STATEWIDE EMERGENCY COMMUNICATIONS BOARD
OPERATIONS & TECHNICAL COMMITTEE

May 10, 2016
1:00 – 3:00 p.m.
MnDOT Arden Hills Training Center
1900 West County Road I, Shoreview MN
Chair: Joe Glaccum
Call-in Number: 1-888-742-5095
Code: 2786437892#

AGENDA

Call to Order
Approval of Agenda
Approval of Previous Meeting's Minutes
Announcements
Action Items

1. Norman County Participation Plan (Rey Freeman)
2. St. Louis County Participation Plan Addendum 2 (Bruce Hegrenes)
3. Public Works Best Practices Guide (Dave Thomson)
4. Standard 7.1.0 Audit/Monitoring Process (Dave Thomson)
5. Standard 7.2.0 Response to Non-Compliance (Dave Thomson)
6. Standard 7.3.0 The Appeal Process (Dave Thomson)
7. LTAC-E Change Management (Curt Meyer)
8. MG FIRE LTAC Waiver (Curt Meyer)
9. AHEMS Logger Participation Change Request (Victoria Peckman)
10. SOAR Change Management Next Steps (Stromberg)

New Business
Old Business
Regional Reports

- Northwest (Dolan)
- Northeast (Hegrenes)
- Northern RIC (Bruning)
- Central (Fjerstad)
- Metro (Gundersen)
- Central/Metro RIC (Juth)
- South Central (Wesley)
- Southeast (Freshwater)
- Southwest (Hamann)
- Southern RIC (Donahue)

Other Reports

- MnDOT (Lee)
- System Managers Group (Lee)
- DPS Standing Report (Stromberg)
- Status Board Report (Anderson)

Adjourn

STATEWIDE EMERGENCY COMMUNICATIONS BOARD

OPERATIONS & TECHNICAL COMMITTEE

April 12, 2016
MnDOT Arden Hills Training Center

MEETING MINUTES

Attendance

Members
Present Member/Alternate
Chair Joe Glaccum/Vacant– Minnesota Ambulance Assn
Vice Chair Dave Thomson/Vacant – MN Chiefs of Police Assoc.
John Gundersen/Ron Jansen – MESB
Tim Lee/Jim Mohn/Mukhtar Thakur– MnDOT
Tim Boyer/– MN State Patrol
Neil Dolan/Brian Zastoupil– NW Region
Bruce Hegrenes/Monte Fronk – NE Region
Terry Wesley/Darrin Haeder – SC Region
Al Fjerstad/Kristen Lahr/Paul McIntyre - CM Region
Rick Freshwater/Michael Peterson – SE Region
Mike Hamann/Kimberly Hall – SW Region
*Members attending are marked with yellow highlight.

Guests reporting:
Name Representing
Jim Stromberg, ECN
Cathy Anderson, ECN
Carol-Linnea Salmon, ECN
Marcus Bruning, ECN
Rick Juth, ECN
Steve Mueller, MNIT
Troy Tretter, MESB
Rod Olson, City of Minneapolis
Carrie Oster, Motorola
Steve Ouradnik, DOC
Victor Wanchena, DOC
Jake Thompson, City of Anoka
Mary Borst, Mayo
Nate Timm, Washington County
Bob Schornsten, Allina
Kurt W., Alpha Wireless
Jim Schnoor, Federal Reserve
Scott Wosje, Northland Business
Rey Freeman, Rey Freeman Communications Consulting

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CALL TO ORDER

Chair Glaccum calls the meeting to order at 1:00 p.m.

AGENDA REVIEW

The chair requests to amend the agenda to add the Mille Lacs Participation Plan amendment as an action item and to move the StatusBoard report to the top of the agenda.

Al Fjerstad makes a motion to approve the agenda as amended.
Bruce Hegrenes seconds the motion.
Motion carries.

APPROVE PREVIOUS MEETING'S MINUTES

Ron Jansen makes a motion to approve the March meeting minutes.
Fjerstad seconds the motion.
Motion carries.

STATUS BOARD UPDATE (STEVE MUELLER)

Steve Mueller reports that in March there were two hours of scheduled maintenance and no unscheduled downtime. The vanity URL is currently not working. A device to support that is being purchased and will be implemented before next month. Mueller is working with the operations team to make sure the StatusBoard report gets in the committee meeting packet. MN.IT is working on the performance fix and it may be deployed next month. Mueller has been working with Cathy Anderson and ECN on changes that have been requested.

ROGER'S TWO WAY RADIO I.D. REQUEST (JEREMY VOGEL)

Jeremy Vogel introduces a request for ARMER radio I.D.s for Roger's Two Way Radio, as presented in the meeting materials. He says these would be for technicians to use while they are working on the system. They would be programmed with the NE and NW SYS TECHs talkgroups.

Neal Dolan and Brian Zastoupil from the Northwest region have no issues and are supportive of the request.

Jansen moves to approve Roger's Two Way Radio request for six radio I.D.s
Fjerstad seconds the motion.
Motion carries.

EF JOHNSON VP400 AND MOTOROLA APX 8000 RADIO TESTING RESULTS (TIM LEE)

Jim Mohn introduces the request for approval of two radios, as presented in the meeting materials. The subscriber test group has tested these radios and recommends them for use on the system.

Terry Wesley makes a motion to accept the radios and have them added to the approved subscriber list.
Jim Mohn seconds the motion.
Motion carries.

MARSHALL COUNTY PARTICIPATION PLAN REQUEST (REY FREEMAN /JASON BOMAN)

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Rey Freeman introduces the Participation Plan request for Marshal County, as presented in the meeting materials. A full participation plan was submitted but it is intended to be a phased plan brining law enforcement onto the system first, some minor upgrades to the dispatch center and long term would incorporate fire agencies. There are seven tower sites in Marshall County. The sheriff's office has some portables and they have done testing and it works well. No local enhancement sites are needed and no additional 800 MHz channels will be added. The PSAP would retain their two positions Zetron consoles and would add new 800MHz RF control stations to be programmed on the new Marshall County talkgroups. The long term option that is included in the plan would be to put in an MCC 7500 but there are no plans to do so in the near future. The plan calls for a total of 357 radios which is the long term plan. Currently the sheriff's office has 13 portables. There are 14 public safety agencies included in plan, as well as two public works and schools. The request is for a total of 367 I.D.s. There are 25 talkgroups in the fleet map and there is a request for a statewide talkgroup. The county will retain the VHF fire radio system. Some train-the-trainer has been done by the Sheriff's office and system admin will be the responsibility of the Sheriff's office

Chair Glaccum clarifies that the request is for an additional 354 I.D.s, 25 talkgroups, 2 statewide talkgroups and no CCGWs at this time.

Fjerstad makes a motion to approve the Marshall County Participation Plan.
Jansen seconds the motion.
Motion carries.

