Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Preserving the Open Internet	)	GN Docket No. 09-191
	)	
Broadband Industry Practices	)	WC Docket No. 07-52

REPLY COMMENTS OF T-MOBILE USA, INC.

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T-Mobile USA, Inc. ("T-Mobile") respectfully submits these reply comments in the above-captioned proceeding.[1] T-Mobile fully supports the principles of Internet platform "openness," and we, together with other stakeholders throughout the wireless broadband industry, have demonstrated this commitment with concrete action that makes imposing a network neutrality regime unnecessary. Such regulatory intervention could well derail the forward evolution needed for wireless broadband services to continue "transform[ing] our society and economy" while fueling "job creation and economic growth."[2]

INTRODUCTION AND SUMMARY

In a recent FCC workshop on broadband competition, Georgetown University economist Marius Schwartz emphasized that regulation should be avoided unless there is both clear evidence of a serious market failure and a reasonable prospect that regulation will improve that

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[1] Notice of Proposed Rulemaking, Preserving the Open Internet, Broadband Industry Practices, GN Docket No. 09-191, WC Docket No. 07-52 (Oct. 22, 2009) ("NPRM").

[2] Prepared Remarks of Chairman Julius Genachowski, FCC, "Mobile Broadband: A 21st Century Plan for U.S. Competitiveness, Innovation, and Job Creation," at 3 (Feb. 24, 2010) ("Genachowski Remarks").

situation.[3] Nowhere is that argument more compelling than in the wireless broadband marketplace. As the comments show, there is no net neutrality "problem" that requires fixing in this marketplace, and unwarranted regulation could have serious unintended consequences.

While advocates of proposed regulation have issued one dire prediction after another about the ways in which wireless broadband providers would shut out competition, halt innovation in its tracks, and harm consumers, the wireless broadband marketplace has grown more diverse and open every day, with providers competing to offer the broadest array of the most useful and compelling applications and forging unique partnerships with innovative edge providers and device manufacturers. As CTIA reaffirmed and the FCC's own data show, dozens of providers across the United States—including several recent market entrants—offer a variety of mobile broadband services, highlighting that marketplace forces remain a robust and effective incentive for providers to address consumer demand. And, as the transition to 3G and 4G progresses, wireless broadband services will increasingly emerge as a competitive alternative to wireline broadband, creating meaningful cross-platform choice and providing a means of delivering vibrant, high-speed Internet access to all Americans, including underserved communities, across the nation.

Application of the proposed net neutrality rules is not only unnecessary, it is unwise. On the simplest level, the rules championed by proponents of net neutrality would seriously complicate if not preclude altogether the kind of fine-tuned network management necessary to support the increasingly complex, latency-sensitive, bandwidth-intense services that are converging on wireless broadband platforms. Ultimately, these proposed rules could both

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[3] *See* Marius Schwartz, Remarks on Broadband Competition and Access Regulation, FCC Workshop on Economic Issues in Broadband Competition (Oct. 9, 2009), available at: http://www.broadband.gov/docs/ws_economic_issues/schwartz.pdf (last visited Feb. 12, 2010).

degrade existing wireless broadband networks and services and impede the evolution of next generation offerings. And, they could make the wireless broadband market less competitive by compromising providers' ability to offer new, innovative offerings—a result that would disproportionately affect independent providers like T-Mobile as well as regional and local wireless providers and new entrants, who face formidable national competitors in their effort to offer consumers viable choices.

Advocates of net neutrality regulation universally acknowledge that wireless networks present unique technological challenges, but they claim that these can be accommodated by allowing wireless carriers more "flexibility" when it comes to defining what falls within the scope of the "reasonable network management" exception to net neutrality obligations.[4] But not one of these proponents attempts to explain how this would work in practice or why their proposals would not deter technological evolution and chill investment in the many ways described by T-Mobile and others in the opening comments in this proceeding. Indeed, even as advocates of regulation offer flexibility as the solution to wireless network management needs with one hand, with the other they press a narrow definition of "reasonable network

[4] *See, e.g.*, Google Comments at 11; Free Press Comments at 125-26; Comments of Public Interest Commenters at 18 ("Public Knowledge Comments"). Unless otherwise indicated, all references below to the Comments of a party refer to the Comments that party filed in GN Dockets No. 09-191 & WC Docket No. 07-52 in January 2010.

management" and a broad, rigid application of the proposed non-discrimination rule, with little allowance for any difference in the wireless context.[5]

The limited nature of spectrum itself requires careful management, and wireless operators must have the flexibility to adapt to the ever changing demands on their networks. One of the foremost challenges facing wireless broadband providers is the critical need for additional spectrum. It is widely acknowledged that the wireless industry is "rapidly approaching a spectrum shortfall."[6] Spectrum scarcity presents an increasingly pressing challenge as wireless providers seek to ensure adequate coverage and capacity to meet consumers' growing demand for bandwidth. As a recent CTIA paper makes clear, "A failure to provide sufficient capacity in the wireless ecosystem will ultimately suppress the continued development of [bandwidth intensive] applications, which has the potential to severely damage the rapid market growth we have recently experienced."[7] To ensure that T-Mobile and other providers have a meaningful opportunity to compete both within the wireless broadband marketplace and in the broader broadband ecosystem, they must have access to additional spectrum. But even then, spectrum

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[5] *Compare, e.g.*, Free Press Comments at 6 (demanding that "[t]he rules should apply in a symmetric manner to all methods of broadband Internet access" even while allowing that "the range of options" may be greater for wireless "[t]o the extent that many mobile broadband networks face demonstrably greater challenges than many fixed networks") *with* Free Press Comments at 82-104 (proposing narrow definition of reasonable network management with no discussion of any additional leeway for wireless broadband); Public Knowledge Comments at 18 (conceding that "the metes and bounds of what constitutes reasonable network management" may differ between wireline and wireless, despite asserting that "the larger open Internet framework should not" differ depending on the platform) *with* Public Knowledge Comments at 35-44 (proposing narrow definition of reasonable network management with no discussion of any additional leeway for wireless broadband).

[6] Rysavy Research, *Spectrum Shortfall Consequences*, at 4 (Apr. 21, 2010), attached to Ex Parte Letter from Christopher Guttman-McCabe, Vice President, Regulatory Affairs, CTIA, to Marlene Dortch, Secretary, FCC, GN Docket No. 09-51 (Apr. 21, 2010) ("*Spectrum Shortfall Consequences*").

[7] *Id.*

will remain a finite and shared resource that will have to be carefully managed by providers. Accordingly, the Commission must also ensure that wireless broadband providers have the flexibility to address capacity limitations and other spectrum-related challenges through reasonable network management practices.

None of the regulatory proposals advanced here would further consumers' interests. Rather, they have the potential to degrade or even eliminate offerings consumers enjoy today. They also would prevent wireless broadband from reaching its potential as a true competitor to wireline broadband, reducing the amount of competition that U.S. broadband consumers deserve. And, heavy-handed regulation would undermine providers' investment incentives and their ability to earn a fair return on their spectrum and technology investments.

T-Mobile and the wireless industry as a whole share the Commission's vision of an open, flexible broadband ecosystem in which wireless providers compete head to head with wireline providers to deliver a robust array of high-quality broadband services to all Americans. To achieve that vision, the Commission should focus its efforts on supporting wireless broadband deployment through various measures that will encourage investment and expansion instead of imposing new regulatory burdens on the wireless industry. T-Mobile wholeheartedly supports the Commission's efforts to deploy more spectrum as the best means to promote competitive networks that benefit consumers with choice, innovation and coverage, and encourages the Commission to embrace such measures rather than seeking to impose unnecessary regulations. The substantial uncertainty regarding the Commission's regulatory authority to impose new net neutrality obligations on the broadband industry generally and the wireless industry in particular further cautions against a precipitous move to regulate the open and innovative broadband marketplace.

