Homeland Security
Office of Emergency Communications

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The Impact of the Nationwide Public Safety Broadband Network for Operational Personnel

The continued evolution of commercial wireless data services **and rapid development of new technologies and applications has led to on-demand access to information, with increased speeds, and with greater accessibility throughout the country**. However, these advances **have largely bypassed emergency responders**. More than 55,000 public safety agencies across the United States rely on individual Land Mobile Radio (LMR) networks, which support mission critical voice communications.

Currently, first responders largely augment LMR capabilities with commercial cellular service and/or agency-owned legacy data systems that provide relatively slow speed mobile data capabilities. Some agencies have also created mobile data systems using a variety of technologies to supplement legacy, agency-owned systems with newer offerings such as WiFi, WIMAX, and 4.9GHz broadband systems. These systems provide public safety personnel with capabilities to perform functions such as dispatch and Computer Aided Dispatch (CAD) system inquiries, various National Crime Information Center (NCIC) and National and State Criminal Justice Information System (CJIS) queries, dispatcher-to-unit and unit-to-unit messaging, and the transmission of low resolution images. Some networks also support records management systems (RMS) inquiries and in-field reporting capabilities for law enforcement, fire, and EMS personnel. Mobile data systems also provide an alternative communications capability and, in many cases, interoperability pathways for agencies sharing larger systems or using commercial offerings.

The February 2012 passage of the Middle Class Tax Relief and Job Creation Act of 2012 enables the public safety community to fully leverage advancements in broadband technology, specifically Long Term Evolution (LTE), to develop and deploy an interoperable Nationwide Public Safety Broadband Network (NPSBN). LTE is the next evolution of commercial wireless communications technology developed to address the increasing demand for data communications. As of mid-August 2012, a total of 98 LTE networks were deployed in 49 countries with an additional 342 networks planned or under development. LTE promises higher data transmission rates and capacity than other current commercial service offerings, allowing for high-speed access to information. Commercial LTE does not currently support public safety grade mission critical voice communications; priority access for public safety users; or push-to-talk, multi-broadcast, or "talk around" capabilities required by the public safety community. In addition, commercial LTE may not have the capacity to be accessible during an event or emergency.

THE NPSBN

The NPSBN will be a dedicated, wireless, interoperable, communications network that allows public safety to receive and share critical information with their counterparts across the Nation. The First Responder Network Authority (FirstNet) is an independent authority within the Department of Commerce's National Telecommunications and Information Administration that will hold the spectrum license for the NPSBN; specify the network requirements; develop a plan for network deployment for each State; and work with State, local, and tribal governments to create an interoperable, nationwide network. The FirstNet Board is composed of 15 members to include the Secretary of Homeland Security, the Attorney General of the United States, the Director of the Office of Management and Budget, and 12 experts with experience in the public safety, technical, network, or financial fields.

The NPSBN will embrace open commercial technology standards, possess built-in backup capabilities, and provide highly-available public safety-grade access to emergency response personnel. The network will provide emergency responders with the ability to have high speed access and exchange information in various forms, including pictures, graphics, video, and non-mission critical voice applications. Public safety will operate on a single network with a single Public Land Mobile Network ID, include nationally consistent technology and standards, and leverage uniform agreements with national commercial carriers. It is expected that First responders will not encounter roaming issues when traveling outside of one's home jurisdiction, as they will still be operating on the dedicated public safety network. First responders will only roam on commercial networks when outside of the NPSBN coverage area or if required due to network congestion and lack of capacity on the NPSBN.

Public safety will continue to rely on LMR and legacy communications systems for mission critical voice communications as the NPSBN evolves; therefore, LMR voice capabilities will be used by first responders for the foreseeable future. Investments in LMR infrastructure, subscriber devices, and overall system maintenance will continue for the foreseeable future, and agencies must begin, or continue, to implement emerging wireless broadband services and applications. Once the network is deployed public safety organizations may begin transitioning from using commercial broadband services to the dedicated NPSBN.

THE NPSBN AND THE FUTURE OF PUBLIC SAFETY OPERATIONS

The NPSBN will provide the emergency response community with mission critical voice, data, and video capabilities and access to real-time information. As a result, first responders will be able to communicate across agency and jurisdictional boundaries, have access to more effective emergency communications on a nationwide scale. LTE will provide the public safety community with reliable, redundant, and resilient technology and provide the potential benefit of purchasing lower cost equipment manufactured on a global scale. LTE systems are scalable, allowing system operators to tailor their network deployment strategies and add spectrum to meet the needs of available resources and/or a particular technology.

As the Nation's public safety entities increasingly employ broadband technologies, it is important to consider how emergency responders will use the nationwide network. While there currently is no timeframe for when the NPSBN will be fully operational, telephony voice and adjunct voice services will be deployed and available for first responder use prior to mission critical voice services. The future network will also provide services such as:

- Remote CAD access
- Geo-spatial applications
- Telemedicine for EMS
- Next generation 9-1-1 (NG9-1-1)
- Real-time resources tracking
- Enhanced field reporting.

The network will allow first responders to securely and reliably gain situational awareness, share information with their counterparts in other locations and agencies, conduct safer and more effective operations by enhancing the effectiveness of emergency communications throughout the Nation, and engage in response operations on a nationwide scale, all while operating on a single network.

The Benefits of Using LTE for Public Safety Communications:

√ Access to technological advances to include mobile data and video capabilities
√ Leverage potential cost savings by providing access to an increasing number of providers, manufacturers, and devices (handsets, mobile terminals and connective devices)
√ Network scalability will allow operators to tailor network deployment strategies and spectrum needs.
√ Use new and enhanced information sources, applications, and capabilities to conduct operations faster, more efficiently, and in greater detail. Applications include: remote CAD access, geo-spatial applications for personnel tracking, telemedicine, and NG9-1-1
√ Leverage experience of worldwide LTE deployments

FOR ADDITIONAL INFORMATION

Please contact OEC@dhs.gov or visit www.dhs.gov (keyword OEC).