



Telecommunications Industry Association
Modernizing U.S. Spectrum Policy
Responses to Questions from the House Energy and Commerce Committee
April 25, 2014

Radio spectrum has never before been more important. In commercial communications networks, mobile data use is exploding as consumers embrace smartphones, tablets and other devices. Wireless connectivity is becoming the way in which consumers access the Internet from technologies such as LTE, Wi-Fi and satellite. The government also has a significant dependency on spectrum for both communications and non-communications purposes.

Meanwhile, radio technologies themselves are changing, placing new demands on spectrum allocations, and raising new operational and regulatory challenges. As a result of these dynamic changes, spectrum allocations and uses that met the country's needs during the 20th century are increasingly under stress.

However, U.S. policymakers are no longer writing spectrum policy on a blank sheet of paper, and virtually all spectrum suitable for mobile service has been allocated. For that reason, TIA believes that a national spectrum policy must reflect the following principles to allow the nation's use of radio spectrum to evolve to meet changing demand and promote innovation:

- *Predictability.* Spectrum allocations need to be predictable. Identifying demand and changes in demand, understanding the pace of radio technology development by platform, and long term planning are all essential parts of a spectrum policy that can provide predictability for both commercial and government users.
- *Flexibility.* For commercial allocations, flexible use policies consistent with baseline technical rules that are technology-neutral have proven to be the best approach. Government allocations of spectrum should be better managed to ensure better usage of scarce spectrum resources for all users.
- *Efficiency.* Policies should encourage more efficient use of spectrum where technically and economically feasible. Cleared, exclusively licensed spectrum allows for the most efficient and dependable use of spectrum for commercial mobile broadband deployment.
- *Priority.* In cases where spectrum sharing is technically and economically possible, policies must advance good engineering practice to best support an environment that protects those with superior spectrum rights from harmful interference.

TIA has long-advocated for realizing the broadly-expressed national policy goal of making more spectrum available for commercial use. This will create hundreds of thousands of jobs for Americans while improving U.S. technological competitiveness. It will enable the mobile

industry to meet the demand for high-speed wireless applications, and will help drive the U.S. economy, both near-term and long-term.

1. The FCC is responsible for licensing spectrum for a number of services, including public safety, fixed and mobile wireless, broadcast television and radio, and satellite. Although many of the processes are the same among these services, the licensing authority is housed in disparate bureaus. What structural changes, if any, should be made to the FCC to promote efficiency and predictability in spectrum licensing?

Congress need not, and should not, dictate the internal organizational structure of the FCC. The Communications Act wisely grants significant discretion to the Commission itself to organize the agency in a manner best suited to achieve the statutory objectives established by Congress.¹ For example, the former Mass Media and Cable Bureaus were merged into one Media Bureau in 2002, reflecting the commonalities in the underlying approach to content delivery.² The Public Safety and Homeland Security Bureau was created in 2006 to help the agency better fulfill its national security obligations under the existing Communications Act.³

Future revisions to the Communications Act may lead to an eventual restructuring within the agency to better align with its revised statutory objectives. However, hard-wiring an organizational structure into the Act itself, even if seemingly a “modernizing” reform by today’s standards, will limit the agency’s ability to adapt to a rapidly evolving communications industry and new technologies through re-structuring in the future.

2. What role should unlicensed spectrum play in the wireless ecosystem? How should unlicensed spectrum be allocated and managed for long-term sustainability and flexibility?

Unlicensed spectrum should continue to play a very important role in the wireless ecosystem. Opening spectrum to unlicensed services has undoubtedly led to great innovations, including microwave ovens, cordless phones, garage door openers, sensors, and perhaps the most important innovation, Wi-Fi. This ecosystem of unlicensed operation has been an important ingredient in facilitating next-generation technologies and maintaining U.S. leadership in ICT innovation. It has also helped mobile operators cope with exploding demand, since Wi-Fi is virtually omnipresent in consumer devices such as smartphones and tablets.

