

**FEDERAL COMMUNICATIONS  
COMMISSION**
**47 CFR Part 1**

[WC Docket Nos. 11–10 and 19–195; FCC 20–94; FRS 16994]

**Establishing the Digital Opportunity  
Data Collection; Modernizing the FCC  
Form 477 Data Program**

**AGENCY:** Federal Communications Commission.

**ACTION:** Final rule.

**SUMMARY:** In this document, a *Second Report and Order* adopted by the Commission establishes important measures for developing improved broadband data, including requiring fixed wireline and satellite providers to submit shapefiles, or lists of addresses or locations, representing where they have customers or could install service within 10 business days of a request; requiring terrestrial fixed wireless providers to report their coverage areas based on propagation maps and models using prescribed parameters, or based on lists of addresses or locations, to define their specific coverage areas; requiring all fixed providers to provide details on the methodology used to determine their reported coverage; and requiring mobile providers to submit coverage maps and propagation model details based on minimum specified parameters and to disclose other assumptions underlying the models. In addition, the *Second Report and Order* includes a provision for the Commission to establish a common dataset of all locations in the United States where fixed broadband service can be installed—known as the “Broadband Serviceable Location Fabric.” The *Second Report and Order* also adopts processes for verifying the accuracy of providers’ broadband data, including the collection of crowdsourced data and the use of regular audits to examine provider data.

**DATES:** Effective September 17, 2020.

**FOR FURTHER INFORMATION CONTACT:** Wireline Competition Bureau, Kirk Burgee, at (202) 418–1599, [Kirk.Burgee@fcc.gov](mailto:Kirk.Burgee@fcc.gov), or Wireless Telecommunications Bureau, Garnet Hanly, at (202) 418–0995, [Garnet.Hanly@fcc.gov](mailto:Garnet.Hanly@fcc.gov).

**SUPPLEMENTARY INFORMATION:** This is a summary of the Commission’s *Second Report and Order* in WC Docket Nos. 11–10 and 19–195, FCC 20–94, adopted July 16, 2020 and released July 17, 2020. The full text of this document is available for public inspection on the Commission’s website at <https://>

[docs.fcc.gov/public/attachments/FCC-20-94A1.pdf](https://docs.fcc.gov/public/attachments/FCC-20-94A1.pdf).

**Synopsis**
**I. Introduction**

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

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

3. This *Second Report and Order* takes the next step in developing the new broadband coverage maps by

adopting specific coverage reporting and disclosure requirements for fixed and mobile broadband providers, filing and certification requirements, measures for determining the accuracy of broadband availability data (including audits and collecting crowdsourced data), standards for collecting and incorporating verified data for use in the coverage maps from governmental entities and certain third parties, and establishing the Broadband Serviceable Location Fabric (Fabric). In the *Third Further Notice of Proposed Rulemaking (Third FNPRM)*, published elsewhere in this issue of the **Federal Register**, the Commission also seeks comment on several narrow issues relating to implementing the challenge and verification processes for coverage data, implementing the Fabric, and certain other specific requirements of the Broadband DATA Act outside the scope of the *Digital Opportunity Data Collection Order and Further NPRM* (84 FR 43705, Aug. 21, 2019, and 84 FR 43764, Aug. 21, 2019).

**II. Background**

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

5. In August 2019, the Commission recognized “a compelling and immediate need” for better broadband deployment data, and adopted the *Digital Opportunity Data Collection Order and Further NPRM* that: (1) Established the Digital Opportunity Data Collection in order to obtain geospatial broadband coverage maps from fixed broadband providers; (2) adopted a

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

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

7. Following adoption of the *Digital Opportunity Data Collection Order and Further NPRM*, Congress passed the Broadband DATA Act, which requires the Commission to take steps to improve its broadband deployment data collection and the related maps documenting broadband availability in the United States. The Broadband DATA Act requires the Commission, within 180 days of its enactment, to issue final rules to: (1) Require the biannual collection and dissemination of granular data relating to the availability and quality of service of fixed and mobile broadband internet access service for the Commission to use in conjunction with creating broadband coverage maps; (2) establish processes for the Commission to verify and protect the data collected; (3) establish a process for collecting verified data for use in the coverage maps from State, local, and Tribal governmental entities,

from other federal agencies, and, if the Commission deems it in the public interest, from third parties; (4) establish the Fabric to serve as a foundation on which fixed broadband availability is overlaid; (5) establish a user-friendly challenge process through which the public and State, local, and Tribal governmental entities can challenge the accuracy of the coverage maps, provider availability data, or information in the Fabric; and (6) develop a process through which entities or individuals in the United States may submit specific information about the deployment and availability of broadband internet access service in the United States on an ongoing basis. The Broadband DATA Act also requires that the Commission adopt rules that include uniform standards for reporting mobile and fixed broadband service availability data.

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

### III. Second Report and Order

9. Based on the record before us and consistent with the requirements of the Broadband DATA Act, in this *Second Report and Order* the Commission takes steps to implement collection and verification requirements for fixed and mobile broadband service availability and quality of service data. The Commission largely builds on the filing requirements it previously adopted or proposed for broadband service providers, and comments submitted in response to the *Digital Opportunity Data Collection Order and Further NPRM*. Many of the requirements and proposals

are encompassed in the structure of the Broadband DATA Act. Indeed, Congress recognized the value of the Commission’s earlier work on the Digital Opportunity Data Collection and provided that “[i]f the Commission, before the date of enactment of this title, has taken an action that, in whole or in part, implements this title, the Commission shall not be required to revisit such action to the extent that such action is consistent with this title.”

10. However, certain requirements adopted in the *Digital Opportunity Data Collection Order and Further NPRM* are inconsistent with the terms of the statute. For example, it established a role for USAC to develop and maintain the infrastructure for accepting and managing submissions from service providers, along with challenges and crowdsourced data from consumers, government entities, and other third parties, which the Broadband DATA Act prohibits. In addition, although the Commission lacks necessary funding to currently implement the Digital Opportunity Data Collection maps under the Broadband DATA Act, the Commission takes steps to complete the rulemaking required within the statutory deadline and in anticipation of receiving necessary funding in the future so that the Commission can begin developing these granular, precise broadband service availability maps as quickly as possible.

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

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

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

13. In the *Digital Opportunity Data Collection Order and Further NPRM*, the Commission required all fixed broadband service providers to submit "granular coverage maps (polygons)" of the areas where they have broadband-capable networks and can make service available to end-user locations. The Commission explained that "broadband coverage polygons," "coverage polygons," and "polygons" as used in the *Digital Opportunity Data Collection Order and Further NPRM* refer to "broadband areas or footprints—captured in GIS-compatible formats—delineating the areas in which a provider's network meets the requirements detailed in [the *Digital*

*Opportunity Data Collection Order and Further NPRM*] and as defined by the Commission." The *Digital Opportunity Data Collection Order and Further NPRM* further required all fixed providers to submit broadband coverage polygons that reflect the maximum download and upload speeds available in each area, the technology used to provide the service, and a differentiation among residential-only, business-only, or residential-and-business broadband services. Service would be considered "actually available" in an area in which a provider had a current broadband connection or could provide such a connection within ten business days of a request, without an extraordinary commitment of resources and without construction charges or fees exceeding an ordinary service activation fee.

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

15. The Commission must further allow providers of terrestrial fixed and satellite service to report availability data in the form of polygon shapefiles, defined as "a digital storage format containing geospatial or location-based data and attribute information regarding the availability of broadband internet access service[,] and that can be viewed, edited, and mapped in GIS software." With regard to data collected from

terrestrial fixed wireless providers, the rules must provide for reporting propagation maps and propagation model details that satisfy standards similar to those applicable to mobile services, taking into account differences between the two types of services. The maps and model data reported for fixed wireless service must also reflect the speed and latency of the services they depict. For all fixed services, the Broadband DATA Act provides that the Commission also may permit, but not require, providers to report fixed broadband service availability using a "list of addresses or locations" in lieu of shapefiles or propagation maps and model details, but requires the Commission to provide a method for providers to use such address or location-based reporting in Tribal areas.

1. Maximum Buffers for Wireline Broadband Service Reporting

16. The *Digital Opportunity Data Collection Order and Further NPRM* sought comment on whether to adopt additional reporting requirements for similarly-situated fixed wired providers in order to provide consistently reliable results. The Commission asked whether fixed "buffers," or a specified distance around network facilities such as the location of distribution or coaxial plant, should be established to define coverage for specific fixed technologies.

17. The Commission adopts requirements for the use of specific maximum buffers around aggregation points for wired technologies. Specifically, for providers using Digital Subscriber Line (DSL) technologies to offer speeds at 25/3 Mbps or greater, the Commission adopts a maximum distance of 6,600 route feet from the DSLAM to the covered premises. For providers using Hybrid-Fiber Coax (HFC or cable) technology, the Commission adopts a maximum buffer of 12,000 route feet from the aggregation point to the customer premises. For providers using Fiber to the Premises (FTTP or fiber) technologies, the Commission adopts a maximum buffer of 196,000 route feet from the OLT to the Optical Network Termination (ONT). For all fixed wired technologies, the buffer distance from the aggregation point shall include the drop distance, up to a maximum distance of 500 feet from a deployed line or distribution network infrastructure to the parcel boundary of a served location. Providers that make fixed DSL service available at a maximum speed less than 25/3 Mbps in an area will not be subject to a maximum buffer requirement for such areas. However, these providers are still subject to the requirement of the

Broadband DATA Act and this *Second Report and Order* that their coverage areas include only the areas where they have actually built out their broadband network infrastructure, such that they are able to provide service, and where they could perform a standard broadband installation. In addition, the buffer distances from the aggregation point are measured in route distance and therefore must reflect where providers have deployed their last-mile distribution networks. Providers may not simply create and submit a coverage area in the Digital Opportunity Data Collection that is an airline-mile radius around an aggregation point of the maximum buffer value. The Commission directs OEA, in coordination with WCB and OET, to update these values via notice and comment rulemaking in the future as necessary to ensure accuracy and to account for technological and other developments.

