

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

In the Matter of)	
)	
Modernizing the FCC Form 477 Data Program)	WC Docket No. 11-10

COMMENTS OF T-MOBILE USA, INC.

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² Statement of Chairman Ajit Pai, 32 FCC Rcd at 6370.

Form 477 obligations are truly necessary—that is, that they have “practical utility”³—and that their burdens do not outweigh any benefits.⁴ Any new information collection must also “be implemented in ways consistent and compatible, to the maximum extent possible, with the existing reporting and recordkeeping practices of those who are to respond.”⁵

Therefore, while T-Mobile generally supports the Commission’s efforts to standardize certain propagation model parameters, it urges the Commission to first assess the results of the recently-adopted, one-time data collection for Mobility Fund Phase II (“MF-II”) before adopting any new obligations. The Commission should carefully analyze the maps produced and build off the industry consensus proposal that formed the foundation for the MF-II collection before adopting any new Form 477 propagation model parameters.

T-Mobile also is concerned that some of the proposals in the *FNPRM* do not meet the standards set forth in the PRA and applicable executive orders.⁶ In particular, the Commission fails to show that the benefits of collecting more granular subscribership data from providers would outweigh the enormous costs involved in collecting and aggregating such information for more than 74,000 census blocks, especially considering the continued availability of Number Resource Utilization/Forecast (“NRUF”) data. For similar reasons, the Commission should refrain from

³ 44 U.S.C. §§ 3506(c)(3)(A).

⁴ Improving Regulation and Regulatory Review, Exec. Order 13,563, 76 Fed. Reg. 3821, 3821 (Jan. 18, 2011) (requiring agencies to “propose or adopt a regulation only upon a reasoned determination that its benefits justify its costs” and “tailor regulations to impose the least burden on society,” taking into account “the costs of cumulative regulation”).

⁵ 44 U.S.C. § 3506(c)(3)(E).

⁶ See also Enforcing the Regulatory Reform Agenda, Exec. Order No. 13,777, 82 Fed. Reg. 12,285, 12,285 (Feb. 24, 2017) (declaring that “the policy of the United States [is] to alleviate unnecessary regulatory burdens placed on the American people”); Reducing Regulation and Controlling Regulatory Costs, Exec. Order No. 13,771, 82 Fed. Reg. 9339, 9339 (Jan. 30, 2017) (emphasizing the importance of “manag[ing] the costs associated with the governmental imposition of private expenditures to comply with Federal regulation”).

requiring providers to submit actual speed-test data in addition to advertised or expected speed data. Not only is such data enormously costly to collect, it is also of limited practical value for comparing the speeds of different carriers' networks due to variations in carrier speed-testing methodologies and myriad environmental factors that affect speeds such as foliage, clutter, and buildings. Furthermore, requiring carriers to submit speed-test data would be redundant given the extensive speed-testing data available through platforms such as Ookla and Open Signal to which the Commission already has access.

It is also premature for the Commission to require providers to report on 5G deployments since, as the Commission notes, there is currently no industry standard definition of 5G. Given the lack of an industry standard and the nascency of such technologies, each provider could adopt a dramatically different definition of 5G when reporting their deployments on the Form 477, reducing the utility of any such collection.

Finally, T-Mobile supports release of information publicly when it will not cause competitive harm; therefore, it does not oppose the release of filer-specific advertised speed data if the Commission eliminates reporting by spectrum band. The Commission should not, however, release publicly certain competitively-sensitive information, including filer-specific subscription counts and mapping parameters. The Commission has long recognized that the release of such data, which is not currently available to the public in the format that it is reported in the Form 477, has the potential to cause providers' competitive harm and accordingly treated such information as confidential. There is no reason to depart from that precedent now.

II. The Commission Should Adopt Its Proposals to Streamline the Form 477 to Reduce Burdens.

In the *FNPRM*, the Commission proposes to eliminate the requirement that mobile providers report broadband coverage by spectrum band⁷ and the requirement that providers submit mobile broadband service availability data.⁸ T-Mobile supports these proposals because they will help reduce unnecessary burdens without any adverse effect on the Commission's ability to evaluate broadband deployment.

