

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

| | | |
|---|---|----------------------------|
| In the Matter of |) | |
| |) | WT Docket No. 11-18 |
| Applications of |) | DA 11-252 |
| AT&T Mobility Spectrum LLC and |) | |
| QUALCOMM Incorporated |) | |
| |) | |
| for Consent to the Assignment of |) | File No. 0004566825 |
| Licenses and Authorizations |) | |

FILED/ACCEPTED
JUN - 3 2011
Federal Communications Commission
Office of the Secretary

**RESPONSE OF AT&T INC. TO
GENERAL INFORMATION REQUEST DATED MAY 20, 2011**

June 3, 2011

No. of Copies rec'd. 0+1
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**PARTIAL RESPONSE OF AT&T INC. TO
GENERAL INFORMATION REQUEST DATED MAY 20, 2011**

June 3, 2011

Introduction

AT&T Inc. (on behalf of its wholly-owned subsidiary AT&T Mobility Spectrum LLC) (“AT&T”) hereby provides a partial response (the “Partial Response”) to the letter dated May 20, 2011, from Ruth Milkman, Chief of the Wireless Telecommunications Bureau, and the General Information Request attached thereto (the “Request”).

The Commission asks a number of detailed questions about AT&T’s planned use of the Qualcomm Spectrum that cannot be answered with specificity at this time, because use of the unpaired Qualcomm Spectrum on AT&T’s LTE network requires additional standards-setting by appropriate bodies and the development of compatible equipment. As a result, AT&T estimates that it will be able to deploy the Qualcomm Spectrum to expand downlink capacity by late 2014 at the earliest.

Thus, while AT&T has tried to be fully responsive to the Commission’s requests, the details relating to the Qualcomm Spectrum that the Commission seeks in certain requests do not exist at this time.

With respect to the Commission’s document requests, AT&T is still collecting the tens of thousands of pages of documents requested by the Commission. Moreover, the Request calls for AT&T to submit information that is extremely sensitive from a commercial, competitive, and financial perspective, and that AT&T would not, in the normal course of its business, reveal to the public or to its competitors. AT&T and QUALCOMM Incorporated (“Qualcomm”) will separately request the issuance of a Second Protective Order in this proceeding to provide for additional protections for highly confidential information. Also, on June 2, 2011, AT&T

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requested an extension of time to file documents and highly confidential information by the latter of June 10th or five business days after the Commission releases a second protective order in this proceeding.

Accordingly, set forth in this Partial Response are AT&T's responses to the questions in the Request, but AT&T has redacted highly confidential material, and highly confidential attachments, for which AT&T has sought protection under a Second Protective Order. AT&T also has identified the responses that will be provided separately by Qualcomm in its response to the Request.

Where appropriate in this Partial Response, certain material is being submitted on a confidential basis pursuant to the Protective Order in this proceeding. The confidential, unredacted submission is marked "*CONFIDENTIAL INFORMATION - SUBJECT TO PROTECTIVE ORDER IN WT Docket NO. 11-18 BEFORE THE FEDERAL COMMUNICATIONS COMMISSION - ADDITIONAL COPYING PROHIBITED.*" A version redacting all confidential information and available to the public is being filed electronically in the Commission's Electronic Comment Filing System ("ECFS").

This Partial Response and our future production of highly confidential information and documents are subject to certain understandings with Commission Staff, including, but not limited to, the following:

- AT&T is providing today paper copies of its Partial Response and certain non-highly confidential attachments, and a CD containing Excel spreadsheets of certain non-confidential attachments in response to Request No. 2. We will provide an electronic copy of the Partial Response (including attachments) on the date we submit the responsive documents in Summation Enterprise load files, which date is the subject of AT&T's extension request.
- The Commission's request for "strategic plans, policies, analyses, reports and presentations," may be limited to plans, analyses and reports prepared for,

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presented to, reviewed by, discussed by, or considered by AT&T's board of directors or AT&T's executive management, or any member thereof.

- For agreed-upon custodian files, the date range for all information and document requests cover the period from January 1, 2009.

AT&T requests the return of all confidential material at the conclusion of this proceeding.

1. REQUEST:

Provide an organization chart and personnel directory in effect since January 1, 2009, for AT&T as a whole and for each of AT&T's facilities or divisions involved in any activity relating to any relevant product or relevant service.

RESPONSE:

AT&T does not maintain organizational charts during the normal course of business. For this proceeding, AT&T created a current organization chart that identified personnel, and it submitted the chart to the Wireless Telecommunications Bureau on June 1, 2011. A copy of that chart is located at Attachment 1.

