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VIA ELECTRONIC DELIVERY

October 1, 2009

Jennifer A. Manner
Deputy Chief
Public Safety and Homeland Security Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Public Safety and Homeland Security Workshop
GN Docket No. 09-51
PS Docket No. 06-229, WT Docket Nos. 06-150 and 96-86

Dear Ms. Manner:

On behalf of the Public Safety Spectrum Trust Corporation ("PSST"), I thank you for the opportunity to participate in the Commission's August 25 Public Safety and Homeland Security Workshop. As I recently stated in my testimony to the House Subcommittee on Communications, Technology and the Internet, it is critical that the Commission include a nationwide interoperable public safety wireless broadband network in the National Broadband Plan. A nationwide interoperable wireless broadband network will address the critical mobility needs of our public safety first responders, and by expanding broadband communications capabilities to public safely personnel, the Commission will also be expanding broadband services to the public in unserved and underserved areas of our nation.

We understand that establishing and building out the wireless broadband network will be a significant challenge, and the PSST is pleased that the Commission is moving forward to address the related issues. Thus, the PSST welcomes the opportunity to respond to the Workshop follow-up questions contained in your letter to me dated September 11, 2009, and hereby submits the following responses.

What public safety applications must be offered as mission critical standards of quality and does that include broadband communications? In an emergency what can be considered lower priority, voice or data?

Immediate mission critical voice capabilities are clearly the highest priority today for public safety users and are expected to remain so even after data and video applications are added through broadband deployment. Public safety agencies rely on lifeline mission critical wireless voice operations both during emergencies and during seemingly routine events that could turn into a critical emergency at any time.

Public safety's goal is to add data and video capabilities to its traditional land mobile radio ("LMR") mission critical voice capabilities, not to substitute data and video

for voice. Experience shows that new tools that increase operational effectiveness and efficiency soon become essential elements in public safety prevention and response activities. Therefore, public safety is planning to begin the multi-year process of deploying broadband with the recognition that the added data and video capabilities will eventually become a high priority as well.

Besides video, which public safety application has the highest required data rate, and what is it? Which has the highest sustained bandwidth requirement?

This is a difficult question to answer at this stage because the aggregate data rate requirements depend on many factors, including the number of simultaneous users in a given cell, the frequency of use, etc. These factors are not yet totally known because there are currently no broadband services available to public safety for wide-area use and many applications are still in early development stages.

At this time, our best estimate is that the application with the highest data rate and capacity requirement is likely to be video uploading and downloading. Other than video, another application that consumes significant capacity is the downloading of geographical information services ("GIS") maps. GIS maps have rich information content and therefore require large files that can consume significant capacity to be downloaded quickly. The size of the file will vary depending on the information content. GIS information varies widely from relatively simple maps to complex versions with multiple layers and three dimensions. Multiple layers can be used to show not only a building floor plan but also a detailed map with the location of the gas lines, electric lines, water lines, elevator shafts, etc. In addition, the resolution and degree of detail shown on the map will affect the size of the file. Depending on the public safety situation at hand, some or all of the available GIS information may be needed urgently. The range of file sizes is on the order of 10 to 200 Megabits.

Another broadband application envisioned for public safety that may have a high sustained bandwidth requirement is the periodic or near-continuous upload transmission of biometric data or vehicle status data and location. While the information from one public safety entity or vehicle may be relatively moderate, the aggregate information from multiple personnel and vehicles in the field would expand the data transmitted on a given system.

Actual experience will help define the capacity required. However, public safety has seldom, if ever, experienced an environment in which it had too much spectrum capacity for the job at hand, especially in major cities. To the contrary, as noted above, our experience is that public safety and industry together develop innovative uses of communications systems to help meet our operational needs. Therefore, the use of new broadband applications will likely exceed what we can predict at this time, driving higher capacity and bandwidth needs.

During an emergency involving multiple public safety agencies operating over the same shared network, who should be in charge of determining which users or which traffic are allowed on the system and which have priority access?

Priority access during emergencies is a critical feature of the proposed shared network. The framework of priority access tiers and triggering mechanisms should be developed, standardized, and maintained at the national level to ensure that the applicable technical specifications and operational characteristics remain uniform

throughout the shared network. The PSST has worked extensively with third parties to address these issues and is well-suited to representing the public safety community as the priority access features are developed.

After the overall priority access framework is established, local public safety entities should have the authority to determine and manage individual priority access assignments in their service areas. These local entities must be authorized to make such priority access decisions quickly and efficiently so that emergencies can be addressed on-site, as rapidly and effectively as possible. In addition, local public safety entities should be responsible for making the remaining operational decisions during an emergency.

Public safety agencies in the same area normally have established protocols (developed through coordinated planning efforts) for day-to-day operations, incidents, and events. The effectiveness of these protocols is evaluated and tested over time through both practice exercises and actual events. In most cases, an incident commander is responsible for directing the use and deployment of resources. The incident commander will designate a person with training and expertise to manage communications support. The individual performing this function is referred to as the Communications Leader ("COML").

