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Comments Submitted to the Telecom Regulatory Authority of India
on Inputs for Formulation of National Telecom Policy - 2018
January 19, 2018

TIA represents approximately 250 manufacturers and suppliers of high-tech telecommunications networks and services here in the United States and around the world. TIA is also an ANSI-accredited standards development organization. Our members' products and services empower communications in many industries and markets, including healthcare, education, public safety, and transportation.

We appreciate the opportunity to submit comments on India's forthcoming National Telecom Policy (NTP) 2018. Our member companies are invested in India for the long term, and they benefit from the contributions of its talented and innovative engineers. As India's telecom market matures and expands, TIA members look forward to growing with it.

Through TIA member technologies, we hope to help India make progress toward goals outlined by the Telecom Regulatory Authority of India (TRAI) such as improving the quality of telecom service and expanding internet connectivity. Below, we offer comments on the following elements addressed in TRAI's consultation paper on the NTP:

1) Access to affordable ICT goods
2) Import substitution
3) Spectrum and licensing
4) Broadband deployment benchmarks
5) Alignment on digital trade policies
6) Satellite policy
7) Standard Essential Patents (SEPs)

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1) Access to affordable ICT goods

First, we would like to acknowledge the significant strides India has made in expanding wireless and digital access to its citizens. India's overall score in the 2017 ICT Development Index (its IDI value) from the International Telecommunications Union (ITU) rose nearly 15 percent from 2016[1]. According to the ITU, India was among a handful of countries that saw the biggest year-on-year improvements in citizens' ICT access,[2] based on the penetration of mobile cell phone subscriptions, households with a computer,

[1] *Measuring the Information Society 2017*, ITU, 31
[2] *Measuring the Information Society 2017*, ITU, 76

and other indicators. Yet India continues to lag in international rankings, and TRAI has outlined goals to improve India's rankings on connectivity, increase internet speeds and shrink the digital divide.

With the end of improving ICT access, we would encourage the government to review its policy on ICT duties.

Duties imposed by the Indian government in 2014 and 2017 are ill-considered from a trade perspective because they violate India's GATT schedule commitments. But perhaps more relevant to India's ICT policymakers is the likely negative effect on Digital India: By making products more expensive, such duties stand to undermine the government's goal of making ICT products and services more affordable and available.

It is well documented that high import tariffs can have a significant negative impact on telecom usage. According to UNCTAD, when Kenya exempted mobile handsets from a 16 per cent value-added tax in 2009, the uptake of new handsets tripled[3].

Tanzania imposes significant taxes on mobile services, with a 17 per cent excise tax in addition to a value-added tax; the result is that its 3G adoption rates lag those of its peers. A GSMA study has estimated that removing the excise tax would boost 3G adoption by 800,000 subscriptions, resulting in $115 million more in mobile investment.

Removing duties would help to keep India's ICT prices globally competitive, thereby improving citizens' access to ICT.

2) Import substitution

We acknowledge the government's interest in developing India's ICT industry, as referred to in TRAI's consultation paper. Certainly, policymakers around the globe aim to boost domestic innovation as a means to enhance economic welfare and improve quality of life.

However, we question whether it is an appropriate strategy for a nation to seek self sufficiency in telecom equipment manufacturing – or indeed any area of ICT – given the complex and globalized nature of supply chains. Protectionist policies in the telecom arena are particularly likely to have unintended consequences for economic development. A 2016 consultation paper from NITI Aayog[4] observed: "Had [India] pursued import substitution in in this [telecommunications] sector and relied on the domestic industry to supply the bulk of the handsets, the [Indian] telecommunication revolution would have almost surely failed to materialize on the scale it did."

The same NITI Aayog paper noted that protectionist policies in other Indian sectors have not yielded favorable outcomes. For example, import substitution in India's auto industry had led to car prices up to 50 higher than the global average, while similar efforts in textiles have produced a clothing industry with exports lagging much smaller Bangladesh and Vietnam[5].

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[3] *World Investment Report 2017: Investment and the Digital Economy*, The United Nations Conference on Trade and Development (UNCTAD), 213

[4] *Make in India Strategy for Electronic Products*, NITI Aayog, 16

[5] *Make in India,* NITI Aayog, 26

3) Spectrum and licensing

We applaud TRAI's expressed interest in ensuring the availability of adequate, contiguous and globally harmonized spectrum. By making more spectrum available for next-generation services, the government could clearly demonstrate its commitment to making it easier to do business in the ICT space, in turn helping to attract more foreign investment in India.