18. The maximum buffers the Commission adopts here are, as the name implies, *maximums*. Wireline fixed broadband providers reporting service availability should not consider these maximum buffers safe harbors; rather, service providers may only report those areas they know to be serviceable by their networks. That is, if the locations that a provider can *actually* serve fall within a smaller distance from the aggregation point, either within a particular geographic area or throughout its network, then the provider should report only those smaller areas or set of locations. Providers must ensure that their polygons, the outer edges of which represent the outer perimeter of a service area, encompass only locations that meet the standards for service provision established in the Broadband DATA Act. The Commission expects that in many areas and under many varying conditions, a provider's actual maximum distance from the aggregation point to a served location would be lower than the maximum buffer. In such circumstances, the provider's coverage polygon must reflect the *actual* buffer size or other methodology used to generate the polygon that accurately depicts the area it serves. Providers may also use a different methodology than buffering around network plant to determine and depict their coverage areas. However, subject to the specific exceptions set forth below, locations included in a provider's coverage polygon may not be outside of the maximum buffers established by the Commission, irrespective of the methodology used by the provider.

19. The approach the Commission adopts is consistent with those commenters that opposed a one-size-fits-all approach to buffers. Service providers may only report serving areas up to the maximum buffer distance to the extent that they have existing line or distribution network infrastructure located within 500 feet of the parcel boundary of the served location and where the provider can perform a standard broadband installation. In particular, the Commission agrees with Verizon that where service providers' business practices call for a smaller buffer than the maximum the Commission adopts for a given technology, the provider should use the smaller of the two. For those reasons, the Commission disagrees with the Broadband Mapping Coalition's proposal to establish "safe harbors" based on an appropriate buffer zone related to the density of a geographic area. Providing such safe harbors could permit some service providers to overstate the availability of their services and report areas served where they cannot actually provide service. The Commission believes that the use of maximum buffers will provide important guardrails and result in more accurate, standardized, and cohesive data on broadband availability by wired providers using fiber, cable, and DSL technologies, and therefore adopt the use of maximum buffers specific to each to account for the particular attributes of each technology.

20. Further, several parties have expressed support for the approach the Commission adopts today for maximum buffers. With respect to buffer values for fiber, NTCA, USTelecom, NRECA, ACA Connects, and UTC argue that common provider deployment practices and industry technical standards provide the basis for a much larger maximum distance from the aggregation point for FTTP than for HFC or DSL. NTCA, NRECA, and UTC claim that ITU standards for Gigabit-capable passive optical network (GPON) technologies, as well as Active Ethernet (AE) technology, allow for a maximum buffer of up to 60 km and that real-world fiber deployments in rural areas are often at or above 45 km from the OLT to the ONT at the customer premises. The three parties support a maximum buffer, or distance from the aggregation point, of 60 km for fiber. USTelecom does not recommend a specific distance, but notes that several of its members have reported deploying FTTP to upwards of 65,000 feet (or 20 km). The Commission agrees that industry technical standards and deployment practices, as explained

in the record, provide a basis for adopting a significantly larger maximum buffer for fiber than for HFC or DSL, and the Commission therefore adopts a maximum distance of 60 route km from the aggregation point at the central office for fiber reporting. To ensure that coverage areas reflect where providers have actually deployed fiber plant that can be accessed by nearby locations, NTCA proposes that the boundary of each location shown to be served or within a provider's polygon coverage area be within 500 feet of a deployed fiber line or distribution network infrastructure. The Commission agrees with this proposal and adopt an equivalent requirement for all wireline technologies in the Digital Opportunity Data Collection. In addition, each location shown to be served or within a provider's polygon coverage area, if not already connected to the network, must be able to be connected within ten business days of a request.

21. With respect to HFC networks, NCTA and ACA Connects encouraged the Commission not to adopt maximum buffers at this time. However, NCTA stated that if the Commission were to adopt a maximum buffer, it should be at least 12,000 route feet from the aggregation point in order to accurately reflect the construction and operation of HFC networks. NCTA argues that smaller buffers would lead to locations that are actually served to be shown as unserved, a concern shared by ACA Connects. For the reasons stated above, the Commission is adopting maximum buffers for HFC and other wired technologies. The Commission supports NCTA's proposed buffer distances and adopt a maximum distance of 12,000 route feet from the aggregation point for HFC networks, along with a maximum distance of 500 feet from a deployed line or distribution network infrastructure and the parcel boundary.

22. With respect to DSL, the Commission's 2010 National Broadband Plan reported that DSL speeds exceeding 25/3 Mbps could be attained in a lab environment at a distance of 5,000 feet from the DSLAM using pair-bonded, vectored VDSL2/2+ on a heavy gauge wire. In addition, USTelecom claims that speeds of 25/3 Mbps are offered at 4,000 feet from the aggregation point using pair-bonded DSL technology. The Commission adopts a higher maximum buffer size of 6,600 route feet from the DSLAM for DSL providers to allow for variance between the actual practices of providers and those examples, along with a maximum of distance of 500 feet from a deployed line or distribution network infrastructure and the parcel

property. In addition, the 6,600-foot buffer for DSL is supported by NTCA. The maximum buffer requirement will not apply to reporting of DSL service at a maximum speed of less than 25/3 Mbps. Given that DSL speeds are highly dependent on the distance from the aggregation point and on the type of copper deployed in a way that the other technologies are not, lower-speed DSL services can be offered at greater distances along a large continuum. Adopting discrete buffer distances to account for different speeds levels for DSL services below 25/3 Mbps would introduce complexity and burden for providers of those services. Given that services offered at speeds below 25/3 Mbps are increasingly less common in the marketplace and are not the focus of the Commission's assessment of broadband availability for universal service funding and annual Broadband Progress Reports, the Commission finds that this additional burden would not be warranted and therefore exempt DSL services offered below 25/3 Mbps from buffers. All fixed providers, including DSL providers offering maximum speeds below 25/3 Mbps, are still subject to the requirement of the Broadband DATA Act and this *Second Report and Order* that their coverage areas include only the areas where they have actually built out their broadband network infrastructure, such that they are able to provide service, and where they could perform a standard broadband installation.

23. The Commission also adopts several limited exceptions to the use of these maximum buffers to promote greater accuracy in the map. First, if a provider has a current subscriber at a location beyond the bounds of the applicable maximum buffer, then that location must be included in its coverage polygon or list of addresses or locations, as applicable. Second, if a provider previously had a broadband subscriber, using the same technology, at a location beyond the bounds of the maximum buffer, then the location must be included in the provider's coverage polygon or list of addresses or locations. Third, if a provider is receiving or has received universal service support to provide broadband service in a particular geographic area—or has other Federal, state, or local obligations to make service available in the area—and the provider has begun to make service available in that area, then the provider must include all of the deployed locations in that area in its polygon or list of addresses or locations, regardless of whether they are within or beyond the bounds of the maximum buffer.

Finally, in cases where a provider asserts that it could serve a location beyond the bounds of the applicable maximum buffer for a reason not already addressed under the exceptions described herein, then the provider must submit a waiver request explaining where and how it provides service to such areas or locations.

## 2. Fixed Wireless Broadband Service Availability Reporting Standards

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

25. In response to the *Digital Opportunity Data Collection Order and Further NPRM*, commenters argued that different standards should be used for fixed wireless given the technological, operational, and usage differences between the services. In addition, two parties, AT&T and WISPA, proposed frameworks for reporting fixed wireless coverage. Following passage of the

Broadband DATA Act, USTelecom and WISPA submitted a joint proposal modifying earlier proposals. Specifically, USTelecom and WISPA urged the Commission to adopt a 50% loading factor for fixed broadband service coverage reporting, consistent with the loading factor established for mobile service by the Broadband DATA Act. USTelecom and WISPA, however, argued for the adoption of a 75% cell edge probability for fixed services, rather than the 90% cell edge probability established in the Broadband DATA Act for mobile broadband services. USTelecom and WISPA explained that “[a] fixed wireless provider often controls the base station and receiver and thus can often customize an installation or adjust a radio to enable successful signal reception even when a model predicts only a 75% probability of success.” USTelecom and WISPA contrast this with mobile wireless providers, who “have no control over the location or movement of a user's phone and thus a higher probability is necessary to predict a consistent connection.”

