STATEWIDE EMERGENCY COMMUNICATIONS BOARD

September 22, 2016 12:30 P.M.
Chair: DPS Commissioner Ramona Dohman
MnDOT Arden Hills Training Center
1900 West County Road I Shoreview, MN 55126

Call in Number: 1-888-742-5095
Call in code: 2786437892#

MEETING AGENDA

Call to Order

Approval of Today's Agenda

Approval of Previous Meeting's Minutes

Announcements

- COML Certificate for John (Jack) Sheehan

Reports of Standing Committees:

Operations and Technical Committee (Glaccum)

1. Public Works Best Practices Guide ***Action Item***
2. Change Management Standard ***Action Item***
3. Pierce County Participation Plan Amendment ***Action Item***
4. Fire Service Communications Best Practice Guide ***Action Item***
5. LOGIS request for TriTech Interface with MCC7500 ***Action Item***

Interoperability Committee (Thomson)

Legislative & Government Affairs Committee (Workman)

Steering Committee (Hartog)

IPAWS Committee (Seal)

NG911 (Pankonie)

Interoperable Data Committee (Risvold)

1. State Plan Process and Stakeholder Letter ***Action Item***

Finance Committee (Gerlicher)

1. Norman County Migration Grant ***Action Item***
2. Re-allocation of 2015 SHSP Funds ***Action Item***
3. 201702018 SECB Grant ***Action Item***

4. Sale of the Refunding of the ARMER Bonds ***Action Item***

Reports – Other

- ARMER Project Status Report (MnDOT OSRC)
- ECN Update (Mines, DPS ECN)
    - Status of SECB Initiatives
        - GIS Project
        - Text-to-911
        - 7.19 Upgrade
        - FirstNet

Old Business

New Business

- Presentation from Motorola

Adjourn

STATEWIDE EMERGENCY COMMUNICATIONS BOARD

MEETING MINUTES

June 23, 2016

Attendance
Members:

MEMBER/ALTERNATE	REPRESENTING
Vacant (Chair)/Jackie Mines	DPS
Mukhtar Thakur/Tim Lee/Jim Mohn	MnDOT
Thomas Baden/Ed Valencia	MNIT
Greg Salo/Todd Kanieski	DNR
Rochelle Schrofer/Tim Boyer	MN State Patrol
Vince Pellegrin/Thomas Humphrey	METC
Bill Droste/ Vacant	League of MN Cities, Metro
Eric Anderson/Pat Novacek	League of MN Cities, Greater MN
Liz Workman/vacant	Assoc. of MN Counties, Metro
Jim McMahon/vacant	Assoc. of MN Counties, Greater MN
Chris Caulk/Darlene Pankonie	MSA, Metro
Dan Hartog/Scott Turner	MSA, Greater MN
/Jeff Marquart	
Mike Gamache/Andrew Johnson	MESB
Mike Risvold/Eric Werner	MN Chiefs of Police Assoc., Metro
Cari Gerlicher/Dave Thomson	MN Chiefs of Police Assoc., Greater MN
Ulie Seal/Vacant	MN Fire Chiefs Assoc., Metro
T. John Cunningham	MN Fire Chiefs Assoc., Greater MN
Joe Glaccum (Vice Chair)/vacant	MN Ambulance Assoc., Metro
Brad Hanson/Paul McIntyre	MN Ambulance Assoc., Greater MN
Jeff Jelinski/Barb Erdman	Central MN ESB/Northeast ECB

Guests:
Scott Wiggins, Federal Engineering
Joe McCamley, Federal Engineering
Cathy Anderson, ECN
Rick Juth, ECN
Dustin Leslie, ECN
Carol Salmon, ECN
Micah Myers, Central ESB
Jill Rohret, MESB
Troy Tretter, MESB
Carrie Oster, Motorola
Scott Wosje, Northland Business Systems

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CALL TO ORDER

Vice Chair Glaccum calls the meeting to order at 12:30 p.m.

APPROVAL OF AGENDA

Thomas Humphrey makes a motion to approve the agenda.
Dan Hartog seconds the motion.
Motion carries.

APPROVAL OF PREVIOUS MEETING MINUTES

Mike Risvold makes a motion to approve the May meeting minutes.
Bill Droste seconds the motion.
The motion carries to approve the minutes.

ANNOUNCEMENTS

Joe Glaccum reports that Mr. Ron Vegemast passed on in early June. Glaccum notes that Vegemast was instrumental in getting the ARMER system built from the ground up and is owed a debt of gratitude for his contribution.

Jackie Mines announces that DPS Commissioner Mona Dohman will be chairing the SECB beginning in July.

Mike Risvold introduces Chief Eric Werner who will be the new alternate representative to the board from the Chiefs of Police Association, Metro Region.

REPORTS OF STANDING COMMITTEES

OPERATIONS AND TECHNICAL COMMITTEE REPORT (GLACCUM)

BROWN COUNTY BDA REQUEST

Chair Glaccum presents a request from Brown County to add an outdoor BDA at the city of Springfield site. MnDot has reviewed it and has no objections.

Jim McMahon makes a motion to approve the Brown County BDA request, as submitted in the meeting materials.
Humphrey seconds the motion.
Motion carries.

ST. LOUIS COUNTY ARMER PARTICIPATION PLAN ADDENDUM 3

Chair Glaccum introduces a request from St. Louis County to amend its participation plan to add the

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use of the ISSI Gateway to connect the ARMER system in St. Louis County to the Wisconsin WISCOM system, as presented in the meeting materials. MnDOT has no objections. St. Louis County secured funding and is the steward of this system right now so if another entity is interested it would work with St. Louis County, along with appropriate permissions from the SECB.

The plan amendment includes the addition of two T-1 Ports, 150 talkgroup IDs, adding the Boise Fort Tribe to the plan, and five additional site profiles which were approved by MnDot and will help with the traffic because the county is so vast.

Humphry makes a motion to approve the St. Louis County ARMER Participation Plan Addendum 3, as submitted in the meeting materials.
Jeff Jelinski seconds the motion.

McMahon asks if we are getting close to consideration of capacity levels.
Glaccum responds that there was a problem before the upgrade but we do not have that issue now.

Motion carries.

INTEROPERABILITY COMMITTEE

The committee did not meet in June and there is no report.

LEGISLATIVE & GOVERNMENT AFFAIRS COMMITTEE (WORKMAN)

Jackie Mines asks Jill Rohret to give a brief update.

Rohret reports that the primary issue the committee focused on was the request to backdate the Joint Powers sales tax exemption and that did not get included in the final tax bill. She suggests that if Joint Powers boards have a big purchase and can delay it until January that might be fiscally prudent.

STEERING COMMITTEE (HARTOG)

Chair Hartog reports that the committee did not meet in June but that there is a workgroup studying the system busies and there will be a report on that at the committee meeting.

IPAWS (SEAL)

The committee did not meet in June and there is no report.

NG911 COMMITTEE (PANKONIE)

Joel McCamley from Federal Engineering gives a presentation on the PSAP Survey Report and NG9-1-1 Life Cycle Funding Analysis, as submitted in the meeting materials.

McCamley reports that a survey was sent to 104 PSAPs. There were 79 responses. Seventy responded that the PSAP intends to deploy and implement Text-to-9-1-1 services. This service is an especially vital new tool for PSAPs to communicate with the deaf and hear impaired community. Thirty-four PSAPs plan to upgrade to NG9-1-1 capable Call Processing Equipment (CPE) in the next three years and ten additional PSAPs might have to upgrade based on the information they provided. Forty-four total possible replacements represent 42% of all MN PSAPs upgrading CPE for NG9-1-1 in the next three years. Forty-six PSAPs have upgraded/replaced their CPE in the last four years and that represents 44% of all MN PSAPs already upgraded CPEs for NG9-1-1.

Thirty PSAPs identified Message Session Relay Protocol (MSRP), a feature of NG9-1-1 capable CPE, as the preferred deployment method for Text-to-9-1-1 service thus allowing the PSAP to receive and respond to Text-to-9-1-1 sessions with the same system used to answer traditional 9-1-1 calls. That may take longer to achieve but should be the method for deploying all Text-to-9-1-1 services at a PSAP.

The PSAPs are interested in the Session Initiation Protocol (SIP). A SIP interface is a requirement of NG9-1-1 capable CPE, allowing additional data to eventually be presented with the call. As PSAPs upgrade/replace CPE systems, they are gaining SIP capability.

Chair Pankonie adds that at this point the cost is unknown about adding the SIP protocol but it looks like it will be significant.

Mines adds that vendors were asked a year or two ago if the PSAPs would be charged implementation costs and the vendors said no. The vendors ECN is in negotiation with now have changed their response about cost. This makes it difficult at the state level to make plans.

Camley says that texting is typically only used for 10% of calls and dollars should line up that way. Text-to-9-1-1 will generate a new kind of traffic but not a lot of traffic percentage-wise. Vendors should line up more appropriately. The FCC fixated the industry on an interim solution which is not where we want to be in five years. He notes that operationally a two or four position dispatch doesn't need a Computer Aided Dispatch (CAD). It is not a requirement of any 9-1-1 center to have a CAD system. The majority of PSAPs across the country do not have them. There is not a direct tie between NextGen9-1-1 and a CAD system. However, CAD as an application is probably where NextGen9-1-1 should take place, eventually. There may come a time when these come together. He adds that there are a lot of shared services in Minnesota such as logging recorders. This is thanks to the ARMER system. Another one is an Emergency Notification System (ENS).

Hardware and software replacements lifecycles are shortening and there is a greater need to update to remain current.

PSAPs identified training and establishing best practices for telecommunicators as requirements to support the transition to NG9-1-1. The National Emergency Number Association (NENA) came out with a report of Best Practices last week. This will be reviewed for consideration in developing a similar document for Minnesota PSAPs.

Most of the PSAPs in Minnesota rely on outside help for GIS data. There are two types of GIS data--one for routing and one for dispatching. The routing is a little less finite—doesn't have to be dispatch quality to route calls. The requirement at the PSAP level for GIS is going to increase. The

need for IT support staff will also increase as the transition to NG9-1-1 continues. Cyber security is a top priority.

Camley concludes that the transition to NG9-1-1 is well underway at both the state and local levels in Minnesota but there is more work to do, equipment to replace or upgrade and new services to deploy. This will require continued support of the 9-1-1 fund, local PSAPs and ECN to be successful and close the 9-1-1 technology gap.

Pankonie adds that the software is so robust that some of the servers are not able to support it. She notes that key highlights of the report are the trends that PSAPs are spending more money to upgrade technology to transition to NG9-1-1 and that PSAPs want Best Practices Standards and training. PSAPS will need more GIS support. The current GIS project being led by Adam Iten will help with this. Training will need to increase as PSAPs transition to new technology and the funding for training will need to increase. NENA just came out with a standard for minimum training and the committee will review it to see if Minnesota should align with it.

Chair Pankonie makes a motion that the board accept the Minnesota 2016 PSAP Survey Report and NG9-1-1 Life Cycle Funding Analysis with a note that there were minor errors on the draft sent to the board which will be corrected before the final report is distributed.
Jelinski seconds the motion.
Motion carries.

INTEROPERABLE DATA COMMITTEE (RISVOLD)

Chair Risvold reports that the committee met by conference call for informational updates but has no action items for this meeting.

FINANCE COMMITTEE REPORT (GERLICHER)

CLAY COUNTY ARMER MIGRATION GRANT

Micah Myers reports that Clay County submitted a request for an ARMER Migration Grant. The grant workgroup agreed to the amount listed in the meeting materials ($165,689.58).

Risvold makes a motion to approve the Clay County ARMER Migration Grant.
Humphrey seconds the motion.
Motion carries.

REPORTS – OTHER

ARMER PROJECT STATUS REPORT (MNDOT OEC)

Mukhtar Thakur reports that there are no new sites on the air. Four sites will be delayed due to land acquisition. The budget is under control. The upgrade is on schedule. Preliminary work is beginning on tower replacements.

Vice Chair Glaccum asks about the Meander Lake solar site. He says that he heard it proved to be valuable recently with fires in the Boundary Waters caused by lightning strikes. Thakur has not yet heard a report from that incident.

ECN UPDATE

Jackie Mines reports that ECN staff has attended regional meetings in the Northwest and Northeast and a trip is scheduled to the Southeast region. She adds that ECN welcomes the opportunity to give updates on NextGen, ARMER, FirstNet and grants. Let her know if a region would like to have ECN come and present on a topic. ECN's goal is to visit every region once a year. Staff have also attended conferences on 9-1-1 and the PSER technical conference about FirstNet. While the PSER conference is usually very technical, this year the discussions were at a higher level, perhaps because of the FirstNet RFP being under consideration. Mines reports seeing a hard push on many levels to adopt FirstNet. FirstNet staff is doing more outreach to governors and other government offices and ECN is getting calls about that. The IDC and its workgroups are continuing the work on the Minnesota state plan and requirements.

Mines thanks Joel Camley for his presentation. She notes that there was concern at NENA and NASNA that NG9-1-1 is not being pursued by most of the states. It is expensive and difficult for states that don't have centralized governing bodies. Minnesota sits solidly in that the state has moved forward with a lot of initiatives and is well positioned, with thanks to the NG911 Committee and this board. Two things to work on are Cyber Security at the PSAP and the grants that have traditionally been used toward ARMER being used for PSAPs to help offset the Cyber Security and Text-to-9-1-1 costs. Mines supports the PSAPs sharing resources and encourages the board to continue to support that as well.

Mines is working with Dustin Leslie on a grant workshop for each region to help the regions understand the importance of using grant money for what it was granted for and keeping the proper paperwork.

Meeting Adjourns at 1:50 p.m.

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Minnesota

Public Works

Communications Best Practice Guide

Statewide Radio Board, Operations & Technical Committee, Interoperability Committee, Public Works Best Practice Workgroup

Approved by the Statewide Radio Board

August 25, 2016

This document describes the recommended best practice, standards, and contact information for Minnesota public works to assist in planning for interoperability with other public safety disciplines.

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DOCUMENT REVISION HISTORY

Date	Revision	Notes	Name
5-17-2013	Removed Tom Johnson Added NWS standard info	Replaced with Brandon Abley	Cathy Anderson
4-29-2016	Entire guide		Workgroup

Section I: Introduction

The Public Works Best Practice Workgroup was created in 2012 to develop a Best Practice Guide for public works disciplines within the various agencies that are on the ARMER radio system or are in the process of migrating to the ARMER radio system. This guide is designed to serve as both a training plan and a resource document, providing a basic outline for the development of talkgroup layouts, and SOPs when interoperating with other disciplines of the same agency or other governmental and nongovernmental agencies. As the migration to ARMER continues to develop throughout the state, it is important for participating agencies to adopt similar programming and operational methods to facilitate seamless interdisciplinary and interagency communication. We will address communication between:

- Public works to public works
- Public works to law enforcement
- Public works to fire units
- Public works to EMS
- Public works to nearest dispatch center

It is likely that most public works disciplines migrating to the ARMER system have their law enforcement and fire departments already operating on the system or making the migration jointly, resulting in much of the fleetmap already being in place. Therefore, the affected public works disciplines will need to add talkgroups necessary for their operations, as well as talkgroups that would be necessary for operations with agencies or other disciplines they may work with on a regular basis.

It is important to remember that the most effective level of interoperability is achieved when users share the same radio system and have shared talkgroups directly accessible to them in their radios. Realizing the difficulty in achieving this goal statewide, this guide will set forth best practices for using current systems for the optimal interoperability solutions to address daily operations and extraordinary occurrences. The Minnesota Public Works Communications Best Practice Guide is a living document, and suggested changes may be submitted to the Emergency Communication Networks (ECN) Standards & Training Coordinator.

NOTE: Questions regarding State Standards or clarification of these standards should be directed to your Local System Administrator, Your Regional Interoperability Coordinator (RIC), or the Statewide Interoperability Program Manager.

Section II: ARMER Basics for Public Works

Each agency should customize their training plan to fit their own unique situation.
It is recommended that all training be completed by a qualified ARMER trainer.

State Standard 1.11.4, Training 800 MHz Users

This standard establishes the minimum training standards for radio operators to ensure proper operation of radios on the system.

Suggested supplemental training beyond the required training listed in State Standard 1.11.4:

It is highly recommended that Public Works personnel view training modules, created on behalf of the Statewide Emergency Communications Board (SECB) and reviewed and approved by subject matter

experts. These training modules are hosted through the Alexandria Technical & Community College online website. They can be accessed from ECN's website at dps.mn.gov/divisions/ecn, then ARMER and ARMER Standards.

A user name and password will be needed for these training modules, and instructions for obtaining these are posted on ECN's website under ARMER Standards. While web-based training is supplemental, except for the Minimum Training Requirements, all users must attend formal training for the ARMER system.

Alexandria Technical & Community College Training Modules

- Radio 101
- History of ARMER
- Interoperability 101
- Interoperability: How to Communicate Outside Your Agency
- Other relevant modules as developed

FEMA/NIMS Courses, NIMS training courses can be found at:
https://training.fema.gov/is/crslist.aspx?all=true

- IS-100PWb, Introduction to the Incident Command System (ICS100) for Public Works
- IS-700a, National Incident Management System (NIMS), An Introduction

Attending Field User ARMER Training: Information on local Field User Training may be obtained through your Local System Administrator or Regional Advisory Committee (RAC).

Section III: Public Works Related Statewide Standards

State Standard 1.11.4, Training 800 MHz Users

This standard establishes the minimum training standards for radio operators to ensure proper operation of radios on the system

State Standard 2.6.0, Fleetmap Standards

A Fleetmap is a list of talkgroups or channels that are programmed into your radios. The Allied Radio Matrix for Emergency Response System (ARMER) will contain a large number of talkgroups and multigroups to support the various agencies that will be subscribing to the system.

The ARMER System has multiple administrating agencies that will be maintaining fleetmaps and system programming of agencies they are responsible for. For the effective management of the system, a defined process needs to be used to document the fleetmap information that each administrating agency is supporting. This information needs to be in a format that is shared with the other administrators.

This also provides a resource for the subscribing agencies to reference when planning interagency communications. System fleetmaps contain configuration information that is classified as "Security Information" and "General Non-Public Data," pursuant to Minn. Stats. § 13.37, Subd. 1a.

State Standard 2.8.0, Talkgroup and Radio User Priority

This standard establishes varying priority levels for talkgroups to ensure the most critical talkgroups on the system are granted a channel as quickly as possible when and where the system is experiencing busy conditions.

State Standard 2.12.0, Scanning

This standard identifies operational procedures and responsible authorities governing scanning activities.

In many jurisdictions, public works users are issued radios with more limited features than those used by public safety users. As a result, it is sometimes difficult for public works users to manage lists of scanned talkgroups in their radios. Public works users with questions about scanning are encouraged to work with their local system administrator.

State Standard 3.15.0, Use of Scene of Action (SOA)

This standard provides standards, protocols, procedures, and operating parameters for Scene-of-Action channels.

The public safety discipline is best served by creating an operating procedure that maintains safety of personnel in situations. The range of mobiles and the "walk over" issue is a critical point. Once a radio is keyed, there is no way to control the footprint of the transmission, other than limiting the power of that transmission. Personnel talking on a mobile radio may have no way of knowing if they are walking over a portable in the next community, because they will not be able to receive it or realize that the channel is in use by the portable.

Public works users should be aware that by switching to an SOA channel, they are leaving the ARMER network and are operating in a direct, "radio-to-radio" mode. This has advantages in certain situations, such as highway flagging operations, where short distance communications are required with a limited number of users. Using SOA channels does not impose any system loading on the local ARMER network. Although mobile radios are permitted on SOA channels, portable radios are recommended in most cases, due to the limitations explained in the paragraph above.

Public works personnel should become familiar with the content of all state and Radio Region Standards included in the Best Practices Guide. While some contain more specific and pertinent information than others, all public works personnel, regardless of position, should have a good understanding of each standard. State and Regional Standards may be accessed through ECN's website under ARMER, then ARMER Standards.

Section IV: Interoperability

Regional Tactical Interoperable Communications Plan (TICP)

Tactical Interoperable Communications Plans are used by jurisdictions to document interoperable communications governance structures, technology resources, and usage policies/procedures. The TICP describes what interoperable communications assets are available in an area, how those assets are shared and prioritized, and the steps that individual agencies should use to request, activate, and deactivate them.

Public works personnel should be familiar with the regional communications resources that are available to their jurisdiction, as well as the process they must follow to request them. Copies of Regional TICP's are available through your Regional Advisory Committee (RAC).

State Standard 2.7.0, Use of Shared Talkgroups

This standard provides options to users of the Allied Radio Matrix for Emergency Response System (ARMER), which will allow talkgroup owners to predefine sharing authorizations for other agencies.

State Standard 3.16.0, 800 MHz Statewide STAC Interoperability Talkgroups

This standard establishes policy and procedures for use of uniform, statewide 800 MHz interoperability STAC talkgroups in all user radios.

3.32.0, Statewide Interoperable Plain Language Policy

The use of plain language (clear text) in emergency management and incident response is a matter of public safety, especially the safety of emergency management/response personnel and those affected by the incident. It is critical that all those involved with an incident know and utilize commonly established operational structures, terminology, policies, and procedures. This will facilitate the achievement of interoperability across agencies/organizations, jurisdictions, and disciplines, which is exactly what National Incident Management System (NIMS) and the Incident Command System (ICS) is seeking to achieve.

It is recommended that public works personnel be required to use clear speech for day-to-day activities. A limited list of permitted codes should be published for users and be strictly adhered to. This will make it easier to use clear speech only on major events, as well.

Use of Minnesota State Patrol Call Talkgroup

Minnesota State Patrol General Order 16-40-015, MSP Hailing talkgroup: MSP –CALL General Order, may be found on the ECN website under ARMER, Guide Books, then Best Practices.

Bordering States and Provinces Interoperability

Talkgroups may be patched by dispatchers to radio systems in other counties, states, or countries (Canada). If a public works user is working on a talkgroup patched to another system, it is important to use plain speech (no 10 codes) and identify yourself with agency name, followed by unit number. Example: "Hastings Public Works 303 to St. Croix County."

Statewide Interoperability Zone

ARMER Standard 3.16.6, 800 MHz Statewide Uniform Interoperability Radio Zones, establishes policy and procedures for the implementation of two 800 MHz uniform interoperability zones in all subscriber radios throughout the state. This policy will guarantee standardized Statewide and Nationwide interoperable communications capabilities for all service branches.

This uniformity will provide dispatch centers, Incident Commanders (ICs), and Communications Unit Leaders (COMLs) the ability to develop and adapt incident radio communications plans quickly and

effectively without having to rely on reprogramming radios, swapping radios, or establishing patches in the field.

Based upon Standard 3.16.6, all Public Works subscriber radios shall have these two statewide interoperability zones (unless a waiver or variance has been granted):

STATEWIDE INTEROP		
ZONE DISPLAY NAME	ROTARY CHANNEL SELECTOR	CHANNEL DISPLAY NAME
MN	1	STAC1
MN	2	STAC2
MN	3	STAC3
MN	4	STAC4
MN	5	STAC5
MN	6	STAC6
MN	7	STAC7
MN	8	STAC8
MN	9	STAC9
MN	10	STAC10
MN	11	STAC11
MN	12	STAC12
MN	13	STAC13E*
MN	14	STAC14E*
MN	15	
MN	16	

CONVENTIONAL INTEROP		
ZONE DISPLAY NAME	ROTARY CHANNEL SELECTOR	CHANNEL DISPLAY NAME
8C	1	8CALL90
8C	2	8TAC91
8C	3	8TAC92
8C	4	8TAC93
8C	5	8TAC94
8C	6	8CALL90D
8C	7	8TAC91D
8C	8	8TAC92D
8C	9	8TAC93D
8C	10	8TAC94D
8C	11	8SOA1
8C	12	8SOA2
8C	13	8SOA3
8C	14	8SOA4
8C	15	FSOA1*
8C	16	FSOA2*

*STAC13E and STAC14E: Required in all DES-equipped radios (or waiver). Must use Statewide Common DES Encryption Key.

*FSOA1 and FSOA2: Required in Fire and EMS only (or waiver). Not allowed in non-Fire and EMS radios.

Personnel should familiarize themselves with ARMER Standard 3.16.6; specifically, the areas of technical background, operational context, standardized policy, and standardized procedure. Your Local System Administrator should be contacted if you have any questions related to technical background and encryption.

Section IV. Standard Minnesota VHF Interoperability Resources*

CH #	Channel Name	Short Name[1]	Mobile TX	Mobile RX	TX/RX Mobile CTCSS[2]	TX/RX Base CTCSS[3]
1	VCALL10	VCAL10	155.7525	155.7525	156.7/CSQ	156.7/156.7
2	VTAC11	VTAC11	151.1375	151.1375	156.7/CSQ	156.7/156.7
3	VTAC12	VTAC12	154.4525	154.4525	156.7/CSQ	156.7/156.7
4	VTAC13	VTAC13	158.7375	158.7375	156.7/CSQ	156.7/156.7
5	VTAC14	VTAC14	159.4725	159.4725	156.7/CSQ	156.7/156.7
6	MNCOMM	MNCOMM	155.3700	155.3700	156.7/156.7	156.7/156.7
7	VFIRE23	VFIR23	154.2950	154.2950	156.7/156.7	156.7/156.7
8	MNFIRG2	MNFG2	154.0100	154.0100	156.7/156.7	156.7/156.7
9	MNFIRG3	MNFG3	153.8300	153.8300	156.7/156.7	156.7/156.7
10	DNRTAC1	DNRT1	151.4750	151.4750	156.7/156.7	N/A[4]
11	VLAW31	VLAW31	155.4750	155.4750	156.7/156.7	156.7/156.7
12	VMED28	VMED28	155.3400	155.3400	156.7/156.7	156.7/156.7
13	IR 2	IR 2	165.9625	170.4125	167.9/167.9	167.9/167.9
14	VTAC14R	TAC14R	154.6875	159.4725	156.7/156.7	156.7/156.7
15	NGRPTR*	NGRPTR	Rest.	Rest.	Rest.	Rest.
16	LE 2*	LE 2	162.2625	167.2500	$68F/$68F	$68F/$68F

Section V: Compliance & Conflict Resolution

The suggested method for reporting conflicts noticed by public works personnel is to document the conflict and forward it to your supervisor. The supervisor should attempt to obtain a resolution with the other entity involved. However, if a conflict is not able to be resolved at this level, the issue should be brought to the Local System Administrator.

Section VI: Refresher Training Plan

While it is the responsibility of each agency to establish their own refresher training, it is imperative to keep personnel up-to-date on the latest technological innovations, as well as applicable local, regional, and state guidelines/mandates.

It is a best practice recommendation that ARMER online equipment and console training modules be reviewed annually, at a minimum. In addition, the Minnesota Public Works Communications Best

[1] For use with limited character display radios
* Local option channel if not implemented with LOA or MOU for use of federal channels.
[2] CTCSS or NAC for subscriber radios. For VCALL10, VTAC11, VTAC12, VTAC13, and VTAC14, use receive CTCSS of 156.7 if needed to mitigate interference.
[3] CTCSS or NAC for fixed stations.
[4] There are no permanent, fixed stations on DNRTAC1.

Practice Guide should become part of every agency's new trainee curriculum, and it should also be reviewed periodically in training sessions for current employees.

Online training modules are available to all users. These courses, created on behalf of the Statewide Emergency Communications Board (SECB) and reviewed and approved by subject matter experts, are hosted through the Alexandria Technical & Community College online website. They can be accessed from ECN's website under ARMER Standards.

A user name and password will be needed for these training modules, and instructions for obtaining these are posted on ECN's website under ARMER standards.

Section VII: Other Best Practices Guides

EMS
Hospital
Emergency Management/Public Health
Dispatcher
Fire
Law Enforcement

These guides have been created as a result of diligent work by the groups involved. Members of the workgroup who contributed to the most recent update of this Guide: Rick Juth (Central MN RIC), Pat Wallace (Blue Earth County Communications Center Administrator), Randy Donahue (Southern MN RIC), Dean Wrobbel (Fire Chief, City of St. Cloud), Darrin Haeder (SR System Admin; SR RAC alternate/OTC), Rod Olson (Manager of Radio Communications Electronics, City of Minneapolis), Brandon Larson (IT, City of St. Cloud), Tom Zabinski (Maintenance Supervisor, St. Cloud Public Works), and Cathy Anderson (Standards & Training Coordinator, ECN). These guides provide guidance for their respective public safety disciplines and are available online. Access to completed Best Practice Guides is available on ECN's website under ARMER and Guide Books.

Section VIII: Minnesota Emergency Communication Networks Contacts

Current email contact information can be found on the ECN website under Contact and then Staff Contacts.

Section IX: Regional Radio and Advisory Committee Contacts

Contacts for the Regional Emergency Communications Boards/Emergency Services Boards (ECB/ESB) and Regional Advisory Committees (RAC) can be found on the ECN website under ARMER, then ARMER Standards. The information will be at the bottom of the page.

Section X: Radio Affiliated Acronyms

You can find a link to commonly used radio-affiliated acronyms on the ECN website.

Minnesota

Public Works

Communications Best Practice Guide

Statewide Radio Board, Operations & Technical Committee, Interoperability Committee, Public Works Best Practice Workgroup

Approved by the Statewide Radio Board

~~November 29, 2012~~ August ~~May~~ 25 ~~6~~, 2016

This document describes the recommended best practice, standards, and contact information for Minnesota public works to assist in planning for interoperability with other public safety disciplines.

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DOCUMENT REVISION HISTORY

Date	Revision	Notes	Name
5-17-2013	Removed Tom Johnson Added NWS standard info	Replaced with Brandon Abley	Cathy Anderson
4-29-2016	Entire guide		Workgroup

Section I: Introduction

The Public Works Best Practice Workgroup was created in 2012 to develop a Best Practice Guide for public works disciplines within the various agencies that are on the ARMER radio system or are in the process of migrating to the ARMER radio system. This guide is designed to serve as both a training plan and a resource document, providing ~~and will provide~~ a basic outline for the development of talkgroup layouts~~, programming~~, and SOPs when interoperating with other disciplines of the same agency or other governmental and nongovernmental agencies. – As the migration to ARMER continues to develop throughout the state, it is important for participating agencies to adopt similar programming and operational methods to facilitate seamless interdisciplinary and interagency communication. We will address communication between:

- Public works to public works
- Public works to law enforcement
- Public works to fire units
- Public works to EMS
- Public works to nearest dispatch center

It is likely that most public works disciplines migrating to the ARMER system have their law enforcement and fire departments already operating on the system or making the migration jointly, resulting in much of the fleetmap already being in place. Therefore, the affected public works disciplines will need to add talkgroups necessary for their operations, as well as talkgroups that would be necessary for operations with agencies or other disciplines ~~that~~ they may work with on a regular basis.

It is important to remember that the most effective level of interoperability is achieved when users share the same radio system and have shared talkgroups directly accessible to them in their radios. Realizing the difficulty in achieving this goal statewide, this guide will set forth best practices for using current systems for the optimal interoperability solutions to address daily operations and extraordinary occurrences. The Minnesota Public Works Communications Best Practice Guide is a living document, and suggested changes may be submitted ~~for consideration~~ to the Emergency Communication Networks (ECN) Standards & Training Coordinator. ~~Statewide Interoperability Committee through the Statewide Interoperability Program Manager, Brandon.Abley@state.mn.us, or by calling 651-201-7554.~~

NOTE: Questions regarding State Standards or clarification of these standards should be directed to your Local System Administrator, Your Regional Interoperability Coordinator (RIC), ~~County System Administrator~~ or the Statewide Interoperability Program Manager.

~~Section II: Participation in ARMER~~

~~Should jurisdictions choose to participate, State Standard 1.10.0, Requesting and Configuring Participation, details the necessary requirements. State Standards may be found on the Statewide Radio Board (SRB) website at: dps.mn.gov/entity/SRB.~~

~~Public works agencies planning to participate on the Minnesota ARMER System must realize that it is a statewide, interoperable communications system built to a project 25 standard. Unlike individual radio systems of the past, the ARMER System has a statewide, formal governance structure with recommended operational procedures, including formal regional and state standards. These procedures and standards~~

are intended to streamline the process of achieving communications in routine, daily operations and in emergencies when time-critical action is required. This document includes numerous state and regional contact references as a resource to assist you in your planning and implementation.

The workgroup recommends that each agency either link to or attach their Agency's Limited or Full ARMER Participation Plan to this document.

Copies of County Participation Plans may be obtained from the Director or Supervisor of the County Dispatch Center, Public Safety Answering Point (PSAP), or from the Regional Advisory Committee (RAC).

Section III: ARMER Basics for Public Works

Each agency should customize their training plan to fit their own unique situation.
It is recommended that all training be completed by a qualified ARMER trainer.

State Standard 1.11.4, Training 800 MHz Users

This standard establishes the minimum training standards for radio operators to ensure proper operation of radios on the system.

