MIGRATION WHITE PAPER

As AT&T has previously explained, it faces unusually severe UMTS capacity constraints in approximately **[Begin Confidential Information]**

[End Confidential Information] because of several factors, including skyrocketing data usage on its network, the unusually high percentage of its customers with smartphones,[2] and its need to support three generations of technology. Some parties have speculated (1) that AT&T could have done more in the past to improve network efficiency and, in particular, to "migrate" its 2G (GSM) customers faster to more spectrally efficient 3G/4G (UMTS/HSPA and LTE) technologies and (2) that AT&T could somehow replicate the efficiency benefits of this transaction by expediting its future migrations of customers to UMTS or LTE.[3] These speculations are baseless and wrong.

AT&T has already taken extraordinary steps to optimize the spectral efficiency of its network. As discussed in Section I below, it has invested billions of dollars to deploy the cutting-edge technologies needed to accommodate surging consumer demands for mobile

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[1] **[Begin Confidential Information]**

[End Confidential Information]. Hogg Reply Decl. ¶ 10 n.13.

[2] Almost 50 percent of AT&T's postpaid base uses a smartphone as compared to 36 percent for Verizon. *See* AT&T Investor Update, *2Q11 Earnings Conference Call* at 9 (July 21, 2011), http://www.att.com/Investor/Financial/Earning_Info//2Q_11_slide_c.pdf (July 21, 2011); Verizon, *2nd Quarter 2011 Earnings Results* at 9 (July 22, 2009), http://www22.verizon.com/investor/investor-consump/groups/financial/documents/investorrelation/2011_q2_pre_col.pdf.

[3] "Migrating" customers means persuading them to replace their legacy devices with later-generation alternatives in order to place them on networks using more spectrally efficient technologies (for example, UMTS rather than GSM). Because any handset is designed to work with a prescribed set of technologies on a limited number of frequency bands, such migration requires inducing customers to acquire new handsets that will work (1) with newer technologies and (2) on the frequency bands the provider has deployed for those technologies. Once enough customers migrate, a provider may need less spectrum for the legacy service (except to the extent that the migration is offset by traffic growth from the remaining customers) and can redeploy the freed-up spectrum to the more efficient networks.

broadband services. For example, it has expanded the coverage of its UMTS network from **[Begin Confidential Information] [End Confidential Information]** million people at year-end 2007 to more than **[Begin Confidential Information] [End Confidential Information]** million people today, increasing to a projected **[Begin Confidential Information] [End Confidential Information]** million by year-end 2012. In addition, AT&T is upgrading the spectral efficiency of its UMTS network by deploying HSPA+ throughout its UMTS footprint. And even before completing its UMTS/HSPA build and HSPA+ upgrade throughout its UMTS footprint, AT&T will imminently begin offering LTE service, having decided in January 2011 to accelerate completion of its current LTE plans by one year. On top of these measures, AT&T has been a market leader in offloading traffic from its network through the use of technologies such as Wi-Fi and Distributed Antenna Systems (DAS), and it has built a cell site grid with **[Begin Confidential Information] [End Confidential Information]** more sites than Verizon's. These multi-billion-dollar investments belie any claim that AT&T has been anything but aggressive in its efforts to increase network capacity.

In addition to these measures, AT&T also has sought to increase network efficiency through aggressive migration initiatives. For example, in markets with congested UMTS networks, such as **[Begin Confidential Information] [End Confidential Information]**, AT&T has used incentives targeted to GSM customers to help free up additional 10 MHz blocks of spectrum for UMTS. AT&T has also responded to soaring demand for sophisticated mobile broadband services by taking significant steps to ramp down its GSM demand. In November 2010, AT&T stopped selling GSM devices to individual retail consumers of AT&T postpaid services. And even though GSM remains the world's preeminent wireless standard with the lowest cost devices, AT&T plans to stop selling

the few remaining GSM devices it still offers to customers of its prepaid services by **[Begin Highly Confidential Information] [End Highly Confidential Information]**. In part because of these efforts, the number of AT&T's individual retail customers using GSM handsets has dropped by nearly *60 percent* in just two-and-a-half years—from about **[Begin Confidential Information] [End Confidential Information]** at the end of 2008 to approximately **[Begin Confidential Information] [End Confidential Information]** as of June 2011.

In Section II below, we explain why, for a variety of reasons, AT&T nonetheless could not fully address its UMTS capacity constraints by accelerating the pace of migration still further. First, AT&T cannot simply shut down its GSM network any time soon. There are now approximately **[Begin Confidential Information] [End Confidential Information]** customers with GSM devices using AT&T's network, and shutting down that network in the near term would leave those customers stranded without service. As history demonstrates, even free handset offers and other extraordinary inducements are insufficient to overcome the reluctance of millions of customers to trade in their familiar GSM devices. Moreover, millions of users on AT&T's network are not AT&T's own retail customers in the first place, and are thus outside AT&T's direct control. For example, millions are customers of resellers, which decide for themselves what handsets to purchase and distribute to their customers. Many other users of AT&T's GSM network use embedded machine-to-machine (M2M) devices that cannot be easily replaced, such as alarm monitoring systems and point-of-sale devices like ATMs and vending machines.

