Before the
National Telecommunications
and Information Administration

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Development of the Nationwide	)	
Interoperable Public Safety Broadband	)	Dkt. No. 120928505-2505-01
Network	)	
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COMMENTS OF THE STATE OF NEW JERSEY

The State of New Jersey ("State") submits these comments in response to the Notice of Inquiry ("NOI") issued on behalf of the First Responder Network Authority ("FirstNet") by the National Telecommunications and Information Administration ("NTIA").[1]

I. Introduction

Following months of anticipation, the FirstNet Board held its first meeting on September 25 amid both great uncertainty and high hopes for the Nationwide Public Safety Broadband Network ("NPSBN"). This NOI represents the first opportunity state and local public safety entities have had to provide input to FirstNet regarding network architecture and applications. The State urges FirstNet to treat this input as a first step in a robust communication between FirstNet and the entities it serves.

II. A Funded, Statewide Project to Forward the NPSBN

New Jersey is one of only three states to win grants under NTIA's Broadband Technology Opportunities Program ("BTOP") to build public safety wireless broadband networks. Following NTIA grant actions in the wake of the creation of FirstNet, the State's almost $50 million project (including State match) stands at a juncture where it has substantial flexibility in direction and focus; it also has

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[1] *Development of the Nationwide Interoperable Public Safety Broadband Network,* Notice of Inquiry, 77 Fed. Reg. 60680 (Oct. 4, 2012).

spent very little of the grant funds thus far. As a result, the State's BTOP-funded project is perfectly situated to maximize its utility in the effort to design and deploy the NPSBN.

A. Status of the New Jersey Project

Initially focused on constructing a 700 MHz LTE network in the seven northern counties that comprise the Jersey City/Newark Urban Area Security Initiative ("UASI") area, the New Jersey BTOP has evolved to pursue a different course. Recognizing that "[w]e cannot predict the FirstNet Board of Directors' upcoming decisions with regard to network architecture, security and other considerations," NTIA was concerned that proceeding with the current projects would be counterproductive.[2] The State of New Jersey understood and complied to avoid such a risk.

Accordingly, the State has begun work to re-cast its project in order to minimize the risk that its spending will conflict with future FirstNet decisions. Specifically, the re-cast project will, when approved by NTIA, prepare state and local government-owned sites statewide for the deployment of the NPSBN. Such preparation would include the development of a statewide coverage design and the identification, evaluation, and improvement of sites implicated by that design. None of these tasks requires LTE-related spending prohibited by NTIA; all of the contemplated activities are identified on the "list of 'low risk' project investments" developed by BTOP staff.[3]

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[2] Letter from Lawrence E. Strickling, Assistant Secretary for Communications and Information, U.S. Department of Commerce to E. Steven Emanuel, Chief Information Officer, State of New Jersey (May 11, 2012) at 2.

[3] Fact Sheet, Broadband Technology Opportunities Program Public Safety—700 MHz Projects, "Low Risk" Project List (May 11, 2012), *available at* http://www2.ntia.doc.gov/files/btop_public_safety_700_mhz_low_risk_project_list_05112012.pdf.

But being on the "low risk" list does not mean the activity is without risk. The State recognizes there is a risk that FirstNet may elect to focus on commercial sites to the exclusion of the government-owned sites the State intends to improve through its BTOP project. New Jersey wishes to minimize that risk and ensure that its substantial BTOP grant and State contribution have the maximum impact in supporting the nationwide network. New Jersey and NTIA have not settled on the new direction and focus of the State's BTOP project. The project is unburdened by pre-existing vendor contracts; it has spent relatively little of its $50 million budget.

B. Partnership Opportunities for FirstNet and New Jersey

A partnership of the State and FirstNet could take any number of forms. In its simplest form, the partnership could be one in which the State becomes an early instance of the nationwide network, deployed in conjunction with FirstNet and fully compliant with FirstNet specifications for the NPSBN. Depending on FirstNet's overall architecture approach, the State might continue down its current path of using its BTOP funds to prepare government-owned sites statewide; FirstNet could then follow with network deployment at those sites, providing coverage statewide, including both rural and urban areas. Another early deployment option might be for the State to revert to its earlier-planned approach, using its BTOP grant to deploy an LTE radio access network ("RAN") in the seven-county UASI area; unlike the original plan, however, the RAN would connect to a FirstNet core network, not a State-deployed core.

Alternatively, the State and FirstNet might form a partnership to create a New Jersey test bed or a New Jersey demonstration project. The partnership might focus not only on the construction of the network, but on the business model supporting it, including the development of agreements with secondary users of the network, including those outside the traditional definition of "public safety." The New Jersey project has great flexibility to support the nationwide effort, but any partnership, including

but not limited to those outlined herein, will require open lines of communication and close collaboration with FirstNet.

