially understating providers' reach? If USAC is matching only a relatively small fraction of provider addresses to the Broadband Mapping Coalition's database, should it be USAC's responsibility to improve the lookup or the providers' responsibility to improve their source data?

107. The Broadband Mapping Coalition pilot also raises several methodological and technical questions. For example, the Broadband Mapping Coalition chose which data sources to use, including negotiating the data rights associated with those sources; the fields from those data sources used to help make determinations about what constitutes a location in the database; and the logic used. For purposes of its pilot program, the Broadband Mapping Coalition also established, for example, a method for determining if a single structure that spans multiple parcels is a row house that should be split into multiple locations and how to choose which building location to use as part of the database, when there are multiple buildings on a parcel, or whether there are certain circumstances when one might have more than one building, such as in a trailer park. Are there determinations made by the Broadband Mapping Coalition as part of its pilot that the Commission should approach differently?

108. We also seek comment on whether, when, and how, after establishing a location-based fabric, USAC should implement a location-based reporting approach. In addition, we seek comment on the extent to which any location-based database should be fully accessible by the public. Should the full dataset be made available to the public or just the aggregate results from the filings? To what extent should such location information be shared with all providers? Would full disclosure aid the Commission and USAC in gathering location-specific information from the public. Would securing such rights lead to higher costs for the Commission than for the Broadband Mapping Coalition?[241] Are there some data sources or fields that should not be made public? Should members of the public be granted access to the actual database? Should there be restrictions on who should be granted such access (e.g., governmental entities, other providers)? We seek comment on these issues.

B. Improving Mobile Broadband and Voice Data

1. Collecting More Accurate and Reliable Mobile Broadband Deployment Data

109. We seek comment on incorporating mobile wireless voice and broadband coverage into the Digital Opportunity Data Collection and what additional steps the Commission should take to obtain more accurate and reliable mobile broadband deployment data. Obtaining accurate mobile broadband deployment data is challenging because performance on mobile broadband networks is inherently variable. Mobile network speed and coverage can vary greatly depending on a wide variety of factors, including: (1) the spectrum band employed; (2) cell traffic loading and network capacity in different locations; (3) the availability and quality of cell site backhaul; (4) the capability of consumers' devices; (5) whether a consumer is using a device indoors or outdoors; (6) terrain and the presence of obstacles between a consumer's device and the provider's nearest cell site (e.g., buildings, trees, and other local structures); and (7) weather conditions. This inherent variability has two dimensions—temporal and spatial. For example, at a given location a consumer may not have a strong enough signal to maintain a reliable broadband speed, or the network may be overloaded at one moment, and then suddenly acquire a signal strong enough, or the network traffic load lightens enough, to maintain a connection at speeds of 5 Mbps or more. Or, a consumer may lack a service signal at one location but receive a strong service signal only a few feet away. The probabilistic nature of mobile broadband service at any specific location

[240] Such variations for "street" alone could include Street, STREET, ST, STR, ST., Str., str, and other variations all representing the same thing.

[241] USTelecom Mar. 21, 2019 *Ex Parte* Letter at 4 (estimating that "the cost to implement the initial nationwide [Broadband Serviceable Location Fabric] is approximately $10 million").

and the many factors that affect a user's experience make it difficult to predict with high precision mobile coverage and speed or to develop a coverage map that always provides predictability for the service the consumer experiences.[242] Although no mobile broadband map will consistently reflect consumer experience with complete accuracy, wireless service providers must improve the quality of the data they submit.

110. *Standardized Predictive Propagation Maps*. In the *2017 Data Collection Improvement FNPRM*, the Commission sought comment on requiring the submission of coverage maps generated by propagation modeling software using standardized parameters for 4G LTE and later-generation technologies.[243] It also sought comment on whether to specify possible eligible models and to standardize to some extent the output of those models and certain input parameters, with the goal of allowing more meaningful comparisons among providers' mobile broadband deployment.[244] The Commission asked, for instance, whether it should require deployment maps to represent coverage at median speeds as well as speeds at the cell edge and, if so, how it should determine those speeds.[245] The Commission inquired about a range of potential input parameters, including: (1) the location of cells in decimal degrees latitude and longitude; (2) channel bandwidth in megahertz; (3) signal strength; (4) signal quality with signal to noise ratio; (5) cell loading factors; and (6) terrain provided at a minimum resolution of three arc-seconds.[246]

111. In response to the *2017 Data Collection Improvement FNPRM*, several commenters expressed support for requiring providers to submit coverage maps based on standardized technical parameters. AT&T, for example, recommended requiring parameters "with a standard cell edge probability of attaining specific download speeds for each technology (3G/4G, 4G LTE and 5G)," and a "standard cell loading factor based on the geographic service area (e.g., 30% for rural areas; 50% for urban/suburban areas)."[247] AT&T further argued that the reporting of other parameters, such as signal strength and clutter factors, was unnecessary.[248] The City of New York supported standardized parameters for median and edge speeds and stated that a median download speed of 10 Mbps with an edge speed of 3 Mbps "may be sufficient for current 4G LTE deployments, but is unlikely to be sufficient for future-generation deployments."[249] Deere & Company commented that propagation models should reflect "a signal strength of -85 dBm RSSI (Relative Signal Strength Indicator)," because a signal strength parameter would "accurately [reveal] where service quality is insufficient."[250] Other commenters urged the Commission to adopt the same parameters that it adopted for data collected in the Mobility Fund Phase II (MF-II) proceeding.[251]

112. In 2017, in the MF-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 MF-II auction.[252] Broadly consistent with an industry consensus

[242] The Commission, however, recognizes that providers have the experience and capabilities to optimize network performance and coverage with some certainty.

[243] *2017 Data Collection Improvement FNPRM*, 32 FCC Rcd at 6333, para. 12.

[244] *Id.*

[245] *Id.*

[246] *Id.* at 6333, para. 13.

[247] AT&T Comments at 5.

[248] *Id*. at 5-6.

[249] City of New York Reply at 1.

[250] Deere & Co. Reply at 2.

[251] *See, e.g.*, RWA Comments at 3.

[252] *Mobility Fund II Order on Reconsideration and Second Report and Order*, 32 FCC Rcd at 6296, para. 28.

proposal,[253] the Commission standardized a number of technical parameters for the data collection to be used for MF-II. In December 2018, the Commission suspended the subsequent phase of the MF-II challenge process, in which providers that filed coverage maps and data regarding their 4G LTE coverage could respond to challenges and launched an investigation into potential violations of MF-II challenge process rules by one or more major providers.[254] The investigation remains ongoing.

113. We ask commenters to refresh the record on the potential use of 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. We observe that at least one other national regulator uses a standardized RF propagation prediction method as a basis for verifying geographic coverage.[255] Commenters should specifically discuss their experience in the MF-II proceeding. Do commenters believe that requiring the submission of coverage maps using standardized RF propagation model(s) and parameters was or would be useful in demonstrating mobile broadband coverage? What insights should the Commission draw from the standardized parameters it established in that proceeding? Do commenters view standardized RF signal strength prediction and technical parameters regarding download speed, cell loading, probability of coverage or confidence intervals as sufficient to demonstrate coverage? If not, what additional parameters would generate better data that will allow meaningful comparisons of coverage between providers? Should the Commission, for example, specify an upload speed parameter? Should it specify a standardized signal strength level? Alternatively, should the Commission establish fewer or different parameters? Would 5G technology require different standardized parameters? Given that cell traffic loading and network capacity varies with time and in different locations, how representative of loading do commenters view the 30% loading factor for rural areas established in the context of the MF-II proceeding as compared to standard network loading conditions at various locations? Should we adopt a higher standard loading factor for urban areas? Should we instead require mobile wireless service providers to maintain and report historical cell loading over a given reporting period?

114. Coverage models predict speed and coverage using assumptions that are based on a combination of geographical and network information, including the location of network infrastructure and the power and capacity of network equipment. Although providers continually refine models by adding additional data, the inherent variability of mobile broadband performance will always affect their ability to predict an individual consumer's experience at a particular time and location. We seek commenters' views on how best to specify technical parameters that would account for the variability of mobile broadband performance. Do commenters agree that all parameters must be subject to a specified probability standard or confidence interval? Assuming a probability factor is necessary for describing coverage, do commenters view the 80% probability factor at the cell edge established in the context of the MF-II proceeding as reasonable or would a higher probability parameter such as 90% be more appropriate?

115. *GIS Data Format*. We ask commenters to refresh the record on whether providers should submit coverage maps as vector-formatted or raster-formatted GIS data.[256] In the *2017 Data Collection*

[253] *See* Comments and Petition for Reconsideration of CTIA, WC Docket No. 10-90, WT Docket No. 10-208 (Apr. 26, 2017).

[254] 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.

[255] Ofcom, *Consultation: Coverage obligations in the 700 MHz and 3.6-3.8 GHz spectrum award - Ofcom's approach to verifying compliance*, Jan. 31, 2019; see https://www.ofcom.org.uk/consultations-and-statements/category-2/coverage-obligations-in-the-700-mhz-and-3.6-3.8-ghz-spectrum-award.

[256] Raster datasets "represent geographic features by dividing the world into discrete square or rectangular cells laid out in a grid. Each cell has a value that is used to represent some characteristic of that location." Raster data "are commonly used for representing and managing imagery, digital elevation models," or "as a way to represent point, line, and polygon features." ArcGIS Help, *Raster Basics*, http://desktop.arcgis.com/en/arcmap/10.3/manage-

(continued….)

Improvement FNPRM, the Commission sought comment on requiring the submission of raster data, noting that because deployment maps are typically developed in raster format and then converted into vector-formatted GIS data, the submission of raster data would appear to be less burdensome for filers than the submission of vector data.[257] The Commission also stated that, unlike vector data, raster data would allow the Commission to "check the resolution of the submissions and to apply standard parameters, including simplified outputs and smoothing, when converting the rasters to shapefiles for analysis."[258] Some commenters supporting such an approach argued that allowing the submission of raster data instead of vector data would help reduce the burdens associated with broadband data collection by allowing providers to skip the step of converting deployment data into vector format.[259] We seek additional comment on whether requiring the submission of raster-formatted rather than vector-formatted data would improve the ability to verify the accuracy of deployment data, and what file format is the least burdensome. Would raster-formatted or vector-formatted data be preferable if the Commission decides to require providers to submit standardized coverage maps? Should the Commission require, or in the alternative, permit filers to submit data using another file format, such as ESRI Geodatabase?

116. *Infrastructure Information*. We propose to require that, upon the Commission's request, providers submit infrastructure information sufficient to allow for verification of the accuracy of providers' broadband data. A growing number of parties have suggested that mobile broadband coverage maps are inaccurate and have urged the Commission to implement mechanisms to verify provider data.[260] To date, however, the Commission has not had the information necessary to examine the methodologies used by providers in generating coverage data, or whether these propagation models reflect actual consumer experience.[261] In light of issues raised about the accuracy of coverage maps even after the Commission standardized some technical parameters in the MF-II proceeding, we anticipate that collecting accurate and recent network infrastructure information would be necessary to independently verify providers' data. Therefore, we propose to require that the provider submit, upon Commission request, the following information: (1) the geographic location of cell sites; (2) the height (above ground and sea level), type, and directional orientation of all transmit antennas at each cell site; (3) operating radiated transmit power of the radio equipment at each cell site; (4) the capacity and type of backhaul

(Continued from previous page)
data/geodatabases/raster-basics.htm (last visited June 18, 2019). Rasters can "represent all geographic information (features, images, and surfaces)," and are "a universal data type for holding imagery in GIS." *Id.*; *2017 Data Collection Improvement FNPRM*, 32 FCC Rcd at 6333, para. 11, n. 20.

[257] Vector data represents the world using points, lines, and polygons. Vector data files are useful for storing data that has discrete boundaries, such as country borders, land parcels, and streets. Raster data represents the world as a surface divided into a regular grid of cells. Rasters are useful for storing data that varies continuously, as in an aerial photograph, a satellite image, a surface of chemical concentrations, or an elevation surface. *See* GIS Geography, "Vector vs. Raster: What's the Difference Between GIS Spatial Data Types?" https://gisgeography.com/spatial-data-types-vector-raster/ (last visited June 19, 2019); PitneyBowes, "Raster and Vector Data, What's the Difference?" http://support.pitneybowes.com/SearchArticles/VFP05_KnowledgeWithSidebarHowTo?id=kA180000000Cu9DCAS&popup=false;&lang=en_US (last visited June 19, 2019).

[258] *2017 Data Collection Improvement FNPRM*, 32 FCC Rcd at 6333, para. 11, n. 20.

[259] AT&T Comments at 6, City of New York Reply at 3.