First, T-Mobile urges the Commission to adopt its proposal to eliminate reporting by spectrum band. For customers, coverage is coverage, regardless of the spectrum band over which it is delivered. Not surprisingly, the separate reporting of coverage information by spectrum band has not been of practical value to the Commission. In fact, "to date the Commission has not used the spectrum band information from Form 477 in its mobile broadband coverage analysis."⁹ Thus, eliminating this reporting requirement should not impact the Commission's ability to evaluate mobile broadband deployment.

At the same time, streamlining the Form 477 reporting requirements will have the positive effect of reducing the burdens on providers. Currently, T-Mobile must generate and submit 14 different coverage maps based on different technology, spectrum band, and speed combinations. This is a significant undertaking.¹⁰ Eliminating the requirements that providers report their

⁷ *FNPRM*, 32 FCC Rcd at 6335, para. 19.

⁸ *Id.* at 6336, para. 21.

⁹ *Id.* at 6335, para. 18.

¹⁰ As Sprint previously explained, "[m]apping of service availability is highly complex...requir[ing] enormous amounts of data, modeling and analyses, and ongoing maintenance of these maps is also very expensive." Comments of Sprint Nextel Corporation at 3, WC Docket No. 07-38 (July 17, 2008) (footnote omitted).

coverage by spectrum band will limit the number of maps providers must create and maintain, thereby reducing burdens.

Second, T-Mobile encourages the Commission to eliminate the requirement that providers submit mobile broadband service availability data. Indeed, as the Commission accurately observes, this requirement “is not producing accurate information about where services are affirmatively available to American consumers,” thus defeating the purpose for its collection.¹¹ It does, however, impose an additional burden on providers.

III. The FCC Should Shift to Annual Filing for All Filers.

The Commission asks whether it should reduce the frequency of the Form 477 collection.¹² In particular, the Commission seeks comment “on the potential impacts of switching to annual, instead of semi-annual, reporting for all Form 477 filers, both in terms of the utility of the data collected and the burden on filers.”¹³

T-Mobile encourages the Commission to move to an annual collection for all filers. While moving to an annual filing would lessen the burdens on providers, doing so would not impair the Commission’s ability to generate comprehensive and up-to-date Broadband Progress reports. As it stands, the FCC typically relies on the prior year’s Form 477 data in preparing its annual Broadband Progress Report, even when more recent data exists.¹⁴ To maximize the usefulness of an annual filing for purposes of generating Broadband Progress Reports, the Commission could

¹¹ *FNPRM*, 32 FCC Rcd at 6336, para. 22.

¹² *Id.* at 6348, para. 56.

¹³ *Id.*

¹⁴ See *In re Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans*, 2016 Broadband Progress Report, 31 FCC Rcd 699, 710 n.79 (relying on data from providers’ December 31, 2014 Form 477 submissions).

also move the Form 477 filing deadline to coincide with the timing of the Commission's annual broadband reporting.

Furthermore, an annual filing should not impair the Commission's ability to effectively review transactions. First, as recent transactions demonstrate, the Commission already relies on the prior year's Form 477 data when reviewing the impact of transactions on broadband competition.¹⁵ Second, the Commission typically relies on available NRUF data in evaluating wireless transactions, which provide a solid backstop for the Form 477 data.¹⁶ Third, the Commission has the ability as part of any transaction review to submit information requests to the applicants, as well as to "seek information from third-parties, such as competitors or customers of the applicants."¹⁷ Thus, to the extent the Commission has concerns about the currency of its broadband deployment data when reviewing a transaction, it could request data from the applicants and their competitors, rather than subjecting *all* broadband providers to highly costly data collections multiple times each year.