However, a one-size-fits-all approach to “the role of unlicensed spectrum” is not appropriate. To begin with, spectrum bands under consideration for unlicensed will not have the same propagation characteristics, and particular bands may lend themselves to support certain types of

¹ See Communications Act of 1934 § 5(b) [47 U.S.C. § 155(b)].

² See Order, *Establishment of the Media Bureau, the Wireline Competition Bureau and the Consumer and Governmental Affairs Bureau*, FCC 02-10 (rel. March 14, 2002), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-02-10A1.pdf

³ See Order, *Establishment of the Public Safety and Homeland Security Bureau*, FCC 06-35 (rel. Sep. 25, 2006), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-06-35A1.pdf

services. Also, the incumbent users of a band as well as adjacent bands can impact the types of unlicensed operations that can successfully occur. Indeed, spectrum policy is not being written on a blank slate – incumbent users exist in many bands used today and under consideration for future use by unlicensed devices.

The choice of a band management plan is therefore dependent upon several factors, including:

- *A band's physical propagation characteristics.* For example, higher frequencies may lend themselves to short range coverage (e.g., Wi-Fi “hotspots”) while lower frequencies are considered to be more efficient for large area coverage.
- *The nature of incumbent or nearby users.* Avoiding harmful interference is important, and unlicensed operations may pose (for example) different enforcement challenges vs. co-existence with users having controlled or managed access to spectrum.
- *The proposed unlicensed use or uses.* For some proposed uses, the need for assured quality of service may be a factor, or else statutory and regulatory mandates such as public safety / 911 requirements may apply.

Both Congress and the FCC have wisely considered many of these factors in their approaches to spectrum management. For example, the 2012 Spectrum Act required licensing of the 600 MHz band while encouraging the FCC to open more spectrum for unlicensed operations in the 5 GHz bands. (TIA has supported both aspects of the 2012 Spectrum Act as sound policy decisions that reflect the various factors above.)⁴ Moreover, the FCC is beginning to experiment with a tiered approach to spectrum access in the 3.5 GHz band utilizing a geo-location database as a means to manage spectrum access among the tiers of users/services and provide interference protection, as required.⁵

Management approaches. Where spectrum is opened to unlicensed uses, multiple tools are available to policymakers to ensure the unlicensed uses can be maximized. These include:

- A “*pure commons*” approach, such as at 2.4 GHz where devices may use spectrum subject to only the most limited of emissions rules;
- A “*spectrum sensing*” approach, such as is used in some bands at 5 GHz to enable unlicensed operations to co-exist with an incumbent;
- *Database-driven approaches*, such as that used for “white spaces” in the television broadcast bands.

⁴ Other examples of unlicensed use potentially include at 6.78 MHz and 900 MHz for industrial, scientific, and medical applications (ISM), Wi-Fi at 2.4 GHz, 5 GHz, or 60 GHz, and ultrawideband (UWB) operations above 6 GHz.

⁵ See Further Notice of Proposed Rulemaking, *Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band* (rel. Apr. 23, 2014) (“3.5 GHz FNPRM”), available at <http://www.fcc.gov/document/fcc-proposes-make-150-mhz-spectrum-available-broadband>

In the end, the choice of a band management plan or the use of particular approaches should be made to encourage more efficient uses of spectrum by all users. Forward-looking management of radio spectrum is essential to the goal of expanding telecommunications services and ensuring that the public derives maximum benefit from the use of spectrum, whether by its government, wireless operators, consumers or enterprises.

3. Spectrum sharing is one proposed technological solution that addresses the issue of spectrum scarcity and encourages efficiency. There are multiple ways to share spectrum, including geographic sharing, temporal sharing, and sharing through dynamic spectrum access. * However, [some] assert that spectrum sharing is only part of the solution ... and that clearing unused or underused federal spectrum for exclusive commercial use is a vital part of any strategy... *** What should be done to encourage efficient use of spectrum by government users?**

Spectrum Sharing

Spectrum “sharing” already exists in many forms today, including in licensed approaches whereby wireless carriers provide access to millions of customers using relatively narrow bands, or in unlicensed approaches such as Wi-Fi. Moreover, very different types of spectrum uses – from commercial wireless services, to military or medical applications, or scientific and deep space research – have been assigned by the FCC to share the same spectrum band.

