BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

In the Matter of	)	
	)	
Application of AT&T Mobility Spectrum LLC	)	WT Docket No. 14-145
and Club 42 CM Limited Partnership for	)	
Consent to Assign Licenses	)	

RESPONSE OF AT&T MOBILITY SPECTRUM LLC TO SUPPLEMENTAL INFORMATION REQUEST DATED FEBRUARY 19, 2015

March 9, 2015

Response of AT&T Mobility Spectrum LLC to Supplemental Information Request Dated February 19, 2015

March 9, 2015

Introduction

AT&T Mobility Spectrum LLC ("Mobility Spectrum"), an indirect wholly-owned subsidiary of AT&T Inc. (collectively, "AT&T") hereby provides this response (the "Response") to the letter dated February 19, 2015 from Roger Sherman, Chief of the Wireless Telecommunications Bureau of the Federal Communications Commission ("FCC" or "Commission"), and the Supplemental Information Request for AT&T attached thereto (collectively, the "Supplemental Request"). In its requests (individually referred to herein as "Request No. [#]"), the FCC asks AT&T (sometimes referred to in the request as the "Company," as defined therein) to provide as soon as possible documents, data, and other information to complete the Commission's review of the application of Mobility Spectrum and Club 42 CM Limited Partnership ("Club 42") for consent to the assignment of two Lower 700 MHz licenses from Club 42 to Mobility Spectrum.

Consistent with AT&T's discussions with Commission staff on similar requests, AT&T's responses are based on a review of available documents that are likely to contain responsive information and inquiry of those individuals and available sources that are likely to have relevant information. To the extent there are additional documents responsive to the Supplemental Request, they are produced and have been labeled with Bates numbers sequential to those used in AT&T's response to the General Information Request.

The Supplemental Request calls for AT&T to submit and/or reference certain information and documents that are sensitive from a commercial, competitive, and financial perspective, and that AT&T would not reveal in the ordinary course of business to the public or its competitors.

AT&T is submitting information and documents on a Confidential and Highly Confidential basis pursuant to the Joint Protective Order for this proceeding that was issued on September 22, 2014. The inadvertent inclusion of any material that is subject to an assertion of the attorney-client, attorney work-product, or other applicable privilege is not intended as a waiver of such privilege.

In the public version of the Response, AT&T has redacted Highly Confidential Information and marked the redactions with "**[BEGIN AT&T HIGHLY CONFIDENTIAL INFORMATION]** . . . **[END AT&T HIGHLY CONFIDENTIAL INFORMATION]**". Additionally, AT&T has redacted information obtained from the Numbering Resource Utilization and Forecast ("NRUF") and Local Number Portability ("LNP") placed in the record by the Commission pursuant to its Protective Order of September 22, 2014. AT&T has marked these redactions with "**[BEGIN NRUF/LNP INFORMATION] . . . [END NRUF/LNP INFORMATION]**." Finally, AT&T has redacted Highly Confidential information contained in Club 42's response to its General Information Request, and has marked the redactions with "**[BEGIN CLUB 42 HIGHLY CONFIDENTIAL INFORMATION] . . .[END CLUB 42 HIGHLY CONFIDENTIAL INFORMATION]**."

The redacted Response is marked "**REDACTED – FOR PUBLIC INSPECTION**" and is being filed electronically in the Commission's Electronic Comment Filing System ("ECFS"). The Highly Confidential, unredacted Response is marked, "**HIGHLY CONFIDENTIAL INFORMATION – SUBJECT TO JOINT PROTECTIVE ORDER IN WT DOCKET NO. 14-145 BEFORE THE FEDERAL COMMUNICATIONS COMMISSION – ADDITIONAL COPYING RESTRICTED**" and is being delivered to the Secretary. Additional copies of the unredacted Response are being delivered as instructed in the Supplemental Request.

