

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

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

COMMENTS OF CTIA

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TABLE OF CONTENTS

I. INTRODUCTION AND SUMMARY 1

II. THE COMMISSION SHOULD ADOPT A STANDARDIZED FRAMEWORK FOR COVERAGE MAPS THAT REFLECTS CONSUMER EXPERIENCES WHILE AVOIDING UNNECESSARY BURDENS BY EVALUATING THE UTILITY OF OTHER DATA SETS..... 4

 A. A New Framework for 4G LTE Coverage Maps Can More Closely Reflect Consumers’ Experiences..... 4

 B. The Commission Should Conduct a Limited Pilot Program to Assess Whether Other Tools Should Be Used to Validate Provider Data..... 8

 C. It Is Likely Unnecessary—and Certainly Premature—to Require Providers to Submit “On-the-Ground” Speed Test Data. 12

 D. Greater Transparency for Mobile Broadband Deployment Data Should Be Balanced with Competitive Harms. 12

III. THE COMMISSION SHOULD CONTINUE TO REFINE THE COLLECTION OF MOBILE SUBSCRIPTION DATA TO MINIMIZE BURDENS..... 14

 A. Combining the Filings of Mobile Voice and Broadband Subscription Data More Closely Reflects Consumers’ Experiences..... 14

 B. Telephone Numbers Remain the Best Method to Assign Prepaid and Reseller Subscribers to Individual Census Tracts..... 15

 C. It Would Be Premature to Collect Internet of Things or Machine-to-Machine Subscription Information at This Time..... 15

IV. CONCLUSION..... 17

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CTIA¹ respectfully submits these comments in response to the Federal Communications Commission’s (“Commission”) *Second Further Notice of Proposed Rulemaking* seeking comment on incorporating mobile wireless voice and broadband coverage into the Digital Opportunity Data Collection (“DODC”) and on what additional steps the Commission should take to obtain reliable mobile broadband deployment data.²

I. INTRODUCTION AND SUMMARY

Mobile wireless coverage data is essential to the Commission’s public policy initiatives, including efforts to close the digital divide by identifying unserved areas for targeted support.³ As

¹ CTIA® (www.ctia.org) represents the U.S. wireless communications industry and the companies throughout the mobile ecosystem that enable Americans to lead a 21st-century connected life. The association’s members include wireless carriers, device manufacturers, suppliers as well as apps and content companies. CTIA vigorously advocates at all levels of government for policies that foster continued wireless innovation and investment. The association also coordinates the industry’s voluntary best practices, hosts educational events that promote the wireless industry, and co-produces the industry’s leading wireless tradeshow. CTIA was founded in 1984, and is based in Washington, DC.

² *In re Establishing the Digital Opportunity Data Collection*, Report and Order and Second Further Notice of Proposed Rulemaking, WC Docket Nos. 19-195, 11-10, FCC 19-79 (rel. Aug. 6, 2019) (“*Second FNPRM*”).

³ *Id.* ¶ 1; Letter from Matthew B. Gerst, CTIA, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 17-183, WT Docket No. 10-208; WC Docket Nos. 10-90, 11-10, at 2 (July 28, 2017) (“Specifically, CTIA believes that the . . . Mobility Fund II Challenge Process Order’s proposal to

Chairman Pai said, “as we focus on reforms designed to provide all Americans with access to high-speed broadband service, it becomes more important for us to be able to identify with more precision the declining number of Americans without such access.”⁴ Members of Congress, too, have called for changes to data collection, recognizing that “we need to make sure we know where connectivity already is and where it is not.”⁵ While the Form 477 data collection has been and continues to be a valuable resource,⁶ CTIA appreciates the Commission’s efforts to evolve the collection of mobile wireless deployment data to more closely reflect consumers’ experiences.

As the Commission recognizes, “the measurement of mobile broadband service at any specific location [is] complex, as many factors can affect a user’s experience, making it difficult to develop a coverage map that provides the exact mobile coverage and speed that a consumer experiences.”⁷ Given the highly probabilistic nature of depicting mobile wireless coverage on a map, wireless providers work hard to present information that reflects coverage using sophisticated

collect new mobile wireless coverage data through consistent parameters will help to close the digital divide by ensuring that finite Mobility Fund II resources are targeted to truly unserved rural areas.” (“CTIA July 2017 Ex Parte”).