2. REQUEST:

Provide a list, in Excel or other machine readable format as of the date of this Request, organized by state (including the District of Columbia, and Puerto Rico), and then by county (or municipality in the case of Puerto Rico), of each spectrum license that can be used in the provision of mobile wireless services that AT&T: (a) holds; (b) manages; (c) contracted to acquire; (d) is in negotiations to acquire; (e) plans to transfer or assign; (f) has an interest in; (g) has a joint venture or other business arrangement; or (h) leases to or from another person or entity. For each license, identify the (a) FIPS Code; (b) county (and the District of Columbia and each municipality in the case of Puerto Rico); (c) state; (d) market name, (e) market number, (e.g. CMA, MTA, and/or BTA), (f) spectrum type, (g) spectrum block (h) amount of spectrum, (i) the wireless technology format (e.g. GSM, EDGE, UMTS, HSPA, HSPA+, LTE) deployed at present and any future plans; (j) any measures of past/present/expected spectrum utilization (k) whether AT&T: (i) holds; (iii) manages; (iv) contracted to acquire; (v) is in negotiations to acquire; (vi) plans to transfer or assign; (vii) has an interest in; (viii) has a joint venture or other business arrangement; or (ix) leases to or from another person or entity.

RESPONSE:

Attachment 2.a is an Excel file that lists each spectrum license that can be used in the provision of mobile wireless services that AT&T holds. Pursuant to definition 1, we have interpreted “hold” to mean having a direct or indirect interest of 10 percent or more.

AT&T does not manage any spectrum license that can be used in the provision of mobile wireless services that is not otherwise listed in Attachment 2.a or 2.f.

Attachment 2.c is an Excel file that lists each spectrum license that can be used in the provision of mobile wireless services that AT&T has contracted to acquire. AT&T does not currently have wireless technology data in the format requested for most licenses listed in Attachment 2.c. In addition, AT&T has agreed to purchase the 33.8849 percent of Cincinnati SMSA Limited Partnership that it does not already hold, and that entity’s licenses are listed in Attachment 2.a.

Attachment 2.d is an Excel file that lists each spectrum license that can be used in the provision of mobile wireless services that AT&T is in negotiations to acquire. AT&T has no definitive plans to transfer or assign any spectrum license that can be used in the provision of mobile wireless services. **[Begin Highly Confidential Information]**

[End Highly Confidential Information] These licenses are listed in Attachment 2.e.

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Attachment 2.f is an Excel file that lists each spectrum license that can be used in the provision of mobile wireless services that AT&T has an interest in and that is not listed in the other attachments. The list of licenses in Attachment 2.a held by Puerto Rico Telephone Company was compiled from the FCC's Spectrum Dashboard. For those licenses, the wireless technology format column was deliberately left blank -- **[Begin Confidential Information]**

[End Confidential Information]. Based on publicly available information, AT&T's understanding is that Puerto Rico Telephone Company has deployed CDMA almost throughout Puerto Rico and overlaid that with GSM and, in many areas, UMTS and HSPA+.

AT&T has a joint operating agreement with the Local Exchange Carriers ("LECs") listed in Attachment 2.g. Under the agreement, the LECs are authorized retailers of AT&T wireless services, which they sell under the AT&T brand. However, the LECs own the licenses listed in Attachment 2.g and provide service in their license areas through their own facilities.

Attachment 2.h.1 is an Excel file that lists each spectrum license that can be used in the provision of mobile wireless services that AT&T leases to another person or entity.

Attachment 2.h.2 is an Excel file that lists each spectrum license that can be used in the provision of mobile wireless services that AT&T leases from another person or entity.

AT&T does not, in the ordinary course of business, separately track, on a license-by-license basis, the deployment of UMTS, HSPA and HSPA+, which are related technologies. Accordingly, Attachment 2 uses "UMTS" to indicate where any of those technologies may be deployed.

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WCS licenses are not suitable for mobile broadband service at this time, and AT&T is aware of no other licensees deploying a mobile broadband system in this service. WCS licenses thus are not included in response to this Request No. 2.

With respect to future plans for technology format, AT&T will be using its AWS and 700 MHz licenses to deploy its LTE network. As described in Request No. 13, AT&T also has submitted to the 3GPP standards organization a request for a specification that will permit AT&T to bond the Qualcomm Spectrum with 1900 MHz spectrum on its LTE network. AT&T's cellular and PCS licenses will continue to support GSM well into this decade and UMTS/HSPA/HSPA+ even longer.

AT&T does not, in the ordinary course of business, track spectrum utilization on a license-by-license basis. However, Attachment 2.j lists, on a cell site-by-cell site basis, identified by "USID" number, how AT&T's cellular and PCS spectrum is allocated between GSM and UMTS/HSPA/HSPA+ services from January 2009 through March 2011. Attachment 2.j.1 has data for 2009, Attachment 2.j.2 has data for 2010, and Attachment 2.j.3 has data for 2011.