Cleared spectrum is preferred for commercial mobile wireless. At the outset, TIA strongly supports the clearing and re-purposing of spectrum bands for commercial mobile broadband use to the maximum extent feasible. Where possible, cleared, exclusively licensed spectrum bands allow for the most efficient and dependable use of spectrum suitable for commercial mobile broadband deployment, and maximize network investment, marketability, availability and consumer use.

TIA supports recent efforts by the FCC, NTIA, and DoD. When incumbent uses make clearing infeasible, TIA supports consideration of sharing opportunities. As described above, TIA recognizes that for low-power technology such as Wi-Fi, shared spectrum use such as at 5 GHz is a very good option. The FCC’s recent actions in the 3.5 GHz band are another example of sharing approaches in a situation involving a federal incumbent. Licensed Shared Access (LSA) is one approach permitting sharing on a geographic, frequency, or time basis that holds promise to improve overall spectrum use efficiency.

Meanwhile, TIA has been encouraged by the recent work done by NTIA and the Department of Defense (“DoD”) to facilitate opening the 1755-1780 MHz band for commercial use, although work is still needed regarding co-existence with services that will remain in the band in the near term. TIA also appreciates the Department of Defense (“DoD”)’s recently- announced Electromagnetic Spectrum Strategy, which clearly and publicly articulates to the DoD spectrum

community the need for increased efficiency, creativity and flexibility in spectrum use.⁶ In doing so, DoD specifically called out various mechanisms that it believes may be useful in circumstances where spectrum sharing is possible. Critically, DoD also recognized that wise use of spectrum is a matter of national economic security as well as national security, and that appropriate balancing of these interests is required.

Federal Spectrum Management

Congress can enact or facilitate a number of actions towards improving federal spectrum management and encouraging more efficient use. These include:

Better tracking. A better spectrum use tracking and management process will undoubtedly encourage more efficient uses of spectrum by all users, including government users. Such a process should include appropriate inventories of usage, valuations, and transparency. In cases of spectrum sharing, federal policy should support forums for all stakeholders to periodically exchange information to better ensure that the sharing environment is and remains workable.

Stronger central coordination. NTIA is currently tasked with coordinating spectrum use for the federal government.⁷ However, as various spectrum-related efforts in recent years have demonstrated, a stronger level of coordination or management for federal spectrum usage may be required. Indeed, in some cases NTIA has had difficulties obtaining current information from other government agencies, making it difficult for NTIA to effectively respond to Congressional and Administration requests for more detailed information regarding federal use. It may be valuable to have government agencies' spectrum offices engage more closely and more often with NTIA to improve coordination.

Agency incentives. Spectrum plays an essential role in fulfilling government missions, and this will continue despite any transition or sharing of particular bands for commercial use. For this reason, although political leadership by Congress and the Administration is necessary, agency-level incentives are also necessary to ensure that federal spectrum uses (and users) are responsive to constraints of efficiency, predictability, flexibility, etc. in a similar manner to those faced by commercial users.

The proposed Federal Spectrum Incentive Act (H.R. 3674, introduced by Reps. Guthrie and Matsui) represents potentially important legislative progress towards this goal. This bi-partisan legislation is designed to provide agencies with voluntary budgetary incentives to transition spectrum to commercial uses, by simply allowing agencies to keep a portion of the proceeds of any auctioned spectrum for their own use. However, even while supporting this effort, Congress should also explore ways to provide incentives for more efficient spectrum use deeper within the

⁶ Department of Defense, *Electromagnetic Spectrum Strategy*, Release No. NR-091-14 (Feb. 20, 2014), available at <http://www.defense.gov/news/dodspectrumstrategy.pdf>

⁷ See NTIA, *Manual of Regulations and Procedures for Federal Radio Frequency Management (Redbook)*, available at <http://www.ntia.doc.gov/page/2011/manual-regulations-and-procedures-federal-radio-frequency-management-redbook>. Chapter 1.1 § 5 collects various statutory authorities delegated to NTIA.

agency budgeting process, *i.e.*, at a more granular level than simply an agency’s top-line retention of a portion of auction proceeds.