CHANGE MANAGEMENT STANDARD (JIM STROMBERG)

Jim Stromberg introduces the Change Management Standard as submitted in the meeting materials. He reports that the main change is that it merges two standards into one. One standard was operational and the other was related to system changes. The workgroup created one simplified and cleaner version. The old standards considered whether things were major or minor changes. The workgroup determined that if something was a minor change it would follow a normal course of approval through the committees. A definition the system backbone was added. An element of timing was added. It would be a four year process to work through significant changes that would require state or local funding. Items must be reviewed by the Finance Committee and the Steering Committee.

Chair Glaccum asks it had no financial impact it would still go to finance?
Stromberg says yes.

Ron Jansen says he would like to propose that the regions have more time to review the standard.

Glaccum responds that there was regional representation on the workgroup and he would like to see this move forward.

Ron Jansen makes a motion to hold the standard for one month so regions have more time to review it.
Motion fails for lack of second.

Rod Olson asks if there is a concern that MnDot is not staffed to give this a technical overview and if will there be delays.

Jim Mohn responds that he does not have concerns about that.

Discussion about how it would be determined if something was a major or minor change. This committee would determine it.

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Hegrenes makes a motion to approve the Change Management Standard as submitted and sunset the two previous standards.
Fjerstad seconds the motion.
Motion carries with one opposed.

SOAR / CHANGE MANAGEMENT (JIM STROMBERG)

Stromberg introduces Scene of Action Repeater introduced by Stevens County and Kandiyohi in October, as submitted in the meeting materials. ECN support and recommends that the OTC adopt this. The old standard would require that this be looked at by MnDot, System Admins and Finance Committee.

Clarification that the approval would be to put this into the change management process. The old process would be used until the new standard is adopted by the board.

Hegrenes makes a motion to accept this as a major change management item and that a workgroup be formed and that this also be reviewed by the Interoperability Committee and then return to the OTC.
Wesley seconds the motion.
Motion carries.

STANDARD 2.17.0 (CATHY ANDERSON)

Cathy Anderson introduces recommended edits to Standard 2.17.0, Multi-group/Announcement, as submitted in the meeting materials.

Jansen makes a motion to approve Standard 2.17.0 as submitted.
Hegrenes seconds the motion.
Motion carries.

STANDARD 3.32.0 (CATHY ANDERSON)

Cathy Anderson introduces proposed edits to Standard 3.32.0, Statewide Interoperable Plain Language Policy, as submitted in the meeting materials. Most of the changes were verbiage. The example under inscription or tactical language – we changed it to a high risk incident such as an active shooter.

Fjerstad makes a motion to approve Standard 3.32.0 as submitted.
Hegrenes seconds the motion.
Motion carries.

MILLE LACS COUNTY PARTICIPATION PLAN AMENDMENT (AL FJERSTAD)

Al Fjerstad introduces the plan amendment, as submitted in the meeting materials. The proposal is to put up a six channel ASR near the city of Wahkon. This is to address coverage issues in the cities of Isle and Wahkon.

Chair Glaccum asks if the region has approved.

Kristen Lahr responds that the Owners and Operators Committee approved it and the O and O has authority to approve participation plans on behalf of the region.

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There are no objections from MnDOT.

Jansen makes a motion to approve the Mille Lacs County Participation Plan amendment as submitted.
Hegrenes seconds the motion.
Motion carries.

NEW BUSINESS

None.

OLD BUSINESS

None.

REGIONAL REPORTS

Northwest (Dolan)
Brian Zastoupil reports that the region met and approved the Marshall County plan. The region plans to evaluate the monthly busy reports from MnDot as a standing item to work on alleviating site busies. A regional talkgroup working group was formed. The region is working on drafting a standard giving guidance on who should be eligible and how to use them. A communications exercise was held in Park Rapids at the end of March.

Northeast (Hegrenes)
Bruce Hegrenes reports that the RAC and the ECB did not meet last month. The region continues to monitor site busies.

Northern RIC (Bruning)
Marcus Bruning reports that the Ontario border project is moving forward. Polk County is on ARMER in its entirety. East Grand Forks police and fire are migrating. Working on protocols to ensure interoperability.

Central (Fjerstad)
Al Fjerstad reports that the region completed its 2016 training plan. It will hold dispatch, radio programming and CASM, refresher and train-the-trainer training. It region is working on some BDAs and ASR sites. It held a demonstration on how TIC P works and how DLAN works and will make a decision on whether it will use CASM or DLAN. The region is close to putting out an RFP for a regional coordinator and has created a list of what the responsibilities would be. The Central MN ECB is looking at having an attendance standard in place by March of 2017 possibly with be fines or ineligibility for grant money for those not attending meetings. This is at a discussion level right now. Some of the concerns are the travel time to meetings. The Motobridge software is installed in dispatch in Mille Lacs County but is not totally operational yet.

Metro (Jansen)
Ron Jansen reports that the Technical and Operations Committee (TOC) received a presentation from the Department of Human Services about a proposal to add additional radios and talkgroups in the region. It was determined that Anoka and Hennepin County would need to do some engineering research to the potential impact on their sub-systems. There is a likely need for additional infrastructure. The TOC approved a change management submission for additional statewide encrypted talkgroups. A change to Alina Health EMS's participation plan was approved and a waiver request from Maple Grove Fire was reviewed. These last three items will be submitted to the OTC for review. A COMT was approved.

Central and Metro RIC (Juth)
Rick Juth adds that the RAC formed a workgroup to look at possible solutions to attendance and develop more

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participation.

South Central (Wesley)
Terry Wesley reports that the RAC met on March 9 and discussed funding for the Interop Conference. A couple of proposals for training on APEX Programming were discussed and it was determined to go with a proposal from Alpha Wireless where each county would set up a session for their own training.

Southeast (Freshwater)
No report.

Southwest (Hamman)
No report.

Southern RIC (Donahue)
No report.

OTHER REPORTS

MnDOT (Mohn)
Jim Mohn reports that there are no new sites on the air. Five are under construction and there are four sites where MnDot is looking for land. These sites are challenging for various reasons. One example is at Lima Mountain where it is difficult to path on which to construct driveway.

Chair Glaccum asks about the Meander Lake site and how the solar power is working.

Mohn responds that on less sunny days in the winter a generator has to run for about an hour during the night. Technicians are making adjustments to try to increase the solar power time.

Systems Managers Group (Anderson)
Mohn reports that Motorola was at the meeting to review the SMG upgrade and go over the ITL step-by-step process.

DPS Standing Report (Stromberg)
Stromberg reports that the website updates to ARMER and Interop are moving forward. Change management made significant steps forward at this meeting. The review of strategic reserve equipment will get more underway after the Interoperability Conference. The 7.19 upgrade is going well.

Cathy Anderson adds to please reminds people to register for the Interoperability Conference. She and Dana Wahlberg have been doing 911 Wireless Emergency Routing Management (WERM) training. There is one region left to do the training and the hope is that the application will go live sometime in May.