Second, AT&T has *already* redeployed much of its GSM spectrum to UMTS, and it is now running out of additional GSM spectrum it can redeploy. And even in those markets where

it may have one last remaining increment of GSM spectrum that it could redeploy, it could not do so without severely degrading performance for the remaining GSM users, which include public safety personnel, alarms and other critical M2M devices, and millions of lower-income individuals who rely on low-cost devices. And in the absence of additional spectrum redeployment, migrating GSM users to UMTS would only add more traffic to AT&T's already-congested UMTS network without adding *any* new capacity to handle it.

Third, even if AT&T could magically migrate all customers from GSM to UMTS overnight *and* free up all GSM spectrum for UMTS, those steps would not relieve UMTS congestion in the near-to-intermediate term. Two AT&T studies of customers who upgraded from GSM to a more data-friendly UMTS service in December 2010 and March 2011, for example, found that, in the months following their upgrades, the customers increased their data consumption on average by **[Begin Confidential Information]**

[End Confidential Information]. Thus, any mass migration campaign, while useful to improving network *efficiency*, would not necessarily produce substantial net capacity gains in the effort to relieve UMTS *congestion*—except in particular markets where migrating a limited number of GSM customers is sufficient to free up an additional 10 MHz increment of spectrum for UMTS. By contrast, this transaction, unlike the migration process, will provide new capacity that can absorb the growth of UMTS traffic *without* itself accelerating that growth.

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[4] That figure ranged from an approximately **[Begin Confidential Information]** **[End Confidential Information]** increase for customers migrating to Android devices to an approximately **[Begin Confidential Information]** **[End Confidential Information]** increase for customers migrating to 3G feature phones.

And it will push back the date of capacity exhaust and enable AT&T to maintain service quality until a critical mass of customers migrates to LTE and additional spectrum is freed up at auction.

Fourth, although AT&T's imminent LTE launch will help relieve UMTS congestion in the long term, it cannot eliminate that congestion in the short-to-intermediate term. AT&T will migrate customers as rapidly as possible from UMTS (and GSM) to LTE, but that migration will not keep pace with the explosive traffic growth on AT&T's UMTS network from the enormous base of remaining customers (more than **[Begin Confidential Information] [End Confidential Information]** as of May 2011 and growing rapidly). Indeed, traffic on AT&T's UMTS network has increased **[Begin Confidential Information]**

[End Confidential Information] In addition, voice traffic will remain on the UMTS network until Voice over LTE becomes available.

Finally, as discussed in Section III, this transaction will promote consumer interests during the migration process in two respects. First, it will provide AT&T with spectrum to launch LTE in many places, as well as to deploy a faster and more spectrally efficient LTE service in many others. This will result in a more expansive migration of customers to LTE, which will, in turn, help relieve UMTS congestion. Second, in the absence of this transaction, AT&T would face a Hobson's choice in markets throughout the United States: harming millions of existing GSM customers by redeploying the dwindling supply of GSM spectrum to UMTS (without any commensurate GSM-to-UMTS customer migration), or harming millions of UMTS customers by failing to take that step. By creating additional new capacity for all of AT&T's networks, this transaction removes consumers from the horns of that dilemma.

I. AT&T Has Been Using the Full Range of Tools At Its Disposal To Relieve Its Capacity Constraints.

AT&T is addressing the capacity constraints on its wireless network in exactly the ways critics say it should. It is no secret that rising network congestion, due to unexpectedly skyrocketing data demands, has damaged the company's reputation for service quality. Thus, long before this transaction, AT&T made it a top priority to improve service quality and contain that reputational damage by taking a broad variety of steps to increase network capacity. Christopher Decl. ¶ 28 & n.57; Hogg Reply Decl. ¶ 48. Customer migration and spectrum redeployment is only one part of those larger efforts.

For example, AT&T has increased the speed and spectral efficiency of its UMTS data services by deploying (1) HSPA+ software upgrades to virtually all of its UMTS cell sites, which now cover more than **[Begin Confidential Information] [End Confidential Information]** million people, and (2) associated Ethernet backhaul to cellsites covering nearly **[Begin Confidential Information] [End Confidential Information]** million people, a number that is growing rapidly. And it continues to expand its UMTS/HSPA footprint, expecting to reach more than **[Begin Confidential Information] [End Confidential Information]** million people by the end of this year and over **[Begin Confidential Information] [End Confidential Information]** million people by the end of 2012. Among other benefits, that expansion increases customer incentives to migrate to UMTS and reduces usage of the GSM network by customers with UMTS-capable devices.

