



Washington State Auditor's Office

Performance Audit

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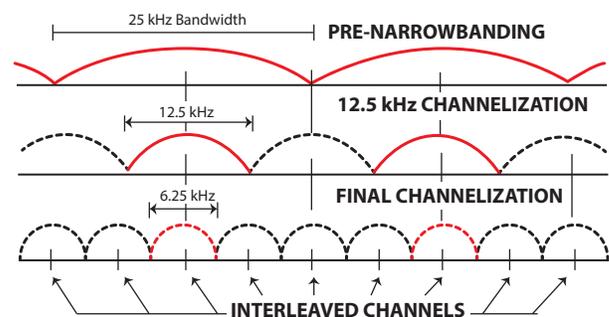
Washington State Patrol's Radio Narrowbanding Project

The troopers of the Washington State Patrol need reliable ways to communicate with one another, their dispatchers and other law enforcement officers, whenever and wherever they are on duty. For many years, their radio equipment used wideband VHF/UHF analog signals, but in 2004, the Federal Communications Commission (FCC) required all public safety agencies to convert their wideband radio systems to narrowband technology by 2013. In 2011, the State Patrol decided to meet this mandate by converting to narrowband digital technology and by merging its radio system with the U. S. Department of Justice's (DOJ) Integrated Wireless Network (IWN), built by Motorola. By using IWN, the Patrol hoped to streamline the conversion process, save money and avoid any loss of coverage for the troopers, even in areas where the wideband analog signals were poor but allowed for limited communication. And by sourcing equipment solely from Motorola, Patrol management believed they would be able to meet the narrowband mandate and achieve seamless interoperability with IWN.

In 2010, the Patrol requested \$60 million to fund its narrowbanding project; the Legislature approved an appropriation of \$40.1 million for the 2011-2013 biennium and \$12.5 million in planned appropriations for the 2013-2015 biennium. Over time, concerns arose among legislators, the Washington State Troopers Association and competing vendors that the Patrol's approaches to project planning, contracting and procurement, and partnerships did not meet their expectations or produce the best results for the state. We conducted this performance audit to examine these areas of concern, and to consider whether the Patrol had been transparent about outcomes resulting from its activities to meet the FCC narrowbanding requirement.

The recommendations we made concerning this narrowbanding project are important because the FCC anticipates imposing a second phase of narrowbanding, from 12.5 kHz to 6.25 kHz (see 'Final Channelization' in the illustration) to create even more radio channels. The State Patrol will need to conduct similar activities to meet that requirement in the future.

Narrowbanding permits additional users to use the available radio spectrum



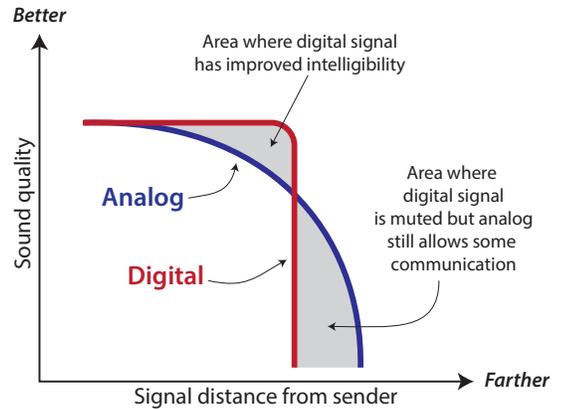
The State Patrol made decisions without a complete understanding of user needs and what digital radio technology could deliver

Historically, the Patrol's system has been a mix of older equipment installed without an engineering study. We found the Patrol could have benefited from the knowledge provided by such a study before designing its narrowband system or entering into agreements with Motorola and the DOJ. A study could have given the Patrol the information needed to ensure the proposed system design would be the best option to meet its needs and stakeholders' expectations. As a consequence, the Patrol had to significantly revise its narrowband system design, in turn adding years to the project and shifting responsibility for mitigating coverage issues for a large part of the system from Motorola to the Patrol.

We found the Patrol has likely maintained or improved coverage in some areas of the state that already had good coverage, such as the Puget Sound area. It has also successfully partnered with other public safety agencies, which has helped reduce the amount of additional funding the Patrol will need to address the coverage issues.

However, the Patrol has likely seen a loss of coverage in areas that already had poor coverage but which nonetheless allowed troopers to communicate with one another. The illustration at right shows the gap between the poor but usable sound quality analog signal produces at greater range compared to the better digital signal which drops off completely at the limits of its range. When narrowbanding in areas with poor coverage, additional radio towers are usually needed to match the signal distance that agencies had in wideband. This gap in coverage means troopers must sometimes use personal cell phones to communicate, and prompted a complaint by the Troopers Association to the state's Department of Labor & Industries.

Comparison between analog and digital signal



The Patrol can continue to improve its procurement and project management processes, and the way it communicates about them

Patrol management decided using the same manufacturer as DOJ used was the best, if not only, solution available to merge successfully with IWN and meet the FCC deadline. They worked with the Department of General Administration (now the Department of Enterprise Services) to award the contract to Motorola, for both infrastructure and radio equipment, without seeking competitive proposals. Although sole source contracts are allowed for purchases that are clearly and legitimately limited to a single source, seeking competitive proposals could have provided meaningful market information, such as the viability of alternative vendor approaches and products. Evaluating the appropriateness of future sole-source procurement will help ensure the Patrol receives the best value possible. Ensuring that project management tools and personnel with appropriate experience needed are in place at the outset will help the Patrol deliver any phase two narrowbanding projects more successfully.

Until recently, the Patrol did not fully communicate the system's current challenges and future risks to legislative members, but project reports are now available online, increasing project transparency. The audit recommends the Patrol work with the Governor's Office and the Legislature to establish a long-term plan to address the system's challenges.

Recommendations in brief

✓ We recommend the State Patrol:

- Continuously assess whether it is advantageous to stay merged with the IWN system
- Work with the Governor's Office to establish the minimum acceptable statewide coverage
- Work with the Legislature to approve funding for needed engineering studies, then conduct them to determine how much it will cost to achieve the desired coverage. Using these studies, work with OFM to establish a long-term plan and budget request for future project work
- Using the studies and long-term plan, work with the Legislature to help it decide the amount of project funding
- Prepare monthly online reports that disclose the status of its phase-one and future phase-two narrow-banding projects
- Before starting the phase two project, establish:
 - Needed project management tools and resources before signing any contracts for goods and services
 - Contract coverage requirements that match what the Governor's Office has agreed to, and are based on engineering studies and available funding