FirstNet RFP Summary

Executive Summary

FirstNet's RFP is an objectives-based, instead of requirements-based, request for proposals for a nationwide public safety broadband network. The contract term runs up to 25 years from award, but acknowledges that this term is a function of continued licensing of the FirstNet spectrum[1]. This means that there are few pass/fail conditions or minimum technical requirements built into the RFP. This is intended to give vendors maximum flexibility in providing proposals.

The RFP is targeted to provide nationwide broadband service within a very short timeframe; a qualified Offeror would almost certainly either (1) need to be a major cellular carrier or (2) be partnered with a major cellular carrier. This is evident in the evaluation factors of the RFP that include, for example, nationwide cellular coverage on non-Band 14 spectrum within six months of award. Essentially, this means the vendor has to provide access to a commercial network immediately after award.

A very important metric in the RFP, overall, is subscriber adoption. While Offerors[2] are evaluated on many factors, including business organization, customer care, coverage, capacity and services offered, the vendor is ultimately evaluated largely on subscriber adoption numbers. For example, the Offeror is assessed financial penalties by state if they do not achieve their adoption targets. This is a novel approach. Ultimately, public safety adoption and customer retention is driven by the quality and cost of the service, and so if the vendor offers an inferior product they will have few subscribers.

The RFP makes it clear that FirstNet intends to leverage the vendor to manage nearly all aspects of the FirstNet service while retaining executive oversight. The vendor is not only responsible for implementing, operating and maintaining the network. The vendor is also responsible for marketing the service, acquiring customers and managing revenues generated by the service including providing funds back to FirstNet to sustain government operations. The vendor is permitted to market the service with the FirstNet trademark and brand.

One of the most important milestones in the RFP is IOC-3, or 24 months from award. At this point the vendor is required to have achieved over 50% of the total projected user base, provide over 60% of the Band 14 coverage proposed, provide mission-critical services including push-to-talk, support state-deployed RANs and provide full public safety priority.

A substantial portion of the RFP is dedicated to managing the winning Offeror. The RFP places the onus of establishing key performance indicators (KPI) on the Offeror. For example, the Quality Assurance Surveillance Plan (QASP) is intended to provide overall management of the service using clearly definable objectives and measurements. The Offeror is to propose QASP elements and will be evaluated on the proposal.

Key dates:

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[1] The current FirstNet license expires in 2022.
[2] The Offeror, contractor, vendor is an entity responding to the RFP.

- Indefinite Delivery Indefinite Quantity (IDIQ) contract and Day 1 task orders – November 1, 2016
- State Plans – Initial Operating Capability Phase 1 (ICO – 1) (presumed to begin Q1/Q2 2017)
- Initial FirstNet-Deployed RAN starts – April 30, 2017
- Delayed FirstNet-deployed RANs – Up to and including June 19, 2019
- IOC – Phase 2: (presumed) late 2018/early 2019.

The following sections of this document provide highlights to the key sections in the RFP. In total there are more than 500 pages in the RFP with more than three dozen sections and detailed maps.

Acknowledgement: Substantial portions of this document are excerpted from a summary prepared for the State of Alabama for the Alabama Public Safety Broadband project. More information on this project available at http://afrwc.alabama.gov.

Section B – Supplies, Services and Prices

FirstNet will issue $6.5B to the Offeror, but will do so upon meeting specific Initial Operating Capability/ Final Operating Capability (IOC/FOC) milestones; not to exceed $1.5B per IOC/FOC.

The vendor must make payments to FirstNet from revenues generated to sustain FirstNet's operations.

For opt-out states: "Contractor may not receive access to the network capacity value for that state or territory through this contract".   The nationwide Contractor will not be responsible for implementing in that state under this award. For failed opt-out states, deployment dates roll back 900 days.

The Offeror's proposed solution and pricing approach shall include separable submissions for delivery of the National Public Safety Broadband Network (NPSBN) for each of the 56 states and territories. The Government reserves the right to issue a subsequent task order for each state or territory individually.