Suggested supplemental training beyond the required training listed in State Standard 1.11.4:

Alexandria Technical & Community College online training may be obtained through the Alexandria Technical & Community College website, http://www.alextech.edu/static/d2l.html?logout=1, or by contacting the Statewide Interoperability Program Manager at Brandon.Abley@state.mn.us. To obtain user name and password information for the Alexandria Technical & Community College online training, please contact Linda Muchow at 320-762-4539, 1-888-234-1313, or via email at lindac@alextech.edu.

It is highly recommended that Public Works personnel view training modules, created on behalf of the Statewide Emergency Communications Board (SECB) and reviewed and approved by subject matter experts. These training modules are hosted through the Alexandria Technical & Community College online website. They can be accessed from ECN's website at dps.mn.gov/divisions/ecn, then under ARMER and ARMER Standards.

A user name and password will be needed for these training modules, and instructions for obtaining these are posted on ECN's website under ARMER Standards. While web-based training is supplemental, except for the Minimum Training Requirements, all users must attend formal training for the ARMER system.

Alexandria Technical & Community College Training Modules

- Radio 101
- History of ARMER
- Interoperability 101
- Interoperability: How to Communicate Outside Your Agency
- Other relevant modules as developed

FEMA/NIMS Courses, NIMS training courses can be found at:
https://training.fema.gov/is/crslist.aspx?all=true

~~http://www.fema.gov/emergency/nims/NIMSTrainingCourses.shtm~~

- IS-100PWb, Introduction to the Incident Command System (ICS100) for Public Works
- IS-700a, National Incident Management System (NIMS), An Introduction

Attending Field User ARMER Training: Information on local Field User Training may be obtained through your ~~L~~local System Administrator or Regional Advisory Committee (RAC).

Section III~~V~~: Public Works Related Statewide Standards

State Standard 1.11.4, Training 800 MHz Users

This standard establishes the minimum training standards for radio operators to ensure proper operation of radios on the system

~~**State Standard 1.11.5, Training Non-Participating Radio Users**~~
~~This standard establishes the minimum training standards for radio operators having access to interoperability talkgroups of this system. This will ensure proper operation of radios on this system and safeguard against improper utilization of statewide system resources.~~

State Standard 2.6.0, Fleetmap Standards

A Fleetmap is a list of talkgroups or channels that are programmed into your radios. The Allied Radio Matrix for Emergency Response System (ARMER) will contain a large number of talkgroups and multigroups to support the various agencies that will be subscribing to the system.

The ARMER System has multiple administrating agencies that will be maintaining fleetmaps and system programming of agencies they are responsible for. For the effective management of the system, a defined process needs to be used to document the fleetmap information that each administrating agency is supporting. This information needs to be in a format that is shared with the other administrators.

This also provides a resource for the subscribing agencies to reference when planning interagency communications. System fleetmaps contain configuration information that is classified as "Security Information" and "General Non-Public Data," pursuant to Minn. Stats. § 13.37, Subd. 1a.

State Standard 2.8.0, Talkgroup and Radio User Priority

This standard establishes varying priority levels for talkgroups to ensure the most critical talkgroups on the system are granted a channel as quickly as possible when and where the system is experiencing busy conditions.

~~**State Standard 2.9.0, 800 MHz Statewide Wide Area Talkgroup Access and Management**~~
~~This standard establishes a policy that provides radio connectivity throughout the ARMER system, while minimizing roaming and excess system loading.~~

State Standard 2.12.0, Scanning

This standard identifies operational procedures and responsible authorities governing scanning activities.

In many jurisdictions, public works users are issued radios with more limited features than those used by public safety users. As a result, it is sometimes difficult for public works users to manage lists of scanned talkgroups in their radios. Public works users with questions about scanning are encouraged to work with their local system administrator.

~~**State Standard 3.12.0, Talkgroup and Multigroup Ownership**~~
~~This standard defines the ownership of private, shared, and interoperability talkgroups and multigroups. This provides standard, written documentation so that System Managers have firm guidelines as to who is permitted to have particular talkgroups and multigroups programmed into their radios.~~

State Standard 3.15.0, Use of Scene of Action (SOA)

This standard provides standards, protocols, procedures, and operating parameters for Scene-of-Action channels.

The public safety discipline is best served by creating an operating procedure that maintains safety of personnel in situations. The range of mobiles and the "walk over" issue is a critical point. Once a radio is keyed, there is no way to control the footprint of the transmission, other than limiting the power of that transmission. Personnel talking on a mobile radio may have no way of knowing if they are walking over a portable in the next community, because they will not be able to receive it or realize that the channel is in use by the portable.

Public works users should be aware that by switching to an SOA channel, they are leaving the ARMER network and are operating in a direct, "radio-to-radio" mode. This has advantages in certain situations, such as highway flagging operations, where short distance communications are required with a limited number of users. Using SOA channels does not impose any system loading on the local ARMER network. Although mobile radios are permitted on SOA channels, portable radios are recommended in most cases, due to the limitations explained in the paragraph above. ~~Under the current State Standard, only two SOA channels are available for use by public works users – ASOA1 and ASOA2.~~

Public works personnel should become familiar with the content of all state and Radio Region Standards included in the Best Practices Guide. While some contain more specific and pertinent information than others, all public works personnel, regardless of position, should have a good understanding of each standard. State and Regional Standards may be accessed through ECN's website under ARMER, then ARMER Standards.~~the Statewide Radio Board's website at this link: dps.mn.gov/entity/SRB. Standards will be under the ARMER section.~~

Section IV: Interoperability

~~**Minnesota Public Safety Mobile Very High Frequency (VHF) Interoperable Frequency Plan**~~
~~This plan may be found on the Statewide Radio Board website: dps.mn.gov/entity/SRB~~

~~**Excerpt from the Statewide Radio Board (SRB) MN VHF Interoperable Frequency Plan – Dated 12-2-2010**~~
~~The Statewide VHF Interoperable Frequency Steering Committee established the final revision of the VHF plan on 12-2-2010. This plan describes the primary channel for interagency law enforcement communications in the state as 155.4750 MHz, commonly referred to as MINSEF. The national naming convention for this channel is VLAW 31. Use of this channel is widespread in Minnesota, and permission from the SRB and previous authorities to utilize VLAW 31 outside law enforcement disciplines has been limited. The current standard operational mode for this channel is wideband analog, but this channel is subject to the FCC mandated narrowbanding deadline.~~

~~Public works personnel should be familiar with VHF channels that are integrated with the ARMER Radio system and are available to be patched to local, regional, or statewide talkgroups as needed. This is necessary when radio interoperability must be established with responders on legacy VHF systems.~~

Regional Tactical Interoperable Communications Plan (TICP)

Tactical Interoperable Communications Plans are used by jurisdictions to document interoperable communications governance structures, technology resources, and usage policies/procedures. The TICP describes what interoperable communications assets are available in an area, how those assets are shared and prioritized, and the steps that individual agencies should use to request, activate, and deactivate them.

Public works personnel should be familiar with the regional communications resources that are available to their jurisdiction, as well as the process they must follow to request them. Copies of Regional TICP's are available through your Regional Advisory Committee (RAC).

State Standard 2.7.0, Use of Shared Talkgroups

This standard provides options to users of the Allied Radio Matrix for Emergency Response System (ARMER), which will allow talkgroup owners to predefine sharing authorizations for other agencies.

~~**State Standard 3.5.0, National/Statewide VHF Interoperability Resources MNSEF (VLAW31), National EMS (VMED28), Statewide Fire (VFIR23), MIMS (MNCOMM)**~~
~~This standard establishes procedures for use and patching of MINSEF (VLAW31, 155.475), National EMS (VMED28, 155.340), Statewide Fire (VFIR23, 154.295) and Minnesota Incident Management System (MIMS, 155.370) VHF interoperability radio frequencies for interagency communications.~~

~~The most common VHF channels that are available are:~~

- ~~VLAW31 (previously MINSEF)~~
- ~~VFIR23 (previously Statewide Fire Mutual Aid)~~
- ~~VMED28 (previously statewide EMS)~~
- ~~MNCOMM (previously Minnesota Incident Management System -MIMS, or Point-to-Point)~~

~~Others may be available as well, such as the National Interoperability Channels VCALL10 and VTAC11-14. Local procedures should be developed that list the specific scenarios in which VHF channels would be needed.~~

~~Note: These channels should only be used at the direction of a dispatcher, Incident Commander, COML, or a COMT.~~

State Standard 3.16.0, 800 MHz Statewide STAC Interoperability ~~Incident Response~~ Talkgroups~~: STACs, ETACs, FTACs, & LTACs~~

This standard establishes policy and procedures for use of uniform, ~~standardized~~ statewide 800 MHz interoperability STAC ~~major incident response interoperability~~ talkgroups ~~and standardized incident command zones~~ in all ~~in~~ user radios.

~~**State Standard 3.16.2, Use of Statewide 800 MHz STAC 1-4 Talkgroups**~~

~~This standard specifies the use of the statewide 800 MHz STAC talkgroups for establishing and maintaining air ambulance emergency landing zones.~~
~~Public Works personnel should be familiar with these statewide talkgroup resources and understand the circumstances when they would be used.~~

~~Important points that should be emphasized are:~~

- ~~Use in order (1,2,3,4) for emergent events.~~
- ~~Use in reverse order (4, 3, 2, 1) for preplanned and non-emergent events.~~
- ~~Clear speech only - no "10" codes on statewide talkgroups.~~
- ~~Priority of use should be for incidents with responders from multiple regions.~~

~~**State Standard 3.16.3, Cross Spectrum Interoperability System (CSIS) 800 MHz National Mutual Aid Resources**~~

~~The purpose of this standard is to establish procedures for use and patching of 800 MHz national mutual aid resources included in the ARMER Cross Spectrum Interoperability System for interagency communications.~~

~~**State Standard 3.16.4, Cross Spectrum Interoperability System VLAW31 Resources**~~

~~The purpose of this standard is to establish procedures for use and patching of VLAW31 resources included in the ARMER Cross Spectrum Interoperability System for interagency communications.~~

~~**State Standard 3.16.5, Cross Spectrum Interoperability System VHF Variable Frequency Station (VFS) Resources**~~

~~The purpose of this standard is to establish procedures for use and patching of VHF Variable Frequency Station (VFS) resources included in the ARMER Cross Spectrum Interoperability System for interagency communications.~~

~~**State Standard 3.31.0, ARMER System StatusBoard**~~
~~The StatusBoard Application, maintained by MnDOT Electronic Communications, is a statewide dispatch console tool installed on all ARMER System consoles and is intended to help facilitate and advise what interoperable talkgroup or channel may be in use for an urgent, emergent, or preplanned event.~~

3.32.0, Statewide Interoperable Plain Language Policy

The use of plain language (clear text) in emergency management and incident response is a matter of public safety, especially the safety of emergency management/response personnel and those affected by the incident. It is critical that all those involved with an incident know and utilize commonly established operational structures, terminology, policies, and procedures. This will facilitate the achievement of interoperability across agencies/organizations, jurisdictions, and disciplines, which is exactly what National Incident Management System (NIMS) and the Incident Command System (ICS) is seeking to achieve.

It is recommended that public works personnel be required to use clear speech for day-to-day activities. A limited list of permitted codes should be published for users and be strictly adhered to. This will make it easier to use clear speech only on major events, as well.

Use of Minnesota State Patrol Call Talkgroup

Minnesota State Patrol General Order 16~~2~~-40-015, MSP Hailing talkgroup: MSP –CALL General Order, may be found on the ECN ~~SRB~~ website under ARMER, Guide Books, then ~~and~~ Best Practices. ~~at https://dps.mn.gov/entity/SRB . Once at the website, click on ARMER, then click on Guide Books and Best Practices.~~

Bordering States and Provinces Interoperability

Talkgroups may be patched by dispatchers to radio systems in other counties, states, or countries (Canada). If a public works user is working on a talkgroup patched to another system, it is important to use plain speech (no 10 codes) and identify yourself with agency name, followed by unit number. Example: "Hastings Public Works 303 to St. Croix County."

~~**State Standard 3.43.0, Use of National Weather Service Standard**~~
~~The purpose of this standard is to define the ARMER talkgroups and procedures to be used by the National Weather Service (NWS) offices that serve the various ARMER regions of the state for NWS to county and local agency communications during severe weather events.~~

~~STANDARDIZED ARMER SYSTEMWIDE INCIDENT COMMAND ZONE FOR MAJOR INCIDENT RESPONSE COORDINATION~~

~~Pos~~	~~Law Enforcement~~	~~EMS~~	~~Fire~~	~~Public Service~~
~~1~~	~~*Local Choice~~	~~*Local Choice~~	~~*Local Choice~~	~~*Local Choice~~
~~2~~	~~L-TAC1~~	~~E-TAC1~~	~~F-TAC1~~	~~Regional-TAC1~~
~~3~~	~~L-TAC2~~	~~E-TAC2~~	~~F-TAC2~~	~~Regional-TAC2~~
~~4~~	~~L-TAC3~~	~~E-TAC3~~	~~F-TAC3~~	~~Regional-TAC3~~
~~5~~	~~L-TAC4~~	~~E-TAC4~~	~~F-TAC4~~	~~Regional-TAC4~~
~~6~~	~~STAC1~~	~~STAC1~~	~~STAC1~~	~~STAC1~~
~~7~~	~~STAC2~~	~~STAC2~~	~~STAC2~~	~~STAC2~~
~~8~~	~~STAC3~~	~~STAC3~~	~~STAC3~~	~~STAC3~~

~~9~~	~~STAC4~~	~~STAC4~~	~~STAC4~~	~~STAC4~~
~~10~~	~~Regional TAC~~	~~Regional TAC~~	~~Regional TAC~~	~~LOC CH/ BLANK~~
~~11~~	~~Regional TAC~~	~~Regional TAC~~	~~Regional TAC~~	~~LOC CH/ BLANK~~
~~12~~	~~Regional TAC~~	~~Regional TAC~~	~~Regional TAC~~	~~LOC CH/ BLANK~~
~~13~~	~~Regional TAC~~	~~Regional TAC~~	~~Regional TAC~~	~~LOC CH/ BLANK~~
~~14~~	~~LOC CH/ BLANK~~	~~LOC CH/ BLANK~~	~~LOC CH/ BLANK~~	~~LOC CH/ BLANK~~
~~15~~	~~P-SOA-1~~	~~P-SOA-1~~	~~P-SOA-1~~	~~LOC CH/ BLANK~~
~~16~~	~~A-SOA-1~~	~~A-SOA-1~~	~~A-SOA-1~~	~~A-SOA-1~~

~~800 MHz Statewide Incident Response Talkgroups – STACs, ETACs, FTACs, & LTACs – 3.16.0~~

Statewide Interoperability Zone

ARMER Standard 3.16.6, 800 MHz Statewide Uniform Interoperability Radio Zones, establishes policy and procedures for the implementation of two 800 MHz uniform interoperability zones in all subscriber radios throughout the state. This policy will guarantee standardized Statewide and Nationwide interoperable communications capabilities for all service branches.

This uniformity will provide dispatch centers, Incident Commanders (ICs), and Communications Unit Leaders (COMLs) the ability to develop and adapt incident radio communications plans quickly and effectively without having to rely on reprogramming radios, swapping radios, or establishing patches in the field.

Based upon Standard 3.16.6, all Public Works subscriber radios shall have these two statewide interoperability zones (unless a waiver or variance has been granted):

STATEWIDE INTEROP		
ZONE DISPLAY NAME	ROTARY CHANNEL SELECTOR	CHANNEL DISPLAY NAME
MN	1	STAC1
MN	2	STAC2
MN	3	STAC3
MN	4	STAC4
MN	5	STAC5
MN	6	STAC6
MN	7	STAC7
MN	8	STAC8
MN	9	STAC9
MN	10	STAC10
MN	11	STAC11
MN	12	STAC12
MN	13	STAC13E*
MN	14	STAC14E*
MN	15	
MN	16	

CONVENTIONAL INTEROP		
ZONE DISPLAY NAME	ROTARY CHANNEL SELECTOR	CHANNEL DISPLAY NAME
8C	1	8CALL90
8C	2	8TAC91
8C	3	8TAC92
8C	4	8TAC93
8C	5	8TAC94
8C	6	8CALL90D
8C	7	8TAC91D
8C	8	8TAC92D
8C	9	8TAC93D
8C	10	8TAC94D
8C	11	8SOA1
8C	12	8SOA2
8C	13	8SOA3
8C	14	8SOA4
8C	15	FSOA1*
8C	16	FSOA2*

*STAC13E and STAC14E: Required in all DES-equipped radios (or waiver). Must use Statewide Common DES Encryption Key.

*FSOA1 and FSOA2: Required in Fire and EMS only (or waiver). Not allowed in non-Fire and EMS radios.

Personnel should familiarize themselves with ARMER Standard 3.16.6; ~~-~~ ~~S~~specifically, the areas of technical background, operational context, standardized policy, and standardized procedure. Your Local System Administrator should be contacted if you have any questions related to technical background and encryption.

~~All Branch IC Zone~~

~~The following alternate "All Branch" STANDARDIZED INCIDENT COMMAND ZONE may be implemented either in addition to, or in lieu of, the service branch specific STANDARDIZED INCIDENT COMMAND ZONE specified in Section 4 of ARMER Standard 3.16.0.~~

~~If the All Branch zone is used, all 16 Statewide Incident Response talkgroups shall be included, and they shall be programmed exactly in the order specified below in order to maintain consistency and to facilitate a potential future renaming to these talkgroups to STAC 1-16 as part of ARMER 3.0. The All Branch zone may be implemented in any radio regardless of service branch.~~

~~This All Branch IC Zone is programmed into all Strategic Technology Reserve cache radios positioned throughout the State and is recommended for inclusion in all other cache radios.~~

~~Pos~~	~~All Branch IC Zone~~
~~1~~	~~STAC 1~~
~~2~~	~~STAC 2~~
~~3~~	~~STAC 3~~
~~4~~	~~STAC 4~~
~~5~~	~~LTAC 1~~
~~6~~	~~LTAC 2~~
~~7~~	~~LTAC 3~~
~~8~~	~~LTAC 4~~
~~9~~	~~FTAC 1~~
~~10~~	~~FTAC 2~~
~~11~~	~~FTAC 3~~
~~12~~	~~FTAC 4~~
~~13~~	~~ETAC 1~~
~~14~~	~~ETAC 2~~
~~15~~	~~ETAC 3~~
~~16~~	~~ETAC 4~~

~~Note: These talkgroups should only be used at the direction of a dispatcher, Incident Commander, COML, or a COMT.~~

~~Section VI: Strategic Technology Reserve~~

~~**State Standard 3.33.0, Establishment of Strategic Technology Reserve, 3.33.1 STR Radio Cache, 3.33.2 STR Transportable Tower/Repeater**~~

~~The basic purpose of the Strategic Technology Reserve (STR) is to provide communication resources that can be deployed in situations where there is a catastrophic loss of the existing public safety communication capabilities. Public Works personnel should be aware that in the case of a catastrophic loss of communication capabilities in the State that these resources (cache radios and portable radio towers) are available by contacting your County or State Patrol Dispatcher. The Workgroup suggests that each public works entity insert or link the applicable Regional STR Standard to this document.~~

Section IV. Standard Minnesota VHF ~~Interoperability Resources~~Interoperability Resources*

CH #	Channel Name	Short Name[1]	Mobile TX	Mobile RX	TX/RX Mobile CTCSS[2]	TX/RX Base CTCSS[3]
1	VCALL10	VCAL10	155.7525	155.7525	156.7/CSQ	156.7/156.7
2	VTAC11	VTAC11	151.1375	151.1375	156.7/CSQ	156.7/156.7
3	VTAC12	VTAC12	154.4525	154.4525	156.7/CSQ	156.7/156.7
4	VTAC13	VTAC13	158.7375	158.7375	156.7/CSQ	156.7/156.7
5	VTAC14	VTAC14	159.4725	159.4725	156.7/CSQ	156.7/156.7
6	MNCOMM	MNCOMM	155.3700	155.3700	156.7/156.7	156.7/156.7
7	VFIRE23	VFIR23	154.2950	154.2950	156.7/156.7	156.7/156.7
8	MNFIRG2	MNFG2	154.0100	154.0100	156.7/156.7	156.7/156.7
9	MNFIRG3	MNFG3	153.8300	153.8300	156.7/156.7	156.7/156.7
10	DNRTAC1	DNRT1	151.4750	151.4750	156.7/156.7	N/A[4]
11	VLAW31	VLAW31	155.4750	155.4750	156.7/156.7	156.7/156.7
12	VMED28	VMED28	155.3400	155.3400	156.7/156.7	156.7/156.7
13	IR 2	IR 2	165.9625	170.4125	167.9/167.9	167.9/167.9
14	VTAC14R	TAC14R	154.6875	159.4725	156.7/156.7	156.7/156.7
15	NGRPTR*	NGRPTR	Rest.	Rest.	Rest.	Rest.
16	LE 2*	LE 2	162.2625	167.2500	$68F/$68F	$68F/$68F

~~Section VI: Strategic Technology Reserve~~

~~**State Standard 3.33.0, Establishment of Strategic Technology Reserve, 3.33.1 STR Radio Cache, 3.33.2 STR Transportable Tower/Repeater**~~

~~The basic purpose of the Strategic Technology Reserve (STR) is to provide communication resources that can be deployed in situations where there is a catastrophic loss of the existing public safety communication capabilities. Public Works personnel should be aware that in the case of a catastrophic~~

[1] For use with limited character display radios
* Local option channel if not implemented with LOA or MOU for use of federal channels.
[2] CTCSS or NAC for subscriber radios. For VCALL10, VTAC11, VTAC12, VTAC13, and VTAC14, use receive CTCSS of 156.7 if needed to mitigate interference.
[3] CTCSS or NAC for fixed stations.
[4] There are no permanent, fixed stations on DNRTAC1.

loss of communication capabilities in the State that these resources (cache radios and portable radio towers) are available by contacting your County or State Patrol Dispatcher. The Workgroup suggests that each public works entity insert or link the applicable Regional STR Standard to this document.

Section VII: COML (Communications Unit Leader III) and COMT (Communications Technician)

COMLs and COMT's are emergency responders trained to facilitate communications during a planned event, manmade, or natural disaster.

COMLs and COMTs may be called out by contacting your local dispatch and/or State Patrol Dispatch Center. COML's may be called out anytime an Incident Commander believes there is a need for this

Section VII: COML (Communications Unit Leader III) and COMT (Communications Technician)

COMLs and COMT's are emergency responders trained to facilitate communications prior to or during a planned event, manmade, or natural disaster. COMLs and COMTs are available to help plan for communications when coordination between agencies is necessary.

COMLs and COMTs may be called out by contacting your local dispatch and/or State Patrol Dispatch Center. COML's may be called out any time an Incident Commander believes there is a need for this position. Refer to the Minnesota Communications Field Operations Guide (MN COMM FOG) for call-out procedure.

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Section VIII: Compliance & Conflict Resolution

The suggested method for reporting conflicts noticed by public works personnel is to document the conflict and forward it to your supervisor. The supervisor should attempt to obtain a resolution with the other entity involved. However, if a conflict is not able to be resolved at this level, the issue should be brought to the Local regional sSystem Aadministrator.
Please refer to State Standards 7.1.0 - Audit/Monitoring Process, 7.2.0 - Response to Non-Compliance, and 7.3.0 - The Appeal Process, for further information or consult your local system administrator.

Section VIX: Refresher Training Plan

While it is the responsibility of each agency to establish their own refresher training, it is imperative to keep personnel up-to-date on the latest technological innovations, as well as applicable local, regional, and state guidelines/mandates.

It is a best practice recommendation that ARMER online equipment and console training modules be reviewed annually, at a minimum. In addition, the Minnesota Public Works Communications Best Practice Guide should become part of every agency's new trainee curriculum, and it should also be reviewed periodically in training sessions for current employees.

Online training modules are available to all users. These courses, created on behalf of the Statewide Emergency Communications Board (SECB) and reviewed and approved by subject matter experts, are hosted through the Alexandria Technical & Community College online website. They can be accessed from ECN's website under ARMER Standards.

A user name and password will be needed for these training modules, and instructions for obtaining these are posted on ECN's website under ARMER standards.

~~It is the workgroup's best practice recommendation that ARMER online equipment modules be reviewed annually, at a minimum. In addition, the Best Practice Guide should become part of every agency's new trainee curriculum, and it should also be reviewed periodically in training sessions for current employees. Online training may be obtained through the Alexandria Technical & Community College website at http://www.alextech.edu/static/d2l.html?logout=1, or by contacting the Statewide Interoperability Program Manager at Brandon.Abley@state.mn.us. To obtain user name and password information for the Alexandria Technical & Community College online training, please contact Linda Muchow at 320-762-4539, 1-888-234-1313, or via email at lindac@alextech.edu.~~

Section VII~~X~~: Other Best Practices Guides

EMS
Hospital
Emergency Management/Public Health
Dispatcher
Fire
Law Enforcement

These guides have been created as a result of diligent work by the groups involved. Members of the workgroup who contributed to the most recent update of this Guide: Rick Juth (Central MN RIC), Pat Wallace (Blue Earth County Communications Center Administrator), Randy Donahue (Southern MN RIC), Dean Wrobbel (Fire Chief, City of St. Cloud), Darrin Haeder (SR System Admin; SR RAC alternate/OTC), Rod Olson (Manager of Radio Communications Electronics, City of Minneapolis), Brandon Larson (IT, City of St. Cloud), Tom Zabinski (Maintenance Supervisor, St. Cloud Public Works), and Cathy Anderson (ECN, Standards & Training Coordinator). These guides provide guidance for their respective public safety disciplines and are available online. Access to completed Best Practice Guides is available on ECN's website under ARMER and Guide Books.

at: https://dps.mn.gov/entity/SRB.

Section VIII~~XI~~: Minnesota Emergency Communication Networks Contacts

Current email contact information can be found on the ECN website under Contact and then Staff Contacts.

Jackie Mines, DECN, Director
jackie.mines@state.mn.us 651-201-7550

Brandon Abley, Statewide Interoperability Program Manager
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John Tonding, DECN Central/Metro Regional Interoperability Coordinator
john.tonding@state.mn.us 763-587-8234

Steve Borchardt, DECN South Regional Interoperability Coordinator
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DECN Grants Project Coordinator, 651-201-7555

Dana Wahlberg, 911 Program Manager, DECN
dana.wahlberg@state.mn.us, 651-201-7546

Section IX~~II~~: Regional Radio and Advisory Committee Contacts

Contacts for the Regional Emergency Communications Boards/Emergency Services Boards (ECB/ESB) and Regional Advisory Committees (RAC) can be found on the ECN ~~SECB~~ website under ARMER, then ARMER Standards. The information will be at the bottom of the page. ~~Regional Boards and Committees.~~ ~~Contacts for the Regional Radio Boards (RRB) and Regional Advisory Committees (RAC) can be found on the ARMER website: Dps.mn.gov/entity/SRB~~

~~Section XIII: Public Works Best Practice Workgroup~~

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DJ Goman – dgoman@ci.spring-park.mn.us
Jack Stansfield – Stansfield.Jack@co.olmsted.mn.us
John Tonding – John.Tonding@state.mn.us
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Kerry Sorenson – Kerry.Sorenson@ci.red-wing.mn.us
Mike Moser – mikemoser@co.stevens.mn.us
Steve Olson – Steve.Olson@co.lake.mn.us
Steven Borchardt – Steven.Borchardt@state.mn.us

~~William Bernhjelm – William.Bernhjelm@state.mn.us~~
~~Tom Johnson~~

Section X~~IV~~: Radio Affiliated Acronyms

You can find a link ~~Link~~ to commonly used~~,~~ radio-affiliated acronyms on the ECN website. ~~– https://dps.mn.gov/entity/SRB , click on ARMER, and then click on Acronyms.~~

Allied Radio Matrix for Emergency Response (ARMER)
Standards, Protocols, Procedures

Document Section 1	**Management of System**	**Status**: DRAFT
State Standard Number	**1.08.1**	
Standard Title	**Change Management**	
Date Established		**SRB Approval**:
Replaces Document Dated	**1.08.0 (04/28/2011) and 1.05.2 (04/28/2011)**	
Date Revised		

1. Purpose or Objective

This standard sets forth the process for considering operational and technical changes to the ARMER backbone. This process should ensure that change requests are managed, vetted, timed to correspond with budgets, and efficiently implemented.

2. Technical Background

Capabilities

This standard relates to future changes to the ARMER backbone but, in and of itself, is not a technical standard.

Constraints

The ARMER backbone is defined by Minnesota State Statue 403.21, subd. 9 and its definition limits the scope of this standard. The statute reads:

> "System backbone" or "backbone" means a public safety radio communication system that consists of a shared, trunked, communication, and interoperability infrastructure network, including, but not limited to, radio towers and associated structures and equipment, the elements of which are identified in the region wide public safety radio communication system plan and the statewide radio communication plan under section 403.36.

3. Operational Context

The Statewide Emergency Communications Board (SECB) is responsible for:

- Ensuring that ARMER maximizes interoperability
- Establishing and enforcing performance and technical standards for ARMER
- Establishing and enforcing priorities or protocols that facilitate uniformity

The SECB adopts ARMER Standards, Protocols, and Procedures to achieve these goals. Changes to the ARMER system are sometimes necessary and those changes must receive due consideration for economic impacts, operational impacts, and other issues that may compromise the integrity and use of the system.

4. Recommended Protocol/ Standard

Changes that have one or more of the following effects on the ARMER backbone or impacting more than one emergency communication regions are subject to the procedures prescribed in this Standard:

- Changes affecting the majority of users
- Changes mandating the placement of resources in communications equipment
- Changes requiring updated user training
- Changes requiring reprogramming of console and/or subscriber equipment
- Changes resulting in costs beyond routine maintenance costs

5. Recommended Procedure

Individuals or entities with a change suggestion that they believe may be subject to this standard should submit their suggestion to the Operations and Technical Committee (OTC) of the SECB. Items brought directly to the SECB or to other committees of the SECB that are subject to this standard will be directed to the OTC. Items may be brought to the OTC at any regular meeting.

After receiving a request to change the ARMER system, the OTC will determine if the request is subject to this standard. If the OTC determines that the suggestion is subject to the terms of this standard, the OTC will ask the requestor to bring their request to specific entities for feedback and/or formal approval. The reviews shall scrutinize the change proposal by identifying pitfalls, considering variables, and identify alternatives. The OTC may establish a workgroup to facilitate this process before making a final recommendation to the SECB.

The OTC shall first assign the requestor to consult the Minnesota Department of Transportation (MnDOT) for technical review and the Emergency Communication Networks (ECN) for an operational and financial review of the request. The requestor may consult with MnDOT and ECN prior bringing the request to the OTC and the input of MnDOT and ECN may be provided when the request is first introduced.

Upon receipt of comment from MnDOT and ECN, the OTC will assign the requestor to consult the SECB's Finance and Steering Committees of the SECB and the Emergency Communication Boards of each potentially impacted region. The OTC may also require the requestor to consult other committees or workgroups of the SECB or any other entity the OTC deems necessary.

The OTC *may* consider and grant provisional authority, subject to SECB approval, for portions or the entire change request to be enacted. Temporary authority will allow for prompt implementation and may provide data about the proposal to assist with a permanent decision.

The requesting entity will consult each of the entities identified by the OTC about their change request and follow through with those entities as directed. The requesting entity may modify their original request based on new information or suggestions received. The requesting entity should provide a status update to the OTC within six months and every three months afterward.

Upon return to the OTC, the requesting entity should provide a report detailing their follow up. Modifications to the original request may be offered. Supporting materials such as meeting minutes or letters of approval should be submitted at this time. Relevant parties should be present for testimony. The OTC may then commence deliberations about the request, resulting in a recommendation to the SECB. Approved requests will be forwarded to the SECB for final review and consideration.

Requesting entities may appeal decisions by the means provided in State Standard 7.3.0.

Change requests approved by the SECB will be jointly managed by MnDOT and ECN. Generally, MnDOT will manage technical items and ECN will manage operational items. Concerns raised but not fully satisfied during the process should be considered as the change is implemented.

ECN will be responsible for tracking requests subject to this standard.

The following points related to timing should be followed during the implementation of this standard:

- Change suggestions may be submitted to the OTC at any time and this standard may be applied at any time.
- The process established in this standard should be expected to take at least six months so change suggestions subject to this standard should be submitted at least six months prior to consideration.

- Approved changes involving reprogramming of consoles or user equipment may be held up to two years so that multiple changes may be consolidated into one reprogramming and to allow for funding of the proposed changes.
- The monthly ECN report to the OTC will include a timeline detailing the approval and implementation of changes subject to this standard.

