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DEPARTMENT OF COMMERCE

National Telecommunications and Information Administration

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Development of the Nationwide Interoperable Public Safety Broadband Network

AGENCY: National Telecommunications and Information Administration, U.S. Department of Commerce.

Response to Notice of Inquiry

Submitted by Great River Energy

Great River Energy Background

Great River Energy is a not-for-profit generation and transmission electric cooperative owned by its 28 member distribution cooperatives. Those 28 member cooperatives in turn provide electrical service to approximately 1.7 million people in a 56,000-square-mile area from Minneapolis-St. Paul suburbs to very rural areas of the north shore of Lake Superior to the farmlands of southwestern Minnesota. The loads served by the member system are primarily residential, seasonal and agricultural loads. GRE owns and operates 12 power plants which generate more than 3,500 megawatts (MW) of electricity. GRE's generation capability is a diverse mix of baseload and peaking power plants, including coal, refuse-derived fuel, natural gas and fuel oil, as well as wind generation.

GRE owns and operates nearly 4,600 miles of transmission lines and owns or partly owns 109 transmission substations. Additionally, GRE interfaces with 28 distribution cooperatives at over 500 distribution substations and has over 150 downline motor-operated switches to which it communicates. All substations and motor operated switches require telecommunications for Supervisory Control and Data Acquisition (SCADA). Additionally, the 28 member distribution cooperatives require telecommunications for Distribution Automation of downline switches, regulators, reclosers, and motor operated capacitor banks. They also use telecommunications for Advanced Metering Infrastructure (AMI) and Automated Meter Reading (AMR).

In addition to SCADA communications, GRE owns and operates a trunked land mobile radio system that is used for voice communications for GRE and 14 of its member distribution cooperatives. GRE also has a very extensive Load Management/Demand Response system that controls air conditioners, water heaters, electric heat storage and irrigation systems during peak electrical usage. This system has the capability of shaving over 380 MW of load from the system. GRE uses synchrophasors for wide area situational awareness. These synchrophasors require very low latency, highly reliable telecommunications.

General Comments

The Critical Infrastructure Industry (CII), including electric utilities such as Great River Energy, should be considered as potential partners on the FirstNet Nationwide Network (FNN). Many utilities have owned and operated telecommunications systems for many decades and have many benefits to offer to the build out of the FNN. Utilities own and maintain large telecommunications networks and infrastructure such as towers, buildings, backup generators,

electrical power towers and poles, fiber and rights of way that could be used to help cost effectively and quickly build the FNN.

Utility telecommunications networks are built to be highly reliable, as many utilities have black start requirements, meaning that if the electric grid is out, utilities are mandated to have the ability to start generators to bring the grid back online. In order to accomplish this, both voice and data communications are essential so utilities equip telecommunications sites with backup generators capable of providing power for a minimum of three days. For practical matters, however, GRE stores a fuel supply of approximately two weeks at most telecommunications sites.

Many utilities have rural telecommunications requirements. Utilities can help public safety affordably build out the PSBN in rural areas. In addition, utilities have backhaul capabilities, both fiber and microwave, that could be leveraged in rural areas to assist with the network build-out.

The user fees that utilities and other critical infrastructure will pay will help fund the construction and operation of the FNN. The FNN will be very expensive to build and operate, and without additional partners, the network will most likely not be affordable for public safety users. By partnering with critical infrastructure entities and developing a network that will be suitable to all users' requirements, the network will be much more economical to build and operate.

In a shared CII and Public Safety network, priority, quality of service (QoS), and preemption requirements can be met using prioritization within the LTE standard. Utilities may use the FNN for different types of data. Some of this data is critical and some is not. Residential and

commercial/industrial meter reading, for example, if put on the network, does not need to be transmitted during disasters when the power is out. That data could be placed at a very low priority, or preempted, for those situations. The data that is critical for utilities during emergencies, is quite small, but is extremely critical and time sensitive. Control messages, for example, which are used to close line switches or reclosers on the electric grid, are only a couple of bytes of data, but if that data does not make it through and an acknowledgement is not received, line workers lives are in danger. Additionally, the FNN will consist of many towers with sectors on each tower. These sectors will only cover a small territory, so if there is a disaster in one area, it will most likely only have an impact in that immediate area, affecting only a few locations, not the entire network.

