

**IDAHO
COOPERATIVE AGENCIES'
WIRELESS INTEROPERABLE
NETWORK
(I-C-A-WIN)**

Achieving Radio Interoperability in Idaho
STATEWIDE INTEROPERABILITY EXECUTIVE COUNCIL
(SIEC)

<http://www.bhs.idaho.gov/>

REVISION 2

Amended January 2009

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Introduction

In 2005, the Idaho Statewide Interoperability Executive Council provided the first version of the I-C-A-WIN concept document. Revision 1 was completed in April 2007. As anticipated, the I-C-A-WIN project has realized significant progress in the arenas of politics, economics and human achievement.

This revised version addresses how I-C-A-WIN is moving from concept to reality. It examines purpose, interoperability, how we got to where we are today, our current statewide status, local government's progress, and the way forward. In addition, it conveys a direction from the SIEC to Idaho's public safety community to facilitate achieving the ultimate goal of a standards-based shared communications system for public safety service and support providers. This document provides strategic direction for immediate and future work toward this goal, and is based upon what is known and available today concerning interoperability.

Statement of Purpose

The Idaho Statewide Interoperability Executive Council (SIEC), with broad representation from first response, administrative and operational agencies at all levels of government in Idaho, has drafted the following amended Concept to provide guidance in the development of interoperable communications. Information and data were collected to identify the current status and to assist in the development of a vision for the future of interoperable communications in Idaho.

Additionally, this document is designed to provide some general guidance for all levels of government regarding current implementation and future enhancements toward interoperable communications for all public safety agencies. The SIEC was tasked to provide policy level direction in Idaho Code, and as such, the SIEC is obligated to report our findings to the Governor followed by a release of the information to the public.

It should be clearly understood that this is not a detailed plan on how to engineer such a statewide system, but rather a direction and goal to move toward to accomplish more effective communications on a daily basis as well as during catastrophic events. This amended Concept contains some general types of actions that will be beneficial to federal, state, local and tribal levels of government if pursued and implemented. It also contains some time frames to keep us all moving in the right direction, culminating on Jan. 1, 2013 which is the target date in the Federal Communication Commission's (FCC) regulations for narrow banding of all radios in the public safety sector. The SIEC has included some guidelines for counties to use to assess their own communications plan/capability and has provided some recommended immediate and low financial impact steps to improve the use of current systems.

One issue that continues to be misunderstood is the reference to the 700 MHz backbone system. It should be clearly understood that while 700 MHz appears to provide the most capacity and options for the system as a whole, this amended Concept clearly recognizes that some areas of the state and some agencies will likely continue to operate in the VHF (130-170MHz) or the UHF (400-500MHz) bands and that will be accommodated in the final statewide system as necessary.

This document recognizes that agencies at all levels of government will continue to maintain, improve and add to their radio communications systems in order to conduct daily business. It is

the hope of the SIEC that this document will encourage agencies to take the future into consideration in that process and look at how to invest their funds wisely in interoperable communications.

Finally, it should be clearly understood that this is an amended document for a continuing process and not an end in and of itself. There are many technical components which will require further explanation and education by those involved in radio communications. The SIEC will seek wide distribution and encourage open communication with all of those impacted by this process. Many constructive ideas will be contributed back into the process as groups around our great state meet and discuss the issue of radio communications. The SIEC offers this Concept as guidance and assistance in radio communications and data planning.

What is interoperability?

Interoperability allows two entities with disparate communications equipment and/or infrastructure to communicate when required. In public safety, there are three situations where interoperability is required; (1) everyday operations, (2) first response, and (3) multi-agency taskforce operations. Everyday operations consist of any requirement to communicate with another agency on a frequent basis where as first response and multi-agency taskforce operations generally occur when emergency situations arise.

The US Department of Homeland Security's SAFECOM initiative defines five levels of interoperability designed to improve public safety response through interoperable communications. SAFECOM defines the use of talk-around and mutual aid channels as one combined level of interoperability.

- **Level 1**
Swap Radios - Swapping radios, or maintaining a cache of standby radios.
- **Level 2**
Gateway and Console Patches - Gateways retransmit across multiple frequency bands providing an interim interoperability solution as agencies move toward shared systems.
- **Level 3**
Shared Channels - Interoperability is promoted when agencies share a common frequency band and are able to agree on common channels.
- **Level 4**
Proprietary Shared Systems - a proprietary communications system (single manufacturer) in which interoperability is provided as a byproduct of system design. Radios work within their own system but don't necessarily have the capability to communicate with other systems.
- **Level 5**
Standards-based Shared Systems - a non-proprietary communications system in which interoperability is provided as a byproduct of system design, creating an optimal technology solution.

Public safety systems within Idaho generally fall into one or more of the levels from Level 1 to Level 5. Most radio systems in Idaho are either conventional VHF or UHF radio systems at Level 3. Since establishing the 700 MHz trunked radio system, five counties have installed Level 5 interoperability radio systems. It has been shown that the 700 MHz trunked radio coverage provides as good or exceeds current VHF radio systems. Proof of concept has moved to a successful day to day usage of the 700 MHz spectrum by these five counties. The Council recommends that public safety agencies continue to pursue Level 5 interoperability utilizing a phased approach.

A planning tool provided by SAFECOM is the Interoperability Continuum. The Continuum is designed to help the public safety community and local, tribal, state, and federal policy makers address critical elements for success as they plan and implement interoperability solutions. Please reference Appendix A.

How We Got Here

Idaho Code 46-1200 established the Statewide Interoperability Executive Council (SIEC) with the express charge to "...provide policy level direction and promote efficient and effective use of resources for matters related to public safety wireless radio interoperability." Further, the Council was directed to "...provide recommendations to the Governor and the Legislature, when appropriate, concerning issues related to statewide interoperable radio communications for public safety in Idaho."

As the SIEC began its work in December 2003, the following Mission and Vision Statements were created to support building an interoperable communications system for the benefit of all Idahoans.

Mission Statement:

The Statewide Interoperability Executive Council (SIEC) shall promote interagency cooperation and provide policy level direction to support efficient and effective use of resources to achieve interoperable communications.

Vision Statement:

Working together to build an interoperable public safety and public services communication system that will benefit all Idahoans.

It remains the SIEC's commitment to promote efficient and effective use of resources for matters related to public safety wireless radio interoperability, standing ready to assist in the promotion of statewide interoperability through coordination and cooperation. The SIEC maintains its recommendation that the State of Idaho and its political subdivisions continue planning and implementation of a single Project 25 (P25) infrastructure to serve the communications needs of emergency responders. This network should include, but not be limited to the following:

- Leverage the State of Idaho's Microwave System investment
- Leverage the State of Idaho's Broadband Initiative
- Leverage the Idaho Bureau of Homeland Security's Master Site investment

- Utilize all available spectrum including the newly available 700MHz
- Incorporate state and county plans
- Build upon available county and regional networks throughout the state

Idaho's Status

The public safety communications assessments conducted by the SIEC and the studies completed, US Department of Homeland Security, Interoperable Communications Technical Assistance Program (ICTAP), and CTA Communications across Idaho contained some key findings regarding public safety's ability to communicate in day-to-day operations and during catastrophic events. The most significant of these findings was the use of disparate frequencies by federal, state, local and tribal agencies coupled with topographical challenges. Findings included:

- many local emergency service providers have interoperability problems within their own jurisdictions, particularly in mutual aid response from surrounding counties; and
- much of the State of Idaho is mountainous terrain, causing a multitude of challenges for radio communication; and
- much of the land in Idaho is federally managed and developing new communication sites is more challenging in environmentally sensitive parts of the state.