⁴ *Second FNPRM*, Statement of Chairman Ajit Pai, at 1.

⁵ Jake Thompson, *Senator Wicker, FCC Chairman Pai Speak on Rural Broadband During Ole Miss Tech Summit*, Oxford Eagle (Aug. 29, 2019), <https://www.oxfordeagle.com/2019/08/29/senator-wicker-fcc-chairman-pai-speak-on-rural-broadband-during-ole-miss-tech-summit/> (quoting Senator Wicker); Gary Arlen, *Better Broadband Mapping Needs Granularity, Shape Files, Industry Leaders Tell Hill*, Multichannel (Sept. 11, 2019) (quoting Representative Greg Walden, who stressed that legislation should focus on “how to leverage data” so that broadband maps are more useful to federal agencies seeking to help providers deliver broadband services).

⁶ Comments of CTIA, WC Docket No. 11-10, at 1 (Oct. 10, 2017) (observing that the Form 477 process has yielded information “that reflects the tremendous investment and innovations in mobile wireless voice and broadband services.”) (“Comments of CTIA”); CTIA July 2017 Ex Parte, at 2 (“CTIA noted that Form 477 data has proven valuable to help assess the status of the market, but CTIA also agrees with the FCC’s proposal to seek comment on ways to improve the Form 477 data collection process.”).

⁷ *Second FNPRM* ¶ 112.

engineering techniques. Further, CTIA agrees that “[a]lthough no mobile broadband map will consistently reflect consumer experience with complete accuracy,”⁸ a unified definition of service-level requirements, such as 4G LTE, can enable wireless providers with unique network designs and deployments to submit a reasonably accurate picture of wireless coverage.

For this reason, CTIA recommends that the Commission adopt the following service-level parameters: facilities-based mobile providers should submit 4G LTE coverage maps that satisfy a 5 Mbps download speed and a 1 Mbps upload speed with a cell edge probability of 90 percent and a cell loading factor of 50 percent. These requirements build upon bipartisan congressional efforts to update the collection of mobile wireless coverage data.⁹

CTIA also appreciates the Commission’s interest in validating provider-submitted coverage maps via tools such as crowdsourced data, drone testing, and third-party speed tests. Given the diversity and untested nature of these data sets to validate provider-submitted maps, however, CTIA urges the Commission to conduct a pilot program to evaluate their utility. A limited pilot—where the Commission could test a variety of tools in a few geographic areas—would enable the Commission to determine, based on actual evidence, which, if any, validation tools should be used as part of the DODC. A pilot would also serve to refine the process for reconciling discrepancies with coverage map data, thereby helping to avoid the imposition of unnecessary burdens on providers, interested stakeholders (such as consumers and state and local officials), and the Commission. Finally, CTIA encourages the Commission to ensure that the collection of subscriber data does not impose unnecessary burdens on providers by simplifying the

⁸ *Id.*

⁹ See, e.g., Kelly Cole, *CTIA Statement on the Introduction of the Broadband DATA Act and MAPS Act*, CTIA (Sept. 10, 2019), <https://www.ctia.org/news/ctia-statement-on-the-introduction-of-broadband-data-act-and-maps-act>.

reporting of mobile voice and broadband subscriptions, using existing data sets for prepaid subscribers, and further examining the utility of nascent Internet of Things (“IoT”) and Machine-to-Machine (“M2M”) subscription data.

II. THE COMMISSION SHOULD ADOPT A STANDARDIZED FRAMEWORK FOR COVERAGE MAPS THAT REFLECTS CONSUMER EXPERIENCES WHILE AVOIDING UNNECESSARY BURDENS BY EVALUATING THE UTILITY OF OTHER DATA SETS.

