

CTIA – THE WIRELESS ASSOCIATION® RESPONSE TO HOUSE ENERGY AND COMMERCE WHITE PAPER ON MODERNIZING U.S. SPECTRUM POLICY

CTIA – The Wireless Association® (“CTIA”) submits the following response to the White Paper released by the House Committee on Energy and Commerce (“Committee”) on April 1, 2014, seeking comment on modernizing U.S. spectrum policy, as a part of the Committee’s ongoing efforts to reform the Communications Act of 1934, as amended (the “Act”).^{1/}

I. INTRODUCTION AND SUMMARY

CTIA applauds the Committee’s continued interest in spectrum policy and appreciates the opportunity to provide the Committee with this response. As CTIA has noted in testimony before Congress, America is the world’s wireless industry leader, and the wireless marketplace is a significant driver of the U.S. economy.^{2/} In 2013 alone, U.S. wireless carriers invested approximately \$34 billion in their networks, which amounts to \$104 per subscriber.^{3/} This was not an anomaly. Indeed, since 2001, U.S. wireless carriers have invested nearly \$300 billion in their networks,^{4/} a figure which does not include the more than \$35 billion in carrier expenditures

^{1/} See House Committee on Energy and Commerce, *Modernizing the U.S. Spectrum Policy* (April 1, 2014) (“White Paper”), available at <http://energycommerce.house.gov/sites/republicans.energycommerce.house.gov/files/analysis/CommActUpdate/20140401WhitePaper-Spectrum.pdf>; 47 U.S.C. § 151 *et seq.*

^{2/} See, e.g., Testimony of Christopher Guttman-McCabe, Vice President of Regulatory Affairs, CTIA – The Wireless Association®, on Military Space Programs and Views of DoD Usage of the Electromagnetic Spectrum, Before the Senate Committee on Armed Services, Subcommittee on Strategic Forces at 1-2 (April 24, 2013), available at http://www.armed-services.senate.gov/imo/media/doc/Guttman-McCabe_04-24-13.pdf.

^{3/} See CTIA, *US Invests Four Times More in Networks* (March 13, 2014), available at <http://www.ctia.org/resource-library/facts-and-infographics/archive/us-investment-networks> (“CTIA March 2013 Wireless Facts”) (citing Didier Scemama, *et al.*, 2014 *Wireless Capex: BRICs & Europe to Pick Up the Slack*, Bank of America Merrill Lynch, Global Telecom Equipment, at Table 2 (Jan. 13, 2014); Glen Campbell, 2014: *The Year Ahead*, Bank of America Merrill Lynch, Global Wireless Matrix 4Q13, at Tables 1 and 2 (Jan. 8, 2014) (“Global Wireless Matrix”).

^{4/} See *id.*; see also CTIA, *The U.S. Wireless Industry: Leading the World in Investment, Value, Innovation, and Competition*, at 3 (Nov. 2013), attached to Letter from Scott K. Bergmann, Vice

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on spectrum auctioned by the Federal Communications Commission (“FCC” or “Commission”).^{5/}

This massive capital investment not only reflects the existence of a vibrant and competitive wireless marketplace, but it also serves as a catalyst for what CTIA calls the “virtuous cycle” of wireless investment and innovation. Sustained capital expenditures facilitate the creation of networks capable of supporting greater speeds and functionalities, which, in turn, result in the introduction of new, more powerful and sophisticated devices. These new devices encourage the development of new applications and content used by consumers and businesses to promote productivity, access information, and increase security. Each point along this cycle leads to job creation and economic development.

American consumers and businesses have become the world’s wireless winners as a result of this “virtuous cycle,” benefitting from better value and more cutting-edge wireless products and services than in other countries.^{6/} In the U.S. market, the most advanced Long-Term Evolution (“LTE”) deployments have produced nearly half of the world’s 4G subscribers,

President, Regulatory Affairs, CTIA, to Hon. Thomas E. Wheeler *et al.*, FCC, GN Docket No. 09-51, WT Docket No. 13-135 (filed Nov. 13, 2013) (“2013 CTIA Wireless Industry Report”).

^{5/} This figure represents auction revenue since 2001. Dating to the adoption of the auction mechanism as part of the Omnibus Budget Reconciliation Act of 1993, spectrum auctions have resulted in total revenues of \$53.56 billion, per the FCC Fiscal Year 2015 Budget Estimate as supplemented by auction revenue data for 2013 to 2014 from the FCC’s Wireless Telecommunications Bureau Auction Home page. See FCC, *Fiscal Year 2015 Budget Estimates Submitted to Congress*, at 36 (March 2014), available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2014/db0307/DOC-325947A1.pdf; Auctions Home, Wireless Telecommunications Bureau, FCC, http://wireless.fcc.gov/auctions/default.htm?job=auctions_home (last visited April 24, 2014).

^{6/} CTIA, *Policy Topics: Innovation*, <http://www.ctia.org/resource-library?Types=Policy%20Topics&Topics=53ac909c41746fcd88eaff000002c0f4&OrderBy=SortTitle> (last visited April 24, 2014); CTIA, *CTIA Statement on the White House’s Executive Memorandum on Expanding America’s Leadership in Wireless Innovation* (June 14, 2013), available at <http://www.ctia.org/resource-library/press-releases/archive/ctia-statement-white-house-expanding-leadership-in-wireless-innovation>.

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despite the fact that the U.S. has just five percent of the world’s overall wireless subscribers.^{7/}

These subscribers use innovative devices that run on chips and operating systems developed by American companies like Qualcomm, Apple, Google, and Microsoft. And these U.S.-derived networks, devices, and operating systems serve as the foundation for a fertile applications development industry – also with its hub in America – that is helping transform the way we consume information and engage in commerce.^{8/}

This “virtuous cycle” of innovation and investment also benefits consumers by driving the mobile ecosystem into new areas, including health care, education, farming, intelligent transportation, fleet management, mobile commerce, safety and security, small business efficiency, and more. As Cisco reports, the growth in 4G technologies – which is characterized by higher bandwidth, lower latency, and increased security – will lead to even higher adoption of mobile technologies by end users, permitting even greater access to any content on any device

^{7/} See 2013 CTIA Wireless Industry Report at 5. As of April 2014, the U.S. was estimated to have approximately 48 percent of the world’s LTE subscribers, according to the Informa Telecoms & Media Group’s World Cellular Information System (“WCIS”) database.

