



# Statement of Objectives

*Special Notice D15PS00295 – Nationwide Public  
Safety Broadband Network (NPSBN)*

4/27/2015

## C Statement of Objectives

First Responder Network Authority (FirstNet) Nationwide Public Safety Broadband Network (NPSBN) Statement of Objectives (SOO).

### C.1 Background

In February 2012, Congress enacted *The Middle Class Tax Relief and Job Creation Act of 2012* (the Act), containing provisions to create an interoperable, NPSBN for public safety entities. The Act created FirstNet, an independent authority within the National Telecommunications and Information Administration (NTIA) and outlined a governing framework for the deployment and operation of the NPSBN based on single, nationwide network architecture.

### C.2 Requirements Derivation

The Act required the establishment of a Board to govern the activities of FirstNet. In turn, the FirstNet Board authorized a program office to carry out the operations of the organization, including the development of the SOO contained herein.

In addition, the Act established within the Federal Communications Commission (FCC) an advisory board to create minimum interoperability requirements for a NPSBN. The Technical Advisory Board (TAB) for First Responder Interoperability issued these requirements in 2012 in a report entitled “Recommended Minimum Technical Requirements to Ensure Nationwide Interoperability for the Nationwide Public Safety Broadband Network” (FCC TAB RMTR)<sup>1</sup>. Subsequently, the FirstNet Program Management Office (PMO) initiated a requirements analysis and acquisition planning. Through this process, it was determined that provisions in the Act necessitated the establishment of a minimum set of requirements for the NPSBN. The PMO also adopted an enterprise architecture approach that identified the need for additional requirements to support an enterprise services capability.

This SOO lists high level objectives, with minimum requirements, allowing latitude for contractors to define implementation details. This comprehensive approach allows contractors to be highly innovative in proposing solutions that ensure nationwide interoperability with both opt-in and opt-out states

### C.3 Program Description

FirstNet is seeking comprehensive network and service solutions covering all U.S. states, territories, and tribal nations. These comprehensive network solutions shall include: the deployment and provisioning of a nationwide core; all radio access network (RAN) components for opt-in states; backhaul, aggregation and national transport networks and datacenters; a device ecosystem; network infrastructure; deployable capabilities; operational and business support systems; an application ecosystem and network services; as well as integration, maintenance, and operational services required to function fully as an operational wireless Third Generation Partnership Program (3GPP) Long Term

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<sup>1</sup> References to the FCC Technical Advisory Board RMTR (FCC TAB RMTR) report, throughout this document refer to the original report adopted on June 21, 2012 by the FCC and the associated clarification issued by the TAB and received by the FCC on June 6, 2012. This is also referenced in the FCC’s transmittal of June 21, 2012.

Evolution (LTE) NPSBN. FirstNet's objective is to maximize the network's value to public safety while meeting its financial sustainability obligations under the Act. This solution would potentially include (1) "in kind" and/or monetary value provided by contractors in consideration for secondary use of FirstNet's excess network capacity, and (2) various partnerships and business arrangements that monetize new public safety market offerings via devices, applications and other value added benefits and services that enhance the customer user experience.

This acquisition considers the value provided for excess network capacity, speed to market, public safety program objectives, and rural coverage, among many other factors. FirstNet does not seek to dictate the deployment strategy of potential contractors or the manner in which parties may or may not seek to align themselves through partnerships, joint ventures, or other vehicles to produce an offer in response to this solicitation. Rather, FirstNet seeks to outline broad objectives that must be accomplished by contractors and encourages innovative solutions that will meet and exceed both the program's and public safety's needs.

FirstNet must create the NPSBN within the financial parameters outlined in the Act and ensure its financial sustainability through federal funding, user fees, and agreements with the contractors that will leverage the value of excess network capacity. In addition, FirstNet must provide services at competitive prices, given constrained state, local, and federal budgets. In undertaking this task, FirstNet must leverage to the extent economically desirable existing infrastructure, obtain optimal value for excess network capacity and optimize its pricing structure so that FirstNet can deliver a high-quality, affordable broadband network and services to the nation's public safety entities.

The Act (Section 6201) required the FCC to reallocate and grant a license to FirstNet for the use of the 700 MHz D Block spectrum and existing public safety broadband spectrum. FirstNet will make available to the contractors the Band 14 spectrum to be used for NPSBN purposes and enter into Band 14 Covered Leasing Agreements (CLAs) so that the contractors have the ability to monetize FirstNet's excess network capacity as established by the Act (Section 6208).

