



Wyoming Communications Interoperability Educational Forum

The Wyoming Communications Interoperability Educational Forum was held November 6, 2003, in Cheyenne, Wyoming. This forum was the second symposium held in the State of Wyoming. The Wyoming Public Safety Mobile Communications (PSMC) Project Team, also known as the WyoLink Project Team, and the Wyoming Department of Transportation (WYDOT) co-hosted this 1-day educational forum, which drew many first



Figure 1: Wyoming Forum, Cheyenne

responders and policy makers from Wyoming, as well as from other states. These public safety and government officials came together to discuss the development of WyoLink—a Project 25 (P25) standards-based, digital, trunked very high frequency (VHF) system. WyoLink will be Wyoming’s new statewide public safety mobile communications system. SAFECOM, a federal program, agreed to sponsor this forum to help build on the progress made since the first Wyoming symposium held in November 2002 in Casper.

This event examined some of the issues specific to implementation of WyoLink and the current policy, funding, technical, and operational challenges facing the public safety community within the state as WyoLink is

implemented. The forum included presentations, a facilitated discussion between PSMC Steering Committee members, and working sessions that focused on developing a “consensus statement” regarding policy, funding, technical, and operational issues. Forum participants gained knowledge of the current communication interoperability problems that Wyoming is facing and the steps that Wyoming is taking to overcome these obstacles.

U.S. Senator Craig Thomas Welcomes the Public Safety Community of Wyoming

Laura Lewis, a field representative for U.S. Senator Craig Thomas, expressed her regret that the senator could not attend in person, but emphasized Senator Thomas’ support for

It is vital that we have a communications system that meets the needs of emergency responders—not just for the next few years but for generations to come....I applaud each of you for your commitment to enhancing Wyoming’s public safety communications.

U.S. Senator Craig Thomas
State of Wyoming

improving communications interoperability of Wyoming’s public safety community and the coordinated effort to implement WyoLink. His letter congratulated those in attendance for making Wyoming a safer place. He stressed the importance of public safety communications interoperability and described how WyoLink would help Wyoming achieve this goal. Senator Thomas then recognized the uniqueness of Wyoming’s geography and sparse population, and added that it would require a significant amount of work to upgrade existing public safety communications to meet the requirements of first responders for the future. He concluded his letter by declaring his support for WyoLink and urging attendees to keep him informed so

that he could help Wyoming obtain additional funding from federal sources to quickly implement WyoLink.

*Governor David D. Freudenthal
Emphasizes the Importance of WyoLink*

Governor David D. Freudenthal of Wyoming welcomed all speakers and attendees to the forum. He stressed his commitment towards improving communications interoperability for first responders and emphasized the urgency to begin implementation of WyoLink because completion of the statewide project would take many years. He noted his past commitment, as U.S. Attorney for Wyoming, to improving



Figure 2: Governor Freudenthal Welcomes Attendees

public safety communications, especially for officers and agents involved with criminal investigations and hostage situations. He pointed out that technical issues with the cities of Casper and Cheyenne would need to be resolved in good faith with a commitment to quickly improving communications interoperability throughout the state. In addition, he described the importance of addressing the issue quickly in order to improve the day-to-day working environment of first responders and the safety and welfare of the citizens of Wyoming regardless of city or county jurisdiction.

Governor Freudenthal reiterated his support for an independent Public Safety Communications Committee within WYDOT that would have oversight of the efforts of the WyoLink system. However, he noted the importance of the future Commission to represent the broader interests of the state, and to place the needs of first responders and the

public health and safety of the citizens of Wyoming as their first priority. He then recognized the efforts of the WyoLink Project Team, stating that the project did in fact represent the broadest vision of the state. He also stated that he felt confident that the Project Team and the Steering Committee would work to combat Wyoming's interoperability problem. He expressed interest in returning in a few years to discuss how the WyoLink Project Team had moved forward to make WyoLink a reality for the public safety community.