^{8/} See, e.g., 2013 CTIA Wireless Industry Report at 6 (“The wireless industry in the U.S. directly or indirectly employs more than 3.8 million Americans, which accounts for 2.6% of all U.S. employment.”); Prepared Remarks of FCC Chairman Tom Wheeler, Wireless Spectrum and the Future of Technology Innovation Forum, The Brookings Institute, Washington, D.C., at 5 (March 24, 2014), *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2014/db0324/DOC-326215A1.pdf (“Think about the iPhone and Android phones, which have given more than 60% of Americans more computing power in their pocket than the module that put a man on the moon. . . . In barely six years, those platforms have given rise to the apps economy, which has already created more than 750,000 new U.S. jobs and put a solution to countless problems just one finger-tap away. Think about what U.S. innovators and entrepreneurs will come up with for these platform over the next six years? The next 16? Or the next 60?”).

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from anywhere.^{9/} This is all occurring in an environment where the Bureau of Labor Statistics Wireless Price Index has declined more than 10 percent over the last five years.^{10/}

Recognizing the value and resilience of LTE technology, an increasing number of consumers have chosen to go “wireless-only,” severing their retail relationship with the wireline industry.^{11/} Similarly, a growing number of consumers use their wireless device as their on-ramp to the Internet, and it was recently estimated that 50 million people in the U.S. now watch video on their mobile phones.^{12/} Irrespective of service (voice, data, and video), consumers now spend more minutes per day focused on their smartphones (151 minutes) than on televisions (147 minutes), and the disparity is even greater when tablet use (43 minutes) is aggregated with smartphone use.^{13/}

Maintaining the United States’ position of leadership in the wireless industry and addressing consumers’ evolving demands requires an on-going commitment to policies that ensure wireless providers have access to a significant and predictable supply of spectrum. Spectrum is the most significant resource for wireless networks. Thus, as spectrum usage and

^{9/} Cisco, *Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2013–2018*, at 10 (Feb. 5, 2014) (“Cisco Report”), available at http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white_paper_c11-520862.pdf.

^{10/} See generally Consumer Price Index – March 2014, Bureau of Labor Statistics, U.S. Department of Labor News Release (April 15, 2014), available at <http://www.bls.gov/news.release/pdf/cpi.pdf>.

^{11/} See *Wireless Substitution: Early Release of Estimates from the National Health Interview Survey, January-June 2013*, Centers for Disease Control, at 1 (Dec. 2013), available at <http://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201312.pdf> (finding that, as of June 2013, two in every five American homes (39.4 percent) had only wireless telephones, an increase of 1.2 percentage points since the second half of 2012).

^{12/} See Tony Danova, *The Great Audience Shift: People Are Watching Tons Of Video On Mobile, And Media Companies Are Trying To Cash In*, BUSINESS INSIDER (Feb. 10, 2014), <http://www.businessinsider.com/mobile-video-market-growth-2014-2#ixzz2zWULb7GG>.

^{13/} See Millward Brown, *AdReaction 2014*, <http://millwardbrown.com/adreaction/2014/#/main-content> (last visited April 24, 2014).

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demand grow – and they are projected to do so at impressive rates, as both Cisco and Ericsson have documented^{14/} – so too does the need for ever-more robust networks and more spectrum. America is only now at a level comparable to other countries with respect to spectrum usable for commercial broadband. Nonetheless, as demonstrated by the chart below, the U.S. efficiently supports more customers and more usage of spectrum than other countries, with U.S. consumers receiving more service for their telecommunications dollar.^{15/}

	USA	Canada	France	Germany	Italy	Japan	Spain	U.K.
Subscribers	335M	28M	78M	114M	92M	140M	52M	78M
Average Consumer MOU/Mo.	933	394	243	135	202	115	160	188
Subscribers per MHz of Spectrum Allocated	698,644	82,840	124,324	185,366	170,370	280,000	86,667	130,478
Number of Major Incumbents	4	3	4	4	4	3	4	4
MHz Assigned for Licensed Commercial Use	479.5	338	555	615	540	500	600	597.8
Potentially Usable MHz in the Pipeline	65 + BIA	113	50	0	20	255	0	0

Despite U.S. carriers’ efficient use of spectrum, more is required to continue to foster economic growth. Accordingly, additional infusions of cleared, licensed spectrum for commercial mobile use should be the top priority of our nation’s spectrum policy. In addition, CTIA recommends that Congress:

- Promote more comprehensive spectrum management by considering changes to the National Telecommunications and Information Administration (“NTIA”)’s role to permit, consistent with national security concerns, most spectrum use decisions to be made by the FCC;
- Adopt spectrum policy that emphasizes licensed spectrum in bands suited for mobile broadband, directs spectrum sharing where and when clearing is not

^{14/} See Cisco Report; Ericsson, *Ericsson Mobility Report on the Pulse of the Networked Society, Interim Report* (Feb. 2014), available at <http://www.ericsson.com/res/docs/2014/ericsson-mobility-report-february-2014-interim.pdf>.

^{15/} See Global Wireless Matrix at Tables 1-2; Craig Moffett, *et al.*, *AT&T, Vodafone, & Global Wireless: Will the U.S. Look Like Europe, or Will Europe Look Like the U.S.?*, MoffettNathanson Research, at 7 (Jan. 13, 2014); see also Comments of CTIA – The Wireless Association®, WT Docket No. 13-135, at 67-68 (filed June 17, 2013); 2013 CTIA Wireless Industry Report at 12.

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feasible, with a preference for transitional sharing over long-term sharing, and provides opportunities for unlicensed use in bands that may not be suited or available for licensed use;

- Direct the Commission and others to expedite access to wireless facilities consistent with Congressional directives; and
- Provide the FCC with appropriate spectrum management tools, including permitting the agency to centralize spectrum management in a single bureau, adopt flexible license use policies, implement flexible build-out obligations, and utilize receiver standards when necessary.

By acting consistent with these recommendations, the Committee will ensure that wireless providers have access to the spectrum necessary to facilitate an innovative and competitive mobile services marketplace to the benefit of American consumers.

