

**Before the
Federal Communications Commission
Washington, D.C. 20554**

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

COMMENTS OF THE DISTRICT OF COLUMBIA

The District of Columbia (the “District”) respectfully submits these comments in response to the Joint Public Notice (the “Notice”)¹ issued by the National Telecommunications and Information Administration (NTIA) and the Federal Communications Commission’s (FCC) Office of Engineering and Technology (OET) in the above captioned proceeding. The District commends the NTIA and the FCC for their effort in creating a “Model City” to test the concept of spectrum sharing with the goal of improving spectrum utilization. The number of residents in the District that rely on wireless mobile devices as their sole means of communication is steadily increasing; and, as a result, wireless coverage and network capacity issues are also becoming increasingly problematic. From a public safety standpoint, the District is interested in ensuring that its residents, businesses, government agencies, and public safety entities are able to communicate using wireless devices and other means, especially during an emergency. The Model City spectrum sharing testing program is an innovative concept and the District is interested in contributing to the success of the program. To that end, the District presents the following recommendations concerning the most appropriate approach for identifying eligible cities interested in serving as a Model City.

¹ Joint Public Notice, “Model City for Demonstrating and Evaluating Advanced Sharing Technologies,” issued July 11, 2014 by the Federal Communications Commission and the Department of Commerce, National Telecommunications and Information Administration, DA 14-981, 79 Fed. Reg. 41262, *et seq.*

I. Overview of the District of Columbia's Technical Capabilities and Expertise

The District has unique and deep experience and expertise in state, local, and Federal interoperable public safety networks based on its unique and critical position in Washington, D.C. Having built and operated the Wireless Accelerated Responder Network² (WARN), deployed in 2004, and the Regional Wireless Broadband Network³ (RWBN), deployed in 2008, the District has maintained prototype public safety networks. Since 2003, the District has maintained and operated a high-quality, carrier-grade fiber infrastructure, known as the District of Columbia City-wide Network (DC-Net), that currently provides robust Internet/data connectivity and telecommunications services to governments, schools, and nonprofit institutions. DC-Net is an intelligent, fiber-based Multiprotocol Label Switching (MPLS) network with enhanced switching from our network. DC-Net also has the capability of rapidly expanding its fiber network and peers with several multiple service providers Internet points-of-presence in Washington, DC and Northern Virginia. The network is also connected to commercial tower sites. The District owns ten radio sites, including two towers over three hundred (300) feet tall. Each radio site has diverse fiber entry points, hardened buildings, and backup power. DC-Net also includes a robust Wi-Fi infrastructure³ that offers services to District of Columbia residents, visitors, and businesses free of charge. The District owns numerous buildings within its boundaries that have access to the District's fiber-optic network. Within those buildings, the District is building and deploying neutral host Distributed Antenna Systems (DAS) to increase indoor wireless coverage.

² <http://www.nascio.org/awards/nominations/2007/2007DC8-NASCIO%202007%20DC%20WARN%20Final.pdf>

³ <http://www.mwco.org/uploads/bids/+v5eww.pdf>

As the owner and operator of DC-Net, the District has experience testing and deploying new technologies and has an understanding of the needs of major cities respecting communications infrastructure. The following recommendations are based upon the District's experience with the DC-Net program.

II. **Proposed Criteria for Selecting "Model Cities"**

The July 2012 President's Council of Advisors on Science and Technology (PCAST) Report on "Realizing the Full Potential of Government-Held Spectrum to Spur Economic Growth," stated that its goal in creating a Model City is to enable multiple users to share spectrum, under a wide range of conditions, without infringing on each other's services.⁴ As the number of end users in dense, urban geographic areas increases, the need for discovering solutions for overly burdened networks also increases. The test area for spectrum sharing technologies must provide an area where testing may occur under varied environments, topographies, and conditions. The criteria for selecting the Model City must ensure that the features of the Model City facilitate the execution of the goals set forth in the PCAST Report.