Indeed, spectrum is such a critical foundation for national networks that we would suggest allocating a detailed, stand-alone section within the NTP focused specifically on spectrum policy goals that would facilitate the next phase of ICT development in India.

To effectively promote the dynamic growth of communications technology, we believe a spectrum policy should be technology neutral and oriented towards flexible use (in other words, not be tied to particular wireless technology, such as LTE). In addition, as we have also noted in comments submitted to the U.S. government[6], we think a national spectrum policy must reflect the following principles to allow the use of radio spectrum to evolve to meet changing demand and innovation:

- *Predictability.* To drive investment by commercial and government users alike, 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.
- *Efficiency.* Policies should encourage more efficient use of spectrum where technically and economically feasible.
- *Priority*. In cases where band 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.

Our members would be happy to provide more input on factors to consider in developing a spectrum policy that would not only promote faster networks but also facilitate progress in reducing latency, which will be critical for enabling next-generation applications such as autonomous vehicles or IoT.

Moving beyond spectrum, we strongly support the recommendations outlined in the TRAI paper to facilitate grants of telecom licenses and to review regulatory compliance costs in India for licensees, relative to international norms.

4) Broadband deployment benchmarks

On the issue of network speeds, we support the government's goal of seeking to provide data connectivity at a speed of at least 1 Gbps to all Gram Panchayats. This is consistent with the U.S. goal of 1 Gbps in fiber deployments to rural areas through anchor institutions such as schools and libraries.

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[6] Please see further TIA recommendations on spectrum policy in our comments filed to the White House Office of Science and Technology Policy, 2014, available here:
http://www.tiaonline.org/sites/default/files/pages/TIA%20OSTP%20Comments%203-20-2014.pdf

However, we would invite the government to consider raising the other minimum standard speeds proposed in the NTP. The U.S. Federal Communications Commission (FCC) has set a minimum requirement of 25 Mbps for service to qualify as broadband internet, and American ICT manufacturers and service providers have been working to develop products and services in the wireless space that would meet this target. We suggest India may wish to consider raising its target for wireless service speed from 20 Mbps to align with the U.S. goal and help support India's goal of developing as a global communication hub.

In addition, we recommend India weigh the possibility of raising its minimum download speed for 900 million broadband connections from 2 Mbps to 3 Mbps. Until recently, 3 Mbps was considered to constitute broadband service in the U.S. Many U.S.-based DSL providers used 3 Mbps as a standard for minimum service plan offerings.

5) Alignment on digital trade policies

One of many suggestions offered to boost India's global ICT standing is to improve international coordination. As India seeks to become more of a global communications hub, we would encourage the government to consider aligning with existing international frameworks in areas such as data privacy and protection and cybersecurity. For example, on data protection we would point to the APEC Cross-Border Privacy Rules as a useful model, while the U.S. NIST Cybersecurity Framework is a continually evolving and robust reference point for cybersecurity.

The TRAI paper notes that India is likely to implement a policy on cross-border data transfers. We would encourage the government to codify a commitment to unrestricted international data flows. This would not only support the continued growth of India's BPO sector, but is also likely to prove essential to the pursuit of another goal flagged in the paper – for India to become a global hub for remote management of telecommunications.

To further facilitate Indian leadership in global communications, we would urge the government to take a light-touch, flexible regulatory framework in the fast-growing IoT/M2M and cloud markets.

On a related note, we are concerned by the recommendation that the government create a licensing framework for IoT and M2M and cloud service providers. New license requirements for services that merely overlay existing traditional infrastructure will only serve to create needless bureaucratic and cost hurdles for ICT investors.

Meanwhile, India's efforts to develop its own telecom certification infrastructure, also referenced in the paper, mark a sharp departure from the path towards international alignment. Though final requirements for Indian certification are not yet clear, there is no question that India-specific tests would drive up the cost and create unnecessary compliance paperwork for telecom equipment vendors. Moreover, the new certification scheme would not provide any meaningful safety and security benefits, since equipment already undergoes testing in internationally accredited labs.

6) Satellite policy

We support TRAI's recommendation that the government review its satellite communications policy, implement an open skies policy and promote the use of satellite service to offer telephony and broadband service in remote and inaccessible areas. We urge the government to open the satellite

market to private sector competition, which would enable access to advanced technologies at an affordable price, and encourage private investment, launch and operation of satellites.

We would encourage the government to rescind restrictive licensing and other barriers that have slowed satellite industry development.

7) Standard Essential Patents (SEPs)

To promote ICT exports, TRAI's paper suggests the government consider "providing financial incentives for the development of Standard Essential Patents (SEPs) in the field of telecommunication services and systems."

