Department of the Interior, Interior Business Center, Acquisition Services Directorate on behalf of the U.S. Department of Commerce, First Responder Network Authority

Special Notice

Comments of APCO International

July 27, 2015

Solicitation No. D15PS00295B

The Association of Public-Safety Communications Officials-International, Inc. (APCO) submits the following comments in response to the above-captioned Special Notice issued by the Department of the Interior on behalf of the First Responder Network Authority (FirstNet). Founded in 1935, APCO is the nation's oldest and largest organization of public safety communications professionals. Its members include state and local employees of law enforcement, fire, and emergency medical service departments, as well as 9-1-1 public safety answering points (PSAPs) and emergency operations centers (EOCs). APCO's members are the public safety communications professionals that will be the primary users of the nationwide public safety broadband network (NPSBN).

APCO applauds FirstNet for working diligently to issue a draft Request for Proposals (RFP). In November 2012, APCO responded to a Notice of Inquiry (NOI) issued by the National Telecommunications & Information Administration (NTIA) on behalf of FirstNet to address several aspects of the development of the NPSBN. APCO's response to the NOI made several points with regard to network architecture, devices, and applications that are relevant to the draft RFP. Here, we reiterate certain points and address other issues raised by the Special Notice.

I.   General Design

To make the best use of FirstNet's limited public funding and spectrum assets, FirstNet should design its final RFP to maximize response and interest on the part of the wireless communications industry to enter into public-private partnerships and resulting covered leasing agreements.[1] This would permit FirstNet to leverage industry expertise in advanced wireless broadband communications and, critically, existing and readily accessible network infrastructure.[2] The potential value of infrastructure sharing by network providers in exchange for secondary spectrum access can be critical to FirstNet's success.

Further, FirstNet should focus on crafting its RFP to achieve an initial network build that provides for continued enhancement. FirstNet should also immediately pursue roaming agreements

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[1] *See* Section 6206(c)(1)(A)(i) (requests for proposals to take into consideration "advantages offered through partnerships with existing commercial providers"). The network also must be based on "commercial standards" as defined in the legislation. *See* Sections 6001(10), 6202(b)(1)(A), 6202(b)(2)(A).

[2] FirstNet should leverage the sizeable infrastructure of mobile network operators to the maximum extent economically desirable. *See* Section 6206(b)(1)(C).

with wireless carriers as enabled under the legislation.[3] Such an approach will result in an enduring and flexible network designed for first responders, while also allowing first responders to immediately take advantage of roaming options while the network is constructed.

> II.   FirstNet and 9-1-1

Much like FirstNet, IP-based Next Generation 9-1-1 (NG9-1-1) networks are on the horizon. NG9-1-1 will be a network of networks providing connectivity among Public Safety Answering Points (PSAPs) locally, regionally, and nationally. NG9-1-1 systems will make it possible for PSAPs and authorized agencies to interoperate with one another over Emergency Services IP Networks (ESInets). NG9-1-1 will also enable the public to interact with the 9-1-1 system using multimedia technology (voice, data, video).

NG9-1-1 and FirstNet will essentially constitute two sides of an emergency response, with the PSAP serving as a "nerve center" connecting them. On one side, the public sends voice or data via NG9-1-1 to request emergency services; on the other side, first responders receive information from the PSAP and exchange mission-critical communications via FirstNet. Together, FirstNet and next generation PSAPs will enable multimedia data sharing from the PSAP to responders (whether originated from the general public, or retrieved from other public safety systems or databases), among responders, and from responders back to the PSAP. A successful integration of NG9-1-1 and FirstNet requires a standards-based open architecture, and APCO is actively working to develop such standards and best practices.