A. A New Framework for 4G LTE Coverage Maps Can More Closely Reflect Consumers’ Experiences.

The Commission explained that “it has become increasingly clear that the fixed and mobile broadband deployment data collected on the Form 477 are not sufficient to understanding where universal service support should be targeted and supporting the imperative of our broadband-deployment policy goals.”¹⁰ As the Commission has recognized, measuring mobile broadband coverage is complicated, given that mobile service levels are influenced by many factors including weather, device type, and number of users on a network.¹¹ Creating a mobile coverage map that accurately tracks consumers’ experiences requires a sophisticated technical, probabilistic analysis that wireless providers work hard to calibrate correctly. CTIA supports the Commission’s decision to update the collection of mobile broadband deployment data, and given these factors, proposes a standardized collection that should more closely resemble consumers’ real-world experiences.¹²

¹⁰ *Second FNPRM* ¶ 5; *see also* Letter from Senators Chuck E. Grassley and Joni K. Ernst to Chairman Ajit Pai, FCC (July 8, 2019), <https://www.grassley.senate.gov/sites/default/files/constituents/CEG%20JKE%20broadband%20letter.pdf> (“It is vital that we are able to more precisely identify where fixed and mobile broadband service is available or lacking [in] the United States.”).

¹¹ *Second FNPRM* ¶ 112.

¹² CTIA’s proposals are also consistent with actions by Congress to reform broadband mapping to better reflect consumers’ experiences. *See* Broadband Deployment Accuracy and Technological Availability Act, S. 1822, 116th Cong. (2019) (“S. 1822”), which was recently approved by voice vote by the U.S. Senate Committee on Commerce, Science, and Transportation; the House version of the bill, Broadband Deployment Accuracy and Technological Availability Act, H.R. 4229,

Consistent with recent Congressional efforts, CTIA suggests that the Commission should require facilities-based mobile broadband providers submit standardized 4G LTE coverage maps that meet the following service-level requirements: a 5 Mbps download speed and a 1 Mbps upload speed with a cell edge probability of 90 percent and a cell loading of 50 percent.¹³ Consistent with the Mobility Fund Phase II collection, the coverage maps would be representative of an outdoor level of coverage, have a spatial resolution of 100m BINS or less¹⁴ and take into account terrain and local conditions.¹⁵

Although the Commission appropriately recognizes the challenges inherent to mobile coverage maps,¹⁶ a collection standardized around 4G LTE service levels will further the

116th Cong. (2019) (“H.R. 4229”); *see also* Letter from Alexi Maltas, Competitive Carriers Ass’n, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 10-208, WC Docket Nos. 10-90, 11-10, at 2-3 (June 27, 2019) (“CCA Ex Parte”).

¹³ S. 1822 § 3(b)(2)(B); H.R. 4229 § 3(b)(2)(B). If the Commission adopts a new DODC mobile data deployment collection, the Commission should sunset the current Form 477 mobile broadband deployment data collection process as quickly as possible—in light of the burdens associated with these regulatory filings, there is no reason to sustain duplicative efforts.

¹⁴ Spatial resolution in digital images refers to the number of pixels used in the construction of an image, and BINS defines the unit of granularity of the image.

¹⁵ Comments and Petition for Reconsideration of CTIA, WC Docket Nos. 10-90, 10-208, at 4 (Apr. 26, 2017) (“CTIA Comments and Petition for Reconsideration”). Terrain and local conditions are considered clutter factors. While “there is no industry standardization of ‘clutter,’” as in Mobility Fund Phase II, providers should use the appropriate clutter factors (and other geo-data elements) that they employ for the propagation models and parameters used in their normal course of business. Letter from Mary L. Henze, Assistant Vice President, AT&T, to Marlene Dortch, Secretary, FCC, WT Docket No. 10-208, WC Docket No. 10-90 at 2 (July 27, 2017) (“AT&T Ex Parte”).

¹⁶ The Commission recognized that mobile network speed and coverage can vary greatly depending on a wide variety of factors, including: “(1) the spectrum band employed; (2) cell traffic loading and network capacity in different locations; (3) the availability and quality of cell site backhaul; (4) the capability of consumers’ devices; (5) whether a consumer is using a device indoors or outdoors; (6) terrain and the presence of obstacles between a consumer’s device and the provider’s nearest cell site (e.g., buildings, trees, and other local structures); and (7) weather conditions.” *Second FNPRM* ¶ 112.