In the Notice, the NTIA and the FCC sought comment on "[t]he most appropriate approach for soliciting or identifying eligible cities interested in hosting Model City deployments" and asked, "[w]hat particular factors, accommodations, commitments, or benefits would be important?"⁵ In response, the District presents the following criteria that the NTIA and the FCC could utilize in selecting a city to serve as the "Model City."

⁴ See PCAST, Report to the President: "Realizing the Full Potential of Government-Held Spectrum to Spur Economic Growth (July 20, 2012)."

⁵ Notice, page 5.

A. Features of the “Model City”

The District sets forth what features a host city should possess to facilitate successful spectrum sharing testing. The District proposes that a city interested in serving as the “Model City” should respond to the following questions to demonstrate its capabilities:

1. *Does the city have a State or Municipal Broadband Network?* The FCC in the past decade has been auctioning spectrum, with the provision that buyers of that spectrum may not share their investment unless fair compensation is exchanged for its use. To facilitate participation in the spectrum sharing testing, incumbent spectrum license holders should be offered some type of incentive or compensation in return for their participation. Access to municipal and state owned fiber-optic networks could provide such incentive. A state or municipality that owns an active and operational fiber network could provide backhaul to the incumbent spectrum license holders in exchange for making their spectrum available for testing. The state or municipal fiber network could be used as an alternate route for the spectrum license holder when the normal route is unavailable or overtaxed. Alternate routing, and networking with various parties that need to participate, will benefit from fiber networks that also offer intelligent capabilities. These types of networks can connect, more efficiently, with various types of capabilities that should be considered, including but not limited to: traditional public switched telecommunications, burgeoning Internet Protocol (IP) communications, and emerging technologies.
2. *Does the city have a topography that supports multiple testing platforms?* As a laboratory environment for spectrum sharing and deployment of new technologies,

the host city should have features and topography that may translate to different types of cities throughout the United States. For example, dense, urban areas often have issues when it comes to getting a signal out of the area where there is no clear line of sight. Rural areas have severely limited cell tower coverage that results in widespread dead zones and inconsistent coverage. The host city must be able to serve as a prototype to test new spectrum sharing technologies geared towards solving both issues in both types of areas.

3. *What real-world events and other conditions can be leveraged?* The host city should also be able to test spectrum-sharing scenarios in a real-world environment where commercial, public safety, and federal government entities experience interference issues that may be tested and examined. The host city should have major events that regularly cause network capacity to swell to its maximum capacity, such as sporting events, festivals, and the like. Incumbent spectrum license holders are likely seeking solutions in these conditions and would be more willing to participate in testing the spectrum sharing concept in this environment.
4. *What radio infrastructure exists?* The host city should have a state, local, and/or federal information technology radio infrastructure available to use. In the testing environment, access to cellular networks is key in testing the spectrum sharing concept. If the host city has (and owns) a cellular network within its infrastructure portfolio, that would be ideal for testing the spectrum sharing concept over that network. A city owned DAS system would also enhance testing capabilities within buildings.

5. *Does the city have Public-Private Partnerships (PPP) in Place Respecting the Deployment of Advanced Communications Technology?* The PCAST Report stated that the PPP structure is essential in the Model City testing concept. If the host city has existing PPPs, those partnerships could be leveraged to facilitate the execution of the testing. The host city should also have a history of PPPs in piloting technology project and have officials and agencies with experience in working closely with private entities to meet a shared communication goals (e.g. closing the digital divide). Leveraging an existing PPP framework is critical in moving the Model City program forward. If the host city has existing relationships and protocols, establishing the PPP framework for the Model City program will be much easier. Further, private sector companies may be more open to spectrum sharing with governments to meet shared goals, such as eliminating “dead zones” for public safety purposes. The host city should be able to demonstrate its use of public private partnerships to deploy new technologies.
6. *Does the city have a budget to procure new equipment for public safety or other uses?* A host city with a budget to procure and upgrade public safety communication equipment is ideal in this context. If new spectrum is available, and a state is interested in procuring equipment to utilize the new spectrum band, vendors will be more likely to develop and deploy equipment that can utilize the new spectrum if there is an existing customer base. If the host city has a budget to place a large order, that provides more potential business opportunity as an incentive for private sector product development and participation.