3. REQUEST:

On Page 13 of the Public Interest Statement, the Applicants state that “AT&T plans to begin LTE deployment in the middle of this year over its 700 MHz and AWS spectrum, which it expects largely to complete by the end of 2013.”

- i. For all CMAs, discuss in detail (on a CMA by CMA basis) these baseline AT&T plans, capacity needs, and timeframe for deploying an LTE network, marketing any relevant services and products, and making changes to any service and pricing plans (with the corresponding pricing assumptions) (*i.e.*, absent both the Proposed Transaction and the proposed AT&T/Deutsche Telekom-T-Mobile merger). Discuss, in detail, how and to what extent the Proposed Transaction would affect these plans, capacity needs, and timeframes, separately assuming that the proposed AT&T/Deutsche Telekom-T-Mobile merger has been approved and assuming that the proposed AT&T/Deutsche Telekom-T-Mobile merger has not been approved. Provide all strategic plans, policies, analyses, reports and presentations prepared on or after January 1, 2007, discussing these issues.**

RESPONSE:

AT&T’s pre-merger plan for LTE deployment, affirmed in January 2011, was to cover approximately 80 percent of the U.S. population. With the AT&T/Deutsche Telekom-T-Mobile USA merger, AT&T will have the scale, spectrum and other resources to expand LTE deployment to approximately 97 percent of the U.S. population. In Attachment 3.i.1, AT&T has provided an Excel file “AT&T LTE Deployment” setting forth AT&T’s pre-merger planned roll-out of LTE service by each CMA and by state and county (including the District of Columbia and each municipality within Puerto Rico) as well as AT&T’s proposed LTE coverage with the T-Mobile USA merger.¹

¹ **[Begin Confidential Information]**

[End Confidential Information] The information presented in this chart is subject to future developments based on a range of factors such as zoning, equipment availability, capital budgeting, etc.

[Begin Confidential Information]

[End Confidential Information] But, AT&T expects such build to be completed within six years of closing.

Because the 700 MHz spectrum that would be acquired in the Proposed Transaction is unpaired and must be bonded with blocks of existing spectrum to be used for LTE service, it can be used only to augment downlink capacity in areas where AT&T already has spectrum. Although there is benefit to augmented downlink capacity, the Qualcomm Spectrum, standing alone, will not affect the footprint of AT&T's LTE deployment either with or without approval of the AT&T/Deutsche Telekom- T-Mobile USA merger. Moreover, AT&T estimates that the Qualcomm Spectrum will not be available for LTE use until late 2014 at the earliest. Absent the AT&T/T-Mobile transaction, AT&T expects to deploy LTE to approximately 80% of the U.S. population by the end of 2013 and has no current plans for any further LTE deployment.

[Begin Confidential Information]

[End Confidential Information] AT&T has provided an excel file with the Corporate Strategy group's most recent analysis in Attachment 3.i.2.

For LTE pricing, **[Begin Highly Confidential Information]**

[End Highly Confidential Information]

The current marketing plan for LTE takes a three-stage approach. **[Begin Highly Confidential Information]**

[End Highly Confidential Information].

Because, as noted above, the Qualcomm Spectrum does not affect AT&T's current planned LTE footprint, the Proposed Transaction will not affect AT&T's current marketing or pricing planning.

AT&T's planning regarding integration of T-Mobile USA is necessarily preliminary at this stage; consequently, AT&T has no specific plans regarding marketing or pricing after the completion of that acquisition and thus is unable to discuss what, if any, impact the Proposed Transaction will have on those plans.

AT&T will provide additional plans, analyses and reports responsive to this request, if any, at a later date.

Footnote continued from previous page

=wireless-networks-general|mk-att-wireless-networks; Press Release, AT&T Inc., AT&T to Roll Out 4G LTE in Houston (May 25, 2011), *available at* [http://www.att.com/gen/press-room?pid=19874&cdvn=news&newsarticleid=31955&mapcode=mk-att-wireless-networks|wireless](http://www.att.com/gen/press-room?pid=19874&cdvn=news&newsarticleid=31955&mapcode=mk-att-wireless-networks|wireless;); Press Release, AT&T Inc., AT&T to Roll Out 4G LTE in San Antonio (May 25, 2011), *available at* <http://www.att.com/gen/press-room?pid=19877&cdvn=news&newsarticleid=31958&mapcode=wireless-networks-general|wireless>.

