

Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, DC 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 AT&T**

AT&T Services, Inc.<sup>1</sup> submits these comments in response to the Federal Communications Commission’s (“Commission’s”) *Report and Order and Second Further Notice of Proposed Rulemaking*<sup>2</sup> in the above-captioned docket.

**I. INTRODUCTION AND SUMMARY**

AT&T applauds the Commission’s determination that “[a]ccurate broadband deployment data is critical to ... bridg[ing] the digital divide,”<sup>3</sup> and is proud to continue to participate in the efforts at the Commission, other agencies, and within industry to improve broadband mapping. AT&T strongly supports the development of better data regarding the scope of the availability of voice and broadband services. Accordingly, the company has consistently worked to help ensure accurate broadband mapping. For instance, AT&T pushed for more accurate coverage maps to determine eligible areas in the Mobility Fund Phase II (“MF-II”) auction, and was an early

---

<sup>1</sup> AT&T Services, Inc. files these comments on behalf of its wireless and wireline operating affiliates (collectively, “AT&T”).

<sup>2</sup> *Establishing the Digital Opportunity Data Collection, Modernizing the FCC Form 477 Data Program, Report and Order and Second Further Notice of Proposed Rulemaking*, WC Docket Nos. 19-195, 11-10, FCC 19-79 (rel. Aug. 6, 2019) (“*R&O*” and “*Second FNPRM*,” respectively).

<sup>3</sup> *Id.* ¶ 1.

proponent (and is an ongoing supporter) of USTelecom’s Broadband Serviceable Location Fabric project, to enable the collection of accurate fixed and, ultimately, mobile broadband data. These comments are offered in the spirit of, and based on, these experiences, to urge the Commission to collect more accurate and reliable mapping information without placing unnecessary burdens on filers.<sup>4</sup>

As discussed in more detail below, AT&T proposes that the Commission improve the accuracy of mapping by both fixed wireless and mobile wireless voice and broadband providers primarily by requiring greater disclosure of the details of filers’ propagation mapping processes, consistent with a framework discussed herein.

## **II. MOBILE AND FIXED WIRELESS BROADBAND REPORTING CAN BE IMPROVED BY GREATER TRANSPARENCY IN PROVIDERS’ PROPAGATION MODELING**

As the *Second FNPRM* rightly notes, “the Commission has not had the information necessary to examine the methodologies used by providers in generating [mobile wireless] coverage data, or whether these propagation models reflect actual consumer experiences.”<sup>5</sup> The *Second FNPRM* asks a wide range of questions regarding various proposals or ideas for addressing the perceived shortcomings of current wireless broadband maps including imposing more prescriptive standards on providers’ propagation models.<sup>6</sup> The *Second FNPRM* also asks whether, if it “adopts standards for reporting mobile broadband deployment,” it should “require

---

<sup>4</sup> In response to the *Second FNPRM*, AT&T generally concurs with the comments filed by CTIA (as regards mobile voice and broadband reporting) and USTelecom (as regards fixed voice and broadband reporting). AT&T submits this filing separately to provide further information regarding certain elements of reporting by fixed wireless and mobile providers.

<sup>5</sup> *Second FNPRM* ¶ 119.

<sup>6</sup> *See, e.g., id.* ¶¶ 113-17.

terrestrial fixed wireless providers to report broadband deployment using similar standards,”<sup>7</sup> and whether mobile wireless providers should report using a “standardized RF propagation model.”<sup>8</sup>

First, AT&T agrees that the reporting of terrestrial wireless coverage using propagation models—whether fixed or mobile—should be subject to similar standards regarding how those coverage contours are derived.<sup>9</sup>

With regard to the standardization of RF modeling, however, AT&T believes that transparency—rather than more prescriptive standards—is more likely to result in accurate mapping. The reality is that past wireless broadband mapping exercises have not always elicited accurate data from all providers because the Commission, attempting to respond to requests for flexibility to accommodate a range of provider size and resources, has failed to provide adequate specificity about how maps should be prepared. Unfortunately, this meant that the quality of the resulting maps also varied because of the specific choices some providers made within the bounds of the flexibility provided, potentially producing inconsistent maps.

AT&T believes that 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 in how providers generate their maps.<sup>10</sup> In other words, rather than prescribing a standardized

---

<sup>7</sup> *Id.* ¶ 80.

<sup>8</sup> *Id.* ¶ 116.

<sup>9</sup> *Id.* ¶ 80.