Commission’s goal of obtaining “more accurate and reliable mobile broadband deployment data.”¹⁷ First, as the Commission has recognized, mobile wireless speeds are one of the key metrics that reflect the consumer experience.¹⁸ The 90 percent cell edge probability—which indicates the likelihood that radio frequency signal strength measured at the cell edge will meet or exceed a desired quality threshold—reflects an evolving consensus, and this parameter increases the likelihood that the consumer experience will align with the results predicted by the model. And a 50 percent cell loading factor—which measures the extent to which available resources from a given base station may be used by consumers while providing minimum coverage speeds—reflects usage patterns in rural areas, where consumers “are more likely to rely on their mobile connection as their primary or only Internet connection.”¹⁹ This proposed new collection should “result in significantly improved propagation maps that more closely resemble consumer experiences on the ground and result in acceptable service levels out at the cell edges.”²⁰

At the same time, the Commission should not prescribe additional technical parameters for the propagation models that underlie providers’ coverage maps. Technical parameters will vary based, for instance, upon each provider’s spectrum, network configuration, and device

¹⁷ *Id.*

¹⁸ See *In re Connect America Fund*, Order on Reconsideration and Second Report and Order, 32 FCC Rcd 6282, 6303 ¶ 40 (2017) (“We decide to benchmark download speed, which is what the customer receives, rather than signal strength, to determine whether a particular geographic area is eligible or not for MF-II support.”) (“*MF-II Challenge Process Order*”).

¹⁹ CCA Ex Parte at 3. CTIA has previously proposed a 90 percent cell edge probability and 50 percent cell loading factor. See CTIA Comments and Petition for Reconsideration at 12.

²⁰ Written Statement of Grant B. Spellmeyer, Vice President, United States Cellular Corporation, before the United States House of Representatives Committee on Energy and Commerce Subcommittee on Communications and Technology, “Legislating to Connect America: Improving the Nation’s Broadband Maps” at 4 (Sept. 11, 2019), https://energycommerce.house.gov/sites/democrats.energycommerce.house.gov/files/documents/Spellmeyer_Testimony.pdf.

capabilities.²¹ Indeed, the Commission has recognized such challenges.²² As a result, mandating any additional technical specifications would not increase the utility of the data to the Commission or the public, would burden providers by complicating the process, and may result in maps that do not reflect consumers' real-world experiences.²³

In particular, CTIA urges the Commission not to prescribe any Reference Signal Received Power ("RSRP") measurements.²⁴ The Commission has recognized that "the signal strength parameter in propagation models may not be closely correlated with actual on-the-ground data in a particular geographic area."²⁵ As the Commission has found, a "cell edge speed threshold requirement subsumes a specific signal strength value depending on specific operating signal bandwidth and the network deployment configurations."²⁶ Thus a cell edge speed and probability factor, not signal strength, will better reflect consumer experiences.

²¹ AT&T Ex Parte at 1.

²² See, e.g., *MF-II Challenge Process Order*, 32 FCC Rcd at 6302-03 ¶ 40 n.110 (noting that different bandwidths "require[] higher signal strengths for the same signal quality" and that "different antenna configurations and LTE releases deployment" also "offer different performance for the same signal strength"); see also *Second FNPRM* ¶ 112.

²³ See AT&T Ex Parte at 1 (urging the commission to refrain from defining technical parameters beyond those then-proposed by CTIA because "[r]ather than improving the quality of the data, such proposals will only complicate the process and constrain the coverage area").

²⁴ RSRP measures the average power received from a single reference signal. RSRP measurements can be used to indicate the quality of a received signal. Cf. CCA Ex Parte at 2 (urging the Commission to collect standardized RSRP measurements).

²⁵ *MF-II Challenge Process Order*, 32 FCC Rcd at 6302-03 ¶ 40; see also AT&T Ex Parte at 1 ("Attempting to standardize a signal strength to be used by all carriers would generate results that had no relationship to the reality of each carriers' network" because "signal strength will vary based on carrier-specific differences such as network design, spectrum band, spectrum capacity, and type of equipment.").

²⁶ *MF-II Challenge Process Order*, 32 FCC Rcd at 6302-03 ¶ 40; see also Comments of AT&T, WC Docket No. 11-10, at 5 n.11 (Oct. 10, 2017) ("[T]he Commission should not standardize additional factors like signal strength or signal quality because they will vary by network to achieve the cell edge download probability."); Comments of T-Mobile USA, Inc., WC Docket No. 11-10,

Finally, while CTIA supports efforts to monitor 5G deployment, which will be even more transformative than 4G LTE,²⁷ it is premature to propose standardized service requirements for 5G. Industry consensus is still emerging around how best to measure the deployment of this still-nascent technology.²⁸ While facilities-based mobile providers will be required to submit 5G deployment information that meets the 5G-NR (New Radio) technology standards,²⁹ the 5G-NR standards are technical ones; they do not establish what service level consumers should be able to expect when using 5G. As a result, it is premature to standardize 5G service parameters at this time.

