

Nationwide Network Coverage and Capacity Objectives

As with other key elements of the RFP, FirstNet provides objectives for coverage and expects Proposal Offerors to describe their solution for achieving those objectives. In Section J-1 of the RFP, FirstNet provides coverage definitions and objectives, as well as a nationwide coverage objective map to identify areas where public safety requires both continuous coverage and temporary coverage solutions.

Coverage Definition

The RFP defines “coverage” as the geographic area where a base station and mobile device can reliably communicate with each other above a minimum designed data rate. Specifically, both continuous (persistent) and temporary coverage is defined as a Long Term Evolution (LTE) Band 14 network capable of providing cell edge data rates of 256 kbps uplink (UL) and 768 kbps downlink (DL) measured from outdoor stationary User Equipment at three (3) feet from ground level with a 95 percent confidence margin at the cell edge with a uniform cell load of 50 percent for the DL and UL.

FirstNet states that most user speeds will be significantly higher as user devices are likely distributed throughout a cell and speeds generally increase closer to the site as coverage increases FirstNet asks the Offeror to provide assurances that the peak/average network and user speeds are consistent with 3rd Generation Partnership Project (3GPP) standards for a 10x10 MHz LTE Frequency Division Duplex (FDD) channel and aligned with the 3GPP release feature set being deployed.

Coverage Objectives

The coverage objective map depicts a one-square-mile grid block for each of the 56 states and territories. The coverage objective map reflects coverage objectives based on data from the following four categories:

- **FirstNet Baseline** – Original coverage objective map developed by FirstNet, further described in the Coverage Objective Map Methodology section below.
- **State Inputs** – Areas of interest identified by states, territories, and tribal nations during state consultation and data collection, not addressed on FirstNet’s baseline.
- **Federal Inputs** – Areas of interest from federal entities, not addressed by the FirstNet baseline or state inputs.
- **On-Demand Temporary** – Areas where there are rare occurrences for the need of coverage.

The FirstNet baseline, as modified by state and federal inputs, indicates areas where persistent coverage is desired. On-demand temporary solutions are adequate for the other areas identified.

Coverage Objective Map Methodology

The FirstNet baseline version of the coverage objective map was created from five distinct data sets and identifies areas that are likely to require a public safety response. This map was updated to incorporate state, territory, and tribal inputs, when available. FirstNet understands that a public safety response could be required anywhere. However, areas with a lower probability for a response would be identified as needing on-demand temporary or extended range coverage and capacity solutions.

The five data sets that were used to create the FirstNet baseline version of the coverage objective map are described below. Each of the five data sets was combined into a single map and displayed in one-square-mile grid blocks.

- **Public Safety Users:** This data set identifies the foundational user base for the network, which consists of law enforcement, fire, and emergency medical services users. The map distributes these users over their jurisdictional areas (i.e., city users are distributed throughout their respective cities, county users are distributed throughout their respective counties, and state users are distributed throughout their respective states).
- **Public Safety High-Risk Areas of Interest:** This data set identifies key facilities, infrastructure, and locations that may be of particular interest to public safety users, such as public safety agencies, correctional facilities, airports, emergency operations centers, hospitals, schools, manufacturing facilities, energy plants, and large public venues.
- **U.S. Population:** This data set identifies where people live using 2010 U.S. Census data.
- **Developed Areas:** This data set helps determine response areas by identifying where people work as well as businesses and structures that may require response. The map includes areas classified as dense, medium, light, or open developed areas.
- **Roadways:** This data set identifies commonly navigated roadways and significant secondary roadways using data from the National Highway System and annual average daily traffic counts.

Evaluation of the Operator's Coverage Solution

As part of the proposal evaluation process, each individual grid block will be assessed for meeting the definition of coverage. Only those grid blocks that have a reasonable amount of coverage will be considered acceptable. The FirstNet coverage objectives map indicates areas where persistent coverage is desired. On-demand temporary solutions are adequate for the other areas identified. The Offeror's proposed solution will be evaluated for each of the 56 states and territories using the information provided by the Offeror.

FirstNet will evaluate the Offeror's proposed solution using a quantitative approach for each of the following coverage and capacity elements:

- **Non-Band 14 Area Coverage** – The amount of land mass that is covered with non-Band 14 coverage solutions

- **Non-Band 14 Population Coverage** – The amount of population that is covered with non-Band 14 coverage solutions
- **Band 14 Area Coverage** – The amount of land mass that is covered with Band 14 coverage solutions
- **Band 14 Population Coverage** – The amount of population that is covered with Band 14 coverage solutions
- **Band 14 Network Capacity** – The amount of designed network capacity for first responders and secondary users

Each of the above elements in the quantitative approach will be weighted equally. Other elements of an Offeror's coverage will be evaluated qualitatively referencing the objectives as set forth in Section C, Statement of Objectives, and the requirements and recommendations specified in Section J, Attachment J-3, FCC Recommended Minimum Technical Requirements.

For example, FirstNet will also consider how effectively the Offeror maximizes in-building coverage as well as the amount of area and population covered that meets or exceeds the in-building link budget.