Coupled with these internal challenges are the external challenges that will affect public safety communications in Idaho. The most significant is the FCC's mandated migration to narrow banding (12.5 kHz) for public safety by January 1, 2013.

The SIEC has witnessed the establishment and continued operation of the 700 MHz trunked radio system for voice and data use by a number of counties and the state. This spectrum has been made available by the FCC for exclusive use by public safety agencies. Systems in use in this spectrum have exceeded county expectations. In addition, these systems have shown mitigation of the challenges mentioned above. Initial findings prove that a 700 MHz backbone for Idaho will allow greater interoperability capacity. Reference Appendix C of this Concept.

The State of Idaho microwave system has been and continues to be a developing asset. It has undergone an upgrade to digital operation over the last 10-years. The upgrade from an analog to digital microwave system was funded by contributions from the private sector and appropriations from the state legislature. The State of Idaho had a \$14.5M project to modernize the statewide multi-agency, multi-use public-safety microwave system. This multi-year, multi-agency project upgraded the microwave system to digital technology while complying with federal policy of fostering emerging technologies and efficiently using radio spectrum.

The capacity of the base digital system is three (3) DS3s. Each is capable of 672 simultaneous voice conversations or 28 medium speed (T1) data connections, or a mixture of both. A microwave connection to Utah from Idaho's Sedgewick Peak to Utah's Logan Peak established a reliable microwave radio connection from Idaho to Utah supporting up 384 voice; 16 data (T1); or a combination of both. This connection has been in place since 2001.

Idaho's microwave system is one of the largest of its kind in the lower 48 states, covering 1,200 miles and connecting over 100 two-way radio repeater sites in some of the most remote locations in the state. The microwave system serves public safety operations, state agencies and supports digital broadcasting for Idaho Public Television. The State of Idaho digital microwave system will ensure that connectivity for all public safety interoperable communications systems may be accommodated. The microwave system is undergoing an upgrade to accommodate the use of 700MHz statewide. In addition, a statewide broadband system is being developed that will create redundancy when used in conjunction with the microwave.

The SIEC is embarking on Phase Two of a three phase strategy to facilitate interoperable communications in Idaho. A Request For Proposal was released in October of 2007 that will determine the operational needs and identify the technical resources available across the state. This phase has provided the data necessary to commence with the third phase of I-C-A-WIN, the statewide system design and build-out.

Local Government Communication Planning

All counties have completed their interoperable communications plans. These plans are being used as a calculated approach to their communications investments. Radio engineering studies have been completed throughout Idaho in an attempt to solve radio coverage, frequency compatibility, and interoperability issues.

The SIEC is aware that the following jurisdictions have completed their planning and /or radio-engineering studies, or are in the contract phase for such services. In some cases, county projects are in the construction phase or have completed installation. It is understood that this is an on-going process, and as such, this list is not intended to be comprehensive:

Ada	Study and plan complete; infrastructure complete
Adams	Study and plan complete
Bannock	Study and plan complete; infrastructure complete
Bear Lake	Study and plan complete
Benewah	Study and plan complete
Bingham	Study and plan complete; infrastructure complete
Blaine	Study and plan complete; infrastructure in process
Boise	Study and plan complete; infrastructure in process
Bonner	Study and plan complete; infrastructure in process
Bonneville	Study and plan complete; infrastructure in process
Boundary	Study and plan complete; infrastructure in process
Butte	Study and plan complete; infrastructure in process
Camas	Study and plan complete
Canyon	Study and plan complete; infrastructure in process
Caribou	Study and plan complete; infrastructure in process
Cassia	Study and plan complete
Clark	Study and plan complete; infrastructure in process
Clearwater	Study and plan complete
Custer	Study and plan complete; infrastructure in process
Elmore	Study and plan complete
Franklin	Study and plan complete
Fremont	Study and plan complete; infrastructure in process

Gem	Study and plan complete
Gooding	Study and plan complete
Idaho	Study and plan complete
Jefferson	Study and plan complete; infrastructure in process
Jerome	Study and plan complete; infrastructure in process
Kootenai	Study and plan complete; infrastructure in process
Latah	Study and plan complete
Lemhi	Study and plan complete; infrastructure in process
Lewis	Study and plan complete
Lincoln	Study and plan complete
Madison	Study and plan complete; infrastructure in process
Minidoka	Study and plan complete
Nez Perce	Study and plan complete; infrastructure in process
Oneida	Study and plan complete
Owyhee	Study and plan complete
Payette	Study and plan complete
Power	Study and plan complete; infrastructure complete
Shoshone	Study and plan complete
SIRCOMM	Study and plan complete; infrastructure in process
Teton	Study and plan complete; infrastructure in process
Twin Falls	Study and plan complete
Valley	Study and plan complete
Washington	Study and plan complete
Coeur d'Alene Tribe	Study and plan complete; infrastructure in process
Nez Perce Tribe	Study and plan complete; infrastructure in process
Sho Ban Tribe	Study and plan complete; infrastructure in process

The SIEC recognizes that some agencies may elect to remain in the UHF or VHF frequency bands. A system developed using 700 MHz will accommodate those agencies and allow them to share in the benefits of a statewide system. The choice to participate belongs to each agency, however all agencies are encouraged to participate in the 700 MHz interoperable radio system.

Contact these jurisdictions for information about their respective engineering studies and project status.

Governance

The SIEC has designed a formal governance structure that will be comprised of multidisciplinary agencies for solving interoperability issues. This group will consist of local, tribal, state, and federal entities. The Regional and District committees will work in their geographical areas. A common governing structure for solving interoperability issues will improve the policies, processes, and procedures of any major project by enhancing communication, coordination, and cooperation, establishing guidelines and principles, and reducing any internal jurisdictional conflicts. The governance structure starting at the District level will produce a 5-Year Interoperable Communications Regional Governance Strategic Plan, basic SOPs, MOUs, MOAs and legislative writings to support the regional structures. The language of these instruments will be developed by the local / tribal practitioners in partnership with entities that represent the interests of our state and federal responder community.

The proposed Governance structure is shown in Appendix H.

Radio Studies

The Interoperable Communications Technical Assistance Program Study

The US Department of Homeland Security, Interoperable Communications Technical Assistance Program (ICTAP), was asked by the SIEC to provide technical assistance to determine the feasibility of a 700 MHz statewide communication system. Reference Appendix D of this Concept.

In Phase 1 of this project, ICTAP visited and evaluated forty-nine sites throughout the state. The site surveys from the visits provided detailed information about the status of each site, including the site's interior, exterior, and tower descriptions, and a single site coverage summary at the 700 MHz and UHF frequency bands.

The ICTAP report includes a combined coverage footprint comparison, interoperability approach, a statewide system comparison, and a recommendation section. The coverage and interoperability solutions were geared toward the needs of each agency in the individual districts throughout the state.

The CTA Communications Study

The SIEC retained the services of CTA Communications to complete the next steps toward statewide interoperable communications. CTA Communications furnished the Conceptual Design Report that is organized under three main tasks.