AT&T has also added approximately **[Begin Confidential Information] [End Confidential Information]** cell sites to its network per year, *see* Hogg Reply Decl. ¶ 56, thereby "reusing" spectrum and enabling more customers to use the same frequencies simultaneously.

Last year, it invested over **[Begin Confidential Information] [End Confidential Information]** million in capital expenditures (even more than budgeted) just to add new cell sites. AT&T was able to add these sites notwithstanding the immense challenges in finding suitable new cell site locations for a highly developed network and the numerous delays and obstacles in adding sites, such as zoning and various regulatory requirements—challenges that caused AT&T to miss its budgeted goal for completing sites despite its best efforts. Hogg Decl. ¶¶ 69-72; Hogg Reply Decl. ¶¶ 55-59. Because of its aggressive cell site additions, AT&T's network today has **[Begin Confidential Information] [End Confidential Information]** more cell sites than Verizon's. Hogg Reply Decl. ¶ 56. And AT&T has been an industry leader in the use of technologies that off-load traffic from its macro-network. It has deployed more than 24,000 Wi-Fi hotspots, 15 permanent Wi-Fi hotzones (with about **[Begin Confidential Information] [End Confidential Information]**), over **[Begin Confidential Information] [End Confidential Information]** public distributed antenna systems, and more than **[Begin Confidential Information] [End Confidential Information]** femtocells. *Id.* ¶ 52.

Even as AT&T is expanding its HSPA+ deployment, it is simultaneously investing billions more to ramp up its LTE network. Indeed, this past January, AT&T decided to accelerate its LTE deployment schedule by one year. AT&T is launching LTE service in a number of markets this summer and plans to offer LTE to 70 million people by the end of the year. AT&T has already "pre-seeded" the market for LTE services by selling a laptop dongle—the USBConnect Adrenaline—that is upgradeable to LTE, thereby enabling customers to take advantage of the LTE network as it is launched. AT&T likewise has announced additional LTE

dongles that will be available this summer and will also offer LTE handsets later this year.[5] AT&T's expedited LTE deployment will help address the company's capacity constraints in two ways: both because LTE is more spectrally efficient than any other technology, including UMTS/HSPA+ (i.e., it can support more traffic per MHz of spectrum), and because the accelerated LTE launch will enable AT&T to bring its 700 MHz and AWS spectrum online more quickly.

AT&T has also made significant progress in moving customers off of its GSM network onto its faster and more efficient UMTS network. AT&T's GSM customers have devices, often sold years ago, that use AT&T's network but can operate only (1) using GSM technologies (2) on designated frequencies in the cellular and PCS bands.[6] The number of customers with GSM devices using AT&T's network fell from approximately **[Begin Confidential Information]** **[End Confidential Information]** at the end of 2008 to approximately **[Begin Confidential Information]** **[End Confidential Information]** at the end of 2009 to roughly **[Begin Confidential Information]** **[End Confidential Information]** customers today. For AT&T's individual retail customers, the drop is even faster: from about **[Begin Confidential Information]** **[End Confidential Information]** at the end of 2008 to almost **[Begin Confidential Information]** **[End Confidential Information]** at the end of 2009 to approximately **[Begin Confidential Information]** **[End**

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[5] *See* Press Release, *4G LTE Devices to Arrive for AT&T Customers* (July 12, 2011), http://www.att.com/gen/ press-room?pid=20301&cdvn=news&newsarticleid=32149&mapcode=wireless-networks-general|broadband; Press Release, *AT&T Announces Plans to Deliver Nation's Most Advanced Mobile Broadband Experience* (Jan. 5, 2011), http://www.att.com/gen/press-room?pid=18885&cdvn= news&newsarticleid= 31477&mapcode=consumer|financial.

[6] Similarly, AT&T's approximately **[Begin Confidential Information]** **[End Confidential Information]** UMTS customers have handsets that will not work with LTE technologies, nor will they work (using any technology) in the 700 MHz or AWS spectrum in which AT&T will provide LTE services.

Confidential Information] as of June 2011—a nearly 60 percent reduction in just two and a half years.

AT&T has followed up on those customer migrations by aggressively redeploying spectrum from GSM to UMTS. For example, **[Begin Confidential Information]**

[End Confidential Information].

AT&T has also radically curtailed its sale of GSM devices to its retail customers in order to avoid increasing its GSM customer base, which would make migration initiatives more difficult. Indeed, in November 2010, it stopped offering GSM devices altogether to postpaid retail consumers.[7] It is also phasing out sales of the remaining GSM devices used in connection with its GoPhone prepaid service. Customers interested in that service are generally highly price-sensitive, and GSM devices—which still account for the overwhelming majority of mobile devices manufactured worldwide—are the lowest-cost available. Nonetheless, as the market increasingly produces affordable and comparable UMTS handsets, AT&T expects to stop selling the last of its GSM handsets even to its GoPhone customers by **[Begin Highly Confidential Information]** **[End Highly Confidential Information]**.