**The PSWN Program's Transition into
SAFECOM and the Department of
Homeland Security**

Mr. Rick Murphy, of the Department of Homeland Security, provided an update on the current status of the Public Safety Wireless Network (PSWN) Program being folded into SAFECOM, a national e-government program. He described how the PSWN Program would continue developing and implementing key technology and policy solutions under the SAFECOM umbrella across agencies at all levels of government. He also discussed how



Figure 3: Mr. Murphy Describes the Transition to SAFECOM

SAFECOM would coordinate all the efforts of local, tribal, state, and federal agencies working to improve public safety response through more effective, efficient, interoperable wireless communications.

In light of these changes, he reassured forum attendees that while the PSWN Program name would go away, the program's interoperability assistance efforts, publications, educational

forums, and leadership would live on under the SAFECOM umbrella. He indicated that the elements of the former PSWN Program would continue to provide the same technical and policy support and solutions, including outreach, policy, and standards activities, that it had in the past. He stressed that these critical program areas would not be replaced, but enhanced under the SAFECOM Program.

WyoLink: Wyoming's Public Safety Mobile Communications Plan

The PSMC Plan was finalized in October 2003. Based on a careful consideration of technical, operational, and financial requirements across Wyoming, the Plan consists of a set of recommendations to implement WyoLink.

The WyoLink Project Team and the associated PSMC Steering Committee are composed of local, state, and federal agencies that represent a cross-section of public safety and first responder agencies in the State of Wyoming. The WyoLink Project Team worked with consultants from Federal Engineering, Inc., to develop the PSMC Plan. The end result of the Plan will be a new P25 standards-based, digital, trunked VHF system that would be used by first responders across Wyoming.

In his presentation, Ron Bosco, the President of Federal Engineering, Inc., explained the foundation and basis for Federal Engineering's final recommendations. He stated that WyoLink was the direct result of an extensive needs, cost, and technology analysis consisting of two phases:

- Phase I: Understand Needs
- Phase II: Develop Recommendations.



After distributing surveys and conducting interviews over a 12-month period, Federal Engineering, Inc., developed three possible solutions that were viable for Wyoming.

Although a variety of solutions were considered, the top three options were completing a VHF (150 megahertz [MHz]) frequency band system, choosing an 800 MHz system, or keeping Wyoming's existing patchwork of analog systems. When the PSMC Project Team and Steering Committee finalized the analysis, the results recommended a statewide, VHF-high band, trunked, digital, P25 standards-compliant radio system with integrated voice and data, automatic vehicle location (AVL), and encryption capabilities.

These recommendations define the technical and functional architecture, as well as the budgetary requirements for a system that will provide improved coverage, improved interoperability across all state and local public safety agencies....The recommendations were made after careful consideration of all possible alternatives, including technical, operational, and financial factors.

PMSC Plan
Executive Summary

Mr. Bosco indicated that the recommended WyoLink system would provide the following improvements in Wyoming's communications—

- Full interoperability across all participating local, state, and federal agencies
- Integration of existing Casper and Cheyenne 800 MHz systems
- "Mutual aid" functionality for those who choose to wait or decline to participate in WyoLink
- An increase in statewide mobile coverage from 83 percent to 94 percent
- Full compatibility with the current and emerging (Association of Public-Safety Communications Officials–International [APCO]) P25 standards
- State-of-the-art, digital radio technology with voice, data, and encryption capabilities

- Trunking to improve channel efficiency and talk group administration
- Increased channel capacity, improved reliability, and enhanced disaster recovery capabilities
- Replacement of aging radio infrastructure and the addition of multiple control points.

Mr. Bosco added that WyoLink would resolve communication issues while reducing lifecycle costs. The figure below details the estimated cost of the three primary system alternatives.

