Networking and Information Technology Research and Development National Coordination Office Request for Information on the National Spectrum Research and Development Plan

Comments of APCO International

The Association of Public-Safety Communications Officials International, Inc. (APCO)[1] submits these comments in response to the Networking and Information Technology Research and Development National Coordination Office's request for information regarding the creation of a National Spectrum Research and Development Plan (R&D Plan).[2] APCO appreciates the opportunity to provide a public safety perspective on the priority areas for spectrum research and development.

The R&D Plan should take public safety's unique spectrum needs into account. As APCO noted in comments to the National Telecommunications and Information Administration regarding development of the National Spectrum Strategy, public safety agencies depend on a broad range of spectrum bands to support their mission critical communications needs and require heightened reliability, priority, and interference-free access to spectrum.[3] Public safety agencies use spectrum to dispatch first responders, provide incident-related data such as suspect descriptions and scene-safety information essential to law enforcement, fire, and EMS officials, establish backup links for 9-1-1 networks, support life-safety communications for first responders, and coordinate the incident response through its resolution.

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[1] Founded in 1935, APCO is the nation's oldest and largest organization of public safety communications professionals. APCO is a non-profit association with over 40,000 members, primarily consisting of state and local government employees who manage and operate public safety communications systems – including 9-1-1 Emergency Communications Centers (ECCs), emergency operations centers, radio networks, and information technology – for law enforcement, fire, emergency medical, and other public safety agencies.

[2] Request for Information on the National Spectrum Research and Development Plan, 89 Fed. Reg. 12871 (Feb. 20, 2024) *available at* https://www.federalregister.gov/documents/2024/02/20/2024-03400/request-for-information-on-the-national-spectrum-research-and-development-plan.

[3] Comments of APCO International, National Telecommunications and Information Administration, National Spectrum Strategy (Apr. 17, 2023) *available at* https://www.apcointl.org/~documents/filing/apco-comments-ntia-nss-041723.

The most important area for spectrum research and development from a public safety perspective is the development of mechanisms that enable the automatic and rapid mitigation of interference problems. Public safety agencies use spectrum in many different types of systems. These systems are not designed to detect interference and are incapable of attributing it to a particular source. Attempting to identify the source(s) of interference is a long, resource-intensive process, and even after the source has been identified agencies often struggle to promptly and permanently eliminate interference. This is a problem in traditional spectrum environments, such as land mobile radio systems encountering interference from improperly installed/programmed distributed antenna systems and "near/far" interference arising from commercial cellular systems. And new spectrum environments with increasing numbers of unlicensed devices – currently an issue for public safety 6 GHz microwave systems – pose an especially difficult interference threat given that unlicensed devices have no readily-identifiable responsible party, can be highly-concentrated, often transmit from inside private homes and businesses, operate intermittently, and employ frequency hopping technology.

APCO also supports prioritizing research and development for dynamic spectrum access and management. Some bands relied upon by public safety are already subject to dynamic spectrum sharing, and public safety licensees might benefit from expanding spectrum sharing mechanisms to other bands if, for example, that leads to lower prices or more equipment options. However, spectrum sharing mechanisms must be thoroughly evaluated with real-world testing in advance of their deployment to ensure they are effective at protecting public safety communications. Simulations and lab-based testing alone are inadequate when public safety is involved. Furthermore, spectrum sharing mechanisms must respect public safety's unique needs and mission critical design elements. For example, public safety microwave systems are

designed with large fade margins to ensure they remain operational during events such as extreme weather that can significantly degrade signal quality. The fade margin in public safety systems should not be mistaken for an opportunity to leverage underutilized spectrum.

Finally, insofar as the R&D Plan addresses economic concerns, APCO encourages research into how to lower costs for public safety spectrum users. Public safety agencies often lack the resources needed to acquire new spectrum technologies or augment existing systems to make them more resilient to interference. They also typically face long equipment lifecycles and procurement processes. These constraints, along with the life-safety nature of public safety spectrum use, underscore the need for an R&D Plan that takes the public safety community's unique needs into account.

Respectfully submitted,

APCO INTERNATIONAL

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