Flexible-use funding. The use of commercial auction proceeds has traditionally been an important and effective tool to migrate and upgrade federal systems to make way for commercial uses, and to support cost impacts on existing programs/contracts when changes are made. As future spectrum transitions are contemplated, Congress should ensure that any spectrum transition funds can be used in a manner flexible enough to cover a wide range of costs. Indeed, such flexibility may also help overcome any agency resistance to “unknowns” associated with any particular transition of spectrum.

Commercial alternatives. For those communications capabilities that can be provided equally well by commercial providers, agencies should be considering commercial options in lieu of using their own legacy systems – options that may be more cost-effective while providing much greater flexibility in serving an agency’s mission. Indeed, any legacy uses of agency spectrum for communications purposes may need to be re-evaluated in favor of a more flexible approach that will ultimately benefit the agencies themselves.⁸ For example, DoD has recently committed that it will seek to use commercial services and technologies to meet its requirements where possible.⁹

4. [B]oth the government and the private sector are concerned with making more spectrum available to meet commercial demand. [T]he FCC considers spectrum to be “currently available” if providers have the legal authority to build out and provide services ... or “in the pipeline” if ... there are government plans to make it available to commercial providers within the next three years. Congress and the FCC have worked to increase the amount of spectrum available to commercial providers.... What other steps can be taken to increase the amount of commercially available spectrum?

Congress must promote spectrum sharing research and development. Most transitions of federal spectrum to commercial use involve the government incumbents upgrading their equipment to more spectrally-efficient technology, which is what commercial providers are doing every day. To ensure this trend continues, Congress must continue to actively encourage federal users to free up more spectrum by operating more efficiently. However, spectrum sharing research and development is necessary to continue exploring sharing in bands that require sharing as part of a transition or cannot be cleared.

In December 2013, TIA released its *Spectrum Sharing Research and Development* white paper.¹⁰ This paper was developed with input from stakeholders across the ICT industry, and includes recommendations for actions by policymakers in Congress, the Administration, and at specific

⁸ The outcomes of such re-evaluations may be different for each agency, particularly when considering certain non-“communications” uses of spectrum (radar, telemetry, etc.).

⁹ DoD Electromagnetic Spectrum Strategy, *supra* n. 6, at 7.

¹⁰ Telecommunications Industry Association, *Spectrum Sharing Research and Development* (Dec. 11, 2013), available at <https://www.tiaonline.org/policy/spectrum-sharing-research-development-white-paper>

funding agencies.¹¹ (The paper is attached to this response.) Congressional action is required for progress on several of these recommendations, including:

- *Updating the NITRD statute to encompass spectrum.* The Networking and Information Technology Research and Development (NITRD) program is a multi-agency effort that coordinates the activities of 20 member agencies that support advanced IT R&D. The NITRD program office has developed or coordinated working groups to address emerging areas of need, including a Wireless Spectrum Research and Development Senior Steering Group (WSRD SSG) established by Presidential Memorandum in June 2010.¹² However, these efforts have occurred even as Congressional efforts to update the NITRD statute have stalled. Congress should enact legislation to update the statutory basis of the NITRD program to encompass and prioritize areas such as spectrum sharing research.
- *Updating NITRD's reporting requirements.* NITRD's annual budget report appears to indicate total federal IT R&D expenditures of approximately \$3.9 billion in FY 2014,¹³ but the reality is quite different. As the President's Council of Advisors on Science and Technology (PCAST) has found, a large majority of the NITRD-reported funding is actually used for IT *infrastructure* to support R&D in fields other than network and information technology.¹⁴ Congress should enact legislation to update NITRD's reporting requirements to ensure a more accurate picture of federal funding for network and information technology research, including in priority areas such as spectrum sharing research.
- *Providing additional funding for spectrum sharing research.* Current federal research funding for spectrum sharing is very limited. The total NTIA research budget (including all programs, not just spectrum sharing) is just \$13 million,¹⁵ which is insufficient to support the rapid pace of development needed to obtain transformative results. While recent White House efforts to administratively target additional funding are helpful, to achieve transformational advances in spectrum sharing R&D that will yield economic

¹¹ TIA presented the white paper at a meeting of the NITRD-led interagency Wireless Spectrum Research and Development Senior Steering Group (WSRD SSG) held on February 6, 2014.