B. The Commission Should Conduct a Limited Pilot Program to Assess Whether Other Tools Should Be Used to Validate Provider Data.

While service-level propagation maps are the industry standard for predicting mobile wireless coverage, CTIA appreciates that other data sets may help to ensure that these coverage maps depict consumers' real-world experiences. Given the diversity of these tools, however,

at 7-8 (Oct. 10, 2017) (calling a signal strength benchmark a “burdensome” and “unnecessary” parameter).

²⁷ As Chairman Pai has said, “5G will be even more transformative than 4G. Networks will be 100 times faster. They will carry a lot more data. Lag times will be one-tenth of what they are today.” FCC Chairman Ajit Pai, Remarks at the National Spectrum Consortium 5G Collaboration Event in Arlington, Va. (Apr. 30, 2019), <https://www.fcc.gov/document/chairman-pai-remarks-5g-national-spectrum-consortium-event>. See also FCC Chairman Ajit Pai, Remarks at a Workshop on 5G During the 7th Congreso Latino Americano de Telecomunicaciones in Córdoba, Argentina, at 1 (July 4, 2019), <https://www.fcc.gov/document/chairman-pai-remarks-5g-argentina>. (“5G could be one of the great moonshots of this generation,” ushering in “a world in which speed, capacity, and lag times are effectively no longer constraints on wireless innovation.”).

²⁸ See, e.g., *In re Communications Marketplace Report*, Report, 33 FCC Rcd 12,558, 12,710, ¶ 286 (rel. Dec. 26, 2018) (noting that “[a]pproaches to 5G development and the status of development efforts vary across countries”); see also *id.* at 12643 ¶ 172 n.518 & 12645-46 ¶ 174 n.537 (observing that the lines between types of broadband services are not rigid, and that 5G technology may be a part of various offerings).

²⁹ *Second FNPRM* ¶ 44.

CTIA encourages the Commission to further assess data about mobile wireless coverage available from crowdsourcing, drones, satellites, and other data sets before permitting these tools to be used to validate providers' propagation maps as part of the nationwide DODC.

Many of these data sets are untested for use on the scale of the nationwide DODC and have potential shortcomings. Indeed, the Commission has recognized that both crowdsourced data and drones face “limitations.”³⁰ For example, the Commission has noted that crowdsourced speed tests “may introduce bias into the data and provide a less accurate picture of overall broadband performance” because they are manually initiated by consumers and performed only at certain times or places.³¹ And the Commission has explained that “given the probabilistic nature of mobile wireless service in general . . . crowdsourced data may not indicate an inaccuracy in the data from the coverage map as much as a difference in conditions.”³²

While drones may hold promise as resources for infrastructure inspection, maintenance, and recovery, they too face challenges in validating mobile wireless coverage on the level and scale of the nationwide DODC, as the Universal Service Administrative Company (“USAC”) recently recognized.³³ Drones may not be able to measure the availability of broadband services at a level consistent with, and comparable to, provider-submitted propagation maps, which track

³⁰ *Id.* ¶ 123 (crowdsourcing); *id.* ¶ 127 (“both drive and drone testing have significant limitations due to the inherent probabilistic nature of mobile network performance testing”).

³¹ *Second FNPRM* ¶ 123; *see also id.* (“[T]he methods by which different speed test apps collect data vary” and may not use techniques that control for the different circumstances in which the test is conducted.); *see also* Letter from Ookla to Marlene H. Dortch, Secretary, FCC, WT Docket No. 10-208, WC Docket No. 10-90, attachment Comparing Internet Measurement Methods (July 26, 2017) (noting drawbacks to consumer-initiated testing and the steps Ookla has taken to remedy them).

³² *Second FNPRM* ¶ 123.