I. A WIRELESS NET NEUTRALITY PROBLEM REQUIRING A REGULATORY REMEDY DOES NOT EXIST.

A. The Record Contains No Evidence of Net Neutrality-Related Misconduct in the Wireless Broadband Market.

The massive record in this proceeding, which includes thousands of pages of comments from over 600 parties, makes one thing patently clear: no evidence of ongoing or potential future misconduct in the wireless broadband marketplace necessitates prophylactic government intervention. Even though net neutrality advocates have fixed their sights on the wireless industry for years, the harmful behavior they repeatedly envisage has not come to pass.

As CTIA highlighted, the litany of dire predictions about the future of the wireless industry made by net neutrality advocates in the past failed to materialize as the wireless marketplace instead evolved in positive ways to meet changing technological and consumer demands.[8] For example, proponents of net neutrality claimed that wireless carriers tightly controlled retail distribution of wireless handsets, limiting the options available to U.S. customers and depriving them of exciting technology available elsewhere.[9] But as CTIA showed, the facts are decidedly different: U.S. consumers can choose from among over 630 devices manufactured by 33 different companies, and they can purchase their device of choice from carriers, manufacturers, and a variety of traditional and online retailers.[10] Some of the most advanced smartphones have been introduced in the United States, including, from T-Mobile, the

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[8] *See* Ex Parte Letter from Christopher Guttman-McCabe, Vice President, Regulatory Affairs, CTIA, to Marlene Dortch, Secretary, FCC, GN Docket No. 09-191, WC Docket No. 07-52, at 2-3 (Feb. 5, 2010) ("CTIA Ex Parte"); *see also* CTIA Comments at 12-22; T-Mobile Comments at 11; AT&T Comments at 6.

[9] Tim Wu, New America Foundation, Working Paper No. #17, *Wireless Net Neutrality: Cellular Carterfone and Consumer Choice in Mobile Broadband*, at 7 (Feb. 2007).

[10] *See* Letter from Christopher Guttman-McCabe, Vice President, Regulatory Affairs, CTIA, to Marlene Dortch, Secretary, FCC, WT Docket No. 09-66, GN Docket Nos. 09-157 & 09-51, at 4 (Feb. 12, 2010) ("CTIA Competition Ex Parte"); CTIA Comments at 14.

myTouch 3G, the G1 with Google, the Blackberry Pearl Flip, the HTC HD2, and most recently, the Android-based Garminfone, which will offer consumers innovative GPS-based navigation capabilities.[11]

Claims made by net neutrality advocates that wireless providers would—in the absence of rules governing their handset development and selections—cripple features such as web access, WiFi, or Bluetooth[12] likewise have been disproven. T-Mobile has been a leader in introducing new features and applications for smartphones in the United States and has moved aggressively to deploy its 3G network.[13] The warnings by net neutrality regulation advocates that wireless carriers would block the development of or access to applications such as VoIP[14] appear almost quaint in today's market where all major providers offer smartphones that support VoIP applications.[15] Further, at last count, according to CTIA, well over 170,000 mobile broadband applications were available to U.S. wireless customers through a variety of manufacturer and carrier application stores.[16] As discussed further below, T-Mobile is a founding member of the Open Handset Alliance and, like many other providers, works directly with developers to deliver their applications—optimized for networks and devices—to its subscribers. In the past two years, the wireless marketplace has changed dramatically with the introduction of new smartphones, open operating platforms, and an array of application stores

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[11] CTIA Ex Parte Attach. at 7.

[12] *Id.* at 7-9.

[13] *Id.* at 9. Indeed, notwithstanding that T-Mobile obtained its 3G spectrum only in 2006, the company has moved ahead with the nation's most aggressive nationwide deployment of broadband. *See, e.g.*, Lynette Luna, *T-Mobile USA outlines aggressive plans for HSPA+ coverage this year*, FierceBroadbandWireless, http://www.fiercebroadbandwireless.com/story/t-mobile-usa-outlines-aggressive-plans-hspa-coverage-year/2010-02-18.

[14] CTIA Comments at 15-16.

[15] *See* T-Mobile Comments at 11; AT&T Comments at 6.

[16] CTIA Ex Parte at 3-4.

that foster innovation and consumer choice, and these developments appear to multiply almost daily. In short, history has repeatedly confirmed that provider practices that do not meet customer needs and desires are quickly driven out by the relentless operation of market forces in the competitive mobile broadband marketplace, without the need for regulatory intervention. Indeed, regulatory solutions in these circumstances will almost always be slower, less effective, and more prone to error than competitively-driven developments.

With this history as a guide, the Commission should view allegations about the potential for harmful conduct in the wireless broadband marketplace with skepticism and dismiss those claims that are recycled in this proceeding. The New America Foundation ("NAF"), for example, repeats old complaints about alleged handset locking. However, T-Mobile allows subscribers to use any compatible, non-harmful device on T-Mobile's network, does not lock unsubsidized phones, and allows subscribers to unlock subsidized phones after only 40 days or 60 days, depending on their service plan.[17] Almost all other major wireless carriers have adopted similar policies.[18] Moreover, the assertion that not all wireless providers or wireless plans permit "tethering"[19] is not a valid "net neutrality" concern. In this diverse market, some providers offer tethering plans, others offer wireless netbooks and/or laptop sticks, and WiFi is broadly available. When it comes to wireless computer access to the Internet, U.S. consumers enjoy abundant choice, obviating any need for the Commission to micromanage wireless service

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[17] *See* T-Mobile, Support: SIM Unlock Code, http://support.t-mobile.com/doc/tm51885.xml.

[18] *See* NAF Comments at 2. *See, e.g.*, Verizon Wireless, Press Release, *Verizon Wireless to Introduce 'Any Apps, Any Device' Option for Customers in 2008* (Nov. 17, 2007), http://news.vzw.com/news/2007/11/pr2007-11-27.html; AT&T, *Your device, Your way*, http://choice.att.com/flash/customersdevices.aspx (noting "it's easy to bring any GSM phone for use on AT&T's network"); Peter Svensson, *MetroPCS to customers: Bring your own phone*, MSNBC, http://www.msnbc.msn.com/id/25416152/.

[19] *See* Electronic Frontier Foundation Comments at 28.

offerings, pricing, or capacity management. T-Mobile urges the Commission to adopt measures aimed at fostering the competitive environment that has yielded this diversity of choices, rather than imposing unnecessary regulations that could stifle competition and innovation.

B. The Wireless Broadband Ecosystem Is Growing More Open and Dynamic Every Day.

As several commenters note, "With respect to wireless, the NPRM presents a solution in search of a problem."[20] In fact, the wireless broadband marketplace has actively embraced openness, consumer choice, and competition, embodying the very values that the net neutrality principles are designed to achieve—without regulatory compulsion.

First, as T-Mobile and many other commenters noted,[21] and as the FCC's own recent data confirms,[22] the wireless broadband industry is the focus of broad-based competition and intensive investment. Consumers in most states can choose from among at least four mobile broadband providers and some have a choice of as many as thirteen.[23] Nationwide, 46 different providers offer wireless mobile broadband service.[24] New providers such as EchoStar, Cox Communications, and Stelera Wireless continue to enter the market at a steady pace.[25] And, providers, small and large, are investing heavily in technology and spectrum to offer consumers

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[20] Qualcomm Comments at 18; *see also* MetroPCS Comments at 17 ("Without strong evidence of continuing or imminent harms, there is simply no reason to deviate from the extremely successful *status quo*, and run the risk of creating a series of destructive unintended consequences."); Motorola Comments at 6.

[21] T-Mobile Comments at 6-11; Comments of the Communications Workers of America at 25; GSM Assoc. Comments at 6; MetroPCS Comments at 14-16; Motorola Comments at 10-12.

[22] *See generally* Thirteenth Report, *Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services*, 24 FCC Rcd 6185 (Jan. 16, 2009).

[23] *See* Federal Communications Commission, Wireline Competition Bureau, *High-Speed Services for Internet Access: Status as of December 31, 2008*, at 23, 44-45, Tbl. 10, Tbl. 20 (Feb. 2010) ("FCC Broadband Status Report").

[24] *See id*.