26. The Commission agrees with USTelecom and WISPA that there are fundamental similarities between mobile and fixed wireless service that warrant collecting common elements in the coverage reporting for each technology, but that certain differences warrant collecting different information, as contemplated by the Broadband DATA Act. Accordingly, given the material differences between the two types of service, as set out in the record, the Commission adopts some of the standards for fixed wireless broadband service reporting by propagation maps and models proposed by USTelecom and WISPA, including a 75% cell edge probability, a 50% cell loading factor, and a receiver height of four to seven meters. The Commission agrees with USTelecom and WISPA that given the stationary nature of fixed wireless customer installations and the ability to manage the base stations and receivers to maximize coverage at fixed locations, it is appropriate to adopt a lower cell edge probability than the Commission otherwise requires for mobile broadband coverage. In addition, fixed wireless propagation modeling appears to use the cell edge probability parameter in a different way than mobile, often having it reflect existing locations in a point-to-point network configuration. Given these material differences and the inaccuracies that could potentially result from a higher cell edge probability for fixed wireless, the Commission adopts the 75% cell edge

parameter for the reporting of fixed wireless broadband availability using propagation maps and model details. In addition, the Commission adopts the use of a 50% cell loading factor, given that it is the value specified in the Broadband DATA Act for mobile and that there is no basis in the record for using a different standard for fixed wireless services. Finally, the Commission requires fixed wireless providers to use a receiver height value ranging from four to seven meters in their propagation modeling. USTelecom and WISPA claimed this range is reasonable for fixed wireless receiver heights and suggested that the Commission establish it. The Commission declines to adopt higher values for these elements of terrestrial fixed wireless reporting, as suggested by NTCA and Vantage Point. USTelecom and WISPA have demonstrated that fixed wireless broadband service providers' control over both the base stations and receivers in their networks affords them more opportunity to make adjustments and take other steps that will increase the likelihood of consistent connections as compared with mobile providers. NTCA and Vantage Point have not meaningfully challenged USTelecom and WISPA's position in their comments, nor have they provided a justification for imposing a higher loading factor on fixed service reporting.

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

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

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

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

30. The Commission believes that this information will assist us in determining whether the fixed wireless

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

31. USTelecom and WISPA assert that certain categories of the information the Commission is collecting from terrestrial fixed wireless providers may be commercially sensitive or raise security concerns. Other information—such as the frequency bands used to provide service, carrier aggregation, radio technologies used, terrain and clutter information, base station elevation, and CPE height and power information—do not appear to raise confidentiality concerns. The Commission will treat this information as presumptively public and will treat the remaining information as presumptively non-public. The Commission believes there is a strong public interest in having as much access to this information as possible in order to facilitate public review and input on its accuracy, but the Commission acknowledges the potential sensitivities and believe this approach best balances the two interests.

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

32. The Commission requires mobile broadband providers to submit propagation maps and propagation model details based on minimum specified parameters. Service providers will be required to submit propagation maps reflecting technology-specific user download and upload speeds given prescribed minimum cell edge probabilities, cell loading factors, and modeling resolution. The Commission

otherwise allows service providers to choose other propagation modeling parameters that reflect each provider's particular network configurations, deployed infrastructure, and geographic characteristics of each area. Service providers must submit to the Commission modeling parameters they use in modeling the prescribed network performance standards which will be available for public review. Providing flexibility to select modeling parameters combined with public disclosure of those parameters will ensure that submitted propagation maps reflect on-the-ground performance while fostering transparency and confidence in modeled performance. As AT&T points out, "The answer is not to prescribe *how* providers should create their maps, but rather to clearly define *what the map must represent*, and then to require transparency."

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

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

35. In the *Digital Opportunity Data Collection Order and Further NPRM*, the Commission sought comment on incorporating mobile voice and broadband coverage into the Digital Opportunity Data Collection and on what additional steps the Commission should take to obtain more accurate and reliable mobile broadband deployment data. The Commission asked commenters to refresh the record on the potential use of radio frequency (RF) signal prediction, including the mutual

use (by the Commission and stakeholders) of a standardized RF propagation prediction model and standardized coverage maps for mobile services. The Commission asked commenters to discuss their experience in the Mobility Fund Phase II proceeding, including the lessons the Commission should draw from the standardized parameters it established for propagation models in that proceeding and whether standardized RF signal strength prediction and technical parameters including download speed, cell loading, and cell edge coverage probability are sufficient to demonstrate coverage. The Commission also asked whether any additional parameters are necessary and whether 5G technology requires different standardized parameters. Providers, to varying degrees, supported the use of propagation models with standardized parameters, though all commenters who opined on the issue supported 4G LTE parameters defined by a cell edge probability of 90% and a cell loading factor of 50%.

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

37. Several of the requirements of the Broadband DATA Act are similar to proposals and recommendations from the *Digital Opportunity Data Collection*

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

#### 1. Standardized Predictive Propagation Maps for Mobile Service

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

39. *First*, as noted above, the Commission requires each coverage map to reflect coverage areas where users should expect to receive the minimum required download and upload speeds with not less than a 90% cell edge coverage probability and a cell loading of not less than 50%. The Broadband DATA Act set these requirements for 4G LTE data submissions, and the Commission finds that they are appropriate metrics to use for 3G and 5G-NR data submissions and voice submissions as well. The Commission agrees with commenters that by adopting the stricter coverage probability and network loading parameters that many providers themselves use to design their networks, the Commission will help ensure that the coverage maps providers submit do not overestimate coverage and that they more closely match real consumer experience. The Commission adopts the Broadband DATA Act's definitions of

the terms “cell edge probability” and “cell loading.”

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

41. For consistency between submissions, and to implement the Broadband DATA Act’s requirement that providers account for the effect of clutter in producing their propagation models, the Commission specifies a baseline resolution requirement for the terrain and clutter data used for modeling and producing maps. The Commission adopts the Broadband DATA Act’s definition of the term clutter for purposes of the collection. Without sufficient resolution for terrain and clutter data, natural obstructions to radio propagation can be missed and cause propagation models to misrepresent cellular coverage. The *Mobility Fund Phase II Investigation Staff Report* recommended that the Commission’s data specifications include maximum terrain and clutter bin sizes and noted that failure to adequately model local clutter and terrain may have contributed to inaccuracies in carrier propagation models in the Mobility Fund Phase II proceeding. Several commenters support requiring carriers to report the clutter factors they use across their coverage areas and requiring the use of terrain and clutter data with a resolution of 100 meters or better. The Commission finds that establishing a baseline terrain and clutter bin value of 100 meters or better will help improve the overall accuracy and comparability of the data the Commission collect.

42. The Commission’s decision to require reporting for 3G, 4G LTE, and 5G–NR networks is consistent with the requirements of the Broadband DATA Act and the streamlining measures the Commission adopted in the *Digital Opportunity Data Collection Order and Further NPRM*. Such a requirement

should serve the public interest by providing accurate, granular data on the availability of the most prevalent generations of mobile broadband service. The Commission rejects arguments that it lacks legal authority to establish mapping parameters for 5G–NR services or that it would be premature to do so.

43. The Commission’s decision to adopt reporting parameters for 5G–NR services implements the Broadband DATA Act requirement that the Commission, if it determines that it is necessary to revise reporting standards to collect accurate propagation maps with respect to future generations of mobile broadband technologies, shall immediately commence a rulemaking to adopt new reporting standards for those technologies. The Commission requires mobile providers to submit coverage maps reflecting 5G–NR deployment based on different speed thresholds than the Broadband DATA Act requires for 4G LTE services because the Commission finds that the 4G LTE speed thresholds specified in the Act are insufficient to accurately reflect 5G–NR coverage. In the *Digital Opportunity Data Collection Order and Further NPRM*, the Commission specifically asked whether 5G technology would require different standardized parameters. Moreover, and as noted above, nationwide providers have deployed 5G networks in different areas throughout the country and additional rollouts are planned. The Commission needs reliable and accurate information about the scope of these 5G–NR deployments as they occur and the parameters the Commission establishes today are appropriate for assessing service quality and consumer experience for all mobile technologies, including 5G–NR. Because the Commission does not prescribe extensive modeling parameters and provide flexibility to providers to select and disclose appropriate parameters that reflect the configuration of their networks, commenters’ concerns here are largely mooted.

44. *Third*, the Commission prescribes technology-specific user download and upload speeds that users should expect in light of the cell edge probabilities and cell loading factors described above. For 4G LTE, as specified in the Broadband DATA Act, the Commission will require mobile broadband service providers to submit propagation maps and propagation model details that demonstrate where mobile wireless users should expect to receive minimum user speeds of 5/1 Mbps at the cell edge, with a cell edge probability of not less than 90% and a cell loading of not less

than 50%. The speed thresholds must represent the expected user experience, as measured at the application layer.

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

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

47. The Commission adopts minimum expected user speeds of 200/50 kbps at the cell edge for 3G network deployments at the prescribed cell edge probability and cell loading. These speeds are consistent with the speed thresholds for 3G service used by the Commission in the Mobility Fund I

context, and represent a useful baseline for mapping 3G mobile network coverage. In the *Digital Opportunity Data Collection Order and Further NPRM*, the Commission noted that commenters had previously expressed support for applying standardized parameters to coverage maps for each mobile broadband technology, including 3G, and it asked commenters to refresh the record on that issue. Although the transition to networks capable of supporting 5G technology is underway nationwide, the Commission recognizes that many mobile broadband network service providers continue to operate 3G networks—particularly providers that serve customers in rural areas of the country.

48. *Fourth*, the Commission requires providers to disclose to the Commission details of their propagation models and of the link budgets they use for modeling cell edge network throughput (both uplink and downlink). The *Mobility Fund Phase II Investigation Staff Report* recommended that the Commission require providers to include detailed information in their filing related to how they developed their coverage maps, such as the locations and specific characteristics of cell sites, the modeling software used, the entire link budget and values, and terrain source data. Commenters expressed support for requiring providers to disclose similar information. The Commission agrees that requiring providers to submit detailed data about their propagation models and link budgets will help the Commission verify the accuracy of their propagation models. Accordingly, the Commission requires providers to disclose the following information regarding their radio network planning tools: (1) The name of the planning tool; (2) the version number used to produce the map; (3) the name of the developer of the planning tool; (4) an affirmation that the coverage model has been validated and calibrated at least one time using drive test and/or other real-world measurements completed by the provider or its vendors (the affirmation should include a brief summary of the process used for calibration and date of calibration); (5) the propagation model or models used; and (6) the granularity of the models used (e.g., 3-arc-second square points, bin sizes (subject to the baseline requirements adopted here), and other parameters). The Commission also requires that propagation maps submitted by providers predict outdoor coverage, which should include both (1) on-street or pedestrian stationary usage and (2) in-vehicle mobile usage.