REQUEST:

- ii. **For all CMAs, describe in detail (on a CMA-by-CMA basis) the current and projected uplink and downlink data usage by your current and projected customer base, and the corresponding pricing assumptions, technologies and services currently used or projected to be used through 2014. Provide projections for the baseline case (*i.e.*, absent both the Proposed Transaction and the proposed AT&T/Deutsche Telekom-T -Mobile merger), as well as two separate projections showing the impact of the Proposed Transaction: (a) for circumstances as set forth in the Proposed Transaction (*i.e.*, absent any AT&T/Deutsche Telekom-T -Mobile merger), and (b) for circumstances that assume the AT&T/Deutsche Telekom-T-Mobile merger has been approved.**

RESPONSE:

To the extent this sub-specification requests information about all mobile wireless services, AT&T believes that it is not relevant to the proposed transaction because the proposed transaction is an acquisition of unpaired 700 MHz spectrum that only can be utilized with existing spectrum⁴ and will only be used for downlink and not uplink, and because AT&T plans to utilize the spectrum acquired from Qualcomm to pair with spectrum AT&T uses for its LTE network. It is possible that documents produced in response to Request No. 25 below contain some information responsive to this request.

As discussed above in response to specification 3.i of this request, **[Begin Confidential Information]**

[End Confidential Information] AT&T has provided an Excel file with the Corporate Strategy group's most recent analysis in Attachment 3.i.2. As discussed further below in response to

⁴ AT&T will acquire only 6 MHz of Lower 700 MHz D block spectrum nationwide. AT&T will acquire Qualcomm's Lower 700 MHz E block licenses in the New York, Los Angeles, San Francisco, Boston, and Philadelphia Economic Areas, which will give AT&T a total of 12 MHz of capacity in those areas.

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Request No. 10, AT&T's data traffic has increased over 8,000 percent from 2007 to 2010. These trends are expected to continue. It has been AT&T's experience that customer usage increases as faster data speeds are deployed. However, because AT&T is in the early stages of its LTE deployment and does not currently have any LTE customers, at present, AT&T does not have information, on a CMA-by-CMA basis, regarding data usage by its current and projected LTE customer base. Similarly, AT&T does not have information regarding projected data usage by its current and projected LTE customer base taking into account the Proposed Transaction.

The T-Mobile USA acquisition will not change how AT&T plans to use the spectrum it acquires through the Proposed Transaction to supplement downlink capacity. Once all the necessary supplemental downlink specifications are established and network and customer equipment is available, AT&T plans to utilize the Qualcomm Spectrum to support its LTE deployment, regardless of whether or not the T-Mobile USA transaction is consummated. The larger LTE footprint resulting from the T-Mobile USA acquisition may allow AT&T to utilize the Qualcomm Spectrum for supplemental downlink purposes in more areas, thus benefitting more people. The Proposed Transaction, standing alone, will not expand AT&T's planned LTE coverage now, or when the Qualcomm Spectrum ultimately becomes available for use.

4. **REQUEST:**

For all CMAs, discuss (on a CMA-by-CMA basis) AT&T's current and projected capacity and bandwidth requirements for mobile wireless services, corresponding covered population, and corresponding pricing assumptions. Include the amount and type of spectrum required by AT&T to provide current and projected relevant services and services that would use the LTE network for AT&T's retail subscribers. Explain precisely why AT&T believes it is capacity constrained, including how and where such asserted capacity constraints affect AT&T's current and projected ability to provide mobile wireless services to its customers, with any relevant pricing assumptions. Provide current and projected information for the baseline case (*i.e.*, absent both the Proposed Transaction and the proposed AT&T/Deutsche Telekom-T-Mobile merger), as well as separate projections showing the impact of the Proposed Transaction: (a) for circumstances as set forth in the Proposed Transaction (*i.e.*, absent any AT&T/Deutsche Telekom-T-Mobile merger), and (b) for circumstances that assume the AT&T/Deutsche Telekom-T-Mobile merger has been approved.

RESPONSE:

As the Proposed Transaction is an acquisition of unpaired 700 MHz spectrum that only can be utilized with existing spectrum, and in light of the fact that AT&T plans to utilize the spectrum acquired from Qualcomm to pair with spectrum AT&T uses for its LTE network, AT&T does not believe that questions regarding all mobile wireless services are relevant to the issues currently before the Commission on the Proposed Transaction. AT&T is in the early stages of its LTE build-out. **[Begin Confidential Information]**

[End

Confidential Information]

⁵ AT&T does not maintain in the ordinary course of business records that show the amount of spectrum required to provide mobile wireless services. Indeed, the amount of spectrum "required" to provide service depends on a number of constantly shifting factors within each

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As discussed above, however, AT&T's Corporate Strategy group **[Begin Confidential Information]**

[End Confidential Information] As described above, that information is provided in Attachment 3.i.2.