In accordance with the Supplemental Request and the Joint Protective Order, unredacted copies of Highly Confidential documents are marked "**HIGHLY CONFIDENTIAL INFORMATION – SUBJECT TO JOINT PROTECTIVE ORDER IN WT DOCKET NO. 14-145 BEFORE THE FEDERAL COMMUNICATIONS COMMISSION – ADDITIONAL COPYING RESTRICTED**." Pursuant to the Supplemental Request, the Highly Confidential documents are being delivered to Scott Patrick of the Wireless Telecommunications Bureau.[1]

[1] In addition, AT&T is providing the Commission with updated shapefiles pursuant to Request No. 3 of the original General Information Request. In addition, AT&T notes that its narrative response to the General Information Request inadvertently included inaccurate data on the population covered by LTE in each market. The enclosed shapefiles represent the most current data regarding LTE network coverage.

RESPONSES

1. REQUEST:

In California 5-San Luis Obispo, the Company already holds 49 megahertz of below-1-GHz spectrum, which comprises more than one-third of suitable and available below-1-GHz spectrum and, as a result of the Proposed Transaction, would increase its holdings to 61 megahertz of such spectrum. Provide a detailed explanation:

a. Of how the Company is maximizing its use of its current spectrum holdings, and how the acquisition of additional below-1-GHz spectrum is necessary to maintain, enhance, or expand mobile telephony/broadband services provided to consumers

RESPONSE:

As an initial matter, AT&T contends that it in fact currently holds only 37 megahertz of true below-1-GHz spectrum in the California 5 – San Luis Obispo Cellular Market Area (the "Market") and that the unpaired Lower 700 MHz D and E Blocks should not be included in the Commission's analysis of whether an enhanced review is necessary. The Commission's "enhanced factor" review is premised on its finding that possession of spectrum holdings below 1 GHz confers certain competitive advantages.[2] In particular, the Commission notes advantages of below-1-GHz spectrum that it contends are not available in other bands.[3] However, these findings are inapplicable in the case of the unpaired Lower 700 MHz D and E Blocks. This is due to the fact that: (1) these blocks currently can only be used in conjunction with spectrum above 1 GHz, rendering moot many of the "inherent benefits" of spectrum below 1 GHz, and (2) AT&T's use of the D and E blocks is governed by unique technical limitations.

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[2] *Policies Regarding Mobile Spectrum Holdings*, Report and Order, 29 FCC Rcd 6133, ¶ 283 (2014) ("*Mobile Spectrum Holdings Order*") (also referencing Section III.C. of the *Mobile Spectrum Holdings Order*).

[3] *See id.* ¶¶ 47-57 (citing benefits of in-building penetration, increased throughput, frequency propagation, and improved deployment in rural areas).

Because the D and E blocks can only be used in conjunction with spectrum above 1 GHz, its use is necessarily limited by the capabilities of the spectrum it is partnered with. As AT&T has previously explained, it is unable to integrate this unpaired spectrum with its 700 MHz LTE network.[4] This is because pairing the Lower 700 MHz B or C Blocks with the Lower 700 MHz D or E Blocks would create an unacceptable level of self-interference within a device supporting both blocks.[5] Such self-interference occurs because these blocks are directly adjacent, and there is not enough frequency separation to mitigate interference.[6] For this reason, AT&T plans to use this spectrum in conjunction with its higher-band holdings. However, for these bands to be used in tandem, the effective footprint of the Lower 700 MHz supplemental downlink spectrum must match that of the PCS or AWS-1 uplink spectrum, further decreasing the coverage/propagation benefits of this spectrum. And, any user of this service will still need to rely on higher-band spectrum for uplink transmissions, which will not carry the throughput or in-building coverage benefits associated with spectrum below 1 GHz. While use of unpaired 700 MHz spectrum for supplemental downlink will improve the communications it supplements, the benefits achieved will not be fully equivalent to those seen in paired 700 MHz spectrum.[7]

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[4] Application of Qualcomm Incorporated and AT&T's Mobility Spectrum LLC for Assignment of Authorization, File No. 0004566825 (filed Jan. 13, 2011, amended Feb. 9, 2011), Public Interest Statement at 16.