A timeline should be followed to ensure adequate timing to prepare and request funding. In the below table, Change Management matters follow a four-year timing cycle and letters represent years:

- Year AAAA: 2016, 2020, 2024, …
- Year BBBB: 2017, 2021, 2025, …
- Year CCCC: 2018, 2022, 2026, …
- Year DDDD: 2019, 2023, 2027, …

January 1, AAAA	If allowing six months for this process, this is the last day to submit changes subject to the Change Management standard to the OTC for consideration in the CCCC/DDDD Minnesota budget.
July 1, AAAA	Deadline for the SECB to approve requests subject and for ECN to know financial needs to be considered for the CCCC/DDDD Minnesota Budget.
July 1, AAAA to January 1, BBBB	ECN to obtain Governor's approval of ECN budget and to prepare budget request for state legislature.
January 1, BBBB to May 1, BBBB	ECN to present budget request to legislature.
June 1, BBBB	State legislature approves budgets.
July 1, BBBB to June 30, CCCC	Fiscal Year CCCC of CCCC/DDDD budget.
July 1, CCCC to June 30, DDDD	Fiscal Year DDDD of CCCC/DDDD budget.

When the requirements of this standard cannot be met by an entity, the entity must apply for a waiver and that waiver must be considered by the OTC.

6. Management

The OTC with administrative support from ECN is responsible for supervising and managing this process.

Allied Radio Matrix for Emergency Response (ARMER)
Standards, Protocols, Procedures

Document Section 1	**Management of System**	**Status:** Complete
State Standard Number	**1.5.2**	
Standard Title	**Changes to Operational Standards**	
Date Established	**3/19/2001**	**SECB Approval:** 4/28/2011
Replaces Document Dated	**3/3/2005**	
Date Revised	**03/01/2011**	

1. Purpose or Objective

The purpose of this standard is to set forth the process by which changes to the system backbone operating procedures will be solicited, evaluated, and adopted for implementation.

2. Technical Background

- **Capabilities**
- **Constraints**

3. Operational Context

Among other responsibilities, the Statewide Emergency Communications Board (SECB) is responsible for:

- Defining the backbone of the system and the standards for system backbone performance necessary to ensure system wide development that maximizes interoperability throughout the system.
- Establishing and enforcing performance and technical standards for the operation of the system backbone.
- Establishing and enforcing priorities or protocols for the system that facilitate statewide uniformity.

The ARMER Standards, Protocols, and Procedures, developed by ARMER participants throughout the state, have been adopted by the Statewide Emergency Communications Board. Periodically, changes to the ARMER Standards will be required to maintain optimum system backbone operations. Those changes must receive due consideration for state and local economic impacts, operational impacts, and other issues that may compromise the integrity and use of the system backbone before those changes can be implemented.

Additions and changes to the ARMER backbone or the technical ARMER Standards, Protocols, and Procedures are governed by State Standard 1.8.0, "System Change Management." Additions and changes to a requesting entities' participation plan are

governed by State Standard 1.10.0, "Requesting Participation and Participation Plan Changes." Some additions and changes could need to be evaluated under more than one process.

4. Recommended Protocol/ Standard

All operational changes to the ARMER Standards, Protocols, and Procedures that impact system users or require a change must be evaluated and approved through this change control procedure, as depicted in Figure 1.

5. Recommended Procedure

Whenever possible, major operational changes will be made on an 18-24 month cycle. This will allow users to match their subscriber radio maintenance cycle to the major change cycle and minimize the number of times that major changes need to be incorporated. The SECB will determine when a new change planning process needs to be initiated. Minor changes may be made at any time.

Solicit & Evaluate

- Change proposals may be submitted at any time. Proposals should be submitted through the proposer's contracting entity (State Standard 1.9.0), a Regional Radio Board (RRB), or the Minnesota Department of Transportation (MnDOT). Change proposals should be submitted on the form provided on the Statewide Emergency Communications Board website and shall include a proposed implementation plan.

- The Division of Emergency Communication Networks (DECN) will collect suggestions for changes from the Regional Radio Boards and MnDOT. DECN will present the collected suggestions at the next scheduled meeting of the Interoperability Committee (IOC), who shall determine if the proposed changes are major or minor.

  Minor changes have the following characteristics:
  - Minor changes affect a relatively minor number of users or are contained to one radio region.
  - Minor changes generally do not contain mandates for other users.
  - Minor changes do not require significant retraining of other users.
  - Minor changes do not have a cost to other users.

  Major changes have one or more of the following characteristics:
  - Major changes impact the majority of users in multiple radio regions.
  - Major changes mandate the placement of resources in communications equipment.
  - Major changes require revisions to operational procedures.
  - Major changes require updated user training.

- Major changes require reprogramming of console and subscriber equipment.

Examples of major changes include mandating the placement of statewide resources in consoles and subscriber units, mandating the creation of national IC zones in subscriber units, and the creation of a statewide vehicle pursuit standard.

- Minor changes may be referred to the Statewide Interoperability Coordinator for evaluation and recommendation. The Statewide Interoperability Coordinator shall perform the necessary evaluation and recommend an action to the Interoperability Committee. The Interoperability Committee may elect to vet the request through additional committees, the Regional Radio Boards, or other user groups. Upon receipt of a recommendation from the Interoperability Committee, the SECB may approve or deny the requested change.

- Major changes shall be held by the Interoperability Committee until they determine that the number and importance of proposed major changes warrants the initiation of a major change process. At that time, the Interoperability Committee will direct DECN to notify stakeholders a major change cycle is beginning. This will be done through a notice published on the Statewide Emergency Communications Board's website and distribution to the regional leadership. The solicitation period should last at least three months to allow sufficient time for regional committees to meet and forward ideas through their Regional Radio Boards.

- At the close of the solicitation period, DECN will schedule presentations by the major change proposers to the Interoperability Committee. Change proposals will be made available for public review on the Statewide Emergency Communications Board website at least one week prior to the Interoperability Committee meeting.

- The Interoperability Committee shall consider the proposed changes and determine which proposals have sufficient need and benefit to warrant further evaluation. If the Interoperability Committee determines that a change proposal does not warrant evaluation and rejects the proposal, the proponent of the change request may appeal the decision. (State Standard 7.3.0, "Appeal Process.")

    - Change proposals selected for further evaluation shall be assessed to discover and document the impacts of each proposed change, including the impacts of the proposed transition plan. The Interoperability Committee may exclude any of the following assessments or may add other assessments, depending upon the nature and complexity of the change proposals. For complex assessments, DECN may be authorized to utilize a professional facilitator for focus groups of discipline specific users (police, fire, EMS) to expedite the process.
    - Tabletop scenarios through Homeland Security Emergency Management (HSEM)

    - State Communications Interoperability Plan (SCIP) conformity review
    - Tactical Interoperability Communications Plan (TICP) conformity review
    - Cost/benefit analysis
    - MnDOT technical review for backbone impacts
    - Operations and Technical Committee review and comment
    - Training needs assessment
    - Other stakeholder review groups

- The assessment process must be completed within 90 days of receipt of the request for assessment. Input received after 90 days may still be considered, but consideration is not guaranteed. The request for assessment from the Interoperability Committee is not asking for a recommendation on the change proposal but is meant to review how the proposed change will impact operations, finances, training, etc.

- Once all assessments are received or 90 days has passed, DECN and MnDOT staff and the facilitator will assemble the comments and prepare a summary document for public review and comment.

Plan and Approve

- The completed change proposals should be vetted by all the radio board regions. The discipline associations (Police Chiefs, Fire Chiefs, Sheriffs, Minnesota Ambulance Association, state agencies, etc.) and other interested stakeholders shall be notified of the pending changes and shall be afforded an opportunity to provide comments. DECN and MnDOT, along with regional/discipline association representatives to the SECB Committees and working groups, will be responsible for facilitating discussions and gathering comments. DECN and MnDOT will provide a summary of all comments received.

- If there is a cost to the change proposals, DECN and MnDOT staff will pass the recommendations through the Finance Committee, who will be responsible for determining how the costs should be allocated, securing Regional Radio Board agreement in any regional or local costs.

- Once the cost allocation is approved, or if there are not costs to allocate, DECN and MnDOT staff will present the change proposals to the Interoperability Committee for final review and recommendation. DECN and MnDOT summary shall include a draft change plan addressing comments received.

- The Interoperability Committee shall review the comments, recommend approval or denial of each change proposal, and create a change plan for approval by the Board.

- The change plan, including transition steps and schedules, will be made available for review and comment at the Regional Boards prior to presentation to the Statewide Emergency Communications Board.

- The SECB shall review the recommendations of the OTC and the Interoperability Committee and may approve the change recommendations, reject the change recommendations, or return the recommendation to committee for further review.

Create & Implement

- This phase will vary in length, depending upon the transitional plan adopted by the Board. The change plan may also involve multiple changes on different implementation schedules.

- Activities in this phase may include code plug development, radio programming, procedure writing and implementation, training development and implementation, physical construction, equipment replacement, or other activities as outlined in the change plan. Entities named in the plan will be responsible for completing the changes in the plan as per the approved schedule and reporting their status, in writing, to DECN.

- DECN will report on the status of the implementation to the SECB.

6. Management

The Interoperability Committee and DECN staff will manage this process for major change requests. The State Interoperability Coordinator will manage the minor change process.

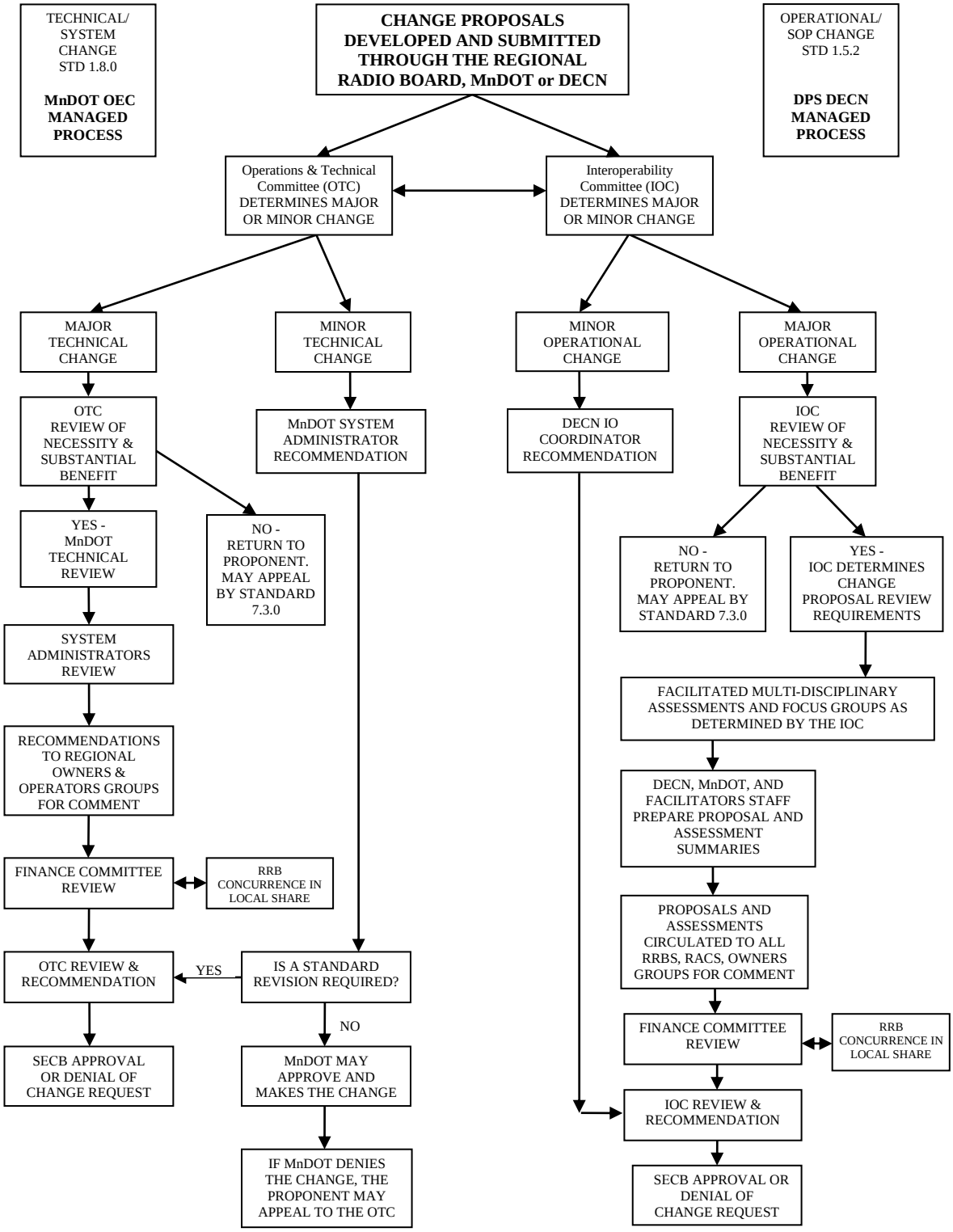

Figure 1 Change Management Process

Allied Radio Matrix for Emergency Response (ARMER)
Standards, Protocols, Procedures

Document Section 1	**Management of System**	**Status:** Complete
State Standard Number	**1.8.0**	
Standard Title	**System Change Management**	
Date Established		**SRB Approval:** 04/28/2011
Replaces Document Dated		
Date Revised	**02/04/2011**	

1. Purpose or Objective

The purpose of this standard is to establish the procedure for managing and approving moves, additions, upgrades, and other changes to the ARMER system backbone.

2. Technical Background

- **Capabilities**
- **Constraints**

3. Operational Context

Among other responsibilities, the Statewide Emergency Communications Board (SECB) is responsible for:

- Defining the backbone of the system and the standards for system backbone performance necessary to ensure system wide development that maximizes interoperability throughout the system.
- Establishing and enforcing performance and technical standards for the operation of the system backbone.
- Establishing and enforcing priorities or protocols for the system that facilitate statewide uniformity.

The Standards, Protocols, and Procedures have been developed by ARMER participants through statewide and regional committees and boards and have been adopted by the SECB. Periodically, changes to the ARMER State Standards or the ARMER backbone will be required to maintain optimum system backbone operations. Those changes must receive due consideration for state and local economic impacts, operational impacts, and other issues that may compromise the integrity and use of the system backbone before those changes can be implemented.

Additions and changes to the Standards, Protocols, and Procedures that affect standard operating procedures (SOPs) are governed by State Standard 1.5.2. Additions and changes

to a requesting entity's participation plan are governed by State Standard 1.10.0. Some additions and changes could need to be evaluated under more than one process.

4. Recommended Protocol/ Standard

All requests for changes to the Standards, Protocols, and Procedures or any other change that affect the system backbone shall be submitted, evaluated, and approved through this change management procedure, depicted in Figure 1.

5. Recommended Procedure

Change proposals may be submitted at any time. Proposals should be submitted through the proposer's contracting entity (State Standard 1.9.0), a Regional Radio Board (RRB), or the Minnesota Department of Transportation (MnDOT). Change proposals should be submitted on a standard form provided on the SECB website and shall include a proposed implementation plan.

MnDOT will collect suggestions for changes from the RRBs and present the collected suggestions to the next scheduled meeting of the Operations and Technical Committee (OTC), who shall determine if the proposed changes are major or minor.

Minor changes have the following characteristics:

- They do not result in measurable impacts to the performance of the system backbone.
- They do not impact users of the system backbone with additional training effort or changed operational procedures.
- They do not create costs to the backbone or users beyond routine maintenance costs.

Major changes are all changes that are not minor. Major changes require a more rigorous review, because they are likely to require the expenditure of fiscal and human resources on the system backbone and by the system users. Examples of major changes are:

- vendor software upgrades that require backbone connected hardware to be replaced
- implementation of a new radio technology that forces subscriber unit reprogramming
- backbone technology improvements that cost more than the maintenance budget can accomplish

Minor changes may be referred to the Statewide System Administrator for evaluation and recommendation. The Statewide System Administrator shall perform the necessary evaluation and recommend an action to the OTC. The OTC may elect to vet the request through additional committees, the RRBs, or other user groups. Upon receipt of a recommendation from the OTC, the SECB may approve or deny the requested change.

Major changes shall be held by the OTC until such time as the OTC determines that the number and importance of proposed major changes warrants the initiation of a major change process. Depending upon the nature of the change request, the OTC may elect to direct MnDOT to notify stakeholders that a major change cycle is beginning through a notice published on the SECB website and be distributed to the regional leadership. The solicitation period should last at least three months to allow sufficient time for regional committees to meet and forward ideas through their RRBs.

At the close of the solicitation period, MnDOT will coordinate with the major change proposers to present their requested changes to the OTC. Change proposals will be made available for public review on the SECB website at least one week prior to the OTC meeting

The OTC shall consider the proposed changes and determine which proposals have sufficient need and benefit to warrant further evaluation. If the OTC determines that a change proposal does not warrant evaluation and rejects the proposal, the proponent of the change request may appeal the decision, per State Standard 7.3.0.

MnDOT staff, supplemented with other resources as required, will assess the requests forwarded by the OTC. The assessment should include:

- conformance with the Plan and the technical and operational standards previously adopted by the SECB
- previous experience with the change on the ARMER system
- how the change will affect operations
- the extent of programming and infrastructure changes
- the merit or benefits of the proposed change
- the cost of the proposed change including operational and maintenance costs
- how long will the change take to accomplish
- what other alternatives could accomplish the requested change
- impact on future system capacity and development plans
- legislation needed

The results of the assessment will be distributed by MnDOT to the System Administrators for additional review and comments. If contradictory issues are identified by the System Administrators, the request shall be returned to the OTC for reconsideration of necessity and benefit.

MnDOT will summarize the changes recommended and create a change proposal, including transition steps and schedules. The change proposal should be vetted at all RRBs. MnDOT, along with regional representatives to the SECB Committees and working groups, will be responsible for facilitating discussions and gathering comments. MnDOT will summarize all comments received.

If there is a cost to the change proposals, MnDOT and the Division of Emergency Communication Networks (DECN) will first pass the recommendations through the Finance

Committee, who will be responsible for determining how the costs should be allocated and securing RRB agreement in any regional or local costs.

Once the cost allocation is approved, or if there are not costs to allocate, MnDOT and the DECN will present the change proposals to the OTC for review and recommendation.

The SECB shall review the recommendations of the OTC and may approve the change recommendations, reject the change recommendations, or return the recommendation to committee for further review.

MnDOT or other responsible entities will implement the change plan. Activities in this phase may include construction of new infrastructure, replacement of existing infrastructure, hardware and software upgrades, programming, or other activities required by the plan. The change plan may also involve multiple changes on different implementation schedules.

MnDOT will report on the status of the implementation to the SECB.

6. Management

The OTC and MnDOT will manage the process for major technical change requests. The Statewide System Administrator will manage minor change request process.

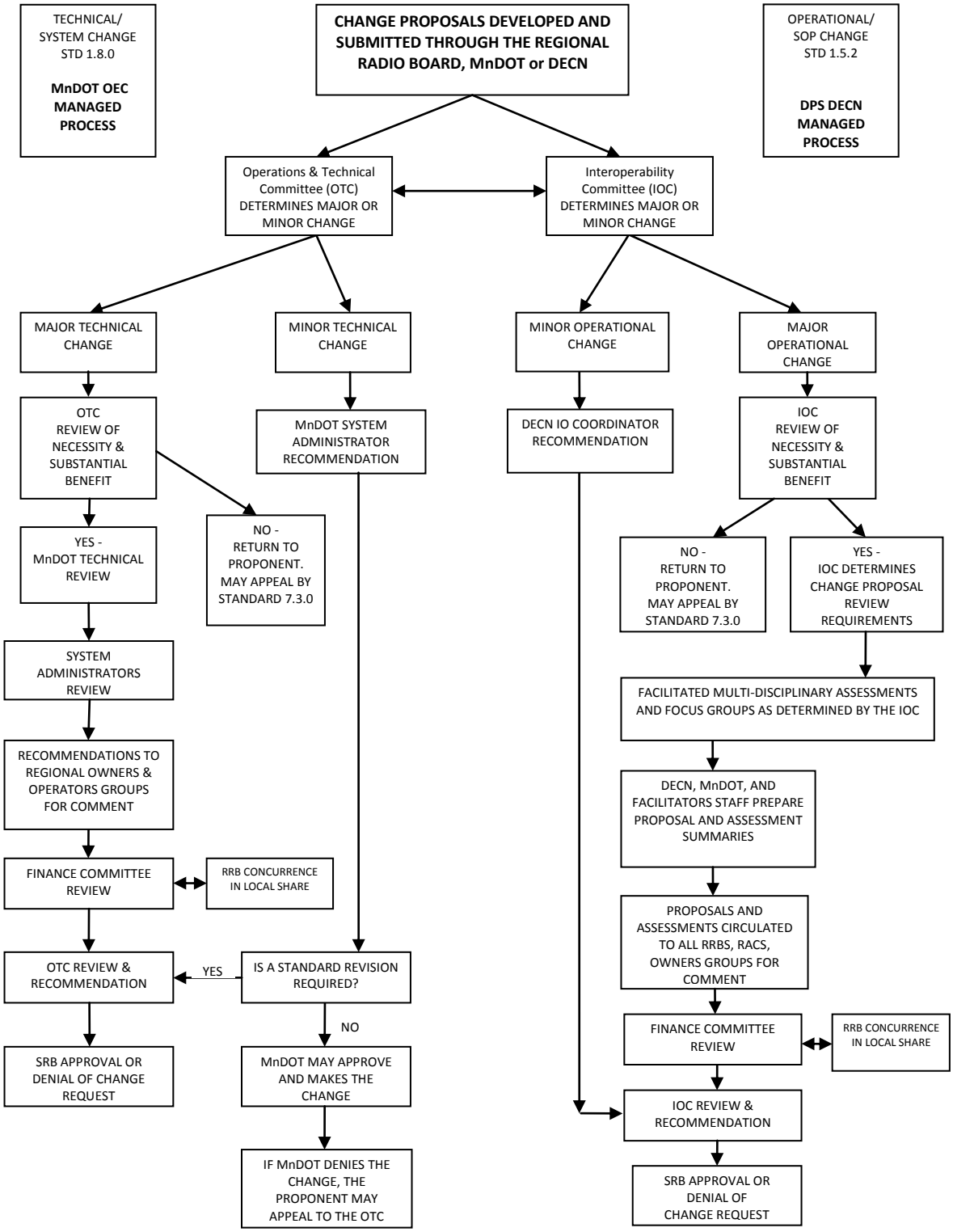

Figure 1 Change Management Process

Pierce County Sheriff's Department

Sheriff Nancy Hove
Chief Deputy Jason Matthys

Sheriff Department Phone: 715-273-5051
Administration Fax: 715-273-3409
Jail Fax: 715-273-6856
Investigation Fax: 715-273-1137

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July 12, 2016

ARMER OTC
Chair Joe Glaccum
4501 68th Avenue North
Brooklyn Center, MN 55429

Chair Glaccum,

Pierce County Wisconsin is an approved interoperable user of the ARMER system. The majority of our deputies use either an APX dual band mobile or portable to interoperate with our Minnesota partners. This includes Goodhue, Dakota, and Washington Counties in addition to events at the Prairie Island Nuclear Generating Plant. Our dispatch center also is equipped with four ARMER control stations which allow us to establish interoperable patches.

We currently are authorized for 55 radio IDs.

Ellsworth Fire Department is in central Pierce County city and shares a road bridge with Minnesota. Ellsworth Fire Department has obtained four dual band radios and 1 XTS2500 portable and they wish to add ARMER to these radios to interoperate with Goodhue county. Those radios will be in several first out apparatus. If future grant funding allows, Ellsworth Fire Department may obtain additional ARMER capable radios.

I am requesting that Ellsworth Fire Department be added to our participation plan, and that 5 more of our current allotment of radio ID's be approved for their radios.

I am an authorized ARMER programmer and will be programming the Ellsworth Fire Department radios. I will also provide training for those radio users, and any future users. I will interface with the radio managers of Goodhue county to verify any of their talk groups placed in these radios are authorized and appropriate. These radio IDs will be created by Nate Timm, who administers the Pierce County block of IDs.

Thank you for your consideration.
Sincerely,

Philip Meixner
Sergeant
Pierce County Sheriff's Office
715-273-5051
Phil.miexner@co.pierce.wi.us

Minnesota

Fire Service

Communications Best Practice Guide

Statewide Radio Board, Operations & Technical Committee, Interoperability Committee, Fire Services Best Practice Workgroup

Approved by the Statewide Radio Board

September 2016

This document describes recommended best practices, statewide standards, and contact information for Minnesota fire agencies and regions to assist in planning for interoperability with fire and other public safety disciplines.

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DOCUMENT REVISION HISTORY

Date	Revision	Notes	Name
8-19-2016	Entire guide	By Workgroup	Cathy Anderson

Section I: Introduction

The Fire Services Communications Workgroup was created in 2012 to assist and coordinate radio use for fire service providers across the state of Minnesota during and after migration to the ARMER radio system. As ARMER has grown throughout the state, fire service providers need assistance, clarification, coordination, and best practice guidance. This guide was created to specifically address fire-related issues and to assist with planning for fire regions and agencies. Common fire communications paths include the following:

- Fire units to dispatch
- Fire units to fire units
- Fire units to EMS
- Fire units to law enforcement
- Fire units to air ambulance

The highest and most effective level of interoperability is achieved when users share the same radio system and have shared talkgroups directly accessible to them in their radios. A best practice recommendation would be for all users to operate on and share the same radio system. Realizing the difficulty in achieving this goal statewide, this guide will set forth best practices for using the current systems for the best interoperability solutions to address incidents and events. The Minnesota Fire Service Communications Best Practice Guide is a living document, and suggested changes may be submitted to the Emergency Communication Networks (ECN) Standards & Training Coordinator.

NOTE: Questions regarding State Standards or clarification of these standards should be directed to your Local System Administrator, your Regional Interoperability Coordinator (RIC), or the Statewide Interoperability Program Manager.

For current ECN contact information, please see Staff Contacts on ECN's website: https://dps.mn.gov/divisions/ecn/pages/default.aspx.

Section II: Participation in ARMER

Should agencies choose to participate, Statewide Standard 1.10.0, Requesting Participation and Participation Plan Changes, details the requirements for participation. Statewide Standards may be found on ECN's website under ARMER and ARMER Standards.

The decision to participate in ARMER must be made in conjunction with county officials, local public safety, and adjacent Fire Agencies. This must also include an evaluation of interoperability with other radio systems. For questions, please utilize the points of contact in this document.

It is recommended that each agency either link to or attach their Limited or Full ARMER Participation Plan to this document.

Copies of Participation Plans may be obtained from the Local System Administrator, Director or Supervisor of the City, County, or Tribal Dispatch Center or PSAP or from the Regional Advisory Committee (RAC), Regional Emergency Services Board (ESB), or Regional Emergency Communications Board (ECB).

Section III: Statewide Fire Communications

Statewide fire radio communications were developed in Minnesota in the early 1970's to provide radio channels for mutual aid interoperability. The original oversight of the VHF mutual aid frequencies was the responsibility of the Minnesota State Fire Chiefs Association. This responsibility was assumed by the

Statewide Radio Board in 2010, which later formed the Interoperability Committee to work on and coordinate interoperability issues throughout the state. The Interoperability Committee formed the Fire Service Communications Best Practice Workgroup to develop this Best Practice Guide, which will assist fire services across the state.

VFIRE23 (Statewide FIRE)

The State of Minnesota VHF infrastructure will remain available, regardless of ARMER migration. Since issues may arise as the result of bordering states and fire departments continuing to remain on a VHF system, this workgroup recommends that all agencies consider interoperable solutions between ARMER and conventional radio systems.

Section III: Statewide Fire Communications
Minnesota Fire Users Statewide Available Talkgroups & Channels

Minnesota Fire Users - Fire Specific Talkgroups & Channels	
Talkgroup/Channel	**Intended Use**
	ARMER 800 MHz -All Fire Users
Region Specific TAC	Regional Interop Resource
STAC's	Statewide All User Tactical channels 1-12
FSOA 1 & 2	Fire Scene of Action channels 1 & 2
TC OP1	Tribal Statewide Talkgroup (Tribal Gov't Use Only)
	VHF CONVENTIONAL
VFIRE23	VHF National Fire/Statewide Fire
MNFIR2	VHF Statewide Fire Tactical
MNFIR3	VHF Statewide Fire Tactical

It is recommended that agencies preplan for use of an SOA channel in case users lose trunking coverage or are in an area without trunking coverage.

Section V: Fire Service Related Statewide Standards

Statewide standards are available on ECN's website.

Current, applicable statewide fire related standards

- State Standard 2.16.0, Emergency Button
- State Standard 3.15.0, Use of Scene of Action (SOA)
- State Standard 3.16.0, 800 MHz Statewide Incident Response Talkgroups: STACs, ETACs, FTACs, & LTACs
- State Standard 3.16.2, Use of Statewide 800MHz STAC 1-12 Talkgroups - Air Ambulance Emergency Landing Zone Coordination
- State Standard 3.16.3, Cross Spectrum Interoperability System 800 MHz National Mutual Aid Resources
- State Standard 3.16.4, Cross Spectrum Interoperability System VLAW31 Resources

- Statewide Standard 3.16.5, Cross Spectrum Interoperability System VHF Variable Frequency Station (VFS) Resources (replaced Standard 3.5.0, National/Statewide VHF Interoperability Resources VLAW31, VMED28, VFIR23, MIMS)
- Statewide Standard 3.32.0, Statewide Interoperable Plain Language Policy

Section VI: Fire Service Interoperability

Applicable statewide standards

- Statewide Standard 3.16.5, Cross Spectrum Interoperability System VHF Variable Frequency Station (VFS) Resources (replaced Standard 3.5.0, National/Statewide VHF Interoperability Resources VLAW31, VMED28, VFIR23, MIMS)
- Statewide Standards 3.16.0 through 3.36.0, Interoperability Standards

The highest and most effective level of interoperability is achieved when users share the same radio system and have shared talkgroups directly accessible to them in their radios. Shared, interoperable talkgroup resources exist in a variety of forms and may be called common, pool, or tactical. It is imperative that fire agencies plan effectively with mutual aid, law enforcement, EMS, and hospital partners. Fire agencies must be aware of local, regional, and statewide interoperable radio resources and procedures. Best practice is to use shared, interoperable resources by progression, beginning with internal resources, progressing to local/county, regional, and utilizing statewide resources last. Some progression may need to be skipped, depending on the situation – i.e., using an STAC for fire mutual aid.

Planned Events

Planned events require consideration for the jurisdictions that will need to communicate. If shared, interoperable resources are required, planners should start by considering local/county talkgroups first, then progressing to regional and statewide talkgroups as necessary, given the agencies and the type of communications needed. This planning must be coordinated with the controlling dispatch center. Regional and statewide talkgroups need to be checked for availability and reserved by a dispatcher via the StatusBoard.

Emergency Incidents

Emergency response communications also requires pre-planning. Talkgroup progression should also be used and must be assigned by the controlling dispatcher, based on availability. It is important to work closely with the dispatch center to ensure a shared resource is not already in use. Regional and state talkgroups need to be checked for availability and reserved by a dispatcher via the StatusBoard.

Based on the scope of the incident, the controlling dispatcher and the incident command structure must communicate effectively to ensure the most appropriate resource is assigned that matches the radio resource requirements of all responders. Dispatchers and incident commanders may choose to patch local resources or VHF and ARMER resources to manage an incident.

Wildfire and Interface Fires

Initial response to wildfire reports may be done by local fire departments, MN DNR, US Forest Service, US Fish and Wildlife Services, BIA/ Tribal, or National Park Service crews, and will vary based on jurisdiction, land ownership, fire type, and crew/equipment availability. Reports may come to the local PSAP, DNR, and United States Forest Service (USFS) dispatchers directly. Responding agencies will be operating on ARMER and/or

VHF systems from DNR or federal agencies. Due to the highly variable responses possible, it is difficult to describe a typical or model scenario.

The best practice is for agencies in wildfire affected areas to do an annual pre-fire planning session involving the local fire department(s), PSAP representative, and affected State/Tribal DNR and Federal wildfire agencies in the area. Review of communications equipment types, fleet maps and channel lists, system coverage, and patching capability for each of the agencies should occur. Pre-incident development of written incident communication resource lists and incident communications plans is highly recommended and will serve not only in the initial period of wildfire response, but also as a resource for incoming Incident Management Team's (IMT's) if the incident expands to higher Type levels. Pre-incident exercise of those plans is also highly recommended to identify technical or training issues that should be resolved.

Communications Unit Leader (COML)

The Communications Unit Leader, or COML, is responsible for developing plans for the effective use of incident communications equipment and facilities, installing and testing of communications equipment, supervision of the Incident Communications Center, distribution of communications equipment to incident personnel, and the maintenance and repair of communications equipment. The State of Minnesota has instituted a COML program to provide a ready cadre of trained communications unit leaders to assist Incident Commanders (ICs) in providing and maintaining effective incident communications. An IC can request a trained COML through the Minnesota State Duty Officer.