The T-Mobile USA acquisition will not change the purposes for which AT&T plans to use the spectrum it will acquire through the Proposed Transaction. After the T-Mobile USA acquisition is complete, AT&T may utilize the Qualcomm Spectrum to expand downlink capacity for LTE services on the spectrum acquired from T-Mobile USA, but the spectrum from the Proposed Transaction, standing alone, will not expand AT&T's footprint now, or when the Qualcomm Spectrum becomes available for use.

5. REQUEST:

Explain (a) types of mobile wireless services and applications that would benefit from use of a supplemental downlink; (b) how the use of supplemental downlink technology can provide efficiencies in the provision of those mobile wireless services; and (c) any projected efficiencies that a supplemental downlink technology, when combined with technology on paired spectrum, can bring in the provision of mobile wireless services. Provide all strategic plans, policies, analyses, reports and presentations discussing these issues.

RESPONSE:

Supplemental downlink technology will be used to bond the Lower D and E block spectrum with AT&T's paired spectrum. The resulting additional downlink capacity will help

Footnote continued from previous page
market, including changes in actual and anticipated demand, subscriber profiles, the geographic landscape, the number and height of buildings, technological advancements, and desired service quality, among many others. Because AT&T is in the early stages of its LTE build-out, it would be difficult in any event to quantify on a CMA-by-CMA basis the amount and type of spectrum "required" for LTE service. **[Begin Confidential Information]**

Confidential Information]

[End

address the asymmetry of data flow that results from wireless broadband users currently consuming more downlink than uplink capacity. Although this ratio is expected to change over time, the additional capacity (when available) would help relieve downlink congestion for LTE services. However, such technology and the unpaired spectrum that is the subject of this transaction will not solve AT&T's total spectrum and capacity needs.

There also will be an improvement in a customer's experience with LTE service and applications. For example, customers who use iPads and other tablets which will support this capability or devices with large screens will notice improvements in speed and performance of high-resolution applications and download, and also may experience a more seamless video or gaming experience. Customers will experience faster, more consistent, and more reliable LTE download services, particularly during periods of peak use – thus permitting the downloading of videos, files, and other services in as little as half the time. (Actual customer experience will depend on a number of factors, including system peak throughput and capacity, where a user is located, number of users in the area, backhaul capacities, traffic characteristics of users, customer device type and capabilities, local interference, mobility speed, and various factors related to network build and terrain.)

A discussion of the efficiency gains from supplemental downlink requested in 5(b)-(c) is set forth in the response to Request No. 6.

AT&T will provide plans, analyses and reports responsive to this request, if any, at a later date.

6. REQUEST

On page 17 of the Public Interest Statement, the Applicants state that “the Qualcomm Spectrum substantially will boost the capacity that otherwise would have been available.” Quantify how the acquisition of the spectrum assets will substantially boost capacity, including the number of customers affected, speed of uplink and downlink, and service quality: (a) for circumstances as set forth in the Proposed Transaction (i.e., absent any AT&T/Deutsche Telekom-T-Mobile merger), and (b) for circumstances that assume the AT&T/Deutsche Telekom-T-Mobile merger has been approved.

RESPONSE:

The general characteristics and effects of the use of the supplemental downlink technology that the Applicants propose are clear. Because data downlink traffic far exceeds data uplink traffic in today’s subscriber usage profile on mobile networks at this time, a major constraint on spectrum utility and capacity arises from the limitations on downlink capacity and the demands placed on the half of the paired spectrum used for downlinks. That is precisely the constraint that asymmetrical carrier aggregation (*i.e.*, supplemental downlink) addresses, and it does so by increasing the available downlink spectrum in a particular affected service area, with increased bandwidth producing increases in capacity over that available in the absence of the use of this carrier aggregation technique. The increased downlink spectrum permits efficiencies gains. In particular, the broader block of spectrum permits more efficient handling of bursty traffic. This effectively increases the utilization efficiency and capacity of both the initial downlink spectrum and the supplemental downlink spectrum. There are limits, however, on the ability to quantify in detail the particular operational characteristics of this type of carrier aggregation and how the supplemental downlink will function in particular operational settings. For LTE Advanced, carriers that intend to use the technology are still engaged in standards-setting and decision-making processes related to the particular operational characteristics of aspects of the supplemental downlink technology, particularly as used in the particular

configuration suitable for Applicants. Moreover, the additional capacity using spectrum bonding technology will not solve a carrier's spectrum constraints if consumer demand for services and applications exceeds the capacity of the additional spectrum. And, carriers may need additional paired spectrum with uplink capability to address the expected increase in uplink traffic in the future.