FirstNet will bring to public safety entities an interoperable NPSBN with quality of service, priority usage, and preemption. In addition, the network will be hardened as needed from the physical perspective, and will be resilient, secure, and highly reliable from the network perspective. Furthermore, the network will provide to public safety agencies both national and local control over prioritization, preemption, provisioning, device features and reporting.

The NPSBN and associated devices will be branded as FirstNet consistent with applicable laws and regulations. While FirstNet has a Congressional mandate to address customer care functions, and FirstNet will oversee the strategy of these functions, it is expected that these functions will be implemented by the contractor that will be responsible for executing the marketing, product management, sales, distribution, and customer care functions. FirstNet will oversee outreach, communications, strategic partnering, and network architecture evolution, while these functions may be executed by the contractor.

## C.4 Scope

Public safety requires a national interoperable broadband network covering urban, suburban, rural, and wilderness service territories, and one designed to meet the information and communications technology needs associated with public safety's mission. This acquisition of services includes the business (distribution of services and devices), technical, financial, operational, logistical, and program

management components for this solution. FirstNet requires continuous upgrade and innovation of the system throughout the lifecycle of the contract as LTE and beyond (5G, 6G) standards evolve, as public safety needs expand, and new capabilities and technologies become commercially acceptable and available.

The NPSBN service, and therefore the contractor's operational management of the NPSBN, shall support the operational needs of public safety ranging from routine law enforcement, fire, rescue, emergency response and similar operations through major natural and manmade disasters, and homeland security/homeland defense missions.

## C.5 Objectives

It should be noted that the objectives for the FirstNet NPSBN are as seen from the government's perspective and, as such, are nationwide in scope. These objectives ensure that the NPSBN operates as a single network guaranteeing seamless interoperability between opt-in and opt-out states.

The FirstNet objectives for NPSBN services follow:

1. **BUILD, DEPLOY, OPERATE AND MAINTAIN THE NPSBN:** Provide nationwide interoperable public safety broadband network service that ensures network coverage 24/7, 365 days a year and complies with the technical requirements referenced herein and outlined in the appendices.
2. **FINANCIAL SUSTAINABILITY:** Provide all services while minimizing risk and use of FirstNet resources to build, deploy, operate, and maintain the NPSBN, allowing FirstNet to achieve a self-sustaining business model.
3. **COMPELLING AND COMPETITIVELY PRICED SERVICES:** Establish pricing structures to support service packages. NPSBN services, at a minimum, include data, voice over LTE, messaging, machine-to-machine, VPN, video, and location services, while promoting subscribership and maintaining financial sustainability.
4. **DEVICE ECOSYSTEM:** Provide and maintain a 3GPP compliant Band 14 capable device portfolio that evolves with the 3GPP standards, and provides functionality and price points that meet the needs of the FirstNet customer base, and drive substantial subscribership. It is anticipated that FirstNet customers will expect devices that include ruggedized units capable of gloved, one-handed or hands-free operation as well as those capable of multi-media and high definition data transmission both from humans and machine-based sensors. The ecosystem shall support, at a minimum, devices that:
  - a. operate seamlessly on the NPSBN, roam onto networks including non-band 14 commercially available networks.
  - b. interoperate with FirstNet's application ecosystem.
  - c. support associated Universal Integrated Circuit Card (UICC), and the ability to home and roam on to multiple networks while prioritizing them appropriately.
  - d. support software containers to isolate the FirstNet applications (if deployed on a non-FirstNet device in a "Bring Your Own Device" situation).
  - e. operate seamlessly with a comprehensive device management system to allow remote provisioning and control.
5. **APPLICATION ECOSYSTEM:** Provide an application ecosystem that supports the NPSBN with public safety relevant capabilities and services. The ecosystem shall include, as a minimum:
  - a. an evolving portfolio of mobile, enterprise, cloud services and applications
  - b. an applications development platform

