Before the
NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION
Washington, DC 20230
and the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	NTIA Docket No. 140708559-4559-1
Model City for Demonstrating and Evaluating	)	
Advanced Spectrum Sharing Technologies	)	ET Docket No. 14-99

COMMENTS OF THE
TELECOMMUNICATIONS INDUSTRY ASSOCIATION

I. Introduction

The Telecommunications Industry Association ("TIA")[1] hereby submits its comments in response to the July 15, 2014 Joint Public Notice ("Notice") issued by the National Telecommunications Information Administration ("NTIA") and the Federal Communications Commission ("FCC") regarding spectrum policy.[2] TIA applauds both NTIA and the FCC for seeking input regarding a potential Model City to support rapid experimentation and development of policies, underlying technologies, and system capabilities for advanced, dynamic spectrum sharing.

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[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 2014 Policy Playbook, which provides an overview of the ICT market, technologies and policies that drive innovation and investment. *See* http://www.tiaonline.org/news-media/press-releases/tia-2014-playbook-presents-annual-guide-driving-innovation-and-investment.

[2] 79 Fed. Reg. 41,262 (July 15, 2014).

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. The Model City Project Must Leverage Existing Efforts and Funding.

TIA welcomes the increased attention by both policymakers and technologists on issues related to spectrum sharing research and development. The creation of the new Center for Advanced Communications ("CAC") under the umbrella of NTIA and NIST represents a welcome step forward by the government towards developing the cutting-edge technological advances that will be required to keep pace with exploding demand for spectrum. In December 2013, TIA released a white paper (enclosed) on this subject that included both high-level recommendations for policymakers as well as areas for potential technical research, including efforts that may be undertaken by the new CAC.[3]

As noted in that white paper, there are a number of research efforts across the federal government regarding spectrum sharing. NTIA's own Institute for Telecommunications Sciences ("ITS") in Boulder conducts some basic research in radio sciences, and the FCC has been actively pursuing efforts in the 3.5 GHz band regarding small cells and spectrum sharing. In addition, the Defense Advanced Research Projects Agency ("DARPA") has issued solicitations regarding Advanced Radio Frequency Mapping ("RadioMap")[4] and Shared

[3] Telecommunications Industry Association, *Spectrum Sharing Research and Development*, rel. Dec. 2013, available at http://www.tiaonline.org/sites/default/files/pages/SpectrumSharingR%26DPaper%3D10-20-13_1.pdf

[4] DARPA-BAA-12-26, available at https://www.fbo.gov/index?s=opportunity&mode=form&id=701c80210c46b7e497bc90cb0b5c120c&tab=core&_cview=1

Spectrum Access for Radar and Communications ("SSPARC"),[5] the latter of which focuses on mechanisms to improve performance or reduce interference when sharing spectrum. There are also efforts underway to establish a new public-private National Spectrum Consortium with the purpose of providing quick and efficient delivery of new, critical spectrum technologies to enhance DoD's spectrum capabilities.[6]

Despite these efforts, current overall funding for spectrum sharing R&D remains relatively limited in proportion to the potential economic impact of this research. To be sure, the spectrum auction legislation passed in 2012 directed some of the eventual auction proceeds to NIST for public safety communications research.[7] And in June 2013, the President announced in that he would be administratively directing additional funding to spectrum sharing research at the National Science Foundation ("NSF") as well as DARPA and NIST.[8] But these efforts are not sufficient to achieve the transformational advances in spectrum sharing R&D that will truly yield economic benefits several times over. In the meanwhile, even as TIA continues to advocate for more funding from Congress, effective coordination of all *existing* resources for spectrum sharing R&D – including the avoidance of potential duplication of efforts – is essential.

In this regard, NITRD's Wireless Spectrum Research and Development Senior Steering Group ("SSG") has been a useful tool to help coordinate some of these activities. However, as NTIA and the FCC explore establishing a Model City for spectrum sharing technologies, they

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[5] DARPA-BAA-13-24, available at https://www.fbo.gov/index?s=opportunity&mode=form&id=8e85f738e53747b502b4b9c3732c2e54&tab=core&_cview=1

[6] Fed Biz Opps Solicitation, *Government Parties Seek Collaboration with Industry on Research and Development (R&D) to Advance Better Use of the Electromagnetic Spectrum*, available at https://www.fbo.gov/index?s=opportunity&mode=form&tab=core&id=1a4190badb50c116cc8d80687b6afb51

[7] *See Middle Class Tax Relief and Job Creation Act of 2012*, Pub. L. No. 112-96, at § 6413(b)(4) (providing $100 million to NIST for public safety research).