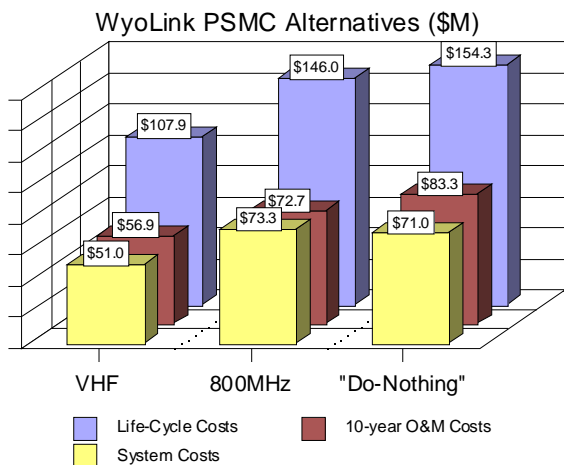


Figure 4: Comparison of WyoLink Alternatives

Panel Members Discuss the Impact of the PSMC Plan for the Public Safety Community

A panel consisting of six members of the PSMC Steering Committee, each from a different organization, was moderated by Mr. Robert Wilson, WyoLink Project Manager. The committee was tasked to represent the interests of county and municipal organizations, state agencies, and federal agencies throughout Wyoming. The panel discussion focused on moving WyoLink from system planning to implementation.

Mr. Wilson opened the discussion by giving a brief overview of the strategy behind the PSMC Plan. He explained that the group's approach was to strive for consensus before making decisions by talking through issues and then agreeing on principle. He then asked the panel members to share how their individual experiences had allowed them to make contributions to the committee.

Mr. Joe Evans, Executive Director, Wyoming County Commissioners' Office, contributed a small town perspective to the committee. He expressed a common theme of the discussion—no county would be forced to join if it was not able to do so, and if it did not join, that county could continue to communicate in the way it had in the past. He stressed that although WyoLink was the vision of the future, those that could not afford to change their current public safety system would not be forced to do so. Mr. Evans also stressed the advantages of pooling purchasing power between agencies to foster bulk discounts with vendors, and the importance of P25 standards because federal grants were mandating the procurement of P25 radio equipment in order to foster cross-agency interoperability.

Mr. Billy Janes, Chief of Police, Torrington Police Department, pointed out that the VHF system was ultimately the most logical decision because it was more cost efficient for smaller cities and counties. The VHF system was also the most optimal choice for agencies at all levels of government seeking to improve communications. Mr. Robert Wyatt emphasized the importance of governance and oversight at the state level, and the need to work with the state's telecommunications council to link the PSMC Steering Committee with the council's efforts.

Mr. Kelly Hamilton stressed the importance of statewide coverage to enhance the small coverage footprint of small cities and counties across Wyoming. Mr. Dave Johnson also stressed the importance of WyoLink for small cities and townships because these areas accounted for 68 percent of Wyoming's population.

Mr. Mark Joiner, Wyoming Bureau of Land Management (BLM), U.S. Department of the Interior, was the federal representative participating in the panel. He indicated that Wyoming posed unique challenges because a majority of the land was federal land that was managed by the BLM and the U.S. Forest Service. He stated that his agency was working to convert its radio assets to narrowband technology. He indicated that this conversion was necessary to meet the National Telecommunications and Information Administration (NTIA) mandate that requires all federal agencies operating land mobile

radio (LMR) systems in the VHF band to be using narrowband channels by January 1, 2005. He stated that because WyoLink would use the VHF frequency band, interoperability linkages would be easier to implement and sharing of resources would be facilitated.

Issues and Challenges for WyoLink

The Wyoming Forum offered two breakout sessions for attendees: 1) policy and funding, and 2) technical and operational. These sessions were held concurrently, allowing the attendees to choose the session that interested them most. The small size of the sessions encouraged participation and in-depth discussion from the audience. Subject matter experts, Mr. Steve Proctor, Executive Director, Utah Communications Agency Network (UCAN) (policy and funding), Mr. Jake Hunt, Operations Manager, UCAN (technical and operational), and Mr. Don Pfohl, Wireless Communications Manager, Oregon State Police (technical and operational) led the sessions.

The purpose of the policy and funding session was to discuss critical management and policy issues related to the implementation of WyoLink, such as acquiring initial grants and various funding sources, as well as the potential establishment of a Public Safety Communications Commission and subcommittees and their impact on implementing interoperable systems. The purpose of the technical and operational session was to discuss topics related to the technical and operational challenges of implementing WyoLink, such as talk group administration, P25 standards management, and radio encryption key management.