If a state opts out, FirstNet will reduce the money it would have paid the Contractor based on the amount the vendor proposed to invest in that state. The RFP indicates that NTIA "intends to review several factors… which may include cost and value information compared to the FirstNet state plans, and final grant funding in any given state or territory may be lower than RAN-related build costs as proposed by the Offeror."

Section C – Statements of Objectives

On December 2012 the National Public Safety Telecommunications Council's (NPSTC) created a Statement of Requirement for FirstNet. The principal purpose of the document was to define, from the perspective of the National Public Safety Telecommunications Council (NPSTC), the high-level broadband public safety launch requirements for consideration by FirstNet. The scope of the Statement of Requirements[3] is quite extensive ranging from governance to detailed technical considerations regarding the operations of the NPSBN. **These requirements are not referenced in the RFP.**

FirstNet seeks one comprehensive network solution for 56 states and territories.

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[3] http://www.npstc.org/download.jsp?tableId=37&column=217&id=2609&file=BBWG_SoR_Launch_12112012.pdf

The RFP is objectives-based: The RFP states that the procurement is "objectives based" and not "requirements based". This provides vendors with wide flexibility but exposes some risk that proposals will not achieve certain minimum needs. The RFP states "[t]his Statement of Work (SOO) lists high-level objectives with minimum requirements, allowing latitude for Offerors to define implementation details."

The RFP includes an "app store": The RFP includes an application ecosystem to be provided by the vendor. This exposes risk that FirstNet customers could be segmented from the larger commercial marketplace and may negatively impact Bring your Own Device (BYOD) subscribers.

Section M – Evaluation Factors for Award

As this is an objectives-based procurement, there are very few specific requirements, few pass/fail criteria. Key evaluation factors include:

- 15% of coverage "includes partnerships with rural telecommunications providers"
- Coverage is *not* the most important evaluation factor in the RFP; it is tied for second. The RFP evaluation factors are listed in descending order of importance:
    - Business Management is more important than Coverage and Capacity:
        - Project Management and the ability to "achieve the state solution"
        - Customer Acquisition: minimize time to provide broadband services, "go-to-market" strategy, application ecosystem, customer support
        - Life-Cycle Sustainment: includes the ability to provide Customer Relations Management (CRM) like services; activation, repair, technical assistance, customer retention, billing, etc.
        - Financial Standing (of the Offeror)
    - Coverage and Capacity:
        - **There are no specific coverage requirements included in this document.** The RFP includes extensive coverage baseline objectives which are evaluated to a high degree of granularity. FirstNet will use a qualitative and statistical approach to assess the Offeror. **States that have submitted coverage requirements are objectively weighted more heavily in the RFP evaluation than those states which did not**. The Offeror's solutions will be evaluated against:
            - Non Band 14 Coverage Area and Population Served
            - Band 14 Coverage Area and Population Served
            - Band 14 Network Capacity
    - Products and Architecture (equal in importance with Coverage and Capacity):
        - Services (Quality of Service (QoS), priority & preemption), Applications, Device Ecosystem, Architecture & Infrastructure, Operations, Security, and Test Strategy
    - Offeror's Value Proposition Assessment:

- Evaluated based on the ability to meet all objectives in exchange for revenues collected from Band 14 secondary usage (ability to monetize the excess network capacity)
   o Past Performance

Section L Instructions Conditions and Notices

The Offeror must provide statistics per state for covered area and population. County level information is provided for capacity.

Table 1: Coverage Categories that the vendor will be evaluated on by state.

Coverage Type	Level	Phase
Non-Band 14 Area Covered **	State/Territory	FOC
Non-Band 14 Population Covered **	State/Territory	FOC
Band 14 Area Covered	State/Territory	FOC
Band 14 Population Covered	State/Territory	FOC
Band 14 Network Capacity	County	FOC

** Note: Non-Band 14 coverage statistics should be broken down by technology: LTE, 3G, 2G, and roaming.

Section J-1 – Coverage and Capacity

There is no international roaming specified.