[260] Oversight of the Federal Communications Commission: Hearing Before the S. Comm. On Commerce, Science, and Transportation, 114th Cong. (2018) (expressing bipartisan concern about the accuracy of MF-II coverage maps); Letter from the Kansas Congressional Delegation to Ajit Pai, Chairman, FCC at 1 (May 6, 2019) (urging standardized validation of broadband availability); Letter from the Illinois Congressional Delegation to Ajit Pai, Chairman, FCC at 1 (June 17, 2019) (asserting that broadband maps are inaccurate and urging the Commission to develop "a process to validate or authenticate the information produced by service providers"); RF Engineering Coalition MF-II *Ex Parte* Letter; Competitive Carriers Association Reply, WC Docket No. 10-90, WT Docket No. 10-208, at 6 (filed May 11, 2017).

[261] *See, e.g.*, *2017 Data Collection Improvement FNPRM*, 32 FCC Rcd at 6332, para. 10.

used at each cell site; (5) all deployed spectrum bands and channel bandwidth in megahertz; (6) throughput and associated required signal strength and signal to noise ratio; (7) cell loading factors; (8) deployed technologies (e.g., LTE Release 13) and (9) any terrain and land use information used in deriving clutter factors or other losses associated with each cell site. We propose to require that a provider submit its infrastructure information within 30 days of receiving a request from the Commission. We ask for commenters' views on our proposal.

117. At the outset, we recognize that providers may view the infrastructure information we propose to collect as commercially sensitive information and we agree that such information should be treated as highly confidential.[262] We seek comment on this view. Do commenters agree that collecting network infrastructure information would be necessary to verify the accuracy of provider coverage map filings? If not, without such data, what mechanisms are available to validate that providers' coverage maps reflect reasonable predictions of consumer experience? Do commenters view the infrastructure information included in our proposal as sufficient to evaluate providers' mobile coverage and speed claims? If not, we ask commenters to discuss any additional infrastructure information we should require. Alternatively, does our proposal include any information that is not necessary? We seek comment on the potential burden associated with requiring such information, particularly for small providers, and on steps we could take to minimize the potential burden.

118. *Supplement Data Collections with On-The-Ground Data*. In addition to seeking comment on whether to require the submission of coverage maps based on standardized parameters, the *2017 Data Collection Improvement FNPRM* sought comment on whether to require the submission of "on-the-ground" data as part of the broadband data collection.[263] The Commission asked whether collecting on-the-ground data from providers, such as drive test data or tests taken from stationary points, would allow it to better evaluate consumer experience.[264] It noted that collection of on-the-ground data could supplement the model-based data, improving the understanding of how the theoretical data relates to actual consumer experience.[265] The Commission asked whether it should require speed test data, how it could impose such a requirement without being unduly burdensome to small providers, and whether providers generate data of this kind during their ordinary course of business. [266]

119. We ask commenters to refresh the record on these questions. In their comments on the *2017 Data Collection Improvement FNPRM*, some commenters supported a requirement that providers supplement their current broadband data with on-the-ground data.[267] Other providers opposed collecting on-the-ground data; they argued that such a requirement would impose unnecessary burdens on providers, especially since the Commission already had access to such information from third-party providers.[268] Some also argued that speed test data generally had limited value given variations in providers' speed test methodologies.[269] What steps could the Commission take to address concerns about the meaningfulness and statistical validity of providers' on-the-ground data? Should the Commission specify the methodology that providers must use to collect and provide on-the-ground mobile network performance data? If so, what parameters should the Commission establish for specific methodologies? Should the Commission consider requiring use of a specific set of measurement equipment or software applications

[262] *See, e.g.*, CTIA Comments at 13-14; Verizon Comments at 15-17.

[263] *2017 Data Collection Improvement FNPRM*, 32 FCC Rcd at 6333, para. 14.

[264] *Id.*

[265] *Id.*

[266] *Id*.

[267] *See, e.g.*, City of New York Reply at 3, Connected Nation Comments at 11.

[268] *See, e.g.*, AT&T Comments at 8, T-Mobile Comments at 2-3, 10-12.

[269] *See, e.g.*, T-Mobile Comments at 2-3, 11 Verizon Comments at 5-6.

enabling measurement of mobile broadband speeds? What measurement scenarios (i.e., indoor, outdoor, in-vehicle, stationary, mobile, height, etc.) should the Commission specify? To what extent do providers already collect any such data in their ordinary course of business?[270]

120. *Crowdsourced Data.* 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. Crowdsourced data are generated by mobile broadband users who voluntarily download speed test apps on their mobile devices. The Commission has used crowdsourced data in assessing service availability and in various Commission reports.[271] For example, in its most recent Broadband Deployment Report, the Commission supplemented Form 477 data with Ookla crowdsourced speed test data in assessing the deployment of advanced telecommunications capability for mobile services.[272] Crowdsourced data can serve as an inexpensive tool to validate speed and coverage claims by providing independent measurements of actual consumer experience on a mobile network across a variety of times and locations. Crowdsourced data have certain limitations, however. For example, speed tests that consumers usually initiate manually and perform only at specific times or places may introduce bias into the data and provide a less accurate picture of overall broadband performance.[273] More generally, the methods by which different speed test apps collect data vary and may not use techniques that control for geographic location, type of device, whether the test is performed indoors or outdoors, and traffic along the network path not controlled by the wireless provider. In addition, there may be a small sample problem with respect to some crowdsourced data, especially in rural areas where there may sometimes be very few speed tests. And, given the probabilistic nature of mobile wireless service in general, we note that crowdsourced data may not indicate an inaccuracy in the data from the coverage map as much as a difference in conditions.

121. We seek comment on developments in crowdsourcing applications and on ways in which the Commission can make greater use of third-party crowdsourced data to create more accurate and reliable mobile broadband maps. While we recognize the potential limitations, we nonetheless believe that crowdsourced data can serve as an important supplement to the information we collect from providers by independently measuring mobile broadband speed and availability. We ask parties to discuss potential sources of crowdsourced data as well as alternatives to crowdsourced data that can provide similar benefits. How should the Commission make greater use of third-party crowdsourced

[270] A variety of third-party entities perform speed tests for providers. *See, e.g.*, Nielson, Network Performance, Measuring the Mobile Consumer, https://www.nielsen.com/us/en/solutions/capabilities/nielsen-mobile-performance/ (last visited June 10, 2019); Mosaik, Network QoE, https://www.mosaik.com/network-experience-solutions/network-qoe/ (last visited June 10, 2019).

[271] *See, e.g.*, *Communications Marketplace Report*, 33 FCC Rcd at 12579, para. 25; *Twentieth CMRS Competition Report*, 32 FCC Rcd at 9034-37, paras. 90-92; *2019 Broadband Deployment Report*, FCC 19-44, * 6-7, paras. 16-17.

[272] *2019 Broadband Deployment Report*, FCC 19-44, * 6-7, paras. 16-17. Ookla gathers crowdsourced mobile speed data through its Speedtest mobile app. Speedtest, *Speedtest Apps for Mobile*, http://www.speedtest.net/mobile/ (last visited June 10, 2019). This app is available free of charge to smartphone users and is designed to test the performance of mobile cellular connections. Once the app is downloaded, with access to wireless service, users can measure the speed of their wireless connection whenever and wherever they choose.

[273] For example, while the Commission's Measuring Mobile Broadband speed test app is available for iOS phones, iOS devices do not have automated testing capability and can only execute the speed test manually. In addition, Ookla uses manual consumer-initiated testing, as opposed to background testing, which means that the majority of Ookla speed tests run by consumers are done so when they experience connectivity or speed issues, and network performance is less than optimal. *See* Speedtest, *How Ookla Ensures Accurate, Reliable Data*, https://www.speedtest.net/insights/blog/testing-methods-sampling/ (last visited June 10, 2019).

data?[274] How should the Commission determine which data to use, what limitations affect the use of such data, and how can they be resolved? How can we best make use of the Commission's own crowdsourcing application—the Measuring Mobile Broadband speed test?[275] How can the Commission make greater use of crowdsourced data collected by local, state, or Tribal governmental entities? What steps should the Commission take to ensure that the crowdsourced data it uses are statistically valid and provide accurate information? How should the Commission handle cases in which crowdsourced data shows that service is unavailable in an area where a provider claims broadband availability?

122. *Sampling Methodologies*. We also seek comment on other potential approaches for verifying submitted mobile broadband deployment data. Should the Commission establish a structured sampling process to verify the information it collects from providers? The Commission has used third-party structured sample data to assess service availability in its analysis of the mobile wireless industry.[276] Structured sample data helps ensure statistical validity by controlling for the location and time of the tests as well as for the devices used in the test and may be collected using stationary indoor or outdoor tests or drive tests.[277] But structured sample data can be expensive and involves judgments about when and where to run tests. Structured sample data may not include sufficient testing at indoor locations or in rural areas. We seek comment on whether the Commission should expand the use of structured sample data or even establish its own structured sample testing program to verify provider filings regarding mobile broadband coverage and speed? If so, then how can the Commission create a program that will produce a rich and useful dataset?

123. In response to the *2017 Data Collection Improvement FNPRM*, the California PUC supported the Commission's adoption of a structured sample approach.[278] It argued that collecting drive test data at the state level provides "the most effective measure of actual mobile broadband service speeds."[279] It suggested that the Commission designate a defined set of points nationwide and contract with a third party to deliver speed test data from those locations.[280] We seek commenters' views on such

[274] Speed measurements are performed through a variety of apps. As noted above, Ookla's Speedtest Mobile App is available free of charge to Android and iOS users and measures the performance of mobile cellular connections. Speedtest, *Speedtest Apps for Mobile*, http://www.speedtest.net/mobile/ (last visited June 10, 2019). OpenSignal's mobile speed test app is available free of charge to Android and iOS users and is designed to collect data about download speeds, upload speeds, and responsiveness, OpenSignal, *Help us measure mobile network experience from the source that matters most – actual users*, https://www.opensignal.com/apps (last visited June 10, 2019).

[275] The Commission's Measuring Mobile Broadband speed test app is available for both Android and iOS phones and measures mobile broadband performance for categories including download speed, upload speed, latency and packet loss. The application also records several other passive metrics such as signal strength of the connection, and device manufacturer and model. The Commission did not report speed metrics based on the FCC speed test app in the Communications Marketplace Report due to anomalies in the underlying data. *See Communications Marketplace Report*, 33 FCC Rcd at 12579, para. 25, n. 86.

[276] *See Communications Marketplace Report*, 33 FCC Rcd at 12582, para. 28. In the *Communications Marketplace Report*, the Commission presented mobile wireless indices from RootMetrics. RootMetrics performs drive tests and stationary tests in specific locations, using the leading Android-based smartphone for each network. RootScores are scaled from 0 to 100. *See* RootMetrics, Methodology, http://rootmetrics.com/en-US/methodology.

[277] Drive 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. *See Universal Service Reform – Mobility Fund*, Notice of Proposed Rulemaking, 25 FCC Rcd 14,716, 14,729 para. 40 (2010). For example, the Commission required recipients of Mobility Fund I support "to demonstrate that they have deployed a network that covers the relevant area and meets their public interest obligations with data from drive tests." *Connect America Fund et al.*, Report and Order and Further Notice of Proposed Rulemaking, 26 FCC Rcd 17663, 17793, para. 370 (2011).

[278] CPUC Comments at 6.

[279] *Id*.

[280] *Id*. at 6-7.

an approach. Assuming the Commission establishes its own testing process, how should it design a process that will produce a useful dataset? Should the Commission establish partnerships to collect drive test information? For example, should the Commission explore creating a pilot program with the United States Postal Service or other delivery organization with a nationwide fleet, to gather mobile performance data? Under such an approach, postal trucks could be equipped to collect mobile deployment and speed data as they travel on their routes in rural areas. We seek comment on the feasibility of creating such a program. What other partnerships should the Commission explore?

124. *Drone Testing*. We seek comment on the use of aerial drone testing to verify data accuracy, with a particular emphasis on using drones to conduct sample audits of provider-submitted mobile deployment data. Drone testing, like drive testing, measures signal strength and coverage using various software solutions (e.g., crowdsourcing and network performance applications) loaded onto smartphones mounted to a testing platform.[281] Service providers have begun using drones to measure coverage and signal strength of their networks, demonstrating that drones are a viable mobile network performance testing method.[282] We note that both drive and drone testing have significant limitations due to the inherent probabilistic nature of mobile network performance testing.[283]

125. We seek comment generally on the cost elements of drone testing and the relative contribution of each element to overall cost. Drones may need fuel or battery replacements more frequently than vehicles used in drive testing platforms.[284] Are these costs significant? How do roadway density, population, weather and natural and man-made terrain features affect the cost of drone testing? How does flight duration affect costs? [285] Are there cost-effective ways to mitigate survey time? What proportion of costs are attributable to the drone operator? What other costs are significant?

