Annual Interoperability Report on Public Safety Communications in the State of South Dakota

Submitted by Matt Tooley
Chairman, South Dakota Public Safety Communications Council
November 20, 2010

Executive Summary

The South Dakota Public Safety Communications Council (SDPSCC) was created by Executive Order 2007-05 on March 14th 2007 with the following directive:

> *"The South Dakota Public Safety Communications Council shall foster collaboration among stakeholders at the local, federal, and state level."*

The communications landscape has been permanently changed with the construction of the statewide radio network. Previously the state-supported communications system primarily supported state users and traffic. The current system user base has 13% federal/tribal, 19% state, and 68% local participation by radio count. It has become more important that ever to integrate the views and needs of all users on the network.

Appointed to the PSCC are the following individuals:

Steve Christensen (Platte Police Chief) -- SD Police Chiefs Association -- **Member at Large**
Dave Ackerman (Sheriff, McPherson County) -- SD Sheriff's Organization
Open -- SD Division of Criminal Investigation
Andy Alban -- SD Game, Fish, and Parks
Greg Fuller (Director of Operations) -- SD Department of Transportation
SGM Dayton Myers (State Communications Chief) -- SD National Guards
Brad Stiefvater (McCook EM) -- SD Emergency Managers Association -- **Vice Chairman**
Dennis Gorton (Pennington Co Fire Director) -- SD Firefighters Association
Rebekah Cradduck (Vice President) -- SD Association of Healthcare Organizations
Matt Tooley (Metro Communications) -- SD APCO/NENA Chapter -- **Chairman**
J.D. Geigle (Spearfish EMS) -- SD Emergency Medical Technicians Association
Ken Wesche (Dispatcher) -- Great Plains Interagency Fire Center
Robert Wilcox -- SD Association of County Commissioners
Rick LaBrie -- SD Department of Health
Larry Jandreau (Facilities Director) -- Lower Brule Sioux Tribe
Bob Fischer (US Forestry Area Lead Technician) -- US Dept of Agriculture
Jeff Pierce (Engineering Manager) SD BIT -- **Executive Board Member**
Sgt Ryan Mechaley -- SD Department of Public Safety

The SDPSCC has met three times during the 2011 calendar year: March in Pierre, August in Mitchell, and December in Aberdeen. Missouri River flooding affected scheduling for the early summer meeting. The distributed meeting sites have allowed participation by a much larger audience of local, tribal, state, and federal first responders. The subject of the necessary system upgrade and funding of that project has had a priority item on each agenda. Other important agenda items covered included the federally mandated narrowbanding, use of the PSIC and DHS grant funding, and uniform protocols.

South Dakota can take pride in the fact that our state has one of the most comprehensive communications systems for first responders in the country. We have approximately 98% geographic coverage and nearly every local, tribal, federal, and state first responder has a radio capable of establishing communications instantly.

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Purpose

As required by the bylaws of the SDPSCC: *(5) prepare and submit an annual report to the Governor, the BIT Commissioner, and others as necessary on the status of communications interoperability in the state;*

Introduction

The State of South Dakota recognizes the importance of communications interoperability within our state. As a rural state, we rely upon multi-agency response and shared resources to cooperatively provide for the public's safety.

This report serves to update the Governor, BIT Commissioner, and others on the progress of the SDPSCC on the following charges outlined in Executive Order 2007-05.

- Update Protocols and standards for the operation and use of the South Dakota Interoperable Communications System
- Develop strategies and recommendations to improve current and future operations of the radio network
- Develop recommendations for legislation or other state action that may be required to further promote public safety communications in South Dakota
- Develop recommendations and strategies for best utilization of grant funding to improve communications in South Dakota.

2011 SD Interoperable Communications System Report

The progress of the PSCC is not limited to the responsibilities charged to it in the introduction above, but this report will concentrate on those points and then provide a general technical and statistical overview of the network.

A. Update Protocols and standards for the operation and use of the South Dakota Interoperable Communications System.

SCIP-- *Statewide Communications Interoperability Plan*. Each state is required by Public Law 110-53, part of the 911 Commission Act of 2007 to annually update and demonstrate conformity with the conditions and requirements set forth in 110-53. The SCIP is taking on a more encompassing scope including statewide and region-wide communications capabilities and protocols. The primary changes to the 2011 SCIP involve gap analysis and identification:

- ☐ Inclusion of the national interoperability frequencies in the recommended programming template of all radios.
- ☐ Improving training opportunities for system users.
- ☐ Specific alignment to the goals of the National Emergency Communications Plan.