III. Opportunities and Risks in the FirstNet Nationwide Network Proposal

The NOI seeks comment on the "FirstNet Nationwide Network (FNN) Proposal" ("Proposal") presented at the FirstNet Board meeting on September 25, 2012.[4] The Proposal outlines an approach where FirstNet would leverage the existing investments of commercial carriers not only for the purpose of deploying the NPSBN in Band Class 14, but also for the purpose of providing coverage on commercial networks for public safety users where the NPSBN is unavailable. The State recognizes and appreciates that engaging a multitude of carriers in business arrangements to prioritize and carry public safety traffic may increase both coverage and availability of connectivity in some areas. Depending on the terms the carriers are willing to accept, it may also help support a sustainable business model for the NPSBN.

As in any major undertaking involving substantial contracts such as envisioned in the Proposal, management and quality control are critical. FirstNet should consider the sort of auditability and validation/verification capabilities it would require, whether it adopts the Proposal or some other approach.

A. Leveraging Carrier Infrastructure for "Reliability"

The Proposal describes an approach in which "reliability" is achieved by enabling NPSBN users to access carrier networks ("alternative paths") when the NPSBN is unavailable.[5] That "reliability,"

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[4] NOI at 60681.

[5] Proposal at 11.

however, is not the reliability of the NPSBN itself, rather, it is the availability of general connectivity for NPSBN users. In other words, the Proposal is based upon the idea that where commercial networks are available and accessible by NPSBN users, those users will have greater connectivity availability than if they were able to access only the NPSBN. While the State does not dispute this concept, it does question whether this approach really would provide adequate service for public safety personnel, including all the features—such as high availability, reliability, resiliency and security—that make a service "public safety grade."

The Proposal includes a diagram captioned "Illustrating Increased Reliability" that suggests the NPSBN alone will provide less reliability than what NPSBN users generally will receive because of the availability of commercial networks. This illustration raises the question of whether the NPSBN will provide enough reliability to meet public safety requirements, or if the availability of commercial networks will be *necessary* to reach the required level of "reliability." If the answer is that the NPSBN will meet public safety requirements on its own, is it economically prudent to engage multiple commercial carriers to exceed those requirements? Alternatively, if FirstNet would have to rely upon commercial carriers in combination with the NPSBN to meet service availability requirements, would the commercial services meet other public safety requirements, such as those related to quality of service and security? Not all connectivity services are equal; the State is concerned that counting commercial connectivity when calculating public safety "reliability" may undermine the very basis for public safety's insistence on a nationwide public safety network in the first place—the need for interoperable public safety-grade service when and where public safety needs it.

As a state with both urban and rural areas, New Jersey urges FirstNet to consider whether the Proposal would result in a lower level of "reliability" in areas served by fewer carrier networks. Where there is no commercial service to supplement the NPSBN, would the NPSBN provide adequate reliability? Further, FirstNet should consider the quality of the service provided by the commercial

carriers under the Proposal. How would the Proposal treat carrier networks differently from a traditional roaming partner? Would carrier networks be required to prioritize public safety traffic? Would carrier networks have to meet other requirements to qualify as "alternative paths" as depicted on slide 11 of the Proposal? Finally, if FirstNet were to adopt the Proposal's multi-carrier approach, what would be the criteria for determining which carrier network an NPSBN user would access if the NPSBN were unavailable? Whether the determining factor is business terms or signal strength, the choice and the handover should be seamless and transparent to the user.

B. Devices for the NPSBN

The idea of accessing many commercial networks via a single NPSBN device carries great promise, but it raises concerns, as well. Pervasive commercial carrier partnerships to support public safety traffic—whether to supplement NPSBN "reliability" or simply for roaming purposes—could lead to carriers including Band Class 14 LTE in the devices they order for the broader commercial marketplace, thereby increasing scale and driving down device costs for public safety. On the other hand, creating a multi-band (and perhaps multi-mode) device that includes satellite service may be more than the carriers are willing to undertake, thus limiting the market for an otherwise expensive and complex device, depriving it of economies of scale necessary to make it affordable for public safety.

New Jersey urges FirstNet to consider whether the regional nature of all but a few carriers diminishes nationwide interoperability. For example, would an NPSBN device that operates on four regional carrier networks on the east coast likewise work on a different four regional carrier networks on the west coast? In other words, would all devices really be able to access all available networks

everywhere in the country, regardless of each network's particular band and technology? If not, and devices really operate only on the carrier networks in a given geography, would the market for those devices be large enough to produce economies of scale necessary to make the devices affordable for public safety?

The State also urges FirstNet to consider the many potential technical challenges to creating such a device. How many bands and technologies can a single device accommodate and still remain viable for public safety in size, usability and cost? When connected to a commercial network, would the device regularly "sniff" for the NPSBN or the strongest available commercial network signal? If so, what would be the implications for the device's required battery capacity? Given the complexities of including many "alternative path" networks in NPSBN devices, FirstNet may consider a more limited commercial network approach, partnering with a smaller number of nationwide commercial networks for maximum roaming coverage and regional carriers that share both band and technology with those nationwide partners. Though this approach might be more achievable, it may also result in reduced coverage in rural areas and greater reliance on a smaller number of nationwide carriers, potentially placing FirstNet at a bargaining disadvantage. In any event, ensuring that the NPSBN itself provides maximum coverage and meets public safety reliability and performance requirements is probably the best way to avoid reliability and interoperability issues.