[25] CTIA Ex Parte Attach. at 2 n.4.

cutting-edge broadband services across the United States. As CTIA notes, wireless carriers have put over $90 billion into the U.S. economy in the last four years alone.[26] These investments are spurring a rapid evolution to 3G and even 4G networks across the United States. T-Mobile, for example, has invested $10 billion in its 3G network since 2006.

Not surprisingly, the real winners in this competitive environment are consumers. As T-Mobile explained in its initial comments, wireless broadband providers compete aggressively on the basis of their Internet "openness," striving to provide customers with not only the most Internet applications, but the best ones.[27] The wireless broadband platform has matured from its roots as a so-called "walled garden" into a rich broadband ecosystem hosting full Web access, a broad array of devices (from handsets to netbooks to wireless cards to new "machine-to-machine" devices) from any number of manufacturers, and hundreds of thousands of applications and content sources. As a result, consumers increasingly turn to mobile broadband to address their daily online needs. FCC data show that by the end of 2008, over 18 percent of residential high speed broadband connections were wireless.[28] Also, according to recent studies, mobile data usage is skyrocketing.[29] Cisco predicts that wireless data use is expected to double

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[26] Comments of CTIA – The Wireless Association, GN Docket Nos. 09-51, 09-47, 09-137, at 12-13 (filed Aug. 31, 2009). These include rural providers like Appalachian Wireless and Bluegrass Cellular and national carriers like T-Mobile and Sprint. *See* CTIA Competition Ex Parte at 3.

[27] T-Mobile Comments at 11-12.

[28] *See* FCC Broadband Status Report, at 11, Tbl. 3.

[29] *See, e.g.*, CTIA – The Wireless Association®, *Annualized Wireless Industry Survey Results – December 1985 to December 2008*, http://files.ctia.org/pdf/CTIA_Survey_Year-End_2008_Graphics.pdf; *see also* Letter from Christopher Guttman-McCabe, CTIA – The Wireless Association, to Marlene Dortch, FCC, GN Docket No. 09-51, WC Docket No. 07-52 (filed May 12, 2009).

every year through 2012,[30] while another study released in January 2010 predicts that mobile phones will overtake PCs for Internet access in 2013.[31] Americans are reportedly spending as much as three hours per day accessing the Internet with wireless technologies for social networking, mobile banking, photo sharing, email, and content access and sharing.[32] Given the rate at which wireless broadband access is evolving to meet consumer demand and, in turn, creating ever more demand (as even net neutrality proponents concede),[33] no market failure exists that could justify regulatory intervention in this "virtuous cycle."[34]

The other winners in this competitive and open environment are the "edge" providers that appear to be the intended beneficiaries of the FCC's proposed policies. As Chairman Genachowski noted, the wireless applications market generated $4.2 billion in revenue last year—up from zero just a few years ago.[35] Wireless providers have been aggressively pursuing ways to facilitate and encourage the development and deployment of diverse wireless applications over a range of devices and service platforms, including supporting open development platforms that make it easy for software developers to deploy applications across many devices and service offerings simultaneously. T-Mobile has been at the forefront of this trend, helping to create and leading in the implementation of the open Android platform—which

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30 Cisco Systems, Inc., *Approaching the Zettabyte Era*, at 3 (June 16, 2008), http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-481374_ns827_Networking_Solutions_White_Paper.html.

31 AccuraCast, *Mobile Internet to Overtake PCs in 2013*, Jan. 19, 2010, http://www.accuracast.com/search-daily-news/mobile-7471/mobile-phones-internet-overtake-pc-2013/.

32 Marketing Vox, *Americans Spend Nearly 3 Hours on Mobile Internet Daily*, Feb. 17, 2010, http://www.marketingvox.com/americans-spend-nearly-3-hours-on-mobile-internet-daily-ruder-finn-046249/.

33 *See* Google Comments at 81 n.245.

34 *See* MetroPCS Comments at 16.

35 Genachowski Remarks at 3.

now boasts over 40,000 applications.[36] As Google acknowledges, "national wireless carriers . . . have taken steps to build business models based on open Internet principles."[37]

In fact, like other providers, T-Mobile encourages and supports developers that seek to offer applications for use on a variety of handsets and devices.[38] For example, T-Mobile recently partnered with Flurry, a leading mobile application analytics provider, to make free analytics solutions available to the developer community to help developers tailor their applications to better address consumer demands.[39] Provider efforts to work with and open their platforms also extend to manufacturers of wireless devices. As CTIA notes, consumers today can choose among more than 630 devices from over 33 manufacturers;[40] T-Mobile alone offers its subscribers twelve different smartphone choices.[41] T-Mobile recently began selling the HTC HD2, a device that leverages T-Mobile's 3G network to provide consumers with an unprecedented mobile entertainment experience that includes multimedia applications such as a Barnes & Noble eReader, BLOCKBUSTER On Demand, and MObiTV (allowing consumers to access live and on-demand TV on their phone).[42] Collaboration between T-Mobile and the

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36 *See Google android market hit 40,000 applications*, http://forums.t-mobile.com/t5/Android-Applications/Google-android-market-hit-40-000-application/m-p/348586.

37 *See* Google Comments at 81 n.245.

38 *See T-Mobile Partner Network, Program Info and FAQ*, http://developer.t-mobile.com/site/global/devpartner/program_faq/p_program_faq.jsp.

39 *See Flurry and T-Mobile Offer Co-Branded Analytics Solution for Application Developers*, FierceWireless, Oct. 2, 2009, http://www.fiercewireless.com/press-releases/flurry-and-t-mobile-offer-co-branded-analytics-solution-application-developers.

40 CTIA Ex Parte at 2-3.

41 *See* www.T-Mobile.com.

42 *See* T-Mobile, Press Release, *T-Mobile to Deliver a Multimedia Powerhouse with Content from Barnes & Noble, BLOCKBUSTER, MobiTV and Paramount Pictures on the Largest Screen on a Smartphone*, Feb. 16, 2010.

manufacturer ensures that the devices are optimized to effectively use T-Mobile's network and offer consumers the most advanced services and handset performance.[43] Nonetheless, T-Mobile also permits customers to bring compatible devices to the network and allows them to activate service on a month-to-month basis[44]—providing both customers and device makers with additional opportunities.[45]

T-Mobile is also working on machine-based applications that would embed T-Mobile wireless chips in an expanding array of devices from a host of different manufacturers. These advanced devices include wireless smart grid meters, automotive tracking and safety products, and wireless medical devices.[46] These "machine-to-machine" products are another avenue for innovation and expansion by manufacturers and other "edge" providers, and they will help advance important economic and policy interests for the nation as a whole, such as energy efficiency, highway safety, and electronic healthcare initiatives. As Chairman Genachowski recently noted, such innovative offerings will be key to economic growth and job creation in a mobile broadband-driven economy.[47] To assist developers of these machine-to-machine applications, T-Mobile has created a certification process for device manufacturers and simplified the activation process to facilitate the development and testing process for

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43 *See* Reply Comments of T-Mobile USA, Inc., RM-11497, at 7 (Feb. 20, 2009).

44 *See* T-Mobile, *T-Mobile Even More Plus Plans: No Annual Contract Required*, http://www.t-mobile.com/shop/Plans/Cell-Phone-Plans.aspx?catgroup=EvenMorePlus.

45 *See* T-Mobile, *Keep your phone, lower your bill*, http://www.t-mobile.com/promotions/pcmtemplate.aspx?passet=Pro_Pro_FreeSIMCardPromo&WT.ac=0853SHO04.

46 *See, e.g.*, T-Mobile, *T-Mobile Announces First-of-its-Kind 'EmbeddedSIM' for Machine-to-Machine Solutions*, Apr. 23, 2009, http://www.t-mobile.com/company/PressReleases_Article.aspx?assetName=Prs_Prs_20090423&title=T Mobile%20Announces%20First-of-its-Kind%20'Embedded%20SIM'%20for%20Machine-to-Machine%20Solutions.

