

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of:)	
)	
Request by the State of Tennessee)	
for a Waiver of the Commission's Rules to)	
Allow Establishment of a 700 MHz)	PS Docket No. 06-229
Interoperable Public Safety Broadband)	
Network in the State.)	
)	

REQUEST FOR WAIVER

Pursuant to Section 1.925 of the Commission's rules, the State of Tennessee submits this Petition for Waiver to allow for construction and deployment of an interoperable 700 MHz public safety broadband network. The State currently is implementing a statewide public safety Project 25 standard based interoperable radio system as in conjunction with the Tennessee Valley Regional Communications System (TVRS). Tennessee would like to leverage and extend its experience, established governance model, antenna sites and other resources to add broadband Long Term Evolution (LTE) capabilities and deploy a system capable of providing next generation mobile data services for first responders across the State of Tennessee.

Under the current rules, Tennessee must obtain a waiver from the Commission to do so, and therefore, submits this waiver request. The Commission has previously granted waivers to other jurisdictions for the use of the 700 MHz public safety broadband spectrum. Tennessee seeks similar considerations. As addressed in this request, a grant of the requested waiver to the State of Tennessee would be in the public interest.

I. Background

The State currently is implementing a statewide public safety Project 25 standard based interoperable radio system in conjunction with the Tennessee Valley Regional Communications System (TVRS). The system is dedicated to providing Tennessee's first responders and public safety providers with state-of-the-art wireless digital communications, and to promote interoperability, in order to save lives and maximize effectiveness in both normal operations and emergency situations.

The P25 infrastructure being implemented consists of 77 state-owned towers, in addition to existing 28 TVRS sites located in eastern Tennessee connected through digital microwave into core computer equipment located in geographically dispersed sites located in eastern, middle, and western Tennessee.

Tennessee would like to leverage and extend its experience, established governance model, antenna sites and other resources to add broadband capabilities that would be connected to a switch centrally located in Tennessee. Furthermore, if granted the requested waiver, Tennessee will be extending an offer to all Tennessee cities and neighboring states to act as a regional switching hub that would serve not only Tennessee first responders but all Public Safety professionals desiring to utilize an Tennessee based world class broadband data network designed around the unique needs of Public Safety.

Under the current rules, Tennessee must obtain a waiver from the Commission to implement its planned network and therefore submits this waiver request. The Commission has previously granted waivers to other jurisdictions for the use of the 700 MHz public safety broadband spectrum. Tennessee seeks similar consideration.

As addressed in this request, a grant of the requested waiver to Tennessee is in the public interest. The Commission previously noted in its Waiver Order issued May 12, 2010 that it was favorably inclined to grant waiver relief to states:

We conclude that waivers for early deployment should meet certain criteria for geographic scope of the proposed deployment. For several reasons, we believe that states provide the most appropriate geographic size for consideration of waiver relief. States offer a reasonable delineation, both geographically and politically, to ensure that deployments are undertaken with sufficient authority, planning and coordination among all state and local public safety agencies within the state. States can also ensure that early deployments are developed to be consistent with overall plans for intra-state interoperability, and can, consistent with existing mechanisms concerning narrowband interoperability, serve as a single interface with the PSST and ERIC to minimize the complexity that would otherwise be inherent in coordinating numerous interactions on a jurisdiction-by-jurisdiction basis. Further, we believe that state-level waiver deployments will facilitate equipment development and purchase, by ensuring that there is a critical mass of potential users even in the early deployment phase to encourage vendors to compete to provide reasonably priced equipment. The public safety community also has experience with interoperability planning at the state level. For example, under a Department of Homeland Security administered Public Safety Interoperable Communications (“PSIC”) grant program, each state and territory has developed a statewide communications interoperability plan (“SCIP”). The established governance mechanisms of a state will also facilitate execution of spectrum leases, and coordination of deployments within states and with adjacent states. Finally, we note that state-level systems have the advantage of including a mix of populations, including both urban and rural areas. Thus, state-level governance mechanisms are more likely to ensure that rural areas are included as part of overall deployment plans.¹

The State of Tennessee concurs with the Commission’s statement. Furthermore, Tennessee’s established experience in planning, procuring, deploying and operating the current system currently being used by local, state, and Federal agencies serves as a firm foundation upon which to deploy a successful interoperable broadband LTE network.

