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ORIGINAL

April 30, 2012

FILED/ACCEPTED

VIA HAND DELIVERY AND ECFS

APR 30 2012

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

Federal Communications Commission  
Office of the Secretary

Re: *Application of Cellco Partnership d/b/a Verizon Wireless and SpectrumCo, LLC for Consent to Assign Licenses; Application of Cellco Partnership d/b/a Verizon Wireless and Cox TMI Wireless, LLC for Consent to Assign Licenses, WT Docket No. 12-4, Ex Parte*

Dear Ms. Dortch:

Cellco Partnership d/b/a Verizon Wireless herewith submits an *ex parte* letter. The attached letter and disc contain highly confidential information subject to the Second Protective Order (DA 12-51) in the above-referenced proceeding.

Pursuant to the terms of the Second Protective Order, two copies of the Redacted version of this letter are being filed with the Office of the Secretary. The Redacted version of this letter is also being filed electronically through the Commission's Electronic Comment Filing System. In addition, one copy of the Highly Confidential version of this letter is being delivered to the Office of the Secretary and two copies of the Highly Confidential version of this letter are being delivered to Ms. Sandra K. Danner of the Wireless Telecommunications Bureau's Broadband Division.

Should any questions arise concerning this filing, please do not hesitate to contact the undersigned immediately.

Sincerely,

John T. Scott, III

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Attachment

cc: Paul Murray  
Tom Peters  
Joel Rabinovitz  
Susan Singer  
Ziad Sleem  
Joel Taubenblatt  
Thuy Tran  
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Dear Ms. Dortch:

On April 26, 2012, Verizon representatives William Stone, Sanyogita Shamsunder, Jeff Stuparits, Matthew Nelson, John Scott, Tamara Preiss, and William Wallace, and Adam Krinsky, outside counsel to Verizon Wireless, had a telephone conversation with Tom Peters, Thuy Tran, Paul Murray, Joel Taubenblatt, Susan Singer, Ziad Sleem, and Joel Rabinovitz of the FCC. Following earlier discussions with FCC staff,<sup>1</sup> the Verizon representatives expanded on three areas addressed in its filings: the process used to derive LTE traffic growth forecasts; the methodology used in the Verizon Planning Instruments (“VPI”) to develop network capacity projections; and network deployment technologies and alternatives that are available to address growing capacity needs.<sup>2</sup>

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<sup>1</sup> See *Ex Parte* Letter from Tamara Preiss, Verizon, to Marlene H. Dortch, FCC, WT Docket No. 12-4 (filed Apr. 17, 2012); *Ex Parte* Letter from Adam Krinsky, Wilkinson Barker Knauer, LLP on behalf of Verizon Wireless, to Marlene H. Dortch, FCC, WT Docket No. 12-4 (filed Apr. 23, 2012). As discussed with FCC staff, this letter supplements and expands on those *ex parte* filings.

<sup>2</sup> See, e.g., Declaration of William H. Stone, Executive Director of Network Strategy for Verizon, at 9-13, attached as Exhibit 3 to Application of Cellco Partnership d/b/a Verizon Wireless and SpectrumCo LLC for Consent to Assign Licenses, WT Docket No. 12-4, File No. 0004993617 (filed Dec. 16, 2011); Supplemental Declaration of William H. Stone, Executive Director of Network Strategy for Verizon, at 10-15, 19-24, attached as Exhibit 2 to Joint Opposition to Petitions to Deny and Comments, WT Docket No. 12-4 (filed Mar. 2, 2012) (“Stone Suppl. Decl.”); Response to

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As discussed with FCC staff, appended to this filing Verizon includes additional maps using VPI data and depicting the capacity constraints in 81 large and small markets across the United States. Combined with the maps of 18 markets already provided,<sup>3</sup> these markets represent all launched LTE markets at year-end 2011 where Verizon Wireless is acquiring AWS spectrum. These additional maps provide further information showing that Verizon Wireless will not be able to fully meet consumers' growing demand for mobile broadband with its current spectrum holdings.