[5] *Id.*

[6] *Id.*

[7] Due to the carrier positions in the lower 700 MHz band, the Band 29 downlink LTE signal can mix with the Band 17 downlink via a mechanism referred to as Passive Intermodulation Interference ("PIM") and cause significant interference into the Band 17 uplink receiver at the base station. This PIM is typically generated when the two carriers illuminate an external source, and in this case, create a third order intermodulation product ("IM3") that falls within the Band 17 uplink band. This effect has been observed in deployment despite the fact that the Band 29 and Band 17 transmit signals are physically located on different antennas with

As a practical matter, AT&T must operate at a lower power level on the D and E Blocks than it may on other spectrum below 1 GHz, negating many of the benefits the Commission associates with low-band spectrum. Specifically, AT&T has found significant Passive Intermodulation ("PIM") effects with use of the D and E Block spectrum in conjunction with the B and C Blocks. AT&T must do substantial work on its towers to combat this interference and, in a significant number of cases, even that is ineffective and power must be substantially reduced—by approximately 6-9 dB—to limit the impact on B Block operations. Because of this need to operate at reduced power, AT&T is not able to achieve coverage and propagation benefits commensurate with paired low band spectrum.

The bedrock of enhanced factor analysis was the notion that spectrum below 1 GHz is superior to higher-band spectrum, and that acquisition of this spectrum would lead to considerable competitive advantages for the acquirer. Because the Lower 700 MHz D and E Block spectrum cannot fully achieve the benefits cited by the Commission in support of disparate treatment of low-band spectrum, it should not be attributed to licensees for purposes of enhanced factor analysis. While the Club 42 transaction (and, indeed, most 700 MHz acquisitions by AT&T) would qualify for enhanced factor analysis regardless of whether unpaired spectrum is considered, such transactions properly would not trigger the requirement that "the demonstration of the public interest benefits of the proposed transaction would need to clearly outweigh the potential public interest harms associated with such additional concentration of below-1-GHz spectrum, irrespective of other factors."[8]

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greater than 30 dB antenna isolation. Thus, to limit the effect of PIM on the Band 17 uplink, the Band 29 transmit power may have to be reduced by as much 6 to 9 dB compared to the PCS or AWS-1 transmit signal power.

[8] *Mobile Spectrum Holdings Order* ¶ 287.

AT&T's response to the General Information Request included information regarding its spectrum holdings and usage in the Market.[9] At that time,[10] AT&T held 25 megahertz of cellular spectrum, **[BEGIN AT&T HIGHLY CONFIDENTIAL INFORMATION]**

[END AT&T HIGHLY CONFIDENTIAL INFORMATION][11] AT&T also held 45 megahertz of Broadband PCS spectrum, **[BEGIN AT&T HIGHLY CONFIDENTIAL INFORMATION]** **[END AT&T HIGHLY CONFIDENTIAL INFORMATION]**[12] AT&T held 12 megahertz of paired 700 MHz spectrum, **[BEGIN AT&T HIGHLY CONFIDENTIAL INFORMATION]** **[END AT&T HIGHLY CONFIDENTIAL INFORMATION]**, as well as twelve megahertz of unpaired 700 MHz spectrum.[13] AT&T plans **[BEGIN AT&T HIGHLY CONFIDENTIAL INFORMATION]**

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9 *See* ATT-C42-000080.