1. Needs assessment of the needs of all local and State public Safety and public service agencies.
2. Develop the conceptual system design, based on the requirements of local and State users, including cost estimates, and implementation plans for the new systems. In this step CTA Communications described alternate approaches, meshed the user's needs, selected the most appropriate architecture, and engineered the system design to the level needed to communicate its capabilities and estimate costs.
3. Develop the design/build statement of work for inclusion in the subsequent procurement package. This study solicited information in five key areas:
 - Interoperability - today's situation and future needs
 - Current radio problems
 - Future radio requirements
 - Quantities of people and vehicles needing to be equipped with radios
 - Additional comments

Communications interoperability surfaced as a major problem area. Public safety personnel need the ability to communicate easily and flexibly during any situation they find themselves in. Interoperability is the ability of public safety personnel to use their radios to quickly communicate with all response team members. Communications must transparently span disciplines; law, fire, EMS, and public service. Likewise, agency members must easily

communicate across jurisdictional lines with organizations in other counties, districts, and regions, while receiving or offering outside assistance.

The SIEC requested that CTA examine two conceptual system design alternatives:

- Statewide 700 MHz System with a VHF Overlay
- Statewide 700 MHz System

Each alternative was examined for the results it would produce. Alternative 1, the 700 MHz system with VHF band overlay, was eliminated largely because the hybrid two-band would result in some unworkable interoperability problems and create an unnecessarily complicated environment for radio users. Alternative 2, the Statewide 700 MHz System, is the most viable architecture for meeting the shared system project objectives. We reach this conclusion based on small differences in initial cost, lower risk of unforeseen interoperability costs, and higher probability of achieving the stated project goal of Level 5 interoperability.

The Goal

The SIEC goal is to achieve Level 5 interoperability statewide. This will be a long-term process requiring a phased approach.

Phase One: Attainment of Level 3 shared channels interoperability, the use of gateways and console patches for interoperable communications statewide to be completed by December 2005.

The SIEC Technical Subcommittee has determined that at least 90% of local agencies are, at a minimum, capable of achieving Level 3 communications within their particular area of operation.

As part of the FY2007 grant process, the State of Idaho, Bureau of Homeland Security required that each county develop a county interoperable emergency communications plan. All counties have completed their respective plans. Reference Appendix E of this Concept.

Counties were also encouraged to consider regional or multi-county system needs. The Idaho Bureau of Homeland Security has fostered regional and statewide planning to help achieve this level of interoperability.

Phase Two: Analyze the results from Phase One to identify additional capabilities needed and advancements in technology and standards to determine the next steps toward Level 5 interoperability statewide to be completed by December 2007.

Phase Three: Statewide availability of Level 5 interoperability to be completed by December 2012.

A Tiered Approach

This document presents several ideas and proposals for future direction, refinement and implementation. It addresses dates/times and implementation strategies including funding mechanisms, and provides a path to statewide interoperability by December 31, 2012.

The SIEC is developing a tiered radio interoperability system concept to provide a statewide standard for radio communications. Under this standard both new and existing radio systems can be designed to tie into the statewide communications network. The network will support Project 25 Narrowband Digital mobile and portable radios. Additionally the network will support mobile and portable radios operating in AES (Advanced Encryption Standard) mode. Details will be available in future collaboratively authored documents.

State Level Radio System

The State Level Radio System includes both the existing statewide microwave radio system and the state agencies' radio systems. The statewide microwave system was originally funded through the Idaho Legislature and was intended to provide remote control of the state agencies' radio systems. Additionally, the statewide microwave system and broadband system(s) will provide an avenue to link disparate and unique radio systems together. The digital microwave radio system may be upgraded and expanded as the need arises. Interfaces between the microwave and broadband systems and the 700 MHz radio system will be required.

County/Regional/Tribal Level Radio Systems

The County/Regional/Tribal Level Radio Systems are the regional radio systems throughout the state. Regional systems are intended to connect the local radio systems together, link to the State Level Radio System and enhance the State Level Radio System on a regional basis. Most counties in Idaho dispatch for all emergency medical services, fire departments and districts, and law enforcement agencies in their respective regions.

City/Local/Other Level Radio System

The City/Local/Other Level Radio Systems are very specialized local radio systems. These systems may connect the users to regional radio systems. By using the County/Regional/Tribal Level and City/Local/Other Level Radio Systems approach, those users with systems capable of Project 25 (P25) Digital Radio Standards can be provided interoperability with other users in the state.

Implementation Steps and Timelines

SAFECOM states in the Interoperability Continuum Overview, "an interoperability program should include both short- and long-term solutions. Early successes can help motivate regions to tackle more time-consuming and difficult challenges. It is critical, however, that short-term solutions not inappropriately drive the planning process, but function in support of longer-term improvements."¹

First, the SIEC recommends that those agencies currently unable to share channels or have audio patching, try to reach that goal.

Second, the SIEC provided guidance and assistance in reaching statewide interoperability through a standards based shared system, such as Project 25. Outlined in Appendix E are recommended steps that assisted counties in finalizing their interoperable emergency communications plans.

¹ SAFECOM Interoperability Continuum, pg. 2, from <http://www.safecomprogram.gov>

The January 1, 2013 date is a deadline established by the FCC for the first step in narrowbanding of the VHF and UHF radio frequency bands. The narrowbanding of the UHF and VHF radio frequencies does not affect the 700 MHz frequency band.

In Years Past:

State Level

Currently the State of Idaho administers and maintains a microwave backbone for the state. Research has been completed to identify the throughput necessary to support state and local agencies communications links.

Public Safety Communications has installed a six channel 700 MHz trunked radio site on Iona Butte.

EMS State Communications and Idaho State Police have interfaced their consoles to the Master Switch.

The US Department of Homeland Security, Interoperable Communications Technical Assistance Program (ICTAP), performed site surveys throughout the state. ICTAP recommended a 700 MHz radio system.

CTA Communications recommends a P25 700 MHz trunked radio system CTA Communications furnished the Conceptual Design Report.

SIEC transferred operations to Public Safety Communications, Idaho Military Division.

Public Safety Interoperable Communications grant (PSIC) application submitted December 2007 that will fund nine (9) county / regional interoperable communications projects, and supporting state microwave site upgrades.

On July 1, 2007, Public Safety Communications, Idaho Military Division began management control and maintenance responsibility of the microwave backbone for the state. This move provides enhanced services and coordination for emergency operations and logistics that are already being developed through federal channels with the Idaho Military.

Idaho State Police radio consoles were interfaced to the Master Switch. ISP has added data capability to the existing 700 MHz data radio system.

The State and all of the counties in Idaho have completed radio engineering studies.

The Idaho Emergency Communications Commission² conducted a survey of all dispatch centers/Public Safety Answering Points (PSAPs)³ throughout Idaho inquiring about their E911⁴

² **Idaho Emergency Communications Commission (IECC)** – Established to determine the status and operability of consolidated emergency communications systems statewide; the needs for the upgrade; costs for the upgrades; recommend guidelines and standards for operation of consolidated emergency communications systems; recommend funding, serve as a conduit for the future allocation of federal grant funds, report annually to the legislature, enter into contracts as necessary, promulgate rules.

³ **Public Safety Answering Points (PSAPs)** – a secure location with equipment and trained personnel to answer 911 calls.

⁴ **Wireless E9-1-1 – Wireless Enhanced 9-1-1.** The wireless E911 program is divided into two parts - Phase I and Phase II. Phase I requires carriers, upon appropriate request by a local Public Safety Answering Point (PSAP), to report the telephone number of a wireless 911 caller and the location of the antenna that received the call. Phase II requires wireless carriers to provide far more precise location information, within 50 to 300 meters in most cases.

practices and capabilities. Information concerning consoles, radio patching, and gateways was provided to the SIEC.