The draft RFP contains several references to 9-1-1 that require clarification, ranging from terminology to operational and interface descriptions. For example, "9-1-1 service center" (Appendix C-7 p 63) is not a common term. The statement that "[a]ppropriate NG9-1-1 content can be delivered to dispatchers from the PSAP call-taker" (Appendix C-7 p 81) requires clarification since dispatchers and call-takers (which APCO refers to collectively as "telecommunicators") are often the same person or work in the same center. There can also be scenarios where NG9-1-1 content is shared between PSAPs. FirstNet should also clarify that while "[t]ext to 9-1-1 is part of the NG 9-1-1 capability" (Appendix C-7 p 80), text-to-911 exists today as an interim step (SMS-based) toward NG9-1-1. Further, the illustration of how FirstNet's services and core will interface with public safety entities (Appendix C-5 p 10) needs to account for legacy PSAPs that will exist for some time throughout the transition to NG9-1-1. Also, "PSE Applications" referenced in this diagram (CAD, RMS, Video) will be hosted and integrated at the PSAP and thus are not physically separate as the diagram illustrates.

FirstNet must accommodate the coexistence of legacy[4] and Next Generation PSAPs, taking into account how to interface with disparate systems as well as how to apply security and authentication measures that FirstNet will seek to implement.[5] The RFP should encourage respondents to leverage the

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[3] Section 6206 (c)(5).

[4] Today, the vast majority of PSAPs are legacy (circuit switched) systems.

[5] It's also important to note that next generation platforms may not be uniform. At present, NG9-1-1 can be either i3 based or IMS based. Compatibility between disparate systems such as i3 and IMS is critical to ensure smooth translation of data from the public to PSAPs and from the PSAP to first responders. FirstNet should consider the

significant work underway that will impact interfaces between FirstNet, PSAPs, IP multimedia subsystems (IMS), ESInets, applications, public safety communications centers, and computer aided dispatch (CAD) systems.[6] Additionally, standards and best practices are in place or under development for the PSAP with regard to both NG9-1-1 and FirstNet. Like FirstNet, NG9-1-1 is IP-based: components and personnel can be located anywhere, there are many new inputs, and standardized interfaces will make it possible for disparate systems, PSAPs, and authorized agencies to interoperate effectively. The use of a standards-based, non-proprietary approach is critical to success.

III.   Location Positioning Technology

The draft RFP makes several references to location positioning technology.[7] APCO agrees that technology will enable enhanced location accuracy for first responders, as well as wireless 9-1-1 callers. FirstNet acknowledges that the Federal Communications Commission (FCC) took steps to improve wireless 9-1-1 location accuracy in February 2014 by proposing new rules, and we provide an update to that effort here.

In response to the FCC's proposal, APCO worked with the nation's largest wireless carriers and the National Emergency Number Association (NENA) to develop a plan that would lead to the best possible outcomes. For indoor location, APCO championed a "dispatchable location" as the gold standard for public safety. This means the civic address, plus additional information such as the apartment number, floor and office suite, or whatever is required to get first responders to the emergency.

After months of negotiation, APCO was proud to join as signatory with its partners to a "Roadmap for Improving E911 Location Accuracy" that focused on providing a dispatchable location and putting 9-1-1 solutions on track with advances in commercial technology. In January 2015, the FCC adopted an Order (FCC 15-9) that substantially incorporates the Roadmap. APCO continues working with the other Roadmap signatories and a variety of additional stakeholders to implement the FCC's Order and deploy technologies that will lead to a new era for wireless location accuracy. This activity is substantial and involves a number of Working Groups and standards development bodies.

The advanced technology and associated standards being developed to serve PSAPs and 9-1-1 callers – including for vertical positioning solutions – has the potential to facilitate the deployment of comparable location solutions for first responders operating on the FirstNet network. FirstNet's RFP should anticipate the impact of these efforts and leverage any synergies.

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work underway at ATIS concerning interfaces between IMS to 9-1-1 and IMS to ESInets. These standards will impact how FirstNet interfaces with PSAPs and ESInets including multimedia content shared between responders and PSAPs.

[6] Substantial work is underway by groups like APCO, NENA, ATIS, 3GPP, IETF, DHS OIC, IJIS, and others in several areas of relevance to FirstNet's deployment of the NPSBN. For example, this includes APCO work on a standard for the interface between mobile apps and public safety communications centers, and interoperability among CAD systems.

[7] Appendix C-4 p 5, Appendix C-5 p 5, Public Safety Use Cases, etc.