B. Develop strategies and recommendations to improve current and future operations of the radio network.

P25 Upgrade. The P25 system standard is the first industry-wide common-air interface in the history of land mobile radio. The current trunking network technology utilized is in the process of being phased out by Motorola, and by 2015 will be completely discontinued. A considerable amount of time has been spent during council meetings in discussion of the alternatives to ensure that the 17,000+ radios on the system will be supported both today and in the future.

The adopted alternative by the council involves a phased approach:

1. Replacement of the network controller in Pierre, and install protocol adaptors at the tower sites to ensure that system support will be available beyond 2015. Radios in the field will continue to operate as currently configured through the protocol adaptors at the tower sites. (Should be completed by end of 2011). Appx $6,800,000.
   - This upgrade will allow for future expansion of the state radio network. Our current controller is at its maximum capacity and we are not able to add on additional towers, or dispatch centers to direct connect to the system. Future expansion will help areas of the State that have underserved radio coverage. It will also allow more dispatch centers to be directly connected to the controller in Pierre. Being direct connected to the controller allows for more functionality of the system, and will help to increase officer safety.

2. Replacement of all radios in use that can not be upgraded to the P-25 networking system, and upgrading of those that can. Some of the original radios purchased in 2001 cannot be upgraded to the new system, while others can be flash-upgraded to the P-25 standard. This replacement can be completed at any time because compliant radios will operate on either system. (Milestone 2014). Most of the required replacement will be at the local level and financed through grants. State and local replacement and upgrade costs are expected to be between $7,000,000 and $10,000,000 depending ultimately on the number replaced.

3. A cut-over by region to the new P-25 operating system. This step will allow the system to operate over an IP-based network from the radio or dispatch center through the network. (Milestone 2015) Potential costs are around $1,000,000. Advantages of this final phase are:
   - There are some potential savings from network connectivity to sites and dispatch centers.
   - Vendor list for radios grows from two to eight, with more competitive pricing.
   - Brings entire state up to national standards and allows interstate communications.

C. Develop recommendations for legislation or other state action that may be required to further promote public safety communications in South Dakota.

The council encouraged adoption of a budget in line with the previous budget to maintain infrastructure within the state.

D. Develop recommendations and strategies for best utilization of grant funding to improve communications in South Dakota.

The PSCC during the past year developed specific criteria on eligible equipment to be purchased with the remaining PSIC grant funds and ongoing with DHS State Homeland Security Grant Program (SHSGP). Allowable equipment not only includes equipment compatible with the statewide system, but also can be used to update paging and associated infrastructure to comply with the federal narrowbanding mandate.

E. Support Efforts of the 700 Mhz committee.

Each state is tasked with the responsibility of developing a statewide plan for the 700 MHz spectrum allocated to each state. The SDPSCC is acting as the governance body for that committee, initially comprised of Jeff Pierce and Todd Dravland from BIT.

PSCC Website

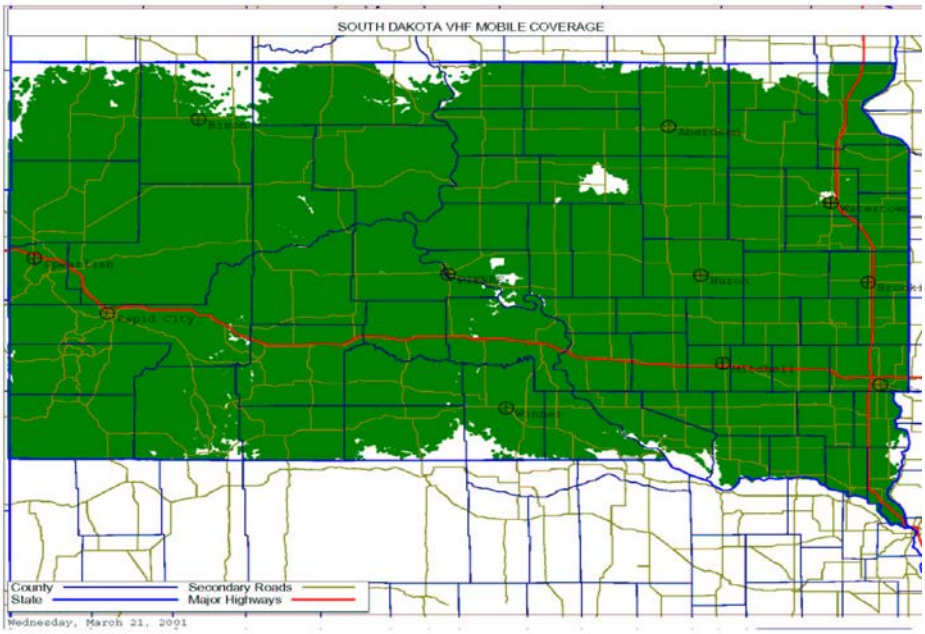
The South Dakota Public Safety Communications Council website is now online with additional communications information being added monthly. The site has been used to post monthly narrowbanding updates, and other relevant information.