II. CONGRESS SHOULD PROMOTE MORE COMPREHENSIVE SPECTRUM MANAGEMENT

The White Paper observes that NTIA oversees the domestic use of federal spectrum, assigning it to agencies and managing its use in coordination with the FCC.^{16/} The FCC, in turn, manages non-federal use of spectrum. The distinctions between “federal” and “non-federal” spectrum however, are, as the White Paper points out, administrative creations made through agreements between NTIA and the FCC.^{17/} The White Paper therefore asks about the role that NTIA should play in the licensing and management of spectrum. As discussed in further detail below, CTIA recommends that all spectrum management functions should be performed by the

^{16/} See White Paper at 5.

^{17/} See White Paper at 5.

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FCC to avoid duplication and maximize efficiency. Regardless of which agency is responsible for spectrum use, *federal* spectrum management must be improved.

A. Congress Should Consider Requiring That All Spectrum Use Decisions Be Made by the FCC.

Since 2009, CTIA has been at the forefront of efforts to make available additional spectrum for mobile broadband. It applauds the assessments of spectrum use undertaken, and goals for spectrum development that have been set, by the President, Congress, and the FCC. While each of these initiatives has been valuable, they have not been coordinated, comprehensive, or consistent. The President established one set of spectrum goals in two recent memoranda, in which he emphasized the importance of freeing up both licensed and unlicensed spectrum suitable for mobile broadband and also directed federal users to work cooperatively with each other and industry to facilitate commercial entry into key spectrum bands.^{18/} In addition, the FCC established a set of spectrum goals in the National Broadband Plan, designed to ensure efficient allocation and use of government assets, make 500 megahertz of spectrum newly available for broadband, and promote greater transparency of spectrum allocation, assignment, and use.^{19/} Congress identified similar goals in the Middle Class Tax Relief and Job Creation Act of 2012 (“Spectrum Act”), under which it expressed its preference for reallocating federal spectrum for exclusive, non-federal use and directed the FCC to allocate and license 15 megahertz of contiguous spectrum by February 2015.^{20/} Similarly, two entities – NTIA and the

^{18/} See *Expanding America’s Leadership in Wireless Innovation*, 78 Fed. Reg. 37431 (June 20, 2013) (“2013 Presidential Memorandum”); *Unleashing the Wireless Broadband Revolution*, 75 Fed. Reg. 38385, 38388 (July 1, 2010) (“2010 Presidential Memorandum”).

^{19/} See *Connecting America: The National Broadband Plan*, at xii (2010) (“National Broadband Plan”), available at <http://www.broadband.gov/plan/>.

^{20/} See Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, 126 Stat. 156 (2012) (“Spectrum Act”) (codified in various sections of Title 47 of the U.S. Code).

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FCC – are responsible for issuing authorizations for spectrum use.^{21/} While the two agencies are obligated to coordinate their spectrum management activities,^{22/} their efforts have been inconsistent.^{23/}

In order to overcome these duplications and inefficiencies, a single entity should be responsible for spectrum policy (establishing national spectrum goals and strategies) and implementation authority (licensing spectrum use). That entity would be charged with, among other responsibilities, comparing and addressing mismatches between spectrum needs for both federal and non-federal users on the one hand and how spectrum is allocated among services today on the other. Finally, it would issue authorizations to all spectrum users, whether federal or non-federal, in order to most effectively implement the strategies it determines to be in the public

^{21/} See 47 U.S.C. § 305 (preserving for the President the authority to assign frequencies to all federal government-owned or operated radio stations); Reorganization Plan No. 1 of 1970, 35 Fed. Reg. 6421 (April 22, 1970) (“The functions relating to assigning frequencies to radio stations belonging to and operated by the United States, or to classes thereof, conferred upon the President by the provisions of section 305(a) of the Communications Act of 1934, 47 U.S.C. 305(a), are hereby transferred to the Director of the Office of Telecommunications Policy hereinafter provided for.”); Reorganization Plan No. 1 of 1977, 42 Fed. Reg. 56101, § 7 (1977) (“All other functions of the Office of Telecommunications Policy and of its Director are hereby transferred to the Secretary of Commerce who shall provide for the performance of such functions.”); Executive Order 12046, Relating to the Transfer of Telecommunications Functions, 43 Fed. Reg. 13349 (March 29, 1978) (“The establishment of an Assistant Secretary for Communications and Information, Department of Commerce, as provided by Section 4 of Reorganization Plan No. 1 of 1977, is hereby effective.”); U.S. Government Accountability Office, *2012 Annual Report: Opportunities to Reduce Duplication, Overlap and Fragmentation, Achieve Savings, and Enhance Revenue*, GAO 12-342SP, at 90 (Feb. 2012), available at <http://www.gao.gov/assets/590/588818.pdf> (“GAO 2012 Annual Report”).

^{22/} See generally 2013 Presidential Memorandum; 2010 Presidential Memorandum; see also National Telecommunications and Information Administration Act, title I, §§ 103, 112 (1992) (codified as amended at 47 U.S.C. §§ 902 (b)(2)(L)(i), 922); Memorandum of Understanding Between the Federal Communications Commission and the National Telecommunications and Information Administration (Jan. 31, 2003), available at http://www.ntia.doc.gov/files/ntia/publications/fccntiamou_01312003.pdf.

^{23/} See GAO 2012 Annual Report at 90-91 (reporting that that meetings between the FCC and NTIA have not occurred regularly, that the entities have not jointly developed a strategic spectrum plan encompassing federal and non-federal spectrum use, and that NTIA and FCC officials identified different documents when asked which documents comprise the national spectrum strategy).

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interest. Such an approach would produce a singular, unified national policy, promoting administrative efficiencies and resulting in more intense spectrum use.

Accordingly, CTIA recommends Congress consider changing NTIA's role so that, consistent with national security concerns, spectrum use decisions are all made by the FCC. Concentrating spectrum policy and licensing authority with the FCC will not diminish federal agencies' access to spectrum needed to fulfill their critical missions. To the contrary, more comprehensive spectrum management can lead to more effective use of spectrum by federal entities, resulting in agencies being better able to fulfill their obligations, including providing for our nation's defense.

