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**Ex Parte**

Ms. Marlene H. Dortch  
Secretary, Federal Communications Commission  
445 12<sup>th</sup> Street, SW  
Washington, DC 20554

**Re: Universal Service Reform – Mobility Fund, WT Docket No. 10-208  
Connect America Fund, WC Docket No. 10-90**

Dear Ms. Dortch:

In a recent letter, consultants for the Rural Wireless Association (RWA) assert that Verizon's Mobility Fund coverage map overstates Verizon's coverage in the Oklahoma Panhandle.<sup>1</sup> The RWA consultants' assertion is unfounded. The Verizon Mobility Fund coverage map complies in all respects with the Commission's mapping specifications and with industry best practices for propagation modeling.

**I. Verizon's Coverage Map Complies with the Mobility Fund Mapping Specifications**

Verizon's Mobility Fund coverage map complies in all respects with the mapping specifications that the Commission adopted in the *Challenge Process Order*: a download speed of 5 Mbps with an 80 percent cell edge probability and 30 percent loading factor.<sup>2</sup> As the Commission explained in the *Challenge Process Order*, those mapping specifications are intended to achieve the Commission's goal of "directing ... limited universal service funds on areas most in need of support."<sup>3</sup>

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<sup>1</sup> See Letter from Mark Seagran, 4G Unwired, Inc., *et al.* to Marlene H. Dortch, FCC, WT Docket No. 10-208 (July 5, 2018) ("RWA Letter").

<sup>2</sup> *Connect America Fund; Universal Service Reform – Mobility Fund*, Order on Reconsideration and Second Report and Order, 32 FCC Rcd 6282, ¶ 34 (2017) ("*Challenge Process Order*").

<sup>3</sup> *Id.*, ¶ 36.

In the RWA Letter, consultants for Panhandle Telecommunications Systems, Inc. (PTSI), an RWA member company, contend that Verizon's Mobility Fund coverage map overstates coverage in the Oklahoma Panhandle.<sup>4</sup> In particular, the PTSI consultants speculate that Verizon used an overly-simplistic propagation model that fails to take into account the Oklahoma Panhandle's terrain characteristics. That claim has no merit. Verizon produced its Mobility Fund coverage map using a sophisticated propagation model that incorporates industry best practices for propagation modeling. Verizon has invested tens of millions of dollars in its propagation model in the past five years alone.

All of the PTSI consultants' claims regarding Verizon's propagation model lack foundation:

- The consultants speculate that Verizon may have used a single national propagation model.<sup>5</sup> In fact, Verizon used over 2,500 separate models, each of which was optimized for a relatively small geographic area with similar terrain. The model that Verizon used for the Oklahoma Panhandle was optimized for the terrain of the Oklahoma Panhandle and for the similar terrain of the northern Texas Panhandle.
- The consultants speculate that Verizon may have used an uncalibrated model.<sup>6</sup> In fact, Verizon calibrates each of the 2,500 local models using drive tests, and recalibrates each local model on a regular basis in order to take into account tree growth and changes in land use.
- The consultants speculate that Verizon may not have used clutter heights in its model.<sup>7</sup> In fact, Verizon used separately-calibrated clutter heights for each of the 2,500 local models.
- The consultants speculate that Verizon may have used the same clutter factors nationwide.<sup>8</sup> In fact, Verizon used separately-calibrated clutter factors for each of the 2,500 local models.
- The consultants speculate that Verizon may have inappropriately used a clutter factor of zero in some instances.<sup>9</sup> In fact, Verizon used a clutter factor of zero only for a handful of terrain types that do not cause excess path loss, such as roadways and grassland.
- The consultants speculate that Verizon may have set the fade margin incorrectly.<sup>10</sup> In fact, Verizon used a 6 dB standard deviation, which is actually more conservative than

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<sup>4</sup> See RWA Letter at 2-3.

<sup>5</sup> *Id.* at 4.