There is no minimum coverage requirement in the RFP. However, coverage is a major evaluation factor.

Coverage is defined ONLY in terms of throughput based on a single, vaguely defined configuration that does not standardize engineering inputs; hence, coverage may differ depending on the Offeror's assumptions.

Coverage is defined as 768 kbps downlink **/ 256** kbps uplink **at the cell edge.** In contrast State's workgroup required that the FirstNet network deliver a minimum of 4 Mbps (downlink) and 1 Mbps (uplink) for a single user over 95% of each Critical Service Area for each county. For areas outside of the critical service areas the requirement is similar to the RFP; 756 kbps downlink and 268 kbps uplink.

Other coverage definitions:

- Device is stationary, outdoor and at 3-feet above ground level
- Vendor not required to provide specific levels of in-building coverage, only to "maximize" it
- The RFP only says Offeror should use "appropriate" losses; it does not specify what they are
- User Density heat maps seem to have a questionable methodology; e.g. Minnesota vs. Alabama
   o The methodology for preparing these heat maps over-represents rural areas in some states while under-representing small and medium-sized cities in others
   o According to the user density map, Alabama is almost entirely urban while Minnesota is almost entirely rural. In reality, both states are mostly rural

- o Note, Alabama has five small/medium-sized metropolitan areas scattered throughout the state, while Minnesota has only one major metropolitan center (the Twin Cities) and some smaller metropolitan areas (e.g., Rochester, Duluth)
- o Note, missing population centers not represented include:
  - Rochester, St Cloud and the Saint Cloud to Morehead Corridor, Bemidji, Mankato
- o Note, the is a puzzling increase in in Rock and Pipestone Counties; likely a spill-over from Sioux Falls
- o Methodology appears to include only cities of population greater than 150,000
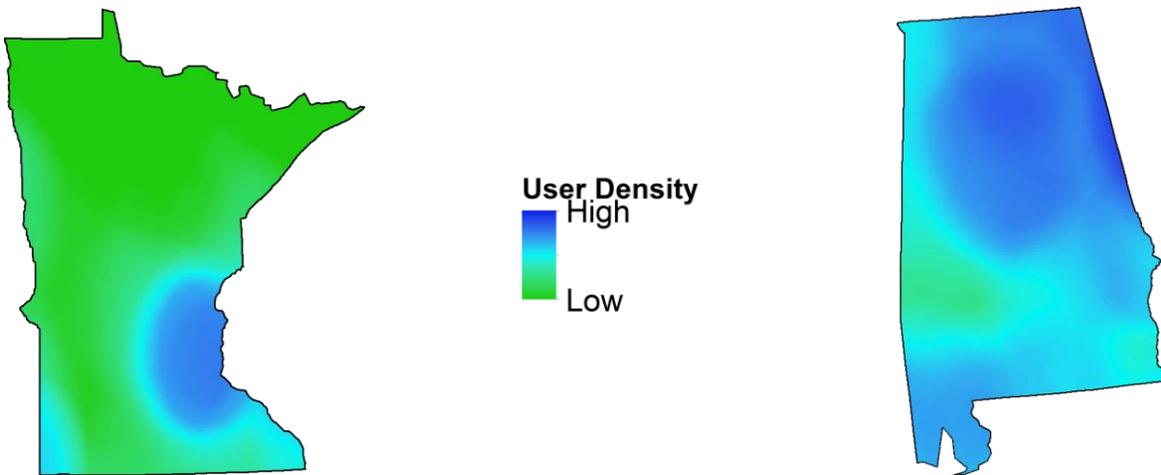
Figure 1: User Density for Minnesota and Alabama

- Most of the country is deemed "rural".