sdpscc.sd.gov

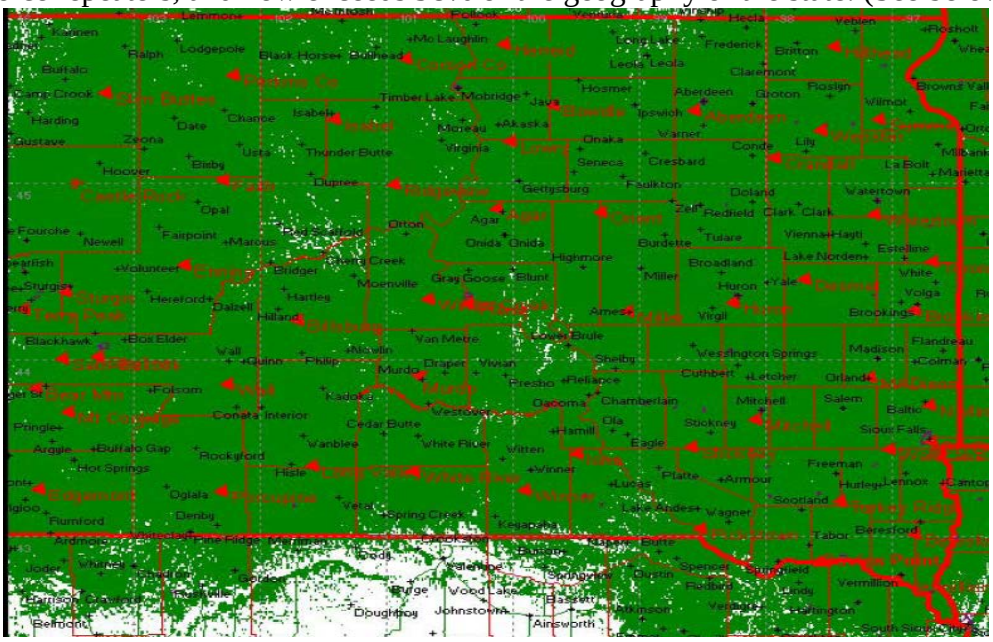
Statewide Radio Network

System

The current radio system serving the State of South Dakota was offered for service in October of 2002. The system at that time had 35 regional sites, approximately 9,000 radios, and covered 90% of the geography of the state. (See below map)



Over the course of the past 9 years, an additional 19 sites have been installed, and over 8,000 radios have been added to the network. The current system has 54 sites on line, 304 voice repeaters, and now exceeds 98% of the geography of the state. (See below map)



During the course of the current calendar year (January -November) the system has shown:

- 19,894,772 radio calls over the network.
- 65,443 radio calls on the average per day.
- 2,180,509 radio calls over the busiest site -- Sioux Falls Simulcast.

- 6,220 radio calls per month on the least busy site -- Slim Buttes (Harding County)
- 2,353,780 radio calls during the busiest month -- August (Sturgis Rally)
- 14,204,867 radio calls by local agencies (71.4%)
- 4,536,008 radio calls by state agencies (22.8%)
- 834,469 radio calls by Federal/Tribal agencies (5.8%)
- 13,572 local radios (68%)
- 3,792 state radios (19%)
- 798 Federal radios (4%)
- 1,796 Tribal radios (9%)

Improvements made in 2011 to the network:

- Addition of a 5th repeater to the Madison site. This site historically has had an inordinate number of busies from the high traffic of the area.
- Installation of a new building at the Crandall site. The old block building had degraded to the point of not being economical to repair, and was undersized for the amount of equipment that SRC and PBS had at the site.
- New building footings and a relocation of the building at the Mitchell site. The original building location was adjacent to a drainage ditch and wet conditions had caused the footings to settle and sink.
- Replaced antennas at a number of sites across the state to improve and equalize coverage.
- Upgrade of the network controller in Pierre. Significant upgrade will allow long-term support for the system. Original system would have not been supported after 2015.