Under this redesign, NTIA would still have a critical role to play. It would serve as an advisor to federal agencies and would interface with the FCC to request spectrum on their behalf. Just as personnel at NTIA have appropriate security clearances today to handle sensitive data, personnel at the FCC would be required to secure permission to access protected information. Although Congress need not outline the specific structure under which the Commission should be organized to effectuate this regime, it should ensure that the FCC has the means and authority to implement policies that promote the cycle of investment and innovation that has been the hallmark of the wireless industry.

B. Regardless of the Governing Entity or Entities, Federal Spectrum Management Must Be Improved.

Regardless of whether it is the FCC or NTIA that oversees it, federal spectrum management must be improved. While NTIA issues spectrum authorizations, it does not direct spectrum use in a way that provides incentives – positive or negative – for efficiency. This has several negative consequences. First, it means that federal agencies, including our military, may not be using the most sophisticated technologies available, relying on less efficient and

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potentially outdated systems. Second, it means that federal agencies may be using more spectrum than they otherwise require, preventing that spectrum from becoming available for commercial wireless operations, which is essential for the development of innovative wireless services.

CTIA appreciates the efforts already undertaken by Representatives Brett Guthrie (R-KY) and Doris Matsui (D-CA) to promote spectrum efficiencies by providing incentives for federal agencies to vacate unused or under-used spectrum.^{24/} As CTIA has stated, reallocation of federal spectrum is critically important and the Federal Spectrum Incentive Act offers a path that can deliver a win for government users, industry, and consumers alike.^{25/} Similarly, the Congressional Spectrum Caucus will facilitate dialogues about the importance of spectrum policy and provide stakeholders with a means to identify ways to increase access to and better utilize the nation's spectrum resources.^{26/}

Congress should expand on these efforts and ensure that agencies have other incentives to migrate to more efficient technologies. To that end, federal agencies should have access to funding unrelated to spectrum auctions to cover costs, including research and development

^{24/} Federal Spectrum Incentive Act of 2013, H.R. 3674, 113th Cong. (2013).

^{25/} See Letter from Steve Largent, CTIA – The Wireless Association®, to Tom Power, Deputy Chief Technology Officer, Telecommunications, Office of Science and Technology Policy, at 4 (filed March 20, 2014) (“CTIA OSTP Comments”), available at http://www.whitehouse.gov/sites/default/files/microsites/ostp/rfi_responses_-_fr_doc._2014-03413_filed_2-14-14_all.pdf (“CTIA applauds the sponsors of that legislation, Reps. Brett Guthrie and Doris Matsui, for their forward-thinking proposal. . . . Congress should further investigate other ways by which agencies’ budgets can be increased if they make spectrum available for commercial wireless broadband systems.”); CTIA Statement on the House Energy & Commerce Committee Approval of the Federal Spectrum Incentive Act and the FCC Process Reform Act (Dec. 11, 2013), available at <http://www.ctia.org/resource-library/press-releases/archive/spectrum-incentive-fcc-reform-acts> (“[The Guthrie-Matsui] bill provides a creative way to repurpose federal spectrum that isn’t being utilized or used efficiently and in doing so will help the commercial mobile industry gain access to spectrum it needs to maintain America’s place as the world’s leader in wireless broadband service.”).

^{26/} See, e.g., Guthrie to Co-Chair Newly-Introduced Spectrum Caucus, News Release (Feb. 27, 2014), <https://guthrie.house.gov/latest-news/guthrie-to-cochair-newlyintroduced-spectrum-caucus/>.

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expenses, related to spectrum relocation, efficiency, and sharing.^{27/} Additional research funding would provide federal entities the incentive and ability to investigate and develop more efficient technologies to reduce overall spectrum consumption. While CTIA disagrees with many of the conclusions it reached, the President’s Council of Advisors on Science and Technology (“PCAST”) was right when it stated that federal agencies may have neither the incentive nor the authority to enhance their use of spectrum if the cost of doing so depletes the budget available for their core missions.^{28/} Federal agencies’ ability to access money for research and development, however, need not be unrestricted. Instead, those entities should be required to demonstrate how the funds can result in spectrum efficiencies and specify a timeframe by which their efforts can reasonably be expected to lead to spectrum becoming available for other uses.^{29/}

III. THE ACT SHOULD CONTAIN CLEAR SPECTRUM GOALS

A. Spectrum Should Be Made Available for Exclusive Commercial Use.

The White Paper points out that there is a vigorous debate over the appropriate role for unlicensed spectrum in the wireless ecosystem, noting that some parties contend that assigning spectrum via exclusive licensing is the most effective, efficient, and economically responsible way to allocate spectrum.^{30/} The White Paper therefore asks what role unlicensed spectrum should play in the wireless ecosystem, including how it should be allocated and managed.

^{27/} CTIA OSTP Comments at 3-4.

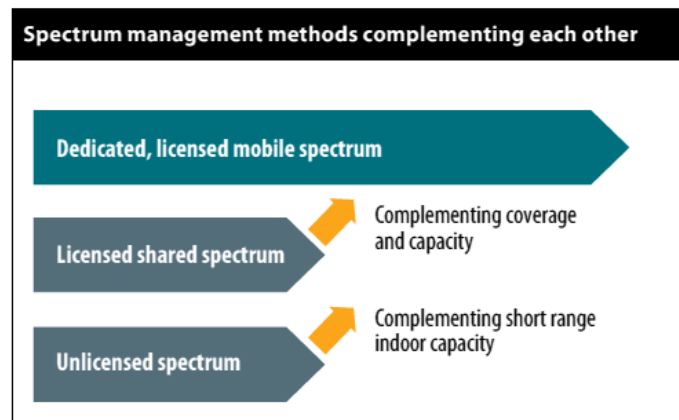
^{28/} See PCAST, *Report to the President: Realizing the Full Potential of Government-Held Spectrum to Spur Economic Growth*, at 56-60 (July 2012) (“PCAST Report”), available at http://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast_spectrum_report_final_july_20_2012.pdf; see also *id.* at xv (“As a result, they may decide not to take on the substantial costs of relocating agency systems and operations, expanding shared access to Federal bands, designing or procuring new and upgraded Federal systems, or moving to far more spectrum-efficient and/or interference-tolerant technologies afford.”).