Communications Unit Technician (COMT)

The All-Hazards Communications Technician, or COMT, is responsible for practices and procedures common to radio communications technicians during all-hazards emergency operations. COMTs work within the Incident Command System (ICS) organizational structure.

COMTs may be federal, state, local, tribal emergency response professionals, and/or coordination/support personnel with communications backgrounds. COMTs have a technical aptitude and are responsible for managing a Strategic Technology Reserve (radio cache, mobile communications vehicle, or other deployable communications assets).

The major responsibilities of the COMT are:

- Support COMLs in the design of the communications plan.
- Stand up equipment in support of the communications plan.
- Assign and track radio caches.
- Document all communications activities.

Incident Management Team (IMT)

An Incident Management Team, or IMT, is a multi-agency/multi-jurisdiction team for extended incidents, formed and managed at the State, regional, or metropolitan level. An IMT is deployed as a team of 8-24 trained personnel to manage major and/or complex incidents requiring a significant number of local, regional, and state resources, as well as incidents that extend into multiple operational periods and require a written Incident Action Plan (IAP). An IC can request an IMT through the Minnesota State Duty Officer.

What An IMT Can Do For You

Provide individuals or an entire team with expertise in the following areas:

- Operations
- Logistics
- Incident Commander – Liaison officer
- Planning – Safety
- Finance- personnel cost, equipment cost, etc.
- Public Information Coordinator
- Perform specific functions, manage a designated part of an incident, or manage the entire incident through a Delegation of Authority.

Provide the following to your jurisdiction:

- Frequent updates on activities
- Detailed records of incident costs
- Tracking of resources
- Documentation of expenditures, claims, labor, and legal issues for the incident
- A written incident action plan for each operational period that includes objectives, strategies, tactics, current resources, and plans for communications, safety, and logistics for the incident.

Incident Dispatch Team (IDT)

The IDT is comprised of dispatch professionals from around the Metro Region. The team represents multi-discipline PSAP personnel (police fire, EMS) ready to deploy and bring the unique skills of the dispatcher to augment incident management at an incident or event. The IDT also serves as Minnesota's Telecommunications Emergency Response Taskforce (MN-TERT) under the National Joint TERT Initiative and is recognized nationally.

The Metropolitan Emergency Services Board (MESB) supports the CRTF and IDT/MN-TERT. The CRTF or MN-TERT can be requested for assistance at an emergency event by contacting the Minnesota State Duty Officer. If you have a planned event, please contact the MESB to make arrangements for the IDT.

Section VII: Aeromedical Interoperability

Applicable Statewide Standards

- Statewide Standard 1.13.0, Aircraft Radio Installations and Operations
- Statewide Standard 3.16.2, Use of Statewide 800 MHz STAC 1-12 Talkgroups - Air Ambulance Emergency Landing Zone Coordination

Responder and Aircraft have ARMER radios:

If the aircraft and personnel on scene coordinating the landing both have STAC talkgroups, they may use the STAC that has been assigned to them by the appropriate, controlling primary PSAP.

Responder or Aircraft that do NOT have ARMER radios:

If the aircraft does not have an ARMER radio, but personnel on scene coordinating the landing does, then the controlling, primary PSAP will assign the first available STAC and patch the responding air ambulance to VLAW31 if being landed by law enforcement personnel. If being landed by fire personnel, VFIRE23 is an option. If landing by EMS personnel, VMED28 can be used. If both the responder and the aircraft have VHF radios, they will use the appropriate VHF channel.

Section VIII: ARMER Communications and Interop Training

Applicable Statewide Standards

- Statewide Standard 1.11.1, Training System Administrators
- Statewide Standard 1.11.2, Training Technical Staff
- Statewide Standard 1.11.3, Training Telecommunicators
- Statewide Standard 1.11.4, Training 800 MHz Users

Training and training standards continue to evolve across the state. Metro region fire agencies have been training personnel since 2002 and can be a wealth of information and assistance. Training materials are widely available and can be tailored for individual agency application.

Whether or not your fire agency will be changing radio systems, field and dispatch personnel need proper training on the ARMER system. In addition, they need training on communications and interoperability basics, as outlined in the State Standards, and also in accordance with regional standards and protocol.

Section IX: Radio Equipment Guidance

Equipment authorized for use on the ARMER radio system is outlined on the ECN web site. Also available on the web site is the state contract, R-651, for communications vendors and equipment suppliers. Purchases should be coordinated with your Local System Administrator.

Applicable Standards

- Statewide Standard 1.7.0, Subscriber Radio Standards
- Statewide Standard 2.6.0, Fleetmap Standards
- Statewide Standard 2.7.0, Use of Shared Talkgroups

Mobile and portable radio fleetmap development should be coordinated with the Local System Administrator to ensure cooperative planning with mutual aid, law enforcement, EMS, and hospital partners.

Section X: Statewide Interoperability Zone

ARMER Standard 3.16.6, 800 MHz Statewide Uniform Interoperability Radio Zones, establishes policy and procedures for the implementation of two 800 MHz uniform interoperability zones in all subscriber radios throughout the state. This policy will guarantee standardized Statewide and Nationwide interoperable communications capabilities for all service branches.

This uniformity will provide dispatch centers, Incident Commanders (ICs), and Communications Unit Leaders (COMLs) the ability to develop and adapt incident radio communications plans quickly and effectively without having to rely on reprogramming radios, swapping radios, or establishing patches in the field.

Based upon Standard 3.16.6, all subscriber radios shall have these two statewide interoperability zones (unless a waiver or variance has been granted):

STATEWIDE INTEROP		
ZONE DISPLAY NAME	ROTARY CHANNEL SELECTOR	CHANNEL DISPLAY NAME
MN	1	STAC1
MN	2	STAC2
MN	3	STAC3
MN	4	STAC4
MN	5	STAC5
MN	6	STAC6
MN	7	STAC7
MN	8	STAC8
MN	9	STAC9
MN	10	STAC10
MN	11	STAC11
MN	12	STAC12
MN	13	STAC13E*
MN	14	STAC14E*
MN	15	
MN	16	

CONVENTIONAL INTEROP		
ZONE DISPLAY NAME	ROTARY CHANNEL SELECTOR	CHANNEL DISPLAY NAME
8C	1	8CALL90
8C	2	8TAC91
8C	3	8TAC92
8C	4	8TAC93
8C	5	8TAC94
8C	6	8CALL90D
8C	7	8TAC91D
8C	8	8TAC92D
8C	9	8TAC93D
8C	10	8TAC94D
8C	11	8SOA1
8C	12	8SOA2
8C	13	8SOA3
8C	14	8SOA4
8C	15	FSOA1*
8C	16	FSOA2*

*STAC13E and STAC14E: Required in all DES-equipped radios (or waiver). Must use Statewide Common DES Encryption Key.

*FSOA1 and FSOA2: Required in Fire and EMS only (or waiver). Not allowed in non-Fire and EMS radios.

Personnel should familiarize themselves with ARMER Standard 3.16.6. Specifically the areas of technical background, operational context, standardized policy, and standardized procedure. Your Local System Administrator should be contacted if you have any questions related to technical background and encryption.

Section XI: Standard Minnesota VHF Interop Resources*

CH #	Channel Name	Short Name[1]	Mobile TX	Mobile RX	TX/RX Mobile CTCSS[2]	TX/RX Base CTCSS[3]
1	VCALL10	VCAL10	155.7525	155.7525	156.7/CSQ	156.7/156.7
2	VTAC11	VTAC11	151.1375	151.1375	156.7/CSQ	156.7/156.7
3	VTAC12	VTAC12	154.4525	154.4525	156.7/CSQ	156.7/156.7
4	VTAC13	VTAC13	158.7375	158.7375	156.7/CSQ	156.7/156.7
5	VTAC14	VTAC14	159.4725	159.4725	156.7/CSQ	156.7/156.7
6	MNCOMM	MNCOMM	155.3700	155.3700	156.7/156.7	156.7/156.7
7	VFIRE23	VFIR23	154.2950	154.2950	156.7/156.7	156.7/156.7
8	MNFIRG2	MNFG2	154.0100	154.0100	156.7/156.7	156.7/156.7
9	MNFIRG3	MNFG3	153.8300	153.8300	156.7/156.7	156.7/156.7
10	DNRTAC1	DNRT1	151.4750	151.4750	156.7/156.7	N/A[4]
11	VLAW31	VLAW31	155.4750	155.4750	156.7/156.7	156.7/156.7
12	VMED28	VMED28	155.3400	155.3400	156.7/156.7	156.7/156.7
13	IR 2	IR 2	165.9625	170.4125	167.9/167.9	167.9/167.9
14	VTAC14R	TAC14R	154.6875	159.4725	156.7/156.7	156.7/156.7
15	NGRPTR*	NGRPTR	Rest.	Rest.	Rest.	Rest.
16	LE 2*	LE 2	162.2625	167.2500	$68F/$68F	$68F/$68F

Section XII: VFIRE23 (Statewide Fire) State Planning

The workgroup recommends that fire users maintain VHF radio capability if there is a need for continued interoperability with other states or Minnesota VHF users.

Section XIII: Bordering States Considerations

VHF frequencies, such as VFIRE 23, are widely used by EMS in the adjacent states of North Dakota, South Dakota, Wisconsin, and Iowa. Each of these states' interoperability plans include some provisions for use of the national VCALL and VTAC channels, as well as all the current, primary VHF interoperability channels used in Minnesota. The one exception is MNCOMM (155.370MHz), which is not widely licensed or used in South Dakota.

EMS agencies that may require interoperability with hospitals or EMS across state lines need to carefully consider 800MHz and conventional interoperability.

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[1] For use with limited character display radios
* Local option channel if not implemented with LOA or MOU for use of federal channels.
[2] CTCSS or NAC for subscriber radios. For VCALL10, VTAC11, VTAC12, VTAC13, and VTAC14, use receive CTCSS of 156.7 if needed to mitigate interference.
[3] CTCSS or NAC for fixed stations.
[4] There are no permanent, fixed stations on DNRTAC1.

Section XIV: Other Best Practices Guides

Law Enforcement
Emergency Management/Public Health
Dispatch
Public Works
EMS/Hospitals

These guides have been created as a result of diligent work by the groups involved. Members of the workgroup who contributed to the most recent update of this Guide: Ulysses Seal (Bloomington Fire Chief), Andrew LaVenture (Firefighter/EMT/COML, Edina Fire Department), Rod Olson (Manager of Radio Communications Electronics, City of Minneapolis), Monte Fronk (Mille Lacs Tribal PD/Tribal Emergency Management), Keith Ruffing (Police Officer, City of St. Peter), Randy Donahue (Southern MN RIC), Pat Wallace (Blue Earth County Communications center Administrator), Dave Thomson (Police Officer, City of Rochester), and Cathy Anderson (Standards & Training Coordinator, ECN). These guides provide guidance for their respective public safety disciplines and are available online. Access to completed Best Practice Guides is available on ECN's website under ARMER and Guide Books.

Section XV: Grants Guidance

All ARMER grant information is located on ECN's website.

The following grants are applicable to EMS for ARMER and VHF equipment. Agencies should contact their RAC for more information.

- IECGP Grants, Interoperable Emergency Communication Grant Program
- SHSP Grants, State Homeland Security Program grants
- PSIC Grants, Public Safety Interoperable Communications grant program
- Other, there are other available grant dollars

Section XVI: Fire Points of Contact for General Assistance

For further information about anything in this Best Practice Guide, please contact your Regional Advisory Committee (RAC), Emergency Communications Board (ECB), or Emergency Services Board (ESB).

Section XVII: Assistance from Minnesota National Guard

Assistance from the Minnesota National Guard, including communications requests, may be obtained via the State Duty Officer. The assistance must be requested by the County Sheriff and/or the Mayor in Cities of the First Class. For planned events or exercises, communications assistance may be obtained by contacting:

SFC Thomas J. Simota
J6 JCP Systems NCOIC / Trainer
8076 Babcock Trail
Inver Grove Heights, MN 55076

Communications: 651-268-8055
DSN: 825-8055

Mobile: 651-336-7515

Additional information about Criteria for Usage of the National Guard in Emergency Operations and Procedures for Requests may be found on ECN's website under ARMER and Guide Books and Best Practices.

Section XVIII: Minnesota Emergency Communication Networks Contacts

Current email contact information can be found on the ECN website under Contact and then Staff Contacts.

Section XIV: Regional Radio Board and Advisory Committee Contacts

Fire agencies across Minnesota must be involved with their respective radio regional governance structure. There are radio regions that do not align with fire regions. Be aware of which regions may affect your primary response area.

Contacts for the Regional Emergency Communications Boards/Emergency Services Boards (ECB/ESB) and Regional Advisory Committees (RAC) can be found on ECN's website under ARMER and ARMER Standards.

Section XX: Radio Affiliated Acronyms

You can find a link to commonly used radio-affiliated acronyms on the ECN website.

Minnesota

Fire Service

Communications Best Practice Guide

Statewide Radio Board, Operations & Technical Committee, Interoperability Committee, Fire Services Best Practice Workgroup

Approved by the Statewide Radio Board

September~~May~~ 2016

This document describes recommended best practices, statewide standards, and contact information for Minnesota fire agencies and regions to assist in planning for interoperability with fire and other public safety disciplines.

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- VFIRE23 (Statewide Fire)

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- Statewide Standard 2.16.0, Emergency Button
- ~~Statewide Standard 3.5.0, National/Statewide VHF Interoperability Resources (VLAW31, VMED28, VFIR23, MIMS)~~
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- Statewide Standard 3.16.0, 800 MHz Statewide Incident Response Talkgroups: STACs, ETACs, FTACs, & LTACs
- Statewide Standard 3.16.2, Use of Statewide 800MHz STAC 1-12 ~~4~~ Talkgroups - Air Ambulance Emergency Landing Zone Coordination
- Statewide Standard 3.16.5, Cross Spectrum Interoperability System VHF Variable Frequency Station (VFS) Resources (replaced Standard 3.5.0, National/Statewide VHF Interoperability Resources VLAW31, VMED28, VFIR23, MIMS)
- Statewide Standard 3.32.0, Statewide Interoperable Plain Language Policy
- Statewide Standard 3.31.0, ~~ARMER System~~ StatusBoard

Section VI: Fire Service Interoperability

- ~~Statewide Standard 3.5.0, National/Statewide VHF Interoperability Resources (VLAW31, VMED28, VFIR23, MIMS)~~
- Statewide Standards 3.16.0 through 3.36.0, Interoperability Standards
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- Incident Management Team (IMT)

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- Statewide Standard 1.13.0, ARMER Aircraft Radio Installations and Operations
- Statewide Standard 3.16.2, Use of Statewide 800MHz STAC 1-124 Talkgroups - Air Ambulance Emergency Landing Zone Coordination

Section VIII: ARMER Communications and Interoperability Training

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- Statewide Standard 1.11.1, System Administrators Definition and Minimum Training Requirements ~~Training System Administrators~~
- Statewide Standard 1.11.2, Training Technical Staff
- Statewide Standard 1.11.3, Training ~~Dispatchers~~Radio Telecommunicators
- Statewide Standard 1.11.4, Training ARMER End Users ~~800 MHz Users~~
- ~~Statewide Standard 1.11.5, Training Non-Participating Radio Users~~

Section IX: Radio Equipment Guidance

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~~**Section XX: Fire Best Practice Workgroup**~~

Section XX~~I~~: Radio Affiliated Acronyms

DOCUMENT REVISION HISTORY

Date	Revision	Notes	Name
8-19-2016	Entire guide	By Workgroup	Cathy Anderson

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Section I: Introduction

The Fire Services Communications Workgroup was created in 2012 to assist and coordinate radio use for fire service providers across the state of Minnesota during and after migration to the ARMER radio system. As ARMER has grown throughout the state, fire service providers need assistance, clarification, coordination, and best practice guidance. This guide was created to specifically address fire-related issues and to assist with planning for fire regions and agencies. Common fire communications paths include the following:

- Fire units to dispatch
- Fire units to fire units
- Fire units to EMS
- Fire units to law enforcement
- Fire units to air ambulance

The highest and most effective level of interoperability is achieved when users share the same radio system and have shared talkgroups directly accessible to them in their radios. A best practice recommendation would be for all users to operate on and share the same radio system. Realizing the difficulty in achieving this goal statewide, this guide will set forth best practices for using the current systems for the best interoperability solutions to address incidents and events. The Minnesota Fire Service Communications Best Practice Guide is a living document, and suggested changes may be submitted to the Emergency Communication Networks (ECN) Standards & Training Coordinator. ~~Statewide Interoperability Committee through the Statewide Interoperability Program Manager, Tom.M.Johnson@state.mn.us, or by calling 651-201-7552.~~

NOTE: Questions regarding State~~wide Radio~~ Standards or clarification of these standards should be directed to ~~your~~ your Local ~~County~~ System Administrator, your Regional Interoperability Coordinator (RIC), or the Statewide Interoperability Program Manager.

For current ECN contact information, please see Staff Contacts on ECN's website: https://dps.mn.gov/divisions/ecn/pages/default.aspx.

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Section II: Participation in ARMER

Should agencies ~~jurisdictions~~ choose to participate, Statewide Standard 1.10.0, Requesting Participation and Participation Plan Changes, ~~& Configuring Participation~~, details the requirements for participation. Statewide Standards may be found on ECN's website under ARMER and ARMER Standards. ~~the SRB~~ website. ~~at https://dps.mn.gov/divisions/ecn/Pages/default.aspx.~~

The decision to participate in ARMER must be made in conjunction with county officials, local public safety, and adjacent Fire Agencies. This must also include an evaluation of interoperability with other radio systems. For questions, please utilize the points of contact in this document.

It is recommended ~~The workgroup recommends~~ that each agency either link to or attach their ~~Agency's~~ Limited or Full ARMER Participation Plan to this document.

Copies of ~~County~~ Participation Plans may be obtained from the Local System Administrator, Director or Supervisor of the City, County, or Tribal Dispatch Center or PSAP or from the Regional Advisory Committee

(RAC), Regional Emergency Services Board (ESB), or Regional Emergency Communications Board (ECB).~~State Interoperability Program Manager, Tom.M.Johnson@state.mn.us, or by calling 651-201-7552.~~

Section III: Statewide Fire Communications

Statewide fire radio communications were developed in Minnesota in the early 1970's to provide radio channels for mutual aid interoperability. The original oversight of the VHF mutual aid frequencies was the responsibility of the Minnesota State Fire Chiefs Association. This responsibility was assumed by the

Statewide Radio Board in 2010, which later formed the Interoperability Committee to work on and coordinate interoperability issues throughout the state. The Interoperability Committee formed the Fire Service Communications Best Practice Workgroup to develop this Best Practice Guide, which will assist fire services across the state.

VFIRE23 (Statewide FIRE)

The State of Minnesota ~~will be narrowbanding its~~ VHF infrastructure~~, which~~ will remain available, regardless of ARMER migration. Since issues may arise as the result of bordering states and fire departments continuing to remain on a VHF system, ~~and~~ this workgroup recommends that all agencies consider interoperable solutions between ARMER and conventional radio systems.

Section III: Statewide Fire Communications

Minnesota Fire Users ~~Specific~~ Statewide Available Talkgroups & Channels

Minnesota Fire Users - Fire Specific Talkgroups & Channels	
Talkgroup/Channel	**Intended Use**
	ARMER 800 MHz -All Fire Users
Region Specific TAC	Regional Interop Resource
STAC's~~Region Specific TAC~~	Statewide All User Tactical channels 1-12~~Regional Interop Resource~~
FSOA 1 & 2~~Region Specific TAC~~	Fire Scene of Action channels 1 & 2~~Regional Interop Resource~~
TC OP1~~Region Specific TAC~~	Tribal Statewide Talkgroup (Tribal Gov't Use Only)~~Regional Interop Resource~~
~~Fire-FTAC 1~~	~~Statewide Fire Tactical~~
~~Fire-FTAC 2~~	~~Statewide Fire Tactical~~
~~Fire-FTAC 3~~	~~Statewide Fire Tactical~~
~~Fire-FTAC 4~~	~~Statewide Fire Tactical~~
~~FSOA 1 & 2~~	~~Fire Scene of Action~~
~~TC OP1~~	~~Tribal Statewide Talkgroup – Tribal Gov't Use only~~
	VHF CONVENTIONAL
VFIRE23	VHF National Fire/Statewide Fire
MNFIR2	VHF Statewide Fire Tactical
MNFIR3	VHF Statewide Fire Tactical

It is recommended that agencies preplan for use of an SOA channel in case users lose trunking coverage or are in an area without trunking coverage.

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Section V: Fire Service Related Statewide Standards

Statewide standards are available on ECN's website. the Statewide Radio Board web site: Dps.mn.gov/entity/srb

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Current, applicable statewide fire related standards

- Statewide Standard 2.16.0, Emergency Button
- Statewide Standard 3.15.0, Use of How to use a Scene of Action (SOA)
- Statewide Standard 3.16.0, 800 MHz Statewide Incident Response Talkgroups: STACs, ETACs, FTACs, & LTACs
- Statewide Standard 3.16.2, Use of Statewide 800MHz STAC 1-12 4 Talkgroups - Air Ambulance Emergency Landing Zone Coordination
- State Standard 3.16.3, Cross Spectrum Interoperability System 800 MHz National Mutual Aid Resources
- State Standard 3.16.4, Cross Spectrum Interoperability System VLAW31 Resources
- Statewide Standard 3.16.5, Cross Spectrum Interoperability System VHF Variable Frequency Station (VFS) Resources (replaced Standard 3.5.0, National/Statewide VHF Interoperability Resources VLAW31, VMED28, VFIR23, MIMS)
- Statewide Standard 3.5.0, National/Statewide VHF Interoperability Resources (VLAW31, VMED28, VFIR23, MIMS)
- Statewide Standard 3.32.0, Statewide Interoperable Plain Language Policy

Section VI: Fire Service Interoperability

Applicable statewide standards

- Statewide Standard 3.16.5, Cross Spectrum Interoperability System VHF Variable Frequency Station (VFS) Resources (replaced Standard 3.5.0, National/Statewide VHF Interoperability Resources VLAW31, VMED28, VFIR23, MIMS)
- Statewide Standard 3.5.0, National/Statewide VHF Interoperability Resources (VLAW31, VMED28, VFIR23, MIMS)
- Statewide Standards 3.16.0 through 3.36.0, Interoperability Standards

The highest and most effective level of interoperability is achieved when users share the same radio system and have shared talkgroups directly accessible to them in their radios. Shared, interoperable talkgroup resources exist in a variety of forms and may be called common, pool, or tactical. It is imperative that fire agencies plan effectively with mutual aid, law enforcement, EMS, and hospital partners. Fire agencies must be aware of local, regional, and statewide interoperable radio resources and procedures. Best practice is to use shared, interoperable resources by progression, beginning with internal resources, progressing to local/county, regional, and utilizing statewide resources last. Some progression may need to be skipped, depending on the situation – i.e., using an FTAC for fire mutual aid or an STAC for fire mutual aid. an air ambulance landing.

Planned Events

Planned events require consideration for the jurisdictions that will need to communicate. If shared, interoperable resources are required, planners should start by considering local/county talkgroups first, then progressing to regional and statewide talkgroups as necessary, given the agencies and the type of communications needed. This planning must be coordinated with the controlling dispatch center. Regional

and statewide talkgroups need to be checked for availability and reserved by a dispatcher via the StatusBoard. ~~, available on ARMER dispatch consoles.~~

Emergency Incidents

Emergency response communications also requires pre-planning. Talkgroup progression should also be used and must be assigned by the controlling dispatcher, based on availability. It is important to work closely with the dispatch center to ensure a shared resource is not already in use. Regional and state talkgroups need to be checked for availability and reserved by a dispatcher via the StatusBoard. ~~, available on ARMER dispatch consoles.~~

Based on the scope of the incident, the controlling dispatcher and the incident command structure must communicate effectively to ensure the most appropriate resource is assigned that matches the radio resource requirements of all responders. Dispatchers and incident commanders may choose to patch local resources or VHF and ARMER resources to manage an incident.

Wildfire and Interface Fires

Initial response to wildfire reports may be done by local fire departments, MN DNR, US Forest Service, US Fish and Wildlife Services, BIA/ Tribal, or National Park Service crews, and will vary based on jurisdiction, land ownership, fire type, and crew/equipment availability. Reports may come to the local PSAP, DNR, and United States Forest Service (USFS) dispatchers directly. Responding agencies will be operating on ARMER and/or VHF systems from DNR or federal agencies. Due to the highly variable responses possible, it is difficult to describe a typical or model scenario.

The best practice is for agencies in wildfire affected areas to do an annual pre-fire planning session involving the local fire department(s), PSAP representative, and affected State/Tribal DNR and Federal wildfire agencies in the area. Review of communications equipment types, fleet maps and channel lists, system coverage, and patching capability for each of the agencies should occur. Pre-incident development of written incident communication resource lists and incident communications plans is highly recommended and will serve not only in the initial period of wildfire response, but also as a resource for incoming Incident Management Team's (IMT's) if the incident expands to higher Type levels. Pre-incident exercise of those plans is also highly recommended to identify technical or training issues that should be resolved.

Communications Unit Leader (COML)

The Communications Unit Leader, or COML, is responsible for developing plans for the effective use of incident communications equipment and facilities, installing and testing of communications equipment, supervision of the Incident Communications Center, distribution of communications equipment to incident personnel, and the maintenance and repair of communications equipment. The State of Minnesota has instituted a COML program to provide a ready cadre of trained communications unit leaders to assist Incident Commanders (ICs) in providing and maintaining effective incident communications. An IC can request a trained COML through the Minnesota State Duty Officer.

Communications Unit Technician (COMT)

The All-Hazards Communications Technician, or COMT, is responsible for practices and procedures common to radio communications technicians during all-hazards emergency operations. COMTs work within the Incident Command System (ICS) organizational structure.

COMTs may be federal, state, local, tribal emergency response professionals, and/or coordination/support personnel with communications backgrounds. COMTs have a technical aptitude and are responsible for managing a Strategic Technology Reserve (radio cache, mobile communications vehicle, or other deployable communications assets).

The major responsibilities of the COMT are:

- Support COMLs in the design of the communications plan.
- Stand up equipment in support of the communications plan.
- Assign and track radio caches.
- Document all communications activities.

Incident Management Team (IMT)

An Incident Management Team, or IMT, is a multi-agency/multi-jurisdiction team for extended incidents, formed and managed at the State, regional, or metropolitan level. An IMT is deployed as a team of 8-24 trained personnel to manage major and/or complex incidents requiring a significant number of local, regional, and state resources, as well as incidents that extend into multiple operational periods and require a written Incident Action Plan (IAP). An IC can request an IMT through the Minnesota State Duty Officer.

What An IMT Can Do For You

Provide individuals or an entire team with expertise in the following areas:

- Operations
- Logistics
- Incident Commander – Liaison officer
- Planning – Safety
- Finance- personnel cost, equipment cost, etc.
- Public Information Coordinator
- Perform specific functions, manage a designated part of an incident, or manage the entire incident through a Delegation of Authority.

Provide the following to your jurisdiction:

- Frequent updates on activities
- Detailed records of incident costs
- Tracking of resources
- Documentation of expenditures, claims, labor, and legal issues for the incident
- A written incident action plan for each operational period that includes objectives, strategies, tactics, current resources, and plans for communications, safety, and logistics for the incident.

Incident Dispatch Team (IDT)

The IDT is comprised of dispatch professionals from around the Metro Region. The team represents multi-discipline PSAP personnel (police fire, EMS) ready to deploy and bring the unique skills of the dispatcher to augment incident management at an incident or event. The IDT also serves as Minnesota's Telecommunications Emergency Response Taskforce (MN-TERT) under the National Joint TERT Initiative and is recognized nationally.

The Metropolitan Emergency Services Board (MESB) supports the CRTF and IDT/MN-TERT. The CRTF or MN-TERT can be requested for assistance at an emergency event by contacting the Minnesota State Duty Officer. If you have a planned event, please contact the MESB to make arrangements for the IDT.

Section VII: Aeromedical Interoperability

Applicable Statewide Standards

- Statewide Standard 1.13.0, Aircraft Radio Installations and Operations
- Statewide Standard 3.16.2, Use of Statewide 800 MHz STAC 1-12 ~~4~~ Talkgroups - Air Ambulance Emergency Landing Zone Coordination

Responder and Aircraft have ARMER radios:
If the aircraft and personnel on scene coordinating the landing both have STAC talkgroups, they may use the STAC that has been assigned to them by the appropriate, controlling primary PSAP.

Responder or Aircraft that do NOT have ARMER radios:
If the aircraft does not have an ARMER radio, but personnel on scene coordinating the landing does, then the controlling, primary PSAP will assign the first available STAC and patch the responding air ambulance to ~~MINSEF (~~VLAW31~~)~~ if being landed by law enforcement personnel. If being landed by fire personnel, ~~SWFIRE (~~VFIRE23~~)~~ is an option. If landing by EMS personnel, ~~EMS HEAR (~~VMED28~~)~~ can be used. If both the responder and the aircraft have VHF radios, they will use the appropriate VHF channel.

Section VIII: ARMER Communications and Interop Training

Applicable Statewide Standards

- Statewide Standard 1.11.1, Training System Administrators
- Statewide Standard 1.11.2, Training Technical Staff
- Statewide Standard 1.11.3, Training Telecommunicators ~~Dispatchers~~
- Statewide Standard 1.11.4, Training 800 MHz Users
- ~~Statewide Standard 1.11.5, Training Non-Participating Radio~~

Training and training standards continue to evolve across the state. Metro region fire agencies have been training personnel since 2002 and can be a wealth of information and assistance. Training materials are widely available and can be tailored for individual agency application.

Whether or not your fire agency will be changing radio systems, field and dispatch personnel need proper training on the ARMER system. In addition, they need training on communications and interoperability basics, as outlined in the State ~~RB~~ Standards, and also in accordance with regional standards and protocol.

Section IX: Radio Equipment Guidance

Applicable Standards

- Statewide Standard 1.7.0, Subscriber Radio Equipment

Equipment authorized for use on the ARMER radio system is outlined on the ECN~~ARMER~~ web site. ~~: Dps.mn.gov/entity/srb.~~ Also available on the web site is the state contract, R-651, for communications vendors and equipment suppliers. Purchases should be coordinated with your Local System Administrator.

Applicable Standards

- Statewide Standard 1.7.0, Subscriber Radio Standards
- Statewide Standard 2.6.0, Fleetmap Standards
- Statewide Standard 2.7.0, Use of Shared Talkgroups

Mobile and portable radio fleetmap development should be coordinated with the Local ~~county and regional radio~~ S~~s~~ystem A~~a~~dministrator~~s~~ to ensure cooperative planning with mutual aid, law enforcement, EMS, and hospital partners. ~~The following fleetmap is a best practice example of a typical mobile and portable radio fleetmap.~~

~~Best Practice ARMER Fire Fleetmap for mobile & portable radio zones:~~
~~*ARMER Standards 3.15 & 3.16 (includes addendum to 3.16, approved 1-24-2011)~~

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Section X: ~~Fire ARMER Fleetmap Planning Guidance~~ Statewide Interoperability Zone

ARMER Standard 3.16.6, 800 MHz Statewide Uniform Interoperability Radio Zones, establishes policy and procedures for the implementation of two 800 MHz uniform interoperability zones in all subscriber radios throughout the state. This policy will guarantee standardized Statewide and Nationwide interoperable communications capabilities for all service branches.

This uniformity will provide dispatch centers, Incident Commanders (ICs), and Communications Unit Leaders (COMLs) the ability to develop and adapt incident radio communications plans quickly and effectively without having to rely on reprogramming radios, swapping radios, or establishing patches in the field.

Based upon Standard 3.16.6, all subscriber radios shall have these two statewide interoperability zones (unless a waiver or variance has been granted):

*STAC13E and STAC14E: Required in all DES-equipped radios (or waiver). Must use Statewide Common DES Encryption Key.

*FSOA1 and FSOA2: Required in Fire and EMS only (or waiver). Not allowed in non-Fire and EMS radios.

Personnel should familiarize themselves with ARMER Standard 3.16.6. Specifically the areas of technical background, operational context, standardized policy, and standardized procedure. Your Local System Administrator should be contacted if you have any questions related to technical background and encryption.