[7] Individual dealers nonetheless sold a small number of GSM devices to individual postpaid consumers in 2011 because those devices remained in residual inventory even though AT&T stopped supplying them in 2010. In addition, AT&T does continue to sell limited numbers of GSM BlackBerry devices to enterprise customers in markets that are not facing spectrum exhaust in order to comply with contractual obligations and to accommodate legacy IT software.

AT&T has also taken aggressive steps to free up additional spectrum for UMTS, where possible, through targeted migration campaigns. The extra spectrum needed to generate additional capacity on UMTS networks is "lumpy" in that such networks can use spectrum only in 10 MHz increments known as "carriers." Beginning last year, AT&T identified metropolitan areas—including **[Begin Highly Confidential Information]**

[End Highly Confidential Information]—where it could move enough customers off its GSM network to redeploy an extra 10 MHz from that network to ease increasing congestion on its UMTS network. For example, in certain markets, AT&T identified areas facing particularly severe capacity constraints and targeted heavy GSM users in those areas with attractive offers designed to induce them to obtain UMTS handsets. Because of churn and natural migration, AT&T was already close to having the necessary 10 MHz of free spectrum, and it therefore targeted only a relatively small number of heavy users. Although a surprisingly small percentage of the targeted customers responded to those offers by migrating to UMTS, *see* Section II.C, *infra*, the migrations were nonetheless successful in freeing up a new 10 MHz carrier for UMTS.

In short, despite critics' assertions that "AT&T should have done more," the evidence is clear that AT&T already has invested billions in every available tool—including but by no means limited to customer migration—to squeeze more capacity out of existing spectrum.

II. Customer Migrations Are Not the Answer to AT&T's Capacity Constraints.

Some merger opponents argue that AT&T could somehow resolve its capacity challenges without this transaction simply by migrating customers and associated spectrum more rapidly from GSM to UMTS and from GSM/UMTS to LTE. That is wrong for several independent reasons.

A. AT&T Cannot Simply Shut Down Its GSM Network.

As an initial matter, AT&T could not feasibly shut down its GSM network altogether and redeploy *all* of today's GSM spectrum to UMTS any time soon. There are currently [**Begin Confidential Information]** [**End Confidential Information]** users with GSM-only devices on AT&T's network. As discussed below, many of these are not AT&T's retail customers, and many others use embedded M2M devices, such as alarm-monitoring devices, that present especially difficult migration challenges. AT&T must therefore dedicate some spectrum for the foreseeable future to the continued provision of GSM service. Moreover, AT&T cannot shut down GSM service in just those markets facing the most severe capacity constraints while leaving it available in others. So long as there are non-trivial numbers of GSM customers *somewhere*, AT&T needs to maintain its GSM network in major markets such as New York and Los Angeles so that its customers in other markets can place calls when traveling to those cities.

Certain GSM users present especially difficult migration challenges. Although discussions of the migration process tend to focus on AT&T's relationships with ordinary retail customers, those relationships are only half the challenge. The following are some of the user categories presenting special migration challenges:

- Over **[Begin Confidential Information] [End Confidential Information]** users of AT&T's GSM network are customers of wireless resellers such as TracFone, Locus, and Consumer Cellular. Those resellers decide for themselves which devices they will acquire and sell to their retail customers. Notwithstanding the availability of UMTS service, many of those resellers target price-sensitive customers who are often not interested in data usage and generally prefer the lowest cost devices possible, which remain GSM devices. For example, a low-end 2G quick-messaging device typically costs **[Begin Confidential Information] [End Confidential Information]** less than a comparable UMTS device, and a 2G smartphone typically costs **[Begin Confidential Information] [End Confidential Information]** less than a comparable UMTS smartphone. And quite apart from *new* handset sales, resellers have embedded customer bases with handsets purchased in the expectation that GSM networks will continue to remain available. Because AT&T has no relationship with

those end users, it cannot directly offer them incentives to migrate to UMTS service, and indirect efforts to induce resellers to migrate their customers would not only disrupt their business model of offering the lowest cost handsets, but would face the same customer inertia factors described below.

- Millions of other users of AT&T's GSM network are wholesale customers that provide their end users with 2G M2M devices, ranging from home alarms to fleet management applications to GPS devices. Here again, AT&T does not sell the devices in question or have a direct relationship with the end user. And because of, among other factors, the costs associated with changing to UMTS devices, M2M customers have migrated in very limited numbers to UMTS service.

  Moreover, some have alleged that changing the embedded devices is often far more complicated than swapping out a handset. Alarm.com, for example, has asserted in this proceeding that "the cost of replacing or retrofitting its deployed units with alternative technology would be prohibitive, to say nothing of the needless disruption and potential dissatisfaction it could cause Alarm.com's customers."[8] Thus, far from wanting AT&T to accelerate migration, Alarm.com is seeking a condition ensuring the continued availability of AT&T's GSM network. *Id.* at 12.