¹⁵ See *Media Bureau Makes Available Broadband Subscriber Data Relevant To Review Of Proposed Charter-Time Warner Cable-Advance/Newhouse Transactions*, Public Notice, 31 FCC Rcd 12,748, 12,749-52, Exhs. 1-3 (MB 2015) (releasing deployment data from December 2014 Form 477 relevant to Charter-Time Warner Cable-Advance/Newhouse transactions); *In re Applications Filed by Altice N.V. and Cablevision Systems Corporation to Transfer Control of Authorizations from Cablevision Systems Corporation to Altice*, Memorandum Opinion and Order, 31 FCC Rcd 4365, 4380, para. 31 (2016) (relying on December 2014 Form 477 data to determine Altice's projected share of the national, fixed BIAS market).

¹⁶ See, e.g., *In re Applications of Cricket License Company, LLC, et al., Leap Wireless International, Inc., and AT&T Inc. for Consent to Transfer Control of Authorizations*, Memorandum Opinion and Order, 29 FCC Rcd 2735, 2755, para. 47 (2014).

¹⁷ FCC, *Overview of the FCC's Review of Significant Transactions*, <https://www.fcc.gov/reports-research/guides/review-of-significant-transactions> (last visited Sept. 19, 2017).

IV. The Commission Should Wait to Adopt Any New Form 477 Propagation Model Parameters Until After It Has Received and Evaluated the Mobility Fund II One-Time Data Submissions.

The Commission seeks comment on standardizing the output of carrier propagation models as well as certain input parameters “with the goal of allowing more meaningful comparisons among service providers’ mobile broadband deployment.”¹⁸ T-Mobile generally supports efforts to standardize the propagation model parameters, but urges the Commission to wait until after it has received and evaluated the one-time MF-II data submissions before adopting any new parameters for the Form 477 collection.¹⁹ The Commission concluded that the one-time MF-II collection would address concerns regarding the lack of consistency in the Form 477 filings and allow the Commission to more accurately identify those areas lacking 4G LTE coverage.²⁰

Waiting until after the Commission has reviewed the MF-II data submissions before adopting any new parameters has several advantages. First, it allows the Commission to evaluate its prediction that the MF-II parameters will improve the consistency and accuracy of the Commission’s mobile coverage data and to apply any lessons learned to the Form 477. Second, because the MF-II one-time data collection was supported by a broad cross-section of the industry,²¹ the Commission may be more likely to secure industry support for a proposal founded upon the consensus model. Third, by basing any new Form 477 parameters on the MF-II

¹⁸ *FNPRM*, 32 FCC Rcd at 6333, para. 12.

¹⁹ *In re Connect America Fund*, Order on Reconsideration and Second Report and Order, 32 FCC Rcd 6282, 6296, para. 28 (2017) (“*MF-II Challenge Process Order*”).

²⁰ *Id.* at 6286-87, paras. 8-10.

²¹ The Commission modeled the MF-II collection on a CTIA proposal that was filed with the support of AT&T, Verizon, T-Mobile, Sprint, and U.S. Cellular. Comments and Petition for Reconsideration of CTIA, WC Docket No. 10-90 et al. (Apr. 26, 2017). CCA also filed reply comments concurring with many of the parameters proposed by CTIA. Reply Comments of Competitive Carriers Association at 3, WC Docket No. 10-90 et al. (May 11, 2017).

collection, the Commission can avoid adopting additional, burdensome parameters that are proven unnecessary, such as a specific signal strength benchmark.²² Thus, the Commission should not adopt any standardized propagation models now.

V. The Commission Should Refrain from Collecting Mobile Subscription Data at the Census-Tract Level.

The Commission proposes to collect more granular subscribership data by requiring mobile providers to aggregate their subscribership data at the census-tract level, based on each subscriber's billing address.²³ T-Mobile urges the Commission not to adopt this proposal for several reasons.

To start, the Commission already has access to more granular data through the telephone number-based NRUF data that it currently uses for its subscriber and market share analysis in secondary market transaction review,²⁴ and when evaluating mobile competition in geographic markets more broadly.²⁵ And, although the NRUF data may not be perfect,²⁶ the Commission has not shown that any flaws justify the burdens associated with the proposed new collection.

²² *MF-II Challenge Process Order*, 32 FCC Rcd at 6302, para. 40.