Meeting adjourns at 2:40 p.m.

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Norman County, Minnesota

ARMER Radio System

Participation Plan

March 2016

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ARMER Participation Plan

1. Introduction

A. ARMER System Application – Norman County

Norman County, Minnesota, and the city and county agencies within the county, request approval for participation in and use of the State of Minnesota Allied Radio Matrix for Emergency Response (ARMER) radio system. The county and its agencies plan to be "Full Participants" in the ARMER system, and will migrate all primary voice communications services to the network, once fully implemented.

The county requests that this application and plan be reviewed and approved by the following agencies:

- Northwest Minnesota Regional Advisory Committee (NW RAC)
- Northwest Minnesota Regional Radio Board (NW RRB)
- State of Minnesota Emergency Communications Board (SECB) and Operations and Technical Committee (OTC)

Norman County's plan has been developed based on the requirements and operational standards established for participation in and use of the ARMER radio system.[1] The county desires to contract as required with the Northwest Regional Radio Board and the State of Minnesota Department of Transportation (Mn/DOT) for use of the ARMER system once approved.

A list of the local city and county agencies within the county that plan to be included in the use of this system is provided in Section 1.D of this planning document.

B. Project Summary

Norman County, Minnesota, and the public safety entities within Norman County have developed a plan for the replacement of the existing VHF public safety radio systems currently used by those agencies.

The primary goals of a new radio communications system are:

- Provide improved radio system reliability, coverage, and capacity
- Replacement of the existing VHF radio system equipment
- Provide expanded county and region wide interoperability between public safety agencies, whether utilizing VHF or 800 MHz radio systems

After a thorough review of the options available, the county has determined that an eventual migration to the 800 MHz ARMER radio system, utilizing the system's multi-site, digital, and Trunking technologies

[1] All endnotes are attached at the end of the report (Attachment 2) under the heading of "References."

would best meet the county agencies radio communications goals, and will provide the required level of interoperability between public safety agencies in the region.

The County's migration to ARMER is anticipated to be a 2 or 3-Phased approach, as follows:

- Phase 1: This initial phase may occur in 2016, and would include the Norman County Sheriff's Office and local police law enforcement operations migrating to the ARMER system on a full-time basis. The Sheriff's Office currently has an inventory of ARMER-capable multi-band (800 MHz and VHF) mobile and portable radios, which were purchased with grant funding over the past few years. These radios are capable of P25 Trunking operation on the 800 MHz ARMER radio system. New radios will be needed for local police agencies to migrate operations to the ARMER system.

  The county's dispatch center currently utilizes Motorola MCC5500 radio control consoles, which are connected to two 800 MHz RF control stations, operating on the various Northwest Region talk groups. Additional RF control stations would be purchased and installed to allow the existing consoles to communicate on the new talk groups established for Norman County operations.

  Fire and EMS operations would continue to operate on existing VHF systems, which are relatively new. However, a small number of ARMER-capable 800 MHz portable radios would be obtained for each Fire/EMS agency to allow use of the ARMER system and interoperability with neighboring county Fire/EMS agencies (outside of Norman County).

- Phase 2: This phase will be dependent on funding options available over the next few years:

  Fire/EMS operations would migrate to ARMER operations; all agencies would obtain the required inventory of 800 MHz mobile and portable radios, which would be used in conjunction with existing VHF radios.

- Phase 3: Will be considered a long-term plan, and again be dependent on agency needs and grant funding options. The existing MCC5500 radio dispatch consoles would be replaced with new MCC7500 consoles, along with microwave radio or fiber optic connectivity into the ARMER network. However, there are no plans for this phase at the time this plan is being prepared.

The primary points of contact for this project are:

Sheriff Jeremy Thornton
Norman County Sheriff's Office
15 – 2nd Ave East
Ada, MN 56510
218-784-7114 Phone
jeremy.thornton@co.Norman.mn.us

Rey Freeman
RFCC
13517 Larkin Drive
Minnetonka, MN 55305
952-541-0747 Phone
rfreeman@isd.net

C. Jurisdictional Coverage of System

The radio system is intended to provide radio communications throughout the entire geographic area of Norman County, Minnesota. Norman County is located in the northwest area of Minnesota, covering 877 square miles, with a population of approximately 6,639 people. The terrain of Norman County is relatively flat, with ground elevations ranging from 1,100 feet in the eastern areas to 850 feet in the far west along the Red River valley and North Dakota border.

D. Entities and Users Participating in the Planned System

It is the intent of Norman County and the agencies within to implement a shared radio system that will incorporate both public safety and additional governmental agencies. The list below contains all of the agencies included in the plan at this time.

Participating Public Safety Agencies	
Norman County Sheriff's Office	Norman County Ambulance
Ada Police Dept.	Norman Co Emergency Management
Ada Fire Dept.	Perley Fire and Rescue
Borup Fire Dept.	Shelly Fire and Rescue
Gary Fire and Rescue	Twin Valley Police Dept.
Halstad Fire Dept.	Twin Valley Fire Dept.
Halstad Rescue	Twin Valley Rescue
Hendrum Fire and Rescue	
Participating Public Works and School Departments	
Norman County Highway Department	Local School District

E. Existing VHF System Configuration

All existing Norman County voice radio systems operate on VHF (150-160 MHz) frequencies, providing radio channels for law enforcement, fire, and EMS/ambulance operations. The dispatch center is physically located at the Norman County Sheriff's Office in the city of Ada, Minnesota.

The existing Norman County radio system consists of multiple VHF base and repeater stations located at different tower sites around the county. Norman County operations had converted to a VHF P25 Digital system several years ago, and the system currently works well, providing good coverage in most areas of the county. The following primary tower sites are used for the Norman County system.

- Ada/Norman County Sheriff's Office
- Flom tower (south east county)
- Hendrum and Halstad water towers (west county)

All radio equipment located at the tower or other remote sites is controlled from the dispatch center via leased telephone circuits or VHF radio link through control stations.

The primary VHF radio system infrastructure equipment used by the county is a variety of newer base and repeater stations. All stations are in good operating condition, operating on P25 digital, narrowband (12.5 kHz) radio frequencies. A 2-position Motorola MCC5500 PC-based radio control console is used in the Norman dispatch center.

The radio system consists of separate VHF channels and base/repeater stations for Sheriff/law, and fire/EMS operations, which are located at the tower sites noted above, as well as at various fire halls throughout the county. The Sheriff/law radio network consists of multiple law repeater channels and sites, along with local Minnesota Statewide Emergency Frequency (MNSEF/VLaw31) stations. The fire/EMS radio networks consist of multiple stations located at the tower sites noted above, which provides tone-and-voice paging capabilities. The radio users and dispatchers manually select the proper tower site based on the radio or service location.

