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REDACTED – FOR PUBLIC INSPECTION

May 8, 2012

VIA HAND DELIVERY AND ECFS

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

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

REDACTED – FOR PUBLIC INSPECTION

Ms. Marlene H. Dortch
May 8, 2012
Page 2

Attachment

cc: Paul Murray
Tom Peters
Joel Rabinovitz
Susan Singer
Ziad Sleem
Thuy Tran
Joel Taubenblatt
Sandra Danner
Jim Bird
Best Copy and Printing, Inc.



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Dear Ms. Dortch:

On May 4, 2012, Verizon Wireless representatives William Stone, Sanyogita Shamsunder, Jeff Stuparits, Matthew Nelson, John Scott, Tamara Preiss, William Wallace, Michael Samsock, and Adam Krinsky, outside counsel to Verizon Wireless, had a telephone conversation with Tom Peters, Thuy Tran, Paul Murray, Susan Singer, Ziad Sleem, and Joel Rabinovitz of the FCC. Mr. Stone and the other representatives addressed the following matters in response to questions from FCC Staff.

MIMO Gains: FCC Staff asked whether Verizon Wireless incorporated potential capacity gains from the use of MIMO. The answer is yes. The company has incorporated MIMO into its analysis of LTE spectrum exhaustion. Testing to determine the sector data capacity throughput
[BEGIN HIGHLY CONFIDENTIAL]

Ms. Marlene H. Dortch
May 8, 2012
Page 2

[END HIGHLY

CONFIDENTIAL]

Connected and Active Users: FCC Staff also asked about the number of connected versus active users on the LTE network. Connected users are those users that have IP connectivity and awareness to the cell site. These users may be transmitting data or may be in idle mode and not consuming spectrum resources. Active users are included as a subset of connected users. Active users are known to the cell site scheduler and are sending or receiving data. Active users consume spectrum resources.

Verizon Wireless' data traffic and spectrum constraint forecasts are not impacted by its vendors' plans to increase connected and active users. Increasing the number of connected and active users allows operators to support larger numbers of simultaneous users, but it does not increase the sector capacity. The net effect of increasing the number of simultaneous users that share the same capacity is lower speed per user.

Verizon Wireless' LTE vendors have roadmaps to increase the number of connected and active users to enable providing service to more users during peak loading. [BEGIN HIGHLY CONFIDENTIAL]

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Growth Rates: Verizon Wireless forecasts usage profiles per device category to calculate network forecasted traffic growth. [BEGIN HIGHLY CONFIDENTIAL]

REDACTED – FOR PUBLIC INSPECTION

Ms. Marlene H. Dortch
May 8, 2012
Page 3

[END HIGHLY CONFIDENTIAL]

Device Forecasts: At a meeting with Commission Staff on April 19, 2012, representatives of Verizon Wireless discussed a document named “Data/Voice/SMS Traffic Projection” (dated September 23, 2011) (VZW-TPK-FCC-045462 to 045471). This document **[BEGIN HIGHLY CONFIDENTIAL]**

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[END HIGHLY

During the May 4 call, Mr. Stone and others explained that the device projections are based on **[BEGIN HIGHLY CONFIDENTIAL]**

Ms. Marlene H. Dortch
May 8, 2012
Page 4

[END HIGHLY CONFIDENTIAL]

As Mr. Stone noted in an April 26, 2012, call with Commission Staff, the device projections are one input that the Network team uses to develop a nationwide projection regarding traffic growth, which is the input to the VPI used to develop cell-site sector specific projections. The other factors are historical network usage, average usage of devices in the various device categories, and the migration of traffic from EVDO to LTE and the impact on traffic growth.¹

Network Capacity Enhancements: During conferences with Commission Staff, Verizon Wireless representatives have emphasized that to increase LTE capacity, Verizon Wireless is investing in new macro sites and will deploy a variety of capacity-enhancing techniques as well, including addition of new cell sites, use of LTE small cells, deploying the LTE Advanced standard, modifying existing cell sites with new antennas and other equipment, load balancing, MIMO, and ICIC and eICIC (enhanced inter-carrier interference cancellation). The availability of these features is based on infrastructure and handset vendor schedules and implementation timeframes. The LTE network development plans are based on Verizon Wireless' current spectrum holdings but take into account these technology advancements to achieve capacity gains.