County/Regional/Tribal and City/Local/Other Level s

The Idaho Bureau of Homeland Security provided a grant to Ada County to procure and install the Master Site Switch that was installed at the ISP campus in Meridian. Installation was completed in December of 2006. This Switch serves as a core network center for the today's trunked radio system. Audio from the many subsystems route through and are processed from this network center. The Master Site Switch contains core network equipment (controllers, servers, network routing devices, management terminals) and console equipment support the wide-area 700 MHz Radio System. Microwave and / or optical fiber T1 links originate from the Master Site Switch and interface to the radio subsystems and each console dispatch location that interconnects to the Master Site Switch.

Ada, Bannock, Bingham, Power (ShoBan tribe), and Teton Counties installed Project 25, 700 MHz trunked radio systems. The installed radio systems show approximately five-percent better coverage than what was predicted in the radio engineering studies.

The Master Switch was upgraded from 7.1 to 7.4 version of operating system. The result of installing two core routers to the Master Switch was the increased the capability of the system. This added the capability to have 72 sites rather than the 24 sites it did have the capability to connect to the master site. The current master switch is capable of multizone operation. Subscriber radios can travel to many zones. Multizone does not offer redundancy between Master Switches.

More than 90 percent of the regional radio systems have reached Level 3 interoperability. Those regional systems that have not reached Level 3 will continue moving toward Level 3.

Present:

State Level

The International Special Olympics shall take place in Idaho during February and March 2009. The Olympics will be held in many locations to include Ada County, Blaine County, Boise County, Canyon County, and Valley County. Radio communications will have to be improved and expanded prior to the start of the Olympics.

Bureau of Homeland Security, Division of the Military – Purchased a five channel 700 MHz, P25 portable radio system that will be used to reestablish on scene multiagency communications in the event of disasters, acts of terrorism, or other events that inhibit or remove existing communications infrastructure.

County/Regional/Tribal/City/Local/Other Level

Regional systems will continue moving toward Level 3 interoperability.

Blaine, Bonner, Canyon, Caribou, and Kootenai are installing or enhancing 700 MHz Trunked radio systems. All systems should be completed by the end this year.

Ada County is installing an Integrated Voice/Data (IVD) interface into the Master Switch at Meridian Site. The IVD interface will allow over the air reprogramming of selected radios. Selected radios will be able to voice and data operations.

Public Safety Interoperable Communications grant (PSIC) is funding nine (9) county / regional interoperable communications projects, and supporting state microwave site upgrades:

- **Ada** – Master Site Router to increase statewide interface capacity \$250,000.00
- **Canyon** – Completion of joint 700 MHz build-out with Ada County \$1,198,334.00
- **Clark** – 700MHz trunked repeater site to serve immediate and surrounding counties, create State interface, and create potential link for cross-border communications. (MT) \$320,000.00
- **Kootenai** – 700MHz trunked system to serve immediate and surrounding counties, Coeur d'Alene tribe, create State interface and potential link for cross-border communications. (WA) (MT) \$2,235,138.00
- **Bonner** – 700MHz trunked repeater site upgrade to interface with Kootenai County enhancing regional trunked system \$640,000.00
- **Boundary** – Interface with Bonner County enhancing regional trunked system and enhancing UHF / VHF cross-border communications (Canada) \$33,505.00
- **Blaine** – Co-locate 700MHz trunked repeaters with two State microwave sites \$1,161,540.00
- **Caribou** – 700 MHz trunked repeater site and with potential link for cross-border communications. (WY) \$250,000.00
- **Fremont** - 700 MHz system digital trunked repeater networked to the statewide interoperable communications system and enhances cross-border communications. (MT) (WY) \$326,717.00

SIEC research has identified those local systems not capable of Level 3 interoperability.

There is a four phase approach to assemble Regional Governance. Phase 1 is in process: November 2008 through March 2009:

- Formed SIEC Governance Subcommittee to work with our statewide stakeholders in implementing governance.
- Schedule and conduct on site governance kick off meetings in each of the 3 governance districts of the state.
- Share governance principles and organizational structuring information.
- Have practitioners determine who will represent their district's interest on the regional governance body.

Future Years:

State Level

The State will continue to address connectivity issues. All of the major work on the digital microwave system will have been completed in calendar year 2011. Work will continue on bringing the last few County/Regional/Tribal Level and City/Local/Other Level systems on line. During the second quarter of 2012, complete statewide backbone upgrade. Seek additional state funding in each years budget to support a statewide P25 standards based radio system.

The Idaho Military Division has plans to upgrade the microwave infrastructure for both the North and the East microwave links. They will also upgrade spur microwave paths and install new spur microwave paths.

The State is planning to install 700 MHz trunked radio sites on Ashton Hill, Hell Hole, Mount Harrison, Bennett Mountain, and Malad Ridge as their next 700 MHz radio projects.

There is planning to establish 700 MHz radio conventional sites at approximately nine sites at major ingress points coming into the State of Idaho. These radios will be used to coordinate actions with agencies entering Idaho who are responding to disasters, emergencies, acts of terrorisms, or other events.

Support phased approach as outlined in the Implementation Plan by CTA Communications in the Idaho Statewide Conceptual Design Report. The project is divided into four phases:

Phase 0, Implementation Planning:

- Project Management Team Assembled
- Implementation Planning
- Governance Structure Development
- User Agreements and MOUs

Phase 1, Backbone Implementation and Region Build-out Planning:

- Region Build-out Planning
- Microwave backbone upgrades
- Installation of Region 1 and 3 master sites
- Implementation of the currently fund

Phase 2, Regional Build-out:

- Complete counties in Region 3
- Complete prioritized counties in Region 2
- Manage 2013 narrowband compliance

Phase 3, Completion

- Complete remaining counties in Region 2
- Complete all counties in Region 1

There is a four phase approach to assemble Regional Governance. Phases 2 through 4 are described below:

Proposed Phase 2:

April – September 2009:

- Conduct 3 regional kick off meetings to bring the district representatives together.
- Begin the process of organizational structuring; elect officers; establish procedures.
- Establish regional level Executive Committee and Technology Committee.
- Develop basic SOPs for regional interoperable communications governance.
 - Finalize charters for regional and state governance structures - discuss legislation for 2010 session
 - Determine decision making authority between regional and state Governance structures

Proposed Phase 3:

October - December, 2009:

- Once organized introduce the Interoperable Communications Regional Governance Executive Committee at the Idaho SIEC, Idaho E911, Public Safety Emergency Communications Governance Council (PSECGC - state agency communications), and the Information Technology Resource Management

Council (ITRMC - state agency IT) meetings for the purpose of initiating communications / work flow.

Proposed Phase 4:

January – September 2010:

- Complete a 5-Year Interoperable Communications Regional Governance Strategy for operations, in partnership with the Idaho SIEC and the PSECGC.

County/Regional/Tribal/ City/Local/Other Level

Regional systems will continue to work toward reaching Level 3 interoperability.

By the end of 2010, it is estimated that 55.69 percent of Idaho's population could be served by communications interoperability through the Project 25, 700 MHz radio system installed by County/Regional/Tribal Level and City/Local/Other Level agencies. It is estimated that 30 percent of the State Level agencies will have been interfaced to the 700 MHz radio system. Approximately 30 percent of the State Level agencies could be using the wideband data capabilities of the system. Connectivity to federal and other state systems will begin.