2. ARMER System Technical Review

A. System Design

During the local ARMER system implementation planning process, work was done to determine what type of configuration would be appropriate for the Norman County radio system. Since the basic structure of the ARMER system as a multicast digital trunked radio system will meet the needs of Norman County agencies, they plan to utilize the system in this planned multicast configuration.

Primary planning factors:

- System infrastructure and equipment plans
- Tower site planning
- 800 MHz channel requirements
- 800 MHz talk group requirements
- Quantity of end user radios
- Tower site and Public Safety Answering Point (PSAP) connectivity

Specific details of how these system parameters will be addressed are provided in this section of the document.

i) System Infrastructure and Tower Site Planning

The ARMER system plan that exists for the Norman County area includes three tower sites within the county borders, as well as additional sites outside the county borders that will provide some level of coverage within the county. The following sites are planned for within Norman County:

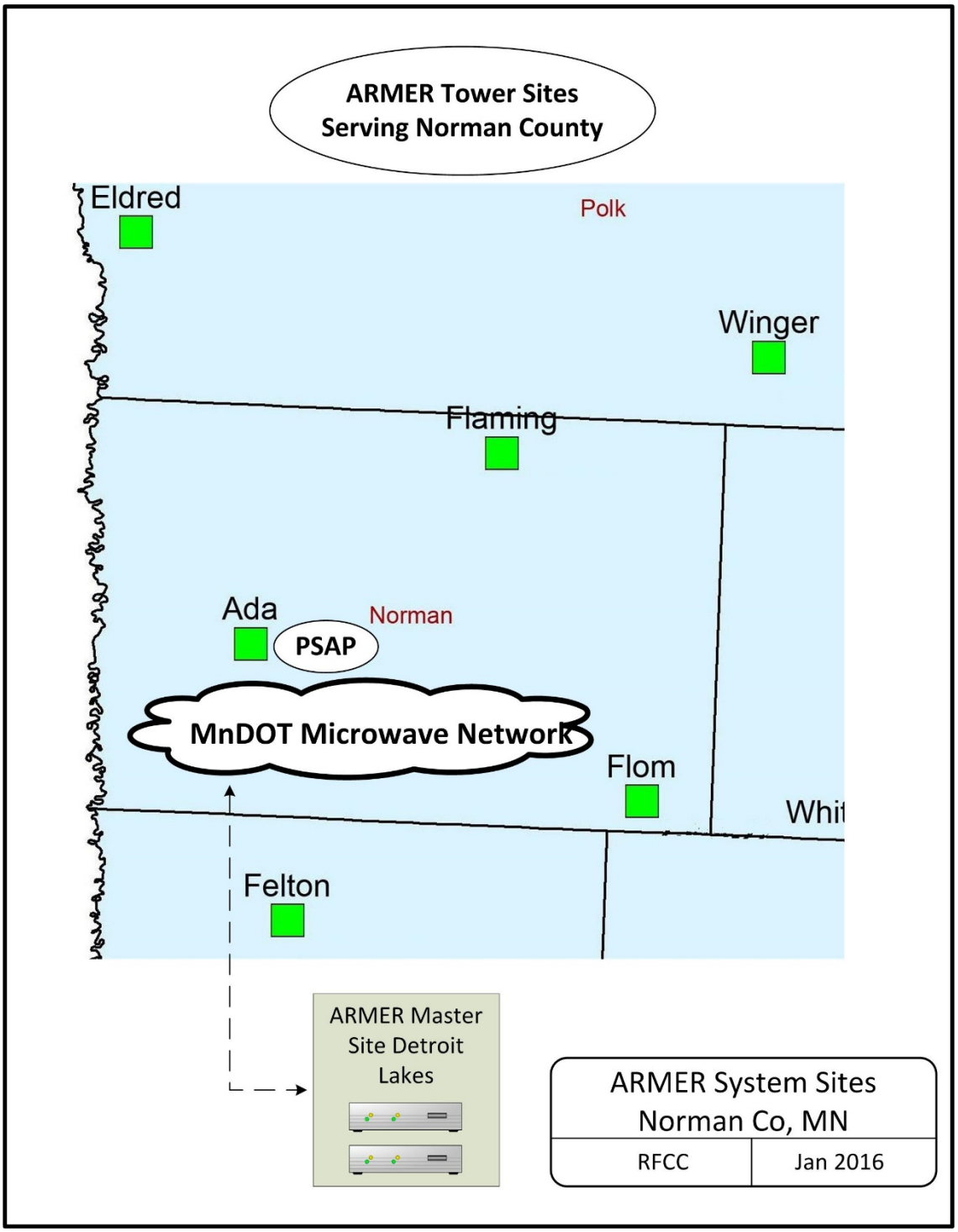
Ada	Flom	Flaming

The following sites are located outside of but near the county border and will provide coverage within Norman County:

Winger	Eldred	Felton

Refer to the diagram on the next page for a high-level overview of the ARMER tower site details for the proposed system implementation for Norman County. Actual coverage maps are provided later in this plan document.

Norman County ARMER System Architecture



ii) Local Equipment Additions and Enhancements

The ARMER planning study conducted for Norman County determined that no additional local enhancement, tower sites (coverage), or channel capacity are required or planned. The ARMER tower sites planned for Norman County and surrounding areas are expected to provide the required level of reliable coverage for the county's agencies, and no additional tower sites should be needed.

A review of the number of radios planned for use in Norman County, along with the number of talk groups and expected radio traffic levels was conducted to determine if any additional 800 MHz channel capacity will be needed at the local ARMER tower sites. Considering these factors, and the resulting traffic loading calculations included in this ARMER Plan, no channel expansion should be needed at the ARMER sites serving the county.

iii) PSAP Console Planning and Logging

The Norman County dispatch center currently utilizes a two-position Motorola MCC5500 PC-based radio console control system. This console system is now connected to the county's existing VHF system equipment, as well as two (2) 800 MHz RF control stations, for use on the NW Region talk groups, as well as some statewide talk groups.

Phase 1 of the implementation plan, which may occur in 2016, will retain the existing Motorola 5500 consoles, and install additional RF control stations for access to the new talk groups established for Norman County.