While Verizon Wireless has determined that the data traffic threshold for spectrum constrained sectors using its 700 MHz Upper C Block spectrum should be [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL] at year end 2013, Verizon Wireless expects the threshold to be higher by year end 2015 due to its plans to aggressively deploy capacity-enhancing techniques. Yet, these network enhancements by themselves are not sufficient to meet the company's capacity needs. Verizon Wireless needs to add spectrum resources in order to address its customers' growing demand.

For example, Verizon Wireless will begin implementing LTE small cells [BEGIN HIGHLY CONFIDENTIAL]

[END HIGHLY CONFIDENTIAL] But, small cells have a limited footprint and are typically deployed in high traffic areas to de-load traffic from the macro cell.² Even with the deployment of [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL] of small cells, this will not be adequate to keep pace with the projected customer growth in years 2013 to 2015 and beyond. Further, LTE small cells are unlikely to be available in the quantities Verizon Wireless would need until sometime in [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL] past the date when many cell sectors will be exceeding desired capacity during busy hours.

¹ See Letter to Ms. Marlene H. Dortch, Secretary, FCC, from John T. Scott, III, Verizon, at 2 (Apr. 30, 2012) ("Verizon Wireless April 30 Letter").

² *Supplemental Declaration of William H. Stone, Executive Director of Network Strategy for Verizon*, at ¶¶ 24-26 ("Stone Supp. Decl."), attached as Exhibit 2 to Joint Opposition to Petitions to Deny and Comments, WT Dkt. No. 12-4 (filed Mar. 2, 2012).

Ms. Marlene H. Dortch
May 8, 2012
Page 5

As Verizon Wireless has previously noted, it plans to deploy [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL]³ Although sometimes useful to address increased demand, cell splitting can have limited benefits. As cell sites are placed more closely together, the benefits of additional sites diminish, particularly as compared with the zoning, equipment, construction and other expenses necessary to deploy the sites. Moreover, a cell split only provides a capacity benefit to three sectors at adjacent cell sites. For that same cost, the company can typically [BEGIN HIGHLY CONFIDENTIAL] [END HIGHLY CONFIDENTIAL] if it activates available spectrum. In addition, there are capital costs involved in building new sites, which ultimately are passed on to consumers, and time constraints that make deploying new spectrum more effective both for the network and the company's customers.

Verizon Wireless has been talking with its vendors about LTE Advanced features, and will continue to evaluate the benefits of this technology when available and deploy it to the extent that it benefits the network to meet demand. It is not clear at this time to what extent LTE Advanced features will improve capacity in the future. However, in any event, that technology may not be available to incorporate into devices until 2015 or beyond, which is not soon enough to meet the capacity constraints that will start to appear by year-end 2013 and continue to increase through 2015.

Market-by-Market Spectrum Constraints. As part of its demonstration of need for additional AWS spectrum to meet rapidly growing demand for 4G broadband, Verizon Wireless has filed maps of markets where it had initiated LTE service as of the end of 2011. The maps depict projected constraints of each LTE cell sector at the end of 2013 and/or 2015 based on data from the VPI. Verizon Wireless depicted each cell sector as green, yellow, or red, indicating whether the cell sector was not projected to be spectrum constrained (green), or conversely was projected to experience spectrum constraints. In yellow sectors, some customers are likely to experience decreases in speed. In red sectors, more customers are likely to experience more widespread and substantial degradation in speed and quality of their data services.