- In addition, AT&T's GSM network supports roaming by other carriers' customers, both domestic and international. Obviously, AT&T has no way to switch out the handsets of *those* customers.

- A number of critical services used by public safety, military personnel, and other government customers also ride on AT&T's GSM network. These include, among others, wireless priority service used by first responders and some military users; secure voice-encrypted services used by high-level government officials and certain military users; and the commercial mobile alert system. Although these services may not generate large amounts of traffic, they obviously are of critical importance, and there is no clear technology path today to transition these services to UMTS.

In short, of the **[Begin Confidential Information] [End Confidential Information]** customers with 2G devices who use AT&T's GSM network, only approximately **[Begin Confidential Information] [End Confidential Information]** are AT&T's retail customers with conventional handsets whom AT&T can try to persuade to trade in for

[8] Alarm.com's Reply in Support of Its Petition to Deny, WT Docket No. 11-65, at 3 (filed June 20, 2011); *see also id.* at 5 (complaining about alleged "perverse pricing incentives to force customers off GSM prematurely").

UMTS alternatives. And AT&T has reduced the number of such customers on its GSM network by nearly 60 percent since year-end 2008.

Customer resistance to migration campaigns. Even as to AT&T's own individual retail customers, history has demonstrated, and AT&T's experience confirms, that the process of migrating a large customer base from one generation of wireless technology to the next is necessarily complex and prolonged. For example, when the first 2G PCS services were introduced in the United States in 1995, customers did not promptly throw out their 1G analog phones, and wireless providers did not stop providing analog service. To the contrary, recognizing the interests of customers in retaining their analog-only handsets, the Commission *required* all cellular licensees to maintain analog networks for many years to support that embedded base of customers, and when the Commission revisited the issue in 2002, the 2G migration had proceeded so slowly that it decided to maintain the analog-support requirement for *five more years*, until it finally sunset in February 2008.[9]

To take another example, Sprint-Nextel has been migrating its customers off of 800 MHz spectrum for *seven* years thus far—even though, as Sprint and representatives of the public safety community have told the Commission, "[e]very day of delay in completing 800 MHz reconfiguration is another day that first responders remain at risk; accordingly, a stay [of the rebanding process] would substantially harm [] police, fire fighters and other public safety personnel."[10] Notwithstanding that concern, Sprint recently informed the FCC that it had

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[9] Report and Order, *Year 2000 Biennial Regulatory Review - Amendment of Part 22 of The Commission's Rules to Modify or Eliminate Outdated Rules Affecting the Cellular Radiotelephone Service and Other Commercial Mobile Radio Services*, 17 FCC Rcd 18401, 18406 ¶ 8 (2002).

[10] Opposition of Nextel Communications, Inc. to Motion for Partial Stay, *Improving Public Safety Communications in the 800 MHz Band*, WT Docket 02-55, ET Docket Nos. 00-258, 95-18, RM-9498, RM-10024, at 2 (filed Nov. 26, 2004).

completed only about 70 percent of the necessary reconfigurations just in non-border areas,[11] making it likely that the transition will take several years longer.

The slow pace of consumer migration is equally evident in other technological settings. When the first digital television broadcasts began in the mid-to-late 1990s, consumers relying on over-the-air signals did not discard their analog sets, and broadcasters did not stop broadcasting analog signals. Indeed, in 1997, Congress gave the FCC a nearly ten-year transition deadline for the sunset of analog television: until year-end 2006. *See* 47 U.S.C. § 309(j)(14)(A). The glacial migration rate pushed even that deadline back several more years until June 2009, when the federal government finally pulled the plug on the last analog broadcasts after issuing more than a billion dollars in coupons to subsidize consumer purchases of converter equipment.[12]

Although AT&T's GSM-to-UMTS transition is proceeding rapidly by comparison to these other migrations, its recent experience confirms the challenges of consumer inertia. As noted in Section I above, AT&T has targeted high-usage GSM customers in several metropolitan areas with offers designed to induce them to trade in their GSM handsets for UMTS handsets. Those migration campaigns illustrate that even very aggressive inducements are insufficient to overcome the reluctance of very large numbers of customers to migrate.

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[11] Letter from Lawrence R. Krevor, Vice President – Spectrum, and James B. Goldstein, Director, Spectrum Reconfiguration, Sprint Nextel, to David Furth, Deputy Bureau Chief, Public Safety and Homeland Security Bureau, FCC, *Improving Public Safety Communications in the 800 MHz Band*, WT Docket 02-55, at 2 (June 1, 2011) (Sprint Nextel's Status Report on 800 MHz Band Reconfiguration).

[12] FCC, *Full-Power TV Broadcasters Go All-Digital* (June 13, 2009), http://hraunfoss.fcc.gov/_public/attachmatch/DOC-291384A1.pdf; DTV Delay Act, Pub. L. No. 111-4, 123. Stat. 112 (2009) (extending analog TV cut-off from Feb. 17, 2009 to June 13, 2009); Digital Television Transition and Public Safety Act of 2005 (contained in Deficit Reduction Act of 2005), Pub. L. 109-171, 120 Stat. 21, 23, § 3002 (extending analog TV cut-off from Dec. 31, 2006 to Feb. 17, 2009) *and* § 3005 (appropriating $1.5 billion for digital-to-analog converter box coupon program) (2006).