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

50. The Commission requires service providers to submit their coverage maps in vector format. There are two predominant forms for storing and displaying map information digitally. Raster format provides a grid of individual points that, together, represent an image. Vector format produces an image by storing and displaying a set of connected lines in the form of the start and end points, rather than the individual pixels of the line as would be done with raster-format data. When taken together, the set of lines form the boundaries for different colors within a map or, more generally, an image. While raster format arguably provides for more detail, it involves significantly more data. There are differing views in the record about whether to require raster format. Some commenters argue that raster format would improve consistency and comparability of provider data. Others argue that requiring raster format would be burdensome. The Commission finds that requiring the submissions in vector format will facilitate efficient and effective collection of data while minimizing burdens for providers. The Commission is not persuaded that the benefits of requiring raster format outweigh the potential added burdens

for some providers. Requiring submission of raster files would not only increase burdens on service providers, but also expend significant Commission resources needed to process the greater volume of data associated with raster-formatted submissions. In addition, the Commission finds that the evidence in the record fails to demonstrate that requiring providers to use raster format for their submissions is necessary for the Commission to be able to verify mobile broadband coverage. Instead, the Commission anticipates that the other verification measures the Commission proposes in the *Third FNPRM* would be more useful for verifying provider submissions.

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

### C. Establishment of the Fabric

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

53. In the *Digital Opportunity Data Collection Order and Further NPRM*, the

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

54. Consistent with the Commission’s stated intentions in the *Digital Opportunity Data Collection Order and Further NPRM*, and the substantially overlapping requirements of the Broadband DATA Act, the Commission adopts the Fabric, along with these basic elements as required by the Act. Specifically, the Commission concludes that the Fabric will consist of a single, nationwide fabric that will contain geocoded locations for all locations where a broadband connection can be installed. However, the Commission finds that it is appropriate in the *Third FNPRM* to seek additional comment on certain aspects of developing the Fabric. The Commission also notes that the Broadband DATA Act specifically authorizes the Commission to contract with an entity with GIS expertise to create and maintain the Fabric, but the Commission has not yet been appropriated funding to implement the Fabric and other measures required by the Broadband DATA Act and therefore cannot begin to implement them. The Commission finds, however, that determining to establish the Fabric now will enable us to commence promptly the processes necessary to contract for its creation and operation once funding is available, subject to the provisions of the Federal Acquisition Regulation and other requirements established in the Broadband DATA Act.

#### D. Timing of Collection Filings

55. As required by the Broadband DATA Act, the Commission establishes a biannual schedule for collection of broadband internet access service availability and quality of service data. For this purpose, the Commission establishes filing deadlines of March 1 and September 1 each year. The March filing would reflect data as of December 31 of the previous calendar year, while the September filing would reflect data as of June 30 of the then-current calendar year. The Commission directs OEA to issue a public notice

announcing the initial filing deadline at least six months prior to that deadline, and fixed and mobile service providers must file their initial reports by that initial filing deadline. Finally, providers that become subject to the Digital Opportunity Data Collection filing requirements after the initial filing deadline must file data initially for the reporting period in which they become eligible.

#### E. Processes for Verifying Broadband Availability Data Submitted by Providers

56. Pursuant to the Broadband DATA Act, the Commission adopts rules for processes through which it will be able to “verify the accuracy and reliability” of the broadband internet access service availability data submitted by providers. In addition to the infrastructure data that fixed wireless providers must submit to verify their network coverage data, the Commission also adopts (1) a process that uses data contained in the Administrator’s High Cost Universal Broadband (HUBB) portal to cross-check fixed broadband coverage data; (2) the use of audits as a means of verifying coverage data accuracy; (3) a certification requirement for all biannual provider submissions, and (4) processes for collecting crowdsourced and verified third-party data. The Commission seeks comment in the *Third FNPRM* on other methods for verifying the broadband availability and quality of service data submitted by providers, some of which are mandated by the Broadband DATA Act.

##### 1. Verifying Fixed Broadband Data Using HUBB Data

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

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

##### 2. Commission Audits

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

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

60. Accordingly, the Commission will conduct audits involving information submitted by all types of providers of broadband internet access service (e.g., terrestrial fixed, fixed and mobile wireless, satellite). Subject to the Commission’s receipt of sufficient appropriations, audit tools will include field surveys, investigations, and annual random audits to verify data accuracy.

In addition, audits may be initiated based on an unusual number of crowdsourced complaints.

### 3. Certification of Filings

61. The Broadband DATA Act requires that each provider must include as part of its filing “a certification from a corporate officer of the provider that the officer has examined the information contained in the submission and that, to the best of the officer’s actual knowledge, information, and belief, all statements of fact contained in the submission are true and correct.” The format of this certification is slightly different from the certification requirement adopted for fixed providers in the *Digital Opportunity Data Collection Order and Further NPRM*, but the Commission concludes that the plain language of the Broadband DATA Act now requires us to adopt this new standard (for both fixed and mobile service providers) and it does so here.

### 4. Process for Collecting Crowdsourced Data

62. The Broadband DATA Act requires that the Commission develop a crowdsourcing process “through which entities or individuals . . . may submit specific information about the deployment and availability of broadband internet access service . . . on an ongoing basis so that the information may be used to verify and supplement information submitted by providers . . . for inclusion in the [broadband coverage] maps.” The Act further directs the Commission to “prioritize the consideration of data provided by data collection applications used by consumers that the Commission has determined: (i) Are highly reliable; and (ii) have proven methodologies for determining network coverage and network performance.” In the *Digital Opportunity Data Collection Order and Further NPRM*, the Commission adopted a crowdsourcing process for fixed services to begin collecting public input on the accuracy of service providers’ broadband deployment data. The Commission further stated, “Consistent with the public feedback mechanism the Commission adopts for fixed providers in the *Digital Opportunity Data Collection*, the Commission proposes 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.” The Commission noted that third-party crowdsourced data for mobile service can serve as an important supplement to the information the Commission collects

from service providers by independently measuring mobile broadband speed and availability. In addition to the Commission’s proposal to collect such data, the Commission sought comment on how to treat crowdsourced data and the procedures that the Commission should follow. In this *Second Report and Order*, the Commission adopts the requirements from the Broadband DATA Act and the Commission’s proposals from the *Digital Opportunity Data Collection Order and Further NPRM* to collect crowdsourced data.

63. As an initial matter, consistent with comments received in response to the *Digital Opportunity Data Collection Order and Further NPRM* and the differences spelled out in the Broadband DATA Act, the Commission determines that the crowdsourcing process should be administered as separate and distinct from the challenge process. As a result, as set forth herein, the Commission adopts distinct processes for collecting data for crowdsourcing and challenges. In addition, in connection with crowdsourced data on mobile service availability, the Commission distinguishes between mobile crowdsourced data collected by app developers, such as Ookla, and information (including individual speed test results) submitted by consumers through the online portal for crowdsourced filings, as described below.

#### a. Scope of Crowdsourced Data Filings

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

65. In the *Digital Opportunity Data Collection Order and Further NPRM*, the Commission noted that it has used mobile crowdsourced data, such as speed test data generated by mobile consumer speed test apps, to inform various Commission reports. The Commission recognized, however, that such data have certain limitations. For example, bias is often introduced into speed test data because tests are performed only at specific times and places, potentially providing a less accurate snapshot of mobile broadband performance. The Commission also noted that the methods by which different speed test apps collect data can vary and may not use techniques that control for certain variables. Although

the Commission recognizes the potential limitations of crowdsourced data, it nonetheless believes that third-party crowdsourced data can serve as an important supplement to the information the Commission collects from service providers by independently measuring mobile broadband speed and availability.

66. The Commission directs OET, OEA, WCB, and WTB to develop and refine a process for entities and individuals to submit third-party fixed and mobile crowdsourced data consistent with the Broadband DATA Act’s requirements and the Commission’s policies. In accordance with the Act’s requirements, these Bureaus and Offices will develop the process by which the Commission will prioritize the consideration of crowdsourced data submitted through data collection applications used by consumers, and other entities, that are determined to be “highly reliable” and that “have proven methodologies for determining network coverage and network performance.” In applying this standard, these Bureaus and Offices may consider: (1) Whether the application uses metrics and methods that comply with current Bureau and Office requirements for submitting network coverage and speed data in the ordinary course; (2) whether the speed application has enough users that it produces a dataset to provide statistically significant results for a particular provider in a given area; and (3) whether the application is designed so as not to introduce bias into test results. The Bureaus and Offices will issue specific rules by which the Commission will prioritize the consideration of crowdsourced data in advance of the time that the online portal is available. This will allow filers to take these rules into account in submitting crowdsourced data. As noted above, the Commission has used mobile crowdsourced data to inform various Commission reports, such as in the 2020 Broadband Deployment Report where the Commission supplemented Form 477 data with Ookla crowdsourced speed test data in assessing access to advanced telecommunications capability for mobile services. The Commission currently receives some crowdsourced data through its Measuring Mobile Broadband in America (MMBA) program; the Commission does not, however, intend to restrict crowdsourcing broadband data collection efforts to the product of any one specific entity. Further, the industry or commenter may identify a number of alternative applications that

satisfy the aims of crowdsourcing in this context.

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

#### b. Establishment of an Online Portal for Crowdsourced Data Filings

68. Consistent with the requirements in the Broadband DATA Act and similar to the requirement in the *Digital Opportunity Data Collection Order and Further NPRM*, the Commission will establish and use an online portal for crowdsourced data filings and will use that same portal for challenge filings. The Commission finds that a single platform would be the most beneficial approach for the public, challengers, and providers to use for crowdsourced data and challenge filings. The Commission directs the Offices and Bureaus to implement the crowdsourced data collection and to create a portal for the receipt of crowdsourced data.