Tests and simulations of the supplemental downlink technology do, however, provide a sound basis to address the quantification of the boost in capacity that the technology can be anticipated to achieve. As to speed of downlink and related capacity increases, materials prepared by Qualcomm provide quantifications under the particular simulation assumptions chosen of increases in burst data rates.⁶ Qualcomm's materials also address the number of customers that will be affected by the use of supplemental downlink technology.⁷

The overall real-world gains are dependent on the amount of spectrum in the original downlink, the amount of spectrum in the supplemental downlink, the specific nature of the application traffic, and the scheduling algorithms in the LTE network equipment. AT&T will be highly motivated to create the best possible combinations and highest possible efficiencies in all regions based on the overall available spectrum. This quantification applies for both the scenario that anticipates a merger between AT&T- T-Mobile USA and the scenario which does not.

Finally, service quality would increase as a result of the use of supplemental downlink technology. Customers will experience a reduction in latency as the system becomes more

⁶ See Qualcomm, Supplemental Downlink Demo for FCC, May 11, 2011 ("SDL Demo") (Attachment 6-1); LTE Carrier Aggregation Performance for AT&T, Oct. 3, 2010 ("LTE CA") (Attachment 6-2).

⁷ See SDL Demo, at 3.

loaded and delay increases.⁸ This positive effect on customer service would generally be independent of the AT&T– T-Mobile USA merger.

Again, the indications of quantifications set out above are based on particular scenarios and technical assumptions. The increases in performance will vary depending on the relationship between the size of the channels used for downlink and uplink compared to the size of the channel used for supplemental downlink.

In short, the supplemental downlink technology will permit AT&T to increase the downlink capacity on the LTE network by bonding the underutilized Qualcomm Spectrum. As a result, AT&T will be able to support more customers than it could have otherwise with some improvements in a customer's mobile wireless experience. But such technology and the unpaired spectrum that AT&T will acquire will not solve AT&T's total capacity and spectrum needs.

7. REQUEST:

Provide all strategic plans, policies, analyses, reports and presentations, from January 1, 2007 to the present, discussing possible constraints in capacity or in increasing capacity to serve current and potential future customers, including:

- i. Acquisition of new spectrum;**
- ii. Plans to increase network capacity using existing spectrum;**
- iii. Alternative solutions to spectrum constraint problems;**
- iv. Repurposing spectrum; and**
- v. Constraints other than spectrum (e.g., backhaul).**

⁸ See LTE CA, at 7.

RESPONSE:

AT&T will provide strategic plans, analyses and reports responsive to this request, if any, at a later date.

8. REQUEST:

On page 14 of the Public Interest Statement, the Applicants state that the Qualcomm spectrum would enable AT&T to add "substantial capacity on its LTE network," and "provide a more robust and competitive service." Explain in detail and provide all documents that discuss why the expanded capacity made possible by the supplemental downlink technology would be needed for AT&T to provide a more robust and competitive service. The information in response to this question should be provided separately for the following circumstances: (a) for circumstances as set forth in the Proposed Transaction (*i.e.*, absent any AT&T/Deutsche Telekom-T-Mobile merger), and (b) for circumstances that assume the AT&T/Deutsche Telekom-T-Mobile merger has been approved.

RESPONSE:

a. The Proposed Transaction will enable AT&T to expand capacity to provide services over the LTE network by late 2014 at the earliest. As discussed in the Public Interest Statement,⁹ AT&T faces significant capacity constraints due to consumers' exploding demand for wireless broadband services. In order to stay competitive, AT&T must expand capacity to address this demand. Consumers' demand for wireless broadband services is currently asymmetrical, because users most often require more downlink than uplink capacity for the consumption of video and other data-heavy media content.¹⁰ The Proposed Transaction helps AT&T to address the asymmetry by expanding AT&T's LTE downlink capacity. However, the unpaired spectrum that is the subject of this transaction will not solve AT&T's total spectrum and capacity needs.

⁹ *In the Matter of Applications of AT&T Mobility Spectrum LLC and Qualcomm Incorporated for Consent to the Assignment of Licenses and Authorizations*, WT Dkt No. 11-18, Public Interest Statement, at 14 (Jan. 13, 2011) ("Public Interest Statement").

¹⁰ *Id.* at 14-15.

In light of the asymmetrical consumer demand for wireless broadband services, AT&T will bond existing spectrum with the Qualcomm Spectrum to expand its LTE downlink capacity.