10 At the time of AT&T's response to the General Information Request, AT&T and T-Mobile had applications pending before the Commission for an exchange of spectrum in several markets, including San Luis Obispo. *See* ULS File No. 0006341062. The parties consummated this transaction on November 24, 2014. *Id.* As a result of this spectrum exchange, AT&T assigned five megahertz of PCS spectrum to T-Mobile, and exchanged its AWS-1 E Block license for T-Mobile's AWS-1 A Block license. *Id.* This caused AT&T's AWS-1 holdings to increase by 10 megahertz, and its PCS holdings to decrease by five megahertz. Since the consummation of this transaction, **[BEGIN AT&T HIGHLY CONFIDENTIAL INFORMATION]** **[END AT&T HIGHLY CONFIDENTIAL INFORMATION]**

11 *Id.*

12 *Id.*

13 *Id.*

[END AT&T HIGHLY CONFIDENTIAL INFORMATION] However, AT&T notes that limits on the use of unpaired 700 MHz spectrum render it incomparable with other spectrum below 1 GHz. Finally, AT&T held 10 megahertz of AWS-1 spectrum, **[BEGIN AT&T HIGHLY CONFIDENTIAL INFORMATION]**

[END AT&T HIGHLY CONFIDENTIAL INFORMATION][14]

The acquisition of the Club 42 License in the San Luis Obispo CMA is necessary to maintain, enhance, and/or expand AT&T's mobile services for several reasons. As an initial matter, AT&T has limited options for 10 x 10 MHz LTE carrier deployments. As explained above, **[BEGIN AT&T HIGHLY CONFIDENTIAL INFORMATION]**

[END AT&T HIGHLY CONFIDENTIAL INFORMATION] AT&T is efficiently and effectively using its cellular and PCS spectrum holdings in this market. Acquisition of the Club 42 License in San Luis Obispo will make AT&T's spectrum holdings and LTE deployments more consistent with those in surrounding markets, where AT&T already holds the Lower 700 MHz B and C Blocks—this allows AT&T improved coverage and increased efficiency in market border areas because AT&T can manage the interference between markets more effectively.

While AT&T has documented its efforts to maximize the use of its current spectrum holdings to provide a high quality mobile experience to users in San Luis Obispo County (including efforts to optimize its LTE network),[15] AT&T must also respond to ever-increasing

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[14] *See* ATT-C42-000080.

[15] *See* ATT-C42000078.

traffic demands. In documents submitted with the General Information Request, AT&T **[BEGIN AT&T HIGHLY CONFIDENTIAL INFORMATION]**

[END AT&T HIGHLY CONFIDENTIAL INFORMATION][16] AT&T has attached more specific **[BEGIN AT&T HIGHLY CONFIDENTIAL INFORMATION]**

[END AT&T HIGHLY CONFIDENTIAL INFORMATION][17] And, recent months have shown **[BEGIN AT&T HIGHLY CONFIDENTIAL INFORMATION]** **[END AT&T HIGHLY CONFIDENTIAL INFORMATION]**[18] This is particularly pronounced **[BEGIN AT&T HIGHLY CONFIDENTIAL INFORMATION]**

[END AT&T HIGHLY CONFIDENTIAL INFORMATION][19] Acquisition of the Club 42 License will enable AT&T to increase the quality of service it offers to consumers in this market. By acquiring the Club 42 License, AT&T will be able to achieve significant gains in network reliability and performance. As an initial matter, AT&T will be able to expand its 700 MHz LTE deployment from 5 x 5 MHz to 10

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16 *See* ATT-C42-000079.

17 *See* ATT-C42000201.

18 *See* ATT-C42000197.

19 *See* ATT-C42000180-ATT-C42000181.

x 10 MHz. AT&T will also be increasing the total amount of bandwidth for LTE services from 20 MHz to 30 MHz, resulting in higher speeds and better throughput in the market. As AT&T explained in its response to the General Information Request, there are key performance benefits associated with this network expansion.