Over the last few years, the Commission has taken significant steps to advance a nationwide interoperable public safety broadband network. Despite these efforts, there

¹ *Order, In the Matter of: Requests for Waiver of Various Petitioners to Allow the Establishment of 700 MHz Interoperable Public Safety Wireless Broadband Networks*, PS Docket No. 06-229, released May 12, 2010.

remains an urgent need to provide mission-critical information via wireless broadband services to our first responders.

Tennessee had previously deployed and operated a first generation public safety in-vehicle wireless data network deployed on narrowband 800 MHz frequencies. Due to the lack of support for higher speed applications and equipment obsolescence the State has migrated to a 3G public data network that currently only covers the high population areas within the State to provide critical data capabilities for first responders. However, this platform has limited ability to support many of the latest public safety applications that require higher bandwidths that will be available in new 4G platforms. The Commission has also recognized that existing public systems are inadequate to transport the data and video information required to provide the situational awareness required by the Nation's first responder community.

Tennessee needs, and stands ready to deploy, an interoperable Long Term Evolution ("LTE") public safety broadband system on the 700 MHz PSBL spectrum that could help form a part of the nationwide public safety broadband solution. Tennessee's request is consistent with previously granted waivers to other jurisdictions that allow early deployments which will leverage 4G LTE technology also being deployed by commercial providers.

The Tennessee vision is to create a distributed network of first responder agencies with the ability to leverage multiple applications in use by multiple agencies and distribute that information to command and control centers located statewide. By placing this information on an accurate mapping system with overlays which depict critical components necessary for defense and sites to be defended, which is then transmitted to

command centers as well as the Mobile Data Terminals, this system will provide the Incident Commander with a level of situational awareness which is currently unavailable. Supplementary software will enable “command center to command center” status of forces and activity while secure audio/video conferencing technology will allow decision makers to confer prior to the commitment of forces to a particular action. Such a capability enhances coordination of action.

In essence, every officer from command at the various HQ’s to forces deployed for tactical response share an accurate “picture” of an on-going event. This defines Domain Awareness and will facilitate accomplishment of the defensive mission. With broadband wireless communications resources available to the First Responder in Tennessee, police officers would know quickly and silently that the vehicle they are stopping is stolen or that the individual they are interviewing is wanted or dangerous. They would be able to conduct photo lineups of suspects while still at the crime scene, and be able to access web-enabled surveillance cameras in public facilities to gain intelligence critical to the safe resolution of blockaded or hostage incidents.

Firefighters would know which routes were blocked due to construction or accidents, which hydrants are out of service, and what hazardous conditions exist as soon as the data is updated by Police, Water Departments and Building Inspectors. Medics would be able to stream patient’s vital signs and video views of the patient to the Emergency Rooms and Medevac helicopters, allowing doctors to better and more quickly diagnose and issue orders for treatment while the patient is en-route to the hospital. Emergency Managers would be able to receive real-time data and video from incident sites, teleconference with the Incident Commanders, and quickly share critical

information, and mobilize essential resources to ensure the swift and safe resolution of the emergency situation. These are some of the benefits and uses deployment of an interoperable broadband network designed to meet the needs of Tennessee can bring. Once the network is deployed and available, experience in its use is likely to reveal many more beneficial uses.