- c. a vibrant applications developer community
  - d. an applications store
  - e. local control of users, subscriptions, services, and applications
  - f. federation of identity management
  - g. data, application, and resource sharing across diverse public safety agencies
  - h. core service and application delivery platforms
  - i. data and applications security and privacy compliance across local, state, tribal, regional, and federal users. (See objective 9 below and Appendix C-10, FirstNet Cyber Hardness Requirements )
6. **ACCELERATE SPEED TO MARKET:** Achieve operational capabilities that include the provision of initial mobile broadband capabilities, Band 14 capabilities, significant subscribership to the NPSBN, substantial rural coverage milestones as part of each service deployment phase (including initial operating capabilities (IOCs) and final operating capability (FOC)).
  7. **USER SERVICE AVAILABILITY:** Maximize service availability. Provide a service that allows users to access network services, within the prescribed coverage area, and persists through natural and manmade disasters, with annual end-to-end availability of 99.9% as defined in Section C-6, Quality Assurance Surveillance Plan (QASP). Service availability includes the reliability effects of all network components (core, gateways, eNodeBs, and backhaul) as well as the environmental survivability of the infrastructure and the benefits derived from deployable units. Restoration activities shall be undertaken with the highest available priority. FirstNet expects to be identified as a national security and emergency preparedness organization and authorized to receive priority restoration services in accordance with Telecommunications Service Priority (TSP) found at <http://www.dhs.gov/telecommunications-service-priority-tsp>.
  8. **SERVICE CAPACITY:** Provide service capacity to support geographically-dispersed public safety use in accordance with FCC TAB RMTR 4.4.6.5, Capacity. Provide service capacity to meet all NPSBN user traffic.
  9. **CYBER SECURITY:** Provide cyber security solutions using the set of industry standards and best practices contained in the National Institute of Standards and Technology (NIST) Framework for Improving Critical Infrastructure Cybersecurity, the FCC TAB RMTR, the 3GPP specifications (TS23.401, TS33.102, TS33.210, TS33.310, TS33.401 and TS33.402) and appropriate encryption capabilities to support public safety and federal government users. (Appendix C-10, FirstNet Cyber Hardness Requirements.)
  10. **PRIORITY SERVICES:** Provide a solution that allows the assignment of quality of service (QoS), priority and preemption (QPP) parameters to user profiles using the standard service control parameters defined by 3GPP and IETF including Access Class, Quality Class Indicator (QCI), Allocation and Retention Priority (ARP), and Differentiated Service (Diff Serve). Allow control and management of static and dynamic assignments QPP parameters for public safety users through a number of predefined user profiles (as noted in Appendix C-9, NPSBN Use Case Definitions), and specifically able to change these user profiles in real time in response to incidents. User profiles assignments and changes need to be managed locally by public safety agency communications.
  11. **INTEGRATION OF OPT-OUT STATE RANs:** Integrate the NPSBN with the opt-out state RANs so that users operate without service interruptions, including when crossing opt-out/opt-in RAN service area boundaries. See details in Service Level Agreement for Radio Access Network (RAN) Integration - Appendix C-2.

12. **INTEGRATE EXISTING STATE/LOCAL/COMMERCIAL/FEDERAL INFRASTRUCTURE TO SUPPORT NPSBN SERVICES:** Facilitate FirstNet's determination of the economic desirability of using or otherwise leveraging commercial or other existing infrastructure.
13. **LIFECYCLE INNOVATION:** Evolve the NPSBN solution, including products, services and the incorporation of 3GPP LTE standards as they are released throughout the life of the contract, in accordance with the FCC TAB RMTR, the Act, and Appendix C-8 IOC/FOC Target Time-line.
14. **PROGRAM AND BUSINESS MANAGEMENT:** Provide program management for the NPSBN solution in accordance with the Project Management Institute (PMI) or other applicable industry standards, Information Technology Infrastructure Library (ITIL<sup>®</sup>) or equivalent, and the Government Accountability Office (GAO) Cost Guidelines. Provide operational and other reporting information to FirstNet sufficient for FirstNet to ensure its compliance with the Act.
15. **CUSTOMER CARE AND MARKETING:** Market NPSBN products and services to FirstNet users in all states, territories, and tribal lands throughout the FirstNet service area. Provide responsive customer acquisition, service and customer care, including a pipeline of new devices and an ecosystem that meets the needs of FirstNet and FirstNet users as noted in Appendix C-6, QASP. Provide lifecycle service and support to all users.
16. **FACILITATE FIRSTNET'S COMPLIANCE WITH THE ACT AND OTHER LAWS:** Perform all objectives in a manner, and provide information and services, to facilitate FirstNet's compliance with its statutory requirements under the Act and all other applicable laws.