^{29/} CTIA OSTP Comments at 4.

^{30/} See White Paper at 2-3.

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CTIA recognizes the importance of unlicensed spectrum, but suggests spectrum allocation for wireless use should foremost consist of dedicated, exclusive spectrum for commercial use. Then, spectrum may be used on a licensed shared basis under appropriate circumstances. Finally, unlicensed spectrum should be made available to complement short-range and indoor needs.^{31/}



1. *Exclusive Spectrum Must be Preferred.*

As CTIA has explained to the Administration and the FCC, there is no substitute for licensed, exclusive-use spectrum.^{32/} Indeed, Congress observed as much when it directed NTIA in the Spectrum Act to prioritize reallocation over sharing.^{33/} Exclusive licensing creates the certainty necessary for commercial entities to invest and innovate in spectrum. As CTIA previously observed, “[t]he preference for clearing and an exclusive-use approach has fostered

^{31/} See Ericsson, *The Spectrum Crunch – Busting the Solutions Myth*, at 8 (Dec. 10, 2013), available at <http://www.ericsson.com/res/thecompany/docs/publications/business-review/2013/the-spectrum-crunch-busting-the-solutions-myth.pdf>.

^{32/} See CTIA OSTP Comments at 1-3; Comments of CTIA–The Wireless Association®, GN Docket No. 12-354, at 6-10 (filed Feb. 20, 2013) (“CTIA 3.5 GHz Band Comments”).

^{33/} See Spectrum Act § 6701(a)(3), codified at 47 U.S.C. § 923(j) (“In evaluating a band of frequencies for possible reallocation for exclusive non-Federal use or shared use, the NTIA shall give priority to options involving reallocation of the band for exclusive non-Federal use and shall choose options involving shared use only when it determines . . . that relocation of a Federal entity from the band is not feasible because of technical or cost constraints.”).

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the U.S. wireless industry’s world-leading deployment of mobile broadband networks and provided tremendous economic benefits for U.S. consumers and businesses.^{34/} To continue investment in technology and infrastructure and growth in the economy, it is critical for commercial carriers to have exclusive use of spectrum.

2. *Sharing May be Appropriate in Some Instances.*

Where exclusive spectrum is not available, carriers can sometimes share – temporally and geographically – on a licensed basis with government users.^{35/} Sharing, however, should generally be used only as an interim measure while the clearing of federal spectrum occurs. As recently noted by Mobile Future, spectrum sharing suffers from many significant challenges that are insurmountable in the near-term.^{36/} For instance, spectrum sharing is new, and users are reluctant to invest in unproven approaches.^{37/} Moreover, there are a large number of different government systems, use cases, propagation models, security risks, and enforcement mechanisms, among other matters, that must be analyzed when considering spectrum sharing.^{38/}

^{34/} See CTIA OSTP Comments at 2; CTIA 3.5 GHz Band Comments at 11; see also CTIA, *CTIA Statement on PCAST Government Spectrum Report* (July 20, 2012), available at <http://blog.ctia.org/2012/07/20/pcast-report/>.

^{35/} See Kathryn C. Brown and Charla Rath, *U.S. Spectrum Policy: The Way Forward*, at 4 (Nov. 13, 2012), available at <http://www.siliconflatirons.com/documents/conferences/2012.11.13%20Spectrum/Compendium.pdf> (“Near-term sharing efforts should focus on geographic and temporal sharing, using lessons learned from existing wireless networks. . . . Over the long-term, sharing technologies such as dynamic spectrum access and geo-location based sharing may be worth exploring – but presently such sharing cannot be seen as a substitute for clearing and reallocating spectrum.”).

^{36/} See Rysavy Research, LLC, and Mobile Future, *Complexities of Spectrum Sharing: How to Move Forward*, at 15 (Apr. 2014) (“Mobile Future Paper”), available at <http://mobilefuture.org/wp-content/uploads/2014/04/Spectrum-Sharing-Paper-2014.pdf>; see also Deloitte, *The Impact of Licensed Shared Use of Spectrum*, at 10 (Jan. 23, 2014), available at http://www.deloitte.com/assets/Dcom-UnitedStates/Local%20Assets/Documents/TMT_us_tmt/us_tmt_GSMA_Spectrum_020714.pdf (explaining that there are “many variables involved” with spectrum sharing that “necessitate terms specific to each sharing opportunity” and that “[n]o generalised (sic) approach is possible).

^{37/} See Mobile Future Paper at 15.

^{38/} See Mobile Future Paper at 15-19.

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More work is necessary to determine how sharing can be effectively accomplished before it is implemented on a long-term basis.

The White Paper notes that PCAST has concluded that sharing is the most efficient way to utilize spectrum.^{39/} However, the approach that PCAST, which contained no representation from actual service providers, took is flawed.^{40/} In addition to overstating the utility and effectiveness of sharing, PCAST inappropriately discounts the value and benefits of exclusive-use spectrum as a basis for investment and technology evolution and for providing high-quality, real-time services. As noted above, commercial mobile providers have invested billions of dollars in networks, and the wireless industry's annual contribution to the country's gross domestic product is now valued at \$195.5 billion, which is larger than publishing, agriculture, hotels and lodging, air transportation, motion picture and recording, and motor vehicle manufacturing industry segments.^{41/} These outcomes are due, in large measure, to the availability of licensed, exclusive-use spectrum.^{42/}

If spectrum policy is shifted to accommodate the PCAST recommendations, trials should first be conducted on sharing among federal users, not sharing between federal and non-federal users. It may be easier to first determine compatible uses between federal systems. Moreover, sharing between federal systems may reduce the need to share sensitive information between federal agencies and commercial licensees. In any case, if spectrum sharing is implemented

^{39/} See White Paper at 3.

^{40/} See CTIA 3.5 GHz Band Comments at 10-12.

^{41/} See CTIA March 2013 Wireless Facts; CTIA, Wireless Quick Facts (last visited April 24, 2014), <http://www.ctia.org/your-wireless-life/how-wireless-works/wireless-quick-facts>.

^{42/} See *Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets*, Report and Order and Further Notice of Proposed Rulemaking, 18 FCC Rcd 20604, 20632, ¶ 57 (2003) (crediting existing exclusive, flexible-use bands as being the most intensively used spectrum and as serving as a “runway” for the launch of innovative services).