Many governments seek to create environments where innovation can flourish, and we appreciate the value of state resources particularly in areas such as early-stage research where there may be less private sector investment.

However, the record shows that government funds allocated with the goal of generating specific technology results are often misallocated. There is a risk that financial incentives intended to promote SEPs could create unintended market distortions; they might allow government officials to "pick winners" whose products may not ultimately succeed in the market. Given that India already claims a highly competitive ICT market capable of rewarding innovation, we would urge the government to consider whether state incentives are the most cost-effective means of promoting ICT development.

Before the
WHITE HOUSE
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
Washington, DC 20500

In the Matter of	)	
	)	
Spectrum Policy	)	FR Doc. No. 2014-03413

COMMENTS OF THE TELECOMMUNICATIONS INDUSTRY ASSOCIATION

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Before the Office of Science and Technology Policy
Comments of the Telecommunications Industry Association

I. Introduction

The Telecommunications Industry Association ("TIA")[1] hereby submits its comments in response to the February 18, 2014 Notice of Request for Information ("RFI") issued by the White House Office of Science and Technology Policy ("OSTP") regarding spectrum policy.[2] TIA applauds OSTP for seeking input regarding market-based or other approaches that could give departments and agencies greater incentive to share or relinquish spectrum. White House-driven leadership is critical to interagency engagement and success on this important issue.

TIA is the leading trade association for the information and communications technology ("ICT") manufacturer, vendor, and supplier community. TIA members manufacture a wide range of products for both the commercial and government wireless markets, including Wi-Fi, LTE, emerging small cell technologies, non-radio products such as routers and switches, and many other ICT products.

II. Four Principles for a National Spectrum Policy

Radio spectrum has never before been more important. In commercial communications networks, mobile data use is exploding as consumers embrace smartphones, tablets and other

[1] TIA is a Washington, DC-based trade association representing hundreds of ICT manufacturers, vendors, and suppliers across all technology platforms. Members' products and services empower communications in every industry and market, including healthcare, education, security, public safety, transportation, government, the military, the environment and entertainment.

TIA is also an American National Standards Institute ("ANSI")-accredited standards development organization for the telecommunications field. For more information, please see TIA's 2013 Policy Playbook, which provides an overview of the ICT market, technologies and policies that drive innovation and investment. *See* http://www.tiaonline.org/policy/tia-2013-playbook.

[2] Notice of Request for Information, *Spectrum Policy*, Federal Register Doc. No. 2014-03413.

devices. Wireless connectivity is becoming the way in which consumers access the Internet from technologies such as LTE, Wi-Fi and satellite.

In addition to commercial uses, the Federal Government has a significant dependency on spectrum for both communications and non-communications purposes. These include GPS, radars, satellite, sensing capabilities, and other civil and military uses across a wide variety of agencies to achieve a diverse set of missions unique to government. Moreover, 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 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 innovation:

- *Predictability.* To drive investment by commercial and government users alike, 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.
- *Efficiency.* Policies should encourage more efficient use of spectrum where technically and economically feasible.

- *Priority*. In cases where band 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.

III. Improving Federal Spectrum Management

This Administration has shown great initiative in improving the federal government's use of spectrum. To begin with, TIA appreciates the Department of Defense ("DoD")'s recently-announced Electromagnetic Spectrum Strategy.[3] This strategy clearly and publicly articulates to the DoD spectrum community the need for increased efficiency, creativity and flexibility in spectrum use. 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.

A number of additional steps can be taken towards improving federal spectrum management. Some of the actions discussed below may require the participation of other stakeholders such as Congress or independent agencies like the FCC, but some can be taken through executive-branch administrative action.

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

Better Tracking is Needed. A better spectrum use tracking and management process will undoubtedly encourage more efficient uses of spectrum by all users. However, achieving this objective will require more frequent and sustained engagement between government and private-sector users at a technical level. 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 May Be Useful. NTIA – an agency in the Department of Commerce – is currently tasked with coordinating spectrum use for the federal government. 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 occasionally had difficulties even obtaining current information from other departments, making it difficult for the agency to effectively respond to Administration and Congressional requests for more detailed information regarding federal use. It may be valuable to have NTIA be staffed to engage more closely with other spectrum management offices to ensure that there is greater currency to government records of use, providing greater transparency for management purposes.

Agency Incentives Are Required. 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 White House-driven leadership to ensure more efficient federal use is necessary – and this Administration's engagement is very encouraging – 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. 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 or wireless operators.