These campaigns generally fell into two categories. In the first, which occurred mainly in 2010 and the first two months of 2011, AT&T tried to persuade GSM users to purchase new UMTS phones by offering **[Begin Highly Confidential Information]**

[End Highly Confidential Information] Only a tiny percentage of customers contacted took advantage of the offer **[Begin Highly Confidential Information]**:

[End Highly Confidential Information]

In the second group of campaigns, AT&T made three significant changes to elicit higher take rates. **[Begin Highly Confidential Information]**

[End Highly Confidential Information] Because of these extraordinary steps, the take-rates for these upgrade offers were considerably higher than in the previous campaigns—but, except in one case, *still* less than **[Begin Highly Confidential Information]**

[End Highly Confidential Information]

This experience vividly illustrates the challenges confronted by any effort to accelerate customer migration. First, **[Begin Highly Confidential Information]**

[End Confidential Information]. And even when

AT&T offered GSM customers **[Begin Highly Confidential Information]**

[End Highly Confidential Information], a large percentage of customers—usually more than **[Begin Confidential Information] [End Confidential Information]**—decided to keep their familiar GSM handsets anyway.[13]

As a means of relieving UMTS congestion, it would be pointless and counterproductive to extend to the entire GSM customer base the narrowly targeted offers AT&T made to free up extra 10 MHz carriers in the **[Begin Highly Confidential Information]**

[End Highly Confidential Information] Even then, AT&T would *still* have a sizable base of non-migrating GSM users that it would still need to support with spectrum devoted to GSM. And on top of all that, accelerated migration, even if accompanied by spectrum redeployment, would not necessarily relieve congestion on AT&T's UMTS network, for the reasons discussed in Section II.C below.

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[13] In contrast, it will be far less problematic for the combined company to migrate T-Mobile USA's UMTS/HSPA+ customers off of AWS spectrum to free up the spectrum for LTE. First, in over **[Begin Confidential Information] [End Confidential Information]** CMAs, T-Mobile USA has not yet deployed UMTS service on its AWS spectrum, and thus redeploying that spectrum will not require customer migration at all. And in more than half of CMAs 1-100, including **[Begin Confidential Information]**
[End Confidential Information], T-Mobile USA has deployed UMTS service using only a subset of its AWS spectrum, and the unused portion of that spectrum can be redeployed without customer migration. Second, the embedded customer base that uses T-Mobile USA's AWS spectrum is much smaller than the embedded customer base that uses AT&T's GSM spectrum, and the T-Mobile USA/AWS customer migration challenge is thus far more limited. Third, an increasing percentage of T-Mobile USA customers have dual-banded handsets capable of roaming on AT&T's UMTS/HSPA+ network, and those handsets will continue to work even after AT&T redeploys AWS spectrum to LTE.

B. AT&T Is Running Out of GSM Spectrum Available for Redeployment to UMTS.

An indispensable objective of any migration campaign is to follow up the migration of *customers* with redeployment of *spectrum* from the older technology to the newer one. Without spectrum redeployment, customer migration is pointless as a means of managing congestion on the newer network, which would necessarily have more traffic without *any* greater capacity to handle it. In many markets, however, AT&T does not—or soon will not—have more spectrum that *can* be redeployed from GSM to UMTS before total GSM shutdown without seriously degrading GSM service quality.

AT&T is already down to 15 MHz or less of spectrum devoted to GSM in a variety of markets, including **[Begin Highly Confidential Information]**

[End Highly Confidential Information]. AT&T further expects that before the end of **[Begin Highly Confidential Information] [End Highly Confidential Information]—**in some cases considerably before then—it will similarly be left with 15 MHz or less of GSM spectrum, and will face UMTS exhaust, in approximately **[Begin Highly Confidential Information] [End Highly Confidential Information]** CMAs covering nearly **[Begin Highly Confidential Information] [End Highly Confidential Information]** people.[14] These include **[Begin Highly Confidential Information**]

[End Highly Confidential Information]

[14] **[Begin Confidential Information]**

[End Confidential Information]. Hogg Reply Decl. ¶ 10 n.13.