By the end of 2012, 95 percent of the state's public safety agencies should have had the opportunity to share in the statewide 700 MHz radio system. It is estimated that 80 percent of Idaho's population should be served by communications interoperability through the Project 25, 700 MHz radio system installed by County/Regional/Tribal Level and City/Local/Other Level agencies. Wideband data will become a major reason for all public safety agencies to begin using the 700 MHz radio system.

It is anticipated that in the 4th quarter of 2010, Version 7.8 upgrade to the Master Switch will be available. This upgrade will allow the interconnectivity of multiple Master Switches with redundancy applications.

Connecting to Disparate Radio Systems

Cooperation and coordination has been a key factor since the formation of the SIEC. Public safety representatives from federal, state, local and tribal agencies have been meeting on a monthly basis to define a method for connecting dissimilar radio systems to the interoperable system. Appendix F, Methodology of Connecting to the 700 MHz Radio System, defines alternate methods of connecting to the 700 MHz radio system.

Conclusions and Recommendations

Conclusions

As this shared statewide shared communications plan has developed, many technical and operational considerations have been considered. In summarizing this new approach to Idaho Public Safety communications, the main practical benefits that each user will receive once the plan is fully implemented include:

- **Simplified communications** - gone are the many frequency band barriers and differences in equipment and capabilities from area to area.

- **Communicate as needed** - within the guidelines of organizational structure, users can push to talk with those they need to. Equipment is no longer a barrier and with cooperative agreements, political boundaries are less of a barrier. The tools are in place for true interoperable communications.
- **Consistently dependable systems** - uniform design, deployment, operation, and maintenance of the systems mean that robust equipment has been designed for the task, placed where it's needed, and users can depend on reliable service every day.
- **Achieved Objectives** - Standards based Level 5 interoperability that will serve today and tomorrow.

With strong leadership, fair stakeholder representation, determination, and professional assistance, Idaho can accomplish this worthy goal of drastically improved public safety communications.

- Review the conceptual design presented in this report.
- Build consensus at the local level for statewide next-generation communications.
- Approve the finalized conceptual design and secure the necessary funding for phased project implementation.

Recommended Next Steps:

Carefully consider the implementation planning topics contained in Section 7 of the Idaho Statewide Conceptual Design Report by CTA Communications. The important project management activities as well as the technical considerations provided will serve as a guide as Idaho moves into statewide implementation.

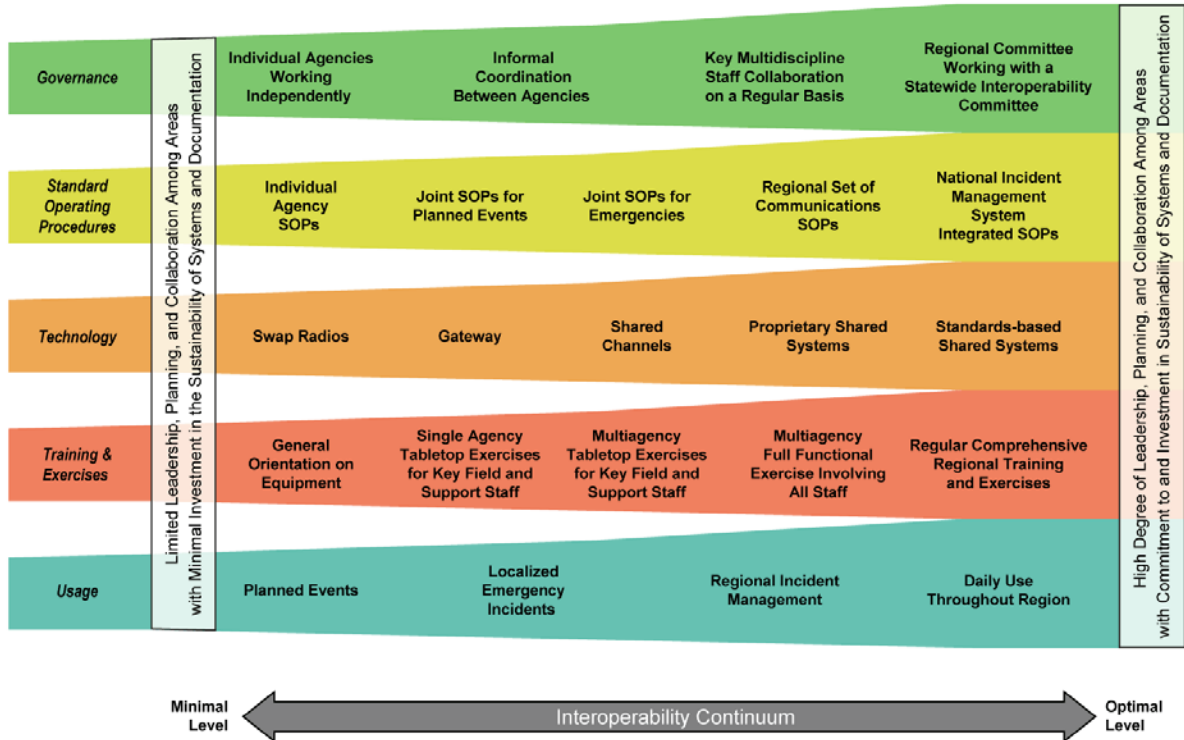
- Assemble the Idaho "Implementation Team". This will include the SIEC Technical Committee and representatives from the counties, Tribes, districts, and regions. The immediate goals will be to:
 - build consensus for the statewide concept at the local level
 - represent the localities during a phased implementation
- Develop the detailed implementation plan.
- Initiate the recommended transition planning activities.

Appendix A



Homeland Security

Interoperability Continuum



SAFECOM Interoperability Continuum

This Interoperability Continuum is designed to help the public safety community and local, tribal, state, and federal policy makers address critical elements for success as they plan and implement interoperability solutions. These elements include frequency of use of interoperable communications, governance, standard operating procedures, technology, and training/exercises.

The Interoperability Continuum was developed in accordance with SAFECOM's locally driven philosophy and its practical experience in working with local governments across the nation. This tool was established to depict the core facets of interoperability according to the stated needs and challenges of the public safety community and will aid public safety practitioners and policy makers in their short and long term interoperability efforts.

Communications interoperability refers to the ability of public safety agencies to talk across disciplines and jurisdictions via radio communications systems, exchanging voice and/or data with one another on demand, in real time, when needed, and as authorized.

Appendix B

MAP

Please contact the Idaho Bureau of Homeland Security, Public Safety Communications Division

Appendix C

Resolution (with validating notes)

Idaho Statewide Interoperability Executive Council

Resolution Number 2005-01

WHEREAS, the Council has considered all available alternatives; and

(The available alternatives were, should Public Safety follow the FCC's requirement to move to narrowband (twice), set up gateways and agreements to stay the UHF and VHF bands moving to narrowband or to move once into a clear FCC designated public safety 700 MHz band. It made sense to move once into a band that would work for both voice and data like the 700 MHz band.)

WHEREAS, a study conducted by the Interoperable Communications Technical Assistance Program (ICTAP) team concluded that a 700 MHz system was feasible; and

(ICTAP compared the transmit and receive levels that could be obtained using existing sites with VHF, UHF, and 700. This demonstrated that a 700 MHz system was feasible.)