7. *What infrastructure sharing opportunities exist?* The host city should also have infrastructure sharing opportunities that would be attractive to the incumbent spectrum licensee and provide incentives to participate in the spectrum sharing concept. Those incentives could include the following:
- The Model City should be able to provide backhaul and data centers that incumbent licensees could utilize to increase coverage.
 - The Model City should have municipally managed fiber assets that could be utilized by spectrum license holders.
 - Streamlined permitting should exist for construction of cell towers and other wireless infrastructure associated with the Model City.
8. *What is the makeup of institutions and end-users?* The Model City should have multiple institutions and end-users located in the jurisdictional area that are willing to test the spectrum sharing concept. While all user bases are relevant in general, there are particular benefits from jurisdictions that possess a large number of academic and not-for-profit sector users. Those users are particularly positioned to promote knowledge sharing. A host city with numerous education and research entities present in the jurisdiction that are willing to offer use of their facilities and research funds to support the spectrum sharing test environment is ideal. The host city should also have the following institutions and entities within its borders:
- Multiple carriers and types of carriers should be present in the region.
 - A diverse user-base should be present and there should be wide adoption and use of multiple technologies by the population.
 - The user-base should also be multi-jurisdictional.

B. Accommodations and Infrastructure that the Model City Could Provide

To streamline the implementation and execution of the experiments within the geographic boundaries of the host city, the location should have existing infrastructure that supports the participants. To meet the same end, we advise that the host city for the Model City experiments should be willing and able to accommodate the participants' access to the public right of way and telecommunications infrastructure by offering streamlined permitting and reducing or eliminating other administrative burdens that could normally be viewed as a barrier to participation by commercial participants. The District recommends that the host city also have the following features:

- Access to city owned and managed tower infrastructure, rooftops, street lights, and similar assets for testing purposes;
- Ability to waive or streamline Right-of-Way access procedures and/or streamlined permitting processes;
- Ability to offer and provide office space, facilities, and personnel for the purpose of facilitating the execution of the experiments; and
- A broadband network that can provide network access, network capacity, expected or required data speed, and a platform for testing electromagnetic interference.

The District recommends that the NTIA and the FCC incorporate the above-mentioned criteria for selecting the Model City into its future application soliciting cities to serve as the host city. The selection of a host city is key to the effectiveness of this program. The features, accommodations, and infrastructure of the host city must facilitate the execution of the goals set

forth in the PCAST Report. The framework the District suggests should provide for the selection of the ideal host city.

III. **Conclusion**

State and municipal governments located in urban areas have much to gain by serving as a host city for the Model City program and testing the spectrum sharing concept. A successful deployment of spectrum sharing technologies would help address the growing demand for wireless coverage prompted by the ever increasing use of tablets, smartphones, and other wireless devices. It could also provide solutions to increasing the network capacity of overburdened cellular networks. Again, the District of Columbia commends the NTIA and the FCC for its effort in proactively addressing this important matter through the Model City concept. The District respectfully suggests that the NTIA and the FCC consider and incorporate the selection criteria presented above in creating its application to serve as a Model City to ensure the success of the program.

Respectfully submitted,

THE DISTRICT OF COLUMBIA

By:

Office of the Chief Technology Officer
200 I Street, SE
Washington, DC 20003
Tel: (202) 727-2277
Fax: (202) 727-6587
E-mail: octo@dc.gov

ROB MANCINI
Chief Technology Officer

TEGENE BAHARU
Deputy Chief Technology Officer

NIQUELLE ALLEN
Policy & Regulatory Advisor, DC-Net

JACK BURBRIDGE
Communications Manager, DC-Net

CHRISTOPHER BENNETT
IT Program Manager, DC-Net

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