~~STANDARDIZED ARMER SYSTEMWIDE INCIDENT COMMAND ZONE FOR MAJOR INCIDENT RESPONSE COORDINATION~~

~~Pos~~	~~Law Enforcement~~	~~EMS~~	~~Fire~~	~~Public Service~~
~~1~~	~~*Local Choice~~	~~*Local Choice~~	~~*Local Choice~~	~~*Local Choice~~
~~2~~	~~L-TAC1~~	~~E-TAC1~~	~~F-TAC1~~	~~Regional-TAC1~~
~~3~~	~~L-TAC2~~	~~E-TAC2~~	~~F-TAC2~~	~~Regional-TAC2~~
~~4~~	~~L-TAC3~~	~~E-TAC3~~	~~F-TAC3~~	~~Regional-TAC3~~
~~5~~	~~L-TAC4~~	~~E-TAC4~~	~~F-TAC4~~	~~Regional-TAC4~~
~~6~~	~~STAC1~~	~~STAC1~~	~~STAC1~~	~~STAC1~~
~~7~~	~~STAC2~~	~~STAC2~~	~~STAC2~~	~~STAC2~~
~~8~~	~~STAC3~~	~~STAC3~~	~~STAC3~~	~~STAC3~~
~~9~~	~~STAC4~~	~~STAC4~~	~~STAC4~~	~~STAC4~~
~~10~~	~~Regional TAC~~	~~Regional TAC~~	~~Regional TAC~~	~~LOC CH/ BLANK~~
~~11~~	~~Regional TAC~~	~~Regional TAC~~	~~Regional TAC~~	~~LOC CH/ BLANK~~
~~12~~	~~Regional TAC~~	~~Regional TAC~~	~~Regional TAC~~	~~LOC CH/ BLANK~~
~~13~~	~~Regional TAC~~	~~Regional TAC~~	~~Regional TAC~~	~~LOC CH/ BLANK~~

~~14~~	~~LOC CH/ BLANK~~	~~LOC CH/ BLANK~~	~~LOC CH/ BLANK~~	~~LOC CH/ BLANK~~
~~15~~	~~P-SOA-1~~	~~P-SOA-1~~	~~P-SOA-1~~	~~LOC CH/ BLANK~~
~~16~~	~~A-SOA-1~~	~~A-SOA-1~~	~~A-SOA-1~~	~~A-SOA-1~~

~~800 MHz Statewide Incident Response Talkgroups – STACs, ETACs, FTACs, & LTACs - 3.16.0~~

~~**All Branch IC Zone**~~

~~The following alternate "All Branch" STANDARDIZED INCIDENT COMMAND ZONE may be implemented either in addition to, or in lieu of, the service branch specific STANDARDIZED INCIDENT COMMAND ZONE specified in Section 4 of ARMER Statewide Standard 3.16.0.~~

~~If the All Branch zone is used, all 16 Statewide Incident Response talkgroups shall be included and they shall be programmed exactly in the order specified below. This will help maintain consistency and facilitate a potential future renaming of these talkgroups to STAC 1-16, as part of ARMER 3.0. The All Branch zone may be implemented in any radio regardless of service branch.~~

~~This All Branch IC Zone is programmed into all Strategic Technology Reserve cache radios positioned throughout the State, and is recommended for inclusion in all other cache radios.~~

~~Pos~~	~~All Branch IC Zone~~
~~1~~	~~STAC 1~~
~~2~~	~~STAC 2~~
~~3~~	~~STAC 3~~
~~4~~	~~STAC 4~~
~~5~~	~~LTAC 1~~
~~6~~	~~LTAC 2~~
~~7~~	~~LTAC 3~~
~~8~~	~~LTAC 4~~
~~9~~	~~FTAC 1~~
~~10~~	~~FTAC 2~~
~~11~~	~~FTAC 3~~
~~12~~	~~FTAC 4~~
~~13~~	~~ETAC 1~~
~~14~~	~~ETAC 2~~
~~15~~	~~ETAC 3~~
~~16~~	~~ETAC 4~~

~~**Limited Cross Service Branch Sharing Permitted**~~

~~In the event multiple, simultaneous incidents throughout the state exhaust all available branch specific talkgroups and STACs and additional talkgroup resources are needed, talkgroups from other service branches may be used on a secondary basis. Any such assignment shall only be made by the dispatch center controlling the incident, the Incident Commander, or the Incident Communications Unit Leader (COML).~~

Section XI: Standard Minnesota VHF Interop Resources*

CH #	Channel Name	Short Name[1]	Mobile TX	Mobile RX	TX/RX Mobile CTCSS[2]	TX/RX Base CTCSS[3]
1	VCALL10	VCAL10	155.7525	155.7525	156.7/CSQ	156.7/156.7
2	VTAC11	VTAC11	151.1375	151.1375	156.7/CSQ	156.7/156.7
3	VTAC12	VTAC12	154.4525	154.4525	156.7/CSQ	156.7/156.7
4	VTAC13	VTAC13	158.7375	158.7375	156.7/CSQ	156.7/156.7
5	VTAC14	VTAC14	159.4725	159.4725	156.7/CSQ	156.7/156.7

[1] For use with limited character display radios
* Local option channel if not implemented with LOA or MOU for use of federal channels.
[2] CTCSS or NAC for subscriber radios. For VCALL10, VTAC11, VTAC12, VTAC13, and VTAC14, use receive CTCSS of 156.7 if needed to mitigate interference.
[3] CTCSS or NAC for fixed stations.

6	MNCOMM	MNCOMM	155.3700	155.3700	156.7/156.7	156.7/156.7
7	VFIRE23	VFIR23	154.2950	154.2950	156.7/156.7	156.7/156.7
8	MNFIRG2	MNFG2	154.0100	154.0100	156.7/156.7	156.7/156.7
9	MNFIRG3	MNFG3	153.8300	153.8300	156.7/156.7	156.7/156.7
10	DNRTAC1	DNRT1	151.4750	151.4750	156.7/156.7	N/A[4]
11	VLAW31	VLAW31	155.4750	155.4750	156.7/156.7	156.7/156.7
12	VMED28	VMED28	155.3400	155.3400	156.7/156.7	156.7/156.7
13	IR 2	IR 2	165.9625	170.4125	167.9/167.9	167.9/167.9
14	VTAC14R	TAC14R	154.6875	159.4725	156.7/156.7	156.7/156.7
15	NGRPTR*	NGRPTR	Rest.	Rest.	Rest.	Rest.
16	LE 2*	LE 2	162.2625	167.2500	$68F/$68F	$68F/$68F

	Standard Name	Short Name	Mobile TX Freq	CTCSS or NAC	Mobile RX Freq	Original Name or Use
1	VCALL10	VCAL10	156.7525	156.7	156.7525	National Public Safety Calling
2	VTAC11	VTAC11	151.1375	156.7	151.1375	National Public Safety Tactical
3	VTAC12	VTAC12	154.4525	156.7	154.4525	National Public Safety Tactical
4	VTAC13	VTAC13	156.7375	156.7	156.7375	National Public Safety Tactical
5	VTAC14	VTAC14	158.4525	156.7	158.4725	National Public Safety Tactical
6	MNCOMM	MNCOMM	155.3700	156.7	155.3700	MNHS
7	VFIRE23	VFIR23	154.2950	156.7	154.2950	MNFIRE MA
8	MNFIRG2	MNFG2	154.0100	156.7	154.0100	Sat Fire Tactical
9	MNFIRG3	MNFG3	153.8300	156.7	153.8300	Sat Fire Tactical
10	DNRTAC1	DNRT1	151.4750	156.7	151.4750	MN DNR
11	VLAW31	VLAW31	155.4750	156.7	155.4750	MNVBF
12	VMED28	VMED28	155.3400	156.7**	155.3400	EMS HEAR
13	IR2	IR2	165.9625	167.9	170.4125	Temp Incident Tactical, EMS Frequency Rescue
14	VTAC14R	TAC14R	154.6875	156.7	159.4725	National Public Safety Tactical
15	NGRPTR	NGRPTR	Restricted	Restricted	Restricted	Temporary Repeater
16	LE2	LE2	Restricted	Restricted	Restricted	Federal LE Vehicle

~~*SRB Statewide VHF Interoperable Frequency Steering Committee 12-2-2010~~
~~**This CTCSS Tone is the National Standard emergency tone found in the National Interoperability Field Operations Guide (NIFOG) and recommended by NPSTC. The Minnesota SRB Statewide VHF Interoperability Steering Committee has established this tone in the Minnesota VHF Interop Plan, recognizing that other tones are currently used with VMED28 across the State of Minnesota. The plan recommends that Minnesota agencies using VHF migrate to the national standard CTCSS tone when appropriate, which may be when narrowbanding. Meanwhile, it may be advisable to work through any gaps created by changing the tone in your area.~~

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Section XII: VFIRE23 (Statewide Fire) State Planning

The workgroup recommends that fire users maintain VHF radio capability if there is a need for continued interoperability with other states or Minnesota VHF users.

~~Excerpt from the SRB MN VHF Interoperable Frequency Plan – Dated 12-2-2010~~
~~The Statewide VHF Interoperable Frequency Steering Committee established the final revision of the VHF plan on 12-2-2010. This plan describes the primary channel for interagency fire communications in the state as 154.2950 MHz, commonly referred to as Statewide Fire. The national naming convention for this channel is VFIRE 23. Under FCC rules, "this frequency may be designated by common consent as an intersystem mutual assistance frequency under an area-wide fire communications plan". The use of this channel is widespread in Minnesota, and permission to utilize this channel outside the fire discipline from the SRB and previous authorities has been limited. The current standard operational mode for this channel is wideband analog, but this channel is subject to the FCC mandated narrowbanding deadline.~~

[4] There are no permanent, fixed stations on DNRTAC1.

~~**VHF Narrowbanding (**Excerpted from the SRB MN VHF Interoperable Frequency Plan)~~
~~The Department of Public Safety (DPS), in conjunction with the SRB has recommended that, in order to preserve interoperability, agencies continue to maintain wideband capability on these channels in mobile and portable radios until the narrowbanding deadline of January 1, 2013. This could be accomplished by programming or updating the four current, statewide interoperability channels in existing radio modes and zones using wideband names as shown in Table and adding the Statewide VHF interoperability zone with narrowband channels into their radios prior to the 60 day transition period.~~

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~~DPS proposes that users should proceed with reprogramming base stations on these four statewide channels beginning on October 1, 2012. Reprogramming of mobile and portable radios could begin before that date if users retain wideband capabilities as well. DPS also urges all users to complete narrowbanding these channels in all their radios no later than November 30, 2012. All wideband operations on these channels must cease as of January 1, 2013.~~

~~During this 60-day narrowbanding transition period, significant difficulties communicating on these four primary, statewide mutual aid channels may occur if users at an incident are attempting to communicate from a narrowband channel to a wideband channel and vice versa. Even though the operating frequency is unchanged, the substantial differences in operating bandwidth between these modes can cause low or muted audio and/or significant distortion of radio communications.~~

Section XIII: Bordering States Considerations

VHF frequencies, such as VFIRE 23, are widely used by EMS in the adjacent states of North Dakota, South Dakota, Wisconsin, and Iowa. Each of these states' interoperability plans include~~s~~ some provisions for use of the national VCALL and VTAC channels, as well as all the current, primary VHF interoperability channels used in Minnesota. The one exception is MNCOMM ~~IMS~~ (155.370MHz), which is not widely licensed or used in South Dakota.

EMS agencies that may require interoperability with hospitals or EMS across state lines need to carefully consider 800MHz and conventional interoperability.

Section XIV: Other Best Practices Guides

Law Enforcement
Emergency Management/Public Health
Dispatch
Public Works
EMS/Hospitals

These guides have been created as a result of diligent work by the groups involved. Members of the workgroup who contributed to the most recent update of this Guide: Ulysses Seal (Bloomington Fire Chief), (Bloomington Fire Chief), Andrew LaVenture (Firefighter/EMT/COML, Edina Fire Department), Rod Olson Department), Rod Olson (Manager of Radio Communications Electronics, City of Minneapolis), Monte Fronk Minneapolis), Monte Fronk (Mille Lacs Tribal PD/Tribal Emergency Management), Keith Ruffing (Police Ruffing (Police Officer, City of St. Peter), Randy Donahue (Southern MN RIC), Pat Wallace (Blue Earth County Earth County Communications center Administrator), Dave Thomson (Police Officer, City of Rochester), and Rochester), and Cathy Anderson (Standards & Training Coordinator, ECN). These guides provide guidance for

provide guidance for their respective public safety disciplines and are available online. Access to completed Access to completed Best Practice Guides is available on ECN's website under ARMER and Guide Books. -Guide Books. ~~at: https://dps.mn.gov/entity/SRB~~

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Section XV: Grants Guidance

All ARMER grant information is located on the ARMER web site:
Dps.mn.gov/entity/srb

The following grants are applicable to EMS for ARMER and VHF equipment. Agencies should contact their RAC for more information.

- IECGP Grants, Interoperable Emergency Communication Grant Program
- SHSP Grants, State Homeland Security Program grants
- PSIC Grants, Public Safety Interoperable Communications grant program
- Other, there are other available grant dollars

Section XVI: Fire Points of Contact for General Assistance

For further information about anything in this Best Practice Guide, please contact your Regional Advisory Committee (RAC), Emergency Communications Board (ECB), or Emergency Services Board (ESB).

~~Bill Mund, Fire Chief, St. Cloud Fire Department, State Fire Chiefs Radio Board Representative~~
~~St. Cloud Fire Department~~
~~101 10th Avenue North~~
~~St. Cloud, MN 56303~~
~~Bill.Mund@ci.stcloud.mn.us~~
~~(320) 650-3500~~

~~Ulie Seal, Fire Chief, Bloomington Fire Department, State Fire Chiefs Radio Board Representative~~
~~Bloomington Fire Department~~
~~10 West 95th Street~~
~~Bloomington, MN 55420~~
~~useal@ci.bloomington.mn.us~~
~~(952) 563-4811~~

Section XVII: Assistance from Minnesota National Guard

Assistance from the Minnesota National Guard, including communications requests, may be obtained via the State Duty Officer. The assistance must be requested by the County Sheriff and/or the Mayor in Cities of the First class. For planned events or exercises, communications assistance may be obtained by contacting:

SFC Thomas J. Simota
J6 JCP Systems NCOIC / Trainer
8076 Babcock Trail

Inver Grove Heights, MN 55076

Communications: 651-268-8055
DSN: 825-8055
Mobile: 651-336-7515

~~Troy P. Tretter, COML~~
~~J6 JCP Systems NCOIC / Trainer~~
~~8076 Babcock Trail~~
~~Inver Grove Heights, MN 55076~~

~~Communications: 651-268-8055~~
~~DSN: 825-8055~~
~~Mobile: 612-242-2847~~
~~G-net: 8055~~

Additional information about Criteria for Usage of the National Guard in Emergency Operations and Procedures for Requests may be obtained on ECN's website under ARMER and Guide Books and Best Practices. ~~the SRB website, https://dps.mn.gov/entity/srb~~

Section XVIII: Minnesota Emergency Communication Networks Contacts

Current email contact information can be found on the ECN website under Contact and then Staff Contacts.

~~**Jackie Mines, Director,** DECN~~
~~jackie.mines@state.mn.us, 651-201-7550~~

~~**Thomas Johnson,** DECN Statewide Interoperability Program Manager~~
~~tom.m.johnson@state.mn.us, 651-201-7552~~

~~**Brandon Abley,** DECN Technical Coordinator~~
~~brandon.abley@state.mn.us, 651-201-7554~~

~~**Bill Bernhjelm,** DECN North Regional Interoperability Coordinator~~
~~william.bernhjelm@state.mn.us, 218-349-3531~~

~~**John Tonding,** DECN Central/Metro Regional Interoperability Coordinator~~
~~john.tonding@state.mn.us, 763-587-8234~~

~~**Steve Borchardt,** DECN South Regional Interoperability Coordinator~~
~~steven.borchardt@state.mn.us, 507-398-9687~~

~~**Erny Mattila,** DECN Grants Project Coordinator~~
~~ernest.mattila@state.mn.us, 651-201-7555~~

~~**Dana Wahlberg,** 911 Program Manager, DECN~~

dana.wahlberg@state.mn.us, 651-201-7546

Commented [AC3]: dana isn't in any of the other BPG's - do you want her in all of them or removed from this?

Section XIV: Regional Radio Board and Advisory Committee Contacts

Fire agencies across Minnesota must be involved with their respective radio regional governance structure. There are radio regions that do not align with fire regions. Be aware of which regions may affect your primary response area.

Contacts for the Regional Emergency Communications Boards/Emergency Services Boards (ECB/ESB) and Regional Advisory Committees (RAC) can be found on ECN's website under ARMER and ARMER Standards.
Contacts for the Regional Radio Boards (RRBs) and Regional Advisory Committees (RACs) can be found on the ARMER web site here: Dps.mn.gov/entity/srb

Section XX: Fire Best Practice Workgroup

Ulie Seal – useal@ci.bloomington.mn.us
Curt Meyer – Curtis.Meyer@co.hennepin.mn.us
Dan Lallier – diallier@virginiamn.us
Dean Wrobbel – Dean.Wrobbel@ci.stcloud.mn.us
Erik Jonassen – jonassene@virginiamn.us
James Van Eyll – jvaneyll@Longlakemn.us
John Tonding – John.tonding@state.mn.us
Cathy Anderson – Cathy.Anderson@state.mn.us
Mark Marcy – Mark.Marcy@state.mn.us
Steven Borchardt – Steven.Borchardt@state.mn.us
Thomas Humphrey – Thomas.Humphrey@metrotransit.org

Vince Pellegrin – Vince.Pellegrin@metc.state.mn.us
William Bernhjelm – William.Bernhjelm@state.mn.us
Thomas Johnson- Tom.M.Johnson@state.mn.us

Section XXI: Radio Affiliated Acronyms

You can find a link to commonly used radio-affiliated acronyms on the ECN website.
Link to commonly used, radio affiliated acronyms – https://dps.mn.gov/entity/SRB , click on ARMER, and then click on Acronyms.

LOGIS
LOCAL GOVERNMENT INFORMATION SYSTEMS

August 17, 2016

MESB Radio TOC

Subject: MCC7500 Interface Request

The LOGIS consortium is moving to a TriTech system for Computer Aided Dispatch and we have a desire to interface to the MCC7500 consoles for our member PSAPS. I've attached a diagram provided by LOGIS network staff after consultation with John Anderson. Below is the description of the interface provided by TriTech.

TriTech – Motorola MCC 7500 Interface Description

The Interface will function with 4 public safety answering points, Bloomington, Minnetonka, Rice and Steele 911 Center and the Dakota Communications Center. The interface calls for the installation of a small executable on the consoles. The TriTech executable running on the console exists to receive communication via TCP and call the corresponding function calls. The executable also receives the API messages, which can be sent back to our interface server via the TCP connection.

The interface shall generate alerting/notification messages for stations upon unit dispatch events.

Alerting/Notification: The interface shall generate alerting/notification messages for stations upon unit dispatch events. Alert messages will correspond to a "Page Alias" or "Page Alias Group" identified in the console as a representation of a station.

LOGIS is requesting MESB approval.

P: 763-543-2600 F: 763-543-2699 5750 Duluth Street, Golden Valley, MN 55422-4036
WWW.LOGIS.ORG

Change Manage Progress Form
Scene of Action Repeater (SOAR)

Summary of Suggestion
Request to use conventional channel SOA-3 as a repeated channel to provide a low cost coverage solution in rural areas where in-building ARMER coverage suffers and without demand or resources for ARMER enhancements.

Change Sponsor *(entity)*
Central Emergency Communications Board for Stevens County.

Sponsor's Representative (person)
Micah Meyers

First Introduction to an OTC or IOC
October 13, 2015

Standard(s) Impacted
3.15.0 (Use of 700 MHz and 800 MHz Statewide Scene of Action (SOA) Channels)
3.24.0 (RF Control Stations)?
3.25.0 (Radio to Radio Cross Band Repeaters)?
3.33.3

Technical/System Change Suggestion

OTC Decision about whether Technical/System Change Suggestion would be a Major or Minor Change (if applicable)	
Major	Minor
April 12, 2016: OTC identified this as a Major Change Management request.	← Identified as a Major Change

If a Major Technical/System Change	If a Minor Technical/System Change
OTC Review of Necessity and Substantial Benefit If YES, move on to MnDOT If No, return to Proponent	MnDOT System Administrator's Recommendation
May 10, 2016: OTC asked Al Fjerstad to form and lead a workgroup to explore this question. The workgroup was authorized to move this item on to MnDOT and System Admins for input. June 14, 2016: Al reported to OTC that there was a poor response to his request for workgroup members. OTC guided that he try again and then move forward. July 18, 2016: Al reported he was too busy at work to follow up. Jim will get group formed to review the "necessity and benefit" of this proposal. Al provided Workgroup membership info to Jim. July 28, 2016 Workgroup met and recommended using an 8TAC instead of an SOA. Memo drafted and sent to OTC. August 9, 2016	n/a

Change Manage Progress Form
Scene of Action Repeater (SOAR)

SOAR discussed at OTC. Suggestion received that a simplex SOA be allowed as an option as well as repeated 8TACs. OTC supported using 8TACs and simplex SOAs. Tim Lee suggested that IOC should formally endorse this use of 8TACs. Motion to move to IOC for further consideration. Also included in motion was to send to MnDOT for Technical Review, SMG for System Admin review, regions, and Finance Committee. Recommended that a Standard be drafted to address this topic. In progress.	

If a Major Technical/System Change
MnDOT Technical Review
September 8, 2016: Sent to Tim Lee by email.

If a Major Technical/System Change
System Administrator Review
September 8, 2016: Sent to John Anderson by email.

If a Major Technical/System Change
Regional Input
September 8, 2016: Sent to all RAC Chairs by email.

If a Major Technical/System Change
Finance Committee Review and, if applicable, Regional Concurrence in Local Share
September 8, 2016: Carol asked to add to Finance Cmte agenda.

If a Major Technical/System Change	If a Minor Technical/System Change
OTC Review and Recommendations	If a Standard Revision is Required, OTC Review and Recommendations
	n/a

If a Major Technical/System Change	If a Minor Technical/System Change
SECB Decision	MnDOT Decision
	n/a

Change Manage Progress Form
Scene of Action Repeater (SOAR)

Operational/SOP Change Suggestion

IOC Decision about whether Operational/SOP Change Suggestion would be a Major or Minor Change (if applicable)	
Major	Minor
May 17, 2016: Interop Cmte identified this as a MAJOR change and empowered the workgroup to sort out the next steps, per standard. May 18, 2016: Email sent to Al advising that the IOC wants to add two people to the workgroup and offering assistance if those volunteers do not become apparent. Workgroup should consider • Comm Truck additions • Ability to be encrypted	n/a

If a Major Operational/SOP Change	If a Minor Operational/SOP Change
IOC Review of Necessity and Substantial Benefit If YES, IOC Determines Change Proposal Review Requirements If No, return to Proponent	ECN Recommendations
May 18, 2016: This should be decided by the workgroup.	

If a Major Operational/SOP Change
IOC Requirements for Assessments and Focus Groups
August 16, 2016: Workgroup already exists and is working on standard. No objections to moving forward with using simplex SOAs and repeated 8TACs. Workgroup should bring standard back to IOC for approval. September 8, 2016: Draft standard sent to MnDOT, SMG, and regions for input.

If a Major Operational/SOP Change
ECN Report

If a Major Operational/SOP Change
Facilitator Reports
See workgroup info.

If a Major Operational/SOP Change
MnDOT Report
September 8, 2016: Sent to Tim Lee by email.

Change Manage Progress Form

Scene of Action Repeater (SOAR)

If a Major Operational/SOP Change
ECN Report

If a Major Operational/SOP Change
Reports and Assessments Circulated to Regions (ECBs, RAC, O&Os)

If a Major Operational/SOP Change
Finance Committee Review and, if applicable, Regional Concurrence in Local Share

If a Major Operational/SOP Change	If a Minor Operational/SOP Change
IOC Review and Recommendations	IOC Review and Recommendations

If a Major Operational/SOP Change	If a Minor Operational/SOP Change
SECB Decision	SECB Decision

Subject: FirstNet State Plan Review Process

Dear Stakeholders:

In preparation for the FirstNet State Plan delivery to the State of Minnesota, and the actual evaluation and preparation of recommendations regarding the State Plan, the Department of Public Safety (DPS), Division of Emergency Communication Networks (DECN) is extending this formal invitation to participate in this important program. The State Plan represents the strategy that FirstNet and its commercial partner will undertake to deliver the Nationwide Public Safety Broadband Network (NPSBN). The State Plan is the next critical phase of the Minnesota FirstNet Consultation Project (MnFCP), and it is essential that we execute a comprehensive program to ensure that the State Plan meets and exceeds Minnesota public safety stakeholder requirements. Therefore, it is our objective to recruit experts from throughout the State to support this effort.

The purpose of this letter is to provide you a brief description of the State Plan Review Process, describe the associated activities, provide an overview of the roles and responsibilities of participants, and approximate the time commitment. While this is a voluntary program, we are requesting that participants continue to support the program over the full duration of the effort.

Time Commitment:

Kickoff: Sept 2016

Length – one year

Monthly commitment - 5-10 hours monthly, depending on domain working group. Some months will require no time commitment.

FirstNet State Plan Review Process

Objective: Develop a process to guide the evaluation of the draft State Plan. Use this process to assess the State Plan, determining strengths, gaps, and recommendations to provide to State executive bodies regarding the Plan. These recommendations will ultimately guide the Governor's out-in or opt-out decision.

Approach: Recruit the best and brightest experts from state and local governments, from rural and metro regions, representing public safety, public service, and others to ensure that all respective stakeholder communities are represented. Four working groups will be created based on anticipated key aspects of the State Plan. The four working groups will share the overall State Plan review based on their domain expertise. The domain working groups include the following:

- **Technical:** Includes but is not limited to network design assumptions, Radio Access Network (RAN), backhaul network, Core design, numbering plan, IP strategy, Land Mobile Radio (LMR) network integration and Public Safety Answering Point (PSAP) integration.
- **End Users/Operations:** Includes but is not limited to application management, application security, local control, devices, equipment, feature roadmaps, fleet management, deployables, and procurement vehicles.

- **Policy:** Includes but is not limited to network redundancy, application security, Bring Your Own Device (BYOD) policy, customer care, facility hardening, and cybersecurity.
- **Financial:** Includes but is not limited to State Plan inputs and outcome, coverage objectives, current mobile data usage, subscription plans and cost, and state decision process.

Please consider what domain working group(s) best meet(s) your skills sets and interests. If you know of someone that may have expertise in these areas, please feel welcome to extend the invitation to them.

Process: The State Plan Review Process will be divided into two distinct phases as follows:

- **Phase One:** Develop a process to evaluate the draft State Plan, which is expected to be delivered in May of 2017. The process will be anchored on stakeholder and working group defined requirements as gathered over the course of the Minnesota FirstNet Consultation Project (MnFCP) and as developed by the working groups. Additional insights and information to guide the State Plan review process will be developed during a series of facilitated meeting sessions.
    - **Phase One Timeframe:**
        - October to December 2016 to develop the process
        - January to February 2017 to present the process to the Regional Emergency Communications Boards (RECB)
        - March to April 2017 to present to the State Executive Steering Committee, the Interoperability Committee (IDC), and the Statewide Emergency Communications Board (SECB)
- **Phase Two:** Using the evaluation process developed during the Phase One activities, the working groups will evaluate the draft State Plan per domain working group. The State Plan evaluation will be based on the relevant criteria and approach as defined by the working group. The strength, weaknesses and gaps in the State Plan will be defined, and a recommendation to accept, reject or further negotiate specific elements of the Plan will be recommended by the working groups.
    - **Phase Two Timeframe:**
        - May to June 2017 to evaluate and prepare draft recommendations
        - July 2017 to present recommendations to the Regional Emergency Communications Boards (RECB)
        - August 2017 to present to the State Executive Steering Committee, the Interoperability Data Committee (IDC) and the Statewide Emergency Communications Board (SECB)

Facilitated Workshops: Facilitated meetings will be conducted on a weekly or bi-weekly basis for each domain working group. These WebEx meetings will be scheduled for one hour and will follow a formal syllabus and pre-determined agenda. Preparatory reading materials will be provided at the kickoff and in advance of each session. Working group team members will be requested to prepare for each workshop through their review of the materials prepared for the each meeting.

Primary Resources: The following resources will be provided to the various domain working groups to guide the State Plan Review Process:

- **State of Minnesota defined requirements:** These requirements and information include all relevant requirements captured from statewide stakeholders over the course of the MnFCP. This data desired coverage requirements, network capacity, device types, applications, subscription costs, and other relevant information.
- **The Minnesota NPSTC Launch Requirements:** The IDC and other stakeholders reviewed and refined the original NPSTC (National Public Safety Telecommunications Council) launch requirements delivered to FirstNet representing a minimal list of FirstNet launch objectives.
- **The FirstNet State Plan Template:** FirstNet published the State Plan Template within their RFP to select a commercial partner. This template provide a comprehensive overview and the expected content in the State Plan, and will guide working groups to prepare for the draft State Plan review.
- **The FirstNet Draft State Plan:** The draft State Plan will include the approach for implementing the NPSBN within Minnesota and will contain typical service level agreement (SLA) content including device options, cost of service and a variety of elements that will be evaluated by the domain working groups.

In closing, thank you for your interest in supporting the Minnesota State Plan Review Process. Please let us know if you have further questions, and reply with your preferred domain working group(s) interest. Please forward replies and inquiries to Melinda.Miller@state.mn.us and/or Mark Navolio (mnavolio@televate.com)

Sincerely,

Melinda Miller
State Program Manager, FirstNet
Deputy StateWide Interoperability Coordinator
Emergency Communications Networks
Work: 651-201-7554
Cell: 651-245-2182

Department of Public Safety
Emergency Communication Networks

Presenter: Melinda Miller, FirstNet Program Manager

STATEWIDE EMERGENCY COMMUNICATIONS BOARD

State Plan Timeline

- FirstNet RFP deadline: May 31, 2016
- Vendor selected: Nov, 2016
- Draft State Plan: Feb-Mar, 2017
- Formal State Plan: May, 2017
- “Governor’s response”, 90days: Aug, 2017?

State Plan Overview

- Provide a statement under which FirstNet and its contract partner will implement and deliver NPSBN services throughout the state.

Define Best Conditions

- Wide area coverage guarantees
- Extensive capacity
- Suitable devices and applications
- Reliable and secure operations
- Fast-paced implementation strategy
- Service delivery at the lowest cost option

Acceptable conditions

Worst conditions

- Limited coverage, capacity, devices, applications, reliability, and security,
- Constructed under a lengthy implementation schedule
- Unaffordable price
- No specific guarantees or commitments

State Plan Process

- Determine the process to review the State Plan and deliver recommendations to the Governor

- Role/Responsibilities of the IDC, Work Groups, the RECBs, the SECB, the State Executive Team, and the Governor

- Two phase process
  - **Phase One:** Prepare for the draft State Plan assessment
  - **Phase Two:** Review the State Plan based on the Phase One criteria established

State Plan Process

- Recruit:
- Three work groups:
  - Technical
  - Operational
  - Business Process – Financial & Policy

Primary Reference Resources

Phase One:

- State Plan Template (J19 in RFP)
- Minnesota defined requirements
- Minnesota NPSTC Launch Requirements

Phase Two:

- FirstNet Draft State Plan
- Work Group evaluation criteria

Phase One Schedule

Phase One - Task Name	Duration	Start	Finish
Presentation to the IDC	1 day	Mon 9/20/16	Mon 9/20/16
Recruit Working Group Volunteers	10 days	Tues 9/22/16	Mon 10/3/16
Workgroup (~12 meetings)	12 wks	Tues 10/4/16	Fri 12/16/16
Summarize Workgroup Findings	2 wks	Mon 12/19/16	Fri 12/30/16
DPS-DECN Review	2 wks	Mon 1/2/17	Fri 1/13/17
IDC Presentation - Draft	1 day	Tue 1/17/17	Tue 1/17/17
Regional Meetings (6)	38 days	Wed 1/18/17	Fri 3/10/17
IDC Meeting – Final	1 day	Tue 3/21/17	Tue 3/21/17
SECB Meeting – Final	1 day	Thu 3/23/17	Thu 3/23/17
State Executive Team (meeting window)	10 days	Mon 3/27/17	Mon 4/10/17

- 5-10 hour monthly commitment per Working Group volunteer
- One year duration for Phase One and Two

Sample Criteria

- Describe specific objectives

- Network design and key assumptions
- Installation strategy and schedule
- State coverage requirements
- Operations and maintenance
- Deployment phases and timelines
- Network reliability
- Rural milestones
- Network resiliency
- Network upgrade and expansion
- Network redundancy
- State assets
- Environmental factors
- Spectrum clearing
- Security
- Coverage and hardening

State Plan Template – Sample Requirements

4		State Radio Access Network Plan	Domain
4.1		Radio Access Network Partner	Technical
4.2		Network Design and Key Assumptions	Technical
4.2.1		Coverage Objectives and Requirements	Technical
4.2.3		Link Budget Specifications	Technical
4.2.4		Equipment Performance Specifications	Technical
4.2.6		Temporary Coverage Related to Incidents and Planned Events	User/Operations
4.3		State Coverage Summary	Technical
4.3.1		Persistent Coverage	Technical
4.3.2		Coverage Extension Assets for Purchase by Public Safety Entities	Business Process
4.3.3		Non-Persistent Cellular Service and Devices	User/Operations
4.4.1		Deployment Phases and Timelines	Business Process
4.5.1		Rural Milestones	Business Process
4.6		Network Upgrade and Expansion	Business Process
4.7		State Assets	Business Process
4.7.1		Memorandum of Understanding/ Memorandum of Agreement Requirements	Business Process
4.7.2		Tower Sites	Business Process
4.7.3		Backhaul	Business Process
4.7.4		Other State Assets	Business Process

MINNESOTA DEPARTMENT OF PUBLIC SAFETY

Alcohol and Gambling Enforcement

Bureau of Criminal Apprehension

Driver and Vehicle Services

Emergency Communication Networks

Homeland Security and Emergency Management

Minnesota State Patrol

Office of Communications

Office of Justice Programs

Office of Traffic Safety

State Fire Marshal

Emergency Communication Networks

445 Minnesota Street • Suite 137 • Saint Paul, Minnesota 55101-5137
Phone: 651.201.7547 • Fax: 651.296.2665 • TTY: 651.282.6555
www.ecn.state.mn.us

DATE: 8/29/2016

TO: Finance Committee

FROM: Jackie Mines, Director DECN

SUBJECT: 2017 ARMER Migration Grant

Dear Finance Committee

The Division of Emergency Communication Networks (ECN) is seeking approval from the Finance Committee and SECB to provide an ARMER Migration Grant to Norman County who has filed a participation plan with the SECB. The funding for this grant is being taken from money left in the FY2016 ARMER budget.