<sup>6</sup> *Id.*

<sup>7</sup> *Id.* at 5.

<sup>8</sup> *Id.* at 4.

<sup>9</sup> *Id.* at 5.

<sup>10</sup> *Id.* at 4.

the 5.85 dB standard deviation that Verizon derived from tuning its propagation model for the Oklahoma Panhandle.

## II. The PTISI Consultants' "Coverage Map" is Flawed

In an attempt to support their claim that Verizon's coverage map is overstated, PTISI's consultants generated their own "coverage map" for Verizon using Verizon's cell site locations and the consultants' "observational estimates" of radio height and antenna placement on towers.<sup>11</sup> Based on this analysis, the PTISI consultants assert that Verizon could only cover 6,800 square kilometers of the Oklahoma Panhandle, or about half of the coverage area shown by Verizon's Mobility Fund coverage map.<sup>12</sup>

The PTISI consultants' coverage map underestimates Verizon's Mobility Fund coverage because it fails to take into account all of the Verizon cell sites that provide coverage to customers in the Oklahoma Panhandle. The consultants' coverage map reflects only the Verizon cell sites that are actually located in the Oklahoma Panhandle. Verizon also provides coverage to customers in the Oklahoma Panhandle from cell sites in Texas, Kansas, and New Mexico (see Attachment). Because the Oklahoma Panhandle is only 34 miles across, Verizon cell sites in adjacent areas of neighboring states are able to provide coverage to a significant portion of the Oklahoma Panhandle.

The PTISI consultants' coverage map is also flawed because it does not comply with the Commission's specifications for Mobility Fund maps, i.e., 80 percent cell edge probability and 30 percent cell loading factor.<sup>13</sup> Notably, the PTISI consultants first produced their Verizon coverage map and the 6,800 square kilometer coverage estimate three years ago, well before the Commission adopted the Mobility Fund mapping standards.<sup>14</sup> In addition, PTISI has said that its consultants' coverage map reflects an uplink constraint,<sup>15</sup> which the Commission specifically declined to include in the Mobility Fund mapping specifications.<sup>16</sup>

Similarly, there is no evidence that the PTISI consultants used appropriate clutter values or clutter heights. The RWA Letter does not provide any information about the propagation model or calibration techniques used by PTISI's consultants.

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<sup>11</sup> *Id.* at 2.

<sup>12</sup> *Id.*

<sup>13</sup> *Challenge Process Order*, ¶ 34.

<sup>14</sup> Letter from Caressa Bennet, RWA to Marlene H. Dortch, FCC, WT Docket No. 10-208, Attachment C, at 5-6 (April 20, 2018).

<sup>15</sup> *Id.* at 5.

<sup>16</sup> *Challenge Process Order*, ¶ 19.

Finally, the PTSI consultants' coverage map is based on assumptions and on incomplete and outdated information about Verizon's network. Among other things, the PTSI consultants' map does not reflect Verizon's network upgrades in the three years since the consultants first produced their coverage map. By contrast, Verizon's Mobility Fund coverage map reflects complete, current, and accurate information about transmitter height and other network parameters.

### III. PTSI's Drive Test Information Does Not Indicate Mapping Errors

The RWA Letter asserts that PTSI has measured speeds below 5 Mbps in certain locations that are shown as covered by Verizon's Mobility Fund map.<sup>17</sup> As an initial matter, the sub-5 Mbps speed test results reported by PTSI are not consistent with Verizon's network performance metrics for the Oklahoma Panhandle. Because the RWA Letter does not provide a description of PTSI's drive test procedures, it is impossible to determine the extent to which PTSI's testing methodology may have introduced speed measurement errors.