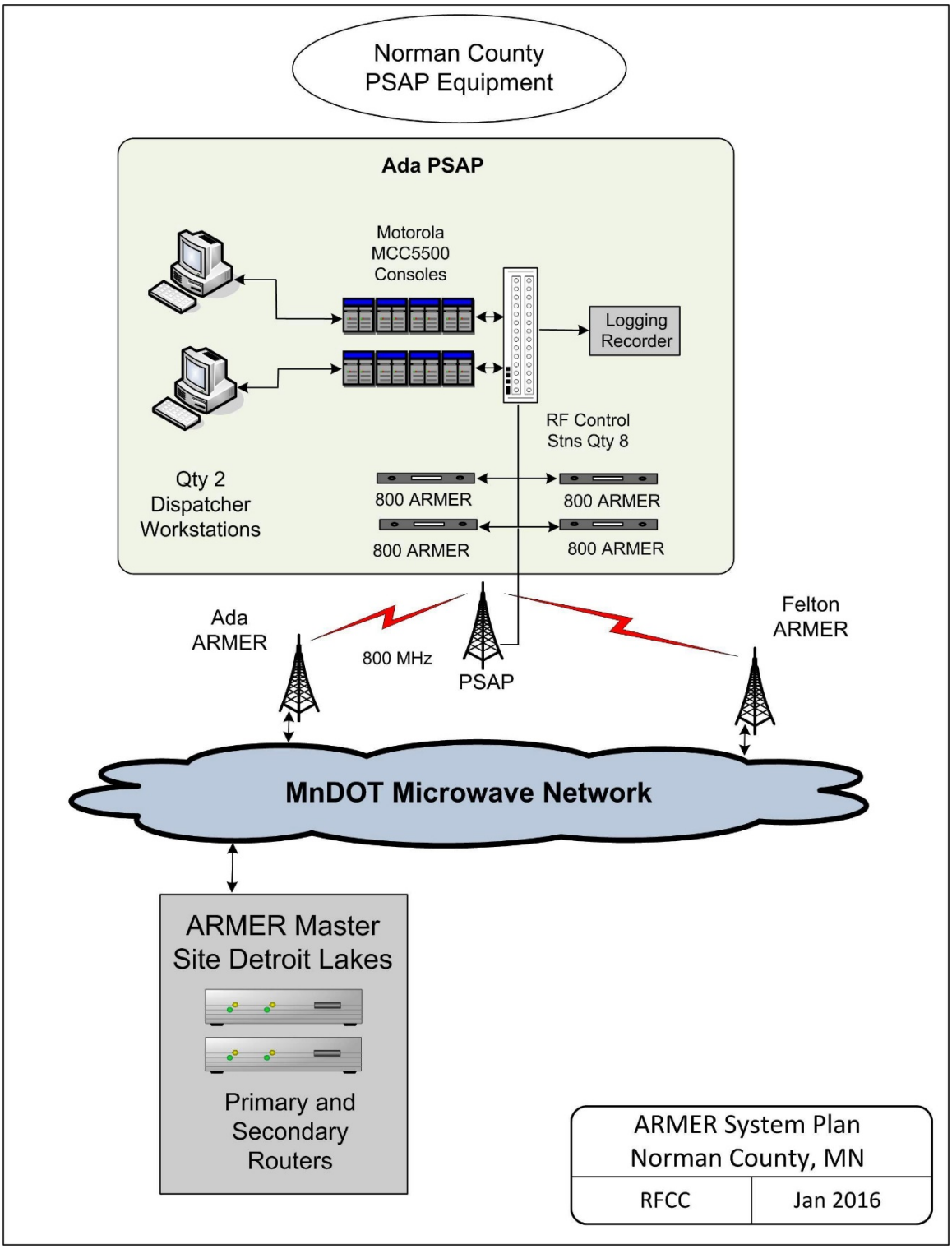
Phase 3 of the implementation plan, which is considered a long-term option (and is dependent on funding), will replace the existing consoles with a new Motorola MCC7500 console system for use with the ARMER system. The county would notify the NW Region, OTC and SECB at the time a Phase 3 transition was being planned. There are no plans for this option in the near future.

No Conventional Channel Gateway (CCGWs) ports are required for the county's initial PSAP implementation. The dispatch center will continue to use its existing local voice logging recorder for the recording of ARMER and conventional channel radio traffic. A limited number of ARMER talk groups will be recorded at the PSAP, and will be handled via local 800 MHz RF control stations.

iv) PSAP Connectivity

Connectivity between the Norman County dispatch center and the ARMER system is required for operation of the system talk groups, as well other non-trunked conventional channel resources. This will be accomplished via the 800 MHz RF control stations planned for the PSAP. No direct microwave or fiber optic link would be implemented until such time that a Phase 2 installation were to occur.

Norman County PSAP ARMER Architecture



v) Subscriber Radios

The 800 MHz subscriber (mobile and portable) radio inventory planning work conducted with Norman County agencies has identified the following maximum estimated quantities of radios to be utilized on the system:

Agency Type	Mobile	Portable	Base
Law Enforcement	12	13	7
Fire/EMS	49	87	9
Public Works	0	6	0
Totals	**61**	**106**	**16**

A maximum total of 183 mobile and portable radios, and control bases would be implemented in the system, if all agencies purchase and implement new 800 MHz radios. This includes the total potential for three year (or more) growth for the agencies within the county. A detailed inventory of the "minimum" and "maximum" mobile, portable and control stations being planned by Norman County and cost estimates is provided on the next page. Also shown are the estimated minimum and maximum quantities being considered, dependent on agency needs and funding available. Agencies throughout the county will be able to use this opportunity to purchase and implement standard radio types for use within the system, which will promote user commonality and interoperability between the various agencies.

Norman County MN ARMER Mobile/Portable Cost Estimate Worksheet

Total of 800 MHz Mobile and Portable Radio Equipment Required for System Implementation											Totals	Totals
Agency	**Dual Band Mobile @ $6,000**	**Mid-Tier Mobile Radios w/DES @ $4,000**	**Mid-Tier Mobile Radios no DES @ $3200**	**Mid-Tier Mob Radios Dual Control @ $3800**	**Dual Band Portable @ $6,000**	**Mid-Tier Port Radios w/DES @ $3,300**	**Mid-Tier Port Radios no DES @ $2500**	**Low-Tier Mobile Radios @ $2,200**	**Low-Tier Portable Radios @ $2,100**	**800 Mhz RF Control Stations @ $6,000**	**Total Agency Radio Equipment Costs (Minimum)**	**Total Agency Radio Equipment Costs (Maximum)**
Norman County Sheriff (existing)	6				5					2		
Norman County Sheriff (new)	1				2					4	$ 42,000	
Ada Police Dept (new)	2				3						$ 30,000	
Twin Valley Police Dept (existing)	2											
Twin Valley Police Dept (new)					2						$ 12,000	
Emergency Mgmt	1					1				1	$ 15,300	
Law Agency Totals (new)	**4**	**0**	**0**	**0**	**7**	**1**	**0**	**0**	**0**	**5**	**$ 99,300**	
Law Agency Totals (max)	**12**	**0**	**0**	**0**	**12**	**1**	**0**	**0**	**0**	**7**		
Ada Fire Dept (min)			2			2					$ 13,000	
Ada Fire Dept (max)			8			12				1		$ 71,200
Borup Fire Dept (min)			2			2					$ 13,000	
Borup Fire Dept (max)			3			8				1		$ 42,000
Gary Fire/Rescue (min)			3			3					$ 19,500	
Gary Fire/Rescue (max)			6			10				1		$ 58,200
Halstad Fire Dept (min)			2			2					$ 13,000	
Halstad Fire Dept (max)			8			7				1		$ 54,700
Halstad Rescue (min)			1			2					$ 9,800	
Halstad Rescue (max)			1			2						$ 9,800
Hendrum Fire/Rescue (min)			2			2					$ 13,000	
Hendrum Fire/Rescue (max)			5			5				1		$ 38,500
Norman Co Ambulance (existing)			2			2					$ 13,000	
Norman Co Ambulance (min)			0			17				1		$ 62,100
Perley Fire/Rescue (min)			2			2					$ 13,000	
Perley Fire/Rescue (max)			5			8				1		$ 48,400
Shelly Fire/Rescue (min)			2			2					$ 13,000	
Shelly Fire/Rescue (min)			6			3				1		$ 35,100
Twin Valley Fire (min)			2			2					$ 13,000	
Twin Valley Fire (max)			6			12				1		$ 64,800
Twin Valley Rescue (min)			1			3					$ 13,100	
Twin Valley Rescue (max))			1			3						$ 13,100
Fire/EMS Agency Totals (min)	**0**	**0**	**21**	**0**	**0**	**24**	**0**	**0**	**0**	**0**	**$ 146,400**	
Fire/EMS Agency Totals (max)	**0**	**0**	**49**	**0**	**0**	**87**	**0**	**0**	**0**	**9**		**$ 497,900**
Norman County Highway Dept								4			$ 8,600	$ 8,600
Norman County Schools								2			$ 4,300	$ 4,300
Public Works Agency Ttls	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**$ 12,900**	**$ 12,900**
GRAND TOTALS (min)	**12**	**0**	**21**	**0**	**12**	**25**	**0**	**6**	**0**	**7**	**$ 258,600**	
GRAND TOTALS (max)	**12**	**0**	**49**	**0**	**12**	**88**	**0**	**6**	**0**	**16**		**$ 510,800**