Tennessee is prepared to deploy a public safety broadband network in the 700 MHz band in the near-term future to serve as the next generation of its mobile data network. Deployment of such a network in Tennessee will enhance day-to-day, task force and mutual aid response through support of a full spectrum of interoperable IP multimedia applications, including:

- Streaming video (surveillance, remote monitoring)
- Digital Imaging
- Automatic Vehicle Location
- Computer Aided Dispatching
- Email
- Mapping/GIS
- Remote Database Access
- Report Management System Access
- Text Messaging
- Telemetry/Remote Diagnostics
- Web Access

A broadband public safety network in Tennessee will support applications that currently cannot be supported over existing narrowband or wideband wireless data

technologies. Tasks that require the consumption of substantial time to communicate between dispatchers and other officers on narrowband voice systems (*e.g.*, database lookups and dispatch messaging) could also be off-loaded to broadband spectrum, significantly reducing narrowband channel load and providing increased voice capacity. In addition, allowing police officers to have remote access to databases (*e.g.*, DMV, warrants, missing persons and stolen vehicle databases, etc.), remote form entry and reporting and web access will enhance public safety by increasing officer efficiency, reducing paperwork and allowing officers to spend more of their time on patrol.

Broadband networks will allow mission-critical information to be exchanged in real-time, anytime, anywhere coverage is built out. Distribution of images (floor plans, mug shots, incident stills), videos (surveillance feeds, on-scene video), messaging, access to incident management databases provide a common operating picture and access to information from the field, enhancing both incident response and first responder safety. Finally, broadband networks will allow for the secure, easy and interoperable sharing of information (voice, video and multi-media data) among members of a task force.

To realize all these important benefits, however, Tennessee requires the Commission's authorization to operate its own network which can be integrated into the larger nationwide deployment as that occurs over time. Therefore, we urge the Commission to grant Tennessee's waiver as soon as possible.

II. Leveraging Established Governance, Experience and Resources

The existing P25 network serves as a model of interoperability while at the same time is designed to meet public safety operability requirements for mission critical voice and low speed data communications. Given the availability of new broadband fourth

generation (4G) Long Term Evolution (LTE) technology, the State would like to supplement the current voice capabilities with broadband data and video applications.

A key benefit of the current network is the established governance structure. Technology is only one key element of a successful interoperable public safety communications system. Under the current governance structure users from multiple public safety state, local, and Federal agencies have the capability to communicate with one another as needed and as authorized.

While communications technology is an essential tool, *people* are in charge of protecting the public and responding to dangerous incidents. Agencies using the current P25 network have successfully broken down a number of barriers that historically hampered interoperability. In addition to the technical capabilities, sharing the P25 system has enabled jurisdictions and departments to collaborate on planning for disaster responses and to conduct practice drills and scenarios before actual disasters occur. This planning and practice is essential to improve communications interoperability and a more effective response when an actual natural disaster or major event does occur. This has significantly improved communications for prevention and response activities.

Grant of the requested waiver will leverage the established governance structure already in place and will help expand public safety communications capabilities beyond voice and low speed data also to include broadband capabilities such as high speed data and video. The resulting broadband system will be designed to be fully interoperable, consistent with conditions as recommended by the public safety community and required by the Commission. Expedient grant of this waiver will allow Tennessee to pursue deployment of an interoperable broadband network in the 763-768/793-798 MHz band

under a spectrum lease agreement with the Public Safety Spectrum Trust (PSST) which holds the nationwide license for this spectrum.

The governance structure established by Tennessee has been invaluable in serving as a key focal point for communications interoperability planning, practice and implementation across the state. Tennessee looks forward to leveraging this existing and proven governance structure to move forward beyond voice communications and enable interoperable broadband high speed data and video capabilities. In addition to its people and process resources, Tennessee has a number of physical resources that can be leveraged to deploy a broadband system.

For example, one of the largest costs in any communications system is the establishment of antenna sites. Tennessee already has access to over 100 antenna sites. These sites can also be used to support antennas, provide backup power and house equipment for the broadband system. While additional sites will be needed for broadband compared to those for narrowband operation, existing resources can significantly contribute toward system deployment.