During a meeting on April 19, 2012, FCC Staff requested that Verizon Wireless submit an excel spreadsheet detailing by county the number of cell sectors that would be green, yellow, or red by the end of 2015. Verizon Wireless is providing the attached spreadsheet in response to this request, but notes the following limitations of the data presented in this format:

- A county-level tally of cell sectors does not provide accurate data on spectrum constraints experienced in a given county, because cell sites commonly serve multiple counties. Customers in a county may suffer lower speeds or service quality when they are served by a spectrum-constrained sector or cell site located in an adjacent county – but that sector or site will not show up in the data for that single county. Looking at data at the county level (or even the CMA containing that county) thus understates capacity constraints in counties;

³ *Id.*, ¶¶ 42-44.

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Ms. Marlene H. Dortch
May 8, 2012
Page 6

for example, the number of counties with red cell sectors understates the number of counties that will actually see significant constraints.

- Comparing the numbers across counties would be misleading. Two spectrum constrained cell sectors in a rural market can be as critical to the capacity needs of customers in that market as 50 spectrum constrained cell sectors in an urban market. Consumers in each market will incur lower speed or service quality.
- As discussed with FCC Staff, no data are provided in those counties where Verizon Wireless had not launched its LTE network as of the end of 2011. However, the company has announced it intends to expand LTE to all counties in its 3G EVDO footprint by mid-2013. And, it is Verizon Wireless' experience that growth in traffic demand in newly-launched LTE markets is similar to the projections in previously-launched markets. It would thus be inaccurate to assume that, for example, because only two of five counties in a CMA are served today, only 40% of the counties in that CMA would be spectrum-constrained by the end of 2015.
- The data only reflect a projection to the end of 2015. As discussed in the company's previous filings, data usage will exceed capacity as soon as 2013 in some markets and in progressively more markets after that year.
- The FCC does not license spectrum by counties. Accordingly, purchasers on the secondary market generally have to buy what spectrum licenses are available, as packaged by the seller. Nor do carriers build out networks based on county boundaries. Here, SpectrumCo and Cox hold Economic Area licenses each of which comprise many counties. The appropriate way to assess spectrum demands is thus to do so on an EA level, not on a county or CMA level.

Business Development Spectrum Valuation Document: Commission Staff asked Verizon Wireless to comment on a document entitled "11013 EA Output and WACC Analysis.xls" (Bates Number VZW-TPK-FCC-37822). The Verizon Wireless representatives explained that **[BEGIN HIGHLY CONFIDENTIAL]**

Ms. Marlene H. Dortch
May 8, 2012
Page 7

[END HIGHLY

CONFIDENTIAL]

Refarming: During the May 4 meeting, Commission Staff asked Mr. Stone about his statement in his Supplemental Declaration that initially, refarming opportunities for cellular and PCS spectrum will occur with 1.25x1.25 MHz channels, but that “[a] 1.25x1.25 MHz LTE channel can only support peak speeds that are 1/8th of the peak speeds on a 10x10 MHz channel, and thus is not a viable solution due to the inconsistency in the customer experience.”⁴ Commission Staff asked whether, during periods of congestion, offloading users onto a 1.4x1.4 MHz LTE channel using PCS spectrum may provide a better experience than a fully-loaded 10x10 MHz channel.

Mr. Stone noted that the statement in his declaration compared only peak speeds and that a fully-loaded LTE 10x10 MHz channel would not offer the same experience. However, he reiterated that, at a minimum, Verizon Wireless will require 5x5 MHz channelization for LTE deployment in refarmed spectrum in order to make use of refarming due to the inconsistency in the customer experience when relying on smaller channels versus using a 10x10 MHz channel. Mr. Stone stated that customers would certainly notice the difference if forced onto smaller channels, and that the user experience would not meet the standard of service that Verizon Wireless customers have come to expect and that the company intends to offer.

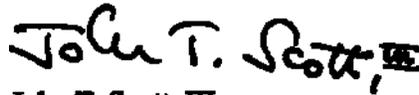
⁴ *Stone Supp. Decl.*, ¶ 48.

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Ms. Marlene H. Dortch
May 8, 2012
Page 8

This letter is being filed electronically 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 distinct "III" at the end.

John T. Scott, III

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