<sup>10</sup> Among the advantages of AT&T’s proposal to allow carriers to do their propagation mapping in a way that suits their network is that carriers who use spectrum aggregation can perform their modeling as needed to meet the service level rather than being constrained by any artificial requirements. Accommodating real-world spectrum aggregation situations, rather than creating artificial standards, will result in better wireless maps.

RF propagation model, the Commission should simply define the service level to be mapped and then require greater transparency in disclosures about how maps were prepared, as discussed below. This transparency will promote accuracy because filers will know that both the Commission and other parties will be able to identify any shortcomings in their methodologies that could lead to inaccurate maps.

**A. Defining the Level of Service to Be Mapped**

As the first step to obtaining more accurate propagation maps from mobile and fixed wireless broadband providers, the FCC should define the level of service to be mapped. While fixed wireless propagation map would not have multiple technology tiers, the mobile map would be developed by wireless different technologies (e.g., 3G, 4G or 4G LTE, and 5G-NR). For 4G LTE (as an example), the Commission could specify this as a particular probability of receiving a specified speed at the cell edge (e.g., 90% probability of receiving 5 Mbps download and 1 Mbps upload at the cell edge) at 50% loading level. Each provider should then be allowed to develop—and submit with their maps—the propagation parameters that they used to generate the coverage area for that service level based on their specific network configuration.

*Mobile Wireless Technologies to Be Mapped.* Consistent with current practice (as modified in the *R&O*), the Commission should require wireless carriers to provide coverage maps depicting their coverage by wireless technology.<sup>11</sup> As prescribed under the current rules, the data associated with each propagation map should indicate the minimum upload and download data speeds associated with that network technology in that frequency band, and the

---

<sup>11</sup> See *R&O* ¶¶ 41-42, 46-48.

coverage area should depict the boundaries where users should expect to receive those speeds.<sup>12</sup> If a provider achieved different minimum upload and download speeds in different areas of the country using the same technology and frequency band, then the provider should submit separate propagation maps showing the coverage area for each speed.<sup>13</sup> As they do today, filers would provide separate propagation map for each technology and frequency band.<sup>14</sup> This approach, requiring providers to map to each service level rather than a single service level as they were required to do in MF-II, more accurately reflects mobile broadband coverage and offers more useful information for purposes of universal service funding. Mobile voice coverage also should be depicted in discrete propagation maps by wireless technology, but separately from the maps showing broadband coverage (given the different coverage contours for voice versus broadband service).

With regard to 5G, the Commission at this time should not expand reporting beyond the 5G-NR standard specified in the *R&O*.<sup>15</sup> Wireless carriers' 5G deployments remain so varied—encompassing a wide range of frequency bands and widely disparate use cases—that no greater specificity can be provided at this time. In particular, 5G deployments using high-band spectrum serving particular enterprise customers are likely to involve very specific coverage areas. Requiring disclosure of polygons showing such coverage would reveal confidential and commercially sensitive information including both the effective transmitter location as well as potentially the identity of the customer.

---

<sup>12</sup> See FCC Form 477, Instructions at 24.

<sup>13</sup> See *id.*

<sup>14</sup> See *id.*

<sup>15</sup> *Id.* ¶ 44.

*Fixed Wireless Mapping.* Fixed wireless providers should be required to report polygons in Commission-specified speed tiers, such as 1 Mbps download 500 kbps upload (“1/0.5”), or 3/1, 5/1, 10/1, 25/3, 100/20, etc. These speed tiers would apply in lieu of the wireless technology reporting discussed above, but fixed wireless reporting would otherwise follow generally the same requirements, as discussed below.

Mapping fixed wireless has become a critical component of determining where broadband is available for universal service funding purposes, including for the Rural Digital Opportunity Fund (“RDOF”). For example, the RDOF NPRM proposes to make support available by auction areas where broadband is not available at 25/3 Mbps.<sup>16</sup> As a result, it is vital to the success of the auction, and future USF support programs, to know where 25/3 Mbps service is available, including from fixed wireless providers.

#### **B. Defining Transparency in the Propagation Model**

Along with each service level coverage map, the Commission should require filers to submit the specific parameters used in producing each coverage contour, including a detailed link budget, as discussed below. Such propagation model parameters, already developed for producing coverage maps, have previously not been a part of broadband coverage submissions, including for Form 477. This information that underlies the coverage contours—minus infrastructure location information, as discussed in more detail below—should also be made public, to allow for broader transparency of filers’ modeling. Full transparency will not only promote greater accuracy, it will allow the Commission to review, as needed, the information behind the maps if there are questions as to whether a given filer’s modeling is reasonable.