Coverage Objective for Minnesota

- FirstNet's coverage objective for Minnesota designates about 97% of the state as a target for persistent terrestrial coverage.
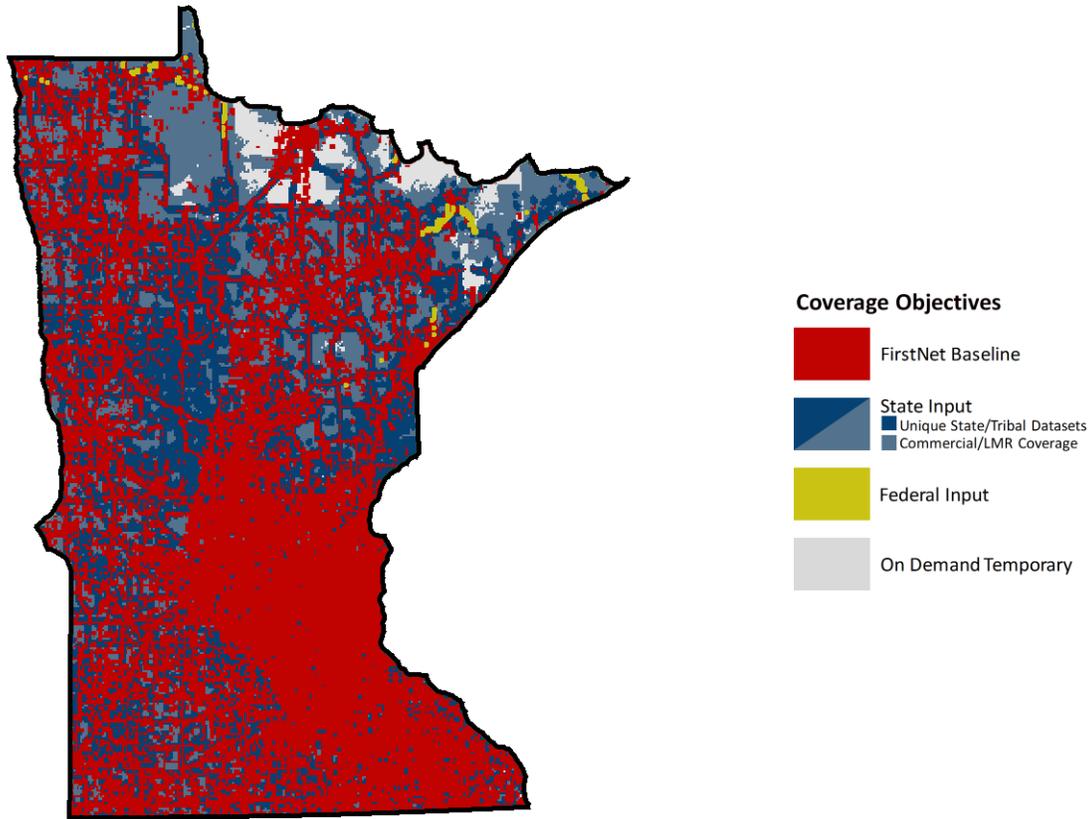
Figure 2: FirstNet Coverage Objective from RFP[4]

Table 2: Area included in each category

Category	% of State
FirstNet Baseline[5]	67.38%
State Datasets	23.96%
Commercial/LMR Coverage	4.89%
Federal Input	0.67%
Temporary/Deployable	3.11%

- This objective differs greatly from FirstNet's original coverage objective. Its draft RFP differs in the following ways:
  - o It includes state input as (1) "unique data" and (2) existing commercial/LMR coverage.
    - ▪ "Unique data" layer represents the Phase 4 coverage requirement.
  - o It includes a small amount of federal input.
  - o It has the same FirstNet baseline as presented in the 2015 draft RFP; however, there is no gradation and the entire FirstNet baseline is one color. It *appears* like a larger area.

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[4] Note—colors are adjusted from original FirstNet RFP to improve visibility.
[5] Includes total area depicted.