²³ *FNPRM*, 32 FCC Rcd at 6337-38, paras. 27-28. The Commission suggests that this information “would provide a more granular understanding of where consumers are subscribing to service[.]” allowing the Commission to better assess the state of mobile competition. *Id.*

²⁴ See 44 U.S.C. § (c)(3)(B) (requiring the agency to certify that the information to be collected “is not unnecessarily duplicative of information otherwise reasonably accessible to the agency”).

²⁵ *In re Implementation of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services*, Twentieth Report, WT Docket No. 17-69, at paras. 33, 75 (2017).

²⁶ As the Commission notes, the increasing number of subscribers with more than one device with an assigned telephone number makes it more difficult to determine the number of mobile subscribers through the NRUF data. *FNPRM*, 32 FCC Rcd at 6337, para. 27 n.38. Moreover, when mobile subscribers move, they often take their numbers with them. *Id.*

Furthermore, the Commission's proposal to use subscriber billing address to track subscribership at the census-tract level has its own flaws. Unlike fixed broadband services, for which subscriber billing address frequently correlates exactly with the fixed location where service is provided, a mobile subscriber's billing address does not necessarily reflect where he or she uses the service. Mobile users often use their mobile broadband and telephony services hundreds or even thousands of miles away from their billing addresses, whether running errands, at work, visiting friends and family locally or out-of-state, or retaining their number when moving to another state.

Using subscriber billing address to track prepaid, business, and family plan subscribers is particularly problematic. T-Mobile has many customers that pre-pay for their mobile service and who therefore are not required to provide a residential billing address when they sign up for service. Additionally, while business accounts are generally billed to a company's headquarters, each such account may have hundreds or even thousands of individual lines associated with it and these lines may be assigned to employees operating in the field or at other company locations across the United States. Family plans similarly often have multiple lines in different states and the billing address would not capture such information. Therefore, collecting data at the census-tract level using subscriber's billing addresses is unlikely to yield more accurate information about the number and location of mobile subscribers than exists today through NRUF and may, in fact, result in less accurate information.

Finally, a new collection of subscribership data at the census-tract level would impose enormous burdens on providers. As T-Mobile previously noted, "[w]ireless providers, including national providers like T-Mobile, as well as regional providers, do not maintain subscription data at the census-tract level. Compiling subscriber data in the format the Commission demands – even

for the current state level reporting – imposes substantial costs.”²⁷ To collect such data at the census-tract level, T-Mobile would have to determine the numbers of its broadband subscribers for each of more than 74,000 census tracts. It also would have to create a new system to process and store such voluminous data, which are otherwise completely unnecessary to T-Mobile’s business operations.

Because the burdens of collecting more granular mobile subscription data would greatly outweigh the usefulness of such information for evaluating mobile availability and deployment, and because such data would be cumulative of the NRUF data that the Commission already collects, the Commission should refrain from requiring providers to submit subscription data at the census-tract level based on subscribers’ billing addresses.

VI. The Commission Should Not Require Providers to Submit “On-the-Ground” Speed-Test Data.

In 2008, and again in 2013, the Commission considered but ultimately declined to collect actual speed-test data because, as it said, the records in those proceedings “d[id] not identify a methodology or practice that could be applied, consistently and by all types of broadband filers, to measure the information transfer rates actually observed by end users.”²⁸ The Commission further acknowledged concerns that “the collection of these data is highly complex, time consuming, and expensive undertaking that requires the use of specialized equipment in the providers’ networks

²⁷ T-Mobile Comments at 16, WC Docket No. 11-10 (Mar. 30, 2011) (footnote omitted) (“T-Mobile Comments”).