126. We also seek comment on unique barriers that may affect the usefulness and practicality of conducting network performance testing using drones. USAC recently performed drone and drive tests to measure mobile wireless coverage and quality in Puerto Rico post Hurricane.[286] USAC's initial analysis shows that drone and drive-tests can provide a comparable picture of network coverage and service quality in a given area, although drone tests are subject to specific variables that the test design

[281] *See* Letter from Victor Gaither, Vice President, High Cost, Universal Service Administrative Company, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 11-10, Attach. at 3 (filed July 9, 2019) (USAC presentation).

[282] Martha Degrasse, AT&T Outlines Plans for Drone Use, (September 6, 2017), https://enterpriseiotinsights.com/20170906/news/AT%26T-drones-tag4 (noting that drones can map radio frequency antenna patterns and look for signal interference) (last visited June 10, 2019); *see also* Miriam McNabb, *What Exactly Can Drone Geospatial Data Do? Disaster Response to Hurricane Michael Provides a Demonstrations*, (Nov. 6, 2018), https://dronelife.com/2018/11/06/what-exactly-can-drone-geospatial-data-do-disaster-response-to-hurricane-michael-provides-a-demonstration/ (discussing use of drones to produce highly precise 3D model of Mexico Beach, FL, after Hurricane Michael) (last visited June 11, 2019).

[283] USAC presentation at 8, *supra* para. 109.

[284] *Id*.; *see* Luke Dormehl, *7 Drones That Can Stay Airborne for Hours – and the Tech That Makes It Possible*, (Oct. 9, 2018), https://www.digitaltrends.com/cool-tech/drones-with-super-long-flight-times/ (noting that the average drone can fly for 30 minutes, but that newer battery or gas powered drone models are extending flight times) (last visited June 6, 2019).

[285] USAC presentation at 8 (noting that drone testing may be more expensive than drive testing to survey a specific area)

[286] The USAC request for proposal can be found here: https://webcache.googleusercontent.com/search?q=cache:h5ChdsOj7bYJ:https://www.usac.org/_res/documents/about/pdf/rfp/RFP-Puerto-Rico-USVI-Mobile-Assessment.pdf+&cd=1&hl=en&ct=clnk&gl=us; *see also* USAC presentation at 8. USAC is still evaluating the results of these tests. While USAC performed drive tests in Puerto Rico and the US Virgin Islands, it performed drone tests only in Puerto Rico. *See* USAC presentation at 3,8.

should take into account. [287] What specific testing parameters should apply to drone data collection compared to drive testing and crowdsourcing to ensure uniform results across methods? Are there any specific technical requirements (e.g., antenna, on-board processing) necessary to ensure uniform results across testing methods? Are there places and/or terrain where drones are either uniquely suited to surveying or, alternatively, currently unable to perform a valid network performance test, regardless of the cost?[288]

127. We seek comment on future technological advances that may increase drone efficiency.[289] Are advanced drone technologies ready and available today, at sufficiently low costs, to use widely? If not, what is a likely timeframe for their widespread adoption?

128. *Availability of Mobile Broadband Deployment Data*. Finally, we seek comment on ways we can make mobile broadband deployment data more available to the public. Currently, the Commission makes available on its website both coverage shapefiles, by provider and technology, as well as the deployment data represented in those shapefiles disaggregated to census blocks, based on two different methodologies.[290] In addition, the Commission has created a limited number of visualizations of

[287] *Id*. at 3; *see also Qualcomm Technologies Releases LTE Drone Trial Results*, (May 3, 2017), https://www.qualcomm.com/news/onq/2017/05/03/qualcomm-technologies-releases-lte-drone-trial-results (noting drone and drive tests may produce different results at a given distance from a cell site due to various factors) (last visited June 6, 2019); Ericsson, *Drones and Networks: Mobility Support*, (last visited June 11, 2019), https://www.ericsson.com/en/blog/2019/1/drones-and-networks-mobility-support ("Since the signal propagation in the sky is close to free-space propagation, the signal strength becomes stronger due to the reduced path loss….[However], the increased likelihood of line-of-sight paths to many non-serving cells increases the interference for the drone."). Given these variabilities, it may be appropriate to use different testing parameters for drone and drive tests to reflect the real-world experience of a user on the ground and to be able to fully compare results. For example, a signal strength of five measured by a drone in the air could mean that a user at a point on the ground directly below the drone would experience a signal strength closer to 10, depending on the conditions.

[288] Based on Census Bureau roadway data, drive-testable roads run through or near approximately two-thirds of the U.S., leaving a significant portion of the country reliant on data collection methods other than drive testing. WTB calculated that 66.59% of this area is "drive-testable" using roadway data from the U.S. Census Bureau overlaid with a uniform one kilometer by one-kilometer grid. The total area of each uniform grid cell was categorized as "drive testable" where there exists any road classified by the census data as a primary, secondary, or local road (MAF/TIGER Feature Class Codes S1100, S1200, or S1400, respectively). While it may be possible to drive test additional types of roadways (i.e., vehicular trails or private roads), doing so may be potentially difficult or cost-prohibitive. As a result, WTB excluded these other classes of roadways from its analysis.

[289] Recent advances are leading to faster and larger drones with sophisticated artificial intelligence. For example, some drones now have the ability to swarm and "talk" with each other and fly greater distances for longer periods of time, all without direct human control. Pierce Lancaster, *Top 5 Latest Technology Drones*, (June 3, 2019), https://thewiredshopper.com/top-5-latest-technology-drone/ (last visited June 6, 2019) (explaining that military drones will be faster); Emily Begley, *UC Develops New Breed of Drones*, (June 3, 2014), https://www.soapboxmedia.com/features/06031-uc-drone-technology.aspx (last visited June 6, 2019) (describing drones that are larger and can carry up to ten pounds and can be operated with computers, cellphones and other devices); Colin Snow, *Seven Trends That Will Shape the Commercial Drone Industry in 2019*, (Jan. 7, 2019), https://www.forbes.com/sites/colinsnow/2019/01/07/seven-trends-that-will-shape-the-commercial-drone-industry-in-2019/#705b524f7494 (last visited June 6, 2019) (describing new developments in drones with AI capabilities); Ivan Tolchinsky, *4 Ways the Drone Scene Will Change in 2018*, (Feb. 4, 2018), https://thenextweb.com/contributors/2018/02/04/4-ways-drone-scene-will-change-2018/ (last visited June 6, 2019) (describing mesh networks that enable drones to exchange data and streamline activity; describing drones that will perform their tasks working together "like insects in a colony"); Luke Dormehl, *7 Drones That Can Stay Airborne for Hours – and the Tech That Makes It Possible*, (Oct. 9, 2018), https://www.digitaltrends.com/cool-tech/drones-with-super-long-flight-times/ (last visited June 6, 2019) (describing drones with enhanced battery life that allows them to fly longer and cover greater distances).

[290] FCC, *Mobile Deployment Form 477 Data*, https://www.fcc.gov/mobile-deployment-form-477-data (last visited June 13, 2019). The Commission uses both the centroid and actual data methodologies. The centroid methodology (continued….)

the mobile deployment data including a map of nationwide mobile wireless coverage and a map of LTE coverage by number of providers.[291] As the Commission works to improve its data collection, we seek comment on whether we should provide additional visualizations of mobile broadband deployment data. Now that we have determined in the *Order* that, going forward, we will publish nationwide provider specific coverage maps that depict minimum advertised or expected speed data, what additional maps or other visualizations would help provide useful information to the public? Should we make this data available to the public in any other formats? We seek comment on how the proposals described in this *Second Notice* would affect the Commission's ability to provide additional visualizations of mobile broadband data.

129. *Changes to the Collection of Mobile Voice and Broadband Subscription Data*. We seek comment on other changes to improve the collection of subscription data. For example, should we combine the mobile voice and broadband subscription data filing requirements? Consolidating these data could provide a better understanding of the marketplace, as consumers increasingly subscribe to both broadband and voice service. In the current form, providers are required to include subscriptions to mobile broadband plans purchased "on a standalone basis, as an add-on feature to a voice subscription, or bundled with a voice subscription."[292] We propose to require providers to report whether subscriptions are data only, voice only, or provided as a bundle. These data could provide us with a better understanding of whether and how consumers purchase and use mobile services, in addition to allowing us to continue to track those who only subscribe to voice service.

130. We propose to require facilities-based mobile broadband and/or voice service providers to report whether subscriptions are enterprise, government, wholesale, prepaid retail, or postpaid retail. These data serve an important purpose in understanding the marketplace for mobile services, that aid in competitive analysis, particularly in transaction review. Should we require providers to submit data about Internet of Things (IoT) or Machine-to-Machine (M2M) subscriptions? Do these subscriptions make up enough of the marketplace for mobile services that they should be tracked? Would a combined subscription filing—as opposed to the current separate filings—likely reduce or increase the burden on filers? We also propose to eliminate the requirement to report mobile broadband subscription data by minimum upload and download speed given that this information is already submitted with broadband deployment data.

C. Sunsetting the Form 477 Fixed Broadband Data Collection

131. Over the long term, we expect the Digital Opportunity Data Collection will largely displace the Form 477 process, at least with respect to the collection of granular deployment data. We therefore seek comment on discontinuing the broadband deployment data collection that is part of Form 477 at some point after the new collection has been established. Under what conditions would eliminating that part of the broadband data collection be appropriate? Are there other portions of the Form 477 collection we should consider sunsetting as well?

(Continued from previous page)
overlays geographic polygons showing wireless coverage onto a map of census blocks. The centroid method codes a census block as "covered" if the calculated center point (the "centroid") of the census block is within the coverage polygon. If a centroid is covered, then all the population and land area in the corresponding census block is also coded as covered. The actual data methodology analyzes reported coverage at a sub-block level for each of the 11 million blocks in the U.S. Using this methodology, the Commission calculates the percentage of the block covered by each technology. *See FCC Releases Data on Mobile Broadband Deployment as of December 31, 2015*," 31 FCC Rcd 10886, 10890-91 (2016).

[291] FCC, *LTE Coverage by Number of Providers—YE 2017*, https://www.fcc.gov/reports-research/maps/lte-coverage-number-providers-ye-2017 (last visited June 10, 2019); FCC, *Nationwide Mobile Wireless Coverage-YE 2017*, https://www.fcc.gov/reports-research/maps/nationwide-mobile-wireless-coverage-ye-2017/ (last visited June 10, 2019).

[292] *FCC Form 477 Instructions* at 26.

V. PROCEDURAL MATTERS

132. *Ex Parte Rules.* This proceeding shall be treated as a "permit-but-disclose" proceeding in accordance with the Commission's *ex parte* rules.[293] 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 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.

133. *Final Regulatory Flexibility Analysis*. The Regulatory Flexibility Act (RFA)[294] 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."[295] Accordingly, we have prepared a Final Regulatory Flexibility Analysis (FRFA) concerning the possible impact of the rule changes contained in this *Report and Order* on small entities. The FRFA is set forth in Appendix B.

134. *Initial Regulatory Flexibility Analysis*. Pursuant to the Regulatory Flexibility Act (RFA),[296] 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 *Second Notice*. The text of the IRFA is set forth in Appendix B. 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 *Second Notice*. The Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, will send a copy of the *Second Notice*, including the IRFA, to the Chief Counsel for Advocacy of the Small Business Administration.[297]

135. *Paperwork Reduction Act*. This document contains proposed new and modified information collection requirements. The Commission, as part of its continuing effort to reduce paperwork burdens, invites the general public and the Office of Management and Budget to comment on the information collection requirements contained in this document, as required by the Paperwork Reduction Act of 1995, Public Law 104-13. In addition, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198 (44 U.S.C. 3506(c)(4)), we seek specific comment on how we might further reduce the information collection burden for small business concerns with fewer than 25

[293] 47 CFR. §§ 1.1200 *et seq.*

[294] *See* 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).

[295] 5 U.S.C. § 605(b).

[296] *See* 5 U.S.C. § 603.

[297] *See* 5 U.S.C. § 603(a).

employees.[298]

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

137. *Filing of Comments and Reply Comments*. Pursuant to Sections 1.415 and 1.419 of the Commission's rules (47 CFR §§ 1.415, 1.419), interested parties may file comments and reply comments on or before the dates indicated on the first page of this document. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS).[299]

- 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.

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

  - All hand-delivered or messenger-delivered paper filings for the Commission's Secretary must be delivered to FCC Headquarters at 445 12th St., SW, Room TW-A325, Washington, DC 20554. The filing hours are 8:00 a.m. to 7:00 p.m. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes and boxes must be disposed of before entering the building.

  - Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701.

  - 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).

138. *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. CLAUSES

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

[298] *See* 44 U.S.C. § 3506(c)(4).

[299] *See Electronic Filing of Documents in Rulemaking Proceedings*, 63 FR 24121 (1998).

140. IT IS FURTHER ORDERED that Parts 1, 43, and 54 of the Commission's rules ARE AMENDED as set forth in Appendix A.

141. IT IS FURTHER ORDERED that the *Order* SHALL BE effective 30 days after publication in the Federal Register, except for rules that have new or modified information collection requirements that must be approved by the Office of Management and Budget (OMB), which will be effective 30 days after the announcement in the Federal Register of OMB approval of those requirements.

142. IT IS FURTHER ORDERED that the Commission's Consumer & Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of the *Order* to Congress and the Government Accountability Office pursuant to the Congressional Review Act, *see* 5 U.S.C. § 801(a)(1)(A).

143. IT IS FURTHER ORDERED that the Commission's Consumer & Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this *Report and Order and Second 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: [*to be inserted by the Office of the Secretary prior to release*]

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

Subpart V Commission Collection of Advanced Telecommunications Capability Data and Local Exchange Competition Data

3. Amend section 1.7000 to read as follows:

The purpose**s** 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** ~~pursuant to~~ 47 U.S.C. **1302,** ~~157 as "high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology,"~~ and ~~the deployment of~~ services that are competitive with advanced telecommunications capability.

4. Amend section 1.7001 by revising paragraphs (a), (b), and (d) to read as follows:

§ 1.7001 Scope and content of filed reports.

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

(1) *Broadband connection*. A wired line, wireless channel, or satellite service that terminates at an end user location or mobile device and enables the end user to receive information from and/or send information to the Internet at information transfer rates exceeding 200 kilobits per second (kbps) in at least one direction.

(2) *Facilities-based provider*. An entity is a *facilities-based provider* of a service if it supplies such service using facilities that satisfy any of the following criteria:

(i) Physical facilities that the entity owns and that terminate at the end-user premises;

(ii) Facilities that the entity has obtained the right to use from other entities, such as dark fiber or satellite transponder capacity as part of its own network, or has obtained

(iii) Unbundled network element (UNE) loops, special access lines, or other leased facilities that the entity uses to complete terminations to the end-user premises;

(iv) Wireless service for which the entity holds a license or that the entity manages or has obtained the right to use via a spectrum leasing arrangement or comparable arrangement pursuant to subpart X of this Part (§§ 1.9001-1.9080); or

(v) Unlicensed spectrum.

(3) *End user*. A residential, business, institutional, or government entity that subscribes to a service, uses that service for its own purposes, and does not resell that service to other entities.

(4) *Local telephone service*. Telephone exchange or exchange access service (as defined in 47

U.S.C. 153(20 and (54)) provided by a common carrier or its affiliate (as defined in 47 U.S.C. 153(2)).

(5) *Mobile telephony service*. Mobile telephony (as defined in § 20.15 of this chapter) provided to end users by a commercial mobile radio service (CMRS) provider.

(b) The following entities shall file with the Commission a completed FCC Form 477, in accordance with the Commission's rules and the instructions to the FCC Form 477:

(1) Facilities-based providers of broadband service;

(2) Providers of local telephone service;

(3) Facilities-based providers of mobile telephony service; and

(4) Providers of Interconnected Voice over Internet Protocol (VoIP) service (as defined in § 9.3 of this chapter) to end users.

* * * * *

(d) Disclosure of data contained in FCC Form 477 will be addressed as follows:

(1) Emergency operations contact information contained in FCC Form 477 is information that should not be routinely available for public inspection pursuant to section 0.457 of this chapter and other information that should not be routinely available for public inspection pursuant to § 0.457.

(2) (i) Respondents may request that provider-specific subscription information in FCC Form 477 filings be treated as confidential and be withheld from public inspection by so indicating on Form 477 at the time that they submit such data.

(ii) The Commission will release the following information in FCC Form 477 filings to the public, and respondents may not request confidential treatment of such information:

(A) Provider-specific mobile deployment data;

(B) Data regarding minimum advertised or expected speed for mobile broadband services; and

(C) Location information that is necessary to permit accurate broadband mapping, including crowdsourcing or challenge processes.

(3) Respondents seeking confidential treatment of any other data contained in FCC Form 477 must submit a request that the data be treated as confidential with the submission of their Form 477 filing, along with their reasons for withholding the information from the public, pursuant to § 0.459 of this chapter.

(4) The Commission shall make all decisions regarding non-disclosure of provider-specific information, except that the Chiefs of the International Bureau, Wireless Telecommunications Bureau, Wireline Competition Bureau, or Office of Economics and Analytics may release provider-specific information to:

(i) A state commission, provided that the state commission has protections in place that would preclude disclosure of any confidential information,

(ii) ‘‘Eligible entities,’’ as those entities are defined in the Broadband Data Improvement Act, in an aggregated format and pursuant to confidentiality conditions prescribed by the Commission, and

(iii) Others, to the extent that access to such data can be accomplished in a manner that addresses concerns about the competitive sensitivity of the data and precludes public disclosure of any confidential information.

5. Insert the following new section 1.7003:

§ 1.7003 Authority to Update FCC Form 477

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 on FCC Form 477 as necessary to reflect changes over time in transmission 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.
* * * * *

Part 43 – Reports of Communications Common Carriers, Providers of International Services and Certain Affiliates

6. The authority citation for part 43 continues to read as follows:

Authority: [*to be inserted by the Office of the Secretary prior to release*]

7. Delete section 43.11.

Part 54 — Universal Service

8. Add new Subpart N – The Digital Opportunity Data Collection

§ 54.1400 Purpose.

The purpose of this subpart is to set out the terms by which facilities-based providers report data to the Universal Service Administrative Company concerning the deployment of fixed broadband connections for use in administration of the Universal Service program and related matters.

§ 54.1401 Frequency of reports.

Entities subject to the provisions of this subpart shall file initial reports pursuant to the Digital Opportunity Data Collection within six months after the Universal Service Administrative Company issues a notice announcing the availability of the new Digital Opportunity Data Collection platform. Thereafter, Digital Opportunity Data Collection filers must submit updates within six months of completing any new fixed broadband deployments or the acquisition of new network facilities that have fixed broadband connections that change the data submitted on their current Digital Opportunity Data Collection filing. Entities that become subject to the provisions of this subpart for the first time after the initial filing deadline shall file their initial reports within six months after they become eligible and shall report data for that initial period. All eligible entities must file a certification once per year on or before June 30th that as of December 31st of the previous year all of the filers’ data continues to be accurate,

subject to any updates made by the filer through June 30th of that calendar year.

§ 54.1402 Scope and content of filed reports.

(a) *Definitions.*

(i) The definitions in paragraph (a) of section 1.7001 of this chapter apply to terms used in this subpart.

(ii) *Fixed broadband connection*. A broadband connection that cannot be used to provide a mobile service (as defined in 47 U.S.C. 153(33)) and does not terminate to mobile stations (as defined in 47 U.S.C. 153(34)).

(b) All facilities-based providers of fixed broadband connections shall file with USAC, pursuant to the timetable in §54.1401 of this subpart, a completed filing as part of the Digital Opportunity Data Collection in accordance with the rules of the Commission and the instructions to the Digital Opportunity Data Collection.

(c) All filers in the Digital Opportunity Data Collection shall include in each report a certification signed by an appropriate official of the filer (as specified in the Digital Opportunity Data Collection's instructions) and shall report the title of their certifying official.

(d) (1) All data contained in Digital Opportunity Data Collection filings will be routinely available for public disclosure, except for emergency operations contact information and other information that should not be routinely available for public inspection pursuant to § 0.457.

(2) Filers seeking confidential treatment of any data contained in the Digital Opportunity Data Collection 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.

(3) The Commission shall make all decisions regarding non-disclosure of confidential information.

(e) Filers shall file a revised version of their Digital Opportunity Data Collection filing if they discover a significant reporting error in their data.

(f) Failure to file in the Digital Opportunity Data Collection in accordance with the Commission's rules and the instructions to the Digital Opportunity Data Collection may lead to enforcement action pursuant to the Act and any other applicable law.

§ 54.1403 Authority to Update the Digital Opportunity Data Collection

The Office of Economics and Analytics, in consultation with the Wireline Competition Bureau, the Wireless Telecommunications Bureau and the International Bureau, may update the fixed broadband technologies reported in the Digital Opportunity Data Collection as necessary to reflect changes over time in technology, and the Office may implement any technical improvements, changes to the format and type of data submitted, or other clarifications to the Digital Opportunity Data Collection and its instructions.

APPENDIX B

Final Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),[1] an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the *2017 Data Collection Improvement FNPRM* released in August 2017 in this proceeding.[2] 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. One commenter in the proceeding referenced the IRFA in its general comments[3] and we address those comments below in Section B. This present Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.[4]

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

2. The Form 477 collection has evolved into the primary data source for many Commission actions, including reporting to Congress and the public about the availability of broadband services, informing merger reviews, and supporting our universal service policies. With the *Report and Order*, the Commission takes steps to improve the Form 477 data collection to reduce filing burdens and provide more useful information to consumers. Specifically, we make targeted changes to streamline the filing process and eliminate the collection of certain information that we believe is not sufficiently useful when compared with the burden imposed on filers in providing such information. In addition, we make targeted changes such as clarifying parts of the instructions and modifying the collection of certain data to aid in more accurate broadband data and the maps based on that data to improve the overall quality and accuracy of the data that we collect on fixed and mobile voice and broadband service. We also streamline the nine mobile broadband technology codes currently listed on the Form 477 down to three categories of technology; require collection of facilities-based mobile broadband and voice subscription data at the census tract level; and make publicly available speed data that mobile broadband service providers submit on all subsequent Form 477 filings.

3. It has become clear to the Commission that the fixed-broadband deployment data collected on Form 477 are no longer sufficient to use for targeting our universal service funds.[5] As a result, the need for more granular data is greater than ever and it is time to establish a new, and more advanced, stage in our collection of fixed broadband deployment data. Therefore, we direct the Universal Service Administrative Company (USAC) to initiate a new data collection (the Digital Opportunity Data Collection) for fixed providers based on geospatial data that represent the actual service area where fixed broadband is available.[6] At the same time, to complement this granular broadband availability data, we

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[1] *See* 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. §§ 601-12, 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] *2017 Data Collection Improvement FNPRM*, 32 FCC Rcd at 6353.

[3] WISPA Comments at 17.

[4] *See* 5 U.S.C. § 604.

[5] *See* Letter from Michael R. Romano, Senior Vice President, NTCA, to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 10-90, 11-10, at 1 (filed Apr. 30, 2019) (NTCA Apr. 30, 2019 *Ex Parte* Letter) ("false positives" from Form 477 reporting can lead to the "denial or withdrawal of federal USF support in areas where support is in fact needed to reach unserved locations, dooming those locations to a lack of service for years to come.").

[6] GIS files are useful for storing geographical data, such as the locations of buildings, homes, and streets. GIS files often use a vector data format, meaning that the geographic data is stored in vector coordinates, the output of which can display on a map (as a polygon). A GIS file also can store attribute information, which is kept in a database table that associates with features on a map. An attribute table lists the vector coordinates for each feature, but it can also be used to store other information about a feature, such as the names of streets or the population of census blocks. *See* wiseGEEK, *What is a GIS Shapefile?*, https://www.wisegeek.com/what-is-a-gis-shapefile.htm.

adopt a process to have USAC begin collecting public input, sometimes known as "crowdsourcing," on the accuracy of service providers' broadband deployment data. Through this new tool, State, local, and Tribal governmental entities, and members of the public will be able to submit fixed broadband availability data, leveraging their experience concerning service availability. We believe these actions in the *Report and Order* will increase the usefulness of fixed broadband deployment data to the Commission, Congress, the industry, and the public.

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

4. The Wireless Internet Service Providers Association (WISPA) in its general comments to the *FNPRM* contends that that IRFA does not meet the requirements of the Regulatory Flexibility Act (RFA) because the Commission failed "to estimate how many small broadband providers use unlicensed spectrum."[7] Section 603 of the RFA requires the Commission to include in the IRFA "a description of and, where feasible, an estimate of the number of small entities to which the proposed rule will apply."[8] WISPA argues that it is feasible for the Commission to estimate the number of small fixed wireless Internet providers by using the information from its data collection on Form 477.[9]

5. When we prepared the IRFA in 2017, it was not feasible for us to provide an accurate estimate of the number of small wireless Internet service providers (WISPs) that would be affected by the proposed rule. Our action in Section III.B. of this *Report and Order* clarifies that WISPs that operate over unlicensed spectrum are required to file Form 477. We recognize the possibility that such entities might not have filed in prior data collections because of the ambiguity in section 1.7001(a) of the Commission's rules. Thus, at the time, it was not feasible for us to estimate the number of small WISPs that would be affected by the proposed rule. However, we specifically considered the potential impact of the proposed rule on small WISPs in the IRFA for the *2017 Data Collection Improvement FNPRM* by including such entities in the "Broadband Internet Access Service Providers" category

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

6. 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.[10]

7. 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

8. 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.[11] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small

[7] WISPA Comments at 18-19.