Areas underserved that need to be addressed at some point:

- McPherson County (Leola area)/northern Brown County work to improve coverage.
- Chamberlain area, work to improve coverage.
- Hot Springs area, work to improve coverage.
- Vermillion, add repeater to improve capacity.
- Wall Lake (Minnehaha County), add repeater to improve capacity (working on identifying frequencies for this site).

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State Radios

Currently the majority of Motorola public safety radios in use by state agencies will need to be upgraded before a full change to an upgraded P25 Network. State agencies have been utilizing state PSIC and DHS funding to begin working on this upgrade.

Local Radios

Local radios are a general mix of Motorola and EF Johnson, and a portion of the Motorola radios will need to be replaced prior to conversion to a P25 Network. Local agencies are in the process of utilizing PSIC and other funding sources to replace obsolete radios.

Tribal/Federal Radios

The BIT State Radio staff does provide limited technical assistance with the federal and tribal radios operating on the statewide system, but generally service is provided by in-house personnel or contractors.

Wireless Data Networks

Wireless data or Mobile Data Terminals (MDT) as they are also referred to as is becoming more commonplace across the state. A number of our class A cities have private systems in place, and the state has worked out the operational and technical issues for a cellular telephone based system. This system will allow a statewide mobile data service that will enable all law-enforcement field units to access data from the vehicle without interaction with a dispatch center. Currently over 300 field units are utilizing this mobile data network.

Regional Communications

State technical staff has been engaged with bordering states for many years working on cross-border communications. State Radio technicians have been installing repeaters along the border which will enable at minimum dispatch to dispatch communications with the intent on improving unit to unit communications.

The States of Wyoming, Montana, North Dakota, Minnesota, and Iowa have all installed or are in the process of installing networks that would be compatible to the system upgrade in South Dakota. Cross-border interaction of first responders in the Emergency Medical Service, fire, and law-enforcement disciplines is routine and better communications will only improve public safety.

First responders from across the state are participating in a FEMA Region 8 working group on interoperable communications. Jay Evenson from the Pennington County Sheriff's office, John McQuillan from the Brown County dispatch center, Steve Christensen from the Platte Police Dept, and Jeff Pierce with the Bureau of Information & Telecommunications are representing our state well in this group.

Public Law 110-53 also requires each state to have a full-time interoperability coordinator or equivalent. Jeff Pierce from the SD Bureau of Information & telecommunications is currently serving this function and is part of a national group working on communications both in-state and nationally.

Conclusion

South Dakota maintains one of the more comprehensive communications systems from a coverage and participation standpoint in the nation. The capability of any first-responder to pick up a microphone and talk to any unit across the state is something that most states can only envision. It has taken the trust of our entire first-responder community, and a willingness to understand that in a rural state such as ours that nobody operates alone to accomplish this in our state.

We do have challenges ahead.

- ☐ The federally-mandated narrowbanding requirement continues to be a big challenge for local governments. Local agencies need to maintain infrastructure to provide

paging for first responders in their areas, which in many cases will need to be replaced by January 1, 2013 to meet the FCC mandate. Equipment subject to this mandate includes radios, pagers, repeaters, and control stations. These equipment purchases will likely have to come from local coffers as the equipment is for internal use and does not meet the interoperability criteria for DHS funds. The council created a subcommittee tasked with developing a timeline and implementation plan to assist the locals in this process.

- The system upgrade protects the state from lack of future support, but to fully migrate to the new technology, all radios will need to be reprogrammed, have software installed, and in some cases replaced. It is the vision of the council that this be completed by 2015.

The PSCC is pleased to report that interoperability in South Dakota is meeting the needs of our first responder community, and is advanced both regionally and nationally. We have challenges ahead to maintain that standing, and will need to maintain this as a priority within our state. Our council will strive to ensure that this progress continues.