As noted previously, the company developed the VPI several years ago to project capacity needs for its 1xRTT voice and later its EVDO broadband networks. More recently, the company adapted the VPI to optimize network planning for the LTE network.<sup>4</sup> The VPI is a network planning tool used in actual business practice to enable the Verizon network team to assess capacity constraints and target network investment; it is not a theoretical model devised for regulatory purposes.

***Traffic Growth Forecasting.*** The Verizon representatives noted that traffic growth forecasts are an important input into network capacity planning. Traffic growth forecasting takes into account the following primary inputs: historical network usage; device purchasing trends and projections; device usage analysis and projections; and migration strategies and radio technology selection.<sup>5</sup> For example, Verizon's marketing and finance operations forecast the number and mix of devices on the EVDO network and on the LTE network, taking into account new activations and churn (together, net additions), upgrades and migration from EVDO, information from device OEMs regarding new and upcoming products, and pricing trends. The network team uses the device projections as an input to forecast average data usage per device type (e.g., smartphone, tablets, computers). **[BEGIN HIGHLY CONFIDENTIAL]**

**[END HIGHLY CONFIDENTIAL]**

Based on these various inputs, the network team derives a national growth factor rate representing the amount of traffic growth Verizon projects for the LTE network on a yearly basis.

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Information and Discovery Request by Cellco Partnership d/b/a/ Verizon Wireless, WT Docket No. 12-4, at 10-16 (filed Mar. 22, 2012) ("Response to Information Request").

<sup>3</sup> See Stone Suppl. Decl.

<sup>4</sup> See Response to Information Request at 13-14.

<sup>5</sup> See Stone Suppl. Decl. at 9; Response to Information Request at 10-13.

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As discussed below, the growth rate factor is an important input in the VPI network capacity projections.

*Verizon Planning Instruments Methodology.* With regard to VPI mechanics, the Verizon representatives referenced three documents provided in response to the FCC’s Request for Information and Discovery: “Data/Voice/SMS Traffic Projection” dated Sept. 23 2011, Bates numbers VZW-TPK-FCC-045462 to 045471; “Verizon Planning Instruments User Guide,” Bates numbers VZW-TPK-FCC-043770 to 043787; and “Forecasted LTE Growth,” Bates Number VZW-TPK-FCC-043690. The parties discussed certain discrete areas of the VPI methodology.

In order to project network capacity, the VPI [**BEGIN HIGHLY CONFIDENTIAL**]

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<sup>6</sup> See Stone Suppl. Decl. at 10; Response to Information Request at 15.

<sup>7</sup> [**BEGIN HIGHLY CONFIDENTIAL**]

[**END HIGHLY CONFIDENTIAL**]

<sup>8</sup> See Data/Voice/SMS Traffic Projection at 5 (LTE BH Fwd MBs).

<sup>9</sup> See Forecasted LTE Growth, Bates Number VZW-TPK-FCC-043690.

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[END HIGHLY

CONFIDENTIAL]

The parties also discussed how Verizon Wireless derived the average throughput that each sector can support on a fully loaded LTE system using a 10x10 MHz channel.<sup>10</sup> During LTE trials, Verizon Wireless and its vendors determined that a busy hour network average of [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL] per cell site sector is the average aggregate sector throughput that would meet the company's goals for speed, latency and session initiation and connectivity. Verizon Wireless converted this per-second speed requirement into a per-hour traffic volume figure by multiplying [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL] by 60 (to reflect volume over an entire minute) and then again by 60 (to reflect volume over an entire hour), resulting in [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]. It then divided that figure by 8 (to convert bits to bytes) to derive a presumed busy-hour volume of roughly [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL], which represents the presumed capacity per hour that each sector can support on a fully loaded LTE system using a 10 x10 MHz channel.