- FirstNet applied Minnesota's submitted coverage requirements from September 2015 to its "coverage objectives" without change. However, they are included as an "objective" and not a "requirement".
    - o Aside from very remote areas (e.g., Superior National Forest, Boundary Waters Canoe Area Wilderness, and Voyageurs National Park), all of the state is considered a "coverage objective".
    - o There is no reference to the State's phased approach within the RFP; the State's phased objectives are found only in the "reading room".
- Note; the RFP states vendors will be evaluated on a state-by-state basis on how well they meet this objective. However, the RFP does not state *how* vendor coverage will be evaluated—just that it will be.
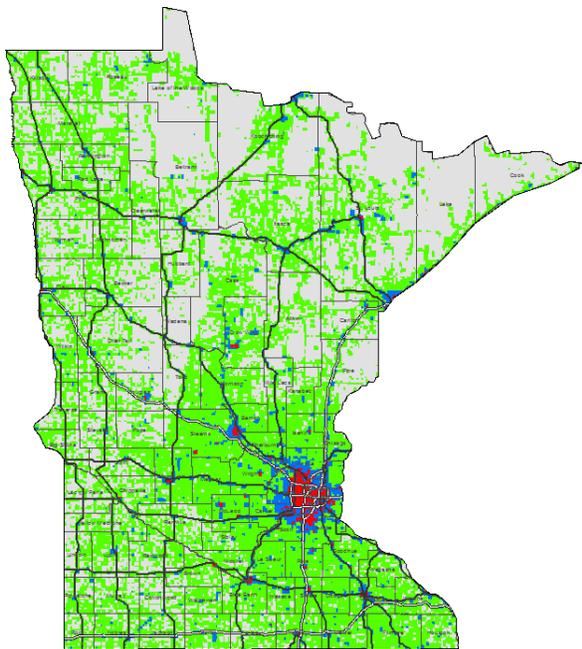

Figure 3: FirstNet Baseline from 2015 Draft RFP
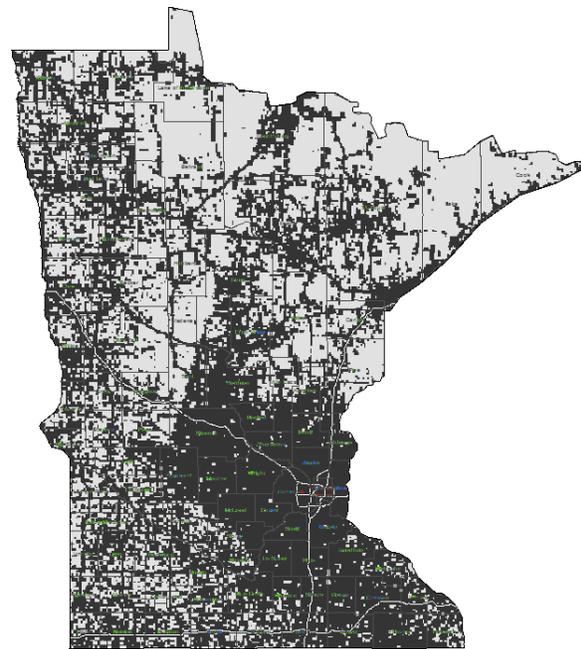
Figure 4: FirstNet Baseline from 2015 Draft RFP; monochromatic

Designation of Urban and Rural Areas

- Almost all of the country is considered "rural": 97.48%.
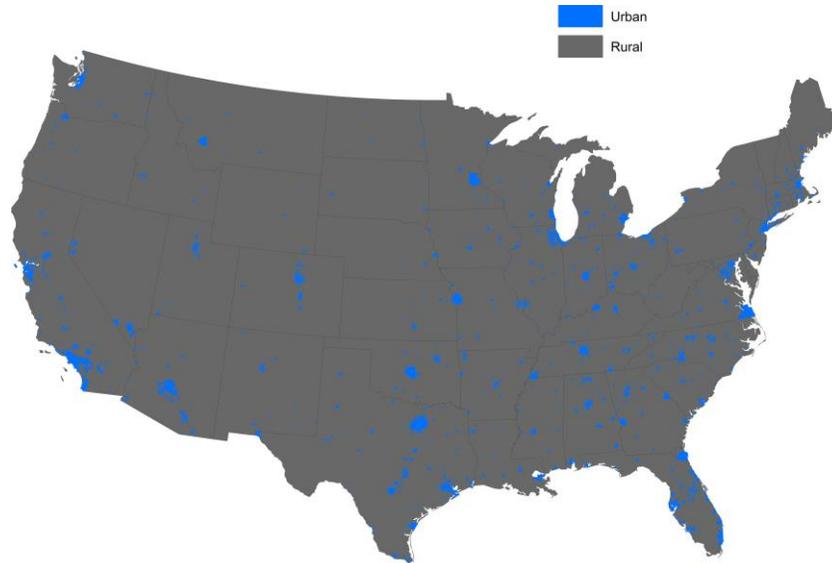
Figure 5: Urban-Rural Area in FirstNet RFP