Deployment of 10 x 10 MHz LTE carriers – which this transaction will make possible for AT&T in the 700 MHz band – is a competitive necessity in today's mobile market. Indeed, as explained below, numerous other carriers in the market have spectrum suitable for 10 x 10 MHz LTE deployments. These competitors of AT&T have stressed that the ability to offer a 10 x 10 MHz or 20 x 20 MHZ LTE carrier has become a competitive imperative in today's market, and have expressed a strong desire to achieve contiguity of spectrum capable of supporting such operation.[20] This is because network speed and performance are key factors on which wireless companies compete with each other. And there are key performance gains associated with wider-bandwidth LTE deployments, as AT&T has previously noted in this proceeding.[21]

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[20] *See, e.g.,* Deutsche Telekom AG Application, File No. 0005446627, Exhibit 1, Description of Transaction and Public Interest Statement at Declaration of Mark McDiarmid ¶¶ 7-9 (citing the benefits of 10x10 MHz and 20x20 LTE deployments and stating that "T-Mobile USA's primary competitors proclaim their data speed advantages as well as the quality and reach of their network services in all of their marketing material. As such, T-Mobile USA must make every effort to deploy a deep and broad LTE network that provides data speeds and capabilities that are competitive with other wireless providers."); Application of Cellco Partnership d/b/a Verizon Wireless and T-Mobile License LLC for Consent to Assign Licenses, File No. 0005272585, Exhibit 1, Description of Transaction and Public Interest Statement at 4-5 (stating that the transaction will allow both T-Mobile and Verizon Wireless to obtain blocks of newly contiguous spectrum, and stating that "[o]perating on contiguous blocks of spectrum and aligning spectrum blocks in adjacent markets allows wireless providers to use frequencies for data transmissions otherwise dedicated to guard bands, provides efficiency benefits and access to greater capacity, and allows the Applicants to take better advantage of improved wideband technologies. Thus, the intra-market spectrum swaps will enhance competition and improve both Applicants' quality of services in the wireless marketplace.").

[21] *See* AT&T Response to General Information Request at 7-8.

b. Why this additional concentration of below-1-GHz spectrum, specifically, would not preclude rival service providers and potential new entrants from expanding or entering into this market.

AT&T's acquisition of the Club 42 License will not preclude rival service providers and potential new entrants from expanding or entering this market. This is in part because other carriers in the market already have access spectrum suitable for 10 x 10 MHz LTE deployments of their own:

- **DISH:** DISH has access to 20 MHz x 20 MHz of contiguous AWS4 spectrum, as well as a 10 MHz AWS-H Block and, now, has relationships with entities holding 25 MHz of AWS-3 spectrum. DISH has no legacy subscribers that would limit deployment in those bands.

- **Sprint:** Sprint has 20 MHz of contiguous PCS spectrum, as well as the 10 MHz G Block, and appears to have the entire BRS/EBS band—196 MHz of contiguous spectrum. Sprint has stated its intention to use its BRS/EBS holdings to deploy LTE, and have touted their large spectrum holdings as a key competitive advantage.[22]

- **T-Mobile:** T-Mobile has access to 20 MHz of contiguous PCS spectrum (B & E Blocks) and 40 MHz of contiguous AWS spectrum (D, E & F Blocks). While some of that spectrum is likely being used to support legacy GSM and UMTS subscribers, it has large swaths of contiguous bandwidth for LTE.[23]

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[22] Chuong Nguyen, "Sprint Chooses Radically Different Approach for LTE Network, And It May Pay Off," GottaBeMobile (Apr. 18, 2013), *available at* http://www.gottabemobile.com/2013/04/18/twitter-music-app-for-iphone-and-web-browsers-launches/ ("In essence, this will give Sprint roughly about a 20 X 20 channel for LTE when maximized, which is double the 10 X 10 channel that Verizon has for its LTE deployment and far more than the 5 X 5 channel that AT&T is limited to in select markets. . . .[Sprint Director of Solutions Engineering Kim Wade] says that essentially, this large chunk of bandwidth from Sprint and as part of its agreement with Clearwire will allow Sprint to deliver speeds up to 100 Mbps in the future."). Further, AT&T notes that Sprint also has access to 14 megahertz of ESMR spectrum in this market.

