

## **OWIN DRIVE TESTS EARN INDUSTRY ATTENTION**

A decision to test some anecdotal evidence from Colorado about public safety communications systems will mean cost savings for Oregon and industry recognition for the Oregon Wireless Interoperability (OWIN) project group and Federal Engineering Inc.

OWIN is in the process of upgrading and consolidating the obsolete radio systems of four major state agencies and creating a P25 digital, trunked radio system with a digital microwave backbone.

As its staff and consultants were working through a conceptual radio system design process, OWIN was faced with the problem that there aren't enough VHF frequencies available to build a VHF radio system that meets its coverage and capacity goals.

"OWIN knew that there was a scarcity of usable VHF frequencies but there was a new 700 MHz band where frequencies were readily available," according to Don Pfohl, Technical Project Consultant to OWIN.

"The problem OWIN faced was the common assumption the 700 MHz band offered much less radio coverage than was possible in the VHF band."

OWIN Director Lindsay Ball had heard reports from Colorado that the loss of coverage when switching from VHF analog systems to 800 MHz digital systems wasn't as bad as had been believed. So he asked Pfohl if there were any definitive studies available to confirm the anecdotal evidence from Colorado. When told there was not, he had Pfohl work with Federal Engineering to develop a test project and conduct real and verifiable drive tests that would actually measure the difference in coverage.

So OWIN and Federal Engineering conducted a large-scale comparison of transmission results of digital transmitters in the VHF and 700 MHz bands. The results showed that while the VHF signal is definitely stronger, the difference that an operator can detect with the 700 MHz signal isn't as great as conventional wisdom said it would be.

Pfohl explains, "The study pointed out that the difference is not in the radio signal propagation difference between the two frequency bands but instead is in the change from analog to digital transmission. FCC rules require digital transmission in the 700 MHz band. Although the VHF signal is stronger, the 700 MHz signal incurs fewer errors because of the lower noise at 700 MHz and because of the more pronounced effect at VHF of receiving multiple signals off of reflecting surfaces. In essence, the VHF signal stays stronger but the recovered signal at 700 MHz retains an equal ability to decode digital signals at signal levels far below those at VHF."

As a result, OWIN decided that using the wide-open and unused 700 MHz band provided a viable and cost-effective option. Applying this to the OWIN project should

cut costs, greatly accelerate system implementation and improve performance for Oregon's public safety communications system.

These drive test results have captured the attention of the industry. Don Pfohl of OWIN, John Kessinger of the Oregon State Police and Neil Horden of Federal Engineering will be featured presenters on Wednesday March 18<sup>th</sup> at the International Wireless Communications Exposition (IWCE) in Las Vegas. If you'd like more of the details of the Oregon Drive Tests, you'll find attached Pfohl's recent presentation to the Oregon Statewide Interoperability Executive Council.