The Grants Workgroup under the Finance Committee met and approved the following to be grant to the NW-ECB to distribute to Norman County:

Clay County: $29,458.97

Respectfully ,

Jackie Mines

Jackie Mines, Director
Emergency Communication Networks

2016 ARMER Migration Grant

INTEROPERABLE EMERGENCY COMMUNICATIONS GRANT PROGRAM

APPLICATION INFORMATION SHEET

Grant Program Title: 2016 ARMER Migration Grant – State Funds

Applicant (Regional Board Name)

Name: Norman County Sheriff's Office

Address: 15 2nd Ave E

Ada, MN 56510

Phone: 218-784-7114

Applicant Contact (must be an individual of the representative County/Tribal Government)

Name: Sheriff Jeremy Thornton

Address: 15 2nd Ave E

Ada, MN 56510

Phone: 218-784-7114

e-mail: Jeremy.thornton@co.norman.mn.us

Application Date: 08/05/2016

Amount Requested: $65,786.00 = total project amount. Amount requested is $29,458.97

Preliminary proposal from vendor is needed. (See attached)

Detailed Narrative Description of Proposed Project(s) Include detailed project timelines.

Norman County's ARMER Implementation to migrate to the ARMER system will be a simple project. We will continue to use our Motorola MCC5500 radio consoles and connect control stations for access to the new talk groups established for Norman County and connectivity to the ARMER system.

Timeline for completion is grant award dependent. Upon 2016 ARMER Migration Grant approval, equipment would be ordered within 2 weeks. Once equipment is delivered (approximately 2-4 weeks) it would be installed and connected to the MCC5500. Installation and Programming subscriber equipment is expected to take 2-3 weeks. Dispatcher classroom training will be scheduled during this time. Cutover to the ARMER system is expected to be at the end of 2016.

INTEROPERABLE EMERGENCY COMMUNICATIONS GRANT PROGRAM

APPLICATION INFORMATION SHEET

Continued

Project Budget Elements:

This section of the application should include detail cost items for each county included in the regional application, as follows:

Number	Item	Cost Per Item	Total Cost
	Radio Console		
	Radio Console Replacements		
5	Control Stations (backup or for non-Motorola implementation)	$6,028.00	$30,140.00
	PSAP to ARMER Backbone Connection		
	Microwave Connection		
	Other connection		
	ARMER Backbone sites in county		
	Added Radio Channels		
	Added Base Radio Sites		
	Added ARMER RF Equipment		
	Added Microwave		
	New/Rebuilt Tower Site		
	Training		
	Other (specify)See attached vender listed Items		$35,646.00
	Total Cost		$65,786.00

MidStates Wireless

Prepared for:
Norman Co ARMER migration
Attn Jeremy Thornton

218-784-7114

7/27/2016 Quote valid for 30 days

ITEM	QTY	PRICE	EXT PRICE
I buttons 2 channels ea total of 8 channels for MCC5500 console upgrade	4	$2,500.00	$10,000.00
dual DAP for channel expansion for MCC5500 upgrade	2	$2,300.00	$4,600.00
HUHF26480/SFR1-50 8 channel combiner 2 antenna	1	$7,500.00	$7,500.00
Motorola APX7500 800mhz control stations	5	$6,028.00	$30,140.00
800 MHZ antenna system and mounts	2	$500.00	$1,000.00
Grounding and Lightning protection	1	$750.00	$750.00
22" monitors	2	$675.00	$1,350.00
19"x72" rack for combiner,and consolettes alum	2	$210.00	$420.00
rackmount shelves for consolettes	8	$97.00	$776.00
TOTAL EQUIPMENT			$56,536.00
Installation,upgrade and programming			$9,250.00
TAX			$0.00
TOTAL COST			$65,786.00

Prepared by Jon Wiser
800-279-9561

55 North 3rd Street, Fargo, ND, 58102
(701)293-9561 (800)279-9561

"Quality Products and Service Excellence"

MINNESOTA DEPARTMENT OF PUBLIC SAFETY

Alcohol and Gambling Enforcement

Bureau of Criminal Apprehension

Driver and Vehicle Services

Emergency Communication Networks

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Phone: 651.201.7547 • Fax: 651.296.2665 • TTY: 651.282.6555
www.ecn.state.mn.us

DATE: 8/29/2016

TO: Finance Committee

FROM: Jackie Mines, Director DECN

SUBJECT: Reallocation of 2015 State Homeland Security (SHSP) Grant

Dear Finance Committee,

The Division of Emergency Communication Networks (ECN) is seeking approval from the Finance Committee and SECB to reallocate 2015 SHSP Grant dollars from money returned from other regions.

The Grants Workgroup under the Finance Committee met and approved the following reallocation:

SWECB: $6,500.00 for a Yellow Medicine County BDA project

NEECB: $27,952.45 for MCC7500 console and software for the Pike Lake back-up emergency center.

Respectfully ,

Jackie Mines

Jackie Mines, Director
Emergency Communication Networks

2015 SHSP Grant

STATE HOMELAND SECURITY PROGRAM GRANT PROGRAM

APPLICATION INFORMATION SHEET

Grant Program Title: 2015 SHSP Grant – Federal Funds

Applicant (Regional Board Name)

Name: SouthWest Emergency Communications Board

Address: 611 West Main

Marshall, MN 56258

Phone: 320-564-2130

Applicant Contact (must be an individual of the representative County/Tribal Government)

Name: Yellow Medicine County Sheriff

Address: 415 9th Ave, Suite 103

Granite Falls, MN 56241

Phone: 320-564-2130

e-mail: bill.flaten@co.ym.mn.gov

Application Date: 8/9/2016

Amount Requested: $13,000

Preliminary proposal from vendor is needed.

Detailed Narrative Description of Proposed Project(s) Include detailed project timelines.

In the middle of July 2016 the Yellow Medicine County Sheriff's Office moved into a new facility along with the county attorney, courts and probation. After we moved into the new office we found that we no longer had adequate ARMER Radio coverage. It is important to have sufficient coverage because we have court for at least three different counties at various times. When officers and deputies come here, they need to have communiction with their offices and us in case of an emergency. I wish to install a BDA. The project should cost around $13,000 dollars. I have the $6,500 available for the match. I am ready to proceed ASAP. Project could be complete by the end of Sept 16.

STATE HOMELAND SECURITY PROGRAM GRANT

APPLICATION INFORMATION SHEET

Continued

Project Budget Elements:
This section of the application should include detail cost items for each county included in the regional application, as follows:

Number	Item	Cost Per Item	Total Cost
	Radio Console		
	Radio Console Replacements		
	Control Stations (backup or for non-Motorola implementation)		
	PSAP to ARMER Backbone Connection		
	Microwave Connection		
	Other connection		
	ARMER Backbone sites in county		
	Added Radio Channels		
	Added Base Radio Sites		
	Added ARMER RF Equipment		
	Added Microwave		
	New/Rebuilt Tower Site		
	Training		
1	Other (specify) Bi Directional Amp	$13,000	
	Total Cost		$13,000

2015 SHSP Grant

STATE HOMELAND SECURITY PROGRAM GRANT PROGRAM

APPLICATION INFORMATION SHEET

Grant Program Title: 2015 SHSP Grant – Federal Funds

Applicant (Regional Board Name)

Name: NE REGION

Address: 440 NE 1ST AVE

GRAND RAPIDS, MN 55744

Phone: 218-327-7403

Applicant Contact (must be an individual of the representative County/Tribal Government)

Name: MARK LALLAK

Address: 440 NE 1ST AVE

GRAND RAPIDS, MN 55744

Phone: 218-327-7403

e-mail: MARK.LALLAK@CO.ITASCA.MN.US

Application Date: 1-6-16

Amount Requested: $17.962.45

Preliminary proposal from vendor is needed.

Detailed Narrative Description of Proposed Project(s) Include detailed project timelines.

THE NE REGION IS UTILIZING A PROPASAL FROM ST. LOUIS COUNTY FOR A MCC7500 SYSTEM TO BE PLACED AT PIKE LAKE EMERGENCY [illegible] CENTER TO BE UTILIZED AS A REGIONAL TRAINING CENTER AND EMERGENCY BACKUP DISPATCH CENTER.

STATE HOMELAND SECURITY PROGRAM GRANT

APPLICATION INFORMATION SHEET

Continued

Project Budget Elements:

This section of the application should include detail cost items for each county included in the regional application, as follows:

Number	Item	Cost Per Item	Total Cost
	Radio Console	$ 35,904.90	$ 35,904.90
	Radio Console Replacements		
	Control Stations (backup or for non-Motorola implementation)		
	PSAP to ARMER Backbone Connection		
	Microwave Connection		
	Other connection		
	ARMER Backbone sites in county		
	Added Radio Channels		
	Added Base Radio Sites		
	Added ARMER RF Equipment		
	Added Microwave		
	New/Rebuilt Tower Site		
	Training		
	Exercises		
	Planning		
	Other (specify)		
	Total Cost	$	35,904.90

MOTOROLA INC.

Date: Dec. 18, 2015
Contract #: 40071
Quote #: MPF12182015
Customer #: 1011120053

Prepared b Mike Fink
Phone: 612-567-2911
email: mike.fink@motorolasolutions.com

Prepared For :	Bruce Hegrenes	Bill To	St. Louis County Sheriff's Dept	Ship to	St. Louis County
Company :	St. Louis County	Address:	Attn: Accounts Payable	Address:	Attn: 911 Radio Shop-Bruce Hegrenes
Phone :	218-726-2933		100 N 5th Ave W #103		2030 Arlington Road
Fax :			Duluth, MN 55802		Duluth, MN 55811

Qty.	Model	Description	APC	APC Disc	List Price	Total Price	Contract Price	Total Price
1	B1905	MCC 7500 Astro 25 Software	443	20%	$ 250.00	$ 250.00	$ 200.000	$ 200.00
1	B1933	Motorola Voice Processor Module	443	20%	$ 11,920.00	$ 11,920.00	$ 9,536.000	$ 9,536.00
1	CA01642AA	ADD: MCC7500 Basic Console Function	443	20%	$ 12,000.00	$ 12,000.00	$ 9,600.000	$ 9,600.00
1	CA00147AF	ADD: MCC7500 Secure Operation	443	20%	$ 3,250.00	$ 3,250.00	$ 2,600.000	$ 2,600.00
1	CA00143AC	ADD: DES-OFB Algorithmm	443	20%	$ 750.00	$ 750.00	$ 600.000	$ 600.00
1	CA00140AA	ADD: AC Line Cord	443	20%	$ -	$ -	$ -	$ -
1	CA00245AA	ADD: ADP Algorithm	443	20%	$ 300.00	$ 300.00	$ 240.000	$ 240.00
1	CA01643AA	ADD: MCC7500 Trunking Operation	443	20%	$ 5,000.00	$ 5,000.00	$ 4,000.000	$ 4,000.00
2	TT2833	Z440 Mid Tier Workstation with Windows 7 (non retruna	708	10%	$ 2,950.00	$ 5,900.00	$ 2,655.000	$ 5,310.00
2	T7449	Windows Supplemental Trans Config	877	20%	$ 50.00	$ 100.00	$ 40.000	$ 80.00
4	DSSL120	SPD, Type 3, 120VAC, 15A Plug-in	207	10%	$ 114.00	$ 456.00	$ 102.600	$ 410.40
7	B1912	MCC Series Desktop Speaker	443	20%	$ 450.00	$ 3,150.00	$ 360.000	$ 2,520.00
3	B1913	MCC Series Headset Jack	443	20%	$ 200.00	$ 600.00	$ 160.000	$ 480.00
1	DSTWIN6328A	Provides One Dual Pedal Footswitch	708	10%	$ 290.00	$ 290.00	$ 261.000	$ 261.00
1	DDN1507	Symantec Endpoint Protection V12.1	708	10%	$ 75.00	$ 75.00	$ 67.500	$ 67.50
		LINE ITEM TOTAL			$ 37,599.00	$ 44,041.00	$ 30,422.10	$ 35,904.90

STATE HOMELAND SECURITY PROGRAM GRANT

APPLICATION INFORMATION SHEET

Continued

Project Budget Elements:

This section of the application should include detail cost items for each county included in the regional application, as follows:

Number	Item	Cost Per Item	Total Cost
	Radio Console		
	Radio Console Replacements		
	Control Stations (backup or for non-Motorola implementation)		
	PSAP to ARMER Backbone Connection		
	Microwave Connection		
	Other connection		
	ARMER Backbone sites in county		
	Added Radio Channels		
	Added Base Radio Sites		
	Added ARMER RF Equipment		
	Added Microwave		
	New/Rebuilt Tower Site		
	Training	$20,000.00	$20,000.00
	Exercises		
	Planning		
	Other (specify)		
	Total Cost		$20,000.00

2015 SHSP Grant

STATE HOMELAND SECURITY PROGRAM GRANT PROGRAM

APPLICATION INFORMATION SHEET

Grant Program Title: 2015 SHSP Grant – Federal Funds

Applicant (Regional Board Name)

Name: NE REGION

Address: 440 NE 1ST AVE

GRAND RAPIDS, MN 55744

Phone: 218-327-7403

Applicant Contact (must be an individual of the representative County/Tribal Government)

Name: MARK LALLAK

Address: 440 NE 1ST AVE

GRAND RAPIDS, MN 55744

Phone: 218-327-7403

e-mail: MARK.LALLAK@CO.ITASCA.MN.US

Application Date: 1-6-16

Amount Requested: $20,000

Preliminary proposal from vendor is needed.

Detailed Narrative Description of Proposed Project(s) Include detailed project timelines.

THE NE REGION IS REQUESTING $20,000 FOR 911/DISPATCH PHONE GENERATION SOFTWARE. THIS SOFTWARE IS A TRAINING SIMULATOR SOFTWARE FOR DISPATCH TRAINING.

Minnesota Department of Public Safety ("State") Division of Emergency Communication Networks 445 Minnesota Street, Suite 137 Saint Paul, MN 55101	**Grant Program:** 2015 State Homeland Security Program (SHSP) **Grant Agreement No.:** A-DECN-SHSP-2015-SW-ECB-007 **Grant Amendment No.:** 1
Grantee: Southwest Minnesota Emergency Communications Board 2558 29th Street Slayton, MN 56172	**Grant Agreement Term:** **Effective Date:** January 1, 2016 **Expiration Date:** December 1, 2016
Grant Matching Requirement: Original Agreement Amount $40,110.00 Previous Amendment(s) Total 0.00 Current Amendment Amount ($33,610.00) Total Agreement Amount $6,500.00	**Grantee Agreement Amount:** Original Agreement Amount $86,610.00 Previous Amendment(s) Total 0.00 Current Amendment Amount ($33,610.00) Total Agreement Amount $53,000.00

In this Amendment deleted agreement terms will be struck out and added agreement terms will be underlined.

The Original Grant Agreement and all previous amendments are incorporated into this amendment by reference.

1. ENCUMBRANCE VERIFICATION

Individual certifies that funds have been encumbered as required by Minn. Stat. §§ 16A.15 and 16C.05.

Signed: _____

Date: _____

3. STATE AGENCY

By: _____
(with delegated authority)

Title: _____

Date: _____

Grant Agreement No. A-DECN-SHSP-2015-SW-ECB-007/3-39815

2. GRANTEE

The Grantee certifies that the appropriate person(s) have executed the grant agreement on behalf of the Grantee as required by applicable articles, bylaws, resolutions, or ordinances.

[FOR I-A GRANTS SUBSTITUTE ABOVE LANGUAGE WITH THE FOLLOWING:]
The Grantee certifies that the appropriate person(s) have executed the grant agreement on behalf of the Grantee as required by applicable statute or delegation.

By: _____

Title: _____

Date: _____

By: _____

Title: _____

Date: _____

Distribution: DPS/FAS
Grantee
State's Authorized Representative

	Grant Agreement Amendment	Page 1 of 1

Minnesota Department of Public Safety ("State") Division of Emergency Communication Networks 445 Minnesota Street, Suite 137 Saint Paul, MN 55101	**Grant Program:** 2015 State Homeland Security Program (SHSP) **Grant Agreement No.:** A-DECN-SHSP-2015-SC-ECB-005 **Grant Amendment No.:** 1
Grantee: South Central Minnesota Emergency Communications Board 401 Carver Road P.O. Box 228 Mankato, MN 56002-0228	**Grant Agreement Term:** **Effective Date:** January 1, 2016 **Expiration Date:** December 1, 2016
Grant Matching Requirement: Original Agreement Amount $13,742.50 Previous Amendment(s) Total 0.00 Current Amendment Amount ($13,742.50) Total Agreement Amount 0.00	**Grantee Agreement Amount:** Original Agreement Amount $38,742.50 Previous Amendment(s) Total 0.00 Current Amendment Amount ($13,742.50) Total Agreement Amount $25,000.00

In this Amendment deleted agreement terms will be struck out and added agreement terms will be underlined.

The Original Grant Agreement and all previous amendments are incorporated into this amendment by reference.

1. ENCUMBRANCE VERIFICATION

Individual certifies that funds have been encumbered as required by Minn. Stat. §§ 16A.15 and 16C.05.

Signed: _____

Date: _____

A-DECN-SHSP-2015-SC-ECB-005/3-39811

3. STATE AGENCY

By: _____
(with delegated authority)

Title: _____

Date: _____

2. GRANTEE

The Grantee certifies that the appropriate person(s) have executed the grant agreement on behalf of the Grantee as required by applicable articles, bylaws, resolutions, or ordinances.

[FOR I-A GRANTS SUBSTITUTE ABOVE LANGUAGE WITH THE FOLLOWING:]
The Grantee certifies that the appropriate person(s) have executed the grant agreement on behalf of the Grantee as required by applicable statute or delegation.

By: _____

Title: _____

Date: _____

By: _____

Title: _____

Date: _____

Distribution: DPS/FAS
Grantee
State's Authorized Representative

	Grant Agreement Amendment	Page 1 of 1

Minnesota Department of Public Safety ("State") Division of Emergency Communication Networks 445 Minnesota Street, Suite 137 Saint Paul, MN 55101	**Grant Program:** 2015 State Homeland Security Program (SHSP) **Grant Agreement No.:** A-DECN-SHSP-2015-NEECB-003 **Grant Amendment No.:** 1
Grantee: Northeast Regional Emergency Communications Board (NE-ECB) 123 4th St. NE Grand Rapids, MN 55744	**Grant Agreement Term:** **Effective Date:** January 1, 2016 **Expiration Date:** December 1, 2016
Grant Matching Requirement: Original Agreement Amount $128,062.09 Previous Amendment(s) Total 0.00 Current Amendment Amount $27,952.45 Total Agreement Amount $156,014.54	**Grantee Agreement Amount:** Original Agreement Amount $153,062.09 Previous Amendment(s) Total 0.00 Current Amendment Amount $27,952.45 Total Agreement Amount $181,014.54

In this Amendment deleted agreement terms will be struck out and added agreement terms will be underlined.

Exhibit A of the Original Grant Agreement is replaced by Revised Exhibit A, which is attached and incorporated into this Grant Agreement. Any references to Exhibit A in the Original Grant Agreement now refer to Revised Exhibit A.

The Original Grant Agreement and all previous amendments are incorporated into this amendment by reference.

1. ENCUMBRANCE VERIFICATION

Individual certifies that funds have been encumbered as required by Minn. Stat. §§ 16A.15 and 16C.05.

Signed: _____

Date: _____

A-DECN-SHSP-2015-NEECB-003/3-39809

2. GRANTEE

The Grantee certifies that the appropriate person(s) have executed the grant agreement on behalf of the Grantee as required by applicable articles, bylaws, resolutions, or ordinances.

[FOR I-A GRANTS SUBSTITUTE ABOVE LANGUAGE WITH THE FOLLOWING:]
The Grantee certifies that the appropriate person(s) have executed the grant agreement on behalf of the Grantee as required by applicable statute or delegation.

By: _____

Title: _____

Date: _____

By: _____

Title: _____

Date: _____

3. STATE AGENCY

By: _____
(with delegated authority)

Title: _____

Date: _____

Distribution: DPS/FAS
Grantee
State's Authorized Representative

MINNESOTA DEPARTMENT OF PUBLIC SAFETY

Alcohol and Gambling Enforcement

Bureau of Criminal Apprehension

Driver and Vehicle Services

Emergency Communication Networks

Homeland Security and Emergency Management

Minnesota State Patrol

Office of Communications

Office of Justice Programs

Office of Traffic Safety

State Fire Marshal

Emergency Communication Networks

445 Minnesota Street • Suite 137 • Saint Paul, Minnesota 55101-5137
Phone: 651.201.7547 • Fax: 651.296.2665 • TTY: 651.282.6555
www.ecn.state.mn.us

DATE: 8/29/2016

TO: Finance Committee

FROM: Jackie Mines, Director DECN

SUBJECT: 2017/2018 SECB Grant Request

Dear Finance Committee,

The Division of Emergency Communication Networks (ECN) is seeking approval from the Finance Committee and SECB to create a 2017/2018 SECB Grant. I would like to propose taking money left over from various FY2016 budgets and projected FY2017 SECB left over budget to create this grant totaling $1,050,000.00.

1) Remaining budget in SECB allocation of $331,710.13.
2) Remaining budget dollars in the 9-1-1 allocation of $418,289.87.
3) Projected remaining FY2017 SECB allocation of $300,000.00.

Assuming the Finance Committee and SECB approve this allocation of budget dollars to to this grant, ECN will make an announcement of competitive grant for regions to su submit application.

Respectfully ,

Jackie Mines

Jackie Mines, Director
Emergency Communication Networks

September 19, 2016

To: Commissioner Ramona Dohman, Chair, Statewide Emergency Communications Board
From: Cari Gerlicher, Chair, SECB Finance Committee
Subject: Bonds

As many of you are aware, one of the goals of the SECB is to pursue early ARMER bond payoff to free up money for future needs. The current bonds go out to the year 2026. Jackie Mines has been working diligently with the Department of Management and Budget towards achieving this initiative. One of the bond is callable now which gives the opportunity to pay that one off early and refund the rest of the bonds at a more aggressive interest rate using Treasury bonds as opposed to market bonds. The following are advantages to pursuing this at this time.

The current interest rate is at an average of 4.8% and we will now have bonds at a 1.3% interest rate saving the state money over the life of the bonds. The net savings from this refinance on the remainder of the bonds is $7.66 Million.

The bonds will be paid down with the majority of the dollars sent to MMB rather than only a portion holding the rest in reserve which leaves us a very large balance at the end of the payoff. Currently the terms of the bonds to the bond holders is that we pay $23 M annually holding in reserve $10 M in case we should default on the bonds. This causes us to have a large reserve at the end of the bond term. It would be prudent not to have a large reserve with MMB at the end of the bond payments. Refunding with Treasury bonds allows us to pay a more aggressive amount over the next five years and pay them off earlier.

There will be a savings of $23 Million a year for ECN from the year 2021 to 2025 saving an additional $115 Million and allowing us to either use that money for other projects or reduce the 911 fee.

Refinancing with Treasury Bonds also protects us from the vulnerability of the market.

The final negotiation with the bond house was this past Friday. I was expecting that we could have taken care of this in the normal October meeting cycle however MMB has requested that we move this through the SECB this month to meet a continuing disclosure issue with the release of the November forecast on December 1st. SEC rules are that they have to disclose any update to numbers if it occurs within 25 days of the sale. If they close on the sale by November 4th, we do not have to do any further updates for the numbers until next December with our annual continuing disclosure document.

They are using the same time frame for the State Appropriation Bonds we are selling the day after the 911 bonds. Those bonds would require MMB to update our entire official statement and they just don't have the time and personnel to do it.

EXTRACT OF MINUTES OF A MEETING OF THE
STATEWIDE EMERGENCY COMMUNICATIONS BOARD

A meeting of the Statewide Emergency Communications Board (the "Board"), was duly held at the MnDOT Shoreview Training and Conference Center, 1900 County Road I West, Shoreview, Minnesota on Thursday, September 22, 2016, commencing at 12:30 p.m.

The following members of the Board were present:

The following members of the Board were absent:

The attached resolution was introduced. Board Member _____ moved the adoption of the resolution. The motion for the adoption of the resolution was duly seconded by Board Member _____ and upon a vote being taken thereon the resolution was adopted by a vote of _____ (___) affirmative votes to _____ (__) negative votes. The Chair of the Board declared the resolution to have been adopted by at least two-thirds of all members of the Board (i.e. at least 14 votes).

(The remainder of this page is intentionally left blank.)

STATEWIDE EMERGENCY COMMUNICATIONS BOARD

RESOLUTION REQUESTING THE SALE AND ISSUANCE OF REVENUE REFUNDING BONDS OF THE STATE OF MINNESOTA BY THE COMMISSIONER OF MINNESOTA MANAGEMENT AND BUDGET TO REFUND CERTAIN OUTSTANDING OBLIGATIONS OF THE STATE OF MINNESOTA

BE IT RESOLVED BY THE STATEWIDE EMERGENCY COMMUNICATIONS BOARD

Section 1. Background.

1.01. The State of Minnesota, in accordance with Minnesota Statutes, Section 403.275, as amended, issued the following obligations:

(a) the 911 Revenue Bonds (Public Safety Radio Communications System Project), Series 2008 (the "Series 2008 Bonds"), in the original aggregate principal amount of $42,205,000;

(b) the 911 Revenue Bonds (Public Safety Radio Communications System Project), Series 2009 (the "Series 2009 Bonds"), in the original aggregate principal amount of $60,510,000; and

(b) the 911 Revenue Board (Public Safety Radio Communications System Project), Series 2011 (the "Series 2011 Bonds"), in the original aggregate principal amount of $60,380,000.

1.02. Pursuant to Minnesota Statutes, Section 403.275, subdivision 1, the Commissioner of Management and Budget, if requested by a vote of at least two-thirds of all members of the Statewide Emergency Communications Board (formerly known as the Statewide Radio Board), shall sell and issue state revenue bonds for the following purposes: (a) to pay the costs of the statewide public safety radio communication system backbone identified in the plan under Minnesota Statutes, Section 403.36, and those elements that the Statewide Emergency Communications Board determines are of regional or statewide benefit and support mutual aid and emergency medical services communication, including, but not limited to, costs of master controllers of the backbone; (b) to pay the costs of issuance, debt service, and bond insurance or other credit enhancements, and to fund reserves; and (c) to refund bonds issued under Minnesota Statutes, Section 403.275.

Section 2. Sale and Issuance of Bonds. The Statewide Emergency Communications Board hereby requests that the Commissioner of Management and Budget sell and issue revenue bonds pursuant to Minnesota Statutes, Section 403.275, subdivision 1, in one or more series, in an aggregate principal amount not to exceed $100,000,000, under the terms and conditions set forth in Minnesota Statutes, Section 403.275, to refund the outstanding Series 2008 Bonds, Series 2009 Bonds, and Series 2011 Bonds.

Passed and adopted this September 22, 2016.

STATEWIDE EMERGENCY COMMUNICATIONS BOARD

_____

Ramona L. Dohman
Commissioner of Minnesota Department of Public Safety and Chair of the Statewide Emergency Communications Board

RESOLUTION

The attached resolution was adopted by the Statewide Emergency Communications Board on September 22, 2016. The question was on the adoption of the resolution, and there were __ AYE votes and __ NAY votes as follows:

STATEWIDE EMERGENCY COMMUNICATIONS BOARD Designee (Member or Appointing Entity)	**Aye**	**Nay**	**Other**
1. Ramona Dohman, Commissioner of Public Safety - **Chair of SECB**	_____	_____	_____
2. _____ Commissioner of Transportation	_____	_____	_____
3. _____ State Chief Information Officer	_____	_____	_____
4. _____ Commissioner of Natural Resources	_____	_____	_____
5. _____ Chief of Minnesota State Patrol	_____	_____	_____
6. _____ Metropolitan Council	_____	_____	_____
7. _____ League of Minnesota Cities - Metropolitan Area	_____	_____	_____
8. _____ League of Minnesota Cities - Greater Minnesota	_____	_____	_____
9. _____ Association. of Minnesota Counties - Metropolitan Area	_____	_____	_____
10. _____ Association. of Minnesota Counties - Greater Minnesota **Executive Secretary of SECB**	_____	_____	_____
11. _____, Minnesota Sheriff's Association - Metropolitan Area	_____	_____	_____
12. _____, Minnesota Sheriff's Association - Greater Minnesota	_____	_____	_____
13. _____, Minnesota Chiefs of Police Association - Metropolitan Area	_____	_____	_____
14. _____, Minnesota Chiefs of Police Association - Greater Minnesota	_____	_____	_____

STATEWIDE EMERGENCY COMMUNICATIONS BOARD Designee (Member or Appointing Entity)	Aye	Nay	Other
15. _____ Metropolitan Emergency Services Board	_____	_____	_____
16. _____ Minnesota Fire Chiefs' Association - Metropolitan Area	_____	_____	_____
17. Chief _____ Minnesota Fire Chiefs' Association - Greater Minnesota	_____	_____	_____
18. _____, Minnesota Ambulance Association - Metropolitan Area **Vice Chair of SECB**	_____	_____	_____
19. _____, Minnesota Ambulance Association - Greater Minnesota	_____	_____	_____
20. _____ Central Region Emergency Services Board; Representative Phase 3 Government Units	_____	_____	_____

RESOLUTION ADOPTED.

ATTEST:

_____
Jim McMahon, Executive Secretary to the
Statewide Emergency Communications Board

Allied Radio Matrix for Emergency Response

ARMER

Project Status Report

Reporting Period August 1, 2016 through September 1, 2016

Executive Summary

Overall Status:

	Green (Controlled)	Yellow (Caution)	Red (Critical)	Reason for Deviation
Budget	☒ ☐ ☐	☐ ☐	☐	
Schedule	☐ ☐ ☐	☐ ☒	☐	Land acquisition delays will impact completion of some sites
Scope	☒ ☐ ☐	☐ ☐	☐	

ARMER Backbone

97%

On-the-air

Controls

Issue Status:

Change Status:

- No pending plan changes

Accomplishments

Accomplishments during this Reporting Period:

- The following sites went on the air:
- The land acquisition has been completed for the following sites:
  - Lake Crystal

Budget

Construction Budget Status as of September 1, 2016

Project Funding	Original Budget	Spent to Date	Unspent Balance Remaining	Encumbered	Available Balance
Phase 3	$45,000,000	$44,952,397.19	$47,602.82	$0.00	***COMPLETE**
SRB Funds (FY 09)	$1,902,831.00	$1,902831.00	$0	$0	**COMPLETE**
Phase 456 (FY 09)	61,996,957.89	$61,996,957.89	$0	$0	$ 0
Phase 456 (FY 10)	$62,015,407.77	$61,912,097.77	$28,000.00	$0	$ 28,000.00
Phase 456 (FY 11, 12, 13)	$61,987,634.34	$54,938,100.92	$7,049,533.42	$2,438,806.33	$ 4,610,727.09
Total Phase 456	$186,000,000.00	$178,847,156.58	$7,152,843.42	$2,514,116.33	**$ 4,638,727.09**
Projected Contingency as of September 1, 2016					$363,727.09

Comments:

Scheduled Milestones / Deliverables

Status updated September 1, 2016

Milestone	Total Sites	Sites Not Started	Sites in Progress	Sites Complete
ARMER Backbone Construction	335 Sites			
Tower Site Acquisition	335	0	5	
Tower Construction & Site Development Work	335	6	6	
Microwave Connectivity & RF Deployment	335	6	3	326 On the Air

Some Sites are on the air, but on the old towers or temporary towers. They are counted as on the air, but still require construction and/or installation at the new tower sites before they are complete:

- Finland
- Duluth South
- Eden Valley
- Lake Crystal

Of the 326, 4 are on temporary sites; sites construct and move still in the works.