Total Radios (min)	**83**
Total Radios (max)	**183**

vi) System Talk group Planning and ID Requirements

Norman County agencies have conducted several radio implementation meetings to discuss talk group requirements and have developed a preliminary fleet map for the implementation of the new system for county agencies. In addressing this issue, the following basic outline will be considered:

- Primary and secondary dispatch talk groups for law enforcement
- Primary and secondary dispatch talk groups for fire service
- Primary and secondary dispatch talk groups for EMS service
- Individual dispatch talk groups for non-traditional public safety agencies
- Countywide talk groups for special events
- Countywide talk groups for interoperability
- Individual talk group(s) for each participating agency
- Non-trunked tactical talk groups for "Scene of Action" use

Refer to Attachment 1 for a copy of the preliminary Norman County fleet map. A total of 40 talk groups have been identified for Norman County agencies' near-term and long-term needs.

A total of 184 ARMER system IDs are expected for the Norman County implementation, which includes three year estimated totals:

- 176 for mobile and portable subscriber units total expected on the system for all agencies
- 8 for PSAP operations

vii) 800 MHz Frequency Planning

The ARMER system sites within Norman County will operate in a trunked multicast mode of operation. The state has planned for a group of five 800 MHz frequency pairs to be implemented at each site, and these channels will be shared by all users of the system/sites in the area. These users will include:

- Norman County agency users
- Neighboring county agency users
- State of Minnesota agency users

The county recognizes that in a trunked radio system it is important that the tower sites be established with a sufficient number of 800 MHz channels to ensure that all radio users are able to access the system when needed for both routine and emergency radio communications traffic. However, a balance must be established between providing a sufficient number of channels and the cost of implementing those channels, as well as the increasingly limited number of 800 MHz frequencies available for the channels.
With a maximum radio inventory of approximately 367 local radio units planned for this system, it is expected that the planned five channels will be sufficient at the Norman County ARMER sites.

When neighboring county and state radios are added to this total, it is possible that a greater number of channels would be needed at the sites. To better calculate the expected traffic loading the Norman County

radio would have on the local tower sites, the industry-standard Erlang-C process has been used in this plan to determine the expected voice traffic on the ARMER system. This process can be used for both telephone and radio networks, where a shared and limited number of communications paths (trunks) are used to handle the voice traffic.

A full discussion of how this process works is beyond the scope of this plan; however, several critical factors are used to determine the expected radio traffic usage of the tower sites:

- Number of local (Norman County) radios
- Number of neighboring county agency radios that are likely to use any given tower site
- Number of State of Minnesota agency radios that are likely to use the sites
- Number of 800 MHz radio channels available at the site(s)
- Estimation of how many radios are in use/service at a point in time
- Average radio transmission length of time (in seconds)
- Average expected number of transmissions from the radios (per hour)

When these radio inventory and usage parameters are entered into the Erlang calculation formula, a resulting Grade of Service (GOS) parameter is generated, indicating the calculated or expected availability of the radio system channels for the radio users. This GOS number could also be viewed as a "likelihood of getting a busy signal" when pressing the transmit button on a radio. The lower the number, the better GOS.

Public Safety Wireless Network (PSWN), the governmental agency which establishes operational standards and recommendations for public safety radio communications, has established a minimum GOS for these radio systems at "equal or less than two percent."

In other words, there should be less than a two percent chance that a radio user's transmission would be blocked by the system due to radio traffic levels. This could also be viewed as "greater than 98 percent" chance of a radio user's transmission being properly handled by the system when needed. This two percent GOS is considered a "Standard Busy Hour" level of usage. It should be noted that many agencies have elected to move beyond the PSWN recommendation and a common goal in Public Safety today is a GOS of 1 or better.

The parameters used for the Norman County radio traffic calculations are as follows:

- Quantity 183 Norman County radios (three year maximum)
- Quantity 100 neighboring county radios (interoperability use in Norman County)
- Quantity 100 State of Minnesota agency radios
- 33 percent estimate percentage of how many radios are in use/service at one time
- 8 seconds average radio transmission length of time (in seconds)
- .51 average expected number of transmissions from the radios (per hour)
- 1.5 seconds average busy time (in seconds)

The GOS is then calculated for each site, based on the number of radio channels planned for the sites, to show the impact of the differing number of channels that would be implemented at the sites.

This formula does not necessarily incorporate any parameter for the number of talk groups being planned for use by the local county agencies. The number of talk groups can have a dramatic effect on system loading, as the larger the number of talk groups, the greater potential for spreading the traffic among the RF channels. Nonetheless, it remains the most reliable method for calculating radio traffic levels.

The table shown below contains the predicted 800 MHz radio channel and tower site traffic loading for typical operational radio activity for the sites that are located within Norman County, based on the parameters in the previous data table:

Predicted 800 MHz Standard Voice Channel Traffic Loading for Norman County

	Number of Voice Channels Normal Conditions				
Site and GOS	**1**	**2**	**3**	**4**	
Ada	27.3%	3.1%	0.2%	0.0%	
Flaming	25.1%	2.6%	0.2%	0.0%	
Flom	26.2%	2.8%	0.2%	0.0%	

One channel at each site is allocated as the Control Channel, which is not used for voice and not reflected in the table above. As shown, a GOS of better than one percent is achieved with three channels per site (highlighted in yellow), less that the total quantity being installed by the state at each of the county sites. This would indicate that no additional channels should be needed at the Norman county ARMER sites.