The breakout sessions were structured as working sessions in which the participants could formulate a set of issues or recommendations that could be used to provide insight and further direction to policy makers, state legislators, and WyoLink system planners.

Policy and Funding Issues and Challenges

Mr. Proctor correlated his experiences in planning, developing, and implementing a system for UCAN and the 2002 Winter

Olympics to that of preparing for the WyoLink system. He facilitated the discussion on policy and funding for WyoLink by addressing the following items:

- Vision
- Funding
- Governance
- Coordination and Partnerships
- Other Issues (i.e. legal, service contracts, and agency commitments).

After brief discussion, the audience agreed on a mutual vision statement by identifying what they wanted to accomplish, the short- and long-term impacts, who the stakeholders were, and how commitment to the system was defined. Mr. Proctor also asked the participants what they knew about funding for WyoLink—where to acquire it and what resources were in place. In addition, he offered an alternative way to approach funding for local agency participation in the system, i.e., receiving credit for the sites and equipment they could bring to the table. Taking this approach would help Wyoming to use the assets currently in place, especially the statewide digital microwave system and the existing 550 government radio sites.

Participants were asked whether Wyoming should proceed with establishing a Commission for this effort. The answer was a resounding yes because it would give the effort legal standing and help elevate the issue politically.

Mr. Proctor queried the group on how the system should help promote coordination and partnerships, and Mr. Wilson assisted in capturing the issues and recommendations. Overall, the session participants agreed that they wanted WyoLink to be a network that would bridge to other systems as seamlessly as possible and allow agencies using systems operating in other frequency bands to provide input and participate in the Commission's forthcoming subcommittees.



Figure 5: Mr. Proctor (left) and Mr. Wilson (right) Facilitate Policy and Funding Working Session

At the conclusion of the working session, the attendees highlighted the most important issues from the discussion. These included—

- Integrating WyoLink with other systems as seamlessly as possible
- Investigating all sources of funding, including state and federal grant resources
- Educating legislatures at the state and national level so they can lobby for Wyoming interests.

These ideas were later included in a “consensus statement” that allowed policy makers and state legislators to address issues raised by the session attendees during the forum.

Technical and Operational Issues and Challenges

Mr. Jake Hunt and Mr. Don Pfohl moderated the session and provided a wealth of technical and operational knowledge, since both of them had been managing and operating radio systems for more than 20 years. Both Mr. Hunt and Mr. Pfohl facilitated the discussion by addressing the following items:

- Interoperability linkages with existing 800 MHz systems
- In-building portable coverage
- Talk group management
- Radio encryption key management
- P25 standards management
- Low-speed wireless data applications.

Many technical and operational issues and challenges were discussed. Even though a set of recommendations was not developed, the session participants were able to capture a list of issues that would need to be addressed by the PSMC Project Team in the future—

- Examine interoperability requirements at city and county levels to determine the best interoperability solution
- Establish interoperability linkages between existing VHF and 800 MHz systems as part of WyoLink
- Address portable coverage requirements for city and counties
- Address migration issues from analog to digital radios
- Identify radio assets that are P25 compliant and can be procured using federal grants
- Address talk group administration
- Address encryption key management issues, including oversight at the state level and administration by the local radio shops.



Figure 6: Mr. Hunt and Mr. Pfohl Facilitate Technical and Operational Working Session

At the conclusion of the working session, the attendees understood the importance of fully addressing the technical and operational issues involved with implementing a statewide, P25, VHF, trunked system. The attendees indicated that they hoped that the PSMC Project Team would be able to address these issues and to disseminate the answers to all parties involved, as the technical and operational details of WyoLink system were finalized. The ideas gathered from this session were later incorporated with ideas from the policy and

funding session to be included in the “consensus statement.”