In any event, a sub-5 Mbps speed measurement is not evidence that Verizon's coverage map is inconsistent with the Commission's mapping standards. First, the Commission specifically acknowledged in the *Challenge Process Order* that the "80 percent cell edge probability" component of the mapping specifications could result in sub-5 Mbps speed measurements in areas shown as covered by the Mobility Fund maps.<sup>18</sup> The Commission declined to adopt more stringent mapping specifications because they "would likely result in MF-II support being used to upgrade or over-build 4G LTE networks rather than to expand 4G LTE coverage to unserved areas."<sup>19</sup>

Similarly, the Commission's mapping specifications require carriers to use a 30 percent loading factor in their propagation models.<sup>20</sup> Consequently, users may measure speeds below 5 Mbps in areas that are shown as covered by Mobility Fund coverage maps if network loading at the time of testing exceeds 30 percent. Verizon's network monitoring data shows that network loading at cell sites in the Oklahoma Panhandle often exceeds 30 percent. In the third week of July, for example, about 67 percent of average hourly network load measurements between 6 AM and midnight exceeded 30 percent. In other words, the actual network load was consistent with the assumed network load only about one-third of the time.

Given that the Mobility Fund mapping rules specify an 80 percent cell edge probability, and given that the mapping rules also specify a network load assumption that is met only one-third of the time in the Oklahoma Panhandle, it is not unexpected that a user would in some

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<sup>17</sup> See RWA Letter at 3.

<sup>18</sup> *Challenge Process Order*, ¶ 36.

<sup>19</sup> *Id.*

<sup>20</sup> *Id.*, ¶ 37.

instances measure sub-5 Mbps speeds in areas of the Oklahoma Panhandle that are shown as covered under the mapping rules.

Finally, a propagation model is just that – a model. Even when the most sophisticated and granular mathematical model faithfully implements the Commission’s mapping specifications, it may overstate coverage in some instances and understate coverage in other instances.

#### **IV. There is No Basis for Imposing Additional Mapping Requirements**

Like many RWA members, PTSI is a “subsidized carrier,” i.e., a carrier that receives support from the Commission’s legacy universal service program. PTSI receives \$184,000 per month from the legacy universal service program, or about \$2.2 million per year.<sup>21</sup> In total, PTSI has received almost \$40 million in universal service support since it became an eligible telecommunications carrier in 2004.<sup>22</sup>

Because Verizon’s Mobility Fund coverage map shows that Verizon (an unsubsidized carrier) covers much of PTSI’s territory, PTSI faces the prospect of losing universal service support in many areas. Under the Mobility Fund rules, areas served by an unsubsidized carrier will not be eligible for the Mobility Fund auction<sup>23</sup> and PTSI will lose its legacy support in those areas after a two-year phase out.<sup>24</sup>

However, the Mobility Fund rules already give PTSI ample opportunity to challenge Verizon’s coverage map, especially since the Wireline Communications Bureau and Wireless Telecommunications Bureau recently weakened the standards for a presumptively successful challenge.<sup>25</sup> Nothing in the RWA Letter provides any basis for the Commission to impose new mapping requirements on unsubsidized carriers.

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<sup>21</sup> See <https://www.usac.org/hc/tools/disbursements/default.aspx> (study area code 439008).

<sup>22</sup> *Id.*

<sup>23</sup> See *Connect America Fund; Universal Service Reform – Mobility Fund*, Report and Order and Further Notice of Proposed Rulemaking, 32 FCC Rcd 2152, ¶¶ 52-53 (2017).

<sup>24</sup> *Id.*, ¶ 72.

<sup>25</sup> See *Universal Service Reform – Mobility Fund*, Order on Reconsideration, WC Docket No. 10-90, WT Docket No. 10-208; DA 18-427 (WTB/WCB April 30, 2018) (“*Reconsideration Order*”). Verizon has filed an Application for Review of the *Reconsideration Order*, see Verizon Application for Review, WC 10-90 & WT 10-208 (June 21, 2018).

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This letter is being filed electronically pursuant to Section 1.1206 of the Commission's rules. Please contact me if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Alan Byers". The signature is written in a cursive style with a large initial "A".

**ATTACHMENT**

**Verizon Cell Site Locations**