[8] 5 U.S.C. § 603(b)(3).

[9] Wireless Internet Service Providers (WISPA) Comments at 19-20 ("Significantly, through the current version of FCC Form 477, Terrestrial Fixed Wireless providers – a category that includes WISPs that use unlicensed spectrum – the Commission has ready access to information on the number of entities using wireless technology to provide broadband services. The Commission also has access to the National Broadband Map, which includes a fixed wireless layer.").

[10] 5 U.S.C. § 604(a)(3).

[11] 5 U.S.C. § 604(a)(4).

organization," and "small governmental jurisdiction."[12] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act."[13] 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 SBA.[14]

9. *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.[15] 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.[16] These types of small businesses represent 99.9% of all businesses in the United States which translates to 28.8 million businesses.[17]

10. 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."[18] 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).[19]

11. 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."[20] U.S. Census Bureau data published in 2012 indicate that there were 89,476 local governmental jurisdictions in the United States.[21] We estimate that, of this total, as

[12] 5 U.S.C. § 601(6).

[13] 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."

[14] 15 U.S.C. § 632.

[15] *See* 5 U.S.C. § 601(3)-(6).

[16] *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).

[17] *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).

[18] 5 U.S.C. § 601(4).

[19] 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".

[20] 5 U.S.C. § 601(5).

[21] U.S. Census Bureau, Statistical Abstract of the United States: 2012 at 267, Table 428 (2011), http://www2.census.gov/library/publications/2011/compendia/statab/131ed/2012-statab.pdf (citing data from 2007).

many as 88,761 entities may qualify as "small governmental jurisdictions."[22] Thus, we estimate that most governmental jurisdictions are small.

1. Broadband Internet Access Service Providers

12. 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.

13. *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.[23] 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.[24] The SBA size standard for this category classifies a business as small if it has 1,500 or fewer employees.[25] 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.[26] Consequently, under this size standard the majority of firms in this industry can be considered small.

14. *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.[27] 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

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[22] The 2012 U.S. Census Bureau data for small governmental organizations are not presented based on the size of the population in each organization. There were 89,476 local governmental organizations in the Census Bureau data for 2012, which is based on 2007 data. As a basis of estimating how many of these 89,476 local government organizations were small, we note that there were a total of 715 cities and towns (incorporated places and minor civil divisions) with populations over 50,000 in 2011. *See* U.S. Census Bureau, City and Town Totals Vintage: 2011, https://www.census.gov/data/tables/time-series/demo/popest/2010s-total-cities-and-towns.html. If we subtract the 715 cities and towns that meet or exceed the 50,000-population threshold, we conclude that approximately 88,761 are small.

[23] *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.

[24] *Id.*

[25] *Id.*

[26] 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.

[27] 13 CFR § 121.201; NAICS Code 517919.

receipts of less than $25 million.[28] Consequently, under this size standard a majority of "All Other Telecommunications" firms can be considered small.

2. Wireline Providers

15. *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."[29] 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.[30] U.S. Census Bureau data for 2012 show that there were 3,117 firms that operated that year.[31] Of this total, 3,083 operated with fewer than 1,000 employees.[32] Thus, under this size standard, the majority of firms in this industry can be considered small..

16. *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.[33] Under the applicable SBA size standard, such a business is small if it has 1,500 or fewer employees.[34] According to Commission data, U.S. Census data for 2012 show that there were 3,117 firms that operated that year.[35] Of this total, 3,083 operated with fewer than 1,000 employees.[36] Thus under this category and the associated size standard, the Commission estimates that the majority of local exchange carriers are small entities.

17. *Incumbent Local Exchange Carriers* (*Incumbent LECs*). *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. The closest applicable NAICS Code

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[28] 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.

[29] *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.

[30] *See* 13 CFR § 120.201, NAICS Code 517110.

[31] *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.

[32] *Id*.

[33] *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.

[34] *Id*.

[35] *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.

[36] *Id*.

category is Wired Telecommunications Carriers. [37] Under the applicable SBA size standard, such a business is small if it has 1,500 or fewer employees.[38] According U.S. Census Bureau data for 2012, 3,117 firms operated in that year.[39] Of this total, 3,083 operated with fewer than 1,000 employees.[40] 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, one thousand three hundred and seven (1,307) Incumbent Local Exchange Carriers reported that they were incumbent local exchange service providers.[41] Of this total, an estimated 1,006 have 1,500 or fewer employees.[42] Thus using the SBA's size standard the majority of Incumbent LECs can be considered small entities.

18. *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.[43] U.S. Census Bureau data for 2012 indicate that 3,117 firms operated during that year.[44] Of that number, 3,083 operated with fewer than 1,000 employees.[45] 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.[46] Of these 1,442 carriers, an estimated 1,256 have 1,500 or fewer employees.[47] 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.[48] Also, 72 carriers have reported that they are Other Local Service Providers.[49] Of this total, 70 have 1,500 or fewer employees.[50] Consequently, based on internally researched FCC data, the Commission estimates that

[37] *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.

[38] *Id.*

[39] 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.

[40] *Id.*

[41] *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*).

[42] *Id.*

[43] *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.

[44] 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

[45] *Id.*

[46] *See Trends in Telephone Service*, at tbl. 5.3.

[47] *See Trends in Telephone Service*, at tbl. 5.3

[48] *Id.*

[49] *Id.*

most providers of competitive local exchange service, competitive access providers, Shared-Tenant Service Providers, and Other Local Service Providers are small entities.[51]

19. *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.[52] The applicable size standard under SBA rules consists of all such companies having 1,500 or fewer employees.[53] U.S. Census Bureau data for 2012 indicate that 3,117 firms operated during that year.[54] Of that number, 3,083 operated with fewer than 1,000 employees.[55] According to internally developed Commission data, 359 companies reported that their primary telecommunications service activity was the provision of interexchange services.[56] Of this total, an estimated 317 have 1,500 or fewer employees.[57] Consequently, the Commission estimates that the majority of interexchange service providers are small entities.

20. *Operator Service Providers* (*OSPs*). Neither the Commission nor the SBA has developed a small business size standard specifically for operator service providers. The closet applicable size standard under SBA rules is the category of Wired Telecommunications Carriers.[58] Under the size standard for Wired Telecommunications Carriers such a business is small if it has 1,500 or fewer employees.[59] U.S. Census Bureau data for 2012 show that there were 3,117 firms that operated that year.[60] Of this total, 3,083 operated with fewer than 1,000 employees.[61] Thus, under this size standard, the majority of firms in this industry can be considered small.

(Continued from previous page)

[50] *Id.*

[51] 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.

[52] *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.

[53] *Id.*

[54] *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.

[55] *Id.*

[56] *See Trends in Telephone Service*, at tbl. 5.3.

[57] *Id.*

[58] *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

[59] *Id.*

[60] *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

[61] *Id.*

21. According to Commission data, 33 carriers have reported that they are engaged in the provision of operator services.[62] Of these, an estimated 31 have 1,500 or fewer employees and two have more than 1,500 employees.[63] Consequently, the Commission estimates that the majority of OSPs are small entities.

22. *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.[64] U.S. Census data for 2012 indicate that 3,117 firms operated during that year.[65] Of that number, 3,083 operated with fewer than 1,000 employees.[66] According to Commission data, 284 companies reported that their primary telecommunications service activity was the provision of other toll carriage.[67] Of these, an estimated 279 have 1,500 or fewer employees.[68] Consequently, the Commission estimates that most Other Toll Carriers are small entities.

3. Wireless Providers – Fixed and Mobile

23. The broadband Internet access service provider category covered by these proposed rules may cover multiple wireless firms and categories of regulated wireless services. 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.

24. *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 wireless video services.[69] The appropriate size standard under SBA rules is that such a business is small

[62] *Trends in Telephone Service*, tbl. 5.3.

[63] *Id.*

[64] *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.

[65] *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

[66] *Id.*

[67] *Trends in Telephone Service*, at tbl. 5.3.

[68] *Id.*

[69] 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.

if it has 1,500 or fewer employees.[70] For this industry, U.S. Census data for 2012 show that there were 967 firms that operated for the entire year.[71] Of this total, 955 firms had employment of 999 or fewer employees and 12 had employment of 1000 employees or more.[72] Thus under this category and the associated size standard, the Commission estimates that the majority of wireless telecommunications carriers (except satellite) are small entities.

25. 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.[73] 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.[74] Of this total, an estimated 261 have 1,500 or fewer employees, and 152 have more than 1,500 employees.[75] Thus, using available data, we estimate that the majority of wireless firms can be considered small.

26. *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.[76] The SBA has approved these small business size standards.[77] 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.

27. *1670–1675 MHz Services*. This service can be used for fixed and mobile uses, except aeronautical mobile.[78] 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.

28. *Wireless Telephony*. Wireless telephony includes cellular, personal communications services, and specialized mobile radio telephony carriers. The closest applicable SBA category is

[70] 13 CFR § 121.201, NAICS code 517210.

[71] 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.

[72] *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."

[73] *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.

[74] *Trends in Telephone Service* at Table 5.3.

[75] *Id*.

[76] *Amendment of the Commission's Rules to Establish Part 27, the Wireless Communications Service (WCS)*, Report and Order, 12 FCC Rcd 10785, 10879, para. 194 (1997).

[77] *See* 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*).

[78] 47 CFR § 2.106; *see generally* 47 CFR §§ 27.1-27.70.

Wireless Telecommunications Carriers (except Satellite).[79] Under the SBA small business size standard, a business is small if it has 1,500 or fewer employees.[80] For this industry, U.S. Census Bureau data for 2012 show that there were 967 firms that operated for the entire year.[81] Of this total, 955 firms had fewer than 1,000 employees and 12 firms had 1000 employees or more.[82] 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.[83] Of these, an estimated 261 have 1,500 or fewer employees and 152 have more than 1,500 employees.[84] Therefore, more than half of these entities can be considered small.

29. *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.[85] 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.[86] These standards defining "small entity" in the context of broadband PCS auctions, have been approved by the SBA.[87] 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 percent of the 1,479 licenses in the first auction for the D, E, and F Blocks.[88] On April 15, 1999, the Commission completed the reauction of 347 C-, D-, E-, and F-Block licenses in Auction No. 22.[89] Of the 57 winning bidders in that auction, 48 claimed small business status and won 277 licenses.

30. 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,

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[79] 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.

[80] 13 CFR § 121.201, NAICS code 517210.

[81] 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.

[82] *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."

[83] *Trends in Telephone Service*, tbl. 5.3.

[84] *Id.*

[85] *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).

[86] *See PCS Report and Order*, 11 FCC Rcd at 7852, para. 60.

[87] *See Alvarez Letter 1998*.

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

[89] *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).

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.

31. *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.[90] 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.[91] The SBA has approved these small business size standards for the 900 MHz Service.[92] 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.[93] 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.[94]

32. 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.[95] 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.[96] 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.

33. 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.[97] We assume, for purposes of this

[90] 47 CFR § 90.814(b)(1).

[91] *Id.*

[92] *See Alvarez Letter 1999*.

[93] *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).

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

[95] *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).

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

[97] *See generally* 13 CFR § 121.201, NAICS code 517210.

analysis, that all of the remaining extended implementation authorizations are held by small entities, as defined by the SBA.

34. *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.[98] 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.[99] 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.[100] 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.[101] The SBA approved these small size standards.[102] 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.[103] 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.[104] 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.[105] 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.

35. In 2007, the Commission reexamined its rules governing the 700 MHz band in the *700 MHz Second Report and Order*.[106] 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.[107] Twenty winning bidders, claiming small business status (those with attributable average annual gross revenues that exceed $15

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[98] *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*).

[99] *See id*. at 1087-88, para. 172.

[100] *See id*.

[101] *See id*., at 1088, para. 173.

[102] *See Alvarez Letter 1999*.

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

[104] *See id*.

[105] *See id*.