As discussed in the declaration of Kristin Rinne:

Supplemental downlink technology will allow AT&T to use Qualcomm's unpaired 700 MHz spectrum in conjunction with AT&T's paired spectrum, thereby permitting substantial capacity gains. The technology facilitates the bonding of non-contiguous spectrum onto a single wider channel, which permits carriers to address the asymmetry of data flows between downlink and uplink channels. That asymmetry exists because wireless broadband users most often require far more downlink than uplink capacity. Such asymmetric flow results, for example, from the consumption of video and other data-heavy media content with mostly one-sided data flows.¹¹

The proposed transaction will help AT&T to handle the increasing demands of consumers downloading large amounts of data and utilizing data-intensive applications and services on its LTE network.¹² However, while helping to alleviate the demands that will be placed on AT&T's network, the technology will not resolve AT&T's current and growing need for additional capacity and spectrum.

b. As noted above, AT&T's acquisition of T-Mobile USA will not change the purposes for which the Qualcomm Spectrum will be used. AT&T does anticipate, however, that it may be able to pair the Qualcomm 700 MHz spectrum it will acquire through the Proposed Transaction with spectrum it acquires through the acquisition of T-Mobile USA. Thus, the Proposed Transaction will add capacity and enhance network performance in areas where AT&T already has spectrum, including spectrum that it may acquire from T-Mobile USA. As discussed above

¹¹ *In the Matter of Applications of AT&T Mobility Spectrum LLC and Qualcomm Incorporated for Consent to the Assignment of Licenses and Authorizations*, WT Dkt No. 11-18, Declaration of Kristin S. Rinne, ¶ 6 (Jan. 13, 2011) ("Rinne Decl.").

¹² Public Interest Statement at 17.

in response to specification 3(ii), the larger LTE footprint resulting from the T-Mobile USA acquisition may enable AT&T to deploy a more robust LTE product in more areas. The two transactions are not substitutes, but are complementary. While the two transactions are distinctly different and serve different purposes, the Qualcomm Spectrum can be used in the future to expand downlink capacity on spectrum that AT&T currently has or that AT&T acquires from T-Mobile USA. However, the acquisition of the Qualcomm Spectrum will not resolve AT&T's current or future capacity needs. AT&T will be gaining only 6 MHz of unpaired spectrum in most of the country, and even where it obtains 12 MHz, the spectrum will be unpaired and limited for downlink capacity.

AT&T will provide documents responsive to this request, if any, at a later date.

9. REQUEST

On pages 6-7 of the Rinne Declaration, it states that “[t]he addition of the Qualcomm Spectrum to the LTE network will result in trunking efficiency gains and higher downlink peak speeds, a significant increase in throughput, and lower latencies in the network.” Provide all strategic plans, policies, analyses, reports, and presentations, including any feasibility studies, that discuss trunking as well as other efficiency gains, higher downlink peak speeds, increased throughput, and lower latencies that may result from this supplemental downlink capacity for different user applications. Provide as well detailed estimates of the magnitude of increases in all efficiencies, including spectrum efficiency, that may result from the use of Qualcomm's spectrum to provide AT&T with supplemental downlink capacity.

RESPONSE:

The term “trunking efficiency gains” is intended to capture the various efficiencies that will be realized as a result of the increased performance on downlink channels, including increases in downlink peak speeds, lower latency, and increased user throughput. An estimate of the magnitude of these efficiencies is set forth in the response to Request No. 6.

AT&T will provide plans, analyses and reports responsive to this request, if any, at a later date.

10. REQUEST:

On page 15 of the Public Interest Statement, the Applicants state that “AT&T and likely other carriers will make significant use of supplemental downlink technology as they strive to meet consumers’ seemingly ever-growing appetite for wireless broadband services.” In support of this assertion, on pages 2-3 of her Declaration, Dr. Rinne notes an expectation that AT&T and other providers in the United States and around the world, will turn to supplemental downlink “as they attempt to efficiently manage their spectrum to help meet consumers’ increasing demand for wireless broadband services.” Explain in detail the basis for these statements. Identify the other U.S. providers and define “wireless broadband services” as used by Ms. Rinne in this context. Provide all documents discussing this issue, including documents that discuss Ms. Rinne’s expectation that other providers in the U.S. and around the world will use supplemental downlink technology.

RESPONSE:

“Wireless broadband services” is used in the Declaration to refer generally to services provided through wireless mobile communications devices over wireless technologies.