III. The Requested Waiver is in the Public Interest

The public interest will be served by allowing Tennessee to engage in the early deployment of an interoperable broadband LTE system in support of public safety, homeland security, and first responder communications. The Commission's rules require that to obtain a waiver, a petitioner must demonstrate either that (1) the underlying purpose of the rule(s) would not be served or would be frustrated by application to the present case, and that a grant of the waiver would be in the public interest, or (2) in view of unique or unusual factual circumstances of the instant case, application of the rule(s)

would be inequitable, unduly burdensome, or contrary to the public interest, or the applicant has no reasonable alternative. Under either of these standards, the requested waiver allowing Tennessee to deploy a public safety broadband network in advance of the National Public Safety Broadband Network is justified.

The underlying purpose of the Commission's rules for the 700 MHz public safety broadband spectrum was to provide for the expeditious deployment of new interoperable broadband communications capabilities for public safety agencies that would leverage technologies used in the commercial market. The Commission rules in place had envisioned that the public safety broadband network would be deployed under a public/private partnership by the auction winner of the adjacent "D block" spectrum.

Those rules severely limit and discourage any local agency deployment. Under these rules, the D block licensee will have the "exclusive right to build and operate the Shared Wireless Broadband Network encompassing both the PSST and D spectrum blocks."² However, the failure of the D block auction in 2008 introduced significant delays in that plan. In its recent Third Report and Order, the Commission noted the significantly changed circumstances since the unsuccessful attempt to implement a mandatory public/private partnership in 2008 and issued a "stay" of existing mandatory partnership rules. However, in doing so, the Commission also noted that during the pendency of the current rulemaking, public safety entities seeking authorization for early deployment must still apply for a waiver.³

² 47 CFR, Sections 27.1330 and 90.143 of the FCC rules.

³ *Third Report and Order and Fourth Further Notice of Proposed Rulemaking*, PS Docket 06-229, released January 26, 2011 at paragraph 14.

Grant of the requested waiver will resolve the problem faced by Tennessee in accessing the public safety broadband spectrum by granting the State of Tennessee's requested waiver for early deployment of a public safety grade broadband network, pursuant to a spectrum agreement with the PSST. Grant of the requested waiver will provide great public interest benefits by allowing the state to move forward and implement an interoperable public safety broadband network the 763-768/793-798 MHz band without further delay.⁴ Also, a waiver grant to the State of Tennessee will enable a plan that helps ensure once the system is built, it will meet the unique needs of public safety agencies in our area.

The tragic events of September 11, 2001 and Hurricane Katrina made clear that public safety entities need more interoperable communications capabilities. The reality is that the deployment of a full coverage nationwide network from which local public safety entities can obtain broadband services could be years away.

Tennessee is willing to commit resources to bridge this gap so that its first responders can utilize broadband technology to protect life and property immediately. While we wait for resolution of the Commission's proceeding, the need for deployment of broadband technologies remains critical. To serve the public interest requires that State and local jurisdictions be permitted to deploy their own interoperable, broadband public safety communications networks, as was recently granted to the 21 jurisdictions in the *Waiver Order*. In these unique circumstances, waiver of the rules providing for deployment in the 763-768/793-798 MHz band under a spectrum lease agreement with

⁴ Should Congress reallocate the additional spectrum in the D block to public safety, Ohio would subsequently seek a modification of its waiver grant to allow operation also on the D block spectrum.

the PSST will serve the public interest. The public interest would be served by a Commission grant of the waiver requested herein, and the State of Tennessee requests favorable action on this request be taken expeditiously.

Grant of the requested waiver will provide great public interest benefits by allowing the state to move forward and implement broadband public safety service in a timely manner and under a plan that helps ensure once the system is built, it will meet public safety needs, both for operability and interoperability. Granting of the waiver will also allow the state to leverage existing communications sites and its extensive experience in interoperability governance gained through the P25 initiative and its predecessors to help deploy an interoperable broadband network. Technology and communications in particular play an increasingly important role in providing public safety and homeland security. It is impossible to predict where the next natural or man-made disaster, criminal incident, or terrorist event will occur. Therefore, all jurisdictions must be as prepared as possible to deal with such incidents.