States Share Lessons Learned and Best Practices for Interoperability

To generate ideas from the audience for WyoLink, two presentations were given to explore the best practices from the statewide radio systems of South Dakota and Alaska. Through these presentations, attendees learned about the complexity of system planning, procurement, and implementation of a statewide, digital, trunked, VHF system. In addition, the presentations examined the local, state, and federal coordination and partnerships that contributed to these successful systems.

Lessons Learned from the South Dakota Statewide Radio System

Mr. Jeff Pierce, Dispatch Group Manager, South Dakota Bureau of Information and Telecommunications, began his presentation on the best practices of South Dakota’s statewide radio system by giving a process overview to answer the question—How did South Dakota decide on their current system? He explained that before the decision was made, two surveys were conducted regarding system use. In these surveys, South Dakota was able to determine that the VHF high-band communications system was more widely used throughout the state.

We have been able to supply 5,600 radios to local agencies and 3,672 radios to state agencies, and we plan to allocate 600 more to federal agencies in the near future.

Mr. Jeff Pierce
Dispatch Group Manager
South Dakota Bureau of Information and
Telecommunications

South Dakota started implementation in September of 2001, and the system went live in October 2002. Radios were distributed to local, state, and federal agencies, including more than 98 percent of every police, fire, and sheriff’s department. In addition, South Dakota provided every ambulance service,

hospital, and emergency care facility with a mobile radio.

Mr. Pierce stated that looking back, there were several lessons learned that he wanted to share with the Wyoming forum attendees. These included—

- Allow adequate time to integrate training on equipment and system concepts
- Obtain buy-in from all involved—*everyone* (all stakeholders) must understand the benefits
- Prepare to adjust to expectations from outside of state government regarding service levels, operation, and support
- Expect that changes will be necessary
- Find a system that provides a good communications method for local, state, and federal agencies.

He closed by acknowledging that Wyoming was headed in the right direction, and then congratulated the audience and asked the attendees to continue in their efforts.

Alaska Land Mobile Radio System (ALMRS) Project

Mr. Jack Phelps, Program Director, ALMRS, addressed the local, state, and federal coordination and partnerships developed in the State of Alaska, as well as the challenges faced during system planning. Mr. Phelps began by stating the goal of the ALMRS Project—to create partnerships across local, state, and federal jurisdictions to build and operate an interoperable, digital, trunked, VHF system in Alaska. He explained the goal would be achieved through immediate transition to a new system, planned migration over time, and integration of existing systems. Mr. Phelps continued by stating the ALMRS Project objectives—

- Create a cooperative partnership across federal, state, and local jurisdictions
- Build and operate a secured interoperable trunked radio system
- Enhance personnel safety and operational capabilities
- Plan a phased implementation—highway system, southeast Alaska and Kodiak, rural areas