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between federal and non-federal users, it should be directed by an entity that, as CTIA suggests, is responsible for both federal and non-federal spectrum use so that it occurs in a way that best reflects overall U.S. spectrum requirements and priorities.

3. *Spectrum Should be Available for Unlicensed Use.*

Unlicensed spectrum also has an important role to play in the wireless ecosystem.

Wireless carriers often use unlicensed spectrum for, among other purposes, offloading traffic from their networks. As CTIA has previously explained to the FCC, it is in the national interest to make additional spectrum available for both licensed and unlicensed services.^{43/}

In determining the appropriate mix of spectrum, Congress should recognize that spectrum that is well suited for mobile broadband services should be reserved for such purposes and licensed for exclusive commercial use. Today, those frequencies lie primarily below 3 GHz.^{44/} Where spectrum is not as easily used for mobile wireless services, it could be made available on an unlicensed basis. For instance, Congress has appropriately determined that the 5 GHz band is better suited today for unlicensed operations.^{45/} Spectrum policy should continue to recognize

^{43/} See Letter from Scott K. Bergmann, Vice President, Regulatory Affairs, CTIA, to Ms. Marlene H. Dortch, Secretary, FCC, GN Docket No. 13-185 and WT Docket No. 13-49, at 1 (filed March 24, 2014).

^{44/} See Letter from CTIA, 4G Americas, Consumer Electronics Association, High-Tech Spectrum Coalition, Information Technology Industry Council, Telecommunications Industry Association, and Wireless Broadband Coalition, to Chairmen Upton and Walden and Ranking Members Waxman and Eshoo, Committee on Energy & Commerce, at 2 (Sept. 12, 2012), *available at* <http://www.4gamericas.org/documents/120912%20Muilt%20Assoc%20Call%20for%20More%20Licensed%20Spectruml.pdf> (explaining that “[m]ore cleared, paired, internationally-harmonized spectrum allocations below 3 GHz are needed and needed soon”); *see also* National Broadband Plan at 84; Department of Defense, *Electromagnetic Spectrum Strategy 2013: A Call to Action*, at 2 (2013), *available at* <http://www.defense.gov/news/dodspectrumstrategy.pdf> (recognizing that lower frequencies are necessary for mobile communications).

^{45/} See 47 U.S.C. § 1453. Of course, technology changes may make different spectrum appropriate for mobile wireless use in the future, potentially requiring reallocation of spectrum to accommodate mobile wireless requirements.

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the differences in various spectrum bands, such as propagation characteristics and coverage capabilities when deciding how to allocate licensed and unlicensed spectrum.

B. Carriers Must Be Able to Deploy Spectrum to Ensure its Effective Use.

Spectrum is only as valuable as carriers’ ability to deploy it. Therefore, Congress should make it a clear goal, and direct the FCC, to provide relief from onerous siting rules, particularly for installations that have minimal environmental impact. Specifically, Congress should direct the Commission to take the actions proposed in its recently initiated antenna-siting rulemaking proceeding. There, the Commission requested comment on, among other matters, ways to expedite or tailor its environmental review process for proposed deployments of small cells, Distributed Antenna Systems (“DAS”), and other small-scale wireless technologies.^{46/}

As CTIA explained in that proceeding, it generally supports the FCC’s efforts to expedite the wireless siting process consistent with congressional directives.^{47/} DAS and other small cell facilities, in particular, should be subject to little, if any, review at the federal, state, and local level given their minimal profile and lack of impact.^{48/} While Congress has already sought to ease the burdens of infrastructure deployment by adopting Section 6409(a) of the Spectrum Act, which provides that state and local governments must approve certain facilities requests,^{49/} that provision does not establish timelines for state and local action. Thus, to the extent that applications for use of DAS and other small cell facilities are subject to review, Congress should clarify that they are subject to the same presumptively reasonable time limits as other personal

^{46/} See *Acceleration of Broadband Deployment by Improving Wireless Facilities Siting Policies, et al.*, Notice of Proposed Rulemaking, 28 FCC Rcd 14238 (2013).

^{47/} See Comments of CTIA – The Wireless Association®, WT Docket No. 13-238, *et al.*, at 1 (filed Feb. 3, 2014) (“CTIA Wireless Facilities Comments”).

^{48/} CTIA Wireless Facilities Comments at 21-22.

^{49/} See Spectrum Act § 6409(a).

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wireless service facilities and establish timelines for responses from state and local authorities on such applications. In addition, because the existing environmental rules were developed long before small cell technologies became prevalent to reflect the scale and level of environmental concern presented by traditional deployments on tall structures, CTIA supports excluding DAS and small cell deployments from review pursuant to the National Environmental Protection Act and the National Historic Preservation Act.

Similarly, Congress should ensure that other stakeholders take actions – which are already required – to facilitate greater access to federal government property by commercial providers. Congress, for example, directed in Section 6409(c) of the Spectrum Act that the General Services Administration (“GSA”), among other things, develop master contracts to govern the placement of wireless service antenna structures on buildings and other property owned by the federal government.^{50/} As a complement to this effort, the President released Executive Order 13616, which directed agencies to “develop and use one or more templates for uniform contract, application, and permit terms to facilitate nongovernment entities’ use of Federal property for the deployment of broadband facilities.”^{51/} This initiative was to be undertaken through a Broadband Deployment on Federal Property Working Group (“Working Group”) co-chaired by representatives designated by the Administrator of General Services and the Secretary of Homeland Security from their respective agencies, in consultation with the Director of the Office of Science and Technology Policy and in coordination with the Chief Performance Officer.

^{50/} See Spectrum Act § 6409(c) (requiring GSA to complete that task within 60 days of enactment).

^{51/} See Exec. Order No. 13616, 77 Fed. Reg. 36903 (June 20, 2012).