[23] News Release, T-Mobile, "Customer Data Proves T-Mobile Network Now Fastest 4G LTE in the U.S." (Jan. 8, 2014), *available at* http://newsroom.t-mobile.com/news/customer-data-proves-t-mobile-network-now-fastest-4g-lte-in-the-us.htm ("The company also revealed the continued rapid expansion of its nationwide LTE network to reach 209 million people, with 43 of the top 50 markets now served by 10+10 MHz LTE. . . . With the launch of T-Mobile Wideband LTE in North Dallas last November, T-Mobile beat another company milestone, delivering

- **Verizon:** In addition to its 25 MHz Cellular authorization, which is likely being utilized for legacy services, Verizon has a 22 MHz Upper 700 MHz license and 30 MHz of contiguous AWS spectrum. Verizon also recently acquired the 10 x 10 MHz AWS-3 J Block license in this market. In particular, Verizon has used its AWS-1 spectrum to significantly expand its LTE network.[24]

Further, this transaction does not have a preclusive effect because it is a spectrum-only transaction that does not impact market shares. In this market, **[BEGIN NRUF/LNP CONFIDENTIAL INFORMATION]**

[END NRUF/LNP CONFIDENTIAL INFORMATION][25] In addition, **[BEGIN NRUF/LNP CONFIDENTIAL INFORMATION]**

[END NRUF/LNP CONFIDENTIAL INFORMATION][26] Meanwhile, **[BEGIN NRUF/LNP CONFIDENTIAL INFORMATION]**

20+20 MHz LTE ahead of 2014, which is capable of peak download speeds of 150 Mbps. T-Mobile has measured download speeds of 147 Mbps and uplink speeds of up to 40 Mbps in North Dallas, meaning customers could download a 90-minute HD movie in under three minutes or a whole music album in 7 seconds."). Further, AT&T notes that T-Mobile also holds the Lower 700 MHz A Block license in this market.

[24] Kevin Fitchard, "Verizon Quietly Unleashes its LTE Monster, Tripling 4G Capacity in Major Cities," Gigaom (Dec. 5, 2013), *available at* https://gigaom.com/2013/12/05/verizon-quietly-unleashes-its-lte-monster-tripling-4g-capacity-in-major-cities/ ("Verizon is tapping the Advanced Wireless Services airwaves it acquired from the cable operators back in 2012, and these are no paltry frequencies. In every major city east of the Mississippi and in several western markets, Palmer said, Verizon has fielded LTE systems utilizing a full 40 MHz of spectrum, twice as big as the 20 MHz network it's spent the last three years rolling out nationwide. In some cities it couldn't piece together a 40 MHz block, but it has been able to get close: In San Francisco and Los Angeles, for instance, the new networks are hosted on 30 MHz of AWS spectrum.")

[25] Derived from NRUF/LNP data supplied in this proceeding.

[26] *Id.*

[END NRUF/LNP CONFIDENTIAL INFORMATION][27] In sum, AT&T's acquisition of the Club 42 License should not have any negative impact on competition in this market.

In addition, AT&T's acquisition of this spectrum cannot possibly be considered preclusive in nature. As Club 42 previously noted, **[BEGIN CLUB 42 HIGHLY CONFIDENTIAL INFORMATION]**

[END CLUB 42 HIGHLY CONFIDENTIAL INFORMATION][28] In addition, **[BEGIN CLUB 42 HIGHLY CONFIDENTIAL INFORMATION]**

[END CLUB 42 HIGHLY CONFIDENTIAL INFORMATION][29] Thus, this transaction cannot be seen as having a preclusive effect because [**BEGIN CLUB 42 HIGHLY CONFIDENTIAL INFORMATION]**

[END CLUB 42 HIGHLY CONFIDENTIAL INFORMATION][30]

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27 *Id.*

28 *See* Club 42 Response to General Information Request.

29 *Id.*

30 *Id.*

Additional documents responsive to the Supplemental Request are attached at Bates Numbers ATT-C42000177-ATT-C42000201.

REDACTED

Bates Numbers ATT-C42000177 through ATT-C42000201 have been redacted in their entirety as Highly Confidential Information