The State of Tennessee looks forward to an expeditious Commission grant of the requested waiver and authorization to deploy a public safety broadband interoperable network. Public Safety requires constant vigilance and response 24 hours a day, 7 days a week and such a broadband network will provide essential tools to keep pace with the expanding requirements and risks we face. Criminals are no longer limited to voice communications and neither should the police officers, firefighters and emergency medical personnel that serve the residents of Tennessee.

Broadband communications will provide an extremely important addition to voice communications systems. A public safety grade broadband system will allow public

safety personnel in the state to quickly and securely access databases in the field and to transmit images among personnel and with the command centers within the state.

The advanced applications enabled by LTE will serve both essential prevention and response activities. Expeditious database access and image transfer can provide critical information that offers the extra margin between life and death. Further, with the deployment of LTE broadband technology already endorsed by public safety leaders and the Commission, the State can provide a broadband network which provides not only operability but also interoperability and technology leveraged off of commercial economies of scale.

It is essential that broadband deployment in the state be accomplished in a manner that serves our respective jurisdictional operability requirements, is interoperable across our jurisdictions, and enables interoperability, as authorized, by any visiting jurisdictions that come to our assistance in times of disaster and is cost effective. Grant of the waiver will allow the Tennessee to pursue public funding and/or its own public/private partnership to commence construction and deployment of a broadband system, under a spectrum agreement with the Public Safety Spectrum Trust (PSST). The state is well positioned to deploy and provide interoperable public safety grade broadband communications that meet the requirements of this area if the spectrum is made available. With a grant of the waiver, the State can move forward to plan and deploy an interoperable public safety broadband network.

IV. Interoperability

LTE is a commercial open standard technology which is being deployed by commercial wireless operators in the commercial portions of the 700 MHz band today.

Tennessee agrees with the Public Safety Spectrum Trust and the Commission that the selection of LTE as the common air interface technology for use in the public safety 700 MHz band is an essential first step towards achieving the goal of nationwide interoperability. Tennessee is planning deployment of a LTE network to support public safety operations. Tennessee is aware and supportive of a similar waiver request by the Tennessee Valley Regional Communications System (TVRS). Tennessee intends to fully cooperate and participate in TVRS' plans that will provide coverage in the eastern portion of the State of Tennessee. This waiver request envisions LTE service to be implemented by the State of Tennessee for the balance of the state and will be fully interoperable with TVRS' implementation. This LTE system will be deployed to operate on a paired assignment of 5 MHz wide channels in the public safety broadband block between 793-798 MHz for mobile transmission and 763-768 MHz for base station transmission. The equipment deployed in the band will be compliant with the 3GPP Release 8 standards, as mandated by the previous Commission interoperability requirements for waiver grantees.⁵

Moreover, at a minimum, the LTE system deployed in the Public Safety Broadband Block will initially support the applications specified in the *Waiver Order*: (1) Internet access, (2) VPN access to any authorized site and to home networks, (3) a status or information "homepage," (4) access to responders under the Incident Command System, and (5) field-based server applications.

Tennessee agrees with the Commission, public safety, equipment manufacturers and commercial wireless service providers that roaming is a "fundamental requirement."

⁵ The LTE standard is progressing with additional updates beyond release 8. If allowed by the Commission, a later release of the LTE standard could also be considered for deployment.

Tennessee will support roaming to all interoperable 700 MHz public safety authorized users in the 763-768/793-798 MHz band and will support roaming to future regional, state, and Tribal public safety authorized users as specified in the *Waiver Order*. Finally, Tennessee agrees to adhere to the technical criteria that the Emergency Response Interoperability Center establishes via Commission rules.

V. Conclusion

In light of the critical public safety and national security requirements at stake, the State of Tennessee urges the Commission to grant the requested waiver expeditiously. Grant of this waiver request is in the public interest and will further both public safety's and the Commission's goal to deploy a nationwide interoperable 700 MHz public safety broadband network. A grant is also consistent with Congressional interests in enabling interoperable broadband communications for public safety as soon as possible.

Respectfully submitted,

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Signature Colonel T. G. Trott

Date 1-17-12