[106] *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; Section 68.4(a) of the Commission's Rules Governing Hearing Aid-Compatible Telephones; Biennial Regulatory Review—Amendment of Parts 1, 22, 24, 27, and 90 to Streamline and Harmonize Various Rules Affecting Wireless Radio Services; Former Nextel Communications, Inc. Upper 700 MHz Guard Band Licenses and Revisions to Part 27 of the Commission's Rules; Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band; Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communications Requirements Through the Year 2010; Declaratory Ruling on Reporting Requirement under Commission's Part 1 Anti-Collusion Rule*, Second Report and Order, 22 FCC Rcd 15289, 15359 n. 434 (2007) (*700 MHz Second Report and Order*).

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

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.

36. *Upper 700 MHz Band Licenses*. In the *700 MHz Second Report and Order*, the Commission revised its rules regarding Upper 700 MHz licenses.[108] 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.[109] 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.

37. *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.[110] 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.[111] 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.[112] SBA approval of these definitions is not required.[113] An auction of 52 Major Economic Area licenses commenced on September 6, 2000, and closed on September 21, 2000.[114] 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.[115]

38. *Air-Ground Radiotelephone Service*. The Commission has previously used the SBA's small business size standard applicable to Wireless Telecommunications Carriers (except Satellite).[116] The appropriate size standard under SBA rules is that such a business is small if it has 1,500 or fewer employees.[117] 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

[108] *700 MHz Second Report and Order*, 22 FCC Rcd 15289.

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

[110] *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*).

[111] *See id*. at 5343, para. 108.

[112] *See id*.

[113] *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).

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

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

[116] 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.

[117] 13 CFR § 121.201, NAICS code 517210.

employment of 1000 employees or more.[118] 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.

39. 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.[119] 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.[120] These definitions were approved by the SBA.[121] 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.

40. *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,[122] 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.[123]

41. *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, utilizing contention-based technologies, in the 3650 MHz band (i.e., 3650–3700 MHz). As of April 2010, more than 1270 licenses have been granted and more than 7433 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

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[118] *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."

[119] *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).

[120] *Id*.

[121] *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).

[122] The service is defined in section 90.1301 *et seq*. of the Commission's Rules, 47 CFR § 90.1301 *et seq*.

[123] *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).

Internet Access Service Providers (ISPs) and that most of those licensees are small businesses.

42. *Fixed Microwave Services.* Microwave services include common carrier,[124] private-operational fixed,[125] and broadcast auxiliary radio services.[126] They also include the Local Multipoint Distribution Service (LMDS),[127] the Digital Electronic Message Service (DEMS),[128] and the 24 GHz Service,[129] where licensees can choose between common carrier and non-common carrier status.[130] 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)[131] 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.[132] For this industry, U.S. Census Bureau data for 2012 show that there were 967 firms that operated for the entire year.[133] Of this total, 955 firms had fewer than 1,000 employees and 12 had employment of 1000 employees or more.[134] 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.

43. 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 includes some large entities.

44. *Broadband Radio Service and Educational Broadband Service.* Broadband Radio Service systems, previously referred to as Multipoint Distribution Service (MDS) and Multichannel

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[124] *See* 47 CFR Part 101, Subparts C and I.

[125] *See* 47 CFR Part 101, Subparts C and H.

[126] 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.

[127] *See* 47 CFR Part 101, Subpart L.

[128] *See* 47 CFR Part 101, Subpart G.

[129] *See id*.

[130] *See* 47 CFR §§ 101.533, 101.1017.

[131] 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.

[132] *See* 13 CFR § 121.201, NAICS code 517210.

[133] 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.

[134] *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."

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)).[135]

45. *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.[136] 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.[137] 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.

46. In 2009, the Commission conducted Auction 86, the sale of 78 licenses in the BRS areas.[138] The Commission offered three levels of bidding credits: (i) 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 percent discount on its winning bid; (ii) 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 percent discount on its winning bid; and (iii) a bidder with attributed average annual gross revenues that do not exceed $3 million for the preceding three years (entrepreneur) received a 35 percent discount on its winning bid.[139] Auction 86 concluded in 2009 with the sale of 61 licenses.[140] 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.

47. *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.[141] Thus, we estimate that at least 2,336 licensees are small businesses. Since 2007, Cable Television Distribution

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[135] *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).

[136] 47 CFR § 21.961(b)(1).

[137] 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 1500 or fewer employees.

[138] *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).

[139] *Id*. at 8296, para. 73.

[140] *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).

[141] 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.

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."[142] The SBA's small business size standard for this category is all such firms having 1,500 or fewer employees.[143] 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

48. *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."[144] 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.[145] For this category, U.S. Census Bureau data for 2012 show that a total of 333 firms operated for the entire year.[146] Of this total, 299 firms had annual receipts of less than $25 million.[147] Consequently, we estimate that the majority of satellite telecommunications providers are small entities.

49. *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.[148] 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.[149] Establishments providing Internet services or voice over Internet protocol (VoIP) services via client-supplied telecommunications connections are also included in this industry.[150] The SBA has developed a small business size standard for "All Other Telecommunications," which consists of all such firms with gross

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[142] 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.

[143] *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.

[144] 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.

[145] 13 CFR § 121.201, NAICS code 517410.

[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 517410, http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_51SSSZ4&prodType=table.

[147] *Id*.

[148] *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

[149] *Id*.

[150] *Id*.

annual receipts of $32.5 million or less.[151] For this category, U.S. Census Bureau data for 2012 show that there were 1,442 firms that operated for the entire year.[152] Of these firms, a total of 1,400 had gross annual receipts of less than $25 million.[153] Consequently, a majority of "All Other Telecommunications" firms potentially affected by our action can be considered small.

5. Cable Service Providers

50. *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.[154] 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.[155] According to 2012 U.S. Census Bureau data, 367 firms operated for the entire year.[156] 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.[157] Based on this data, the Commission estimates that the majority of firms operating in this industry are small.

51. *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.[158] Industry data indicate that there are currently 4,600 active cable systems in the United States.[159] Of this total, all but eleven cable operators nationwide are small under the 400,000-subscriber size standard.[160] In addition, under the Commission's rate regulation rules, a "small system" is a cable system serving 15,000 or fewer subscribers.[161] Current Commission records show 4,600 cable systems nationwide. 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.[162] Thus, under this standard as well, we estimate that most cable systems are

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[151] 13 CFR § 121.201; NAICS Code 517919.

[152] 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.

[153] *Id.*

[154] S*ee* 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#.*

[155] *See* 13 C.F.R. 121.201, NAICS Code 515210.

[156] *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.

[157] *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.

[158] 47 CFR § 76.901(e).

[159] August 15, 2015 Report from the Media Bureau based on data contained in the Commission's Cable Operations and Licensing System (COALS). *See* https://apps.fcc.gov/coals/.

[160] Data obtained from SNL Kagan database on April 19, 2017.

[161] 47 CFR § 76.901(c).

[162] August 5, 2015 report from the Media Bureau based on its research in COALS. *See* https://apps.fcc.gov/coals/.

small entities.

52. *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 percent 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."[163] There are approximately 52,403,705 cable video subscribers in the United States today.[164] 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.[165] Based on available data, we find that all but nine incumbent cable operators are small entities under this size standard.[166] 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.[167] 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

53. *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.[168] 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.[169] 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.[170] Consequently, we estimate that under this category and the associated size standard the majority of these firms can be considered small entities.

E. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities

54. We expect the rules adopted in the *Report and Order* will impose new or additional reporting, recordkeeping, and/or other compliance obligations on small entities. In an effort to develop better quality, more useful, and more granular broadband deployment data, the Commission modifies

[163] 47 CFR § 76.90(f) and notes ff. 1, 2, and 3.

[164] *See* SNL KAGAN at http://www.snl.com/interactivex/MultichannelIndustryBenchmarks.aspx.

[165] 47 CFR § 76.901(f) and notes ff. 1, 2, and 3.

[166] *See* SNL KAGAN at http://www.snl.com/interactivex/TopCable MSOs.aspx.

[167] 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).

[168] http://www.census.gov/cgi-bin/ssssd/naics/naicsrch.

[169] 13 CFR § 121.201; NAICS Code 517919.

[170] U.S. Census Bureau, Estb & Firm Size: Receipts Size of Firms for the U.S., 2012http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_51SSSZ4&prodType=table.

aspects of the Form 477 collection to increase the accuracy of the information collected and to streamline the current reporting requirements to reduce the burdens on filers. We were 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 new collection requirement for fixed providers to report broadband deployment data using GIS file format will benefit small entities as well as other providers. WISPA supports the reporting of geographic location information because it is less burdensome for its members, who are primarily small fixed wireless providers, and because it is a more accurate means of collecting deployment data.[171]

55. Many fixed providers are already familiar with GIS files because the Commission and other federal and state agencies use these files in other contexts.[172] Further, some fixed providers already have internal GIS capabilities and/or vendor relationships for the production of GIS files,[173] which should lessen the cost of compliance for small entities. The record suggests that several online resources and software options are available that can help fixed providers create their own polygons of service availability to comply with this requirement,[174] which may lessen the need for small entities to hire professionals. Thus, we find that any additional burdens imposed by our new collection will be relatively light for fixed providers in comparison to the significant benefit to be gained from more accurate and precise broadband deployment data. Although the Commission cannot quantify the cost of compliance with the requirements in the *Report and Order*, we believe the streamlining and removal of certain reporting requirements should reduce the compliance burdens for small entities that are required to complete Form 477.

F. Steps Taken to Minimize the Significant Economic Impact on Small Entities, and Significant Alternatives Considered

56. 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.[175]

57. The Commission's actions to modernize and streamline the Form 477 collection and reduce the compliance burdens for filers include measures that should benefit small entities. In considering the comments in the record, we were mindful of the time, money, and resources that some small entities incur to complete the current Form 477.[176] Our actions adopting the GIS filing format

[171] WISPA Comments at 6.

[172] *See* NTCA Apr. 30, 2019 *Ex Parte* Letter at 3; NCTA Feb. 28, 2019 *Ex Parte* Letter at 1; Letter from Elizabeth Andrion, Senior Vice President Regulatory Affairs, Charter, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 11-10, at 1-2 (filed Mar. 18, 2019) (Charter Mar. 18, 2019 *Ex Parte* Letter); .”); Letter from Tim Stelzig, Federal Regulatory Attorney, General Communication, Inc., to Marlene H. Dortch, Secretary, FCC, WC Docket No. 11-10, at 1 (filed Feb. 28, 2019) (“ Shapefiles are used in multiple other contexts which demonstrates that any technical and operational challenges could be overcome.”); U.S. Dep’t of Agriculture, RUS Broadband Mapping Tool Help Guide, at 16 (June 25, 2015) (various RUS programs require submission of service area maps as GIS file polygons), https://broadbandsearch.sc.egov.usda.gov/bsa/servlet/resources/BSAHelp.pdf; *FCC Form 477 Instructions* at 26 (mobile voice deployment requires the submission of polygons in a shapefile format).

[173] Connected Nation May 17, 2019 *Ex Parte* Letter at 2 (points to the generation of GIS files for clients in 16 states and Puerto Rico).

[174] Connected Nation May 17, 2019 *Ex Parte* Letter at 2.

[175] 5 U.S.C. § 603(c)(1)-(4).

[176] WISPA Comments at 5-6.

should provide some economic relief to small entities when compared to the burdens imposed by the current census-block reporting requirement. We also believe our actions to streamline the filing process and eliminate certain filing requirements will benefit small entities by reducing the administrative costs they incur to file Form 477.

58. The Commission considered but declined to adopt a requirement to collect fixed broadband deployment data at the street segment level. With a street-level approach, smaller providers would encounter much greater burdens to report deployment data with more precision. For the reasons discussed in the *Report and Order*, we agree with WISPA that a street-level approach is not appropriate for fixed wireless providers.[177] The Commission also declined location-based reporting because it would impose substantial costs and complexity on fixed broadband providers, especially smaller providers, and would take significant time to complete.[178] In addition, we declined to establish technical standards for fixed providers to follow in determining whether fixed broadband is available in an area. Imposing fixed standards could result in increased costs and burdens for small entities and could risk undermining the expertise and on-the-ground knowledge of fixed providers, possibly resulting in less accurate maps. The unique knowledge of fixed broadband providers about their networks puts them in the best position to determine where broadband is available in their service areas.

G. Report to Congress

59. The Commission will send a copy of the *Report and Order*, including this FRFA, in a report to Congress pursuant to the Congressional Review Act.[179] In addition, the Commission will send a copy of the *Report and Order*, including this FRFA, to the Chief Counsel for Advocacy of the SBA. A copy of the *Report and Order*, and FRFA (or summaries thereof) will also be published in the Federal Register.[180]

[177] *See supra Report and Order*, Section III.A.

[178] ACA Feb. 25, 2019 *Ex Parte* Letter at 2-3.

[179] *See* 5 U.S.C. § 801(a)(1)(A).

[180] *See* 5 U.S.C. § 604(b).