- For comparison; Minnesota and Alabama:
    - Minnesota is 1.91% urban; population 5.46 million; density 68.9 pops/sq. mi
        - Largest urban area: Twin Cities, 3.459 million
    - Alabama is 4.53% urban; population 4.84 million; density 95.4 pops/sq. mi
        - Largest urban area: Birmingham, 1.304 million
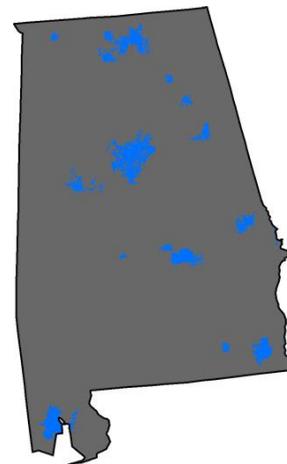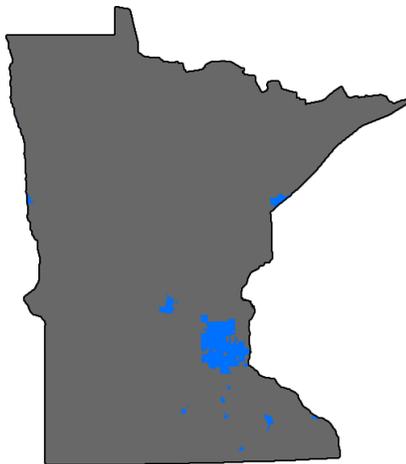
Section J-4 – System and Standards

This section includes standard 3GPP interfaces and introduces some new concepts, such as the Vehicular Network Systems (VNS). The VNS is intended to serve as an LTE cell site when it is outside the coverage

of the fixed NPSBN. The VNS is defined as a "device"; however, with the VNS providing LTE service, it is assumed to have some core network elements that would interface with the nationwide primary core.

The document calls for "Third Party Apps", but shows "(FirstNet certified)" for those third party apps. It is unclear about whether or not other apps, non-FirstNet certified, will be permitted to traverse the network. It also indicates that Voice over LTE (VoLTE) traverses the network, however, it is not clear how it should be supported on the Offeror's network; whether it is "mission critical" or whether it should extend to other voice technologies (Voice over Internet Protocol (VoIP), etc.).

The section is heavily laden with the technical description of the network interfaces, the interface standards, and the future interface standards that the Offeror is required to meet. Some important mandatory requirements include:

- Local Control (QoS and access policies
- IP Multimedia Services (IMS) peering for Next Generation 911 (NG911) Multimedia Services: Two documents are referenced, one a NENA general Internet Protocol IP networking document, and the other IMS emergency sessions specifications.
- Mission critical Push-To-Talk (MC-PTT)
- Proximity Services (ProSe); proximity services are services that become accessible through a mobile network that make use of the geographical positioning of the device, especially the geographical proximity of two or more devices, example: a paramedic could be automatically notified if he/she were near to the scene of a medical emergency.
- Monitoring/Service Level Agreements (SLAs): this seems to imply that the Contractor is required to provide network status, alerts and other information to the public safety entity.

The RFP also requires support ("shall") for roaming interfaces for MCPTT, ProSe, and others.

Section J-6 – Quality Assurance Surveillance Plan

Disincentive payments present significant risk to the Offeror. Disincentive payments are payments the vendor must make to FirstNet if the vendor does not meet the adoption levels proposed. Forces beyond the Offeror's control could still penalize the Offeror and potentially impact the sustainability of the service.