#### c. Information Included in Crowdsourced Data Filings

69. Similar to the Commission's proposal in the *Digital Opportunity Data Collection Order and Further NPRM*, the Commission requires that crowdsourced data filings contain the contact information of the filer (e.g., name, address, phone number, and email), the location that is the subject of the filing (including the street address and/or GPS coordinates of the location), the name of the provider, and any relevant details about the deployment and availability of broadband internet access service at the location. With regard to crowdsourced input from existing speed-test applications, the Commission currently collects the location and identifying information that is part of the normal operation of the application, and the Commission will only accept tests that use the device's location services to

determine latitude and longitude to ensure precise location data.

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

#### d. Treatment of Crowdsourced Data Filings

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

72. The Commission will use crowdsourced data to inform, but not decide, a provider's claimed deployment and availability of broadband internet access service—and as an important part of verification options that include Commission audits, cross-checking with HUBB data, a challenge process, and data from government entities and third parties. When the Commission sought comment in the *Digital Opportunity Data Collection Order and Further NPRM* on the use of crowdsourced data, many providers argued that such data should be used only when there is a systematic problem with a provider's reporting in a given area. The Commission adopts an approach similar to that advocated by commenters and limit the use of crowdsourced data to identifying trends and trouble-spotting, rather than addressing every individual claim. Specifically, Commission staff will use crowdsourced data to identify individual instances or patterns of potentially inaccurate or incomplete deployment or availability data that warrant further investigation or review.

73. In response to the Commission's requests for comment on mobile crowdsourced data, parties generally

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

74. In response to the *Digital Opportunity Data Collection Order and Further NPRM*, commenters suggested a range of thresholds above which the Commission should investigate crowdsourced data complaints—from “one half of one percent of the number of premises covered,” as suggested by Next Century Cities, to at least 75% of submitted results in an area suggesting that coverage is overstated, as requested by WTA—Advocates for Rural Broadband (WTA). The Commission declines to establish specific thresholds to use when deciding whether to evaluate providers' filings where crowdsourced data suggest that a certain percentage of the locations reported in a census block, or a certain percentage of the provider's total locations, are inaccurate. Instead, the Commission agrees with commenters such as ACA Connects that Commission staff should initiate inquiries when a “critical mass of” crowdsourced filings suggest that a provider has submitted inaccurate or incomplete data. The Commission directs its Bureaus and Offices to provide guidance to providers when inquiries based on crowdsourced filings could be initiated. The Commission also reserves the right to investigate filings in instances that do not meet the thresholds if warranted by the specific

circumstances of a crowdsourced data filing.

e. Remedies for Inaccurate Data Identified by Crowdsourced Data Filings

75. Similar to the Commission's proposal in the *Digital Opportunity Data Collection Order and Further NPRM*, once staff have evaluated a particular crowdsourced data submission and established the need to take a closer look at a provider's data, staff will contact the provider and offer it an opportunity to explain any discrepancies between its data and the Commission's analysis. If the provider agrees with staff analysis, then it will be required to refile updated and corrected data within 30 days of agreeing with that determination, although providers will be allowed to bundle multiple crowdsourced corrections into one filing during a 30-day period. If the provider disputes the staff analysis, staff will review the provider's response and consider whether further inquiry is necessary to resolve the discrepancy. This could include, for example, beginning a formal audit of the provider's data or engaging in informal dispute resolution. If staff ultimately conclude that the provider's filing is not reliable with respect to the areas covered by the crowdsourced filing, staff will require the provider to refile its fixed or mobile coverage data excluding the locations or areas in question.

f. Public Availability of Information Filed in the Crowdsourcing Process

76. The Commission will make public all information submitted as part of the crowdsourcing process, with the exception of personally identifiable information and any data required to be confidential under § 0.457 of the Commission's rules. The Commission notes that the information that it adopts for crowdsourced data filers to provide is the same information that the Commission required be made publicly available in the *Digital Opportunity Data Collection Order and Further NPRM*. The Commission finds that this information will be sufficient to inform the public about the nature of a crowdsourced data filing, while protecting legitimate privacy or other interests. Similar to the requirement the Commission adopted in the *Digital Opportunity Data Collection Order and Further NPRM*, it directs OEA to make crowdsourced data publicly available as soon as is practicable after submission and to establish an appropriate method for doing so. While the Commission does not establish a specific timeline for making such data publicly available, it

expects that there will be regular releases of crowdsourced data.

F. Enforcement

77. Under the Broadband DATA Act, it is unlawful to willfully and knowingly, or recklessly, submit information or data that is materially inaccurate or incomplete with respect to the availability or the quality of broadband internet access service. The Commission adopts this requirement, but seek comment in the *Third FNPRM* on several aspects of the Broadband DATA Act's enforcement requirement.

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

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

79. The Commission will establish the Broadband Map as a map that depicts the extent of the availability of broadband internet access service, as well as areas that are unserved, overlaid onto the fixed service Fabric data. The Broadband DATA Act provides that this Broadband Map must depict the availability of broadband "without regard to whether that service is fixed or mobile." Pursuant to the Act, the Commission also will create separate maps depicting fixed coverage and mobile coverage. Coverage depicted on the Broadband Map and the fixed and mobile coverage maps will be defined

by providers' reported availability data, as revised by the outcome of successful challenges under the challenge process and the outcomes of Commission investigations and inquiries, which may be informed by crowdsourced data.

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

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

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

82. The Broadband DATA Act requires the Commission to develop a process to collect verified data for use in the coverage maps from: (1) State, local, and Tribal governmental entities primarily responsible for mapping or

tracking broadband internet access service coverage in their areas; (2) third parties, if the Commission determines it is in the public interest to use their data in the development of the coverage maps or in the verification of data submitted by providers; and (3) other federal agencies. The Commission adopts this requirement and direct the Bureaus and Offices to implement the details of the process. The Commission will treat such data as “primary” availability data “for use in the coverage maps” on par with the availability data submitted by providers in their biannual Digital Opportunity Data Collection filings. The Commission seeks comment in the *Third FNPRM* on other details associated with the process, including such issues as the meaning of “verified” data, how to reconcile this data with data submitted by providers in their biannual filings, collecting verified data for mobile service, and the parameters of the Commission’s public interest determination to use third-party data.

#### *I. Data Confidentiality and Privacy*

83. The Broadband DATA Act requires that the rules the Commission adopts establish “processes and procedures through which the Commission and, as necessary, other entities or individuals submitting non-public or competitively sensitive information, can protect the security, privacy, and confidentiality of such information,” including: (1) Information contained in the Fabric, (2) the dataset supporting the Fabric, and (3) availability data submitted pursuant to section 802(b)(2) of the Broadband DATA Act. In the *Digital Opportunity Data Collection Order and Further NPRM*, the Commission determined that all fixed broadband service provider information, comprising shapefiles depicting areas covered at each offered speed, would be presumed to be non-confidential unless the Commission specifically directed that it be withheld. The Commission required all filers seeking confidential treatment of data submitted as part of the Digital Opportunity Data Collection to submit a request at the time of the filing that the data be treated as confidential, along with the reasons for withholding the information from the public. The Commission noted that it would make decisions on requests for confidential treatment on a case-by-case basis. The Commission similarly determined that mobile broadband service provider coverage maps would presumptively be treated as non-confidential. Specifically, the Commission decided that the Commission will release the following information in Digital Opportunity Data

Collection filings to the public, and providers may not request confidential treatment of such information: (1) Provider-specific mobile deployment data; (2) data regarding minimum advertised or expected speed for mobile broadband internet access services; and (3) location information that is necessary to permit accurate broadband mapping, including as part of the crowdsourcing or challenge processes.

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

85. The Commission expects the Fabric will include at least some proprietary information that it will acquire commercially, which will be subject to licensing or other agreements that limit the extent to which it can be made available. The Commission also anticipates that it will receive information from individuals or entities concerning the accuracy of availability data and information in the Fabric. Accordingly, the Commission will withhold from routine public inspection all data required to be kept confidential pursuant to § 0.457 of the Commission’s rules and all personally identifiable information, including names, email addresses, and telephone numbers submitted in connection with availability data and the data in the Fabric. However, the Commission will entertain requests for disclosure if the public interest in disclosure outweighs the interests listed in § 0.457 of the Commission’s rules. Subject to contractual or license restrictions, the Commission will make public all other information received about the status of broadband internet access service availability at specific locations,

including geographic coordinates and street addresses, whether a provider has reported availability at a location, and whether the owner or occupant has disputed a report of broadband internet access service availability at such location. The Commission also will make publicly available all shapefiles, propagation maps, lists of addresses or locations for both fixed and mobile service, and on-the-ground mobile data, including data submitted by mobile providers to verify their coverage maps, subject to individual requests for confidential treatment.

#### *J. Updating the Data Collection*

86. Consistent with the requirement in the Broadband DATA Act, and similar to the requirement that the Commission adopted (but have not implemented) in the *Digital Opportunity Data Collection Order and Further NPRM*, it directs IB, WTB, WCB, and OEA to (1) update the specific format of data to be submitted pursuant to the Digital Opportunity Data Collection to reflect changes over time in GIS and other data storage and processing functionalities; and (2) implement any technical improvements or other clarifications to the filing mechanism and forms.