---

<sup>16</sup> *Rural Digital Opportunity Fund, et al.*, Notice of Proposed Rulemaking, FCC 19-77, at ¶¶ 45 *et seq.* (rel. Aug. 2, 2019).

Specifically, the Commission should require filers to provide, and publicly release, the following underlying information regarding their coverage contours:

*Radio Network Planning Tool.* Different wireless carriers use different planning tools to support their network planning and coverage mapping. Rather than prescribing a particular tool, the Commission should require filers to identify (i) the planning tool by name, (ii) the version number used to produce the coverage contour, and (iii) the name of the developer of the planning tool.

*Basic Parameters.* The submission should specify the receiver height and device power used to develop the contours. For mobile wireless contours, a standard receiver height of 1.5 meters and a standard 23 dBm power class device should be assumed. For fixed wireless contours, a receiver height of 4.57 meters should be used, and the power of the receiver device should be specified by the filer.

*Terrain and Clutter Information.* Different wireless carriers obtain terrain and clutter information from different sources. Most providers purchase commercial terrain files, while others self-derive their data. Some use a combination of the two. The Commission should require filers to provide a complete list of the clutter categories used in their propagation model, along with a detailed description of each clutter category. The descriptions should include the assumptions made about the density and height of buildings, trees, and other terrain factors that affect RF propagation within each category. The description must also include the year for which the dataset is accurate (“vintage”), as well as the resolution of the data (e.g., 10 meters).

*Calibration of Coverage Model.* Each submission also should include an affirmative indication that the filer has validated and calibrated the coverage model using drive test and/or

other real-world measurements of coverage to confirm the model's appropriateness for the area being modeled, consistent with good RF engineering practice.

*Frequency Bands Utilized.* Each contour should include a complete description of the frequency bands used to provide the service. Mobile wireless contours will be already identified by wireless technology (e.g., 4G LTE), as discussed above. For fixed wireless submissions, the data should also include the radio access technology used to provide the service.

*Detailed Link Budget.* The core of each submission should be a detailed description of how the link budget was developed to generate the coverage contour submitted. Coverage types such as RSRP, RS Power, PDSCH Receive Power, or their equivalents for different radio access technologies should be used to depict coverage. RSSI should *not* be used to depict coverage. The derivation of the different thresholds used and their equivalent should be captured in the link budget detail.

The value for each of these inputs may differ for each polygon that providers submit. Filers should accordingly be required to submit each individual value used for each of these parameters for all polygons submitted.

### **C. Infrastructure Location Information Must Be Treated Differently**

While the accuracy of wireless mapping would be improved by making publicly virtually every other element of filers' propagation models, requiring providers to submit certain infrastructure information including actual location of network facilities raises obvious concerns with respect to revealing competitively sensitive information and information that could impact national security.

Although, AT&T has proposed the types of information providers could submit to assist the Commission with validation of providers' propagation model or maps, AT&T believes the *locations* of wireless providers' physical infrastructure (including macro cell sites, microsites,



and other network components) must be treated differently. Specifically, such locations should only be produced—consistent with the *Second FNPRM*'s proposal—upon request by Commission staff, and then handled confidentially.<sup>17</sup> The burden for providers to produce infrastructure location information (particularly larger providers with thousands of sites) could be significant and may require more than the 30 days response time the Commission has proposed. AT&T suggests providers should be allowed the flexibility to request additional time to respond after receiving such request from the Commission. However, the Commission may require the provider to explain why the extra time is needed. Further, national security and competitive sensitivity concerns similarly dictate that precise infrastructure locations not be kept in readily accessible locations and formats.

### **III. CONCLUSION**

AT&T urges the Commission to formulate the DODC reporting process for fixed and mobile wireless providers consistent with these comments, and looks forward to working with the Commission further to refine its broadband mapping processes to improve results.

Respectfully submitted,

By:     /s/ Terri L. Hoskins      
Terri L. Hoskins  
Gary L. Phillips  
David Lawson  
AT&T SERVICES, INC.  
1120 20<sup>th</sup> Street NW  
Suite 1000  
Washington, DC 20036

September 23, 2019

---

<sup>17</sup> *Second FNPRM* ¶ 120.