By Order of the Federal Communication Commission, dated May 12, 2010, the Wisconsin Counties of Calumet, Outagamie, and Winnebago, as a group, received a waiver of FCC rules to begin early deployment of a local public safety broadband network. The three Wisconsin counties that received the FCC waiver award have worked together in a public safety communications partnership known as 'FoxComm' since the early 1990's. The partnership's initial focus was on sharing data among local law enforcement agencies, and sharing the costs of installing and maintaining computer-aided dispatch hardware and software. Since Sep. 11th, the Counties have acted on a desire to expand their partnership focus to include voice and data communications to improve interoperability among neighboring communities as well as regional, state, and national emergency responders. The FoxComm 700 MHz Broadband Network project will directly serve all emergency response agencies that operate in the three-county service area. These users include the local sheriff's deputies, police officers, firefighters, EMTs and paramedics that respond to all types of emergency incidents. The users also include the E911 dispatch center call-takers and dispatchers, who process the 911 calls, create incident records, and communicate with the responders in the field via voice radio and data messaging. Current data system limitations hinder the effective use of technology that's available to the responders. The proposed 700 MHz LTE network would have a great impact on improving communications. The LTE network would allow responders to use the ever-expanding number of technical applications designed to increase safety of both responders and the public they serve. The proposed service area is located in East Central Wisconsin. The counties share borders with one another and are located on the east, north, and west side of Lake Winnebago. The area encompasses 1,368 square miles, which includes primarily rural areas. The service area includes 13 cities, 14 villages, and 44 towns. As a project that involves the 700 MHz Public Safety Spectrum Trust, and is thus limited to use by public safety agencies, it is projected that the primary benefactor from this system will be the 28 law enforcement departments, which include state, county, tribal, and local police; as well as the 58 local fire and EMS departments that are located in the service area. Those agencies protect and serve a population of nearly 270,000 residents in the three counties. To estimate the number of jobs that were created or saved by this project, the formula provided in the document 'Estimates of Job Creation from the American Recovery and Reinvestment Act of 2009', published by the Executive Office of the President Council of Economic Advisers and available on the www.whitehouse.gov website. It is estimated that a total of 250 jobs will be created. Using the methodology included in the document, 80 jobs will be created directly, 80 jobs will be created indirectly, and 90 jobs will be induced by the project. The network will be designed to provide 95 percent in building penetration. Based on an initial RF dimensioning exercise, a
determination was made that 52 sites will be required for the required in building penetration. These 52 sites will consist of 27 existing towers that exist in the three Counties as well as 25 new tower sites that have been identified as being required to provide 95 percent in building coverage. Note that final identification of these tower sites has not been made, only an initial search ring has been determined based on the RF dimensioning. Each tower site will be connected by a secure licensed microwave backbone using spectrum in the 6, 11 or 18 GHz range. A determination of the exact frequency will be made after the exact final locations of the 25 new towers have been made. A redundant ring topology will be used for the backbone portion of the network. As is noted in the Level of Need narrative, the following issues were identified with the existing VHF radio and 800 MHz mobile data systems during a feasibility study conducted in 2008: 1. Poor coverage: There are a considerable number of areas where low signal levels or no coverage is available. 2. Lack of capacity: Because each county has different frequencies and operate several separate systems, there is not sufficient capacity to provide reliable communications. A number of agencies have only one channel. If there are concurrent incidents there is too much traffic on the channel resulting in 'stepping on each other'. A major incident would result in more traffic than can be accommodated by any of the existing systems. 3. Interference: Interference occurs in several channels which dispatch communications. 4. Poor Mobile Data Communications (MDC): Several MDC systems are overloaded or have long delays. 5. Lack of interoperability: Other than use of interoperability channels, if available on agency's mobile or portable radios, or by the use of someone else radios, there is no way of coordinating activities of incident responders from several jurisdictions. 6. Lack of redundancy: The systems for each county generally are not setup with redundant links to sites. 7. Aging systems: The systems are outdated and require updating 8. Medical information: There is little or no use of the UHF medical telemetry channels. Rather information from a scene to a medical facility is done by voice which leads to channel congestion and can result in loss of life. 9. Encryption: The present systems don't have security or encrypted capability incorporated in their current radio systems. 10. Paging and Alerting: Paging and alerting systems suffer from poor coverage, use for dispatch voice for on scene operation as well as paging in other systems, do not provide voice dispatch messages to fire fighters until they reach the incident scene. Co-channel interference from other jurisdictions. Presently, two message switches are used in the three-county mobile data system. Calumet and Outagamie counties share one message switch; Winnebago County has their own message switch. At this time, the public safety data traffic is the limiting factor and does not allow further sharing of this equipment. This hinders the interagency communications among neighboring police and fire departments. A prime example of how this affects emergency operations is the fire department mutual aid system. During the past several years, in an effort to address shrinking municipal budgets and increase efficiency, the State of Wisconsin has enacted legislation and implemented a statewide mutual aid system. The mutual aid project allows fire departments to work together and cross municipal boundaries to assist one another on a daily basis. Even though fire apparatus and ambulances in the metro areas are equipped with mobile data computers and response software, they are not able to message one another or share pre-plan or response information, due to the disparate systems. The proposed broadband project will correct this problem and allow seamless interoperable communications among all public safety agencies in the three-county area. As the system grows in the future, this important feature will be spread throughout the State of Wisconsin, and with proper design, throughout the nation. The coverage gaps in the VHF voice network have resulted in tragic consequences. During a recent fire in Appleton, WI, two
firefighters fell through a hole in a burning building. One firefighter sent out an emergency call, which was only heard by the dispatcher and one firefighter. The dispatcher had to call back to the scene and alert the other firefighters of the mayday. The dispatcher was able to send more units to the scene to assist, however, only one of the firefighters was able to be saved. According to Winnebago County Sheriff Mike Brooks tragic events like this are fortunately not an everyday occurrence, 'but 'every single shift we have a situation where we have a lack of radio communication.' FoxComm would like to focus on building a 700 MHz data system based on the LTE platform and migrate existing VHF voice users and applications to this platform when the handsets and other devices are available as well as the LTE platform has been proven to support 'mission critical voice communications. However, this necessitates that FoxComm invest in a 700 MHz digital trunked radio system or narrowband system that will replace the antiquated VHF voice system as well as meet the narrowband mandate. This requires that FoxComm deploy two systems: a voice system and a data system. This is simply beyond the existing financial capabilities of Calumet and the other two counties to do this project on their own without federal assistance. For these reasons it is imperative that federal funding be leveraged to provide the critical public safety communications.