WHEREAS, the ICTAP study and other pertinent information was reviewed by the SIEC Technical Subcommittee; and

(This is pretty much self-explanatory. Again based upon the premise of system availability and ease of migration to achieve level 5 interoperability.)

WHEREAS, many local governments agencies have received radio engineering studies and have opted to install 700 MHz radio systems; and

(For a radio system to meet the operational requirements of any public safety agency, proper engineering needs to be performed based on two specific requirements; what is the operational need and what is the best engineered design to meet the operational need. The 700 MHz spectrum meets both the voice requirement and the data requirement. As the first 700 MHz system, located in Bannock County, demonstrated that 700 MHz not only met the need, but also exceeded expectations for coverage.)

WHEREAS, the Federal Communications Commission (FCC) in an attempt to promote migration to narrowband (12.5 kHz) technology in the 150-174 MHz and 421-512 MHz bands by January 1, 2013, released FCC 04-292; and

(The FCC in an attempt to allow more operations in a congested portion of the spectrum designated for use by public safety, formulated a design to use less bandwidth per channel and resulted in a doubling of the available number of channels for use by public safety without assigning more radio spectrum for public safety, but meeting the demand by public safety for more channels or spectrum. The issue here is not the fact that public safety is required to move to 12.5 KHz channels, but more importantly, the FCC's upcoming requirement to move to the 6.25 KHz channels when the FCC determines when they will require the migration to take place. Some agencies already have equipment that will meet the 12.5 KHz requirement, but no one has equipment that will operate in both the 12.5 KHz and 6.25 KHz channels.)

WHEREAS, there are insufficient channels available in the 150-174 MHz and 421-512 MHz bands to comply with the FCC mandate to migrate to narrow band; and

(The present demand for channels has exceeds the available capacity allowed within these particular bands. This is once again demonstrating that very soon a cash expenditure will take place by every agency to migrate towards the narrowband requirement. The question is, should funds be expended a number of times or just once?)

WHEREAS, there are existing high speed data requirements that can only be realized using a 700 MHz radio versus either the slower data speeds in the 150-174 MHz or 421-512 MHz or the 800 MHz frequency bands; and

(Simply put, 700 MHz is the only FCC public safety designated spectrum that was specifically developed for both voice and wideband data operations. The only way to ever achieve total interoperability for public safety is to have everyone in the same band.)

WHEREAS, some agencies may elect to remain in the UHF or VHF frequency bands; and

(Due to some agencies belief that the only band that will work for their operational needs, the SIEC realizes that coordination needs to take place to develop an interoperable plan, which will allow interoperability with those various agencies.)

WHEREAS, the 700 MHz backbone system will accommodate those agencies, allowing them to share the benefits of a statewide backbone.

(The SIEC determined that the majority of public safety would be operating in the 700 MHz band and also that through multiple agency participation would become the backbone system or base infrastructure, which could then be added to or interfaced, in order to ensure interoperability among public safety users.)

BE IT HEREBY RESOLVED BY THE IDAHO STATEWIDE INTEROPERABILITY EXECUTIVE COUNCIL, that:

1. The statewide interoperable communications backbone shall be operated in the 700 MHz frequency band;
2. All agencies are highly encouraged to participate in the 700 MHz interoperable radio system.

(ABUNDANT CAPACITY- The 700 MHz Public Safety band has more capacity for voice and data communications than VHF, UHF and 800 combined.)

(CLEAR SPECTRUM- The 700 MHz Public Safety band is free from incumbent users and can be licensed for use immediately.)

(CLEAN SPECTRUM- The 700 MHz Public Safety band is free from interference and therefore is capable of delivering maximum use to public safety.)

Appendix D

700 MHz Radio Survey

**Department of Homeland Security (DHS) Interoperable Communications
Technical Assistance Program (ICTAP)**

ICTAP was requested by the Idaho SIEC to produce several coverage maps utilizing 700 MHz spectrum. The contour models utilizing set criteria could then be evaluated to determine potential coverage of a 700 MHz system. Forty-nine state microwave sites were selected for the studies based upon trunked radio systems requirement for microwave to operate effectively. Following is the list of criteria that was used as a standard format for the forty-nine site contour models:

1. Tx ERP = 160 Watts
2. Repeater/Base Station Tx Power = 31 Watts⁵
3. Repeater/Base Station Rx Sensitivity = -121 dBm⁵
4. Tx/Rx Connector Loss = 0.5 dB²
5. Tx Combiner Loss (Accounted for in Tx power)⁵
6. Rx Multicoupler Loss (Accounted for in Rx sensitivity)⁵
7. Tx and Rx Antennas = DB589 with a gain of 9 dBd
8. Tx Antenna Height = 70 feet
9. Tx Cable Length = Antenna height + 30 feet (tower base to equipment) = 100 feet
10. Rx Antenna Height = 80 feet
11. Rx Cable Length = Antenna height + 30 feet (tower base to equipment) = 110 feet
12. Tx/Rx ½" Superflex Line Loss = 3.2 dB/100 feet
13. Tx/Rx 1¼" Line Loss = 0.732 dB/100 feet
 - Run ½" Superflex from equipment and tie to 1¼" coaxial (inside building)
 - Run 1¼" Coaxial to antenna on the tower
14. Frequency of operation = 770 MHz for talk out
15. Frequency of operation = 800 MHz for talk in
16. Propagation model is Okumura-Hata-Davidson Adaptive
17. Adaptive parameters: See table below⁶

Classification	Attenuation (dB)
	Frequency (MHz): 746-941
Open Land	5
Agricultural	18
Rangeland	10
Water	0
Forest Land	25
Wetland	3
Residential	20
Mixed Urban/ Buildings	20
Commercial / Industrial	20
Snow & Ice	0

⁵ Based on the Motorola STR-3000 data specifications

⁶ Figures from TSB-88B, pg. 96, Table 19

18. Set the confidence and reliability⁷:

- Set Margin = 11.5 dB for 97% tile reliability (standard deviation of 5.6dB)

19. Delivered Audio Quality (DAQ) Levels⁸:

Audio Level	Talk Out (dBm)	Talk In (dBm)	Bin Color
DAQ 4	-105.4	-107.4	Green
DAQ 3.4	-108.9	-110.9	Blue
DAQ 3	-110.1	-112.1	Orange

20. Subscriber Unit: (the receiving mobile unit)⁹

- Rx/Tx Omni Antenna Gain = 3 dB
- Rx/Tx Loss = 4 dB
- Rx/Tx Antenna Height = 4 feet
- Transmitter Power = 30 Watts
- Receiver Sensitivity = -119 dBm
- Use 1¼" Coaxial cable rather than ½" coaxial cable.
- Use ½" Superflex coaxial cable rather than ¼" Superflex coaxial cable.
- Use 97% vice 95% tile reliability margin.
- Top mounted antennas with Receiver (Rx) = 80 feet and Transmitter (Tx) = 70 feet rather than using currently available space on existing towers.
- Print maps for each of the 49 sites, one site at a time (talk out and talk in), rather than district wide coverage maps.
- Show coverage maps using MapPoint underlay map rather than a terrain map to show cities and main roads.
- Add Effective Radiated Power (ERP) to the parameter list.