47 *See* Genachowski Remarks at 3-4.

developers.[48] Observers have noted that "T-Mobile USA Inc. is making a big integration push into M2M, partnering with module companies, device companies and VARs to create an open marketplace, leveraging its experience with the Android Market for third-party applications for the G1 mobile handset."[49]

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In summary, proponents of the imposition of new net neutrality obligations on wireless broadband providers have failed to demonstrate that regulatory intervention is needed to achieve an open wireless broadband Internet platform. To the contrary, the wireless ecosystem appears to be flourishing to the benefit of all stakeholders and consumers. Far from supporting the need for regulatory intervention, the record suggests that the wireless market already—and without any regulatory intervention in this area—exemplifies the values of openness, consumer choice, and competition that the NPRM seeks to foster. Moreover, unnecessary regulation could have unintended consequences and disproportionately harm the ability of smaller wireless providers to compete against largest national providers. The Commission should carefully consider the potential impact of net neutrality on providers like T-Mobile, which face even greater spectrum constraints and challenges than their larger competitors and are critical players in fostering innovation and choice in the wireless ecosystem.

C. The Serious Questions Raised by the *Comcast* Decision Concerning the NPRM's Jurisdictional Theories Are Yet Another Reason the Commission Should Retain a Hands-Off Approach to the Wireless Broadband Marketplace.

The Commission should be especially wary about intervening in this well-functioning marketplace in light of the serious questions about its jurisdiction articulated by the D.C. Circuit

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48 Tara Seals, *Verizon, T-Mobile Can Lead M2M: Carriers and Channel Partners Can Take Machine-to-Machine Mainstream*, xchange, Apr. 8, 2009, http://www.xchangemag.com/articles/verizon-t-mobile-can-lead-m2m.html.

49 *Id.*

in the *Comcast* decision.[50] In that case, the Court specifically rejected the Commission's effort to assert ancillary jurisdiction over network management decisions of Internet access service providers. The *Comcast* case made clear that "'each and every assertion of [ancillary] jurisdiction . . . must be *independently justified* as reasonably ancillary to the Commission's power[.]'"[51] In light of the rigorous analysis required by the Court to support any assertion of ancillary jurisdiction, it is highly questionable whether the Commission could provide those justifications in this proceeding aimed at regulating even more broadly the very same set of activities.

At the very least, an attempt to assert such jurisdiction would be sure to result in extended litigation and risk and uncertainty for all the players involved—especially the network providers that would be subject to a new regulatory regime of questionable legality governing how they operate their core business. Such an outcome could not help but undermine incentives to invest and innovate in the provision of broadband Internet access services.

Further, there is no reason that the Commission should be reaching to find a basis for jurisdiction to regulate the wireless broadband marketplace. Not only, as discussed above, has there been no demonstrated problem, but, in addition, the Administration has expressed a specific hope that wireless broadband providers will help fill this nation's broadband deployment gap and provide vibrant competition in the greater broadband ecosystem. Those goals are incompatible with the regulatory uncertainty that would follow any attempt by the Commission to reassert jurisdiction in the wake of the *Comcast* case, no matter what theory it adopts in doing so. The collateral effects would of course be felt throughout the broadband industry, but nowhere with more devastating impact than in the still-young and highly dynamic wireless

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50 *See Comcast Corp. v. FCC*, No. 08-1291 (D.C. Cir. Apr. 6, 2010).

51 *Id.*, slip. op. at 15 (citations omitted) (emphasis in original).

broadband marketplace, whose future remains uncharted. A fall-off in wireless broadband investment and innovation at this critical stage, when providers are poised to complete the transition to 3G and move to 4G, would undermine consumer interests and the Administration's broadband policies.

Thus, while T-Mobile advocates a "first, do no harm" approach in general, that approach is even more important in the wireless broadband industry, where an era of regulatory challenges could have long-term, devastating effects. Instead, T-Mobile urges the Commission to recognize the success of the competitive environment to date in fostering openness and innovation in the wireless market and to focus its efforts on regulatory initiatives that preserve and reinforce that environment—an arena where the Commission's jurisdiction is at its strongest and its goals clearly aligned with the public interest.

II. THE PROPOSED RULES WOULD THREATEN WIRELESS PROVIDERS' ABILITY TO MANAGE THEIR NETWORKS AND UNDERMINE SERVICE QUALITY AND INNOVATION.

Notwithstanding their inability to show any specific risk in the wireless ecosystem, advocates of net neutrality regulation insist that the proposed rules must apply to wireless broadband providers to ensure a "seamless" consumer broadband experience—one that is "platform agnostic" as between wireline and wireless broadband.[52] Ironically, however, the proposals they advance would defeat these very goals by undercutting wireless broadband providers' ability to deliver high quality services, advanced applications, and content. This is the case notwithstanding assurances about incorporating "flexibility" into the regulatory framework to account for unique wireless broadband network challenges or any additional spectrum

[52] *See, e.g.*, Public Knowledge Comments at 19; Comments of Access Humboldt, et al., at 8 ("Public Interest Advocates Comments"); Google Comments at 77 .

capacity that may become available. The draconian rules these advocates propose would prevent wireless providers from engaging in the careful management necessary to support converging services over wireless platforms.

Certain immutable features of wireless broadband networks—constrained spectrum, shared "last mile" infrastructure, a mobile customer base, and interference sensitivity, to name a few—make the provision of wireless broadband particularly challenging. Network management is necessary even to ensure that a simple voice call is carried with appropriate "priority" so that it is not overwhelmed by wireless data users, especially as the latter proliferate and applications become more bandwidth-intensive. Some management techniques, like scheduling, have been deliberately designed into advanced wireless broadband network standards to permit the rational allocation of increasingly scarce spectrum among different devices and different users as the strain on the network changes from moment to moment.

The critical need for wireless network management is widely recognized, even by those who would apply net neutrality regulations to the wireless market.[53] Without adequate network management, "harmful traffic generated by a small number of users has the potential to degrade the experience or impede the access of a significant number of other users. . . . [and] inefficient applications may be designed to enhance their own performance at the expense of other applications."[54] Congestion—which can be hard to predict on wireless networks due to mobility and interference—is particularly problematic for "real-time applications such as VoIP, online

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[53] *See, e.g.*, Comments of the Center for Democracy and Technology ("CDT") at 51 ("As the NPRM notes, wireless networks are subject to conditions such as access point sharing, interference, and more constrained bandwidth – that might require more aggressive traffic management to ensure the smooth and effective operation of the network."); Skype Comments at 6; Google Comments at 81-83; Open Internet Coalition ("OIC") Comments at 37-39.

[54] Leap Wireless Comments at 2.

gaming, video conferencing, and IPTV."[55] Congestion is likely to become an even bigger concern over time, given skyrocketing wireless data usage,[56] finite spectrum resources, and the fact that the new applications that make up an increasingly large portion of wireless data usage, like video streaming, are generally quite bandwidth intensive.[57]

Although the Commission has committed to find 500 MHz of additional spectrum to support mobile broadband deployment in the coming years, this will not remove the need for current and future network management.[58] Spectrum allocation is a lengthy process that will not offer immediate relief to an industry that faces constantly increasing demand.[59] Further, more spectrum is not a panacea.[60] New applications and devices will continue to develop based on available bandwidth opportunities and network capabilities, which means that usage will continue to expand, and providers will continue to face challenges in providing high quality services to all users over a shared, defined medium that is subject to hard, real world limits.

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[55] George Ou, The Information Technology & Innovation Foundation: *Managing Broadband Networks: A PolicyMaker's Guide* at 2 (2008) ("ITIF Paper").

[56] *See* National Broadband Plan Workshop: Technology/Wireless Tr., GN Docket No. 09-51, at 26 (Aug. 13, 2009) (Comments of Tom Anderson, Alcatel-Lucent); *see also* Genachowski Remarks at 4 (noting that "America is facing a looming spectrum crunch"); T-Mobile Competition and Innovation Comments at 18. As T-Mobile noted in its initial comments, subscribers using a G1 device consume 50 times more data than the average T-Mobile customer. *See* T-Mobile Comments at 18. For subscribers using some of T-Mobile's smartphones launched in 2010, that figure has doubled to 100 times the data of the typical T-Mobile customer.