C. Commercial Assets Compared to State and Local Government-Owned Assets

As explained above, the State is currently working to re-cast its BTOP-funded project to prepare State and local government-owned sites to receive NPSBN LTE equipment. This work would include a statewide coverage design and improvements to sites implicated in that design, impacting towers, shelters, power supplies, backhaul links, and any other items that require investment and improvement to be used in the NPSBN in New Jersey.

The Proposal, however, suggests that the NPSBN should leverage the "billions of dollars [invested] over 25+ years in a massive infrastructure" by commercial carriers. While the State fully supports the idea of leveraging existing commercial infrastructure, it urges FirstNet to do so only where relying on commercial infrastructure is most advantageous from an economic and operational perspective. Where state and local governments offer sites for use in the NPSBN under better terms than those offered by carriers for use of their sites, FirstNet should rely on those government-owned sites. As the Act requires, FirstNet

> shall enter into agreements to utilize, to the maximum extent economically desirable, existing— (A) commercial or other communications infrastructure; and (B) Federal, State, tribal or local infrastructure.[6]

Thus, the Act does not permit an approach that relies first upon commercial sites, looking to government-owned sites only where commercial sites are unavailable (such as in rural areas), unless there is a clear economic justification for that preference. Given that state and local governments may differ from carriers in the priority they attach to economic incentives, commercial sites (requiring ongoing rent) may be the more expensive option, especially the government-owned sites that have been improved specifically for the use of the NPSBN.

This discussion leads to a few critical questions for New Jersey's current project plan. If the State were to improve government-owned sites statewide, how could the State ensure that FirstNet would leverage that investment in support of the NPSBN? What sort of business arrangement does FirstNet foresee with regard to use of state and local government-owned assets? What are the key

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[6] Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, 126 Stat. 156 (2012) ("Act"), § 6206(c)(3).

business criteria that will be the focus of FirstNet's inquiry into whether use of government-owned assets or commercial assets is most "economically desirable" in a given location?

D. Timeline Assumptions

The Proposal states that implementation of the NPSBN could begin in the "2013 to 2014 timeframe."[7] The State fully supports early deployment, but not at the expense of quality, reliability, coverage, or affordability. Given the scale and complexity of the undertaking, the State is concerned that such a timeframe may be too ambitious, especially if the state consultation process is to be meaningful.

The State and Local Implementation Grant Program, established in Section 6302 of the Act, will play a key role in helping states support FirstNet via the consultation process. NTIA plans to begin to disburse the first phase of that funding not before the first quarter of 2013, and the second phase "will not begin until FirstNet has consulted with the state-designated contact about the matters listed in the Act, including defining coverage needs, user requirements, and network hardening and resiliency requirements."[8] NTIA staff has suggested that the period of performance for the grant may run for five years. The Proposal's implementation timeframe beginning in 2013 or 2014 seems unlikely to accommodate the consultation process required by the Act and supported by the implementation grant program. What assumptions as to timing and funding underlie the Proposal's plan to begin implementation as early as 2013 or 2014?

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[7] Proposal at 12.

[8] Notice, *Development of Programmatic Requirements for the State and local Implementation Grant Program to Assist in Planning for the Nationwide Public Safety Broadband Network*, 77 Fed. Reg. 50481, 50483, 50485 (Aug. 21, 2012).

IV. The Approach to Public Safety Applications

At the September 25 Board meeting, Chairman Ginn described an open, "app store" concept for the development of public safety applications to be accessed over the NPSBN. New Jersey supports this concept and believes it will foster innovation in public safety applications.

Any development of applications must begin with the user requirements in mind, with a detailed understanding of how the application will be used by and demonstrate benefits to first responders. Thus, applications must be driven by public safety working with applications developers; the network over which the application will be used should not be the primary consideration in applications development. Rather, since the network is a mechanism for gaining access to applications and associated data, it is the applications that should drive the requirements for the network. Nonetheless, developing applications for the NPSBN is an evolutionary process, so initial efforts will be subject to early limitations and capabilities.

The applications developed for public safety must be truly mobile applications, able to be accessed via a wide variety of devices. They must be lightweight, browser-based, open-source, and vendor agnostic. The interfaces must be secure and the applications must be enabled for a standardized, high-assurance authentication methodology that authenticates the individual for access to the application.

Finally, FirstNet should consider the implications of the "app store" for nationwide interoperability. Enabling individual public safety users to download individual applications could, if not coordinated, hamper data interoperability. FirstNet should consider, with appropriate public safety input, ensuring that for certain functions, all users of the NPSBN (or all law enforcement users, or all emergency medical users, etc.) utilize specific applications or interoperable groups of applications. The advent of the NPSBN should be an opportunity for public safety to progress toward data interoperability, rather than an aggravating factor for our current data interoperability problems.

V. Conclusion

With a $50 million project available to support the NPSBN, New Jersey is a willing and eager partner, but the first step is to open the discussion. With these comments, the State hopes to engage FirstNet and begin the conversation.

Respectfully submitted,

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