### **IV. Final Regulatory Flexibility Analysis**

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

#### *A. Need for, and Objectives of, the Rules*

88. With the *Second Report and Order*, the Commission takes steps to adopt certain requirements mandated by the Broadband DATA Act, as well as adopting improvements to the collection of data. Specifically, the Commission establishes reporting and disclosure requirements for fixed and mobile broadband providers, filing and certification requirements. The Commission adopts the use of the Fabric to serve as the foundation upon which all data relating to fixed broadband internet access service availability must be overlaid. The Commission also adopts certain rules for the collection and reporting of data mobile broadband

internet access service. For mobile providers, the Commission implements the requirements of the Broadband DATA Act by requiring them to submit propagation maps and propagation model details based on specified minimum parameters. In addition to requiring mobile broadband providers to use propagation modeling to generate and submit maps showing their 4G LTE coverage, the Commission requires providers to submit data and coverage maps for existing 3G networks and next-generation (5G–NR) networks. The Commission also adopts requirements to collect crowdsourced data as well as a process for verifying broadband availability. The Commission believes these actions in the *Second Report and Order* will increase the usefulness of broadband deployment data to the Commission, Congress, the industry, and the public, and satisfy the requirements of the Broadband DATA Act.

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

89. None.

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

90. 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.

91. 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*

92. 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. The RFA generally defines the term “small entity” as having the same meaning as the terms “small business,” “small organization,” and “small governmental jurisdiction.” In addition, the term “small business” has the same meaning as the term “small-business concern” under the Small Business Act.” A “small-business concern” is one which: (1) Is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).

93. *Small Businesses, Small Organizations, Small Governmental Jurisdictions.* The Commission’s actions, over time, may affect small entities that are not easily categorized at present. The Commission therefore describes here, at the outset, three comprehensive small entity size standards that could be directly affected herein. 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. These types of small businesses represent 99.9% of all businesses in the United States which translates to 28.8 million businesses.

94. 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.” 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).

95. 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.” U.S. Census Bureau data from the 2012 Census of Governments indicate that there were 90,056 local governmental jurisdictions consisting of general purpose governments and special purpose governments in the United States. Based on this data, the Commission estimates that at least 49,316 local government jurisdictions fall in the category of “small governmental jurisdictions.”

1. Broadband Internet Access Service Providers

96. 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 the Commission’s action might affect, it discusses in turn several different types of entities that might be providing broadband internet access service. The Commission notes that, although it has no specific information on the number of small entities that provide broadband internet access service over unlicensed spectrum, the Commission included

these entities in its Initial Regulatory Flexibility Analysis.

97. *Internet Service Providers (Broadband).* Broadband internet service providers include wired (e.g., cable, DSL) and VoIP service providers using their own operated wired telecommunications infrastructure and fall in the category of Wired Telecommunication Carriers. 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. The SBA size standard for this category classifies a business as small if it has 1,500 or fewer employees. 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. Consequently, under this size standard the majority of firms in this industry can be considered small.

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

2. Wireline Providers

99. *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.” 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. U.S. Census Bureau 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.

100. *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. Under the applicable SBA size standard, such a business is small if it has 1,500 or fewer employees. According to Commission data, 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 category and the associated size standard, the Commission estimates that the majority of local exchange carriers are small entities.

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

102. *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. U.S. Census Bureau data for 2012 indicate that 3,117 firms operated during that year. Of that number, 3,083 operated with fewer than 1,000 employees. 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. Of these 1,442 carriers, an estimated 1,256 have 1,500 or fewer employees. 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. Also, 72 carriers have reported that they are Other Local Service Providers. Of this total, 70 have 1,500 or fewer employees. 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.

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

104. *Operator Service Providers (OSPs)*. Neither the Commission nor the

SBA has developed a small business size standard specifically for operator service providers. The closest applicable size standard under SBA rules is the category of Wired Telecommunications Carriers. Under the size standard for Wired Telecommunications Carriers, such a business is small if it has 1,500 or fewer employees. U.S. Census Bureau 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.

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

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

### 3. Wireless Providers—Fixed and Mobile

107. The broadband internet access service provider category covered by these new 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 actions may have an impact on those small businesses as set forth above and further below. In addition, for those services subject to auctions, the Commission notes 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.

108. *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. The appropriate size standard under SBA rules is that such a business is small if it has 1,500 or fewer employees. For this industry, U.S. Census data for 2012 show that there were 967 firms that operated for the entire year. Of this total, 955 firms had employment of 999 or fewer employees and 12 had employment of 1,000 employees or more. Thus, under this category and the associated size standard, the Commission estimates that the majority of wireless telecommunications carriers (except satellite) are small entities.

109. 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 the Commission's actions. 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. Of this total, an estimated 261 have 1,500 or fewer employees, and 152 have more than 1,500 employees. Thus, using available data, the Commission estimates that the majority of wireless firms can be considered small.

110. *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. The SBA has approved these small business size standards. 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.

111. *1670–1675 MHz Services*. This service can be used for fixed and mobile uses, except aeronautical mobile. 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.

112. *Wireless Telephony*. Wireless telephony includes cellular, personal communications services, and specialized mobile radio telephony carriers. The closest applicable SBA category is Wireless Telecommunications Carriers (except Satellite). Under the SBA small business size standard, a business is small if it has 1,500 or fewer employees. 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 firms had 1,000 employees or more. 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. Of these, an estimated 261 have 1,500 or fewer employees and 152 have more than 1,500 employees. Therefore, more than half of these entities can be considered small.

113. *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. 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. These standards, defining “small entity” in the context of broadband PCS auctions, have been approved by the SBA. 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. On April 15, 1999, the Commission completed the reauction of 347 C-, D-, E-, and F-Block licenses in Auction No. 22. Of the 57 winning bidders in that auction, 48 claimed small business status and won 277 licenses.

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

115. *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. 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. The SBA has approved these small business size standards for the 900 MHz Service. 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. 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.

116. 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. 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. 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.

117. In addition, there are numerous incumbent site-by-site SMR licenses and licensees with extended implementation authorizations in the 800 and 900 MHz bands. The Commission does 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, the Commission does not know how many of these firms have 1,500 or fewer employees, which is the SBA-determined size standard. The Commission assumes, for purposes of this analysis, that all of the remaining extended implementation authorizations are held by small entities, as defined by the SBA.

118. *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. 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. 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. 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. The SBA approved these small size standards. 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. 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. 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. 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.

119. In 2007, the Commission reexamined its rules governing the 700 MHz band in the *700 MHz Second Report and Order* (72 FR 48814, Aug. 24, 2007). 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. 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.

120. *Upper 700 MHz Band Licenses.* In the *700 MHz Second Report and Order*, the Commission revised its rules regarding Upper 700 MHz licenses. 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. The auction concluded on March 18, 2008, with three winning bidders claiming

very small business status (those with attributable average annual gross revenues that do not exceed \$15 million for the preceding three years) and winning five licenses.

121. *700 MHz Guard Band Licenses.* In 2000, in the *700 MHz Guard Band Order* (65 FR 17594, April 4, 2000), 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. 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. 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. SBA approval of these definitions is not required. An auction of 52 Major Economic Area licenses commenced on September 6, 2000, and closed on September 21, 2000. 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.

122. *Air-Ground Radiotelephone Service.* The Commission has previously used the SBA’s small business size standard applicable to Wireless Telecommunications Carriers (except Satellite). The appropriate size standard under SBA rules is that such a business is small if it has 1,500 or fewer employees. For this industry, U.S. Census Bureau data for 2012 show that there were 967 firms that operated for the entire year. Of this total, 955 firms had fewer than 1,000 employees and 12 had employment of 1,000 employees or more. There are approximately 100 licensees in the Air-Ground Radiotelephone Service, and the Commission estimates that almost all of them qualify as small entities under the SBA definition.

123. 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. 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. These definitions were approved by the SBA. 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.

124. 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, 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 the Commission does not know for certain which entities are likely to apply for these frequencies, the Commission notes 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.

125. *3650–3700 MHz band.* In March 2005, the Commission released a *Report and Order and Memorandum Opinion and Order* (70 FR 24712, May 11, 2005) that provides for nationwide, non-exclusive licensing of terrestrial operations, using contention-based technologies, in the 3650 MHz band (*i.e.*, 3650–3700 MHz). As of April 2010, more than 1,270 licenses have been granted and more than 7,433 sites have been registered. The Commission has not developed a definition of small entities applicable to 3650–3700 MHz band nationwide, non-exclusive licenses. However, the Commission estimates that the majority of these licensees are Internet Access Service Providers (ISPs) and that most of those licensees are small businesses.

126. *Fixed Microwave Services.* Microwave services include common carrier, private-operational fixed, and broadcast auxiliary radio services. They

also include the Local Multipoint Distribution Service (LMDS), the Digital Electronic Message Service (DEMS), and the 24 GHz Service, where licensees can choose between common carrier and non-common carrier status. 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) 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. For this industry, U.S. Census Bureau data for 2012 show that there were 967 firms that operated for the entire year. Of this total, 955 firms had fewer than 1,000 employees and 12 had employment of 1,000 employees or more. 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.

127. 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. The Commission notes, however, that the common carrier microwave fixed licensee category does include some large entities.

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

Instructional Television Fixed Service (ITFS)).

129. *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. 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, the Commission estimates 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. 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.

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

131. *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. Thus, the Commission estimates that at least 2,336 licensees are small businesses. Since

2007, Cable Television Distribution Services have been defined within the broad economic census category of Wired Telecommunications Carriers. Wired Telecommunications Carriers are comprised of establishments primarily engaged in operating and/or providing access to transmission facilities and infrastructure that they own and/or lease for the transmission of voice, data, text, sound, and video using wired telecommunications networks. Transmission facilities may be based on a single technology or a combination of technologies." The SBA's small business size standard for this category is all such firms having 1,500 or fewer employees. 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

132. *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." 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. For this category, U.S. Census Bureau data for 2012 show that a total of 333 firms operated for the entire year. Of this total, 299 firms had annual receipts of less than \$25 million. Consequently, the Commission estimates that the majority of satellite telecommunications providers are small entities.

