Land Mobile Radio (LMR):
Public Safety's Best and Most Reliable Form of Communications

Emergency responders must have consistent, resilient, and interoperable mission critical voice communications systems to respond to citizen calls for services and to enhance personnel safety. Land mobile radio (LMR) has been deployed since the 1930's to meet this critical need. As communications technologies have evolved, LMR has kept pace with the introduction of new features and functionalities incorporated into Project 25 (P25) standards-based systems. The advent and deployment of new and robust wireless data systems using Long-Term Evolution (LTE) technology will continue to provide an additional path for wireless data communications as an adjunct to LMR mission critical voice communications.   For the foreseeable future, the public safety community will likely continue to support TWO networks – LMR for mission critical voice and the First Responder Network Authority's (FirstNet) Nationwide Public Safety Broadband Network (NPSBN) for critical wireless data, once available.

PROGRESSION OF LMR TECHNOLOGY

The progression of LMR technologies from conventional analog systems to the current digital trunk systems primarily can be attributed to overall advancements in electronics technologies. The transition from conventional analog systems to the initial public safety trunking standards introduced more spectrally efficient operations and incorporated enhanced features such as private calls, emergency buttons, and mobile data. P25 standards further enhanced features and functions and are applicable to conventional digital and trunking LMR systems. The public safety community has embraced LMR substantially, with significant investment in infrastructure. LMR systems have thus been configured to topology and usage patterns through decades of use, evaluation, and adjustment.

LMR'S PROVISION OF MISSION CRITICAL VOICE COMMUNICATIONS

Public safety LMR systems provide first responders mission critical voice communications and the best possible radio frequency coverage within a given geographical area. Furthermore, the infrastructure equipment and methods of deployment are hardened, allowing for prolonged operation in rigorous environments with a higher level of user availability and accessibility. Other LMR system capabilities include:

- Emergency alerting
- Encryption
- Audio noise reduction technologies

- Dedicated channels/talkgroups
- Priority Access
- Highly reliable and redundant networks

LMR Systems	Cellular Networks
Provide highest reliability at reasonable cost	Maximize system capacity by allowing more users wireless access
Maximum coverage per base station site	Commercial-grade service
Allow communications with multiple devices simultaneously	Conversations are typically between two users
Based on dispatch operations from a control center	Communications are typically between individual subscribers
Designed to be robust and resilient	Designed as "best effort" and offer no assurance of call completion; become overwhelmed during major incidents
Dedicated to public safety	Do not provide public safety priority for voice and data

At present, there is no other viable choice to achieve the same level of mission critical voice capabilities currently provided by public safety LMR, as the emerging voice services (e.g., Internet Protocol [IP]-based, Voice over IP, Voice over LTE) available on wireless broadband networks do not currently provide the same capabilities, features, and functionality. While development continues for future versions of LTE technology and the standards development organizations contemplate the addition of public safety requirements into the LTE technical standards, there is no date certain or firm commitment of when or if mission critical voice services will be supported in LTE technology.