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.[4] However, even while supporting this effort, the Administration should also explore ways to provide incentives for more efficient spectrum use deeper within the agency budgeting process, *i.e.*, at a more granular level than simply an agency's top-line retention of a portion of auction proceeds.

Spectrum "Ownership" is Outdated in an IP World. TIA does not support moving towards a model of agency "ownership" of spectrum. To begin with, moving towards an agency ownership model would diminish the prospects for centralized control and (certainly) for transparency.

Moreover, at least for communications-based functions, the notion of spectrum ownership by agencies was an idea promulgated in an era where networks and the data flowing over them were tightly linked, *i.e.*, pre-dating the transition to IP networks. In today's world, spectrum ownership would make it more difficult to transition agencies towards a more flexible approach for meeting their communications needs. 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-

[4] Spectrum auction legislation is usually considered to be a net "plus" for federal revenues, which has typically been a significant factor towards its advancement in Congress. TIA encourages the Administration to work with the sponsors of H.R. 3674 and others in Congress to enact federal incentive legislation that will similarly be seen as budgetary "win-win."

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.[5]

Spectrum Fees Could Create Market and Technology Distortions. Spectrum fees are not a helpful tool to drive efficiency. To begin with, the implementation of any such fees would almost certainly not be universal, and would therefore create myriad opportunities for "market distortions" including administrative and/or legislative intervention over time. (To use an analogy, the existing problems of a massively complex tax code should not be imported into spectrum policy.) Moreover, this would result in a marketplace that may not be technology-neutral, *i.e.*, in which the government is picking technological winners and losers. Finally, experience shows that fees are unnecessary – the commercial spectrum market already reflects intense market-based competition and strong pressure to use spectrum as efficiently as possible, all without spectrum fees.

The Administration Should Push For Legislative Action. While some actions above can be taken administratively, some require legislative action. The Administration can and should work with Congress to support greater effectiveness in the management of Federal spectrum (including proper inventories of usage, valuations, and transparency), long term planning, and to provide incentives (carrots, rather than sticks) for agencies to maximize the use of scarce spectrum resources to support their own increasing requirements and those of other users..

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

IV. Facilitating Spectrum Transitions

Spectrum transitions must be managed by agencies to ensure prompt and predictable outcomes that follow a transparent process.

Cleared Spectrum is Important to Commercial Users. TIA supports the clearing of re-purposed spectrum bands to the maximum extent feasible. Where possible, cleared, exclusively licensed spectrum bands allow for the most efficient and dependable use of spectrum suitable for mobile broadband deployment, and maximize network investment, marketability, availability and consumer use. However when incumbent uses make clearing infeasible, TIA supports greater spectrum efficiency through sharing. Indeed, TIA has recognized that for low-power technology such as Wi-Fi, shared spectrum use such as at 5 GHZ, is a good option. Meanwhile, TIA has been encouraged by DoD's recent work to facilitate opening the 1755-1780 MHz band for commercial use.

Flexible-Use Funding is Required. 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, the Administration 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.

The FCC Must Play a Central Role. TIA cautions against any agencies other than the FCC allocating spectrum rights for commercial use. The FCC has developed a strong track record in transitioning spectrum to commercial use and for its administration, and future spectrum transitions should leverage this expertise.

V. Spectrum Sharing Research and Development

The Administration must continue to play a strong role in encouraging spectrum sharing research and development. In December 2013, TIA released its Spectrum Sharing Research and Development white paper.[6] 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 funding agencies.[7] OSTP can play a significant role in facilitating or encouraging progress on several of these recommendations, including:

- Urging Congress to update NITRD's reporting requirements to ensure a more accurate picture of federal funding for network and information technology research;
- Updating the statutory basis of the NITRD program to encompass and prioritize areas such as spectrum sharing research; and
- Continuing to seek opportunities to administratively target research funding towards spectrum sharing research and development.

Connecting Transitions to R&D Funding. As the Administration looks for further ways to improve federal spectrum management and facilitate transitions to commercial use, it should continue to advocate (administratively and legislatively) for re-investment of a portion of spectrum funds in spectrum research and development efforts. 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.

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

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

The Administration previously proposed a Wireless Innovation Fund ("WIN"), but funding for this initiative was unfortunately not included in the 2012 spectrum law.[8] These and other proposals should be revived as part of any legislative initiative to transfer or open federal spectrum for commercial use.

VI. Conclusion

TIA thanks OSTP for seeking comment regarding improvements in federal spectrum policy and management. We urge OSTP to consider the positions of the ICT manufacturer and vendor community as it proceeds in its efforts.

Respectfully submitted,

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[8] Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96.