



FirstNet Authority Roadmap COVERAGE AND CAPACITY

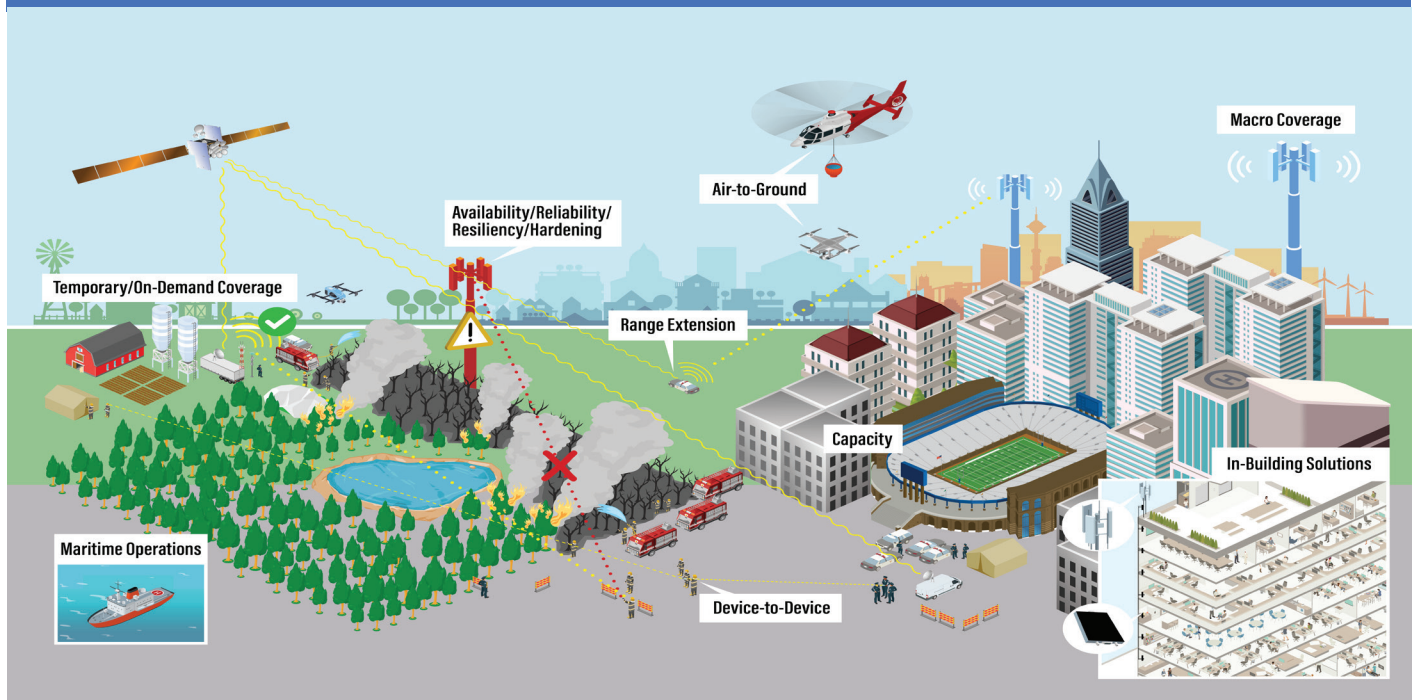


Domain Overview

Access to mobile broadband with reliable, dependable, and consistent coverage and sufficient capacity can fundamentally change how first responders work. A principal focus of the FirstNet Authority's contract with AT&T is to build a robust nationwide broadband network for public safety's use on Band 14 spectrum. Coupled with public safety's access to all of AT&T's commercial spectrum with the same public safety features, public safety agencies have access to the FirstNet network when and where they need it, enhancing their ability to access network services that can transform operations.

The Vision

The FirstNet Authority envisions the network will be available to public safety personnel when and where they need it.



Roadmap Priorities for Coverage and Capacity

The FirstNet Authority assessed multiple factors to determine its Roadmap Priorities for Coverage and Capacity.

These priorities will be developed into a series of initiatives that will direct the FirstNet Authority's efforts and drive its investments.



Increase outdoor and indoor coverage, particularly Band 4, at locations deemed to be public safety priorities.



Advocate for changes in policies, codes, and standards to facilitate in-building coverage enhancements.



Grow and enhance the deployables fleet considering varying operational needs, staging locations and technology options.

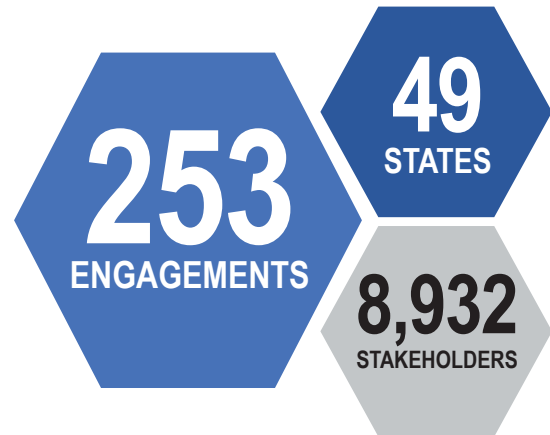


Key Technology Areas that Comprise Coverage and Capacity

- **Macro Coverage:** A broad coverage footprint, typically enabled by fixed towers.
- **Capacity:** Availability of sufficient network resources to deliver mission-critical services at all times and under all conditions.
- **In-Building Solutions:** Persistent coverage in areas that may be hard to reach by the macro network (e.g., inside commercial buildings, underground public transit stations, crowded sports arenas).
- **Range Extension:** Ability for end users to maintain connectivity beyond the radio access network edge (e.g., vehicular network system, high powered user equipment, LTE relay).
- **Device-to-Device:** Capability for communications devices to link services (i.e., voice, video, and data) directly between or among other devices (“direct mode” or proximity services [ProSe]) without relying on central network infrastructure.
- **Temporary/On-Demand:** Temporary, on-demand, or as needed coverage (e.g., FirstNet deployables, customer owned and managed).
- **Air-to-Ground:** LTE operations and use of broadband applications while in the air (e.g., aircraft, LTE drones).
- **Maritime Operations:** LTE operations and use of broadband applications while operating in coastal and inland waterways.
- **Availability/Reliability/Resiliency/Hardening:** Survivability and recoverability in cases of extreme impairment.

Public Safety’s Take on Coverage and Capacity

- Public safety wants transparency on where coverage exists today and the ability to guide where it will expand in the future.
- Fixed, reliable wireless broadband coverage is preferred for public safety operations especially as it becomes foundational to public safety communications.
- Temporary coverage solutions must be readily available to an agency and their use must easily integrate into their operations.



Public safety engagements that addressed Coverage and Capacity
(April 1 – June 30, 2019)

Key Takeaways from the FirstNet Authority’s Analysis of Learnings from Stakeholders

- FirstNet has established a robust coverage network through its public private partnership.
- Coverage expansion investments will have a direct and meaningful impact when targeted at critical locations, both indoor and outdoor.
- Meaningful improvements to indoor coverage can be achieved by updating relevant policies to encourage cooperation from building developers and owners.
- Deployables have had a high impact when used, and enhancing the fleet with more and a wider variety of solutions will improve accessibility and effectiveness for public safety operations.