

## NPSTC releases document describing 'public-safety-grade' requirements for FirstNet

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The National Public-Safety Telecommunications Council ( [NPSTC](#) ) last week released its much-anticipated guidelines describing public-safety-grade (PSG) communications, which are expected to be used by [First Net](#) as the organization attempts to build a nationwide broadband network for first responders.

The notion that PSG communications exist and are different from commercial communications has been a fundamental concept that has been embraced during several efforts to deploy public-safety broadband systems, whether they were being built by the public safety spectrum trust, a state or local jurisdiction, or FirstNet. However, an actual definition explaining what it means for a network to be public safety grade has not been published previously, making it difficult for potential partners to understand first responder expectations.

“This is a huge milestone in our quest to develop requirements for FirstNet,”NPSTC Executive Director Marilyn Ward said in a prepared statement. “Thanks to David Buchanan, Task Group Chair, and the numerous volunteers from public safety and industry [that worked on the document].”

In the [123-page document](#) released last week, a NPSTC task group outlines a series of requirements and best practices—are "above and beyond" a typical commercial wireless network design—that must be followed for broadband system be recognized as meeting the public-safety-grade standard.

“This report expands on previous NPSTC documents that used the term “public safety grade” in an attempt to convey the differences in the way public safety “mission-critical” communications systems are designed compared to the typical commercial systems,” the report states. “The PSG term not defined in prior NPSTC reports, because the conceptual definition is complex and thus rendered with many definitions and best-practice design elements in a variety of areas that make up a total communication system.

“This work is primarily focused on mobile data to assist FirstNet in their design of the NPSBN [nationwide public-safety broadband network] but can also be helpful to public-safety agencies that are designing or specifying new or upgraded public-safety LMR systems.”

A fundamental principle conveyed throughout the document is that public-safety networks need to be available to first responders at all times, even in circumstances that would cause commercial networks to reach capacity limits or fail entirely.

“PSG communications systems are systems that are used by public-safety responders and that have been evaluated by public-safety officials to provide reliant and resilient operations in the event of natural or man-made disasters or events,” according to the NPSTC report. “The NPSBN must be relied upon and trusted by the public-safety community. It must be a public safety grade network, not a commercial “best effort” network.

“Emergency responders and their commanders depend on communications systems to be fully functional at all times and under all circumstances. In order to be successfully adopted by the public-safety, the NPSBN cannot be anything less.”

To achieve PSG reliability, a network cannot have single points of failure, the report states. This means introducing a level of redundancy to various aspects of each cell site, including backup power and multiple paths to [backhaul](#) network traffic. Of course, implementing such measures increase costs, so it may be advisable to integrate all PSG requirements and best practices at sites that are deemed to be critical.

“The public-safety community understands that the entire FirstNet system may not economically be built to meet all of the best practices contained in this document,” the report states. “For example, a cell site at a distant or remote portion of the network might not economically be built to meet 100% of these requirements. However, a central site that provides links and access to adjoining sites should be considered a critical site and should be built and operated based on all recommendations.

“[FirstNet](#) , in consultation with local jurisdictions, should assess the importance or criticality of each site and determine how to balance cost and risk. In fact, not all of the existing LMR public-safety communications sites in service today will meet these requirements. However, a

significant number of them will meet the requirements and LMR services include communications fallback modes that will not be available on broadband network built today.”

In addition, the report acknowledges that no network can be built in a manner that is 100% reliable in all circumstances. With this in mind, it is important for FirstNet to have communications resources that can be deployed to a troubled area quickly.

“Even sites which meet PSG best practices and requirements may not withstand the extraordinary natural or man-made disasters, “ according to the [NPSTC](#) report. “Therefore, FirstNet must take steps to provide temporary network components that can be deployed into an area to replace or augment failed sites. These temporary network components will not, in most cases, meet PSG requirements but will be able to restore minimal communications in a given area until such time as the PSG sites can be restored to full operation.”

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