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

In the Matter of	)	
Review of the Commission's Rules Governing the	)	WT Docket No. 17-200
896-901/935-940 MHz Band	)	

To: The Commission

REPLY COMMENTS OF MISSION CRITICAL PARTNERS, INC.

These comments are submitted in response to FCC-17-200, Notice of Inquiry, adopted August 4, 2017.

Mission Critical Partners, Inc. ("MCP") is a consultancy focused on the public safety communications industry. Within MCP its Radio and Wireless Practice is staffed by seasoned professionals with decades of experience in land mobile radio systems design, implementation, and operation. Members of the staff participated in dozens of projects that involved the planning, negotiations, and supervision of the implementation of 800 MHz rebanding of some of the most complex interoperable public safety trunked systems.

MCP was asked by PDV Wireless to share our perspective on the practicality of a successful reconfiguration of the 896-901/935-940 MHz band in a manner that will not disrupt mission critical operations of incumbent licensees. Our comments are based upon observations of best practices that evolved through the planning and execution of the 800 MHz band reconfiguration.

While there are similarities between the 800 MHz and 900 MHz bands with regard to the steps below, which may be applicable to any system reconfiguration, there are differences as well. In particular, the greatest and most time-consuming complexities of 800 MHz rebanding

arose in the context of large public safety systems, generally operating primarily on NPSPAC channels. Complex interoperability webs of cross programmed mobile and portable radios required careful planning of the sequence of reprogramming radios to prevent loss of functionality. Because few non-public safety systems have extensive interoperability arrangements, and since public safety entities are not eligible to hold 900 MHz licenses, these complications are not likely to arise at 900 MHz.

Both in terms of the number of affected systems and their complexity, incumbents in the 900 MHz band more closely resemble the types of systems handled in Phase I of 800 MHz rebanding that needed to be moved to make room for NPSPAC licensees. Many of those systems were small, comprised of only a few channels. Moving them to different channels was a straight forward, relatively simple process. Even the larger Phase I systems operated by public safety, utilities and other licensees with mission critical responsibilities did not involve the interoperability and equipment challenges that we encountered with NPSPAC systems. The steps below describe what was required to complete the most complex rebanding projects without any loss of functionality. The effort may be considerably less challenging for a significant number of 900 MHz systems.

Planning

Success in reconfiguration of the 900 MHz band will be measured by the absence of any interruption of mission critical communications and minimal distraction of operational personnel from their core missions. In the 800 MHz reconfiguration, in which MCP staff was involved, no significant interruptions of service occurred. This success was attributed to the effort expended on planning and rehearsing the reconfiguration process and the active involvement in planning by the myriad stakeholders affected by the process.

Scheduling

Implementation of a complex project requires sufficient time to permit attention to the details that permit a seamless implementation of a reconfiguration. Planning and execution of reconfiguration of some of the most complex interoperable public safety communications systems took several years. It is important that realistic schedules be implemented that are sufficiently flexible to accommodate a range of complexity from single site, small fleet systems to statewide or region-wide interoperable systems.

Baseline

In successful reconfigurations the same level of care that was applied to the initial design and implementation of the affected radio communications systems was applied to the rebanding process. A vital first step was to document the baseline from which the process would commence. For example, Information such as coverage acceptance test results from the original system implementation may be needed to establish the baseline for comparable facilities post-reconfiguration.

In the 800 MHz reconfiguration it was common to find that “as built” documentation had not been kept current as modifications and expansion of systems occurred. Asset inventories, including user equipment, were often inaccurate and missing equipment was common. Time will need to be spent inventorying the systems, documenting, to the level of control cards, RF subsystems, software and firmware revisions, and current revision spares, that are in use or on hand.

Coverage enhancement devices such as bi-directional amplifiers and distributed antenna systems that are associated with radio systems need to be documented and certified for use on a different frequency set. Vehicular repeaters need to be assessed for the ability to be returned or modified to new frequencies. Devices controlled on radio channels, such as public warning

sirens and PA systems need to be inventoried and assessed for modification.

RF components such as transmitter combiners, duplexers, receiver multicouplers, tower top amplifiers, and antennas need to be assessed as to bandwidth and compatibility with the proposed frequency change.

Tower space and capacity for “swing” or replacement antennas must be evaluated in advance of work. Antenna bandwidths must be assessed for compatibility with the new frequency set. The desirability of installation of new antennas for the final configuration was verified. Antenna support brackets and cable supports need to be verified.

An operational overview is an important step in planning the execution of the reconfiguration. This step involves a review of each user group, their method of operating on the network, critical times of day or week, location of personnel, and interoperability capabilities in place.

RF planning of compatibility of the new frequencies with existing frequencies at sites should be performed as soon as the channels for relocation are known. Co-channel licensees should be identified to determine if new sources of on-frequency interference may be present.

A technology risk assessment of changeout of subsystems, for example availability of parts or circuit cards if a failure occurs during reconfiguration. Availability of software support for subsystems that may be affected by reconfiguration should be verified.

Implementation planning

Public safety agencies affected by the 800 MHz band reconfiguration planned around scheduled events, such as the Super Bowl or Presidential Inauguration, to avoid any rebanding work when events with the need for large public safety presence were scheduled. Other cautionary scheduling of reconfiguration work included the Atlantic hurricane season and winter months when site access was problematic. Utility companies are cognizant of periods when

emergency response may be required, such as months with potential ice storms, thunderstorm season, or when scheduled maintenance or refueling of generating plants is planned. Implementation plans were implemented that allowed work to be stopped at any time without system interruptions to allow for unanticipated events to be handled.

Successful plans included a "retreat path" so that if a critical component failed during reconfiguration there was a method of returning to the existing system. This planning included the use of additional antennas and transmission lines, combiners, back to back repeaters, "swing equipment" that would be configured, set up and operated, on legacy channels while primary equipment was reconfigured, and removed when work was completed.

In rare instances legacy systems beyond factory support were viewed as too risky to attempt rebanding when there was no retreat path. In such instances full or complete replacement of fixed network equipment was accomplished.

Conclusion

Application of the experience gained in the reconfiguration of the 800 MHz band and the best practices developed can be applied to reconfiguration of critical infrastructure industry mobile communications systems. Attention to lessons learned from the 800 MHz reconfiguration can lower the risk of service interruptions and negative effects on the core operations of the organization.

Respectfully submitted,

MISSION CRITICAL PARTNERS, INC.

By: */s/ David F. Jones*
Principal and Senior Vice President
690 Grays Woods Blvd.
Port Matilda, PA 16870
(888) 862-7911

November 17, 2017