¹² See Presidential Memorandum, *Unleashing the Wireless Broadband Revolution*, June 28, 2010, § 3 (“The Secretary of Commerce, working through NTIA, in consultation with the National Institute of Standards and Technology, National Science Foundation (NSF), the Department of Defense, the Department of Justice, NASA, and other agencies as appropriate, shall create and implement a plan to facilitate research, development, experimentation, and testing by researchers to explore innovative spectrum-sharing technologies, including those that are secure and resilient.”), available at <http://www.whitehouse.gov/the-press-office/presidentialmemorandum-unleashing-wireless-broadband-revolution>

¹³ See NITRD, *Supplement to the President's FY 2015 Budget Request*, at 5 (rel. March 2014), available at <http://www.nitrd.gov/pubs/2015supplement/FY2015NITRDSupplement.pdf>

¹⁴ PCAST, *Designing a Digital Future: Federally Funded Research and Development in Networking and Information Technology*, at ix (rel. December 2010), available at <http://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast-nitrd-report-2010.pdf>

¹⁵ See NTIA, *FY 2015 budget request*, at 33 (rel. March 2014), available at <http://www.ntia.doc.gov/files/ntia/publications/ntia2015cjfinal.pdf>

benefits several times over, Congress should provide significant additional funding for spectrum sharing research.

Congress should connect transitions and auctions to R&D funding. Spectrum R&D is the “seed corn” that has enabled more efficient uses of spectrum by federal and commercial users alike, resulting in macroeconomic benefits to the U.S. economy as well as direct benefits to the Treasury when more spectrum is made available for auction. To ensure that the pipeline of spectrum continues into the future, Congress should enact legislation requiring re-investment of a portion of spectrum funds in spectrum research and development efforts.

Congress should support efforts to identify under-utilized bands. NTIA has recently announced the debut of a Federal Government Spectrum Compendium, and made it publicly available at the new www.spectrum.gov website. On April 11, 2014, NTIA posted information on the website regarding current uses of federal bands between 225 MHz and 5 GHz. While stakeholders are still reviewing this information to determine whether it is sufficiently detailed to identify additional bands for possible transition, NTIA’s efforts are certainly to be commended. Congress should support the work of NTIA and the FCC in this area.

5. [T]he Communications Act requires the FCC to make an affirmative finding that granting [a] license serves the public interest, convenience, and necessity. Moreover, the Act prohibits the FCC from basing its finding on the expectation of auction revenues. Should the Act permit the FCC to use expected auction revenue as the basis for a public interest finding? What criteria should the FCC consider as part of its analysis?

First, properly designed spectrum auctions that adhere to certain principles – avoiding aggregation caps or limits, technology neutrality, flexible service allocations, etc. – will naturally result in both higher auction revenues and a greater likelihood that spectrum will be put to its highest and best use. While auction revenue is a consideration in scoring federal laws for budget purposes, the long-term economic benefit to the nation comes from auction winners building networks that in turn enable economic activity throughout the economy.

Second, Congress is generally better positioned to make policy decisions about the relationship between spectrum usage and revenue for the Treasury – much of which is used to pay for non-telecommunications federal priorities. However, allowing the FCC to consider auction revenues may make sense in certain instances, such as when the agency is considering competing commercial uses for a band. Even so, there are some instances where financial considerations could distort the agency’s view, such as where public safety, universal access, and similar issues are at play.