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Despite this clear direction from Congress and the President, little has been done to facilitate wireless carriers' access to federal property. Twenty-six months after enactment of the Spectrum Act, the work needed to effectuate Section 6409(c) is not complete. In "A Progress Report to the Steering Committee on Federal Infrastructure Permitting and Review Process Improvement," the Working Group reported that GSA has developed a common master application, an antenna lessee checklist, master contracts, lease forms, and license forms and presented the forms to the Working Group.^{52/} In addition, the report indicated that additional work to streamline the process for deploying broadband infrastructure on federal buildings or property, as required by Executive Order 13616, would be complete, depending on function, in either the third or fourth quarters of 2013. However, the forms developed by GSA are not yet available for wireless carriers' use, and the work performed pursuant to Executive Order 13616 does not appear to be complete yet either. Congress should therefore take additional action to further ensure carriers' access to federal properties.

IV. THE ACT SHOULD PROVIDE THE FCC WITH APPROPRIATE SPECTRUM MANAGEMENT TOOLS

A. Spectrum Should Be Managed By A Single Entity at the FCC.

The White Paper observes that the FCC is responsible for licensing spectrum across several services and that, although many of the processes are the same, its licensing authority is spread across disparate bureaus.^{53/} It thus asks what structural changes should be made to the FCC to promote efficiency and predictability in spectrum licensing. The White Paper also notes that, in order to issue spectrum licenses, the Communications Act requires the FCC to make an

^{52/} See *Implementing Executive Order 13616: Progress on Accelerating Broadband Infrastructure Deployment*, at 5-6 (Aug. 2013), available at http://www.whitehouse.gov/sites/default/files/microsites/ostp/broadband_eo_implementation.pdf.

^{53/} See White Paper at 2.

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affirmative finding that granting the license serves the public interest, convenience, and necessity, and seeks comment on what criteria the FCC should consider when conducting this analysis.^{54/}

Just as it recommends consolidating the roles of NTIA and the FCC at the Commission, CTIA agrees that spectrum management should be contained in a single bureau at the FCC. A centralized approach to spectrum licensing would streamline the processing of applications and promote other efficiencies. For instance, the new organization could leverage the same technical and legal experts across all radio services. Management of spectrum resources by a single administrative entity would also allow it to best assess efficient spectrum use and opportunities for spectrum reallocation.

In modernizing the Act, CTIA urges Congress to further refine the “public interest” standard used to grant licenses. Both licensees and the Commission would benefit from further development of the criteria which satisfy that standard. Additional clarity could provide applicants with greater certainty in formulating business plans and would expedite FCC review of applications.

B. The FCC Should Issue Flexible Licenses.

The White Paper seeks comment on whether all FCC licenses should allow flexible use, permitting licensees to use their spectrum for any service.^{55/} It also asks in what instances the Commission should exercise control over the services that licensees offer.

As a general matter, licensees should be afforded flexibility in the services they offer. The Commission has routinely declined to impose equipment standards or require licensees to

^{54/} See White Paper at 3.

^{55/} See White Paper at 3-4.

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use certain technologies,^{56/} and Congress should direct the FCC to continue this practice.

Congress should also direct the Commission to refrain from imposing particular service obligations in specified spectrum bands as it did, for example, for the 700 MHz auction. There, the Commission applied special conditions to certain spectrum blocks – the C Block was subject to “open platform” requirements and the D Block was subject to public safety-commercial network partnership requirements.^{57/} These blocks were either unsold (the D Block) or were auctioned at a price below the spectrum that was made available for flexible use (the C Block).^{58/}

Licensees should be free to offer a variety of services – *e.g.*, voice, data, etc. – so that they are not locked into a particular technology or service as the market and technologies continue to evolve. As CTIA has noted, “[h]istory demonstrates that the public interest is best advanced by the Commission’s longstanding flexible-use spectrum policy, which provides licensees the freedom to compete, the opportunity to innovate, and the ability to satisfy evolving consumer demands.”^{59/} The goal of regulatory policy should be to maximize opportunity, not micromanage outcomes. If the Commission aims to internationally harmonize spectrum use to

^{56/} See, *e.g.*, *Amendment of the Commission’s Rules with Regard to Commercial Operations in the 1695-1710 MHz, 1755-1780 MHz, and 2155-2180 MHz*, Report and Order, GN Docket No. 13-185, FCC 14-31, ¶ 105 (rel. Mar. 31, 2014) (“*AWS-3 Order*”) (“Mandating a particular industry standard such as LTE would hamstring innovation and development and be contrary to the Commission’s policy to preserve technical flexibility and refrain from imposing unnecessary technical standards.”); see also *Amendment of the Commission’s Rules with Regard to Commercial Operations in the 1695-1710 MHz, 1755-1780 MHz, and 2155-2180 MHz Bands, et al.*, Notice of Proposed Rulemaking and Order on Reconsideration, 28 FCC Rcd 11479, ¶ 102 (2013).

^{57/} See *Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, et al.*, Second Report and Order, 22 FCC Rcd 15289, ¶¶ 202, 395 (2007).

^{58/} See *Auction of 700 MHz Band Licenses Closes*, Public Notice, 23 FCC Rcd 4572 (2008).

^{59/} Comments of CTIA – The Wireless Association®, WT Docket No. 07-195 and WT Docket No. 04-356, at 2 (filed July 25, 2008) (“CTIA AWS-2/3 Comments”).

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avoid unique spectrum allocations, it will foster greater efficiencies in the deployment of mobile services and equipment.^{60/}

Where spectrum allocations are made based on a set of service and technical assumptions, the Commission must fully evaluate requests to use that spectrum for other services. As CTIA has explained to the FCC, allowing Mobile Satellite Service spectrum, for example, to be used for terrestrial broadband services requires a holistic examination of numerous issues, including interference, efficient use of spectrum, build-out requirements, and the public interest considerations associated with increased terrestrial rights.^{61/} It is important that the benefits associated with new uses of spectrum be balanced against the protection of operations in neighboring bands,^{62/} particularly as incumbents have already developed their business plans and operations based on the FCC’s existing service rules. Once spectrum is repurposed for a new service, the Commission should ensure that the new service is likewise protected in the future.^{63/}

^{60/} See CTIA AWS-2/3 Comments at 47-49.