IV.   Applications Ecosystem

The draft RFP includes an applications ecosystem among the high-level functions FirstNet has determined necessary to meet its stated mission and objectives.[8] APCO agrees with several important aspects of FirstNet's approach to applications in the draft RFP.[9] In particular, we agree that users should be able to continue using the apps they use today,[10] and that application and data interoperability will be key elements of public safety user satisfaction going forward.[11]

As a general matter, FirstNet should keep in mind that even in the short time since FirstNet's enabling legislation was passed, the commercial ecosystem for mobile apps has changed dramatically. As networks have developed to enable more sophisticated features, consumer needs have changed and correspondingly demand more coverage, greater reliability, and faster speeds. Consumer needs and network capabilities have advanced in an iterative process. Predicting how public safety professionals will use the mobile apps on the NPSBN is especially difficult given that, for the first time, first responders will have a network that supports priority and mission critical applications. FirstNet's application ecosystem needs flexibility to adapt to first responder needs that are certain to evolve.

Accordingly, FirstNet should seek to leverage what the commercial ecosystem already has to offer, and focus on filling gaps and coordinating solutions for public safety that would not otherwise be achieved.[12] For example, consider the following vision of a FirstNet user experience:

> Fire departments in County A and County B provide different applications to personnel. A firefighter from County A can use her county's application to receive a mutual aid dispatch from County B, transmit status updates to County B's PSAP, and obtain incident pre-plans created by the fire department in County B - regardless of whether Counties A and B are using the same CAD or application vendor. This cross-agency application use was made possible because FirstNet took a collaborative approach to facilitating interoperability that preserved the benefits of an open and flexible application ecosystem.[13]

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[8] Special Notice p. 5.

[9] APCO responds to this portion of the Special Notice with the benefit of lessons learned from its work with public safety applications, including hosting workshops on public safety application security, participating in public safety app hackathons, conducting app-related brainstorming sessions at APCO events, engaging in app testing/evaluation projects, developing an American National Standards Institute (ANSI) standard for apps that interface with public safety, and hosting AppComm, a public safety apps website that serves as a resource for developers and public safety professionals to learn about apps and contribute their expertise to improving the existing ecosystem.

[10] Answer to question #437.

[11] Answer to question #436.

[12] In particular, FirstNet may be in a unique position to cut through barriers to facilitate the development of apps using certain databases or providing enhanced cross-agency features.

[13] In its answer to question #436, FirstNet describes several areas to consider for maximizing interoperability, including the use of middleware software and access clients capable of mapping data from one application to another; local control of access based upon federated Identity, Credential, and Access Management (ICAM); mutual aid agreements between PSEs on shared application sets; cross training first responders on applications from multiple vendors; consortia of third party developers working independently on interoperability of similar applications; standard APIs and applications/clients for access to key Public Safety repositories and ultimately,

APCO supports the development of an applications ecosystem that will make this vision a reality, recognizing that some elements of the ecosystem described in the draft RFP will be critical to facilitating the development of advanced applications for first responders.[14] FirstNet should take a value-added approach to the applications ecosystem that makes targeted improvements to the commercial ecosystem. In this way, FirstNet will maximize innovation in public safety app development.

V.   Conclusion

FirstNet's task is significant, yet achievable. The RFP should focus on achieving the fundamental aspects of the network in a fashion that best retains a flexible platform for continued augmentation to meet public safety's evolving needs. FirstNet must also integrate with legacy and NG9-1-1 networks to complete the full response picture. Once the fundamental aspects are in place, FirstNet can turn to accelerating enhancements to the network and the applications ecosystem, leveraging complementary industry efforts throughout the process.

Respectfully submitted,

By: /s/
John Wright
President
APCO International

Jeffrey S. Cohen
Chief Counsel
1426 Prince Street
Alexandria, VA 22314
(571) 312-4400 ext. 7005
cohenj@apcointl.org

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universal standards adoption for common data formats. APCO encourages FirstNet to issue an RFP that facilitates the exploration of these mechanisms and other enhancements for public safety applications.

[14] For example, some aspects of the commercial application ecosystem, such as a development platform for applications that can take advantage of FirstNet's unique priority capabilities and the tools needed to enable data, application, and resource sharing across diverse public safety agencies, will be essential for achieving the new era that FirstNet will make possible. Other elements, such as an application developer community and applications store, may not need to be reinvented from the commercial marketplace as prerequisites for this vision.