- Disincentive payments are used to encourage the Offeror to keep within their metrics. FirstNet includes up to $3B in disincentive payments over a 20-year performance period.
- The amount for each year increases over time but averages about $150M each year.
- User adoption is the only specified factor for the disincentive fee application.

Disincentive fees are divided per-state. This structure creates disincentives to the Offeror to not commit to a distributed build across the USA.

- Disincentive fees for Minnesota: $2-$3M per year

If the Offeror does not get 70% or more of the adoption it has proposed, the Offeror has to pay the full disincentive payment to FirstNet. This may encourage Offerors to propose a low adoption rate to

avoid potential penalties. However, the adoption rate is an RFP evaluation factor so an Offeror would likely ONLY lowball their adoption rates if they felt the RFP was not very competitive.

The Quality Assurance Surveillance Plan serves as a template for how Offerors must provide their proposed metrics and standards. The document provides only a template, and no requirements. The Offeror's accountability is up to the Offeror to propose.

Section J-7 – Operational Architecture

The RFP contains only the FirstNet roles and responsibility first proposed in the draft RFP released in 2015.

Section J-8 – IOC-FOC Target Timeline

The RFP does not provide lifecycle management direction over the 25 year operational period. The RFP does include a brief reference to "Beyond the features and functions targeted within this timeline, FirstNet intends for the coverage, services, system, and hardening to evolve to meet public safety users' needs while keeping up with new technologies."

The RFP presumes that the bidder has existing support systems that enable customer operations for wireless services. IOC-1 milestone, (6 months from award), includes Business Management; "Implement CRM, sales, billing, and financials utilizing existing business support systems".

IOC-FOC Targets include Band 14 coverage *only***, not** the Contractor's non-Band 14 commercial service footprint. Band 14 coverage is important because it is being designed to provide the mission critical functionality demanded by public safety, such as local control and prioritized service. Non-Band 14 service will likely be very similar to existing commercial wireless data service (Verizon, AT&T, etc.)

The largest jump in requirements occurs at IOC 3 after 24 months. At this point, the Offeror is required to deploy mission-critical PTT and users are required to be able to invoke public safety priority. Coverage increases from 20% to 60% and core additions for state-deployed RANs are added.

- "IOC" => "Initial Operation Capability"
- "FOC" => "Final Operating Capability"
- FirstNet seeks a 5-year deployment schedule.
- Temporary or deployable coverage is not considered "coverage" for the purposes of evaluating the Offeror's proposed coverage at a given implementation phase.
- Nationwide coverage is required within the first six months on a commercial carrier's existing network. This coverage shall provide public safety priority, but not pre-emption.

Table 3: IOC-FOC Phase Highlights

IOC-1 6 months	• State Plans Delivered • Nationwide Coverage (Band 14 or non-Band 14) • Launch of initial network operations (Band 14 or non-Band 14) • Launch agency systems onboarding • **Public Safety Prioritization** • Lawful Interception • Deployment of "App Store" and application developer tools
IOC-2 12 months	• Complete Customer Relations Management (CRM), sales, billing, and financial business support systems specific to FirstNet • 20% proposed urban coverage • 20% proposed rural coverage • **Consumer grade** PTT • **Band 14 devices available**
IOC-3 24 months	• Achievement of 50% of Contractor's IOC-5 public safety device connections target • 60% proposed urban coverage • 60% proposed rural coverage • **Mission-critical services including PTT** • Ability to invoke Public Safety Priority • Core additions for state-deployed RANs
IOC-4 36 months	• 80% proposed urban coverage • 80% proposed rural coverage
IOC-5 48 months	• Achievement of 100% of Contractor's public safety device connections target • 95% proposed urban coverage • 95% proposed rural coverage • **Mission-critical video**
IOC-6 60 months	• 100% proposed urban coverage • 100% proposed rural coverage

Section J-9 QASP Surveillance Matrix Template

The document serves as a template for how Offerors must provide their proposed metrics and standards for FirstNet's management of the agreement.