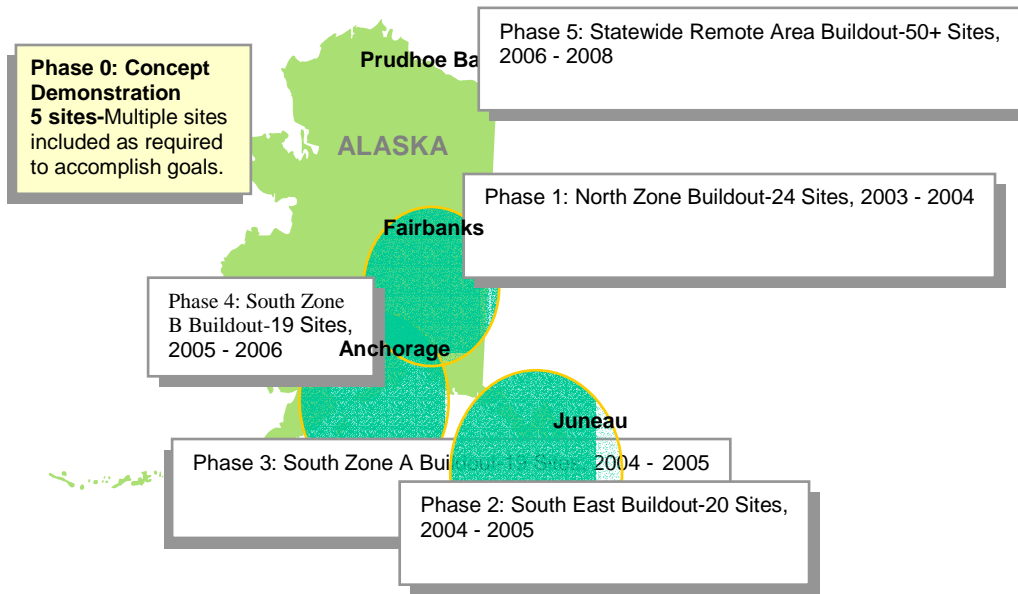


Figure 7: ALMRS Implementation Plan

- Share infrastructure costs among the federal, state, and local governments
- Educate the legislature and key policy makers in state and federal governments in order to gain strong support and adequate funding.

To achieve these objectives, the ALMRS implementation plan was broken into five phases. These five phases are shown in Figure 7.

Mr. Phelps explained that the ALMRS was in Phase 1 now, and feedback had been positive. The ALMRS after action report for Phase 0 concluded the following—

- Performance of the system was flawless under incident command system (ICS).
- Advanced Encryption Standard (AES) secure, wide-area, maritime, air-to-ground and backward compatibility was proven.
- Interoperability, security, and situational awareness were significantly improved.

Mr. Phelps concluded that although the ALMRS was the right system for Alaska, it might not be right for other states. He encouraged the audience to develop a system that specifically targeted the needs of Wyoming.

Moving WyoLink from System Planning to Implementation

Mr. Dan Perko, Wyoming Chapter President, APCO, made closing remarks articulating the issues and recommendations developed during the afternoon working sessions.

He began by emphasizing the importance of communications between public safety officials. Public safety was a major concern to the state because Wyoming had a larger tourist population than actual population—the state wanted to uphold the reputation that first responders could and would be able to effectively provide a safe environment for all.

Mr. Perko continued by highlighting the main points from the two working sessions, and then presented the following action items for audience members to take back to their organizations—

- Identify statewide interoperability requirements
- Include all public safety responders regardless of city or county jurisdiction
- Build a statewide commitment to implement WyoLink
- Investigate all sources of funding (local, state, and federal grants and partnerships) to fully implement WyoLink
- Use existing assets and resources

- Educate legislative bodies at the local, state, and federal levels regarding WyoLink
- Develop subcommittees for the forthcoming Public Safety Communications Commission to concentrate on technical needs, membership, funding, outreach, political involvement, and training requirements of WyoLink.

Mr. Perko concluded his remarks by thanking all individuals who worked on WyoLink. He then encouraged attendees to rally support from local areas to take action and move forward to improve communications interoperability with WyoLink.

Wyoming Forum Provided Venue for Education and Information Sharing to Improve Interoperability

This one-day forum showcased the importance of interoperable public safety communications and highlighted ways to improve interoperability by implementing WyoLink. Participants learned that the WyoLink system offers a unique model of statewide cooperation and provides clear evidence that states can take a lead role in developing infrastructure and get buy in from local communities.

Most importantly, the forum allowed stakeholders from across the state to discuss the policy, funding, technical, and operational issues facing the state as WyoLink moves from the system planning phase to the procurement and implementation phases of the radio system development lifecycle. A set of issues and recommendations were captured in a “consensus statement” allowing policy makers and state legislators to author legislation, directives, and guidelines to address the needs of end users and assist in the development of WyoLink. The consensus statement would serve as a summary action list for the PSMC Project Team (and all WyoLink stakeholders) during the next year.

Forum participants were encouraged to use the information and contacts they gained to improve interoperability problems at home. Participants can use SAFECOM as a resource to provide interoperability advice and

solutions. The program can be reached by telephone at 1-800-565-7796, or on the Web at www.safecomprogram.gov.

The lessons learned from this forum should be used to increase dialog regarding the need for public safety officials to adhere to the radio system development life cycle, and the importance of implementing shared, standards-based systems to solve interoperability problems because no man, woman, or child should lose his or her life because public safety officials cannot talk to one another.