The following list of sites was selected for the study by ICTAP:

District 1

- Black Mtn. / Bonners Ferry
- Bonners Ferry
- Coeur d'Alene
- Mica Peak
- Sandpoint Baldy
- Schweitzer Peak

District 2

- Cold Springs Ridge
- Cottonwood Butte
- Culdesac Grade
- Grangeville
- Lewiston
- Lewiston Hill
- Moscow (U of I)
- Moscow Mtn.

⁷ Figures from TSB-88B, pg. 101, Table 21

⁸ Reference TSB-88B, pg. 159, Table A-1

⁹ Based on the Motorola XTL-5000 data specifications

District 3

- Boise ITD Dist 3
- Boise ITD Hdqtrs.
- Boise Towers
- Brundage Mtn.
- Doe Point
- Meridian
- Rocky Butte
- Shafer Butte
- Snowbank Mt.

District 4

- Albion Ridge
- Cotterel Port of Entry
- Flat Top Butte
- Jerome ISP
- Ketchum Baldy
- Mt. Harrison
- Notch Butte
- Shoshone
- Twin Falls
- Yahoo Creek

District 5

- Blackfoot
- Chinese Peak
- Howard Mtn.
- Paps Mtn.
- Pocatello
- Sedgwick Peak

District 6

- East Butte
- Grouse Peak
- Idaho Falls ISP
- Idaho Falls SOB
- Iona Butte
- Relay Ridge
- Rigby
- Salmon Baldy
- Salmon ITD
- Summit Lake

Appendix E

**PLANNING ELEMENTS FOR COUNTY
INTEROPERABLE EMERGENCY COMMUNICATIONS PLANS**

**Idaho Statewide Interoperability Executive Council
(SIEC)**

To: Counties of Idaho and SIEC Partners

Subject: Assistance Memorandum on Interoperability Planning

This appendix is presented in support of accomplishing Phase I of the Idaho Cooperative Agencies' Wireless Interoperable Network (I-C-A-WIN). The SIEC believes that most areas will be able to achieve Level 3 interoperability with relatively minor modifications to their existing communications systems. As counties proceed to prepare written communications plans and evaluate the best use of their existing resources, this document may assist in standardizing the necessary information. This should allow the analysis of existing systems and plans for purposes of expanding such to regional and then statewide systems in the next phases of I-C-A-WIN.

This memo provides information and suggests elements for developing a local interoperability communications plan. It is provided by the SIEC as a resource. It is the hope of the SIEC that this information will be a useful starting point for interoperability planning.

For the purposes of coordinating communication agencies, the SIEC recommends including a broad range of public and private entities that provide public safety services, including: emergency management, police, fire, emergency medical service, hospitals, transportation, public works, utilities, forestry, municipal and commercial airports and other state and federal agencies that operate radio systems within a service area.

Planning Elements for County Interoperability Planning

1. Introduction

2. Lead Contact Information

- a. Designation of Lead Agency for Plan
- b. Contact Information for Designated Primary Contact

3. Managers of Radio Systems Within County

- a. List entities and users to be covered by the plan
- b. Identify managers of public safety radio systems in county and contact person(s)

4. Service Area

- a. Describe coverage area and the population served within area
- b. Generally describe the type of topography/terrain of service area
 - i. Roads
 - ii. Waterways
 - iii. Mountains/hills
 - iv. Other
- c. Identify the type of structures that present special challenges within the service area (e.g. tunnels, high rise buildings, industrial complexes)
- d. Provide signal coverage maps as available
- e. Identify dispatch center(s) that dispatch for the public safety agencies within geographic area

5. Frequencies Used and Licensed in County

- a. List frequencies used in the county and the agencies that hold the FCC license
- b. List persons responsible for maintaining licensing of frequencies (FCC compliance)

6. Intergovernmental Agreements

Briefly describe the formal and/or informal communications arrangements that presently exist within the planning area. *Examples:* memoranda of understanding, mutual aid agreements, historical perspective or practice, contract, etc.

7. Status of Interoperability in County

- a. Describe radio communications systems presently in operation within the service area

- i. Frequencies used and band of operation
 - ii. Coverage and reliability (effectiveness)
 - iii. Redundancy of systems
 - iv. Existing user groups and the purpose of each group
 - v. Language and code usage for each user (e.g. 12 code, 10 code or clear text)
- b. Describe what the county has done or has planned to do toward implementation of the NIMS as requested by the Federal Department of Homeland Security. Include a description of the ICS portion of NIMS to be incorporated in the county communications plan.
 - i. Describe the daily use of channels for responses to incidents.
 - ii. Describe how current and planned channels will be implemented in the ICS system for major events.
- c. Interoperability within the county
 - i. Describe known interoperability gaps and challenges
 - ii. Identify actions in progress to address short- and long-term problems and provide associated timeline for completion
 - iii. Identify gaps and challenges that cannot be addressed at this time
 - iv. Identify or describe plans to conduct, or results of, any emergency management training exercises that test communications within the county
 - v. Identify existing communications plans, if any, of system users including on-going plans to develop the communications infrastructure
- d. Interoperability outside the county
 - i. Identify how the county and planning partners will improve interoperability with neighboring counties within the state and, if applicable, with neighboring counties in border states
 - ii. Identify what the county and planning partners are doing to improve interoperability with state public safety entities
- e. Short-term interoperability
 - i. Describe what the county and planning partners have done or have planned to implement the Federal Communications Commission's newly established nationwide interoperability channels¹⁰
 - ii. Describe plans, if any, and processes to transition to narrow band and digital operations, consistent with FCC Project 25 Standards
 - iii. Describe plans, if any, and processes to incorporate 700MHz into jurisdictional communications systems

¹⁰ The following is the SIEC's guide for programming the FCC designated interoperability (I/O) channels into existing radios and all new radios that are added to any system. Due to space limitations in some radios, it may not be possible to program all of the I/O channels into all radios. In that case, at a minimum, the calling channel and the first tactical channel should be programmed. The frequencies listed are in each of the -3 bands and are listed by order of priority, with the highest priority shown at the top of the list. They are to be programmed into the radios with the highest priority first, as space permits

Appendix F

Methodology Of Connecting To The 700 MHz Radio System.

The following table sets the rules that allow other than 700 MHz radio systems to connect to the 700 MHz radio system in this plan

<u>Technology Used</u>	<u>Frequency Band</u>	<u>Interoperability/Connectivity</u>
P 25 Trunking	All	Master Site
P 25 Conventional	All	Master Site if Connected
P 25 Conventional	All	ACU1000 LYRIX Console Patch Gateway Device Crossband Repeater If not connected to The Master Site
Conventional	All	ACU 1000 LYRIX Console Patch Gateway Device Crossband Repeater