³³ While Matthew Gerst serves as a member of the USAC Board of Directors, he does not represent USAC in these comments.

service parameters for consumers on the ground. Terrestrial wireless networks are designed to optimize coverage for wireless devices on the ground, so measuring wireless service coverage from devices attached to drones flying at altitude will not provide an accurate measurement of service levels available to consumers on the ground. Nor have drone tests proven more efficient in cost or time than traditional drive tests. In a recent test to “[d]etermine the feasibility of using drones for measuring mobile wireless signal strength and coverage in disaster and remote areas,”³⁴ USAC found that “it took approximately two to three times the cost and time for the drone testing to complete a one-mile square signal survey, as compared to a traditional drive test for a comparable area, leading to a higher per-area drone test cost.”³⁵

Before deciding whether any of these tools should be used to validate providers’ coverage maps (and potentially impose burdens in requiring wireless providers to undertake new, additional data collections), the Commission should take a more measured approach via a targeted pilot. A pilot would allow the Commission to assess the strengths and weaknesses of each tool and then better tailor its integration, if any, into the overall DODC process. Evaluating each potential tool and data set in a pilot could avoid a hodgepodge of potentially conflicting data sources and concomitant inefficiencies that the Commission has sought to avoid.³⁶

CTIA recommends that the Commission conduct, or direct USAC (under the direction of the Wireline Competition Bureau and/or Wireless Telecommunications Bureau) to conduct, a pilot

³⁴ Letter from Victor Gaither, Vice President, Universal Service Administrative Company, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 11-10, Attachment Verification of Mobile Wireless Service in Puerto Rico Post Hurricane Maria, at 3 (July 9, 2019).

³⁵ *Id.* at 8.

³⁶ *In re Connect America Fund*, Report and Order and Further Notice of Proposed Rulemaking, 32 FCC Rcd 2152, 2236 ¶¶ 227-228 (2017) (expressing the Commission’s commitment “to designing the challenge process so that it is as efficient as possible” and also noting the specific need for “administrative[] efficien[cy]”).

to collect and evaluate the benefits of other data sets before permitting their use to validate providers' propagation maps. For example, the Commission could certify a limited number of consumer apps for crowdsourcing purposes and specify a methodology to collect drone data as well.³⁷ The Commission could circumscribe the pilot to a few geographic areas, such as two states, to limit the burden.³⁸ The entity that conducts the pilot could then analyze and assess the collected data by, for instance, triangulating them against trusted, existing commercial third-party data sets. The pilot data could also be compared against the provider-submitted coverage maps. Where there are discrepancies, the Commission could administer the reconciliation process adopted in the MF-II proceedings.³⁹ Evaluating the data via a pilot would enable the Commission to further pressure-test provider maps, determine which data sets best reflect consumer experiences, and also evaluate the effectiveness and efficiency of the reconciliation process itself.⁴⁰ In short, the Commission could determine, based on actual evidence, which, if any, validation tools should be used as part of the DODC.

³⁷ Any terrestrial coverage data obtained via drone should account for differences in terrestrial and airborne coverage.

³⁸ USTelecom's pilot of the Broadband Serviceable Location Fabric was also conducted in two states. See Letter from Jonathan Spalter, President & CEO, USTelecom, Genevieve Morelli, President, ITTA, and Claude Aiken, President & CEO, WISPA to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 19-195, 11-10, 10-90, 19-126 (Aug. 20, 2019).

³⁹ See *MF-II Challenge Process Order*, 32 FCC Rcd at 6311-14 ¶¶ 58-64; see also *Procedures for the Mobility Fund Phase II Challenge Process*, Public Notice, 33 FCC Rcd 1985, 2005-13 ¶¶ 43-67 (2018).

⁴⁰ A more limited pilot of the MF-II challenge process, for instance, might have helped identify and mitigate some of the concerns that have since arisen.

C. It Is Likely Unnecessary—and Certainly Premature—to Require Providers to Submit “On-the-Ground” Speed Test Data.

The Commission seeks comment on whether to require providers to submit “on-the-ground” data in addition to coverage maps based on standardized parameters.⁴¹ While “on-the-ground” speed test data may be a useful resource to help validate propagation data, providers generally do not collect such data across their entire network in their ordinary course of business. Moreover, this data is readily available from other third-party companies, such as Ookla. It is therefore unnecessary and unduly burdensome to require wireless providers to generate and submit this data in addition to their coverage maps. At the least, it would be arbitrary to require these submissions without the Commission having even had the opportunity to first determine whether such an onerous collection is even necessary to validate providers’ coverage maps.