133. *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. 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. 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. For this category, U.S. Census Bureau 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. Consequently, a majority of "All Other Telecommunications" firms potentially affected by the Commission's action can be considered small.

#### 5. Cable Service Providers

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

135. *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. 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. According to 2012 U.S. Census Bureau data, 367 firms operated for the entire year. 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. Based on this data, the Commission estimates that the majority of firms operating in this industry are small.

136. *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. Industry data indicate that there are currently 4,600 active cable systems in the United States. Of this total, all but eleven cable operators nationwide are small under the 400,000-

subscriber size standard. In addition, under the Commission's rate regulation rules, a "small system" is a cable system serving 15,000 or fewer subscribers. 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. Thus, under this standard as well, the Commission estimates that most cable systems are small entities.

137. *Cable System Operators (Telecom Act Standard).* The Communications Act of 1934, as amended, also contains a size standard for small cable system operators, which is "a cable operator that, directly or through an affiliate, serves in the aggregate fewer than 1% of all subscribers in the United States and is not affiliated with any entity or entities whose gross annual revenues in the aggregate exceed \$250,000,000." There are approximately 52,403,705 cable video subscribers in the United States today. 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. Based on available data, the Commission finds that all but nine incumbent cable operators are small entities under this size standard. The Commission notes that the Commission neither requests nor collects information on whether cable system operators are affiliated with entities whose gross annual revenues exceed \$250 million. Although it seems certain that some of these cable system operators are affiliated with entities whose gross annual revenues exceed \$250 million, the Commission is 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

138. *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. 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. 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. Consequently, the Commission estimates 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*

139. The Commission expects the rules adopted in the *Second Report and Order* will impose new or additional reporting, recordkeeping, and/or other compliance obligations on small entities. The Commission establishes reporting and disclosure requirements for fixed and mobile broadband providers, filing and certification requirements. In an effort to comply with the Broadband DATA Act and develop better quality, more useful, and more granular broadband deployment data to advance the Commission’s statutory obligations, it concludes it is necessary to adopt these rules to produce broadband deployment maps that will allow the Commission to precisely target scarce universal service dollars to where broadband service is lacking. The Commission is cognizant of the need to ensure that the benefits resulting from use of the data outweigh the reporting burdens imposed on filers and believe the establishment of the broadband serviceable location fabric will benefit small entities as well as other providers. Further, the Broadband DATA Act requires the Commission to collect from each mobile broadband internet access service provider propagation maps and propagation model details that indicate coverage based on specified parameters which the Commission concludes will improve the accuracy and reliability of the mobile broadband data the Commission collects. The Commission also adopts requirements to collect crowdsourced data. The Commission finds that any additional burdens imposed by the Commission’s revised reporting approach for providers in comparison are outweighed by the significant

benefit to be gained from more precise broadband deployment data. Although the Commission cannot quantify the cost of compliance with the requirements in the *Second Report and Order*, the Commission believes the reporting requirements are necessary to comply with the Broadband DATA Act and complete accurate broadband coverage maps.

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

140. 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. The Commission’s actions in the *Second Report and Order* are primarily in response to the legislative enactment of the Broadband DATA Act and to develop better quality, more useful, and more granular broadband deployment data. In considering the comments in the record, the Commission was mindful of the time, money, and resources that some small entities incur to complete these requirements.

#### *G. Report to Congress*

141. The Commission will send a copy of the *Second Report and Order*, including this FRFA, in a report to Congress pursuant to the Congressional Review Act. In addition, the Commission will send a copy of the *Second Report and Order*, including this FRFA, to the Chief Counsel for Advocacy of the SBA.

#### **V. Procedural Matters**

142. *Final Regulatory Flexibility Analysis.* The Regulatory Flexibility Act (RFA) 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.” Accordingly, the Commission has prepared a Final Regulatory Flexibility Analysis (FRFA) concerning the possible impact of the

rule changes contained in this *Second Report and Order* on small entities.

143. *Paperwork Reduction Act.* The initial rulemaking required under the Broadband DATA Act is exempt from review by OMB and from the requirements of the Paperwork Reduction Act of 1995 (PRA), Public Law 104–13. As a result, the *Second Report and Order* will not be submitted to OMB for review under section 3507(d) of the PRA.

144. *Congressional Review Act.* The Commission has determined, and the Administrator of the Office of Information and Regulatory Affairs, Office of Management and Budget, concurs, that this rule is non-major under the Congressional Review Act, 5 U.S.C. 804(2), because it is promulgated under the Telecommunications Act of 1996 and the amendments made by that Act. The Commission will send a copy of this *Second Report and Order* to Congress and the Government Accountability Office pursuant to 5 U.S.C. 801(a)(1)(A).

#### **VI. Ordering Clauses**

145. Accordingly, *it is ordered* that, pursuant to sections 1–4, 7, 201, 254, 301, 303, 309, 319, 332, and 641–646 of the Communications Act of 1934, as amended, 47 U.S.C. 151–154, 157, 201, 254, 301, 303, 309, 319, 332, and 641–646, this *Second Report and Order* is adopted.

146. *It is further ordered* that part 1 of the Commission’s rules is amended as set forth in the Final Rules.

147. *It is further ordered* that the *Second Report and Order* shall be effective 30 days after publication in the **Federal Register**.

148. *It is further ordered* that the Commission’s Consumer & Governmental Affairs Bureau, Reference Information Center, shall send a copy of the *Second Report and Order* to Congress and the Government Accountability Office pursuant to the Congressional Review Act, see 5 U.S.C. 801(a)(1)(A).

#### **List of Subjects in 47 CFR Part 1**

Administrative practice and procedure, Broadband, Reporting and recordkeeping requirements, Telecommunications.

Federal Communications Commission.

**Marlene Dortch,**

*Secretary.*

#### **Final Rules**

For the reasons discussed in the preamble, the Federal Communications Commission amends 47 CFR part 1 as follows:

**PART 1—PRACTICE AND PROCEDURE**

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

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

- 2. Revise § 1.7000 to read as follows:

**§ 1.7000 Purpose.**

The purposes of this subpart are to set out the terms by which certain commercial and government-controlled entities report data to the Commission concerning:

(a) The provision of wired and wireless local telephone services and interconnected Voice over internet Protocol services;

(b) The deployment of advanced telecommunications capability, as defined in 47 U.S.C. 1302, and services that are competitive with advanced telecommunications capability; and

(c) The availability and quality of service of broadband internet access service.

- 3. Amend § 1.7001 by adding paragraphs (a)(6) through (19) to read as follows:

**§ 1.7001 Scope and content of filed reports.**

(a) \* \* \*

(6) *Broadband internet access service.* Has the meaning given the term in § 8.1(b) of this chapter.

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

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

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

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

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

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

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

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

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

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

(17) *Quality of service.* With respect to broadband internet access service, the download and upload speeds, and latency if applicable, with respect to that service, as determined by, and to the extent otherwise collected by, the Commission.

(18) *Shapefile.* A digital storage format containing geospatial or location-based data and attribute information regarding the availability of broadband internet access service and that can be viewed, edited, and mapped in geographic information system software.

(19) *Standard broadband installation.* The initiation by a provider of fixed broadband internet access service in an area in which the provider has not previously offered that service, with no charges or delays attributable to the extension of the network of the provider, and includes the initiation of fixed broadband internet access service through routine installation that can be completed not later than 10 business days after the date on which the service request is submitted.

\* \* \* \* \*

- 4. Add §§ 1.7004 through 1.7010 to read as follows:

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

\* \* \* \* \*

Sec.

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

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

1.7006 Data verification.

1.7007 Establishing the Fabric.

1.7008 Creation of broadband internet access service coverage maps.

1.7009 Enforcement.

1.7010 Authority to update the Digital Opportunity Data Collection.

\* \* \* \* \*

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

(a) All providers shall make biannual filings with the Commission in the

Digital Opportunity Data Collection portal in accordance with this subpart.

(b) Digital Opportunity Data Collection filings shall be made each year on or before March 1 (reporting data as of December 31 of the prior year) and September 1 (reporting data as of June 30 of the current year). Providers becoming subject to the provisions of this section for the first time shall file data initially for the reporting period in which they become eligible.

(c) Providers shall include in their filings data relating to the availability and quality of service of their broadband internet access service in accordance with this subpart.

(1) Each provider of terrestrial fixed or satellite broadband internet access service shall submit polygon shapefiles or a list of addresses or locations, and each provider of fixed wireless broadband internet access service shall submit propagation maps and model details that reflect the speeds and latency of its service or a list of addresses or locations, that document the areas where the provider has actually built out its broadband network infrastructure, such that the provider is able to provide service, and where the provider is capable of performing a standard broadband installation. Each provider's submission shall include the details of how it generated its polygon shapefiles, propagation maps and model details, or list of addresses or locations.

(i) Terrestrial fixed providers using certain wireline technologies may not report coverage that exceeds a defined maximum distance from an aggregation point, including the drop distance, or that exceeds 500 feet from a deployed line or distribution network infrastructure to the parcel boundary of a served location.

(A) Terrestrial fixed providers using Digital Subscriber Line technology shall not report coverage that exceeds 6,600 route feet from the digital subscriber line access multiplexer to the customer premises for speeds offered at or above 25 Mbps downstream, 3 Mbps upstream. Providers that offer Digital Subscriber Line service in areas at speeds less than 25 Mbps downstream, 3 Mbps upstream shall not be subject to a maximum buffer requirement for such areas.