^{61/} See Comments of CTIA – The Wireless Association®, WT Docket No. 12-70, *et al.*, at 2-3 (filed May 17, 2012) (“CTIA AWS-4 Comments”); *see also* Comments of CTIA – The Wireless Association®, WT Docket No. 12-357, at 2 (filed Feb. 2, 2013) (“CTIA H Block Comments”) (“[T]he Commission must act promptly, while at the same time engaging in a holistic, measured approach to spectrum planning); Comments of CTIA – The Wireless Association®, ET Docket No. 14-14 and GN Docket No. 12-268 (filed Mar. 18, 2014) (suggesting that the Commission further investigate concerns raised about co-channel and adjacent-channel interference between television and wireless services in nearby markets as a result of accommodating market variations as it develops a plan for the 600 MHz band).

^{62/} See CTIA AWS-4 Comments at 10; *see also* CTIA H Block Comments at 2 (“Perhaps most importantly, the Commission must carefully evaluate the interference impact of new mobile broadband services in the H Block and develop a technical rules framework that assures all licensees will be fully protected.”).

^{63/} See, *e.g.*, Comments of CTIA – The Wireless Association®, WT Docket No. 08-166 (filed Jan. 25, 2013) (recommending that wireless microphones and other low power auxiliary service operations be cleared from the 600 MHz band, which will be repurposed from broadcast television services to commercial mobile services, due to the interference risk that they pose).

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**C. The FCC Should Impose Build-Out Requirements That Recognize Unique
Circumstances.**

The White Paper asks whether the Communications Act should encourage competitive and efficient use of spectrum through the use of build out requirements and operating rules.^{64/} It also asks how effectively the Commission has used the tools at its disposal to encourage competition.

The FCC has generally used build-out requirements effectively to promote efficient spectrum use. Those obligations are an effective tool to ensure that spectrum is put to use in a timely manner and to prevent spectrum warehousing. The Act should continue to allow the Commission to impose build-out requirements, but those requirements should be flexible enough to accommodate unique circumstances and unforeseen events. The Commission should, for instance, continue to take into consideration encumbrances such as the need to accommodate federal users, particularly as more spectrum is shared.^{65/} In addition, where build-out is hampered by lack of available equipment, or other circumstances beyond a licensee’s control, the FCC should remain sympathetic to requests for modifications of its requirements.^{66/} The Commission, however, should not be permitted to adopt unprecedented penalties for failing to meet build-out commitments.^{67/}

^{64/} See White Paper at 4.

^{65/} See, e.g., *AWS-3 Order* ¶¶ 135-141 (adopting longer build-out requirements to account for federal impediments to use of the spectrum).

^{66/} See, e.g., *Wireless Telecommunications Bureau Extends 700 MHz B Block Licensee Interim Construction Benchmark Deadline Until December 13, 2013*, Public Notice, 28 FCC Rcd 4584 (2013) (extending the interim construction deadline for all active Lower 700 MHz band B Block licensees due to their inability to have meaningful access to a wide range of advanced devices); *AWS-3 Order* ¶ 141 (“We also generally agree that if a licensee demonstrates that it is unable to meet a coverage requirement due to circumstances beyond its control, an extension of the coverage period might be warranted.”).

^{67/} See CTIA AWS-4 Comments at 16-17.

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D. The FCC Should Manage Receivers Only Where Necessary.

Finally, the White Paper points out that the FCC sets limits on transmissions, but does not regulate receivers used by wireless devices to manage interference.^{68/} While some parties have proposed receiver standards as a potential interference mitigation solution, others have argued that such a step could result in over-engineering and higher consumer prices. Accordingly, the White Paper seeks comment on the best balance between mitigating interference concerns and avoiding limiting flexibility.

CTIA agrees that the FCC must continue to have the authority to establish regulations governing transmission characteristics to protect adjacent-band and adjacent-area licensees from interference. Receivers, however, have been appropriately regulated by industry standards created through stakeholder consensus, and marketplace forces should continue to be the primary means by which wireless receivers are developed and introduced. As CTIA has demonstrated to the Commission, industry efforts have resulted in receiver performance standards, including blocking and other requirements,^{69/} putting the U.S. wireless industry at the forefront of developing and deploying some of the most interference-resistant receivers in the world. Moreover, there are at least 32 different device manufacturers offering over 630 different handsets and devices in the U.S.^{70/} In this competitive environment, device manufacturers that create low-quality products that are subject to excessive interference from others will simply be unable to maintain their operations.

^{68/} See White Paper at 4-5.

^{69/} See Comments of CTIA – The Wireless Association®, ET Docket No. 13-101, at 2 (filed July 22, 2013) (“CTIA TAC Comments”).

^{70/} See CTIA TAC Comments at 2.

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On the other hand, CTIA recognizes that receiver performance is not fully embraced by all spectrum users. If industry actions and market forces do not result in appropriate receiver characteristics, the FCC may wish to act as a facilitator of multi-stakeholder groups to promote those efforts. CTIA has a wealth of experience with multi-stakeholder groups and thus is a strong supporter of their use.^{71/}

Use of a “harms claim thresholds” approach, which relies on multi-stakeholder groups, provides a particularly promising potential framework for encouraging enhanced receiver performance where natural, market-based incentives have failed.^{72/} The proposal, developed by the Commission’s Technical Advisory Committee (“TAC”), sets forth interference limits that a service would be expected to tolerate from other services before a claim of harmful interference could be made. Multi-stakeholder groups would investigate the interference limits policy at suitable high-value inter-service boundaries, and could modify harm claim thresholds over time. Manufacturers and operators would then be left to determine whether and how to build receivers that could tolerate such interference. Congress should therefore direct the Commission to further examine this approach, but ensure that it is used only when other methods have failed.

V. CONCLUSION

CTIA appreciates and supports the Committee’s efforts to review and modernize the Nation’s spectrum policies. While the U.S. wireless industry has led the world under the current statutory regime, Congress can promote further growth and investment by ensuring that spectrum

^{71/} See, e.g., CTIA TAC Comments at 7-8; see also Comments of CTIA – The Wireless Association®, IB Docket No. 11-109, at 3 (filed Feb. 27, 2012) (“CTIA submits industry and government stakeholders should work together in these efforts to advance receiver performance to maximize spectral efficiency.”).

^{72/} See CTIA TAC Comments at 4-7.

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is comprehensively and well managed to meet industry needs. CTIA stands ready and looks forward to working with the Committee on these important endeavors.

April 25, 2014