Section J-10 Cybersecurity

The cybersecurity section includes over 100 items that the vendor will be evaluated on. However, almost all of them are evaluation factors only, and are not written as a "shall" or "must" requirement. Some key "must" requirements in the RFP include the following:

- The vendor must actively monitor the network; all security incidents must be reported upon.
- Blacklisting of devices must not jeopardize the safety mission of first responders.
- Device local storage must be encrypted.
- All network traffic must be encrypted.
- All data in the NPSBN must be handled according to applicable data retention laws and agency policies.
- The Contractor must implement Application Programming Interfaces (APIs) on the network; contractor SHOULD implement specific security controls on these APIs.
- Document threats and vulnerabilities.

The requirements largely defer to existing standards, including:

- FCC Technical Advisory Board (TAB) Report[6]
- 3GPP security standards—note, any major carrier will be compliant with these based on their deployment of 3GPP standards-compliant networks. These include:
  - TS23.401 (GRPS Enhancements for E-UTRAN)
    - "General Packet Radio Service" is an enhanced packet oriented mobile data service for the Evolved UMTS Terrestrial Radio Access, the air interface of 3GPP's Long Term Evolution (LTE)
  - TS33.102 (3G security architecture)
  - TS33.210 (3G security; Network Domain Security (NDS); IP network layer security)
  - TS33.310 (Network Domain Security (NDS); Authentication Framework (AF))
  - TS33.401 (3GPP System Architecture Evolution (SAE); Security architecture)
  - TS33.402 (Security aspects of non-3GPP accesses)
  - Most requirements are best-practices and other things FirstNet has already proposed in its previous cybersecurity release.

Section J-11 Device Specifications Template

The device requirements are general. Typical form factors, (smartphones, routers, tablets, and modems) are addressed as well as "other" systems (including vehicular network systems, deployables, hotspots etc.).

Section J-18 Delivery Mechanism Objectives for State Plans

State plans will not be a single document; they will be hosted on a web service. The contractor will be required to develop a web-based platform to host state plans.

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[6] The FCC was tasked to develop recommended minimum technical requirements to ensure a nationwide level of interoperability for the Nationwide Public Safety Broadband Network.
https://apps.fcc.gov/edocs_public/attachmatch/FCC-12-68A3.doc

Section J-19 State Plan Template

The document is almost entirely made up of a list of headings with placeholder text (e.g., "Text for this section will be provided by FirstNet."). Key topics included in the template are as follows:

- Coverage, including:
    - Band 14/Non-band 14
    - Deployables
    - Coverage
- One heading reads "coverage objectives and **requirements**" (emphasis added).
    - There is only placeholder text here. Note, it is the only instance of a coverage **requirement** in the RFP.
- Temporary coverage solutions
- Service availability; there is no mention of an SLA but it can be inferred that the service level described in the State Plan may constitute something similar to an SLA; however, FirstNet has stated that the State Plan is not a binding agreement or contract.
- Customer Support
- Service Management Center
- Security plan is broken into many domains including physical security, response to incidents, monitoring, and others.
- Training Requirements
- A detailed description of the network to be implemented is briefly defined, including system architecture, site/sector locations, backhaul, logical network design, core, operational and business systems and many others. The list of headings with very brief descriptions on what *will* be included is 18 pages long. From this, we can infer that the State Plan will include extremely detailed documentation on the network.
- The State Plan does not include a heading for the sales and marketing plan, or anticipated contract vehicles the vendor will utilize to market their service. The State Plan should include details on service centers, points of sale, retail centers, etc. so that the state can evaluate whether the vendor has an effective sales and marketing strategy that will allow them to meet their acquisition targets.

Section J-23 End User Pricing Tables

The offerors are requested to provide pricing for "Post-Paid" and Pre-Paid customers for a variety of plans, including agency-wide pooled data and per-user data rates for unlimited as well as metered data use. "Estimated" pricing is requested for Band 14-enabled devices per device type.