²⁸ *In re Modernizing the FCC Form 477 Data Program*, Report and Order, 28 FCC Rcd 9887, 9907, at para. 39 (2013); *In re Development of Nationwide Broadband Data To Evaluate Reasonable and Timely Deployment of Advanced Services To All Americans, Improvement of Wireless Broadband Subscribership Data, and Development of Data On Interconnected Voice Over Internet Protocol (VOIP) Subscribership*, Report and Order and Further Notice of Proposed Rulemaking, 23 FCC Rcd 9691, 9702-03, para. 22 (2008).

and at their customers' premises.”²⁹ Yet once again, the Commission seeks comment on whether to require some “on-the-ground” speed-test data as part of any Form 477 data collection.³⁰ Because the same concerns that the Commission voiced in 2008 and 2013 apply with equal force today, the Commission should continue to refrain from collecting actual speed-test data on Form 477.

First, actual speed-test data has limited practical utility. As T-Mobile previously explained, “[w]hile speed information would at first blush appear to be useful, measuring ‘actual’ wireless speeds is an undertaking fraught with difficulties that substantially dilute any perceived utility.”³¹ For one, “different methods of speed measurement produce different results.”³² In addition, “speed results can change from minute to minute or between locations even a few meters apart based on changing factors from the surrounding environment such as traffic volume, signal strength, directness of the path between the handset and the cell site antenna, handset design, terrain, structures, foliage, weather, and many others.”³³

At the same time, collecting actual speed-test data for mobile services is an enormously complicated and costly process, especially in rural areas. For example, one provider reported that it took ten months to drive test and process actual speed data for 1,200 square miles as part of the

²⁹ *Id.* at 9907, para. 39.

³⁰ *FNPRM*, 32 FCC Rcd at 6333-34, para. 14.

³¹ T-Mobile Comments at 10-11.

³² *Id.* at 11 (citing Steve Bauer, David Clark, William Lehr, MIT Internet Traffic Analysis Study, *Understanding Broadband Speed Measurements* (June 2010), http://groups.csail.mit.edu/ana/Publications/Understanding_broadband_speed_measurements_bauer_clark_lehr_TPRC_2010.pdf (explaining different measurement methodologies and their varying results for the same service)).

³³ *Id.* (citing Comments of T-Mobile USA, Inc. at 5, WC Docket No. 07-38 (July 8, 2010); Comments of T-Mobile USA, Inc. at 5-6, WC Docket No. 10-136 (Aug. 13, 2010)).

Mobility Fund Phase I challenge process, at an estimated cost of more than a hundred thousand dollars.³⁴ Based on its experience in MF-I, T-Mobile estimates that the cost of drive testing its entire network would likely cost tens of millions of dollars.

Because of this expense and the inherent limitations of the utility of such data as discussed above, several providers now rely primarily on crowd-sourced data such as that collected by Ookla and Open Signal to evaluate the on-the-ground speed of its network. Indeed, such data is in many ways preferable to provider-collected speed-test data, which as discussed above, can vary greatly from provider to provider depending on test conditions and the methodology used. This third-party data is also readily available to the Commission. T-Mobile, therefore, urges the Commission to rely on established third-party data rather than imposing unnecessary new burdens on providers.

VII. It Is Premature for the Commission to Collect 5G Data.

As the Commission acknowledges in the *FNPRM*, there is currently no industry standard definition of what qualifies as 5G.³⁵ Rather, “the discussion concerning a possible fifth generation of mobile wireless technology includes a wide variety of ideas and technological developments.”³⁶ Companies have proposed using 5G technologies to support such diverse uses as wireless backhaul, machine-to-machine communication, critical emergency services, and higher capacity cell networks.³⁷

Because 5G is still so nascent and evolving, were the Commission to require 5G reporting today, the results would likely be so different as to be of limited practical value. Therefore, while

³⁴ Comments of Rural Wireless Association, Inc. at 12, WC Docket No. 10-90 (Apr. 26, 2017).

³⁵ *FNPRM*, 32 FCC Rcd at 6334, para. 15 & n.21.

³⁶ *In re Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 8014, 8020, para. 7 (2016).

³⁷ *Id.*

T-Mobile supports flexibility generally in reporting by technology, the Commission should wait until an industry standard has been adopted before initiating a proceeding to specifically consider whether, and how best, to collect data on various types of 5G deployments.