6. Many of the existing allocations were made because certain spectrum bands are better suited for certain uses. However, changes in technology have changed assumptions over the years. While restrictions have eased in recent years, there are still certain limited-use spectrum licenses. Flexible use licenses permit licensees to use their spectrum for any service, including wireless, broadcast, or satellite services. Should all FCC licenses be

flexible use? In what instances should the Commission exercise control over the service offered? How can the Act enable better use of spectrum, either flexible or specified?

Flexible-use licenses go hand-in-hand with the convergence to broadband. The laws of physics mean that spectrum is limited, so government must continue to play an important role in avoiding the “tragedy of the commons” problem whereby spectrum becomes unusable. However, today’s service-specific and balkanized regulations governing spectrum allocations need to be overhauled in response to the convergence around *broadband*. The Act should look to the future by accommodating various assignment approaches including traditional exclusive licensing, unlicensed uses, or emerging hybrid models based on technological advances in spectrum sharing.

The FCC is moving in this direction. The FCC has recently proposed to allow flexible uses in the 3.5 GHz band, which may promote small cell technologies while also allowing for other possibilities. These principles of service flexibility could increasingly allow commercial providers room for innovation (assuming sufficient licensing certainty to support investment) that will lead to spectrum being deployed for its highest use. Congress should continue to encourage this approach.

7. The FCC has placed limitations on spectrum holding in a number of ways. In mobile wireless, the Commission has implemented policies that included the cellular cross-interest rule, the PCS cross-ownership rule, and the CMRS spectrum cap. Currently, the Commission conducts a case-by-case analysis of spectrum aggregation for each entity. * The FCC has considered other tools.... Among these are [spectrum “set-asides,” bidding credits,] and auction design including reserve prices, package bidding, and proposed restrictions on bidder eligibility.**

What principles should Congress and the FCC consider when addressing spectrum aggregation limits? How has the converging marketplace and growing demand for services changed the discussion of spectrum aggregation?

Convergence around broadband is creating multi-modal competition, both between wireless and wireline services and within the wireless marketplace itself. Indeed, the wireless environment is particularly competitive. Of course, public interest factors such as universal access remain important, and antitrust law remains an important backstop against the development of anti-competitive practices that harm consumers. But in this evolving marketplace, a light-touch approach to regulation is most appropriate and spectrum aggregation limits have not shown to be necessary – and could be an impediment to providing next generation services that will require more spectrum to support services requiring more bandwidth.

8. Build-out rules require licensees to construct and activate infrastructure within a certain timeframe, or risk losing that license. The operating rules require some licensees to return a license if not used for any 12-month period after construction.... These provisions help to ensure that spectrum ... becomes available to those who will put it to dynamic use.

Should the Act promote competitive and efficient use of spectrum in this way? How effective is the current Act in doing so? How effectively has the FCC used the tools at its disposal to encourage competition?

Build-out requirements can be an effective tool to promote competitive and efficient use of spectrum. Used properly, such requirements encourage licensees to build out their services in a timely manner, while preventing spectrum warehousing and promoting innovation. A recent GAO study of several services found that 75% of licensees successfully met their build-out requirements, with 14% of licenses being revoked and the remainder having other outcomes.¹⁶ Waivers were requested in 9% of cases, with the FCC granting 74% of those requests.¹⁷ These statistics demonstrate that the FCC has used the tools available to strike an appropriate balance between the need to encourage service deployment while preserving flexibility when limited waivers are needed.

Importantly, build-out requirements are not inconsistent with principles of service flexibility. Indeed, they may promote innovation by motivating licensees to provide services in a manner not originally anticipated in order to meet a required deadline. However, since uncertainty regarding the usefulness or value of building out particular legacy services should be lessened in an all-IP, broadband-based world, any “uncertainty” burdens associated with build-out requirements will be lessened as the convergence around broadband continues.