[57] Andrew Afflerbach & Matthew DeHaven, Any Device and Any Application on Wireless Networks: A Technical Strategy for Evolution, at 46 (Jan. 13, 2010) (attached as Appendix A to NAF Comments) ("NAF Paper"). Indeed, as a recent CTIA paper makes clear, "With insufficient spectrum, users will experience severely degraded network performance . . . that significantly deviates from wireline performance." *Spectrum Shortfall Consequences*, at 7.

[58] Genachowski Remarks at 5.

[59] *Id.* at 7 ("One thing is clear. It typically takes quite some time from the beginning to end of a Commission strategic spectrum reallocation process.").

[60] *See* T-Mobile Comments at 20-21; ITIF Paper at 4 ("Building more bandwidth, while desireable, does not eliminate the need for network management.").

And, as CTIA recently observed, "just a small percentage of users can consume available capacity" on overcrowded cell sites and significantly reduce throughput speeds for all users and all applications.[61] Thus, Clearwire has stated that its own experience (which is based on an expansive spectrum holding and a more limited form of "openness" than what advocates of regulation propose here), cogently demonstrates that "[T]he Commission's acknowledgement that wireless networks are different from wired networks (and present a complex set of network management challenges) should inform any action taken in this proceeding."[62]

Like the NPRM itself, proponents of regulation acknowledge these special characteristics of the wireless market and make vague references to a more "flexible" application of the "reasonable network management" exception for wireless.[63] Notwithstanding this supposed concession, however, their proposals actually make no allowance at all for the needs of wireless networks. For example, some of the most extreme advocates of regulation would have the Commission prohibit any form of network management—and in particular, any prioritization of any service or application—as a means of addressing service quality in the face of congestion.[64] Instead, they insist that network providers faced with congestion should be given no option to

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61 *Spectrum Shortfall Consequences*, at 8.

62 Clearwire Comments at 9.

63 *See, e.g.*, Google Comments at 81 (suggesting the Commission's rules must be "flexible enough to accommodate legitimate differences between wired and wireless and even between different kinds of wireless networks."); Free Press Comments at 6 ("To the extent that many mobile broadband networks face demonstrably greater challenges than many fixed networks, the range of options considered proportional in response to these challenges will be greater."); Public Knowledge Comments at 18.

64 *See, e.g*, Public Interest Advocates Comments at 8 (advocating that broadband providers only be allowed to engage in network management "to ensure the network's survival or to ensure the network's timely functioning"); Public Knowledge Comments at 45-46 ("prioritization should be either ***essential*** to the network's operation or undertaken in compliance with legal obligations – and in this latter case, pursuant only to the direction of courts, appropriate governmental agencies or law enforcement authorities") (emphasis in original).

preserve service quality other than through supplementation of network capacity.[65] But, as the Commission well knows, spectrum is not infinitely expandable, despite spectral efficiency measures, and new spectrum is not always available. The rule these commenters advance would therefore have the Commission penalize wireless providers—and consumers—for employing measures that providers have no choice but to use every day to balance competing needs over limited, shared wireless spectrum.

The one exception these advocates recognize is likewise of little help. They would permit network management to address temporary "spikes" in congestion—but only if network providers maintained detailed, daily logs of network utilization levels and network management responses.[66] This approach shows no appreciation for the fact that wireless network utilization is not a monolithic statistic that can be easily tracked. Utilization differs from place to place and moment to moment, so tracking and recordkeeping would impose an unreasonable administrative burden. Beyond this, the notion that spikes are rare misunderstands the wireless network, where there can be multiple episodes of "micro" congestion at multiple sites at any given moment. This proposal, if even possible to implement, would hardly be conducive to smooth, ongoing network management.

These same pro-regulation commenters fail to account for the fact that there may be perfectly legitimate "network management" reasons to prioritize some services, such as voice, over the wireless broadband platform.[67] Prioritization of voice packets will be even more critical when the network converts to an all IP-format on LTE platforms and voice is just another

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65 *See* Public Interest Advocates Comments at 7-8.

66 *See* Free Press Comments at 95. Free Press also would require such traffic logs to document harmful traffic in order to justify management efforts designed to protect the network.

67 T-Mobile Comments at 25.

"application." Free Press and NAF,[68] who suggest that there could never be a legitimate need for prioritization of any service, fail to account for this, even though the NPRM itself recognizes that there may be a legitimate basis to prioritize certain classes of service, like all voice traffic over all email traffic.[69]

Other applications also need prioritization to operate at an acceptable quality, especially new, advanced, latency and/or jitter-sensitive services such as high quality streaming video and video conferencing.[70] Motorola notes that gaming, social messaging, and other applications that consumers expect to use over advanced smartphones require special treatment to ensure smooth functioning.[71] Other services, including wireless law enforcement transmissions and wireless medical telemetry, will also need performance assurance to be of value.

Network engineers continue to work to develop a variety of techniques that would reduce latency, jitter, packet loss, and other performance issues for such applications over the wireless platform.[72] But, the proposed rules leave stakeholders with considerable uncertainty as to whether such techniques fall within the bounds of "reasonable network management." That uncertainty creates a hostile climate for continued development of efficient management techniques and for development of applications that require such techniques. As commenters make clear, "Eliminating distinctions in traffic would be contrary to current practices that are

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68 *See* Free Press Comments at 103; NAF Paper at 51-52.

69 NPRM ¶ 156-157.

70 T-Mobile Comments at 25-26.

71 Motorola Comments at 13.

72 AT&T Comments at 173-75.

widely accepted in the industry and that make VoIP, video, and other latency sensitive applications possible."[73]

Despite the obvious need for network management, NAF mistakenly asserts that wireless providers will never need to enhance the performance of any application or limit bandwidth intensive usage. And, contrary to NAF's contentions, tiered pricing is not a substitute for application-focused network management in the wireless ecosystem.[74] Because the wireless last mile network is shared, high volume users in the same cell site could very well block one another if they all decide to stream a video at the same time or if some try to make voice calls while others play online games. High volume users could block a low volume user or vice versa, based on the particular applications being used at any given moment. Tiered pricing may help to address average usage, and it may help rationalize the costs of usage, but it cannot eliminate the problems inherent in sharing spectrum among multiple users and different applications.[75]

Nor is there any basis for NAF's second proposition that network providers could ensure optimal network performance and sharing of network resources if individual users were allowed to request special network enhancements for certain applications instead of the network provider arranging such enhancements directly with application providers.[76] NAF's proposal fails to account for the fact that the technology necessary to permit prioritization on a per customer, per application basis has yet to be developed, much less tested or implemented. And, in any event, customer-based prioritization choices could not replace all wireless network management. Even

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73 Leap Wireless Comments at 18.

74 NAF Paper at 43-35.

75 AT&T Comments at 160; *see also* T-Mobile Comments at 2.

76 NAF Paper at 52-53.

if a customer were to seek no prioritization whatsoever, wireless providers would still need to prioritize in many situations, such as for emergency calling.

T-Mobile is already exploring many of the creative ideas set forth in this proceeding and elsewhere regarding ways in which the network could be even more open and responsive to consumer choice. It is clear, however, that network management requirements will remain a fundamental necessity for quality service in the wireless context. For this reason, a "flexible" *post hoc* network management exception to the net neutrality rules would expose wireless carriers and their customers to too much uncertainty and operational service risk. As Motorola notes, wireless broadband operators would have to make countless judgment calls on a daily basis about whether particular network management decisions complied with the proposed net neutrality rules, knowing at every turn that they ran the risk of being second-guessed by the Commission.[77] This could lead to overly cautious network management implementation, which likely would result in increased congestion and slower response time when network problems arise. Such uncertainty could also chill private sector engagement in the government's important cybersecurity efforts and in measures designed to ensure the reliability of critical communications services.[78]

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[77] Motorola Comments at 14 ("The uncertainty of how the proposed rules would apply to wireless broadband services coupled with the Commission's 'case-by-case' adjudicatory approach is fatal to the notion that the proposed rules would 'provide greater predictability.'").

[78] No commenters seriously question providers' rights to engage in network management to prevent security threats to the network. But, the line between a clear threat and an abusive use of the network may not always be easy to detect. A threat may arise from the volume of use, for example—denial of service attacks may differ from "normal" traffic primarily in amount rather than in type.