The basis for the Declaration’s statements concerning carriers’ “attempt[s] to efficiently manage their spectrum to meet increasing demands for wireless broadband services” are reflected in the Commission’s and individual Commissioners’ own statements regarding increasing demands placed on spectrum and the resulting need for carriers to address spectrum exhaustion and capacity limitations.¹³ Data traffic on AT&T’s mobile network, driven in part by iPhone usage, is up 8,000 percent over the past four years, and by 2015, it is expected to be eight

¹³ See, e.g., See FCC, Connecting America: The National Broadband Plan, Ch. 5 (2010) (“NBP”), available at <http://www.broadband.gov/download-plan/>; Julius Genachowski, Chairman, FCC, Remarks at NAB Show 2010 (April 13, 2010), available at <http://hraunfoss.fcc.gov/edocspublic/attachmatch/DOC-297469A1.pdf>; Julius Genachowski, Chairman, FCC, Prepared Remarks at the 2011 International Consumers Electronics Show (Jan. 7, 2011), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-303984A1.pdf.

to 10 times what it was in 2010.¹⁴ Verizon Wireless says it, too, has recently experienced substantial data growth in its network. According to Cisco, North American wireless networks carried approximately 17 petabytes per month in 2009. “By 2014, Cisco predicts wireless networks in North America will carry some 740 petabytes per month, a greater than 40-fold increase. Other industry analysts forecast large proportional increases.”¹⁵ The National Broadband Plan indicates that these trends will be reinforced by “increased adoption of Internet-connected mobile computing devices and increased data consumption per device,” as well as “a huge increase in machine-based wireless broadband communications” and “[t]he rollout of advanced 4G networks” that will “increase the range of applications and devices that can benefit from mobile broadband connectivity”¹⁶ Paralleling the Declaration, the Plan indicated that “[i]n the absence of sufficient spectrum, network providers must turn to costly alternatives”¹⁷ The same need to manage spectrum constraint by carriers underlays the Plan’s recommendations for repositioning spectrum or making additional spectrum available to support wireless mobile broadband networks and services.

Carrier participation in the standards-setting process provides the basis for concluding that it is “likely” that other carriers will turn to supplemental downlink technology and which U.S. and global carriers those are likely to be. Our response to Request No. 13 provides an overview of the 3GPP specification process and the related RAN meetings that address this technology and carrier aggregation. A wide variety of operators and vendors participate in this

¹⁴ Press Release, AT&T, AT&T To Acquire T-Mobile USA From Deutsche Telekom, (March 20, 2011) <http://www.att.com/gen/press-room?pid=19358&cdvn=news&newsarticleid=31703&mapcode=corporate|financial>.

¹⁵ NBP at 76-77.

¹⁶ NBP at 77.

¹⁷ *Id.*

process and are developing scenarios and progressing work items related to their interest in, and likely plans for, use of the carrier aggregation technology. Details on carrier activities related to carrier aggregation in the context of the 3GPP process is set forth in the chart accompanying the response to Request No. 13.

In addition, other sources indicate the breadth of wireless carrier focus on carrier aggregation (also known as “spectrum aggregation”). As one recent study indicated, “[a]s one of the key technologies of LTE-Advanced, spectrum aggregation is attracting increasing attention from Ericsson, NTT Docomo, ETRI, China Mobile, and so on.”¹⁸ There are other indications of the extensive work undertaken by NTT DoCoMo.¹⁹ Nokia Siemens and Agilent have also demonstrated their commitment to developing equipment based upon carrier aggregation technologies.²⁰

AT&T will provide documents responsive to this request, if any, at a later date.

¹⁸ Wei Wang, Zhaoyang Zhang & Aiping Huang, Macrothink Institute, *Spectrum Aggregation: Overview and Challenges*, at 2, Network Protocols and Algorithms, Vol. 2, No. 1 (2010), available at <http://www.macrothink.org/journal/index.php/npa/article/viewFile/329/275>.

¹⁹ See NTT DoCoMo, Carrier Aggregation Deployment Scenarios, Discussion Paper for 3GPP TSG-RAN WG2 #68 (Valencia, Spain, Jan. 18-22, 2010); James Middleton, *DoCoMo Eyes Up Blazing Speeds on LTE Advanced Trials*, Telecoms.com (Feb. 7, 2011), available at <http://www.telecoms.com/24433/docomo-eyes-up-blazing-speeds-on-lte-advanced-trials/>; see also NTT DoCoMo, LTE-Advanced Key Technologies Implemented in DOCOMO's Experimental Equipment, available at www.nttdocomo.com/pr/files/20110207_Attachment01.pdf (showing NTT DoCoMo carrier aggregation trial).

²⁰ See Press Release, Nokia Siemens Networks, LTE-Advanced “Carrier Aggregation” on Commercial Equipment a World First (Feb. 9, 2011), available at <http://www.nokiasiemensnetworks.com/news-events/press-room/press-releases/lte-advanced-carrier-aggregation-on-commercial-equipment-a-wor>; Press Release, Agilent Technologies, *Agilent Technologies Introduces Industry's First LTE-Advanced Signal Generation, Analysis Solutions*, <http://www.agilent.com/about/newsroom/presrel/2011/02feb-em11015.html>.