9. The FCC sets limits on transmissions, but doesn’t regulate the receivers used by wireless devices to receive wanted signals and eliminate the noise coming from the other surrounding spectrum bands. * Some have proposed receiver standards as a solution, but others argue that such a step could result in over-engineering and higher consumer prices. What is the best balance between mitigating interference concerns and avoiding limiting flexibility in the future? Can engineering and forward-looking spectrum strategies account for the possibility of unanticipated technologies and uses in adjacent spectrum bands? How do we promote flexibility without unreasonably increasing the cost of services and devices? Does the Act provide the FCC tools to address this problem?**

TIA supports voluntary standards. TIA recognizes that receiver performance is integrally connected to issues of spectrum use efficiency, whether in adjacent bands or in scenarios involving spectrum sharing. While mandatory standards are inadvisable due to their potential to increase device cost or inhibit flexibility, TIA supports the development of voluntary standards, potentially through an ANSI-accredited standards process.

The FCC’s Technical Advisory Committee (TAC), which was chaired by now-agency Chairman Tom Wheeler, seems to have found some common ground with this position. The TAC issued

¹⁶ GAO-14-236, *Spectrum Management – FCC’s Use and Enforcement of Buildout Requirements*, at 18 (Feb. 2014), available at <http://www.gao.gov/assets/670/661153.pdf>

¹⁷ *Id.* at 20-21.

its first white paper in February 2013,¹⁸ and issued a follow-up white paper in March 2014 that called for the FCC to:

- Identify boundaries (i.e., between specific services) where defining “harm claim thresholds” would add significant value;
- Encourage a multi-stakeholder process to work out implementation details; and
- Engage in rulemaking as required.¹⁹

TIA is prepared to play a leading role. While rulemaking would be premature, TIA is prepared to facilitate an industry-government multi-stakeholder process to explore issues of receiver performance, whether based on “harm claim thresholds” or an alternative approach. TIA is an ANSI-accredited standards development organization, so to the extent that such standards are deemed appropriate as a result of the multi-stakeholder process, TIA is well-situated to facilitate development of such standards. TIA looks forward to working with the FCC as it responds to the TAC recommendations and seeks to develop a multi-stakeholder process.

10. In a report on reducing duplication in the federal government, GAO identified spectrum management as “fragmented” between NTIA and the FCC and urged coordination. What role should NTIA play in the licensing and management of spectrum? Is their current role appropriate and necessary, given the potentially duplicative functions of the FCC and NTIA in spectrum allocation and assignment?

At the outset, TIA cautions against any agencies other than the FCC allocating spectrum rights for commercial use. The FCC has established open and transparent processes and developed a strong track record in transitioning spectrum to commercial use and for its administration, and future spectrum transitions should leverage this expertise.

As described above (see response to question 3), better tracking of spectrum usage and stronger central coordination of government uses – by NTIA in close coordination with the spectrum offices of other agencies – are both important for improving the efficiency of overall spectrum use. As experience has shown, NTIA requires additional resources to interface effectively with other agencies’ spectrum offices and respond effectively to Congressional or other requests regarding spectrum use. In an era where spectrum auctions are producing tens of billions of dollars for the federal Treasury, this situation is becoming increasingly untenable and Congress should correct it.

In the end, Congress may wish to consider far-reaching changes in the roles of NTIA and/or the FCC in spectrum management. However, a better course of action may be for Congress to begin

¹⁸ FCC Technological Advisory Council, Receivers and Spectrum Working Group, *Interference Limits Policy: The use of harm claim thresholds to improve the interference tolerance of wireless systems* (February 6, 2013), available at <http://transition.fcc.gov/bureaus/oet/tac/tacdocs/WhitePaperTACInterferenceLimitsv1.0.pdf>

¹⁹ FCC Technological Advisory Council, Spectrum / Receiver Performance Working Group, *Interference Limits Policy and Harm Claim Thresholds: An Introduction*, at 9 (March 5, 2014), available at <http://transition.fcc.gov/oet/tac/tacdocs/reports/TACInterferenceLimitsIntro1.0.pdf>

by ensuring that NTIA is better funded and thus better-positioned to execute its important spectrum management mission.

Enclosure: TIA White Paper, *Spectrum Sharing Research and Development* (released December 11, 2013), available at <https://www.tiaonline.org/policy/spectrum-sharing-research-development-white-paper>