SE – all sites completed
SR – Land acquisitions completed 1 new site plus leased site replacement for Lake Crystal.
SW – all sites completed
CM – Leased site replacement for Eden Valley, construction in process.
Metro – all sites completed
NW – 2 land acquisitions remaining.
NE – 3 land acquisitions remaining, 5 site under construction.

<u>Completion Targets</u>

ARMER all Phases:

4 original plan sites will be delayed due to delays in land acquisition.

Ongoing ARMER System Work

Motorola System Upgrade

- 7.15 upgrade in process. Master site upgrades completed. RF sites software upgraded. Working through dispatch center upgrades.
- Working on contracts for billing with local agencies involved in 7.19 equipment replacements under the Motorola contract. Only contract not completed yet is with the City of Minneapolis.
- 2016 Motorola SUAII local agency billings received.
- SUAIIPlus 7.19 equipment upgrades. Over the next 5 years before we can go to Motorola system release 7.19 all circuit based simulcast and Quantar based ASR sites need to be upgraded. The hardware and services are all included in our current SUAIIPlus contract. We have meet with the agencies that this involves and we have come up with the following tentative implementation schedule for these upgrades:

System	Equipment order	Install
St Cloud subsystem	1st half 2016(Rcvd)	2nd half 2016
Stearns ASR sites	1st half 2016(Rcvd)	2nd half 2016
Enfield(Wright-Sherburne) subsystem	1st half 2016(Rcvd)	2nd half 2016
Goodhue subsystem	1st half 2016(Rcvd)	2nd half 2016
North Branch(Isanti-Chisago) subsystem	1st half 2016(Rcvd)	2nd half 2016
City Center	1st half 2016(Rcvd)	Completed
Olmsted subsystem	2nd half 2016	2nd half 2016
Hennepin SAT COW ASR	2nd half 2016	2nd half 2016
Norwood (Carver- Scott) subsystem	1st half 2017	1st half 2017
Hennepin West subsystem	2nd half 2017	2nd half 2017
Washington subsystem	1st half 2018	1st half 2018
Minneapolis subsystem	2nd half 2018	2nd half 2018
Dakota subsystem	1st half 2019	1st half 2019
Hennepin East subsystem	2nd half 2019	2nd half 2019
Anoka subsystem	1st half 2020	1st half 2020
Ramsey subsystem	2nd half 2020	2nd half 2020

Planned system upgrades during this contract period are:

- 7.17 May of 2018
- 7.19 End of 2020

Site improvements

- Still working on the addition of card key reader to the equipment shelters. Working on installs, 98% of the sites completed.

- We are continuing our review of our leased sites/land. Plans had always been to build towers in these areas, but to get the project moving we leased sites to get on the air. In review of some of the land and lease cost it would make sense to find land in these areas and build towers. Also

looking at long term land lease from private parties, would prefer to have towers we own on state, County or City owned land.

- Replace Lake Crystal leased site with 2 new sites. This adds a new site to the area. Specification being prepared for bidding the tower constructions. .

Microwave improvements

- At this point we have identified one bad path where an intermediate microwave site is needed. So we are looking to add a microwave site somewhere in the Cromwell area to split the Lawler – Moose Lake link. Tower contract awarded. Site construction in process.

- Still reviewing microwave performance, ongoing.

VHF interop layer

- VPN access for access to MotoBridge network has been worked out. Remote access is now working.
- Working on plans in the metro area to simplify the VHF interop layer as we move from Gold Elites to 7500s. Removing the metro voters and voting receivers scheduled for Oct 3, 2016.

Old towers that need replacement

- We have a number of towers that are on the air for ARMER that are old towers constructed in the 1950's. These towers did not pass structural when we added the new ARMER equipment. But the level of structural deficiency was not a risk that required immediate replacement. So we have held off on replacement of these towers to see where we were in the ARMER budget to build what we had planned. We are still holding off on these until we are a little further along with ARMER. Towers not replaced under the ARMER project will be scheduled for replacement as the ARMER maintenance budget allows, estimate 1 to 2 per year until completed.

ARMER Construction Budget (Remaining Work)

Site Name (Green - site on air)	County	Description	Land/ Construction	Estimate to Complete	Balance
			Unencumbered Fund Balance (As of SEPTEMBER 1, 2016)		$4,638,727.09
Madelia	Watonwan	New tower	Specs at Bldg Sec	$350,000.00	$4,288,727.09
Lake Crystal	Blue Earth	New tower	Specs at Bldg Sec	$575,000.00	$3,713,727.09
Red Lake	Beltrami	Working on Lease	Red Lake-Lease	$75,000.00	$3,638,727.09
Finland	Lake	Replace Tower	Envir	$440,000.00	$3,198,727.09
NE Lake County	Lake	New tower	DNR/Envir	$930,000.00	$2,268,727.09
Lima Mt	Cook	New tower	DNR/Envir	$880,000.00	$1,388,727.09
Molde	St Louis	Replace fire tower	DNR/Envir	$320,000.00	$1,068,727.09
Berner	Clearwater	New tower	Indent Land	$505,000.00	$563,727.09
PENDING WORK					
Site clean up, shelter and tower removals				$200,000.00	$363,727.09
				$0.00	$363,727.09
TOWER REPLACEMENTS (This work being held until above projects compeleted)					
Cass Lake	Replace tower	Working on spec for replacement		$600,000.00	
Windom	Replace tower	Working on spec for replacement		$600,000.00	
Freedhem	Replace tower			$600,000.00	
Middle River	Replace tower			$600,000.00	
Theif River Falls	Replace tower			$600,000.00	
Virginia	Replace tower			$600,000.00	
Viola	Replace tower			$600,000.00	
Kimball	Replace tower			$600,000.00	
Hoffman	Replace tower			$600,000.00	
New London	Replace tower			$600,000.00	
Woodland	Replace tower			$600,000.00	
Littlefork	Replace tower			$600,000.00	
Roosevelt	Replace tower			$600,000.00	
Hewit: Land Purchase, replace tower.				$500,000.00	
Scandia: Need to look at land purchase.				$100,000.00	
Geneva: Need to look at land purchase, new tower ?				$500,000.00	
Mapleton: Find land and build new tower				$500,000.00	
Red Wing: Land purchase				$100,000.00	

Allied Radio Matrix for Emergency Response

ARMER

Project Status Report

Reporting Period July 1, 2016 through August 1, 2016

Executive Summary

Overall Status:

	Green (Controlled)	Yellow (Caution)	Red (Critical)	Reason for Deviation
Budget	☒ ☐ ☐	☐ ☐	☐	
Schedule	☐ ☐ ☐	☐ ☒	☐	Land acquisition delays will impact completion of some sites
Scope	☒ ☐ ☐	☐ ☐	☐	

ARMER Backbone

97%

On-the-air

Controls

Issue Status:

Change Status:

- No pending plan changes

Accomplishments

Accomplishments during this Reporting Period:

- The following sites went on the air:
- The land acquisition has been completed for the following sites:

Budget

Construction Budget Status as of August 1, 2016

Project Funding	Original Budget	Spent to Date	Unspent Balance Remaining	Encumbered	Available Balance
Phase 3	$45,000,000	$44,952,397.19	$47,602.82	$0.00	***COMPLETE**
SRB Funds (FY 09)	$1,902,831.00	$1,902831.00	$0	$0	**COMPLETE**
Phase 456 (FY 09)	61,996,957.89	$61,981,069.99	$15,887.90	$15,887.90	$ 0.00
Phase 456 (FY 10)	$62,015,407.77	$61,912,097.77	$103,310.00	$103,310.00	$ 0.00
Phase 456 (FY 11, 12, 13)	$61,987,634.34	$54,859,346.68	$7,128,287.66	$2,132,660.47	$ 4,995,627.19
Total Phase 456	$186,000,000.00	$178,752,514.44	$7,247,485.56	$2,251,858.37	**$ 4,995,627.19**
Projected Contingency as of August 1, 2016					$290,627.19

Comments:

Scheduled Milestones / Deliverables

Status updated August 1, 2016

Milestone	Total Sites	Sites Not Started	Sites in Progress	Sites Complete
ARMER Backbone Construction	335 Sites			
Tower Site Acquisition	335	0	7	
Tower Construction & Site Development Work	335	7	6	
Microwave Connectivity & RF Deployment	335	11	0	326 On the Air

Some Sites are on the air, but on the old towers or temporary towers. They are counted as on the air, but still require construction and/or installation at the new tower sites before they are complete:

- Finland
- Duluth South
- Eden Valley
- Lake Crystal

Of the 326, 4 are on temporary sites; sites construct and move still in the works.

SE – all sites completed
SR – 1 land acquisitions remaining, 1 new site plus leased site replacement for Lake Crystal.
SW – all sites completed
CM – Leased site replacement for Eden Valley, construction in process.
Metro – all sites completed
NW – 2 land acquisitions remaining.
NE – 3 land acquisitions remaining, 5 site under construction.

<u>Completion Targets</u>

ARMER all Phases:

4 original plan sites will be delayed due to delays in land acquisition.

Ongoing ARMER System Work

Motorola System Upgrade

- 7.15 upgrade in process. Master site upgrades completed. RF sites software upgraded. Working through dispatch center upgrades.
- Working on contracts for billing with local agencies involved in 7.19 equipment replacements under the Motorola contract.
- 2016 Motorola SUAII local agency billings received.
- SUAIIPlus 7.19 equipment upgrades. Over the next 5 years before we can go to Motorola system release 7.19 all circuit based simulcast and Quantar based ASR sites need to be upgraded. The hardware and services are all included in our current SUAIIPlus contract. We have meet with the agencies that this involves and we have come up with the following tentative implementation schedule for these upgrades:

System	Equipment order	Install
St Cloud subsystem	1st half 2016(Rcvd)	2nd half 2016
Stearns ASR sites	1st half 2016(Rcvd)	2nd half 2016
Enfield(Wright-Sherburne) subsystem	1st half 2016(Rcvd)	2nd half 2016
Goodhue subsystem	1st half 2016(Rcvd)	2nd half 2016
North Branch(Isanti-Chisago) subsystem	1st half 2016(Rcvd)	2nd half 2016
City Center	1st half 2016(Rcvd)	2nd half 2016
Olmsted subsystem	2nd half 2016	2nd half 2016
Hennepin SAT COW ASR	2nd half 2016	2nd half 2016
Norwood (Carver- Scott) subsystem	1st half 2017	1st half 2017
Hennepin West subsystem	2nd half 2017	2nd half 2017
Washington subsystem	1st half 2018	1st half 2018
Minneapolis subsystem	2nd half 2018	2nd half 2018
Dakota subsystem	1st half 2019	1st half 2019
Hennepin East subsystem	2nd half 2019	2nd half 2019
Anoka subsystem	1st half 2020	1st half 2020
Ramsey subsystem	2nd half 2020	2nd half 2020

Planned system upgrades during this contract period are:

- 7.15 May of 2016
- 7.17 May of 2018
- 7.19 End of 2020

Site improvements

- Still working on the addition of card key reader to the equipment shelters. Working on installs, 98% of the sites completed.

- We are continuing our review of our leased sites/land. Plans had always been to build towers in these areas, but to get the project moving we leased sites to get on the air. In review of some of the land and lease cost it would make sense to find land in these areas and build towers. Also

looking at long term land lease from private parties, would prefer to have towers we own on state, County or City owned land.

- Replace Lake Crystal leased site with 2 new sites. This adds a new site to the area.

Microwave improvements

- At this point we have identified one bad path where an intermediate microwave site is needed. So we are looking to add a microwave site somewhere in the Cromwell area to split the Lawler – Moose Lake link. Tower contract awarded. Site construction in process.

- Still reviewing microwave performance, ongoing.

VHF interop layer

- VPN access for access to MotoBridge network has been worked out. Remote access is now working.
- Working on plans in the metro area to simplify the VHF interop layer as we move from Gold Elites to 7500s.

Old towers that need replacement

- We have a number of towers that are on the air for ARMER that are old towers constructed in the 1950's. These towers did not pass structural when we added the new ARMER equipment. But the level of structural deficiency was not a risk that required immediate replacement. So we have held off on replacement of these towers to see where we were in the ARMER budget to build what we had planned. We are still holding off on these until we are a little further along with ARMER. Towers not replaced under the ARMER project will be scheduled for replacement as the ARMER maintenance budget allows, estimate 1 to 2 per year until completed.

ARMER Construction Budget (Remaining Work)

			Unencumbered Fund Balance (As of August 1, 2016)		$4,995,627.19
Site Name (Green - site on air)	**County**	**Description**	**Land/ Construction**	**Estimate to Complete**	**Balance**
Madelia	Watonwan	New tower	Specs at Bldg Sec	$350,000.00	$4,645,627.19
Lake Crystal	Blue Earth	New tower	Specs at Bldg Sec	$575,000.00	$4,070,627.19
Red Lake	Beltrami	Lease tower/New Shelter	Red Lake-Lease	$505,000.00	$3,565,627.19
Finland	Lake	Replace Tower	Envir	$440,000.00	$3,125,627.19
NE Lake County	Lake	New tower	DNR/Envir	$930,000.00	$2,195,627.19
Lima Mt	Cook	New tower	DNR/Envir	$880,000.00	$1,315,627.19
Molde	St Louis	Replace fire tower	DNR/Envir	$320,000.00	$995,627.19
Berner	Clearwater	New tower	Indent Land	$505,000.00	$490,627.19
PENDING WORK					
Site clean up, shelter and tower removals				$200,000.00	$290,627.19
				$0.00	$290,627.19
TOWER REPLACEMENTS (This work being held until above projects compeleted)					
Cass Lake	Replace tower	Working on spec for replacement		$600,000.00	
Windom	Replace tower	Working on spec for replacement		$600,000.00	
Freedhem	Replace tower			$600,000.00	
Middle River	Replace tower			$600,000.00	
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Viola	Replace tower			$600,000.00	
Kimball	Replace tower			$600,000.00	
Hoffman	Replace tower			$600,000.00	
New London	Replace tower			$600,000.00	
Woodland	Replace tower			$600,000.00	
Littlefork	Replace tower			$600,000.00	
Roosevelt	Replace tower			$600,000.00	
Hewit: Land Purchase, replace tower.				$500,000.00	
Scandia: Need to look at land purchase.				$100,000.00	
Geneva: Need to look at land purchase, new tower ?				$500,000.00	
Mapleton: Find land and build new tower				$500,000.00	
Red Wing: Land purchase				$100,000.00	

Allied Radio Matrix for Emergency Response

ARMER

Project Status Report

Reporting Period June 1, 2016 through July 1, 2016

Executive Summary

Overall Status:

	Green (Controlled)	Yellow (Caution)	Red (Critical)	Reason for Deviation
Budget	☒ ☐ ☐	☐ ☐	☐	
Schedule	☐ ☐ ☐	☐ ☒	☐	Land acquisition delays will impact completion of some sites
Scope	☒ ☐ ☐	☐ ☐	☐	

ARMER Backbone

97%

On-the-air

Controls

Issue Status:

Change Status:

- No pending plan changes

Accomplishments

Accomplishments during this Reporting Period:

- The following sites went on the air:
- The land acquisition has been completed for the following sites:
  - Madelia

Budget

Construction Budget Status as of July 1, 2016

Project Funding	Original Budget	Spent to Date	Unspent Balance Remaining	Encumbered	Available Balance
Phase 3	$45,000,000	$44,952,397.19	$47,602.82	$0.00	***COMPLETE**
SRB Funds (FY 09)	$1,902,831.00	$1,902831.00	$0	$0	**COMPLETE**
Phase 456 (FY 09)	61,996,957.89	$61,981,069.99	$15,887.90	$15,887.90	$ 0.00
Phase 456 (FY 10)	$62,015,407.77	$61,912,097.77	$103,310.00	$103,310.00	$ 0.00
Phase 456 (FY 11, 12, 13)	$61,987,634.34	$54,124,126.26	$7,863,508.08	$2,850,297.17	$ 5,013,210.91
Total Phase 456	$186,000,000.00	$178,017,294.02	$7,982,705.98	$2,969,495.07	**$ 5,013,210.91**
Projected Contingency as of July 1, 2016					$308,210.91

Comments:

Scheduled Milestones / Deliverables

Status updated July 1, 2016

Milestone	Total Sites	Sites Not Started	Sites in Progress	Sites Complete
ARMER Backbone Construction	335 Sites			
Tower Site Acquisition	335	0	8	
Tower Construction & Site Development Work	335	8	5	
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ARMER Construction Budget (Remaining Work)

				Unencumbered Fund Balance (As of July 1, 2016)	$5,013,210.91
Site Name (Green - site on air)	**County**	**Description**	**Land/ Construction**	**Estimate to Complete**	**Balance**
Madelia	Watonwan	New tower	Ready	$350,000.00	$4,663,210.91
Finland	Lake	Replace Tower	Envir	$440,000.00	$4,223,210.91
NE Lake County	Lake	New tower	DNR/Envir	$930,000.00	$3,293,210.91
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Red Lake	Beltrami	New tower	Indent Land	$505,000.00	$1,908,210.91
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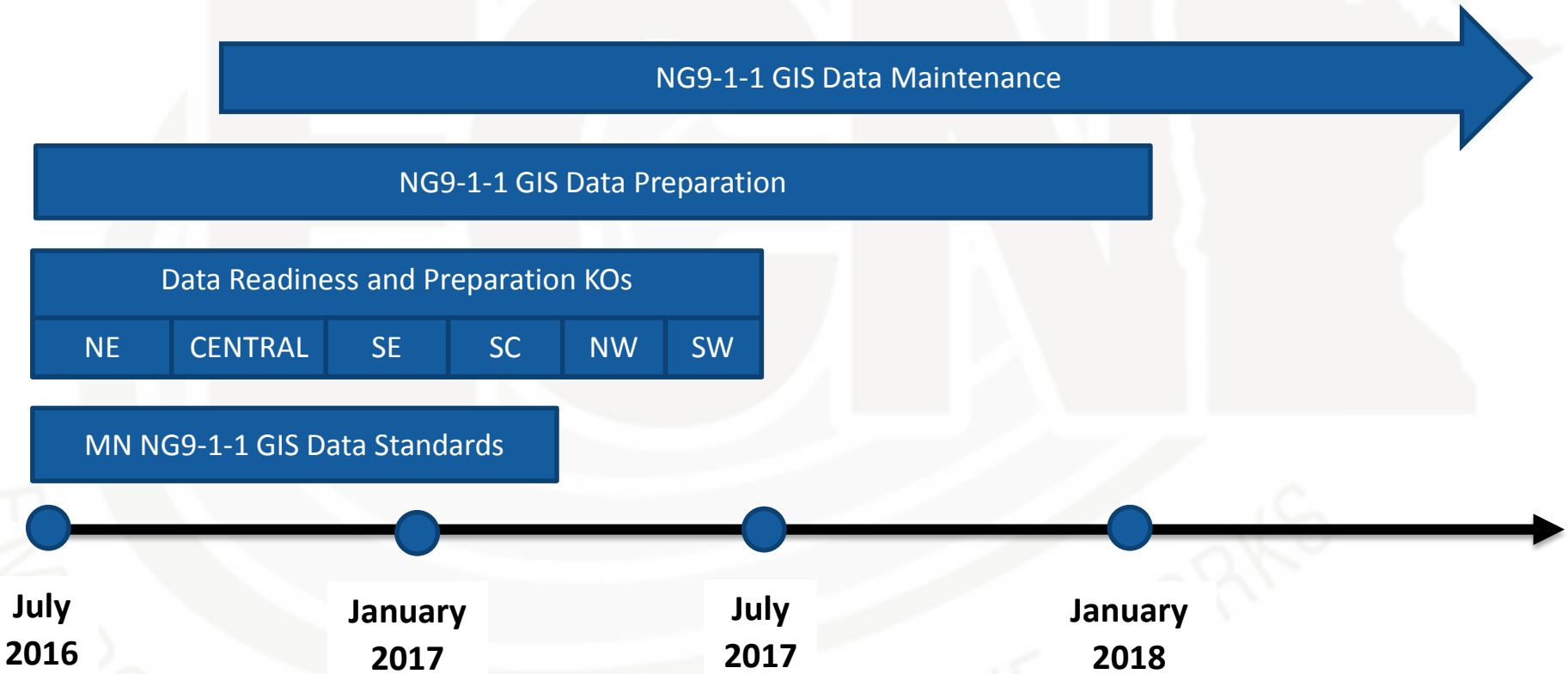
Mapleton: Find land and build new tower				$500,000.00	
Red Wing: Land purchase				$100,000.00	

Next Generation 9-1-1 GIS Project

Project Update
NG9-1-1 Committee and SECB Meetings
September 14, 2016

Presenter:
Adam Iten, Project Manager

Project Timeline



NG9-1-1 GIS Project Update

2016 High-level Goals

- GIS Data Collection, Assessment, and Preparation
- GIS Data Maintenance
- MN NG9-1-1 GIS Data Standards
- Communication Plan

NG9-1-1 GIS Project Update

Data Collection and Assessment

- Data Collection
  - MSAGs, ALI, ELTs
  - GIS data
- Data Readiness Profiles
  - Required 911 and GIS data
  - 100+ data checks
  - Metro and NE – Summer 2016
  - All regions – end of 2016
  - Summary reports

NG9-1-1 GIS Project Update

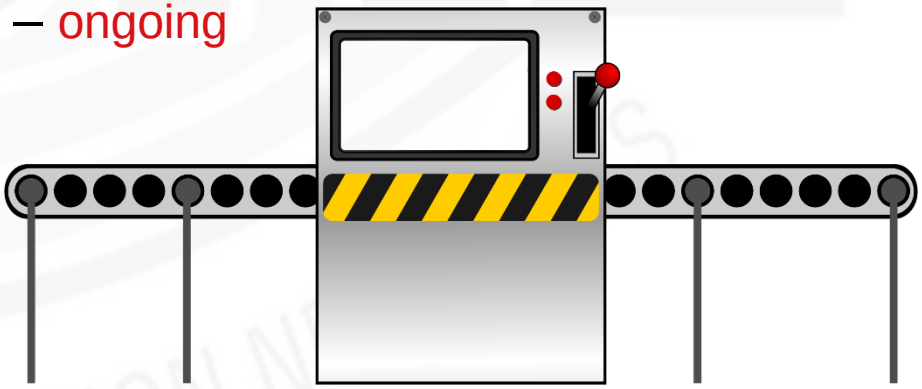
Data Preparation Projects

- Timeline
  - Metro – ongoing with MESB
  - NE – ongoing in 5 of 11 counties
  - Remaining regions – begin Fall/Winter 2016
- General Project Tasks
  - Kickoff, roles/responsibilities, workflows
  - Community name validation
  - Street name validation
  - Address validation
  - Geospatial validation
  - Edge-matching
  - Emergency service boundary validation

NG9-1-1 GIS Project Update

GIS Data Maintenance Requirements

- Data Uploads and Portal – ongoing
- Normalization – ongoing
- Validation – ongoing
- Aggregation – begin Fall/Winter 2016
- Provision
  - ECRF/LVF– TBD
  - Geospatial Commons – ongoing



MN NG9-1-1 GIS Standards

- Developing GIS data requirements for NG9-1-1 in Minnesota
- Aligning with NENA standards and validate against similar standards
  - Other states (IA, KS, ND, TN, TX) and MRCC
  - Standards Comparison spreadsheet
- Standards Workgroup working toward Version 1.0
- Second stakeholder review – September/October 2016

MN NG9-1-1 GIS Standards

- Stakeholder review – **started February 2016**
  - Metropolitan Emergency Services Board (MESB) – ongoing
  - Metro Regional Centerline Collaborative (MRCC) – ongoing
  - MN PSAP and GIS Managers – ongoing
  - MN GAC Standards Committee – ongoing
  - MetroGIS Address Point Workgroup – ongoing
  - ECRF, LVF, and other NG9-1-1 vendors – starting September 2016
  - Neighboring states – starting September 2016

MN NG9-1-1 GIS Standards

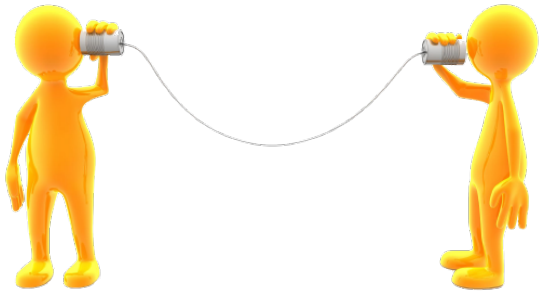
- Stakeholder approval of v1.0 – **Complete early 2017**
  - Metropolitan Emergency Services Board (MESB)
  - GIS Subcommittee
  - NG9-1-1 Committee
  - Statewide Emergency Communications Board (SECB)
  - MN Geospatial Advisory Council (MGAC)
  - MN Information Technology Agency (MNIT)

Standards Considerations

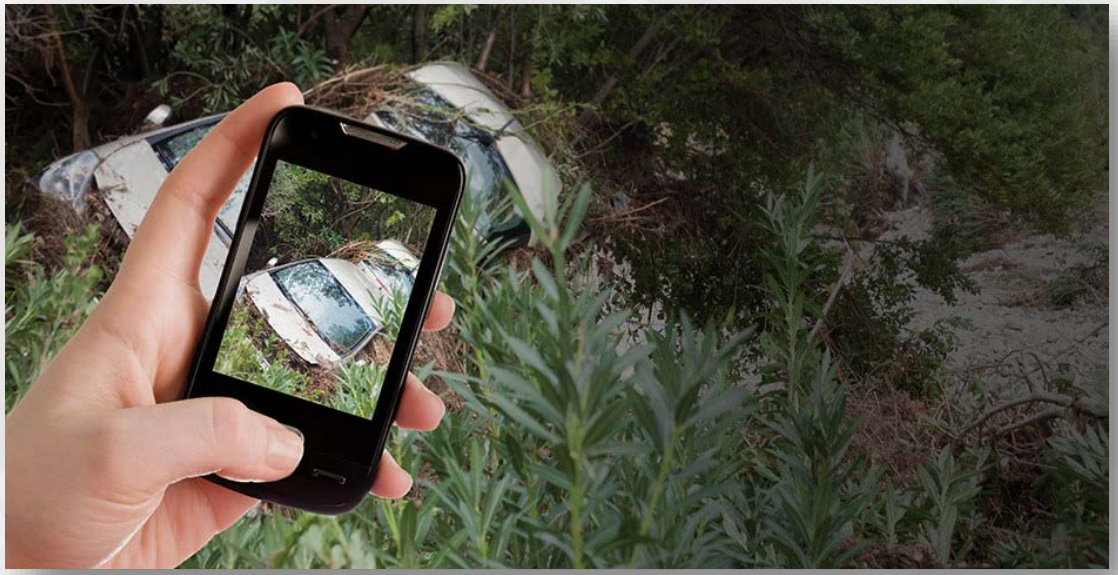
- DRAFT NENA Standards
  - NG9-1-1 GIS Data Model
  - Provisioning GIS to ECRF/LVF
  - i3 Solution
- Specific ECRF/LVF Vendor(s) is unknown
- Build once, use many times

Communication Plan

- ECN website
  - Project newsletter - Issue #4 available on ECN website
- Monthly
  - GIS Subcommittee meeting
    - Next meeting: Thursday, November 10 at 2pm
  - NG9-1-1 Committee meeting
  - SECB meeting
- Quarterly
  - Regional PSAP/GIS meetings
  - MN Geospatial Advisory Council



Thank You!



Adam Iten, Project Manager
Adam.Iten@state.mn.us
651-201-7559

Next Generation 9-1-1 GIS Project

Prepared for NG9-1-1 Committee and SECB
August 18, 2016

Presenter:
Adam Iten, Project Manager

NG9-1-1 GIS Project Update

- 2016 Goals
  - GIS Data Collection and Assessment
  - GIS Data Preparation
  - MN NG9-1-1 GIS Data Standards
  - Communication Plan

NG9-1-1 GIS Project Update

- **GIS Data Collection and Assessment**
  - Data Collection
    - MSAGs, ALI, ELTs
    - GIS data
  - Data Readiness Profiles
    - Required 911 and GIS data
    - 80+ data checks
    - Metro and NE – Summer 2016
    - All regions – end of 2016
    - Summary reports

NG9-1-1 GIS Project Update

- **NG9-1-1 GIS Data Preparation Projects**
  - Timeline
    - Metro – ongoing with MESB
    - NE – begin Summer 2016
    - Remaining regions – begin Fall/Winter 2016
  - General Project Tasks
    - Kickoff, roles/responsibilities, workflows
    - Community name validations
    - Street name validations
    - Address validations
    - Centerline validations
    - Emergency boundary validations
    - Edge-matching
    - GIS-based MSAG creation

MN NG9-1-1 GIS Standards

- Developing GIS data requirements for NG9-1-1 in Minnesota
- Aligning with NENA standards and validate against similar standards
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  - Standards Comparison spreadsheet
- Standards Workgroup working toward Version 1.0

MN NG9-1-1 GIS Standards

- Stakeholder review – **started February 2016**
  - Metropolitan Emergency Services Board (MESB) – ongoing
  - Metro Regional Centerline Collaborative (MRCC) – ongoing
  - MN PSAP and GIS Managers – started March 2016
  - MN GAC Standards Committee – started April 2016
  - ECRF, LVF, and other NG9-1-1 vendors – starting September 2016
  - Neighboring states – starting September 2016

MN NG9-1-1 GIS Standards

- Stakeholder approval of v1.0 – **Complete early 2017**
  - Metropolitan Emergency Services Board (MESB)
  - GIS Subcommittee
  - NG9-1-1 Committee
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Communication Plan

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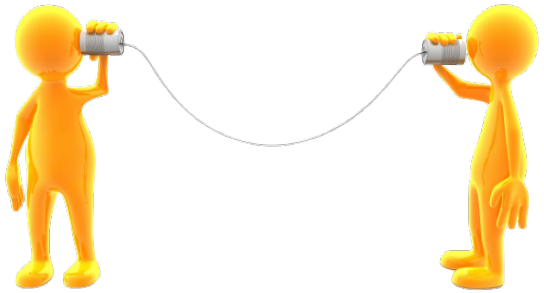

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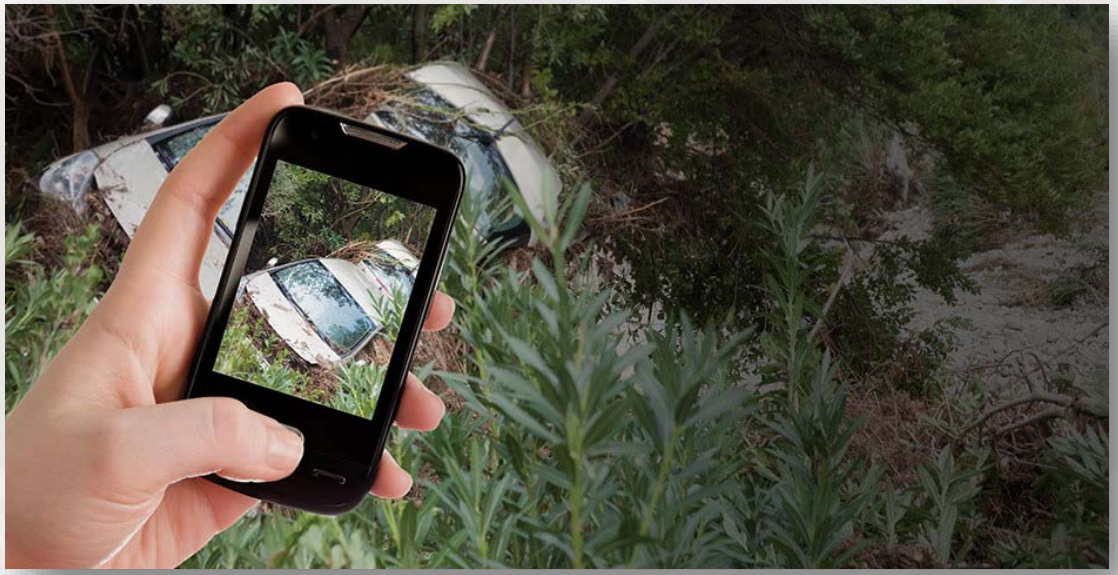

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Minnesota NG9-1-1 GIS News

July, 2016 Issue #4

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Useful Links:

DPS-ECN

Minnesota Department of Public Safety Emergency Communication Networks GIS Information

MnGeo

Minnesota Geospatial Information Office

SECB

Statewide Emergency Communications Board

NENA

National Emergency Number Association

FirstNet

First Responder Network Authority

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NG9-1-1: National Collaboration

The Minnesota Department of Public Safety, Emergency Communication Networks division (DPS-ECN) is responsible for oversight of public safety communications including the 9-1-1 system in the state and the migration to a Next Generation 9-1-1 (NG9-1-1) system. Minnesota is not alone in this journey, many states are beginning to plan for or are actively engaged in the process of creating their NG9-1-1 systems (see status map). Numerous federal, state, professional and academic organizations are also working together to define the processes and standards that will help guide the development and integration of NG9-1-1 geospatial data and systems nationally. Initiatives such as the National Address Database (NAD) are indicative of this multi-agency cooperation.