*Network Deployment Technologies and Alternatives.* The Verizon representatives also addressed various network deployment alternatives that could affect capacity. For example, Verizon Wireless incorporates WiFi capability into all devices so consumers can choose to use WiFi or the network.<sup>11</sup> But Verizon Wireless has not invested in WiFi infrastructure, or chosen to force customers to use WiFi, because it wants to provide to its customers the service quality that they have come to expect. One exception is in stadiums and similar venues where WiFi can augment the heavily loaded Verizon Wireless radio access network and enable some level of connectivity for the large number of users attempting to access the network.

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[END HIGHLY CONFIDENTIAL]

With regard to LTE Advanced, the Verizon representatives noted that even as Verizon Wireless is working to optimize the LTE network, it is also engaging with network and device vendors on LTE Advanced. [BEGIN HIGHLY CONFIDENTIAL]

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<sup>10</sup> See Response to Information Request at 18-19.

<sup>11</sup> See Stone Suppl. Decl. at 22-23.

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**[END HIGHLY CONFIDENTIAL]**

With regard to refarming PCS spectrum, while some EVDO traffic is migrating to LTE, overall traffic continues to increase on the EVDO network.<sup>12</sup> Moreover, even when EVDO growth subsides, refarming opportunities will initially occur only on a piecemeal basis with 1.25x1.25 MHz channels that are too small to provide the level of service Verizon Wireless seeks to provide its LTE customers. Verizon Wireless will not compromise its service quality by using a 1.25x1.25 MHz LTE channel, for example, that can support peak speeds that are only 1/8th of the peak speeds on a 10x10 MHz channel. Additionally, due to RF guard band requirements and overhead (paging & control messaging), the use of smaller LTE carriers does not achieve significant benefit and capacities. At a minimum, Verizon Wireless will require 5x5 MHz channelization for LTE deployment in refarmed spectrum in order to achieve a significant benefit from deployment, which is not expected until **[BEGIN HIGHLY CONFIDENTIAL]** **[END HIGHLY CONFIDENTIAL]**; even then, the availability of refarmed spectrum will be piecemeal and likely limited at the onset to areas where cells are more lightly loaded and the company does not need additional capacity.

*Other Issues.* The Verizon representatives noted that the company plans to deploy Voice over LTE (“VoLTE”) by **[BEGIN HIGHLY CONFIDENTIAL]** **[END HIGHLY CONFIDENTIAL]**, and is working with its vendors to achieve the additional network features necessary to ensure the service quality and efficiency of the offering in that time frame. With regard to VoLTE capacity, **[BEGIN HIGHLY CONFIDENTIAL]**

**[END HIGHLY CONFIDENTIAL]**

The Verizon representatives also discussed the distribution of users within a cell coverage area during capacity testing for a fully loaded cell sector. **[BEGIN HIGHLY CONFIDENTIAL]**

**[END HIGHLY CONFIDENTIAL]**

Finally, with regard to the cell coverage area using 700 MHz and AWS spectrum, in urban areas the cell coverage areas are exactly the same, as capacity demands require the network to

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<sup>12</sup> See Stone Suppl. Decl. at 23-25; Response to Information Request at 5. As indicated in the September 23, 2011 projections, there is a large embedded base on the EVDO network even through **[BEGIN HIGHLY CONFIDENTIAL]** **[END HIGHLY CONFIDENTIAL]**.

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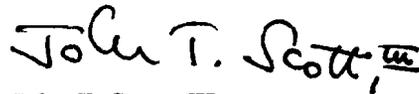
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optimize cell coverage in relatively smaller areas. **[BEGIN HIGHLY CONFIDENTIAL]**

**[END HIGHLY CONFIDENTIAL]**

This letter is being filed pursuant to Section 1.1206 of the Commission's Rules. Should you have any questions, please contact the undersigned.

Sincerely,

A handwritten signature in black ink that reads "John T. Scott, III". The signature is written in a cursive style with a horizontal line under the "III".

John T. Scott, III

cc: Paul Murray (redacted)  
Tom Peters (redacted)  
Joel Rabinovitz (redacted)  
Susan Singer (redacted)  
Ziad Sleem (redacted)  
Joel Taubenblatt (redacted)  
Thuy Tran (redacted)