VIII. The Commission Should Keep Providers' Form 477 Data Confidential.

In the *FNPRM*, the Commission proposes to release minimum advertised or expected speed data for mobile broadband services—information that is currently treated as confidential.³⁸ In addition, the Commission proposes treating certain propagation model parameters as public information,³⁹ and seeks comment on whether to make public various subscription data after a certain period of time has passed.⁴⁰

To the extent the Commission eliminates reporting by spectrum band, T-Mobile does not object to disclosing provider-specific advertised speed information. If, however, the Commission continues to require reporting by spectrum band, T-Mobile is concerned that such information could be used to cause providers competitive harm. As T-Mobile previously explained, if providers' minimum advertised or expected speed data are released in their Form 477 format, those data can be paired with spectrum information gathered via the Commission's Universal Licensing System ("ULS") to identify specific spectrum bands, which can reveal carriers' proprietary and confidential deployment strategies.⁴¹ Currently, by checking the "confidential" box, carriers keep

³⁸ *FNPRM*, 32 FCC Rcd at 6346-47, para. 51.

³⁹ *Id.* at 6347, para. 52.

⁴⁰ *Id.* at 6347, para. 54.

⁴¹ See Comments of T-Mobile, WC Docket No. 10-90 (Apr. 26, 2017). Contrary to the Commission's suggestion in the *FNPRM*, such information is not currently made available to the public in the Form 477 format. Although some carriers provide their subscribers with information about the download speeds they can expect in certain geographic areas, a person would have to take a number of arduous steps to match that information with the carriers' spectrum-use plan—and the results still would be imprecise at best. The high level of effort required to achieve a relatively imprecise result is a barrier of protection that carriers currently enjoy.

confidential what bands their spectrum holdings are in and the minimum advertised speeds associated with the contour field.⁴²

Furthermore, the Commission should not require providers to disclose their unique propagation model parameters. T-Mobile has invested substantial time and resources into developing and validating its propagation model in order to be able to accurately map and market its network's coverage to consumers. Such information is highly proprietary and competitively-sensitive. Were the Commission to require providers to publicly reveal their propagation model parameters, competitors could gain insights into T-Mobile's network design. In addition, providers could also appropriate T-Mobile's model for their own use, without having to incur the expense of developing their own models.

Finally, the Commission should not make public any filer-specific subscribership data even after a certain amount of time. As the Commission has recognized, the release of such data has the potential to cause providers severe competitive harm.⁴³ Therefore, rather than attempting to divine at the outset the period of time after which the risk of harm to providers would be sufficiently diminished to permit public disclosure, the Commission should continue to assess the case for continued confidential treatment if and when it receives a request for inspection.

While T-Mobile has concerns regarding the public disclosure of competitively-sensitive information, T-Mobile supports the Commission's efforts to provide the public with greater

⁴² See *In re Modernizing the FCC Form 477 Data Program*, Report and Order, 28 FCC Rcd 9887, 9923, para. 82 (2013) (explaining that while deployment data generally are not confidential, they "include certain specific spectrum and speed parameters that may be used by providers for internal network planning purposes" and thus "[f]ilers may request confidential treatment of those specific elements of their deployment data on form 477").

⁴³ *In re Local Competition and Broadband Reporting*, Report and Order, CC Docket No. 99-301, para. 88 (2000) (observing that competitors could use a filer's subscription data to "tailor market strategies to quash nascent competition, protect areas that are being subjected to increased competition, or deploy facilities to defend strongholds").

information regarding mobile broadband deployment. To this end, T-Mobile supports the Commission's proposal to publish a searchable, national map of aggregated mobile broadband deployment data, *provided that* the Commission not disclose any filer-specific deployment data that could reveal carriers' proprietary deployment strategies and cause carriers competitive harm.

IX. Conclusion

For the foregoing reasons, T-Mobile applauds the Commission's diligent and good government efforts to streamline and eliminate certain Form 477 obligations. At the same time, T-Mobile urges the Commission to carefully evaluate any new burden and, in particular, avoid rushing to adopt new obligations without first evaluating the Mobility Fund Phase II collection.

Respectfully submitted,

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