III. THE NO-BLOCKING, ANY-DEVICE, AND NONDISCRIMINATION RULES ARE AMBIGUOUS AND POTENTIALLY HARMFUL TO BOTH CONSUMERS AND THE WIRELESS BROADBAND MARKETPLACE.

A. The Rules Would Negatively Impact Consumers.

The proposed no-blocking, any-device, and non-discrimination rules and the paid prioritization bar could have unanticipated and undesired effects in the wireless context. As the Commission has recognized and several commenters have shown,[79] the wireless marketplace is one in which collaboration among different market stakeholders is common and beneficial. Wireless providers enter into arrangements with specific manufacturers to optimize efficiencies and provide incentive for further innovation. In addition, wireless providers work with specific application providers to develop unique, network-specific offerings for consumers. As the GSM Association notes, an "expansive nondiscrimination rule" could raise questions "any time carriers collaborate with content, application or service providers, or otherwise facilitate consumer access to specific content or services" and thereby "discourage or even could prohibit voluntary, pro-consumer, and pro-competitive revenue sharing agreements between content providers and network operators."[80] Preloading a certain application onto a device could be considered discrimination, as could provision of a smartphone specifically optimized for video streaming.[81]

Similarly, the proposed no-blocking or non-discrimination rules could preclude wireless carriers from offering products tailored to satisfy customer demand for specific types of wireless Internet access, including navigation devices dedicated to pre-determined sites or an e-reader

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79 *See* NPRM ¶ 9 ("We also recognize the importance . . . of preserving and protecting the ability of broadband providers to experiment with technologies and business models to help drive deployment of open, robust, and profitable broadband networks across the nation.").

80 GSMA Comments at 18-19; CTIA Comments at 45-46.

81 T-Mobile Comments at 34; AT&T Comments at 181.

designed to facilitate access to limited content or preclude certain activities (*e.g.*, no email permitted) for productivity or safety reasons. While all major providers permit the use of "any device" that is compatible with their networks today, some offerings may not fit within the framework proposed by net neutrality advocates (and certainly within the NAF framework, discussed below). More specifically, if T-Mobile works with a manufacturer to design a smart-meter, wireless picture frame, or some other device that uses spectrum in a certain way to ensure reliable transmissions but the minimal use of network resources, is this arrangement one that must be made available to "any device"—or is it enough that the network itself is accessible to any device? Only the latter seems to make sense, but the rule is unclear.[82]

In addition, the proposed rules could negatively impact the transition of applications and content to the mobile platform.[83] For example, in the mobile context, the provision of high quality streaming video may require special quality of service arrangements and graphics on traditional websites may need to be compressed or otherwise specially treated to be readily accessible on wireless devices. If rigidly applied, the rules could preclude network operators from working with companies to help support their special service needs. As the GSM Association notes, there is "a vast untapped pool of economic interests that may be willing to engage in innovative business arrangements that could provide consumers with high quality content and services at reduced prices."[84] Efficiencies from collaboration would serve

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[82] *See also* Motion Picture Association of America Comments at 18; Recording Industry Association of America Comments at 5-6; Amazon.com Comments at 4.(arrangements that offer particular value to these providers could be prohibited by strict application of the rules.

[83] Some larger application providers enhance content for the mobile network, doing their own compression and other adjustments. Network providers may do the same for network management and resource conservation reasons. *See* Leap Wireless Comments at 8; MetroPCS Comments at 42-43.

[84] GSM Assoc. Comments at 8.

consumers directly, support and enhance the offerings of edge providers, and, by stimulating more network demand, would help defray the enormous costs of wireless broadband networks and in turn stimulate more investment by both network providers and edge providers.

While at least some of the collaborations and tailored services wireless providers may offer would qualify as "managed services" under the rules, this possibility is altogether tenuous. The resulting overhang of regulatory uncertainty would chill investment and threaten innovation. The record reflects deep confusion and disagreement about the meaning of the term "managed services," and the rules that would be applicable to such services.[85] Further, many of the pro-regulation commenters stress that managed services cannot ever "share bandwidth" with broadband Internet access service[86]—a meaningless concept on the shared wireless network.

It is also not clear why all packet prioritization should be condemned as harmful or discriminatory. It is not discriminatory to prioritize applications that need such prioritization for optimal network performance over those that do not need performance enhancement measures.[87] Supporters of a blanket nondiscrimination and no prioritization rule "incorrectly assume that all applications require the same performance metrics" and that prioritizing one application and not another necessarily harms, and discriminates against, the latter application.[88] For example, the quality of a Blackberry's passive downloading of email traffic will be unaffected by a millisecond or even a multi-second delay, whereas that same delay could seriously degrade the performance of a wireless game, a live wireless videoconference, or a wireless transmission from

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[85] In fact, some net neutrality proponents, like Public Knowledge, advocate that the Commission put off ever defining the concept of "managed service" for purposes of this proceeding. Public Knowledge Comments at 32.

[86] CDT Comments at 48; *see also* Public Knowledge Comments at 33-34.

[87] For a fuller discussion of this issue, *see, e.g.*, NCTA Comments at 35-36; ITIF Paper at 33.

[88] ITIF Paper at 22.

a heart monitor or other medical telemetry device.[89] Providing a performance guarantee to allow more sensitive transmissions to use available resources first or more broadly in times of congestion is not discriminatory because it simply matches network capability to need. Nor is it harmful to any applications if the impact on the non-latency sensitive application is imperceptible to subscribers and not performance-affecting.[90] Indeed, the differentiation that matches network capacity with performance requirements can actually enhance network performance for all applications and users. As the ITIF explains, quality of service prioritization means that "the network is simply switching between the various applications more frequently so that all priority tiers end up with less packet delay. Every application, regardless of whether it is high priority or low priority, benefits."[91] As many commenters note, a network that did not prioritize latency sensitive applications could itself be unfairly discriminatory in the sense that it would necessarily produce poorer performance for such services, while preferring non-latency sensitive applications like email.[92]

Moreover, managing for optimal performance should not be deemed discriminatory simply because application or content providers might enter into arrangements that involve paying for special enhancements in certain circumstances. No reasonable definition of the term "discrimination" would encompass providing special service to a customer that has paid for such service. As several commenters explain, treating these types of arrangements as discriminatory

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89 *See* T-Mobile Comments at 26.

90 *See, e.g.*, AT&T Comments at 39-40; *see also* ITIF Paper at 33 ("One misconception about QoS prioritization is that lower priority applications are somehow forced on to a 'dirt road' that runs slower. This is false because bandwidth is generally not affected by higher packet delay.")

91 ITIF Paper at 34.

92 *See, e.g.*, Leap Wireless Comments at 2 ("In the wireless ecosystem particularly, *an unmanaged network is essentially an 'unfair' network*"); AT&T Comments at 40-41; ITIF Paper at 27.

would go well beyond anything the Commission has ever suggested in the context of the many-decades-old Title II regime.[93]

Also, a provider does not discriminate among end-user subscribers because it enhances an application one subscriber is using but not the application another is using. Quality of service arrangements that occur in the background of the network are designed to ensure that each consumer gets the optimal experience given the application and device he or she is using at the moment—not to harm or prefer one consumer over another. Providers would not be spending billions of dollars on technology and network buildout if their goal was to disadvantage some users. Rather, they seek to ensure that all users can engage in any number of applications—latency-sensitive or otherwise—and that the network can support all of these uses simultaneously.

In contrast, the proposed rules could deprive consumers of services and arrangements they use and depend on today, and they would have a particularly pernicious effect on future innovation in the wireless marketplace. Because the Commission's goal is to advance the development of wireless broadband networks and services, the Commission should seek to encourage wireless network providers to continue managing their networks and entering into business arrangements with developers that offer applications optimized for efficient, high quality performance in the wireless ecosystem.

B. Application of the Non-Discrimination and Other Net Neutrality Rules to Wireless Is Premature in Light of the Pending C Block Experiment.