## C.6 State Coverage Objectives

The Act (Section 6206(b)(3)) required deployment phases with substantial rural coverage milestones as part of each phase of the deployment of the NPSBN. The state minimum NPSBN coverage objectives are contained in image file (.png) format (Appendix C-1 Baseline Coverage Objective Maps).

Contractor will have no coverage objectives for opt-out states. Opt-out states will be required to comply with Appendix C-2 Service Level Agreement for Radio Access Network (RAN) Integration.

## C.7 Minimum Technical Requirements

The Act (Section 6203(c)) required the FCC to develop the minimum technical requirements. On June 21, 2012, the FCC approved by Order (FCC 12-68) the *Recommended Minimum Technical Requirements to Ensure Nationwide Interoperability for the Nationwide Public Safety Broadband Network (FCC TAB RMTR)* report. The contractor's services shall comply with these minimum requirements (FCC TAB RMTR, Appendix C-3) including the clarification issued by the TAB on June 6, 2012 (also referenced in the FCC's 12-68 order.)

The Act requires FirstNet to comply with the 3GPP (Section 6001), LTE (Section 6203), and open, non-proprietary, commercially available standards (Section 6206(b)(2)(B)(i)). Contractor provided NPSBN services shall comply with Appendix C-4 System and Standards View (SV-1 and StdV-1) and Appendix C-5 FirstNet FOC Features Standards Forecast (StdV-2).

## C.8 Performance Standards

FirstNet's objective performance standards are listed in this SOO, accompanying appendices, and the FirstNet Quality Assurance Surveillance Plan (Appendix C-6 QASP). The contractor shall provide service functions contained in the Appendix C-7 Operational Architecture Functional Descriptions.

For integration with opt-out states (if any), the contractor shall implement all specified interfaces contained in Appendix C-4 System and Standards Views.

The contractor's services shall provide functionality described Appendix C-9 Public Safety Use Cases.

## C.9 Delivery Schedule

Contractors shall meet the milestone delivery schedule for vendor service solutions as outlined in Appendix C-8 IOC / FOC Target Timeline. This milestone delivery schedule is consistent with the current (February 2014) 3GPP release schedule. As the feature set of future 3GPP releases is formalized, contractor and FirstNet will agree on the features required for the NPSBN and the associated delivery date for each.

## C.10 SOO Appendices

(All appendices will be provided on a separate DVD)

Table 1 SOO Appendices

Appendix Number	SOO Appendix Name	Description
<b>Appendix C-1</b>	Baseline Coverage Objective Maps	State and territory minimum terrestrial NPSBN coverage requirements image (.png) files. Minimum coverage areas are noted in green, blue and red in the attached files.
<b>Appendix C-2</b>	Service Level Agreement for Radio Access Network (RAN) Integration	This is the FirstNet service level agreement (SLA) for radio access network (RAN) integration for opt-out states.
<b>Appendix C-3</b>	FCC TAB RMTR	<i>Recommended Minimum Technical Requirements to Ensure Nationwide Interoperability for the Nationwide Public Safety Broadband Network</i> , Technical Advisory Board for First Responder Interoperability, Final Report, May 22, 2012; including the associated clarification issued by the TAB and received by the FCC on June 6, 2012. This is also referenced in the FCC's transmittal of June 21, 2012.
<b>Appendix C-4</b>	System and Standard Views (SV-1 and StdV-1)	FirstNet Standards View-1 (StdV-1) and Systems View-2 (SV-1)
<b>Appendix C-5</b>	FirstNet FOC Features Standards Forecast (StdV-2)	FirstNet Standards View-2 (StdV-2)
<b>Appendix C-6</b>	Quality Assurance Surveillance Plan (QASP)	FirstNet Quality Assurance Surveillance Plan (QASP)
<b>Appendix C-7</b>	Operational Architecture Functional Descriptions	FirstNet Operational Architecture View including the AV-1, OV-1, and OV-5 system diagrams.
<b>Appendix C-8</b>	IOC/FOC Target Timeline	FirstNet Initial Operating Capability (IOC) and Final Operating Capability (FOC) Target Timeline
<b>Appendix C-9</b>	Public Safety Use Cases	Public Safety Use Cases are provided for informational purposes to guide contractor in proposal preparation. Network and devices should be capable of performing as described in these use cases..
<b>Appendix C-10</b>	FirstNet Cyber Hardness Requirements	FirstNet System Cyber Hardness Requirements – Security requirements for the NPSBN.