A recent report prepared by the NG911 NOW Coalition – a working group established by the National Association of State 911 Administrators (NASNA), National Emergency Number Association (NENA), and the Industry Council for Emergency Response Technologies (iCERT), emphasizes the need for collaboration at all levels of government and industry to help realize their goal of the nationwide deployment of NG9-1-1 by 2020. A June 13, 2016 NOW press release announcing the report, highlighted the role states play:

"State governments play a vitally important role in facilitating the deployment of NG911. The state governance, regulatory, statutory, funding, technical and operational, and educational aspects of successful deployment must be addressed at the state level," said Evelyn Bailey, NASNA's executive director. "The states that have made the most progress are those that have addressed these matters. The combined efforts of the Coalition partners will help the remaining states to step up the pace."

Cooperation between state and local government entities will be critical to the success of implementing NG9-1-1 in Minnesota. Within the Twin Cities metropolitan area the Metropolitan Emergency Services Board (MESB) plays a key role in building out NG9-1-1 geospatial data. I would like to thank Jill Rohret, Executive Director of MESB, for contributing this issue's guest article. Their work with PSAP managers as well as county and city GIS managers will help ensure that local data can be integrated with the statewide NG9-1-1 system while meeting local needs as well. Thank you Jill!

Jackie Mines, Director, DPS-ECN

Metropolitan Emergency Services Board

By Jill Rohret, Executive Director

The Metropolitan Emergency Services Board (MESB) was established by a Joint Powers Agreement for the purposes of overseeing the metropolitan 9-1-1 system, the metropolitan portion of the Allied Radio Matrix for Emergency Response (ARMER) system, and Emergency Medical Services (EMS) in the Twin Cities metropolitan area.

Formed in June 2005 by the counties of Anoka, Carver, Chisago, Dakota, Hennepin, Isanti, Ramsey, Scott and Washington, as well as the City of Minneapolis, as a result of a merger of the former Metropolitan 9-1-1 Board and the former Metropolitan Radio Board, the MESB provides metropolitan 9-1-1 network oversight, establishes standards and guidelines for 9-1-1 services, and coordinates the 9-1-1 database to ensure accuracy and integrity of the 9-1-1 system. It also oversees and manages the metropolitan portion of the ARMER system, establishes standards and guidelines for radio system operation in the region, and encourages and facilitates participation among the region's first responder agencies. For EMS, the MESB coordinates regional EMS activities, serves as an information clearinghouse, and supports EMS providers with monetary and programmatic resources to enhance the metropolitan EMS system. The MESB provides an essential forum for problem-solving and discussion by facilitating and coordinating meetings and activities for ARMER users, Public Safety Answering Points (PSAPs), and EMS providers involved in providing public safety service and response. The MESB also represents and advocates for the needs of its member entities and the metropolitan 9-1-1, ARMER, and EMS systems.

MESB Role in 9-1-1

In 1982, seven metropolitan counties formed the Metropolitan 9-1-1 Board as a joint powers agency to govern the metropolitan 9-1-1 system and carry out the requirements of counties under Minnesota Statute Chapter 403 for the establishment, operation, and maintenance of a 9-1-1 telephone system for the metropolitan area. The Board was later expanded to include Chisago and Isanti counties, along with the City of Minneapolis. The member entities recognized economic and operational advantages to the members to jointly plan, coordinate, and administer a regional 9-1-1 system. The Board allowed for cost savings and efficiencies for the counties as each county did not have to have staff to coordinate and manage the 9-1-1 network and database. The MESB continues that role today. Minnesota Statute 403 specifies the MESB's role in 9-1-1 system governance and maintenance. MS 403.07 Subd. 2 requires the MESB to establish design standards for the metropolitan 9-1-1 system. These standards must be included in State of Minnesota 9-1-1 rules. The MESB works closely and regularly with DPS-ECN on all 9-1-1 matters, but particularly in maintaining the efficacy of the 9-1-1 network infrastructure. The MESB also assists the region's PSAPs by determining the correct routing of wireless cell sectors, a role which was added as the 9-1-1 system needs evolved. In addition, the MESB monitors metropolitan 9-1-1 system performance and coordinates extensively on behalf of its member entities with system vendors and telecommunications service providers on 9-1-1 service related matters.

9-1-1 Data

In relation to 9-1-1 data, the current metropolitan area Enhanced 9-1-1 (E9-1-1) system relies on three key datasets: the Master Street Address Guide (MSAG), Automatic Location Identification (ALI), and ESN (Emergency Service Number) data. The MSAG is a tabular database used in validating addresses and determining the correct routing of 9-1-1 calls to the appropriate PSAP. It is the official 9-1-1 record of valid street names and house number ranges within communities in the region. The MSAG associates street address ranges to the correct combination of police, fire and medical responders (designated in the 9-1-1 system as an Emergency Service Number or ESN). Telecommunications service providers submit their wireline telephone records daily to be processed against the MSAG. Once validated, the records are added to or updated in the ALI database that is used for 9-1-1 call routing and caller location display at PSAPs.

The MESB coordinated the initial creation of the MSAG for the metropolitan region prior to implementation of the current E9-1-1 system on December 2, 1982. Since that time, each metropolitan county, having statutory responsibility for operation and maintenance of their 9-1-1 system, has maintained their portion of the MSAG, which is then overseen at a regional level by the MESB. In most cases, counties have assigned day-to-day responsibility of MSAG maintenance to PSAP personnel familiar with Computer Aided Dispatch (CAD) data. Each PSAP has a designated MSAG Coordinator who then interfaces with the MESB on various 9-1-1 data related matters. In partnership with their cities and emergency agencies, counties/PSAPs keep the address, emergency response, and PSAP boundary information contained in their MSAG and ESNs current. The MESB provides standardized regional 9-1-1 data oversight and support, as well as coordinates with telecommunication service providers, database vendors, and the metro area 9-1-1 system integrator on various 9-1-1 database issues.

NG9-1-1 and GIS

Today's E9-1-1 system is based on a phone number that, when a 9-1-1 call is made, flows through the 9-1-1 network and is used by the PSAP call handling equipment to perform a query into the static ALI database to obtain location information pre-associated with the calling device's phone number. With NG9-1-1, however, the current location of the calling device becomes part of the initial call flow through the 9-1-1 network. The location of the calling device may be a civic street address or a latitude/longitude coordinate. In an NG9-1-1 environment, both location validation and call routing determination will be done using geospatial data deployed in new NG9-1-1 network elements rather than today's existing database models. The county's role of maintaining the data essential to operating its 9-1-1 system will continue as the system evolves, however, the role will be accomplished through the maintenance of geospatial datasets rather than tabular files, such as the MSAG.

Early in the planning for NG9-1-1, the MESB recognized the industry need to replace the legacy MSAG with geospatial datasets as the means for address validation and call routing determination. As a result, in 2004, the MESB hired a GIS Coordinator to begin working with county and regional agencies in the assessment and planning for how future 9-1-1 needs could be accommodated with GIS efforts contemplated or underway in the metropolitan area. The discussions focused on creation of publicly available, authoritative, centerline and address point datasets that were multi-use in nature, but would be capable of meeting the anticipated NG9-1-1 requirements under development by the NENA. Collaboration by GIS staff from the seven metropolitan counties, the MESB, the Metropolitan Council, and the State of Minnesota resulted in the Metropolitan Road Centerline Consortium (MRCC) project (see Issue #3 of this newsletter) that has become the vehicle for meeting the NG9-1-1 centerline requirements for the metropolitan region. Similar collaborative efforts are anticipated to meet NG9-1-1 address point data requirements for the metropolitan region.

Data Validation and Synchronization

The MESB also recognized that the transition to NG9-1-1 would require a significant effort to validate and synchronize legacy 9-1-1 data (MSAG, ESNs, and ALI telephone record data) with the geospatial data (centerline, address points, and emergency service response polygons). Although the State of Minnesota did not officially kickoff the Minnesota NG9-1-1 GIS project until 2015, the MESB began working with its member counties and PSAPs as early as 2010 to explore what would be involved in the NG9-1-1 data validation and synchronization effort. Anticipating statewide requirements, the MESB has helped its member counties identify key markers of NG9-1-1 data synchronization, organize and report on discrepant data, and coordinate with key parties on error resolution.
The MESB has identified essential phases of the 9-1-1/GIS data synchronization effort including validation of Emergency Service Zone (ESZ) and response agency boundaries with the MSAG and ESNs, validation of street names across the key datasets, geocoding of 9-1-1 addresses to centerline and address point data, geocoding of address point data to the centerline, centerline validations (e.g. parity checks), and ESN assignment comparison/validation. The metropolitan area counties and PSAPs are currently at various stages in their data synchronization, depending on

when they started, the state of their existing GIS data, timing with Computer Aided Dispatch (CAD) system upgrades, etc. Through diligence on their part, some MESB counties have even reached a current level of just .2% or less of 9-1-1 addresses that do not match either their county centerline or address points.

In working with its member entities, the MESB has also observed that, due to the data synchronization effort, metropolitan area PSAPs and county GIS departments have forged new partnerships surrounding GIS data, as well as strengthened their ties with address authorities, thereby ensuring that official addressing is consistently reflected throughout the datasets. The 9-1-1/GIS data synchronization effort in the metropolitan area is clearly benefiting existing centerline, address point, CAD, MSAG, and ALI data accuracy today. The synchronization effort is also positioning metropolitan area counties to be in a state of data readiness so that minimal adjustments will be needed to meet statewide NG9-1-1 GIS standards as they are finalized and approved.

Staff from the MESB, metro county GIS organizations, and PSAPs are working closely with Adam Iten, the State's NG9-1-1 GIS Project Manager, to share knowledge gained in the metro area over recent years and to offer input into the statewide project. The MESB is looking forward to more clarity from the DPS-ECN and MnGeo regarding NG9-1-1 system requirements as statewide planning and implementation evolves. As specifics of the State's NG9-1-1 system become clear, MESB will continue, as it has in the past, to support its member counties and PSAPs as they align their GIS data and processes to meet NG9-1-1 needs.

The Future of 9-1-1

In the future, 9-1-1 will remain a vital part of public safety. Though the future technical specifications are not entirely clear, the MESB is committed to evolving its role in the 9-1-1 system as it continues to evolve with technology and user needs. The MESB will continue to support and work with metropolitan agencies to optimize the 9-1-1 system and data, and will continue to advocate for system performance standards.

NG9-1-1 GIS Standards - Update

The Minnesota NG9-1-1 GIS Standards Workgroup continues to move forward with its efforts to establish GIS data standards for NG9-1-1. The workgroup consists of GIS managers and staff representing each of **DPS-ECN's seven regions**.

Whether you describe them as guidelines, specifications, models, benchmarks or axioms, standards are needed because NG9-1-1 GIS data will be harvested from and maintained by local authoritative sources whenever possible. Standards will help ensure that these data can be consumed efficiently and with confidence that they will meet Emergency Call Routing Function (ECRF) and Location Validation Function (LVF) requirements.

Road Centerlines Review:

Working closely with the GIS Standards Workgroup, in late March DPS-ECN and MnGeo published a first draft of the document, *Minnesota Next Generation 9-1-1 GIS Data Standards*. Although the draft document focused solely on standards for road centerlines, it also included an overview of the state's proposed NG9-1-1 GIS data model, roles and responsibilities for the state and its partners, map projection requirements, and data creation and collection standards.

PSAP and GIS managers from across the state were asked to review the document and comment on standards defined in the publication by the end of April. Nearly 50% of the state's PSAPs responded, submitting more than 250 comments or questions. Examples include:

> *"Are the field names, types, and widths required or will the state have a means to translate the data into the final statewide schema as long as some field is present in the dataset to cover each mandatory and conditional field?"*

"Are we conforming to State or Nena requirements? Assume this is saying conform to State standards which conforms to NENA standards?"

"Our current road centerline data closely aligns with requirements here. Missing fields should not require much effort to populate. That said, ZIP CODE boundaries have posed some difficulty locally. I could benefit from an authoritative zip code boundary source to populate the ZIP_L and ZIP_R fields."

"Our centerlines meet spatial requirements, some maintenance will be needed once schema is changed and new fields are introduced. Is there a plan or suggestions in place to assist in verification of 100% msag [MSAG] matching once msag [MSAG] entries are made into the road centerline dataset?"

"Can E991 [E9-1-1] funds be used to acquire outside help on the project, and will the state provide help to meet this extensive list of standards?"

Comments have been compiled and reviewed by DPS-ECN and MnGeo and in most cases, staff responded to questions asked by the reviewers. MnGeo staff worked closely with the GIS Standards Workgroup to include revisions recommended through the vetting process in the second draft of the document. The second draft will be distributed for review in late August/early September to PSAPs, GIS managers and for the first time, NG9-1-1 vendors, ECRF and LVF vendors, and other states. This is the second of at least three revisions expected before formal approval of the completed document by the MESB, NG9-1-1 GIS Subcommittee, NG9-1-1 Committee, SECB, and Minnesota Geospatial Advisory Council. Final approval will likely not occur until early 2017 (Figure 1).

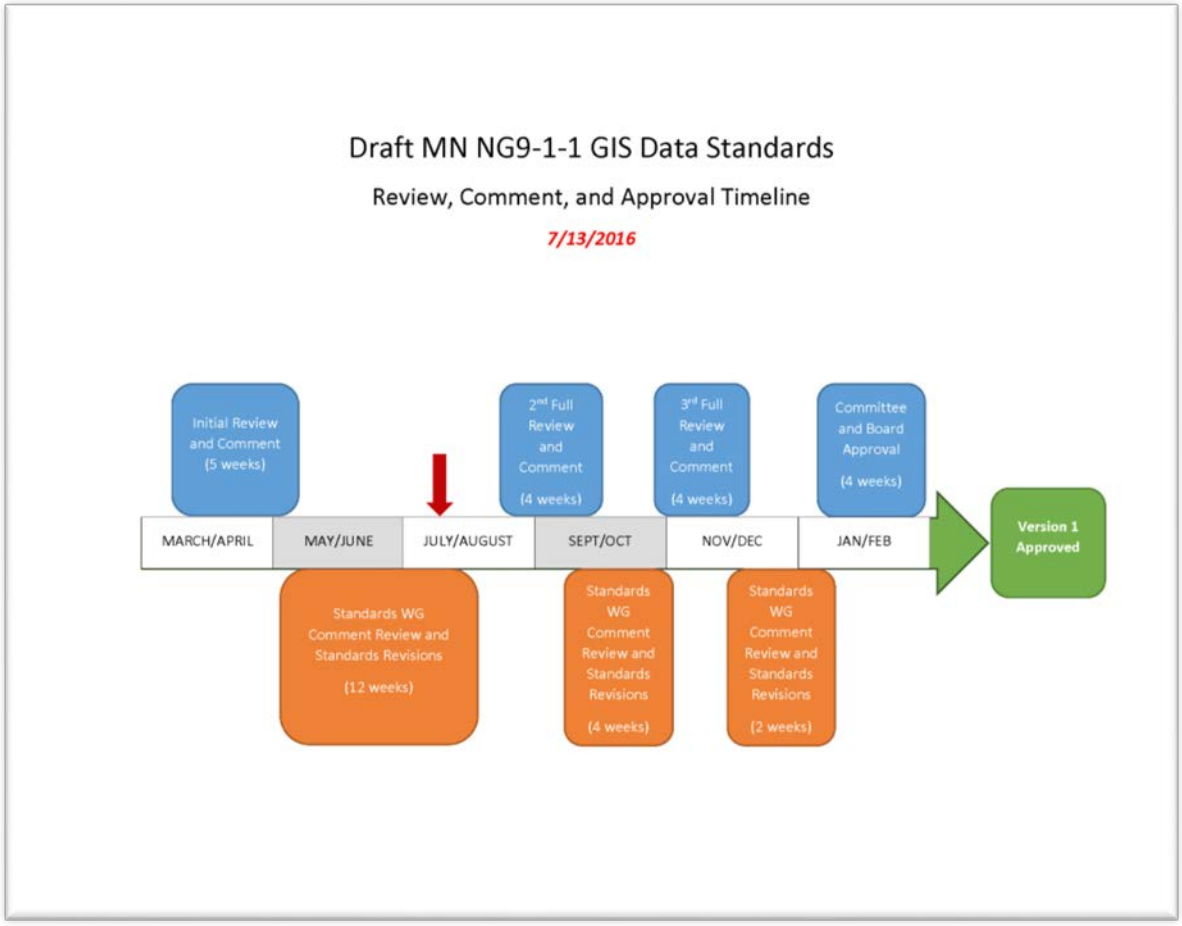


Figure 1: Data Standards Timeline

The second draft of *Minnesota Next Generation 9-1-1 GIS Data Standards* will also include preliminary specifications for address points and polygonal GIS data.

Address Points:

A growing number of PSAPs and GIS authorities across the country are building an "address point" layer for their service areas. Address points use a distinct geographic location such as USNG or latitude/longitude to describe the position of a residence, business, grocery store, police station, etc. (Figure 2).

Information associated with an address point such as its street address, accompanying phone number, business name and contents (such as hazardous chemicals storage) can potentially be displayed on a 9-1-1 dispatcher's screen. The ability to link address locations to photos, 3-D floor plans and much more make address points more useful than current-day MSAG and ALI data.

Figure 2: Address Points

DPS-ECN and MnGeo are recommending that PSAPs begin building their address point layer along with road centerlines and emergency service boundaries. As with road centerlines, to maximize the benefit of collecting and utilizing site/structure address points in NG9-1-1, data standards are needed. DPS-ECN and MnGeo have begun work to define those standards for Minnesota building upon draft standards prepared by NENA, MetroGIS and adjacent states. Staff from the MESB, MnGeo and DPS-ECN have methodically compared (Figure 3) each with the other - identifying commonalities and differences. Preliminary results from this analysis will be incorporated in the second draft of *Minnesota Next Generation 9-1-1 GIS Data Standards* after being vetted by the MetroGIS Address Workgroup, MESB and the GIS Standards Workgroup.

In addition to defining "structure" of the data, i.e. domains, attributes, field widths and types, etc., consideration must be given to how address points are placed. The document, *NENA Information Document for Development of Site/Structure Address Point GIS Data for 9-1-1*, provides helpful guidelines for address point data development including point placement considerations. Many of its recommendations will be incorporated in future revisions of *Minnesota Next Generation 9-1-1 GIS Data Standards*.

	MINNESOTA							NENA Site/Structure Address Points Data Model					MetroGIS				IOWA			
	Descriptive Name	Field Name	M/C	Ty	Field	Responsibility	Domain	Descriptive Name	Field Name	M/C/O	Type	Field Width	Field	M/C/O	Type	Field Width	Field	M/C/O	Type	Field Width
1	Source of Data	SOURCE	M	T	75	Local	Y	Source of Data	Source	M	A	75	ADIRSOURCE, AUTHORITY, EDI	O, M, O	A, A, A	40, 40, 40	SOURCE	M	A	75
2	Date Updated	EDITED_DT	M	D		Local	N	Date Updated	DateUpdate	M	D	20	UPDATEDATE	M	D	8	UPDATED	M	D	26
3	Effective Date	ACT_DATE	C	D		Local	N	Effective Date	Effective	O	D	20	n/a				EFF_DATE	M	D	26
4	Expiration Date	RET_DATE	C	D		Local	N	Expiration Date	Expire	O	D	20	n/a				EXP_DATE	O	D	26
5	Site Unique ID	UNIQUE_ID	M	T	100	Local	N	Site NENA Globally Unique ID	Site_NGUID	M	A	100	ADD_ID_NAT, ADD_ID_LOC	M, M	A	60, 50	SITE_UID	M	A	100
6	Country	COUNTRY	O	T	2	State	Y	Country	Country	M	A	2	n/a				COUNTRY	M	A	2
7	State	STATE	M	T	2	State	Y	State	State	M	A	2	STATE_CODE	M	A	2	STATE	M	A	2
8	County	COUNTY	M	T	40	Local	Y	County	County	M	A	40	CO_NAME	M	A	20	COUNTY	M	A	40
	n/a							Additional Code	AddCode	C	A	6	n/a				n/a			
9	Additional Data URI	ADDDATAURI	C	T	254	Local/State	N	Additional Data URI	AddDataURI	C	A	254	n/a				n/a			
10	Municipality	CITY	M	T	100	Local	Y	Incorporated Municipality	Inc_Muni	M	A	100	MUNI_NAME	M	A	30	INC_MUNI	M	A	100
	n/a							Unincorporated Community	Uninc_Comm	O	A	100	n/a				UN_COMM	C	A	100
	n/a							Neighborhood Community	Nbrhd_Comm	O	A	100	n/a				NGHBD_COMM	C	A	100
11	Address Number Prefix	ANUMBERPRE	C	T	15	Local	N	Address Number Prefix	AddNum_Pre	C	A	15	ANUMBERPRE	M	A	6	HNP	O	A	15

Figure 3: Address Points Standards Analysis

Polygonal GIS Data:

To the extent that time allows, the second draft of *Minnesota Next Generation 9-1-1 GIS Data Standards* will include preliminary standards for polygonal data such as PSAP, law, fire, first responder and ambulance service areas. Ultimately, standards for polygonal data will define the structure of the data as well as resolution, map projections, etc.

Once these standards are defined, vetted and approved, polygonal data submitted by local authorities will be carefully reviewed by DPS-ECN and MnGeo staff. They will work with PSAPs, GIS managers and emergency service providers to resolve issues like boundary overlaps or gaps that may occur between adjacent PSAPs (Figure 4). Polygonal data will be compared with road centerlines, address points and MSAG tabular data as well to ensure its completeness and accuracy.

Figure 4: Service Area Gaps

A complete set of standards for polygonal data will appear in the third revision of the data standards document.

Data Readiness Profiles – Update

As noted in Issue #3 of *Minnesota NG9-1-1 GIS News*, a major initiative currently underway at MnGeo is the assessment of existing geospatial data needed to support the NG9-1-1 operations. Data Readiness is one of many processes used by MnGeo to evaluate 9-1-1 and GIS data submitted by local authorities (PSAPs, GIS managers, etc.). It falls within the Data Assessment activity – the first of three major program activities. The other two are Data Preparation, and Ongoing Data Maintenance. Each activity consists of multiple processes and phases undertaken to prepare the geospatial data for on-going ECRF and LVF use.

NG9-1-1 data assessments began in late 2015 when DPS-ECN and MnGeo requested GIS and tabular 9-1-1 data: MSAG, ALI and English Language Translation (ELT), from each PSAP in the state. Beginning with the Northeast region, these data have undergone a rigorous inspection and evaluation. Results from nearly 100 data readiness checks are being captured in a Data Readiness Profile table for each PSAP. Key results will be highlighted in a comprehensive Data Readiness Report and shared with PSAP and GIS authorities to support them with the validation and ultimately correction of their data. Below are examples (Figure 5) of several pieces of a *draft* Data Readiness Report.

Once the Data Readiness Profiles are completed for a region, MnGeo will work with local PSAP and GIS managers to schedule and kick-off the next activity, Data Preparation. Like the previous activity, Data Preparation consists of multiple processes and phases used by state and local authorities to validate and correct street centerlines, address points, PSAP and ESN boundaries. Tabular information, including the MSAG, ALI, ELT data are also to be assessed for each ECN region in the state - beginning with the Northeast. The Data Preparation process involves six phases:

1. Community Name Validations
2. Street Name Validations
3. Address Validations
4. Road Centerline Validations
5. Emergency Service Zone Validations
6. Edge Matching

Summary tables and charts:

2. Observation of Data Supplied to MnGeo
   a. Comments
      i. There are blanks records in all of their GIS data.
   b. Aitkin County MSAG

Number of Entries	1855
Unique Street Names	1260
Unique Community Names	18

   c. Centerlines

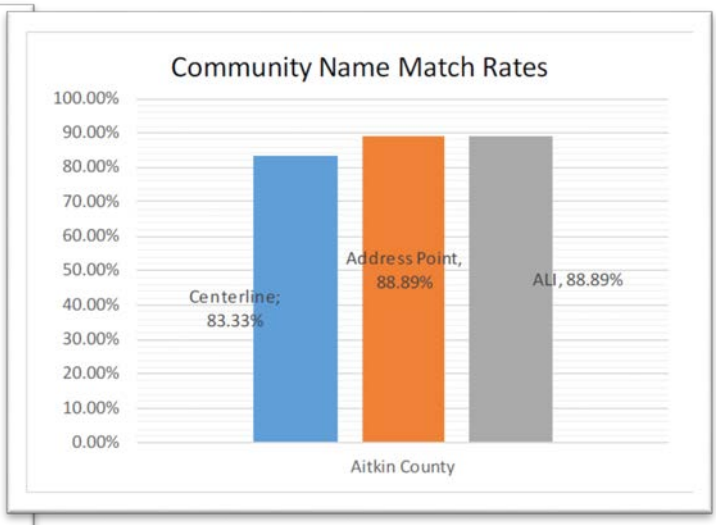
Number of Entries	4979
Unique Street Names	1247
Unique Community Names	15

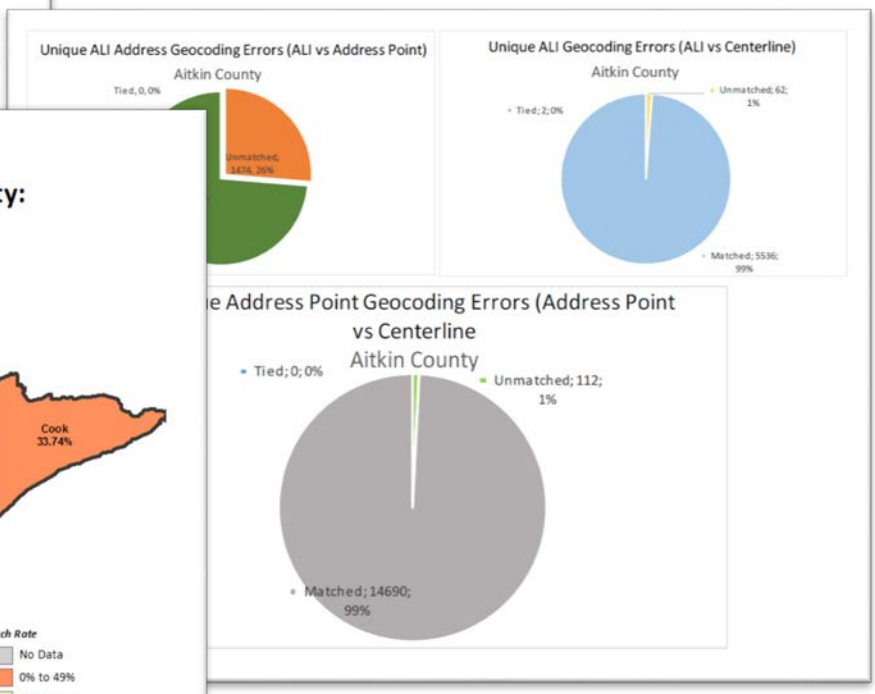
   d. Address Point

Number of Entries	14824
Unique Street Names	1056
Unique Addresses	14802
Unique Community Names	16

   e. ALI

Number of Entries	7391
Unique Street Names	0
Unique Addresses	5600
Unique Community Names	0





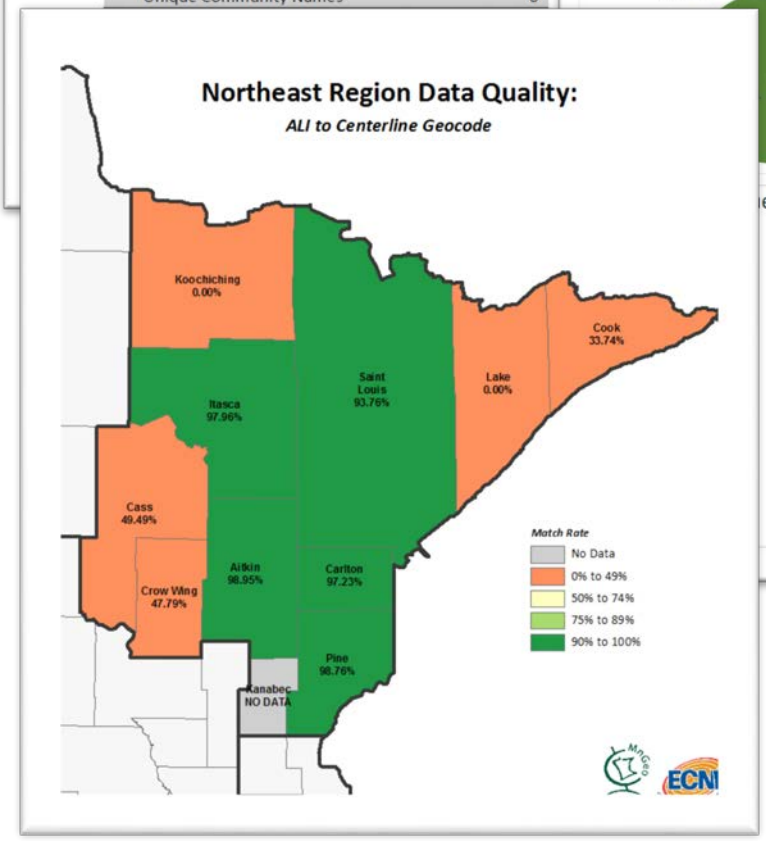


Figure 5: Data Readiness Profile Report

Community Names Validation report:

During the Community Names Validation phase the jurisdictional community name found in three input data files will be scrutinized for accuracy, continuity and adherence to state standards. The data sets to be evaluated for each PSAP are: Road Centerlines, Address Points, and the MSAG. This process has been designed to address the following questions:

1. Is every community name in the MSAG represented in both the Street Centerline and the Address Point geospatial data files?
2. Under what conditions should a change to a Community Name in any of those input data sets be required?
3. Who should determine when a change should be made?
4. What process should the affected stakeholders take to assure a change is permanently reflected in their source data?

Consistent and accurate community names are important because they are a critical component of geocoding, location validation, and call routing tasks. Below is a sample (Figure 6) comparison of Aitkin community names from five different sources. Pale red indicates a mismatch between these sources. For example, the community name "Deerwood" appears in the MSAG but not in the street centerline file provided by the PSAP or in the GNIS database.

PREFERRED NG911 Community Name	MSAG Community Name	Centerline Community Name	Address Point Community Name	GNIS Community Name	GNIS Feature ID
AITKIN	AITKIN	AITKIN	AITKIN	City of Aitkin	2393894
	AITKIN CO SO				
	DEERWOOD		DEERWOOD		
	FINLAYSON	FINLAYSON	FINLAYSON		
	FLOODWOOD	FLOODWOOD	FLOODWOOD		
HILL CITY	HILL CITY	HILL CITY	HILL CITY	City of Hill City	664474
	ISLE	ISLE	ISLE		
	JACOBSON	JACOBSON	JACOBSON		
MCGRATH	MCGRATH	MCGRATH	MCGRATH	City of McGrath	2395067
MCGREGOR	MCGREGOR	MCGREGOR	MCGREGOR	City of McGregor	2395068
PALISADE	PALISADE	PAL			
	SANDSTONE	SAN			
	STURGEON LAKE	STU			
	SWAN RIVER	SWA			
	SWATARA	SWA			
TAMARACK	TAMARACK	TAM			
	WRIGHT	WRI			

Aitkin County Street Name Validation
MSAG Compared to Centerline and Address Point Datasets

# of MSAG Community Names	18
# of Centerline Community Names	15
# of Address Point Community Names	16
# of Discrepancies between MSAG and Centerline	3
# of Discrepancies between MSAG and Address Point	2
# of Discrepancies between Address Point and Centerline	1

Figure 6: Community Names Analysis

In the coming weeks, DPS-ECN and MnGeo staff will be meeting with PSAP and GIS managers in the Northeast region to review and discuss their assessment of local data.

Upcoming Events

Notable upcoming DPS-ECN NG9-1-1 events:

- August 11: NG9-1-1 GIS Subcommittee Meeting
- August 24: NG9-1-1 Committee Meeting
- August 25: SECB Meeting
- September 8: NG9-1-1 GIS Subcommittee Meeting
- September 28: MN Geospatial Advisory Council Meeting
- October 26-28: MN GIS/LIS Annual Conference, Duluth, MN

Neighboring States

For more information about NG9-1-1 efforts in the states surrounding Minnesota, visit:

Iowa Enhanced 9-1-1
North Dakota ND911
South Dakota 9-1-1
Wisconsin: In planning phase. See NENA status map.

If you have a news item pertaining to NG9-1-1 that you would like to share in future issues of this newsletter, please contact:

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