Once the spectrum dedicated to a GSM network falls to 15 MHz or below, redeploying additional spectrum from that network to UMTS will severely degrade service quality on the GSM network. Again, UMTS networks can use new spectrum deployments only in 10 MHz blocks known as "carriers." Thus, in a market with 10 MHz of GSM spectrum, the only way to redeploy that spectrum to the benefit of the UMTS network is to assign all 10 MHz to that network, leaving none for the GSM network and thus stranding all GSM users. And in a market with 15 MHz of GSM, redeploying 10 MHz would leave only 5 MHz for GSM, which would substantially increase the number of dropped and blocked calls for GSM customers.[15] **[Begin Highly Confidential Information]**

[End Highly Confidential Information]

Nonetheless, **[Begin Highly Confidential Information]**

[End Highly Confidential Information] Either outcome would disserve consumers. And degrading service quality for remaining GSM customers would disproportionately disadvantage, among others, the lower-income individuals who have chosen GSM devices because of their lower cost. **[Begin Highly Confidential Information]** **[End Highly**

[15] As a technical matter, providing GSM service with only 5 MHz of spectrum requires an extreme engineering solution: carrying traffic in the "broadcast control channel" ("BCCH") and not in the "hopping pool."

Confidential Information] is only the leading edge of this phenomenon—AT&T will soon confront the same dilemma in an escalating number of markets. As discussed in Section III below, this transaction, by creating new capacity, presents the only path for avoiding such anti-consumer outcomes.

C. Mass GSM-to-UMTS Migration Would Be No Substitute For This Transaction In Addressing UMTS Congestion.

Even if AT&T could somehow migrate all GSM users to UMTS tomorrow *and* redeploy all of its GSM spectrum to UMTS—which it obviously cannot—that step would not generally relieve the congestion challenges on its already constrained UMTS network. That is because, although UMTS is more spectrally efficient than GSM, mass migration would create a much larger absolute *volume* of traffic on the UMTS network because UMTS is faster than GSM and supports more data-intensive applications.

An AT&T study of customers who migrated from GSM to UMTS in March 2011, for example, found that, in the three months following their upgrades, they substantially increased their overall usage on average by a factor of **[Begin Confidential Information] [End Confidential Information]** as compared to the three months prior to their upgrades. A second study of customers who migrated from GSM to UMTS in December 2010 found an average usage increase of more than **[Begin Confidential Information] [End Confidential Information]** times in the six months after the upgrade as compared to the six months before. The specific increase for any given customer varied with, among other things, the UMTS device the customer obtained and his or her usage behavior. According to the studies, the average customer upgrading from a 2G handset to an Android phone increased usage by a factor of approximately **[Begin Confidential Information] [End Confidential Information]**, whereas

the average customer upgrading to a simple UMTS feature phone increased usage by a factor of approximately **[Begin Confidential Information]**

[End Confidential Information] Even the usage increases on the very low end of that range (for customers upgrading to mere UMTS feature phones) are at least equal to or higher than the efficiency gains associated with serving those customers using UMTS/HSPA+ technologies rather than GSM/EDGE. Based on this data, any mass migration campaign—while useful to improving network *efficiency*—would not necessarily produce substantial net gains in the effort to relieve UMTS *congestion*.

For that reason and others, the efficiency gains derived solely from mass customer migration are, as a means of addressing capacity constraints, greatly inferior to the independent efficiency gains and *new* capacity that AT&T will derive from this transaction. The combined company will be able to make use of those transaction-related efficiency gains, unlike efficiency gains achieved through mass migration, *without* simultaneously and dramatically increasing bandwidth demands on the UMTS network.

To take one example, channel-pooling efficiencies and the elimination of redundant control channels will enable the combined company to serve its GSM customer base using less total spectrum. In a number of markets, those network synergies will enable the company to free up sufficient spectrum to allow an additional 10 MHz to be redeployed to UMTS without radically accelerating the migration of customers from GSM to UMTS and thus without abruptly increasing congestion on the UMTS network. *See* Hogg Decl. ¶¶ 13, 42, 48, 53; Reed/Tripathi Decl. at 31-32. To take another example, the greater cell density created by this transaction will directly increase the capacity of the UMTS network without requiring customer migration or even spectrum redeployment. And the transaction will provide AT&T with AWS spectrum that

it can use in many markets to deploy LTE service using 20 MHz of spectrum, which will be more spectrally efficient and provide more capacity and higher throughput speeds than using 10 MHz. These are key reasons why, as a response to worsening UMTS congestion, accelerated and larger-scale GSM-to-UMTS customer migration—even if it were otherwise possible, which it is not—would be no substitute for the broader, non-migration-related capacity gains this transaction will generate.

D. LTE Migration Would Proceed Too Slowly in the Absence of This Transaction To Address UMTS Capacity Constraints in the Near-to-Intermediate Term

Customer migration from UMTS to AT&T's LTE network also cannot resolve AT&T's UMTS capacity constraints in the short-to-intermediate term, even though it will offer longer-term relief. First, as discussed, large-scale customer migrations from older to newer technologies typically take many years. Although AT&T has every incentive and intention to migrate customers as rapidly as possible from UMTS (and GSM) to LTE, there is no reason to believe that the migration to LTE will proceed significantly faster than migration to UMTS. Among other factors, at least until the LTE ecosystem matures and manufacturing scale is reached, LTE handsets will likely be substantially more expensive than UMTS handsets. AT&T expects that the initial LTE handsets it will offer **[Begin Highly Confidential Information]**

[End Highly Confidential Information] And even after accelerating its LTE deployment by a full year, AT&T's LTE network will not reach areas covering 80% of the population until the end of 2013. In the meantime, even some data-centric customers may decide to wait until LTE service is more ubiquitous or until their favorite handset is available in an LTE-compatible model.

