

Before the  
Federal Communications Commission  
Washington, DC 20554

In the Matter of )  
)  
The Development of Operational, Technical )  
And Spectrum Requirements For Meeting ) WT Docket No. 96-86  
Federal, State, and Local Public Safety )  
Agency Communication Requirements )  
Through the Year 2010 )

To: The Commission

**REPLY COMMENTS OF THE STATE OF CALIFORNIA  
IN RESPONSE TO  
FOURTH NOTICE OF PROPOSED RULEMAKING**

The State of California (hereinafter "State") as represented by its Department of General Services, Telecommunications Division hereby submits the following Reply to Comments submitted by other parties in response to the Commission's *Fourth Notice of Proposed Rulemaking*, FCC 00-271, released August 2, 2000, (hereinafter "*Fourth NPRM*"), in the above-captioned proceeding.

The State notes the broad support given to the adoption of Project 25 Phase I (12.5 kHz mode of operation) as the standard mode of operation on the Interoperability Channels within the 700 MHz band. The primary opposition to such adoption came in a

joint filing submitted by the American Association Of State Highway and Transportation Officials, the Forestry Conservation Communications Association, the International Association of Fire Chiefs, Inc., the International Association of Fish and Wildlife Agencies, the International Municipal Signal Association, and the National Association of Foresters (hereinafter referred to as the “Joint Commenters”). While the Joint Commenters claim to represent state agencies in all fifty states, the State of California does not concur with their filing on two issues.

First, the Joint Commenters suggest that equipment cost should be an overriding factor in the selection of a standard and that based on this factor alone, the Commission should consider adopting TETRA<sup>1</sup> as the standard. While the State agrees that equipment cost is a significant factor, the Joint Commenters have neither considered all of the costs associated with implementing interoperability nor considered all of the operational impacts of their recommendation.

The Joint Commenters suggest that the cost for Project 25-compliant subscriber equipment will be in the range \$3-4,000 whereas the cost for TETRA-compliant equipment will be in the range \$800-2,000<sup>2</sup>. The State is unable to confirm this pricing data and believes it to be highly speculative. Of more concern is the failure to include the additional costs for infrastructure that are necessary for implementation of a TDMA-

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<sup>1</sup> A European standard developed by the European Telecommunications Standards Institute (ETSI). TETRA utilizes a 4 time slot time division multiplexing (TDMA) scheme that allows four users to share a single 25 kHz wide radio channel.

<sup>2</sup> Comments of the Joint Commenters, p. 7

based system, such as TETRA<sup>3</sup>. As noted in the State's comments in this proceeding, it is not possible to predict where or when a disaster or other emergency requiring implementation of the interoperability channels will occur. Thus, any TDMA-based interoperability system would require that the infrastructure for such system provide ubiquitous coverage throughout the nation so as to ensure it would be available whenever needed. However, constructing this ubiquitous infrastructure is neither practical nor cost effective. Based on its own analysis, the State believes that over 5,000 radio sites would be required to provide ubiquitous coverage within the boundaries of California<sup>4</sup>. To then provide availability of all 32 interoperability channels on the chance that a large-scale emergency (such as a major forest fire) might require their usage illustrates the enormity of implementing an effective TDMA-based interoperability system. Conversely, an FDMA-based system is capable of operating without an associated infrastructure.

The State acknowledges that a TDMA-based interoperability system supported by infrastructure would allow individual subscriber units to communicate over a larger area than would be possible with a FDMA-based interoperability system not supported by infrastructure. This "reduction in range", however, is not necessarily detrimental. A significant portion of the communications occurring during a large-scale emergency is within and amongst tactical teams<sup>5</sup>. Most often, the members of these tactical teams are

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<sup>3</sup> TDMA-based systems require that all subscriber equipment be synchronized to a single central clock such that each "knows" when its assigned time slot begins and ends. FDMA-based systems are not restricted to specific time slots and thus do not require clocking information from the infrastructure.

<sup>4</sup> To support this estimate, a TETRA system being installed in Great Britain is reported to include 3,200 radio sites to cover an area of 94,000 sq. mi. as opposed to the 159,000 sq. mi. area of California.

<sup>5</sup> Such as fire strike teams, search and rescue teams, squads of law enforcement personnel

within close proximity to one another thus allowing direct unit-to-unit communications. In fact, the limited range of direct unit-to-unit type communications may be preferable since it allows for a single channel to be reused in several areas of a large-scale event with minimal interference between the different teams. In this situation, the greater range provided by operating through the infrastructure may be detrimental since it limits channel reuse in different areas of a single event as well as in different nearby events.

The State also acknowledges that TETRA offers a direct unit-to-unit mode known as the “DMO” mode. However, it appears that in the DMO-mode, TETRA provides only one voice-per-25 kHz of bandwidth. This is one-half the spectrum efficiency of the one voice-per-12.5 kHz of bandwidth offered by the Project 25 Phase I systems and only one-fourth the spectrum efficiency desired by the Commission. This reduction in spectrum efficiency translates into fewer channels being available for emergency operations and, thus, would have a significant impact upon public safety’s ability to respond to a large-scale emergency event. Furthermore, the State is concerned about descriptions of this DMO-mode as being “full duplex”. A “full duplex” communication implies a conversation involving only two units with both parties capable of “talking” simultaneously. Public safety tactical communications, however, do not involve just two units. Rather, it involves several units, each of which needs to be capable of “talking” with all of the other members of the tactical team. Thus, public safety does not need or want “full duplex” communications; it needs and wants “simplex” communications with all members of a tactical team sharing use of a single time-slot.

The above arguments notwithstanding, the State supports adoption of a standard only as it might be applicable to the Interoperability Channels. It does not support adoption of any standard at this time for operations on the General Use Channels. While the State believes that “locking in” a single standard for operations on the Interoperability Channels is essential to opening the 700 MHz band to public safety use, it also believes that development and implementation of digital communications systems for public safety use is too immature to justify locking in a single technology on the General Use Channels. Individual users must be allowed to evaluate the various technologies being offered and to select a technology they find to be most appropriate to their own day-to-day operational needs.

Secondly, the State does not support the Joint Commenters’ contention that the Commission does not need to prescribe use of a pre-coordination database. As noted in its Comments on the Fourth NPRM, the State believes the failure of a region to input its own plans into a database accessible to adjoining regions or to consider the plans input by other regions into a common database prior to making frequency recommendations is likely to result in conflicts. While the State has enjoyed relatively few conflicts with its own adjoining regions, there nonetheless have been some conflicts. It also is aware of some serious conflicts between other regions across the country that could have been minimized by the prior exchange of information between regions. For this reason, the State urges the Commission to require all regions and the four frequency coordinators to use a common pre-planning database such as the database being developed by the National Law Enforcement and Corrections Technical Center (NLECTC) in Denver.

In summary, the State of California urges the Commission to adopt Project 25 Phase I as the standardized mode of operation on the Interoperability Channels. The State further urges the Commission make an early decision on this matter so as to open access to the 700 MHz band as soon as possible. Finally, the State urges the Commission to require all regions and frequency coordinators to utilize a common database to maintain pre-coordination information about frequency allotments.

Respectfully submitted,

October 10, 2000

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