(B) Terrestrial fixed providers using Fiber to the Premises technology shall not report coverage that exceeds 196,000 route feet from the optical line termination point to the optical network termination point.

(C) Terrestrial fixed providers using Hybrid Fiber Coaxial Cable technology shall not report coverage that exceeds 12,000 route feet from the aggregation point to the customer premises.

(D) Locations can be reported as served beyond the maximum distances to the extent that:

(1) A provider has a current subscriber at a location beyond the bounds of the applicable maximum distance;

(2) A provider previously had a broadband subscriber, using the same technology, at a location beyond the bounds of the maximum distance;

(3) A provider is receiving or has received universal service support to provide broadband service in a particular geographic area—or has other Federal, state, or local obligations to make service available in the area—and the provider has begun to make service available in that area; or

(4) A provider receives a waiver to report coverage beyond the maximum distances.

(ii) Fixed wireless service providers that submit coverage maps shall submit propagation maps and propagation model details based on the following parameters:

(A) A cell edge probability of not less than 75% of receiving the maximum advertised download and upload speeds;

(B) A cell loading factor of not less than 50%; and

(C) Receiver heights within a range of four to seven meters.

(2) Fixed wireless service providers that submit coverage maps shall provide the following information with their propagation maps and model details:

(i) The name of the radio network planning tool(s) used, along with information including:

(A) The version number of the planning tool;

(B) The name of the planning tool's developer;

(C) The granularity of the model (*e.g.*, 3-arc-second square points); and

(D) Affirmation that the coverage model has been validated and calibrated at least one time using on the ground testing and/or other real-world measurements completed by the provider or its vendor.

(ii) The following base station information:

(A) Frequency band(s) used to provide the service being mapped;

(B) Information about whether and how carrier aggregation is used;

(C) The radio technologies used on each frequency band (*e.g.*, 802.11ac-derived orthogonal frequency division multiplexing modulation (OFDM), proprietary OFDM, long-term evolution (LTE)); and

(D) The elevation above ground for each base station.

(iii) The following terrain and clutter information:

(A) The name and vintage of the datasets used;

(B) The resolution of clutter data;

(C) A list of clutter categories used with a description of each; and

(D) The link budget and a description of the other parameters used in the propagation model, including predicted signal strength.

(iv) Information on the height and power values used for receivers/customer premises equipment (CPE) antennas in their modeling (height must be within a range of four to seven meters).

(3) Mobile providers must submit coverage maps based on the following specified parameters:

(i) For 3G services—a minimum expected user download speed of 200 kbps and user upload speed of 50 kbps at the cell edge; for 4G LTE services—a minimum expected user download speed of 5 Mbps and user upload speed of 1 Mbps at the cell edge; for 5G-NR services—a minimum expected user download speed of 7 Mbps and user upload speed of 1 Mbps, and a minimum expected user download speed of 35 Mbps and user upload speed of 3 Mbps at the cell edge.

(ii) For each of the mobile broadband technologies, 3G, 4G LTE, and 5G-NR, and for mobile voice services, the provider's coverage maps must reflect coverage areas where users should expect to receive the minimum required download and upload speeds with cell edge coverage probability of not less than 90% and a cell loading of not less than 50%.

(iii) For each of the mobile broadband technologies, 3G, 4G LTE, and 5G-NR, and for mobile voice services, the provider's coverage maps must account for terrain and clutter and use terrain and clutter data with a resolution of 100 meters or better. Each coverage map must have a resolution of 100 meters or better.

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

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

(i) The name of the planning tool;

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

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

(iv) Affirmation that the coverage model has been validated and calibrated at least one time using drive test and/or other real-world measurements completed by the provider or its

vendors, to include a brief summary of the process and date of calibration; and

(v) The propagation model or models used. If multiple models are used, the provider should include a brief description of the circumstances under which each model is deployed (*e.g.*, model X is used in urban areas, while model Y is used in rural areas) and include any sites where conditions deviate; and

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

(5) Propagation maps submitted by providers must depict outdoor coverage, to include both on-street or pedestrian stationary usage, and in-vehicle mobile usage.

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

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

(ii) The name of the creator, developer or supplier, as well as the vintage of the terrain and clutter datasets used, the specific resolution of the data, and a list of clutter categories used, a description of each clutter category, and a description of the propagation loss due to clutter for each.

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

(d) Providers shall include in each Digital Opportunity Data Collection filing a certification signed by a corporate officer of the provider that the officer has examined the information contained in the submission and that, to the best of the officer's actual knowledge, information, and belief, all statements of fact contained in the submission are true and correct.

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

(a) The Commission shall protect the security, privacy, and confidentiality of non-public or competitively sensitive information submitted by entities or individuals, including information contained in the Fabric, the dataset

supporting the Fabric, and availability data submitted pursuant to § 1.7004, by:

(1) Withholding from public inspection all data required to be kept confidential pursuant to § 0.457 of this chapter and all personally identifiable information submitted in connection with the information contained in the Fabric, the dataset supporting the Fabric, and availability data submitted pursuant to § 1.7004; and

(2) Subject to contractual or license restrictions, making public all other information received about the status of broadband internet access service availability at specific locations, including geographic coordinates and street addresses, whether a provider has reported availability at a location, and whether an entity or individual has disputed a report of broadband internet access service availability at such location.

(b) Providers may request that provider-specific subscription information in Digital Opportunity Data Act filings be treated as confidential and be withheld from public inspection by so indicating on the filing at the time that they submit such data.

(c) Providers seeking confidential treatment of any other data contained in their Digital Opportunity Data Collection filings must submit a request that the data be treated as confidential with the submission of their filing, along with their reasons for withholding the information from the public, pursuant to § 0.459 of this chapter.

(d) The Commission shall make all decisions regarding non-disclosure of provider-specific information.

(e) The Commission shall release the following information in Digital Opportunity Data Collection filings to the public, and providers may not request confidential treatment of such information:

(1) Provider-specific mobile deployment data;

(2) Data regarding minimum advertised or expected speed for mobile broadband internet access services; and

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

#### **§ 1.7006 Data verification.**

(a) *Audits.* The Commission shall conduct regular audits of the information submitted by providers in their Digital Opportunity Data Collection filings. The audits:

(1) May be random, as determined by the Commission; or

(2) Can be required in cases where there may be patterns of filing incorrect

information, as determined by the Commission.

(b) *Crowdsourcing process.* Entities or individuals may submit in the Commission's online portal specific information regarding the deployment and availability of broadband internet access service so that it may be used to verify and supplement information submitted by providers for potential inclusion in the coverage maps.

(1) Crowdsourced data filers shall provide:

(i) Contact information of the filer (e.g., name, address, phone number, and email);

(ii) The location that is the subject of the filing, including the street address and/or coordinates (latitude and longitude) of the location;

(iii) The name of the provider;

(iv) Any relevant details disputing the deployment and availability of broadband internet access service at the location; and

(v) A certification that to the best of the filer's actual knowledge, information, and belief, all statements in the filing are true and correct.

(2) The online portal shall notify a provider of a crowdsourced data filing against it, but a provider is not required to respond to a crowdsourced data filing.

(3) If, as a result of a crowdsourced data filing, the Commission determines that a provider's Digital Opportunity Data Collection information is not accurate, then the provider shall refile updated and corrected data information within 30 days of agreeing with the Commission's determination. Providers are allowed to bundle multiple crowdsourced corrections into one filing during a 30-day period.

(4) All information submitted as part of the crowdsourcing process shall be made public, with the exception of personally identifiable information and any data required to be confidential under § 0.457 of this chapter.

#### **§ 1.7007 Establishing the Fabric.**

(a) The Commission shall create the Fabric, a common dataset of all locations in the United States where fixed broadband internet access service can be installed. The Fabric shall:

(1) Contain geocoded information for each location where fixed broadband internet access service can be installed;

(2) Serve as the foundation upon which all data relating to the availability of fixed broadband internet access service collected pursuant to the Digital Opportunity Data Collection shall be overlaid;

(3) Be compatible with commonly used Geographical Information Systems (GIS) software; and

(4) Be updated every 6 months by the Commission.

(b) The Commission shall prioritize implementing the Fabric for rural and insular areas of the United States.

#### **§ 1.7008 Creation of broadband internet access service coverage maps.**

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

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

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

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

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

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

(d)(1) The Commission shall develop a process through which it can collect verified data for use in the coverage maps from:

(i) State, local, and Tribal entities primarily responsible for mapping or tracking broadband internet access service coverage in their areas;

(ii) Third parties, if the Commission determines it is in the public interest to use their data in the development of the coverage maps or the verification of data submitted by providers; and

(iii) Other Federal agencies.

(2) Such government entities and third parties shall follow the same filing process as providers submitting their broadband internet access service data in the Digital Opportunity Data Collection portal.

#### **§ 1.7009 Enforcement.**

(a) It shall be unlawful for an entity or individual to willfully and knowingly, or recklessly, submit information or data as part of the Digital Opportunity Data Collection that is materially inaccurate or incomplete with respect to the availability or the

quality of broadband internet access service.

(b) [Reserved]

**§ 1.7010 Authority to update the Digital Opportunity Data Collection.**

The International Bureau, Wireless Telecommunications Bureau, Wireline

Competition Bureau, and Office of Economics and Analytics may update the specific format of data to be submitted pursuant to the Digital Opportunity Data Collection to reflect changes over time in Geographical Information Systems (GIS) and other

data storage and processing functionalities and may implement any technical improvements or other clarifications to the filing mechanism and forms.

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