As T-Mobile and others noted in the initial comments,[94] the pending C Block experiment makes the imposition of net neutrality rules on the wireless industry premature—especially in

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93 *See* USTA Comments at 47-49; AT&T Comments at 105-106.

94 T-Mobile Comments at 40-41; MetroPCS Comments at 32-33; AT&T Comments at 142-43.

light of the fact that the Commission expressly committed *not* to adopt widespread net neutrality rules for the wireless industry in connection with establishing those targeted obligations in the 700 MHz auction. Instead, it chose to "allow both the Commission and the industry to observe the real-world effects of such a requirement" before making any broader determinations.[95] This decision reflected concerns that the "open platform requirement for devices and applications" could "have unanticipated drawbacks."[96] It would be unwise for the Commission to go forward now without having observed the real-world effects it deemed a necessary condition to further action—and after having recognized the risk of "unanticipated drawbacks" of precisely the type described in this record.

At a minimum, the Commission should wait to consider open access requirements for the wireless broadband ecosystem until after 700 MHz C Block service has been deployed and in use for a period of time. In the meantime, the industry will continue to develop, and the Commission may very well decide—as it already could today—that it is unnecessary to impose open access requirements on wireless providers. If, on the other hand, it turns out some rules are warranted, the Commission will be in a position to adopt narrow rules targeted to wireless broadband—a question for which neither the NPRM nor the comments in this proceeding provide an answer.

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[95] Second Report & Order, *Service Rules for the 698-746, 747-762, and 777-792 Bands*, 22 FCC Rcd 15289, 15364-65 ¶ 205 (2007).

[96] *Id.* Analysts have predicted that imposition of new net neutrality mandates could have unintended consequences by undermining investment and shrinking the broadband sector, with job losses in the nascent wireless sector likely to outpace those in the wireline sector. *See* Coleman Bazelon, The Brattle Group, *The Employment and Economic Impacts of Network Neutrality Regulation: An Empirical Analysis*, at 10 (Apr. 23, 2010).

C. NAF's "Any Device/Any Application" Proposal Goes Well Beyond Anything the NPRM's Proposed Rules Envision.

In a paper prepared for NAF,[97] Andrew Afflerbach and Matthew DeHaven take an extraordinary leap from the concepts discussed in the NPRM to a hypothetical wireless broadband ecosystem designed to stamp out any differentiation that could in any way cause a departure from complete and idealized "neutrality." In particular, they propose that the Commission should dictate the permitted evolution of every wireless network in the country in order to ensure a perfectly equivalent platform for every device manufacturer. As noted above, they also propose eliminating network management of applications, preferring a pure, best-efforts "free for all" transmitted over dumbed-down wireless networks in which bandwith-intensive applications "shout down" all other applications.

T-Mobile operates as an "any device" network and instructs customers on how to use their T-Mobile SIM cards in GSM-compatible, unlocked devices.[98] But the authors of the NAF paper want absolute compatibility, so that every GSM-compatible device would work the same on every GSM network with no operator involvement or oversight. They insist this could be achieved through nothing more than network provider and device manufacturer compliance with publicly available GSM standards available from a third-party certification body.

In fact, although every GSM network already complies with basic GSM standards, reasonable device/network compatibility is best achieved when the manufacturer and the network operator work closely together, something that net neutrality proponents seek to curtail. For instance, Google's Nexus One device was launched both as a device optimized for the T-Mobile network and as an unsubsidized, unlocked device compatible with other GSM

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97 *See* NAF Paper, *supra* note 57.

98 *See* T-Mobile, *Keep your phone, lower your bill*, *supra* note 45.

networks. When used on the T-Mobile network, the Nexus One is a 3G device, but it cannot operate on AT&T's 3G network, which uses a spectrum band that the Nexus One does not support.[99]

As CTIA makes clear, it is erroneous to assume that "wireless devices exist on the 'edge' of the network and may be harmlessly interchanged via an industry standard interface—the wireless equivalent of an RJ-11 (telephone) or RJ-45 (Ethernet) jack."[100] While a compatible device may operate on the network without any further testing or development, it will not necessarily operate optimally. In some cases, even GSM-compatible devices can cause actual harm to the network that requires intervention by network providers. For example, when subscribers began connecting unlocked iPhones to T-Mobile's network, the devices repeatedly issued PDP Context Activation requests to establish a session and obtain an IP address. These repeated requests began to cause signal overload akin to a denial of service attack, requiring immediate action and network management to mitigate the massive signaling load on T-Mobile's Packet Core network.

In other cases, T-Mobile must modify its network to address devices that fail to work optimally on T-Mobile's network and undermine mobile users' experiences. For example, an early, multi-band GSM phone contained a software bug that interfered with its functionality on certain frequency channels. The device failed to operate properly on certain frequency "hopsets" (*i.e.*, frequency lists for a mobile device) if certain channel numbers were listed as the highest channel in the hopset. This led to muted calls and handset inoperability in some geographic markets. To address this problem, T-Mobile audited its hopsets and created work-arounds in affected regions to ensure that the device would function properly throughout T-Mobile's

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99 CTIA Comments at 41-42.

100 *Id.* at 41.

network. Thus, the ability to work closely with the manufacturer to identify problems (ideally before product launch) and make any necessary adaptations is a necessary part of network management. Without that flexibility, the network and users alike would be disserved.

Further, NAF's vision of 100 percent compatibility would be achievable only if the long history of wireless provider self-determination in this country were replaced by from-the-top dictation of network technology choices requiring 100 percent uniformity among all wireless networks. To do this, network providers would have to strip their networks of anything "non-standard," jettison existing equipment and technology, and operate their networks on a generic, dumbed-down, standards-only basis. Networks would be basic conduits, and the consumer devices that use those networks would be considerably less innovative and less interesting.[101]

Finally, NAF's "any application" proposal, if taken literally, would preclude network management even to ensure security and for "managed services."[102] According to NAF, network management should not be used to address bandwidth-hogging applications[103] or denial of service attacks.[104] Instead, NAF would require all network transmission of any packets to be pure "best efforts." But forcing networks to carry every packet in a one-size-fits-all manner with no concern as to how this affects the performance of particular applications or the network

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[101] NAF's proposal also ignores wireless carriers' obligation to control the devices on their networks and to prevent interference. *See* 47 C.F.R. § 22.927. Without the ability to work closely with device manufacturers, wireless carriers would be hard pressed to meet these obligations. While NAF suggests that the network operator could push solutions and required updates to devices on their network to ensure required compliance, this solution is not technically feasible. Such a solution would require every device to have Firmware Over The Air ("FOTA") capability and the ability to receive updates from all carriers, which is not the case today. More importantly, FOTA updates are simply not sufficient to address all aspects of device functionality as NAF's proposal envisions.

[102] NAF Paper at 51-54.

[103] *Id.* at 44.

[104] *Id.* at 55.

generally goes well beyond the Commission's own recognition that prioritization of different types of applications can be appropriate[105] and could have a devastating effect on wireless networks.

IV. NEW DISCLOSURE REQUIREMENTS ARE UNNECESSARY AS BROADBAND PROVIDERS ALREADY DISCLOSE THE MATERIAL TERMS OF THEIR OFFERINGS, THUS ENABLING CONSUMERS TO MAKE INFORMED DECISIONS ABOUT THEIR SERVICE.

T-Mobile fully supports the principle that broadband providers should disclose the material terms of their service offerings in clear, understandable language, along with other information that customers need to make informed decisions about choosing and using their broadband service. Accordingly, T-Mobile, along with most other major wireless providers, has already committed to provide open and transparent disclosure to customers by participating in CTIA's "Consumer Code for Wireless Service."[106] New and burdensome disclosure rules are unnecessary to ensure that consumers have the information they need to choose between providers and understand wireless service offerings. In fact, the intense competition in the wireless broadband market creates pressure on providers to offer useable, relevant, and accessible information to consumers in a manner that is far more effective than inflexible disclosure rules that could quickly become outdated or result in expansive disclosures that are overwhelming and not useful to consumers.