APPENDIX C

Initial Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),[480] 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 *Second 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 *Second Notice* provided on the first page of the *Second Notice*. The Commission will send a copy of the *Second Notice*, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).[481] In addition, the *Second Notice* and IRFA (or summaries thereof) will be published in the Federal Register.[482]

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

2. The Commission continues its ongoing efforts to ensure that the new collection adopted in the *Report and Order* and the Form 477 collection will evolve to align with changes to technology, markets, and policy needs. In the *Second Notice*, the Commission raises issues for consideration and seeks comment on additional steps we can take to obtain more accurate and reliable mobile broadband deployment data. The probabilistic nature of mobile networks and the many factors that impact a user's experience make it difficult to predict with precision mobile coverage and speed or to develop a coverage map that always provides predictability for consumers. Although no mobile broadband map will consistently reflect consumer experience with complete accuracy, we recognize that we must take steps to improve the quality of the data we collect. Therefore, we seek further comment on the tradeoffs among different potential approaches for developing more accurate and reliable mobile broadband 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.[483] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[484] In addition, the term "small business" has the same meaning as the term "small-business concern" under the Small Business Act.[485] A small-business concern" is one which: (1) is independently owned and operated; (2) is not dominant in its field of

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[480] *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).

[481] *See* 5 U.S.C. § 603(a).

[482] *Id.*

[483] *See* 5 U.S.C. § 603(b)(3).

[484] *See* 5 U.S.C. § 601(6).

[485] *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."

operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).[486]

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.[487] 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.[488] These types of small businesses represent 99.9% of all businesses in the United States, which translates to 28.8 million businesses.[489]

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."[490] Nationwide, as of Aug 2016, there were approximately 356,494 small organizations based on registration and tax data filed by nonprofits with the Internal Revenue Service (IRS).[491]

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."[492] U.S. Census Bureau data from the 2012 Census of Governments[493] indicate that there were 90,056 local governmental jurisdictions consisting of general purpose governments and special purpose governments in the United States.[494] Based on this data we estimate that at least 49,316 local government jurisdictions fall in the category of "small governmental

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[486] *See* 15 U.S.C. § 632.

[487] *See* 5 U.S.C. § 601(3)-(6).

[488] *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).

[489] *See id.*

[490] 5 U.S.C. § 601(4).

[491] 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".

[492] 5 U.S.C. § 601(5).

[493] *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.COG#*.

[494] *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).

jurisdictions."[495]

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.[496] 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.[497] The SBA size standard for this category classifies a business as small if it has 1,500 or fewer employees.[498] U.S. Census Bureau data for 2012 show that there were 3,117 firms that operated that year.[499] Of this total, 3,083 operated with fewer than 1,000 employees.[500] 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.[501] 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.[502] For this category, U.S. Census Bureau data for 2012 show that there were 1,442 firms that operated for the entire year.[503] Of these firms, a total of 1,400 had gross annual receipts of less than $25 million.[504] Consequently, under this size standard a majority firms in this industry can be considered small.

3. Wireline Providers

11. *Wired Telecommunications Carriers.* The U.S. Census Bureau defines this industry as

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[495] *Id.*

[496] *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.

[497] *Id.*

[498] *Id.*

[499] 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

[500] *Id.*

[501] *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.

[502] 13 CFR § 121.201; NAICS Code 517919.

[503] 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.

[504] *Id.*

"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."[505] 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.[506] U.S. Census Bureau data for 2012 show that there were 3,117 firms that operated that year.[507] Of this total, 3,083 operated with fewer than 1,000 employees.[508] 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.[509] Under the applicable SBA size standard, such a business is small if it has 1,500 or fewer employees.[510] According to Commission data, U.S. Census data for 2012 show that there were 3,117 firms that operated that year.[511] Of this total, 3,083 operated with fewer than 1,000 employees.[512] 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*). *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. The closest applicable NAICS Code category is Wired Telecommunications Carriers. [513] Under the applicable SBA size standard, such a business is small if it has 1,500 or fewer employees.[514] According U.S. Census Bureau data for 2012,

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[505] *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.

[506] *See* 13 CFR § 120.201, NAICS Code 517110.

[507] *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.

[508] *Id*.

[509] *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.

[510] *Id*.

[511] *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.

[512] *Id*.

[513] *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.

[514] *Id.*

3,117 firms operated in that year.[515] Of this total, 3,083 operated with fewer than 1,000 employees.[516] 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, one thousand three hundred and seven (1,307) Incumbent Local Exchange Carriers reported that they were incumbent local exchange service providers.[517] Of this total, an estimated 1,006 have 1,500 or fewer employees.[518] 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.[519] U.S. Census Bureau data for 2012 indicate that 3,117 firms operated during that year.[520] Of that number, 3,083 operated with fewer than 1,000 employees.[521] 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.[522] Of these 1,442 carriers, an estimated 1,256 have 1,500 or fewer employees.[523] 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.[524] Also, 72 carriers have reported that they are Other Local Service Providers.[525] Of this total, 70 have 1,500 or fewer employees.[526] 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.[527]

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[515] 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.

[516] *Id*.

[517] *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*).

[518] *Id*.

[519] *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.

[520] 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

[521] *Id*.

[522] *See Trends in Telephone Service*, at tbl. 5.3.

[523] *Id*.

[524] *Id*.

[525] *Id*.

[526] *Id*.

[527] 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."[527] The SBA's Office of Advocacy contends that, for RFA purposes, small incumbent LECs are not dominant in their field of operation

(continued….)

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.[528] The applicable size standard under SBA rules consists of all such companies having 1,500 or fewer employees.[529] U.S. Census Bureau data for 2012 indicate that 3,117 firms operated during that year.[530] Of that number, 3,083 operated with fewer than 1,000 employees.[531] According to internally developed Commission data, 359 companies reported that their primary telecommunications service activity was the provision of interexchange services.[532] Of this total, an estimated 317 have 1,500 or fewer employees.[533] 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 closet applicable size standard under SBA rules is the category of Wired Telecommunications Carriers.[534] Under the size standard for Wired Telecommunications Carriers such a business is small if it has 1,500 or fewer employees.[535] U.S. Census Bureau data for 2012 show that there were 3,117 firms that operated that year.[536] Of this total, 3,083 operated with fewer than 1,000 employees.[537] Thus, under this size standard, the majority of firms in this industry can be considered small.

17. According to Commission data, 33 carriers have reported that they are engaged in the provision of operator services.[538] Of these, an estimated 31 have 1,500 or fewer employees and two have more than 1,500 employees.[539] Consequently, the Commission estimates that the majority of OSPs are small entities.

(Continued from previous page)
because any such dominance is not "national" in scope.[527] 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.

[528] *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.

[529] *Id.*

[530] *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.

[531] *Id.*

[532] *See Trends in Telephone Service*, at tbl. 5.3.

[533] *Id.*

[534] *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

[535] *Id.*

[536] *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

[537] *Id.*

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

[539] *Trends in Telephone Service*, tbl. 5.3.

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.[540] U.S. Census data for 2012 indicate that 3,117 firms operated during that year.[541] Of that number, 3,083 operated with fewer than 1,000 employees.[542] According to Commission data, 284 companies reported that their primary telecommunications service activity was the provision of other toll carriage.[543] Of these, an estimated 279 have 1,500 or fewer employees.[544] 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.[545] 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 services using that spectrum, such as cellular services, paging services, wireless internet access, and

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[540] *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.

[541] *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

[542] *Id.*

[543] *Trends in Telephone Service*, at tbl. 5.3.

[544] *Id*.

[545] This includes, among others, the approximately 800 members of WISPA, including those entities who provide fixed wireless broadband service using unlicensed spectrum. *See* "About WISPA," https://www.wispa.org/About-Us/Mission-and-Goals (last visited June 27, 2019). As noted in Section B the FRFA, when we prepared the IRFA in 2017, it was not feasible for us to provide an accurate estimate of the number of small wireless Internet service providers (WISPs) that would be affected by the proposed rule. Our action the *Report and Order* clarifies that WISPs that operate over unlicensed spectrum are required to file Form 477. We also recognize the possibility that such entities might not have filed in prior data collections because of the ambiguity in section 1.7001(a) of the Commission's rules. Thus, at the time, it was not feasible for us to estimate the number of small WISPs that would be affected by the proposed rule. That remains true until the Commission is able to collect and analyze the data that are filed as a result of the action we take in *Report and Order* to clarify that WISPs who operate over unlicensed spectrum are required to file Form 477. However, we specifically considered the potential impact of the proposed rule on small WISPs in the IRFA for the *2017 FNPRM* by including such entities in the "Broadband Internet Access Service Providers" category. 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.[546] The appropriate size standard under SBA rules is that such a business is small if it has 1,500 or fewer employees.[547] For this industry, U.S. Census data for 2012 show that there were 967 firms that operated for the entire year.[548] Of this total, 955 firms had employment of 999 or fewer employees and 12 had employment of 1000 employees or more.[549] 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.[550] 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.[551] Of this total, an estimated 261 have 1,500 or fewer employees, and 152 have more than 1,500 employees.[552] 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.[553] The SBA has approved these small business size standards.[554] 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.

23. *1670–1675 MHz Services*. This service can be used for fixed and mobile uses, except aeronautical mobile.[555] 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

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[546] 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.

[547] 13 CFR § 121.201, NAICS code 517210.

[548] 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.

[549] *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."

[550] *See* https://www.fcc.gov/wireless/systems-utilities/universal-licensing-system. 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.

[551] *Trends in Telephone Service* at Table 5.3.

[552] *See id*.

[553] *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).

[554] *See* 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*).

[555] 47 CFR § 2.106; *see generally* 47 CFR §§ 27.1-27.70.

services, and specialized mobile radio telephony carriers. The closest applicable SBA category is Wireless Telecommunications Carriers (except Satellite).[556] Under the SBA small business size standard, a business is small if it has 1,500 or fewer employees.[557] For this industry, U.S. Census Bureau data for 2012 show that there were 967 firms that operated for the entire year.[558] Of this total, 955 firms had fewer than 1,000 employees and 12 firms had 1000 employees or more.[559] 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.[560] Of these, an estimated 261 have 1,500 or fewer employees and 152 have more than 1,500 employees.[561] 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.[562] 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.[563] These small business size standards, in the context of broadband PCS auctions, have been approved by the SBA.[564] 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.[565] On April 15, 1999, the Commission completed the reauction of 347 C-, D-, E-, and F-Block licenses in Auction No. 22.[566] 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

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[556] 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.

[557] 13 CFR § 121.201, NAICS code 517210.

[558] 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.

[559] *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."

[560] *Trends in Telephone Service*, tbl. 5.3.

[561] *Id*.

[562] *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).

[563] *See PCS Report and Order*, 11 FCC Rcd at 7852, para. 60.

[564] *See Alvarez Letter 1998.*

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

[566] *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).

Broadband PCS licenses in Auction No. 35. Of the 35 winning bidders in that auction, 29 claimed small business status.[567] 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.[568] On May 21, 2007, the Commission completed an auction of 33 licenses in the A, C, and F Blocks in Auction No. 71.[569] Of the 12 winning bidders in that auction, five claimed small business status and won 18 licenses.[570] On August 20, 2008, the Commission completed the auction of 20 C-, D-, E-, and F-Block Broadband PCS licenses in Auction No. 78.[571] Of the eight winning bidders for Broadband PCS licenses in that auction, six claimed small business status and won 14 licenses.[572]

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.[573] 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.[574] The SBA has approved these small business size standards for the 900 MHz Service.[575] 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.[576] A second 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.[577]

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

[567] *See C and F Block Broadband PCS Auction Closes; Winning Bidders Announced*, Public Notice, 16 FCC Rcd 2339 (2001).

[568] *See Broadband PCS Spectrum Auction Closes; Winning Bidders Announced for Auction No. 58*, Public Notice, 20 FCC Rcd 3703 (2005).

[569] *See Auction of Broadband PCS Spectrum Licenses Closes; Winning Bidders Announced for Auction No. 71*, Public Notice, 22 FCC Rcd 9247 (2007).

[570] *Id*.

[571] *See Auction of AWS-1 and Broadband PCS Licenses Closes; Winning Bidders Announced for Auction 78*, Public Notice, 23 FCC Rcd 12749 (WTB 2008).

[572] *Id.*

[573] 47 CFR § 90.814(b)(1).

[574] *Id*.

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

[576] *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).

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

million size standard.[578] 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.[579] 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.[580] 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.[581] 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.[582] 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.[583] 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.[584] The SBA approved these small size standards.[585] 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.[586] 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.[587] 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.[588] 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.

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[578] *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).

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

[580] *See generally* 13 CFR § 121.201, NAICS code 517210.