[8] *See* White House, *Fact Sheet: Administration Provides Another Boost to Wireless Broadband and Technological Innovation*, rel. June 14, 2013, available at http://www.whitehouse.gov/sites/default/files/spectrum_fact_sheet_final.pdf

should ensure that their efforts are aligned with other projects already occurring across the Federal Government. It is essential that wherever possible, funding already allotted to other projects is leveraged as part of any Model City efforts – and this should therefore inform any decisions regarding how the Model City program is established.

III. Effective Coordination and Collaboration are Essential.

NTIA's Role. As envisioned by the Notice, TIA supports NTIA playing a significant role in facilitating federal agency participation. Earlier this year, TIA filed comments with the White House Office of Science and Technology Policy ("OSTP") regarding federal spectrum management more broadly, and our observations there remain relevant in the context of a potential Model City for spectrum sharing research and development:

> 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.[9]

Having NTIA engage more with other agencies to help facilitate and coordinate the federal government's portion of this project would help ensure that resources are appropriately leveraged, as described above.

Public-Private Partnerships. TIA also supports having NTIA facilitate (with the FCC) a dialogue between key stakeholders, including the use of public-private partnerships as envisioned by the Notice. TIA also encourages both NTIA and the FCC to use such partnerships

[9] Comments of the Telecommunications Industry Association, *Spectrum Policy*, filed March 20, 2014 in response to Federal Register Doc. No. 2014-03413, at 4, available at http://www.tiaonline.org/sites/default/files/pages/TIA%20OSTP%20Comments%203-20-2014.pdf

not just after a Model City program is established, but even as initial arrangements – including the selection of a potential city or cities – are being contemplated.

In the context of spectrum sharing, there are several existing or proposed models for such collaboration. For example, in February 2014, the FCC's Technical Advisory Committee (TAC) proposed a multi-stakeholder organization for the development of receiver standards – a topic closely connected to spectrum sharing.[10] TIA has supported the use of multi-stakeholder processes in various contexts, and in recent comments in the FCC's 3.5 GHz proceeding we discussed the possible benefits of housing that process within an American National Standards Institute (ANSI) accredited organization.[11] The ANSI process provides assurance that such standards truly represent an agreement amongst a majority of key players within a sector, while allowing for participation of all stakeholders including government entities. TIA itself is an ANSI-accredited standards development organization.

Other models for collaboration, both formal and informal, can also be leveraged. Examples include T-Mobile's work on a pilot project with DoD to explore the usage of LTE in the 1755-1780 MHz band, as well as the nascent National Spectrum Consortium project which seeks to provide DoD with access to critical spectrum sharing technologies more quickly – hopefully to the benefit of federal and non-federal spectrum users alike.

IV. Factors in the Selection of a Model City (or Cities)

TIA believes the particular city – or cities – selected for this program should have the following attributes:

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[10] FCC TAC Spectrum / Reciever Performance Working Group, *Multi-stakeholder Organization to Develop Interference Limits Policies Recommended Charter*, available at http://transition.fcc.gov/bureaus/oet/tac/tacdocs/meeting61014/InterferenceLimitsMulti-stakeholderOrganization-RecommendedCharter.pdf

[11] Reply Comments of the Telecommunications Industry Association, filed August 15, 2014 in (FCC) GN Docket No. 12-354, at 3-4, available at http://apps.fcc.gov/ecfs/document/view?id=7521768382

Diversity of existing spectrum uses. To provide a real-world scenario (or scenarios) for evaluating spectrum sharing – and to shorten the time between the evaluation and deployment stages for new technologies – spectrum sharing should be tested in "challenging" spectrum environments that could, if successful, hold the greatest potential to facilitate near-term commercial deployment. This means, for example, that testing in locations with significant incumbent Federal uses may be useful for "worst-case" benchmarking, although testing in less difficult environments would also be appropriate.

For example, recent efforts to open the 3.5 GHz band for spectrum sharing applications have starkly illustrated the potential effects of different geographical uses, including the appropriate size of exclusion zones from coastal areas. Testing in such high-impact areas will be more effective for benchmarking than testing in areas which may be less affected – with the caveat that such "worst-case" testing results not be used as a basis to later limit the deployment of services in more benign environments.

Diverse topography under common legal control. Urban environments come in many shapes and prop s ihat s5.7 au3 Tc- 44.8denaph7.7(ents.)8e(-imsMan(u)tanTJs ihoym

General flexibility in permitting. The selection of a candidate city or cities should