The proposed transparency rule would impose vague and cumbersome disclosure mandates that would not ultimately benefit consumers. The rule would require wireless broadband providers to disclose anything reasonably necessary to ensure that a consumer can

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105 NPRM ¶ 156-157.

106 *See* T-Mobile Comments at 37; *see also CTIA Consumer Code for Wireless Service*, at http://files.ctia.org/pdf/The_Code.pdf.

"enjoy the protections" of the proposed net neutrality regime.[107] But, as the record demonstrates, wireless providers do not know what the net neutrality regime would mean for their various service and device offerings. Indeed, even proponents of regulation have failed to provide any detailed guidance on how they think the rules apply in the wireless context. Given that the Commission has indicated it will resolve questions about network management and the like only through *post hoc* enforcement decisions,[108] no carrier can ever know for certain the precise scope or limit of the "protections" consumers "enjoy" on the network. As a result, wireless providers will be caught in a guessing game, trying to balance their "flexible" network management rights against the need to provide consumers with an undefined category of "required" information.

The resulting uncertainty will inevitably compel providers to err on the side of caution, especially given the surge in litigation that is likely to follow adoption of the regime envisioned in the NPRM. And, that cautious, defensive approach can be expected to produce long, detailed disclosures that ultimately prove less useful to consumers' real-world decisionmaking. For example, Leap Wireless correctly points out that numerous types of network challenges affect a user's speed or bandwidth and might require some element of "management" in order to ensure quality service. These include the technical capabilities of users' equipment, interference from any number of sources, weather conditions, and a user's distance from cell sites.[109] A disclosure that walked through these issues would be not only lengthy, but overly technical and incomprehensible to the average user. It would also require constant revision to reflect the introduction of new techniques or new potential issues. In a dynamically changing industry where the technology is still developing—and new threats to the network are developing apace—

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107 NPRM ¶ 119.

108 *See, e.g., id.* ¶ 175.

109 Leap Wireless Comments at 23-24.

this could be an extremely burdensome process of ongoing revision.[110] As the Commission has observed, "[T]oo much detail may be counterproductive if users ignore or find it difficult to understand those details."[111]

Net neutrality proponents' suggestions would make the proposed transparency rule even more problematic. They urge the Commission to require highly detailed disclosures of every network provisioning and network management technique that might in some way affect a customer's use of his or her service,[112] how such a customer (and all customers) would be affected,[113] why the technique was deemed necessary,[114] what particular speeds a customer can expect,[115] and how the carrier allocates capacity between its various services—among other things.[116] They would also have providers track incidents of harmful traffic or congestion in order to back up any network management decisions and link them to its disclosed practices.[117] Again, proponents ignore the technical and logistical realities of a highly dynamic environment. The variables listed above may change from moment to moment and differ among customers. The resources required to constantly update disclosures would not only overwhelm consumers but would take valuable resources away from innovation and even general network maintenance.

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110 Leap Wireless Comments at 24 ("Carriers should not be required to provide disclosures so detailed that they must be constantly revised.").

111 *Id.* ¶ 126.

112 *See* Free Press Comments at 112; CDT Comments at 33; OIC Comments at 88-89; Public Knowledge Comments at 65.

113 *E.g.*, CDT Comments at 33; OIC Comments at 88-89; Public Knowledge Comments at 65.

114 *E.g.*, CDT Comments at 33; Public Knowledge Comments at 65.

115 Public Knowledge Comments at 65.

116 CDT Comments at 35; Public Knowledge Comments at 65.

117 Free Press Comments at 95.

Some commenters further suggest that providers make disclosures 30 days before employing a new network management technique.[118] This requirement would be unworkable in the wireless context, where providers must manage day-to-day risks on evolving networks. A provider facing a new threat—a new application or network flaw—should not be prohibited from responding quickly simply because it has not yet drafted language to describe the particular practice that it may need to implement to prevent disaster. And, while the Open Internet Coalition would allow a provider to offer a *post hoc* defense of its failure to disclose in advance,[119] the mandate would likely have a chilling effect, causing providers to hesitate and consult lawyers at a time when their first priority should be protecting the network and their customers.

The proposed requirement that network operators disclose information to both application and content providers is unnecessary and overly burdensome. Many wireless providers already host sites specifically devoted to providing developers with all the information they need to develop applications and content for providers' systems and devices. Open platforms like Android make development information generally available on an open source basis, and no commenter has provided an example of missing information or explained even more generally what additional purpose would be served by this new category of mandatory disclosures.

Moreover, disclosure of comprehensive, highly detailed network management information would be especially perverse in the wireless context. Many carrier network management techniques are proprietary and competitively sensitive, and others combine network management with vital network security information. Further, content and application providers could use detailed network management disclosures as a roadmap to engineer around a

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118 *See, e.g.*, Public Knowledge Comments at 65-66; OIC Comments at 90-91.

119 OIC Comments at 90.

provider's network management techniques. CDT acknowledges but dismisses this risk with the assertion that, "subscribers or providers of content, applications, or services . . . do not have an interest in causing congestion per se. If they know what congestion management practices are in effect, they may adjust their behavior—but that would not be 'circumvention' so much as conforming their bandwidth usage to parameters established by the network provider."[120] Based on this unsupported assurance of all user and provider goodwill, CDT proposes that the Commission actually strike the "reasonable network management" exception from the transparency rule—which would compel providers to make disclosures without regard to how bad actors could misuse that information to harm networks.[121] This is a particularly unwise approach in this age of cybersecurity threats and denial of service attacks. And, in any event, even if an application provider may not have an interest in causing congestion "per se," that is precisely what would happen if all users or providers were permitted to "adjust their behavior" to circumvent management measures and use maximum spectrum resources.

Thus, even if it adopts new transparency requirements, the Commission should make clear that providers have the right to draft their consumer disclosures so as to protect sensitive technical data about network management and provisioning. In the open network environments that wireless providers offer today, application and content providers are flourishing and developing new applications for the network with all the information they need. In contrast, network operators must support those applications with no advance notice about how they will affect the network, and consumers download and use them with even less information about the impact on the network, on the consumer's privacy interests, and the like. Yet, no proponent of regulation proposes to compel these entities to make any required disclosures to consumers on

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120 CDT Comments at 34.

121 *Id.* at 32.

their websites where any user (or network provider) can access the information. The rule should run both ways, or not apply at all.[122]

Rather than impose overbroad and burdensome disclosure requirements, the Commission should encourage broadband, content, and application providers to work together, as they already do, to share information, partner, and create mutual value for one another and for their collective end users.

CONCLUSION

For the reasons set forth above, the imposition of net neutrality rules, in any form, on wireless broadband Internet access services is unnecessary and could undermine innovation and competition, particularly for independent providers like T-Mobile as well as regional and local wireless providers. Wireless broadband has improved consumer welfare and helped to grow the U.S. economy by fostering innovation, investment, and job creation—all without the need for regulatory intervention of the sort the Commission is now considering. Rather than adopting a new broad-based net neutrality regime, the Commission should focus on mechanisms that foster an environment in which wireless broadband and individual wireless broadband providers can remain competitive and continue to offer consumers meaningful choice.

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[122] T-Mobile agrees with the comments of Comcast (at 33-35), Time Warner (at 21-23); NCTA (at 48-49); Verizon (at 37-39), AT&T (at 196), and many others that stress that if the net neutrality rules are to be adopted to preserve an "open Internet," it makes no sense to limit those rules to broadband providers. Search providers, for example, have as much if not greater influence over the Internet's openness. If a popular search provider does not return "hits" for a new website when a relevant content search is done, that new site may simply fade away—a fact that has led at least one party in this proceeding to call for "search neutrality" to be added to the Commission's agenda. *See generally* Comments of Foundem; *see also* NPRM, Separate Statement of Commissioner Copps at 95 (asserting that the rules should take into account "the gatekeepers of tomorrow," especially when those gatekeepers are already exerting a powerful influence). T-Mobile believes, of course, that the industry is healthy enough to flourish with only a protective overlay of antitrust and consumer protection law. But if the Commission disagrees, it cannot responsibly address only part of the supposed "problem."

Respectfully submitted,

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