This gradual migration of customers off the UMTS network onto LTE will not keep pace—at least in the near-to-intermediate term—with the explosive traffic growth on AT&T's UMTS network from the remaining UMTS customers. Indeed, traffic on AT&T's UMTS network has increased **[Begin Confidential Information]**

[End Confidential Information] And that growth rate shows no sign of abating. In addition, voice traffic will remain on the UMTS network until Voice over LTE becomes available.

In short, while the migration of customers to LTE will help with capacity constraints over time and will offer consumers numerous other benefits, that migration, like every other migration, cannot begin to substitute for the near-term and more comprehensive capacity gains this transaction will produce. The transaction, by contrast, will provide *new* capacity that can absorb the growth of UMTS traffic without requiring the immediate mass migration of customers, and, as discussed below, it will also expedite the LTE migration by enabling AT&T to deploy LTE in more areas. As a result, this transaction will push back the date of capacity exhaust on AT&T's legacy networks, move forward the migration of customers to AT&T's LTE network, and enable AT&T to maintain service quality until a critical mass of customers migrates to UMTS and LTE and additional spectrum is freed up at auction.

III. This Transaction Will Provide the Capacity Needed Both To Transition Customers and Spectrum to More Efficient Technologies and To Maintain and Improve Service Quality for Customers During the Time Needed To Accomplish That Migration.

Although migrating customers and spectrum to more efficient technologies is intricate and prolonged, this transaction—among its many other efficiency advantages—will greatly facilitate that process to the benefit of consumers.

In the absence of this transaction, service quality for millions of existing customers would deteriorate during the time needed to migrate customers and redeploy spectrum. As AT&T has explained, it is facing severe capacity constraints and approaching spectrum exhaust for its UMTS service in markets throughout the country. Since AT&T can redeploy spectrum to UMTS only in 10 MHz carriers, it would have to wait until enough subscribers in a market migrated from GSM to UMTS before it could free up 10 MHz of spectrum for UMTS in that market. In the interim, its UMTS service would become even more congested, harming all of its existing UMTS customers. Alternatively, AT&T could redeploy 10 MHz of spectrum to UMTS *before* enough customers had migrated, but that would harm quality of service to existing GSM customers. As noted above, AT&T expects just that scenario to play out in **[Begin Highly Confidential Information] [End Highly Confidential Information]**.

The transaction removes AT&T and its customers from the horns of that dilemma by creating additional headroom in both the GSM and UMTS networks. As discussed in our prior filings, the network synergies of this transaction will create the functional equivalent of new spectrum. In many cases, as a result of those efficiencies (and the addition of T-Mobile's spectrum), AT&T will be able to redeploy spectrum from GSM service to more spectrally efficient UMTS service without having to degrade existing GSM service. Not only will this help address UMTS capacity constraints, but it will also provide much-needed time to migrate GSM customers to UMTS. In addition, the transaction will result in new capacity on the UMTS network directly as a result of increased cell density. As a result, AT&T will have additional capacity to serve existing UMTS customers and absorb customers migrating from GSM service without service quality degradation resulting from increasing congestion. That will give AT&T

the additional time needed to deploy its LTE network and then migrate substantial numbers of customers to LTE.

Finally, the transaction also will facilitate customer migration by providing AT&T with spectrum in areas where it otherwise could not deploy UMTS or LTE networks to which customers could migrate. As AT&T has explained, in **[Begin Confidential Information] [End Confidential Information]** markets, AT&T lacks enough spectrum today even to launch and support UMTS service in at least one county, and thus it can offer only GSM service in those areas. Jt. Opp. at 22-23. Further, in approximately **[Begin Confidential Information] [End Confidential Information]** CMAs, AT&T lacks AWS and 700 MHz spectrum to deploy LTE, while T-Mobile USA holds AWS spectrum that could be used to provide LTE. *Id.* at 23. And in another approximately **[Begin Confidential Information] [End Confidential Information]** CMAs, AT&T lacks the 20 MHz of AWS or 700 MHz spectrum needed to deploy LTE with optimal speed and spectral efficiency, whereas the combination of AT&T's and T-Mobile USA's spectrum will make that possible. *Id.* That in turn will make the combined company's LTE offering more attractive, which will encourage customer migration to that new network.

CONCLUSION

For these reasons, merger opponents' claims that AT&T could substantially resolve its capacity issues on a standalone basis by accelerating the migration of customers to newer technologies are baseless. In fact, the transaction will provide new additional capacity that will facilitate migration and allow AT&T to maintain and improve service quality during the time needed to transition customers.