



King County
Information and Telecommunications Services Division

Department of Executive Services

700 5th Avenue, Suite 2300

Seattle, WA 98104-5002

Phone (206) 296-0600

FAX (206) 263-4834

May 6, 2002

Marlene Dortch, Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: WT Docket No. 02-55

King County (Washington) is pleased to have this opportunity to provide comment on WT Docket No. 02-55. King County is the most populous county in Washington State (approximately 1.7 million) and the center of the economic vitality for the Puget Sound region. In conjunction with other local governments, King County operates a countywide 800 MHz trunked radio system (using both “806” and “821” or NPSPAC spectrum) that provides services to over 13,000 police, fire, emergency medical and government service radios across our 2,200 square mile area. The region also has other 800 MHz voice and data systems operated by other governmental entities (such as our port authority and the State’s Department of Transportation) that we need to interoperate and coordinate with in the delivery of our various public services.

The King County trunked radio system has been experiencing an increasing number of interference problems from commercial wireless sites, most often Nextel sites. While the work we have done with Nextel and other carriers has usually been able to provide some mitigation of individual problem locations, these efforts do not seem to be getting us any closer to an overall systemic solution that will meet our needs in the long run. Instead, the modifications the carriers make (such as lowering transmitter power, changing antenna patterns, changing frequencies, etc.) appear to be changes they aren’t interested in sustaining for the long term due to the impacts they have on their service delivery interests. We have also had experiences where changes made at a commercial site to resolve a problem with one of the multiple 800 MHz systems in our region results in a problem being created for one of the other systems.

The NPRM (FCC 02-81) begins the process of exploring and solving an exceptionally complex and challenging situation. In the short Comment cycle provided, we have not been able to conduct an in-depth review and response to the multitude of individual questions posed in the document. In fact, it seems clear that the Commission’s intent in issuing such a complex proceeding with such a short Comment cycle was specifically intended to get the most critical

viewpoints voiced early to help guide further proceedings that can sharpen our collective focus on viable solutions.

The most important factor that we want to emphasize as any future directions are established is that local governments need to be assured that they will be fully compensated for any costs they incur in the implementation of a solution. We have invested a considerable proportion of our taxpayers' resources in building our incumbent system (approximately \$75 million to date in infrastructure and subscriber equipment), and any solutions that involve modifications to those systems should not cost our taxpayers a second time. These systems worked fine the way they were originally designed, and it is the more recent intense sectorizing of the carrier systems, particularly the Nextel system, that presents the biggest challenge to our formerly effective systems.

Further, the overall costs of moving public safety systems to alternative band plans will be exceptionally high. This is not going to be a simple act of "retuning" some radios to new frequencies as some have characterized. Instead, this will be a highly complicated and intricate engineering undertaking that will require considerable up-front resources to do all of the spectrum planning and licensing work that will need to be accomplished before the first "retune" even takes place. Then the hard part will start.

Our radio sites are delicate balances of frequencies that have been selected to not only fit within the convoluted band-plan we currently live in, but also to allow antenna combining schemes to minimize the impacts a trunked radio system can have on a tower site. Often ten channels are combined into a single antenna feed, and changing even one frequency in the mix can cause a total re-engineering of the combining system. Our county is also in close proximity with Canada (Region 5) and collectively in the "806" and "821" have a significantly smaller number of channels to work with, further complicating our channel selection and engineering alternatives.

Further, it is highly likely that a re-managed band plan will result in the need to make software, firmware or other changes in our radio system infrastructure and/or subscriber equipment to accommodate the new band plan. In our situation, with over 13,000 radios operating in several hundred individual customer agencies, the logistics and resources to accomplish this work would be considerable. There will also be considerable disruption to the day-to-day work being performed by our public safety and government employees as the various changes and migrations are executed. This does not seem to be in the public's interest.

The combined effect of these constraints leads us to the conclusion that implementing any of the proposed band-plans suggested to date would be incredibly complex and expensive. Our systems will need to remain at full operational capacity and functionality during any migration to an alternate band plan. Therefore, the only approach that seems reasonable will be for some "green space" to be defined in the 800 MHz band to allow a smooth transition. Since all the available spectrum is currently filled with tightly packed and coordinated channels and systems, there seems to be no reasonable way to accomplish a re-banding without someone having to move out.

While this is the essence of the Nextel plan, it comes at the expense of numerous 800 MHz users in both public safety and B/ILT categories (who are not causing interference problems) facing considerable relocation complexity and cost. One alternative viewpoint would be for Nextel to be the one that relocates, since the history would indicate that it is the introduction of the ESMR technology and system design approach in the band plan, not the band plan itself, that has created the current problems. Our radio system is designed with what is often referred to as a noise limited design approach, and the introduction of the low-HAAT and relatively high-powered ESMR continuous-duty digital transmitters (in what is often called an interference limited design approach) is what has resulted in the interference problems we are experiencing.