[581] *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*).

[582] *See id.* at 1087-88, para. 172.

[583] *See id*.

[584] *See id.*, at 1088, para. 173.

[585] *See Alvarez Letter 1999*.

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

[587] *See id.*

[588] *See id.*

31. In 2007, the Commission reexamined its rules governing the 700 MHz band in the *700 MHz Second Report and Order*.[589] 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.[590] 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.[591] 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.[592] 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.[593] 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.[594] 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.[595] SBA approval of these definitions is not required.[596] An auction of 52 Major Economic Area licenses commenced on September 6, 2000, and closed on September 21, 2000.[597] 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

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[589] *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; Section 68.4(a) of the Commission's Rules Governing Hearing Aid-Compatible Telephones; Biennial Regulatory Review—Amendment of Parts 1, 22, 24, 27, and 90 to Streamline and Harmonize Various Rules Affecting Wireless Radio Services; Former Nextel Communications, Inc. Upper 700 MHz Guard Band Licenses and Revisions to Part 27 of the Commission's Rules; Implementing a Nationwide, Broadband, Interoperable Public Safety Network in the 700 MHz Band; Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Communications Requirements Through the Year 2010; Declaratory Ruling on Reporting Requirement under Commission's Part 1 Anti-Collusion Rule*, WT Docket Nos. 07-166, 06-169, 06-150, 03-264, 96-86, PS Docket No. 06-229, CC Docket No. 94-102, Second Report and Order, 22 FCC Rcd 15289, 15359 n. 434 (2007) (*700 MHz Second Report and Order*).

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

[591] *700 MHz Second Report and Order*, 22 FCC Rcd 15289.

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

[593] *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*).

[594] *See id*. at 5343, para. 108.

[595] *See id*.

[596] *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).

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

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.[598]

34. *Air-Ground Radiotelephone Service*. The Commission has previously used the SBA's small business size standard applicable to Wireless Telecommunications Carriers (except Satellite).[599] The appropriate size standard under SBA rules is that such a business is small if it has 1,500 or fewer employees.[600] 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 1000 employees or more.[601] 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.[602] 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.[603] The SBA approved these definitions.[604] 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,[605] 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

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

[599] 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.

[600] 13 CFR § 121.201, NAICS code 517210.

[601] *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."

[602] *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).

[603] *Id*.

[604] *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).

[605] The service is defined in section 90.1301 *et seq*. of the Commission's Rules, 47 CFR § 90.1301 *et seq*.

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.[606]

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, utilizing contention-based technologies, in the 3650 MHz band (i.e., 3650–3700 MHz).[607] As of April 2010, more than 1270 licenses have been granted and more than 7433 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,[608] private-operational fixed,[609] and broadcast auxiliary radio services.[610] They also include the Local Multipoint Distribution Service (LMDS),[611] the Digital Electronic Message Service (DEMS),[612] and the 24 GHz Service,[613] where licensees can choose between common carrier and non-common carrier status.[614] 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)[615] 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.[616] For this industry, U.S. Census Bureau data for 2012 show that there were 967

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[606] *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).

[607] *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*).

[608] *See* 47 CFR Part 101, Subparts C and I.

[609] *See* 47 CFR Part 101, Subparts C and H.

[610] 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.

[611] *See* 47 CFR Part 101, Subpart L.

[612] *See* 47 CFR Part 101, Subpart G.

[613] *See id*.

[614] *See* 47 CFR §§ 101.533, 101.1017.

[615] 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.

[616] *See* 13 CFR § 121.201, NAICS code 517210.

firms that operated for the entire year.[617] Of this total, 955 firms had fewer than 1,000 employees and 12 had employment of 1000 employees or more.[618] 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 includes some large entities.

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.

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)).[619] 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.[620] 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.[621] After adding the number of small business auction licensees to the number of incumbent licensees not

[617] 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.

[618] *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."

[619] *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).

[620] 47 CFR § 21.961(b)(1).

[621] 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 1500 or fewer employees.

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.

42. In 2009, the Commission conducted Auction 86, the sale of 78 licenses in the BRS areas.[622] The Commission offered three levels of bidding credits: (i) 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; (ii) 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 (iii) 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.[623] Auction 86 concluded in 2009 with the sale of 61 licenses.[624] 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.

43. 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.[625] 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."[626] 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; that size standard was: all such firms having $13.5 million or less in annual receipts.[627] U.S. Census data for 2012 show that there were 3,117 firms that operated that year.[628] Of this total, 3,083 operated with fewer than 1,000 employees.[629] Thus, the majority of these firms can be considered small.

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[622] 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).

[623] *Id.* at 8296 para. 73.

[624] 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).

[625] 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.

[626] 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.

[627] 13 CFR § 121.201, NAICS code 517110.

[628] *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.

[629] *Id.*

5. Satellite Service Providers

44. *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."[630] 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.[631] 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.[632] Of this total, 299 firms had annual receipts of less than $25 million.[633] Consequently, we estimate that the majority of satellite telecommunications providers are small entities.

45. *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.[634] 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.[635] Establishments providing Internet services or voice over Internet protocol (VoIP) services via client-supplied telecommunications connections are also included in this industry.[636] 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.[637] For this category, U.S. Census Bureau data for 2012 show that there were 1,442 firms that operated for the entire year.[638] Of these firms, a total of 1,400 had gross annual receipts of less than $25 million.[639] Consequently, a majority of "All Other Telecommunications" firms potentially affected by our action can be considered small.

6. Cable Service Providers

46. Because section 706 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.

47. *Cable and Other Subscription Programming.* This industry comprises establishments

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[630] U.S. Census Bureau, *2012*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.

[631] 13 CFR § 121.201, NAICS code 517410.

[632] 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.

[633] *Id*.

[634] *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

[635] *Id*.

[636] *Id*.

[637] 13 CFR § 121.201; NAICS Code 517919.

[638] 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.

[639] *Id.*

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.[640] 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.[641] According to 2012 U.S. Census Bureau data, 367 firms operated for the entire year.[642] 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.[643] Based on this data, the Commission estimates that the majority of firms operating in this industry are small.

48. *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.[644] Industry data indicate that there are currently 4,600 active cable systems in the United States.[645] Of this total, all but nine cable operators nationwide are small under the 400,000-subscriber size standard.[646] In addition, under the Commission's rate regulation rules, a "small system" is a cable system serving 15,000 or fewer subscribers.[647] Current Commission records show 4,600 cable systems nationwide.[648] 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.[649] Thus, under this standard as well, we estimate that most cable systems are small entities.

49. *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 one% 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."[650] There are approximately 52,403,705 cable video subscribers in the United States today.[651] 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

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[640] *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#.*

[641] *See* 13 C.F.R. 121.201, NAICS Code 515210.

[642] *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.

[643] *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.

[644] 47 CFR § 76.901(e).

[645] 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).

[646] *See* SNL KAGAN, *Top Cable MSOs*, https://www.snl.com/Interactivex/TopCableMSOs.aspx.

[647] 47 CFR § 76.901(c).

[648] *See March 31, 2013 Broadcast Station Totals Press Release.*

[649] *See* FCC, *Cable Operations and Licensing System (COALS)*, www.fcc.gov/coals (last visited Oct. 25, 2016).

[650] 47 CFR § 76.90(f) and notes ff. 1, 2, and 3.

[651] *See* SNL KAGAN at http://www.snl.com/interactivex/MultichannelIndustryBenchmarks.aspx.

exceed $250 million in the aggregate.[652] Based on available data, we find that all but nine incumbent cable operators are small entities under this size standard.[653] 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.[654] 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

50. *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.[655] 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.[656] 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.[657] 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

51. The potential modifications proposed in the *Second Notice* if adopted, could, at least initially, impose some new reporting, recordkeeping, or other compliance requirements on some small entities. Small entities and other providers could potentially be required to submit coverage maps based on standardized parameters. Commenters have been asked to refresh the record from the *FNPRM* on the potential use of standardized coverage maps for mobile services in the context of Form 477 and to specifically discuss their experience with approach used in the *MF-II* proceeding. Commenters have also been asked to refresh the record on whether to require on-the-ground data as part of the Form 477 data collection. In particular, the Commission asked whether it should require some actual speed test data, how it could impose such a requirement without being unduly burdensome to small providers and the extent to which providers already collect on-the-ground data in their ordinary course of business.

52. In the *Second Notice*, the Commission also seeks comment on a requirement for providers to submit infrastructure information sufficient to allow us to verify the accuracy of providers' Form 477 filings. Anticipating that the collection of accurate and recent network infrastructure information would help the Commission to verify providers' filings, we propose to require small entities

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[652] 47 CFR § 76.901(f) and notes ff. 1, 2, and 3.

[653] *See* SNL KAGAN at http://www.snl.com/interactivex/TopCable MSOs.aspx.

[654] 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).

[655] *See* https://www.naics.com/naics-code-description/?code=517919.

[656] 13 CFR § 121.201; NAICS Code 517919.

[657] *See* http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_51SSSZ4&prodType=table.

and other providers to submit, as part of their Form 477 filing, the following information: (1) the location of cell sites in decimal degrees; (2) the height (above ground and sea level), type, and directional orientation of transmit antennas at each cell site; (3) maximum radiated transmit power of the radio equipment at each cell site; (4) the capacity and type of backhaul used at each cell site; (5) deployed spectrum band and channel bandwidth in MHz; (6) throughput and the required signal strength and signal to noise ratio (7) cell loading factors; and (8) deployed technologies (e.g., LTE Release 13) and; (10) any terrain and land use information used in deriving clutter factors or other losses associated with each cell site. Additionally, the Commission also requests updated comments on adopting a requirement that coverage maps be submitted in raster format, noting that such a requirement might be less burdensome than shapefiles.

53. As means of improving accuracy and reliability of mobile broadband filings, the Commission seeks comment on whether we should establish a challenge process similar to the *MF-II* challenge process to verify Form 477 filings. The adoption of such a process would allow states, local governments or other interested parties an opportunity to challenge providers' mobile broadband filings and could subject small entities and other providers to additional submission and compliance requirements. In addition, while the Commission has adopted the GIS reporting format for fixed broadband services, because there are limitations to this type of deployment data the Commission seeks comments on how to move to a location-based data requirement for small entities and other providers.

54. In addition, we seek comment on how best to ensure the collection of high-quality fixed broadband coverage data as part of the Digital Opportunity Data Collection. For example, we seek comment on whether to require fixed providers to provide latency reports, whether to impose penalties for entities that chronically file bad data, and how we can improve the existing satellite broadband collection to reflect more accurately current satellite broadband coverage availability. Additionally, we seek comment on how best to collect information relating to service availability data gathered from fixed providers. For example, we seek comment on how to establish a complaint tracking system through USAC, how quickly fixed providers should be required to correct any data where they do not refute the alleged lack of coverage, and how we should instruct USAC to handle cases in which providers and the stakeholders disagree about whether service is actually available at a given location. Finally, we seek comment on how to define a broadband-serviceable location for purposes of creating a broadband serviceable location tool in the Digital Opportunity Data Collection. For example, we ask about how we can best make use of U.S. Census Bureau data to better inform broadband-available locations and how we ensure the accuracy of the location and census data to provide the most complete picture of broadband coverage.

55. The issues raised for consideration and comment in the *Second 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 *Second Notice*. We expect our requests for information on potential burdens on small entities associated with matters raised in the *Second 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

56. 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.[658]

57. 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 *Second Notice*, and to better explore options and alternatives, the Commission has sought comment from the parties. More specifically, the Commission seeks comment on what burdens are associated with the potential requirements discussed in the preceding section and how such burdens can be minimized for small entities. For example, the Commission has sought comment on the potential burdens associated with requiring providers to submit on-the-ground data and/or mobile broadband and voice subscription data at the census tract level, particularly for small providers, and on steps the Commission could take to minimize the potential burdens.

58. In addressing possible changes to the Digital Opportunity Data Collection, we seek comment on lessening the burdens associated with the stringent timeliness and completeness requirements for the broadband coverage data to be submitted by smaller broadband providers. In addition, we seek comment on the burdens of a proposal for USAC to publish crowdsourced complaint data without directly informing the affected providers, which would require the provider to regularly check for pertinent complaints. Further, any requirement to timely submit corrected broadband deployment data may impose a burden on small providers, so we seek comment on alternatives. Finally, the creation of a new online portal for use with the Digital Opportunity Data Collection, generally, has the potential for errors to the disadvantage of small providers seeking USF funds, and we seek comment on alternatives.

59. More generally, the proposals and questions laid out in the *Second 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 collection. Before reaching its final conclusions and taking action in this proceeding, the Commission expects to review the comments filed in response to the *Second 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

60. None.

[658] 5 U.S.C. § 603(c).