D. Greater Transparency for Mobile Broadband Deployment Data Should Be Balanced with Competitive Harms.

The Commission seeks comment on ways to make mobile broadband deployment data more available to the public, asking whether it should provide additional visualizations of mobile broadband deployment data or provide the data in other formats.⁴² Much of the Form 477 mobile deployment data is already available to the public,⁴³ and CTIA appreciates the Commission’s efforts to ensure that this information is not only available but also accessible and useful.

To the extent that the Commission is contemplating the public release of data as part of a new collection—as opposed to making already-public information more accessible—CTIA urges the Commission to release information only where it will not cause competitive harm. For

⁴¹ *Second FNPRM* ¶¶ 121-122.

⁴² *Id.* ¶ 131.

⁴³ *See* Mobile Deployment Form 477 Data, FCC, <https://www.fcc.gov/mobile-deployment-form-477-data>.

instance, because detailed propagation model parameters “are highly proprietary and if publicly-released could give competitors insights into providers’ highly-proprietary network designs and deployment strategies,”⁴⁴ much of the MF-II data collection was appropriately kept confidential.⁴⁵

Similarly, the Commission should refrain from requiring that, as a means of independently verifying the coverage maps, providers submit commercially sensitive infrastructure information.⁴⁶ First, because such information is sensitive critical infrastructure information, this requirement could raise national security and counter-intelligence risks.⁴⁷ Additionally, as the Commission notes, this infrastructure information is “commercially sensitive” and highly confidential.⁴⁸ It would also be burdensome for providers to compile the kind of encyclopedically detailed infrastructure information that the Commission requests, such as the “height (above ground and sea level), type, and directional orientation of all transmit antennas at each cell site” nationwide.⁴⁹ The collection of this sensitive data would also be unnecessary, particularly if other

⁴⁴ Comments of CTIA at 13.

⁴⁵ Mobile 4G LTE Coverage Data Filing Instructions at 8, FCC, <https://us-fcc.app.box.com/s/e0s0igu98ry0w4r545jqigjep1udx8ee> (“The Commission will treat provider-specific information submitted as part of this data collection as confidential.”).

⁴⁶ The Commission proposed to require that a provider submit, within 30 days of the Commission’s request: “(1) the geographic location of cell sites; (2) the height (above ground and sea level), type, and directional orientation of all transmit antennas at each cell site; (3) operating radiated transmit power of the radio equipment at each cell site; (4) the capacity and type of backhaul used at each cell site; (5) all deployed spectrum bands and channel bandwidth in megahertz; (6) throughput and associated required signal strength and signal to noise ratio; (7) cell loading factors; (8) deployed technologies (*e.g.*, LTE Release 13); and (9) any terrain and land use information used in deriving clutter factors or other losses associated with each cell site.” *Second FNPRM* ¶ 119.

⁴⁷ The government has long recognized the importance of special protections against dissemination and disclosure of private sector critical infrastructure information. *See, e.g.*, Department of Homeland Security, Procedures for Handling Critical Infrastructure Information, 6 C.F.R. Part 29, 2006.

⁴⁸ *Id.* ¶ 120.

⁴⁹ *Id.* ¶ 119.

data sets or tools (such as drones or crowdsourcing) prove effective tools to validate provider maps. CTIA urges the Commission to defer collecting sensitive infrastructure data without first assessing whether other, less-intrusive options may be sufficient.

As a general matter, when considering whether to release new information collected via the DODC, the Commission should be guided by the same principles applied in the MF-II collection, which properly recognized the potential harm caused by publicly releasing highly proprietary network designs and infrastructure deployment strategies.⁵⁰

III. THE COMMISSION SHOULD CONTINUE TO REFINE THE COLLECTION OF MOBILE SUBSCRIPTION DATA TO MINIMIZE BURDENS.

A. Combining the Filings of Mobile Voice and Broadband Subscription Data More Closely Reflects Consumers' Experiences.

CTIA supports the Commission's proposal to consolidate mobile voice and broadband subscription data filing requirements.⁵¹ CTIA agrees that combining voice and broadband subscription data filing requirements, rather than collecting the subscriptions separately, would help the Commission better assess the marketplace, "as consumers increasingly subscribe to both broadband and voice service."⁵² Combining these requirements should also reduce burdens for providers. CTIA also agrees that the Commission's proposal to require providers to report whether

⁵⁰ *MF-II Challenge Process Order*, 32 FCC Rcd at 6296-97 ¶ 29 n.84 (establishing a secure portal for challengers to access "confidential provider-specific information" and finding that "[t]his approach will also help safeguard the confidentiality of provider-specific information and reduce the risk of unauthorized access to that information").