Another model would be to segment the data so that there is a segment that is guaranteed for public safety data and a segment guaranteed for CII data. The segment guaranteed for CII data could be quite small, and the majority of the data that is shared during normal operating situations could be quite large. See Figure 1A:

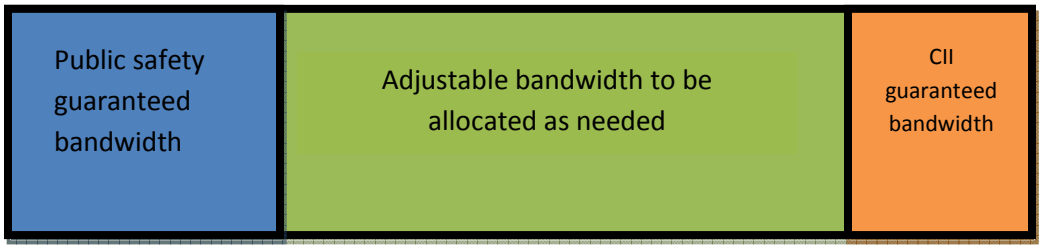

Figure 1A

Specific Comments to FirstNet Presentation

The FNN Concept (Slide 7)

in addition to the public sector and the commercial wireless industry's investments, CII also has significant telecommunications infrastructure that could be leveraged to assist in the building out of the FNN.

Many of FirstNet's goals can be accomplished more quickly by partnering with CII. By allowing CII to participate in the FirstNet network, wireless operators can increase their subscribers, usage, and commercial coverage much faster than if the FNN was strictly for public safety use. Utilities alone have the potential to add many millions of devices to the network, which in turn drives down the cost of the network and handsets for public safety users, and increases the network and handset suppliers' sales volumes and revenues. Application developers would also have the opportunity to develop apps for CII and further increase their product lines, user bases and sales volumes.

Network Implementation Options (Slide 8)

Network Option 3 could include CII. Pros to including CII include lower construction costs, faster buildout, better rural area coverage, network hardening, and interoperability.

FNN Leverages Existing Architecture (Slide 10)

As mentioned previously, CII and utilities in particular also have very large, comprehensive telecommunications networks and infrastructure that can be leveraged. Utilities have had telecommunications networks in place for 70+ years. While it is noted on this slide that FNN can also partner with Rural Telecom and Rural Electric, partnerships with other CII entities and not only in rural areas can also be beneficial. In urban areas where it may be difficult to acquire land to add eNodeB sites or where microcells are needed, electric utilities have substations and

transmission lines and poles that may be ideal site locations. Many CII entities also have extensive rights of way that could be leveraged for backhaul buildout for the FNN.

FNN Solves Several Critical Issues (Slide 20)

CII infrastructure can be leveraged to help build coverage into unserved/underserved rural areas. By allowing CII to use the FNN, equipment costs can be further reduced as the user base would be significantly expanded. There are times during energencies that it would be advantageous for utilities and public safety to have direct communications, such as when power lines are down and need to be de-energized or moved.

Conclusion

In conclusion, GRE strongly believes that allowing CII, particularly utilities, to partner with public safety on the FNN will be a benefit from both cost and coverage standpoints. CII can help fund the FNN by providing network infrastructure and user fees. In addition, the majority of electric utilities' large amounts of data, which bring potentially millions of devices to the network resulting in a large number of user fees, do not require communications during disasters where there is no power. Electrical utility devices that do require communications during disasters do not require large amounts of data. CII can help buildthe FNN in rural areas where commercial carriers do not typically cover well.

Respectfully submitted by:

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