

**Texas A&M University Internet2 Technology Evaluation Center (ITEC)**

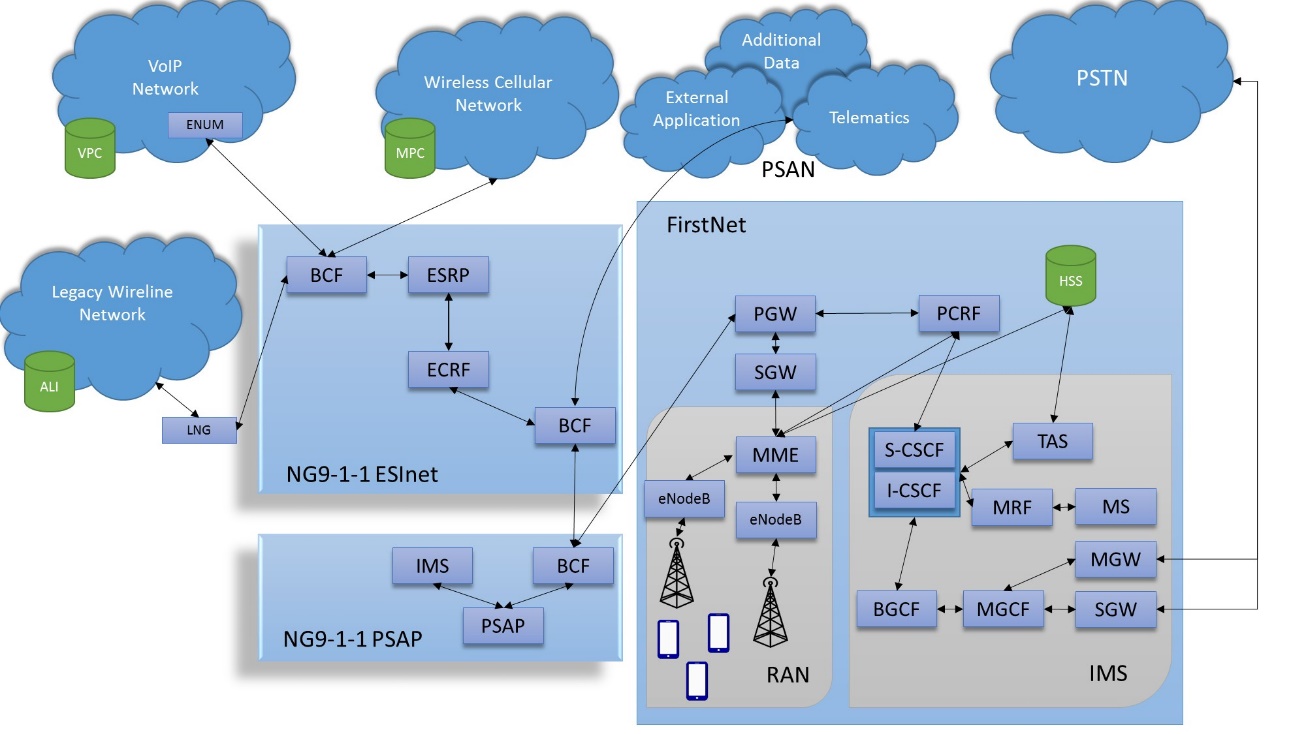
**Response to Federal Communications Commission Notice of Inquiry 17-200**

The Texas A&M University Internet2 Technology Evaluation Center (ITEC) was established as an official university center in 2004 by the Texas A&M University System Board of Regents. We have become well recognized as a public safety communications research center. The first NG 9-1-1 system in the world was developed, deployed and tested under an ITEC contract with the U.S. Department of Transportation. ITEC staff designed the NENA NG 9-1-1 interoperability testing protocol (called “Industry Collaboration Event”, or “ICE”), and supports Harris County, Texas, in its build-out and deployment of the first Public Safety Broadband Network (also known as “FirstNet”) in the United States with funding from FEMA. We have also contracted with several commercial firms to do both wireline and wireless interoperability testing. The ITEC lab has acquired about $6 million of donated communications equipment over the past 13 years as a result of these projects.

Additionally, we now possess a keen understanding of communications technologies and how to support them. The most critical technical resource is spectrum; having clean, dedicated, sufficient frequencies allocated to a service leads to success, and a lack of sufficient spectrum ensures failure.

The questions posed by the FCC under Notice of Inquiry 17-200 all relate to reallocation of existing spectrum in the 900 MHz band, from channelized push-to-talk to next generation technologies, such as LTE. The ITEC strongly supports the recommendation to allow restructuring of the bandwidth to allow LTE use for the following reasons.

1. As a license holder of Educational Broadband Spectrum (EBS) for the past three decades we have seen the waste of resources that exists when spectrum is allocated to services that either underutilize or fail to utilize it. This is in stark contrast to the amazing impact that the same spectrum can have when it was reallocated as EBS and is now eligible to support LTE. Similar to that rule change, a change in the 900 MHz band to allow broadband would enable the efficient use of the underutilized spectrum that could directly benefit industry, universities and enterprises in performance of their mission critical functions.
2. Our work in support of the U.S. Department of Homeland Security was the deployment of LTE over limited backhaul, such as a Ku satellite connection, that would be typical during a major disaster. The ability of LTE to prioritize traffic makes this a very appropriate technology to implement. This point speaks to portion of the Notice of Inquiry (NoI) that askes “How much spectrum is needed to be effective”. The right answer is always that the more spectrum that is allocated to a service the better the service will perform. However, when there are limits of availability, next generation technologies such as LTE allow one to optimize the effectiveness of what is available. A private LTE system would also place a significant amount of control into the hands of those that deploy those systems, with the necessary redundancy built into the network from its inception for that particular enterprise’s purposes.
3. The NoI also seeks input regarding the type of use. Texas A&M University has a Smart Grid center for projects in intelligent energy distribution and management. The ITEC staff is working with the Smart Gird Center in the integration of energy and communications, two services that are closely coupled. Smart grid requires that we transition from the use of wireless technology simply for the purpose of monitoring consumption to actually managing consumption through load-shedding. To properly manage energy consumption requires the availability of a cost-effective, secure, reliable broadband network. With a transition to LTE this becomes a viable use for the spectrum.



**APCO Project 43 functional element diagram**

The above diagram shows how emergency communications will flow into the 911 networks and the first responder networks. This information will include millions of sensor devices referred to as machine-to-machine, or the “Internet of Things” (IoT). While service providers will be able to support these sorts of devices, their business model would need to change significantly to accommodate a large number of low traffic volume devices. The 900 MHz spectrum in question by this NoI could prove to be invaluable for private network buildout by the energy sector. An LTE network using that spectrum as the wireless communications platform could serve multiple use cases without pursuing an entirely new major system procurement. Each use case could utilize the network and deploy devices on it as the existing limited technology networks reach end of life. The saves precious human capital constraints and limited finances of the public utilities.

1. The prioritization capabilities inherent in LTE could manage any congestion issues that would occur during a crisis situation. Further, inherent in LTE is the ability to add capacity through carrier aggregation or license assisted access (LAA). These LTE features could provide additional capacity for enterprises in specific use cases or geographies, while using the deployed equipment of the LTE network as those needs are identified; once again not entailing a new major system procurement. Also, voice communication is a critical application which could be offered on the LTE platform, with enhancements to allow mission critical voice as that reaches maturity.

For the above-stated reasons, our analysis supports the recommendation to restructure the appropriate use of the PLMR frequencies in question to allow use of next generation technologies such as LTE. Please feel free to contact me with any questions that you may have.

Signed

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