⁵¹ The Commission currently collects mobile broadband and mobile voice subscriptions separately. See FCC, FCC Form 477, Local Telephone Competition and Broadband Reporting Instructions, at 25-27 (Dec. 5, 2016), <https://transition.fcc.gov/form477/477inst.pdf>.

⁵² *Second FNPRM* ¶ 132.

subscriptions are data only, voice only, or bundled would provide “a better understanding of whether and how consumers purchase and use mobile services.”⁵³

B. Telephone Numbers Remain the Best Method to Assign Prepaid and Reseller Subscribers to Individual Census Tracts.

CTIA appreciates the Commission’s recognition that it will be challenging for facilities-based mobile providers to assign prepaid and reseller subscribers to a particular census tract based upon primary place of use.⁵⁴ CTIA agrees with the Commission’s near-term approach to allow providers to assign these subscribers to a particular census tract based upon their telephone number—providers can use NPA-NXX to allocate subscribers by census tract, which is feasible and will provide the Commission with more granular data than the state-level reporting. At present, though, other methods of assigning these subscribers to a particular census tract would be extremely burdensome, and it is unclear if they would provide the Commission with any better granularity or accuracy than NPA-NXX. Any proposal that would require mobile providers to collect and retain consumer address data beyond what is required for the collection of taxes and fees would be administratively burdensome and could raise significant consumer privacy issues. CTIA will continue to work with its member companies to evaluate other viable ways to provide the Commission with more granular prepaid and reseller subscription data.

C. It Would Be Premature to Collect Internet of Things or Machine-to-Machine Subscription Information at This Time.

The Commission sought comment on whether providers should be required to submit data about IoT or M2M subscriptions.⁵⁵ CTIA urges the Commission to refrain from collecting

⁵³ *Id.*

⁵⁴ *Id.* ¶ 134.

⁵⁵ *Id.* ¶ 133.

information about IoT and M2M subscriptions at this time because it would be unlikely to yield useful data and thus would impose an unnecessary burden on providers.

As a threshold matter, it is not clear how the Commission would use the data for public policy purposes. Such data would not be used to help identify unserved areas and it is unclear how such data would serve other Commission public policy goals.

Moreover, CTIA understands that there is currently no consistent framework for counting IoT subscriptions. Mobile providers count subscriptions differently and the companies that sell IoT devices may also have different mechanisms for counting subscriptions. For example, large agricultural customers may have a single subscription for a single farm, which covers thousands of sensors. On the other hand, an industrial company may have multiple subscriptions through its various subsidiaries, or count a network of sensors as a single subscription. Because subscription models are widely varied and still evolving as IoT applications proliferate,⁵⁶ the Commission should understand how service models are developing before imposing a static connectivity measurement framework that could be out-of-date almost immediately.

If the Commission nonetheless considers requiring such a collection, it must ensure any collection format is feasible and not unduly burdensome. Accurate primary place of use information, for instance, would likely be difficult to obtain. Usage data would likely also become outdated quickly. The Commission should also remain mindful of whether and how this collection will further its goal to collect better data to help bridge the digital divide.⁵⁷

⁵⁶ Louis Columbus, *2018 Roundup of Internet of Things Forecasts and Market Estimates*, Forbes (Dec. 13, 2018) (reporting Ericsson is forecasting the number of cellular IoT connections is expected to reach 3.5B in 2023, increasing at a CAGR of 30%.)

⁵⁷ *Second FNPRM* ¶ 1.

IV. CONCLUSION.

CTIA supports the Commission's efforts to update the collection of mobile wireless deployment data so as to inform the regulatory actions that will promote the deployment necessary to help unserved areas. To further these objectives, CTIA encourages the Commission to require providers to submit standardized coverage maps that reflect the emerging bipartisan consensus around what constitutes appropriate service-level requirements for 4G LTE. While CTIA appreciates the potential value in using other tools to validate providers' coverage maps, CTIA believes that these tools should first be tested through a pilot before integrating them into the broader DODC process. Finally, CTIA urges the Commission to minimize the regulatory burdens on providers as it refines the collection of mobile subscriber data.

Respectfully submitted,

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