Appendix G

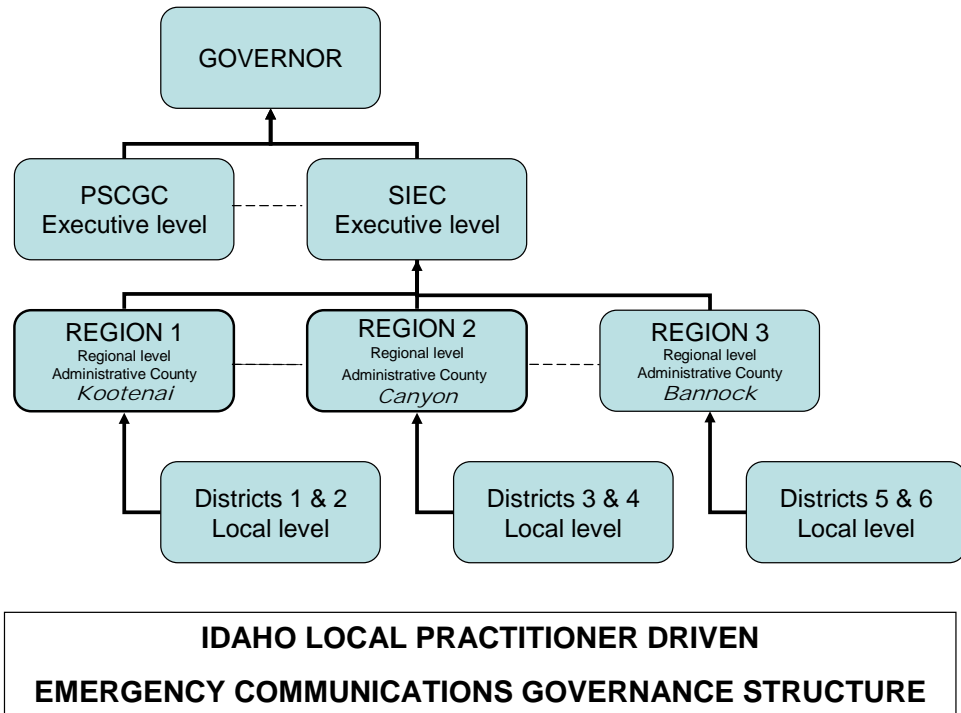
Idaho Statewide Conceptual Design Report (CTA Communications)

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(Provided Separately: For more information about this document please go to www.bhs.idaho.gov .)

Appendix H

Governance Structure



October 2008 Idaho SIEC

Appendix I

Terms and Definitions

700 MHz – Frequency band allocated by the Federal Communications Commission as additional 24 MHz of public safety spectrum in the 764-806 MHz band, which can provide for immediate capacity growth in areas not currently blocked by incumbent TV channels for public safety communication access. This band is capable of carrying both voice and data transmission.

Districts – Used as the unit of measure for this plan. Reference Appendix B of this Concept.

ERP – Effective Radiated Power is a measure of the power output of an antenna, used by stations to predict signal range, and by regulatory bureaus to limit a station's emissions.

FCC – The Federal Communications Commission (FCC) is an independent United States government agency, directly responsible to Congress. The FCC was established by the Communications Act of 1934 and is charged with regulating interstate and international communications by radio, television, wire, satellite and cable. The FCC's jurisdiction covers the 50 states, the District of Columbia, and U.S. possessions.

ICTAP – The Interoperable Communications Technical Assistance Program contracted through the Office for Domestic Preparedness, US Department of Homeland Security, to provide assistance in interoperability planning.

Interoperability – The ability of public safety service and support providers – law enforcement, firefighters, EMS, emergency management, public utilities, transportation and others – to communicate when necessary with staff from other responding agencies, and to exchange voice and/or data communications on demand and in real-time.

Interoperability Continuum – SAFECOM's Interoperability Continuum is designed to help the public safety community and local, tribal, state, and federal policy makers address critical elements for success as they plan and implement interoperability solutions. These elements include frequency of use of interoperable communications, governance, standard operating procedures, technology, training/exercises, and frequency of use (usage) of these solutions.

kHz / kilohertz – A unit of frequency equal to 1,000 hertz. Used especially as a radio-frequency unit.

Master Site / Master Site Switch – The Master site is a system that serves as a core network center for a trunked radio system. The Master site includes controllers, servers, network routing devices, management terminals and console equipment to support a wide-area 700 MHz Radio System. In addition, a Master site is a trunking controller that provides automatic switching of a mobile or portable radio between tower sites. Much like a cellular switch, it enables a user in one coverage area to communicate with a user in another area served by a different tower site or system of towers.

MHz / megahertz – One million cycles per second. Used especially as a radio-frequency unit.

Narrowband – The Federal Communications Commission's rule-making proceeding to reduce wideband channel assignments from 25 kHz, then to 12.5 kHz and finally to 6.25 kHz bandwidths.

NIMS – The National Incident Management System created by the US Department of Homeland Security in order to provide a consistent nation-wide approach for all levels of government to work together effectively and efficiently to prepare for, prevent, respond to, and recover from domestic incidents, regardless of cause, size, or complexity.

Project 25 Digital Radio Standards (P25) – Developed as a partnership involving the Association of Public Safety Communication Officials, the National Association of State Telecommunications Directors, agencies of the Federal government, and the Telecommunications Industry Association, Project 25 is a suite of standards for Private Wireless radio equipment. Developed in a process controlled by the public safety user community, the suite includes the air interface, and standardized functions and protocols supporting both conventional and trunking architectures. The standards require equipment to be backward compatible with legacy analog equipment (i.e., operate on both digital and analog systems) and to be non-proprietary. Ultimately, the standard ensures that all the defined services are accessible to any subscriber unit or system built to the Project 25 specifications.

SAFECOM – The Wireless Public SAFETy Interoperable COMMunications Program is the umbrella organization managed by the US Department of Homeland Security with coordination/oversight responsibility for federal initiatives and projects pertaining to public safety communications and interoperability at the local, state, federal and tribal levels.

SIEC – The Statewide Interoperability Executive Council for the state of Idaho is charged with the responsibility to provide policy level direction and promote efficient and effective use of resources for matters related to public safety wireless radio interoperability. The SIEC works in cooperation with the Idaho Emergency Communications Commission (E911 Commission) whose primary focus is to assist emergency communications and response professionals in the establishment, management, operations, and accountability of consolidated emergency communications systems. Idaho Code 46-1200.

Standards-based shared communications system – A non-proprietary communications system in which interoperability is provided as a byproduct of system design, creating an optimal technology solution.

State Level Radio Systems – Consists of a statewide digital microwave system, which is utilized by the State Agencies as a transport mechanism for the control of the state's two-way radio systems. In addition to the microwave system are the State Agencies two-way radio systems. The statewide digital microwave system is intended to link all of the state radio systems, disparate regional radio systems and other radio systems together.

Trunked Radio System – Trunking is the efficient utilization of a frequency spectrum. Many subscribers can use fewer radio frequencies than a conventional radio system to hold many conversations.

UHF – Ultra High Frequency. A band of radio frequencies from 300 to 3,000 MHz. The specific radio frequency spectrum that Idaho predominately utilizes within the 450-460 MHz range.

VHF – Very High Frequency. A band of radio frequencies falling between 30 and 300 MHz. The specific radio frequency spectrum that Idaho predominately utilizes within the 130-174 MHz range. This publication was supported by grant # 2005-GE-T5-0044 awarded by the Idaho Bureau of Homeland Security. Points of view or opinions in this document are those of the authors and do not represent the official position or policies of the U.S. Department of Homeland Security or the Idaho Bureau of Homeland Security. Costs associated with this publication are available from the Idaho Statewide Interoperability Executive Council in accordance with I.C. Section 60-202.

This publication was supported by grant # 2004-GE-T4-0034 awarded by the Idaho Bureau of Homeland Security. Points of view or opinions in this document are those of the authors and do not represent the official position or policies of the U.S. Department of Homeland Security or the Idaho Bureau of Homeland Security. Costs associated with this publication are available from the Idaho Statewide Interoperability Executive Council in accordance with I.C. Section 60-202.

For more information about this document or to submit comments please contact the Idaho Statewide Interoperability Executive Council.