While the same low-HAAT and high-power situation we are experiencing with ESMR sites could certainly occur between public safety or B/ILT systems, these systems often share a more consistent design approach and technology base, and far fewer problems have been experienced to date. Further, the site-by-site channel assignment and frequency coordination processes used by public safety and B/ILT licensees help improve the opportunity for interference problems to be avoided in the first place. The physical characteristics of the ESMR technology, the design strategies used in these systems, and the area licensing used for this spectrum, combine to create a situation where interference is almost unavoidable under current mechanisms.

We are also concerned about the potential adverse impacts an alternative band plan will have relative to our close proximity to Canada in border sharing Region 5. The combined impacts of the reduced amount of spectrum available for our systems and the limits on signal levels within our service area already present us with significant challenges trying to find adequate useable spectrum on which to build our systems. We already have an extremely challenging time coordinating our site and channel selections to avoid interference to our Canadian neighbors, and changing the current balance may create a number of unintended and unfortunate consequences. While we would certainly welcome changes to the band structure that would result in additional public safety spectrum in the 800 MHz band, we are skeptical about how successful this can be given the technical and diplomatic challenges such an approach would face. We have not had time in the short comment cycle to analyze this situation, and we suggest that considerable administrative and engineering time be spent on this issue before any final decisions are made.

It has been suggested that one potential solution to the interference problem would be to make the public safety systems more “robust”. Basically, this would likely take the form of either increasing power levels from current sites or adding sites to improve overall signal density. While both of these are technically possible, they have a number of practical challenges that make this an almost impossible challenge. Adding sites can be an exceptionally long and costly undertaking, and even if sites were available, there isn’t enough spectrum available to public safety entities to populate those sites. Our system already uses a large number of simulcast sites to allow us to achieve the highest possible signal levels with the lowest possible number of channels. There are infrastructure and physical limits on the number of sites that can live in any simulcast group, so adding sites may require considerable changes to our overall system topology and require significant investments in infrastructure equipment.

Trying to move public safety to a more cellularized or interference-limited design approach, where our signal levels would compete on a more 1:1 basis with CMRS signals, also does not

seem realistic in the current spectrum situation. There are simply not enough channels to make it happen. If a re-banding approach brought the additional spectrum, it would be used up adding sites to overcome the interference problem, and no net gain of capacity would result for the public safety need.

Whatever course is ultimately chosen, the real art will be in the execution. We would fully support any approach that continues to utilize the concept of regional planning committees to help shape and guide the final outcomes and their execution. These committees provide an invaluable opportunity for agencies and individuals with common interests and concerns to work together to find strategies and solutions that help reach these common interests. We would also support strategies that utilize some form of nationalized database and engineering support that would allow the regional committees to utilize consistent data and consistent methods to achieve the highest degree of spectrum efficiency and system performance.

To accomplish this, the committees will need to be supported with a sustainable funding mechanism to allow them to perform their responsibilities effectively. Doing this with volunteer efforts, often from individuals from large agencies who donate their efforts, is not a business model that is sustainable or consistently effective. Local governments are facing exceptional fiscal and service level challenges and their ability to supplement regional planning efforts is eroding. That doesn't mean that regional planning is a bad approach, it just means that a different business model needs to be found to make it more effective and consistent across the country.

We would not support a move to apply narrow-band approaches to the 800 MHz band or to force the movement to digital technologies. Our analog system, with its significant utilization of simulcast technology, is highly effective for our needs and can serve those needs economically for many years to come if interference problems are resolved. A move to narrower and more closely packed spectrum would force exceptionally expensive changes in additional infrastructure and replacement of subscriber equipment. Again, moving the interfering technology may make considerably more sense than the profound changes public safety would need to make in response to radical action in band re-management.

It is also important to note that a fairly high degree of interoperability already exists in the 800 MHz band for public safety and government systems. Even with these systems operating in a mix of "806" and "821" channels, they are often implemented with compatible technologies to easily allow inter-radio and inter-system interoperability. In addition, the NPSPAC interoperability channels add another layer that allows dissimilar technologies to interoperate. In our region, we have several overlapping and neighboring 800 MHz trunked systems, some from different vendors, that have effective interoperability features programmed into subscriber radios and in the infrastructures. Changes to band plans or spectrum/technology principles in the band may result in unintended consequences of diminishing the effectiveness of the current installed base.

We recognize that interference in the public safety band is an extremely challenging and complex issue. We have been active in local and national efforts to assist in characterizing the problems, and look forward to further participation as potential solutions are offered, analyzed

and evaluated. We have a lot of work ahead of us, and we need to proceed quickly but also deliberately to make sure that the course of action that is selected doesn't come with costs and impacts that are adverse to the public interest. Clearly we feel that the public interest at the local level is the most important, since it is the day-to-day services offered by local government and public safety employees, and their actions in times of dire crisis, that are truly the front line of our nation's security.

Sincerely,

Kevin Kearns, Manager
Information and Telecommunications Services Division