Specific decisions regarding what types of communications traffic are allowed and which have the highest priority may vary at different times to support operational requirements during various phases of an event or incident. For example, with a bomb threat in an industrial area, downloading and sharing building plans and data on what chemicals are stored in the building(s) may be a high priority initially. However, as that information is processed and attention is turned to defusing a suspected bomb, video may become a higher priority. The resources at a COML's disposal also impact prioritization decisions. For communications, the added capacity from the D block would allow for more effective decision-making when large amounts of data and multiple video views are required.

How can Federal grant programs encourage equitable distribution of funding to create a more reliable national network for public safety, while making broadband deployment less complicated at the local level? Are there near and long term priorities that grants should target?

With regard to Federal grant programs for improving local and state public safety communications, the public safety community continues to support as its first priority funding to improve voice operability and interoperability. If Congress authorizes additional funding to support public safety wireless broadband planning and deployment, there will need to be further discussion and collaboration relative to near- and long-term grant priorities.

There is a pressing need for local, state, and regional grant opportunities to facilitate early wireless broadband build-out by local public safety entities. Some of these entities have already requested waivers from the Commission to deploy regional wireless broadband networks in their local service areas. Local public safety entities will need funding for a variety of purposes, including network planning and development, equipment procurement and public safety-grade enhancements, build-out, coordination efforts regarding the nationwide network, maintenance, and operations management. Funds also should be made available to encourage build-out in unserved and underserved areas.

Additional funds are also needed to ensure that existing narrowband users are relocated off of the public safety broadband spectrum to conform to the revised bandplan. These necessary relocation costs should be addressed as part of any early build-out in advance of the national shared network.

Do you envision a time when broadband communications will supplant legacy LMR emergency communications systems? What would need to happen in order for such an outcome to be achieved?

It will be many years, if ever, before LMR systems are replaced entirely. Before LMR systems could be supplanted, broadband services would first need to be deployed to the level that provides the same extensive coverage that mission critical voice systems provide, including in-building coverage in many instances. Because coverage area decreases as data rate increases, covering the same area at the same level of reliability with broadband services will require even more sites than the number used today for voice communications.

The biggest technological impediment to replacing LMR systems is that current broadband technologies designed for commercial use do not provide direct unit-to-unit voice capabilities like that offered today and used extensively by public safety. We have been told that there are no current plans in the development of LTE technology or standards to include this feature. One of the advantages of LTE technology is its development for the commercial market and added economies of scale. However, that also has the effect of reducing the priority of and incentive for incorporating solutions not needed by the broader commercial market. Even if LTE developers did decide to include a talk-around solution in the standard, we have been told the earliest this might happen is in 4-6 years. Then chipsets and/or software would have to be modified/developed to support that additional element of the standard so equipment could be developed. The public safety community would need to be involved in that equipment development and would need to see it tested and work in the actual public safety environment on a trial basis before they would be convinced it would be reliable enough to use as an alternative to current LMR narrowband voice systems. System operators and users then would need time to procure and deploy appropriate equipment and devices. The reality of broadband coverage buildout, standards and equipment development, testing in the public safety environment, and follow-on procurement means it would likely be 10 to 15 years or more before most public safety entities would be in a position to seriously consider substituting broadband voice for today's LMR mission critical voice solutions.

Using LMR systems for certain voice communications also may be more spectrum-efficient. Regardless of which system is being used, public safety's extensive use of voice operations will require spectrum capacity. It makes little sense to load up very broad channels that require significant spectrum and are optimized for high data rates with voice use that today is accommodated on much narrower channels.

What is the current thinking on solutions to the geo-location problem in NG911?

I have collaborated with APCO in developing this response because of their expertise relative to 9-1-1 matters.

The transition to NG 9-1-1 and IP-based call routing will require all PSAP jurisdictions at the local, state, and national level to implement and maintain an

accurate GIS map database of their response areas. The authority responsible for drafting and updating the GIS system will need to interface with all surrounding jurisdictions to assure that any areas of geographic overlap or boundary disputes are addressed and resolved. The level of effort and coordination that will be required to achieve the necessary precision will be unprecedented.

In addition, all 9-1-1 calls made from IP-based devices (voice, text, multimedia) must still be associated with an accurate location. Location accuracy from communications devices that only provide coordinate data (Latitude/Longitude) will only be as accurate as the wireless network architecture will allow. Moreover, in-building coverage and accuracy issues are still of concern to the 9-1-1 industry, and the implementation of femtocell technology will also pose challenges to determining pinpoint location accuracy for 9-1-1 calls.

IP communications that are routed via broadband services must be matched with the registered address of either the resident who owns the device (*i.e.*, VOIP residential telephone) or the physical location of a broadband or Wi-Fi device that is passing the call to 9-1-1 agents (*i.e.*, a Starbucks Hotspot). Internet Service Providers ("ISPs") will need to provide 9-1-1 call location by matching computer ("Internet Protocol") IP addresses or Uniform Resource Locators ("URLs") from within their database systems.

Coordination with ISPs and the implementation of a nationally harmonized GIS database for 9-1-1 call routing are challenges that we will face as NG 9-1-1 features are implemented. Additional issues related to wireless location accuracy (both indoor and outdoor), as well as femtocell technology, are challenges that are being addressed for both E9-1-1 and NG 9-1-1.

I am filing this notice electronically in the above-referenced dockets. Please contact me directly with any questions.

Respectfully submitted,

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cc: Blair Levin