The above calculations are again based on the PSWN "Standard Busy Hour" calculations, and do not account for the increased traffic loads that would be expected during emergency periods (tornado, large fire, multiple events). PSWN has established a recommendation of an additional 20 percent capacity for these events. Refer to the following table for the predicted ARMER system traffic loading and GOS for the

Norman County sites when the PSWN 20 percent additional emergency operations data is incorporated into the usage calculations.

Predicted 800 MHz Voice Channel Traffic Emergency Loading for Norman County

	Number of Voice Channels Emergency Conditions				
Site and GOS	**1**	**2**	**3**	**4**	
Ada	51.7%	9.6%	1.4%	0.2%	
Flaming	44.6%	7.6%	1.0%	0.1%	
Flom	49.7%	9.1%	1.3%	0.1%	

As shown, three voice channels remain adequate to maintain the minimum recommended GOS during emergency traffic periods at all sites. The State of Minnesota will be implementing four voice channels at all sites, so no additional channels should be needed at the ARMER sites. Because of the typical number of talk groups planned by Norman County agencies, we do not believe that Norman County's implementation will have a significant impact on the system loading at the remaining sites, and should not be a factor requiring additional RF channel capacity. This also includes additional future capacity for the local sites in the event that other governmental agencies (schools, transportation) elect to join the system in the future.

The State of Minnesota has obtained the 800 MHz frequency assignments for the basic five channel configuration needed for the three tower sites within Norman County. The table on the following page is the current available 800 MHz frequency data for the Norman County ARMER tower sites. The channels listed as "Norman Co." have been assigned to Norman County via the state's 800 MHz NPSPAC channel plan, and while they have not yet been assigned to a specific site, they could be used for the system at some point. Channels and sites with a "PS" listed have been assigned a non-NPSPAC 800 MHz channel.

800 MHz Frequency Assignments for ARMER Sites in Norman County

Site	Chan 1	Chan 2	Chan 3	Chan 4	Chan 5
Norman County	5	25	62	197	217
Ada	73	223	PS	PS	PS
Flaming	112	PS	PS	PS	PS
Flom	35	103	131	165	224

(PS = Public Safety/Non-NPSPAC channels)

viii) Legacy VHF Equipment

The county will continue to operate and control a number of existing or updated VHF radio system channels, for local paging and interoperability. Emergency paging for fire and EMS operations is currently conducted via county-owned VHF system(s). These existing systems will be retained and modified or expanded as needed for improved paging coverage. This expansion will very likely include a relocation of some equipment to ARMER tower sites for improved coverage and reliability.

In addition, the existing law enforcement VHF repeater channels may be utilized for local interoperability between VHF and 800 MHz radio system users.

B. Coverage Review

i) Design Parameters

The overall system design and resulting communications coverage of the ARMER system can be affected by the following goals and concerns:

- Desire to obtain in-building coverage as best as possible in more densely populated areas of the county
- Need to cover the geographic area with a reasonable number of tower sites
- Cost of developing new tower sites, including structures, land acquisition, Federal Aviation Administration (FAA)/FCC/National Environmental Policy Act (NEPA) considerations, as well as local zoning
- Availability of and costs associated with existing and planned tower sites

The existing and planned tower sites planned for this project are being provided by the State's ARMER network. The coverage goal for Norman County is 95 percent "on-the-street/outdoor" reliability to a portable radio with a standard antenna held at a height of five feet above ground level.

ii) Coverage Propagation Mapping

The planning for this project included coverage modeling and propagation analysis work to determine if the basic tower site planning assumptions were valid and could be expected to result in a system that would meet Norman County's coverage needs.

These coverage maps were generated with the RadioSoft© ComStudy2© software program. The modeling for the coverage analysis was done with the Longley-Rice propagation models. The coverage maps were done for portable talk-in and talk-out usage, as this is the most difficult coverage scenario. If the basic system design shows the portable goals are attainable, then mobile coverage should not be a concern.

Provided below are the parameters used for the coverage modeling:

Site Parameters	**Value**
Transmit Antenna Gain	9 db, omnidirectional
Transmit Output Power (into main line)	35 watts
Transmission Line Size (tower over 300 feet)	1.25 inch Heliax®
Transmission Line Size (tower under 300 feet)	7/8 inch Heliax®
Transmission Line Length	Based on tower height
Receive Antenna Gain	9db, omnidirectional
Receive Tower Top Amplifier Gain	5db
Receive Transmission Line Size	7/8 inch Heliax®
Receive Transmission Length	Based on tower height
Field Unit Parameters	**Value**
Type of Unit	Portable radio
Environment	Outdoors, on-street
Antenna Height	5 feet
Transmit Power	3 watts

Preliminary coverage maps for portable radio talk-in and talk-out are shown on the following pages. The color coding for these maps is:

- Light Green: Reliable signal coverage 40 dBu or greater
- Yellow: Reliable signal coverage 33 dBu or greater
- Red: Marginal signal coverage 19 dBu or greater
- White: No useable coverage expected 10 dBu or less

Five predicted-coverage maps are provided in this plan; all maps utilize all tower sites within and outside of the county that provide coverage in the target service area:

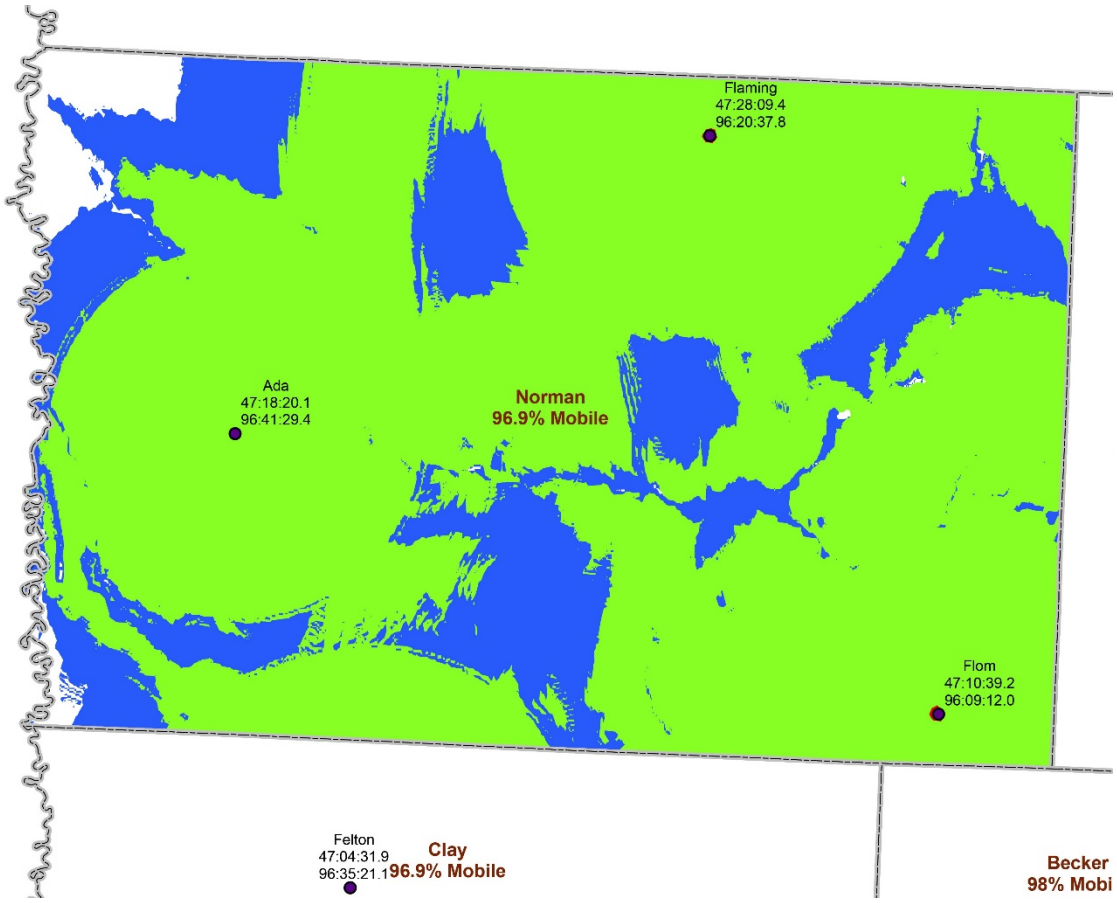
1. State of Minnesota prepared coverage map for Norman County (from 2008).
2. Mobile (vehicle-mounted) radio coverage (prepared by RFCC)
3. On-Street portable radio coverage
4. In-building countywide coverage
5. In-building coverage in the City of Ada area

As shown in the predicted coverage maps on the following pages, the potential coverage for the system, using the selected sites and parameters is very good and is expected to meet the project coverage goals. The first map presented in this plan is the predicted coverage map provided by the State of Minnesota for the Norman County geographical area.

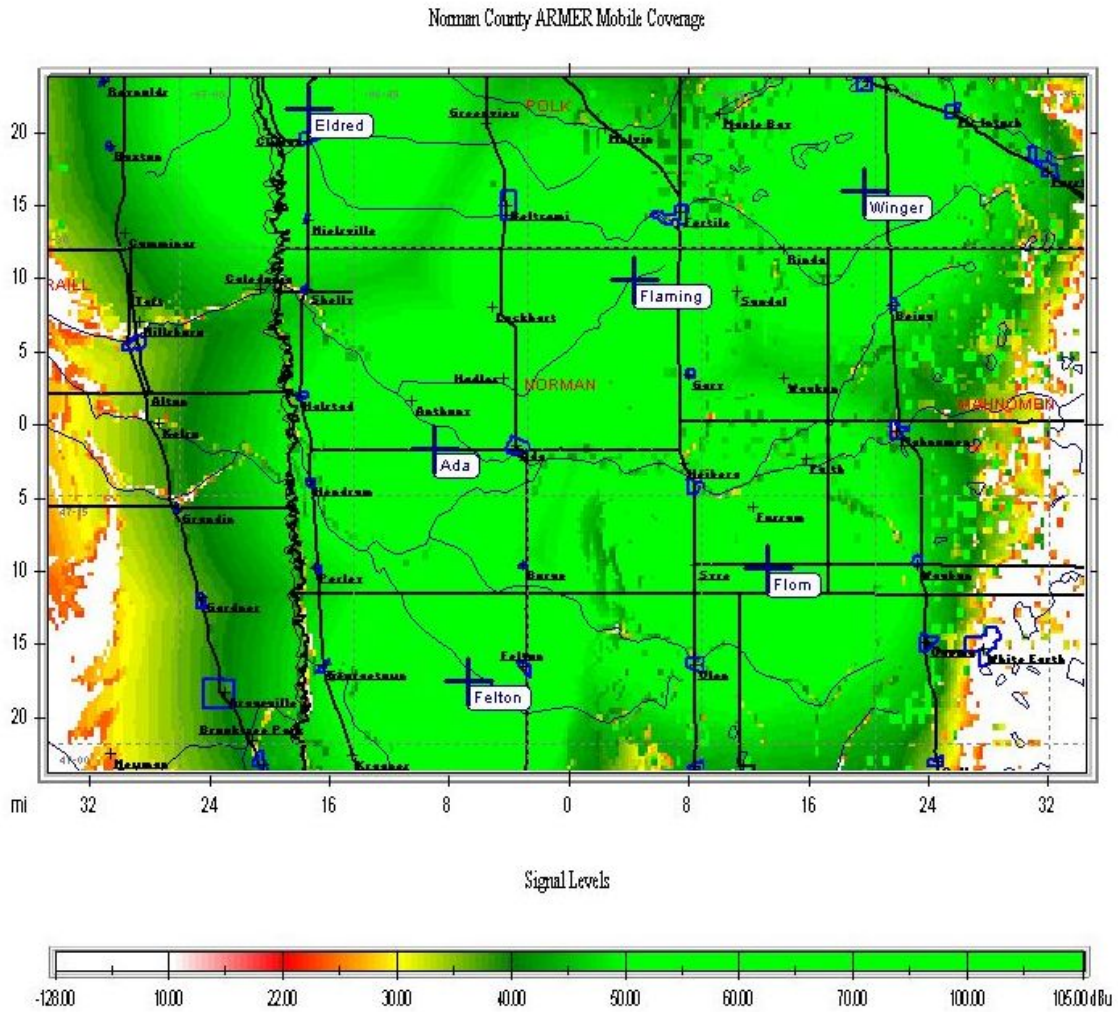
All maps were created using RadioSoft© ComStudy2© software program, and the modeling for the coverage analysis was done with the Longley-Rice and Okumura propagation models. The modeling parameters used by the State and RFCC are similar, however a somewhat different color-coding scheme is used. The State's maps use green areas represent a 40 dBu level of radio signal, which can generally be translated into a level where reliable portable and mobile radio coverage can be expected. The areas shaded in blue represent a 33 dBu level of radio signal, which typically reflects mobile (vehicle-mounted) radio coverage.

The areas shaded in white reflect a lower level of signal where coverage cannot be predicted, and can be interpreted to represent very weak areas of coverage. The only areas of the county where this is predicted to exist are in the far west and east corner of the county, and are not expected to be problematic.

Map 1: Norman County Predicted ARMER Coverage
(Originally provided by the State of Minnesota in 2008; this map is provided for reference only, and is considered outdated due to some changes in tower site locations that have been established since the time of original publication).

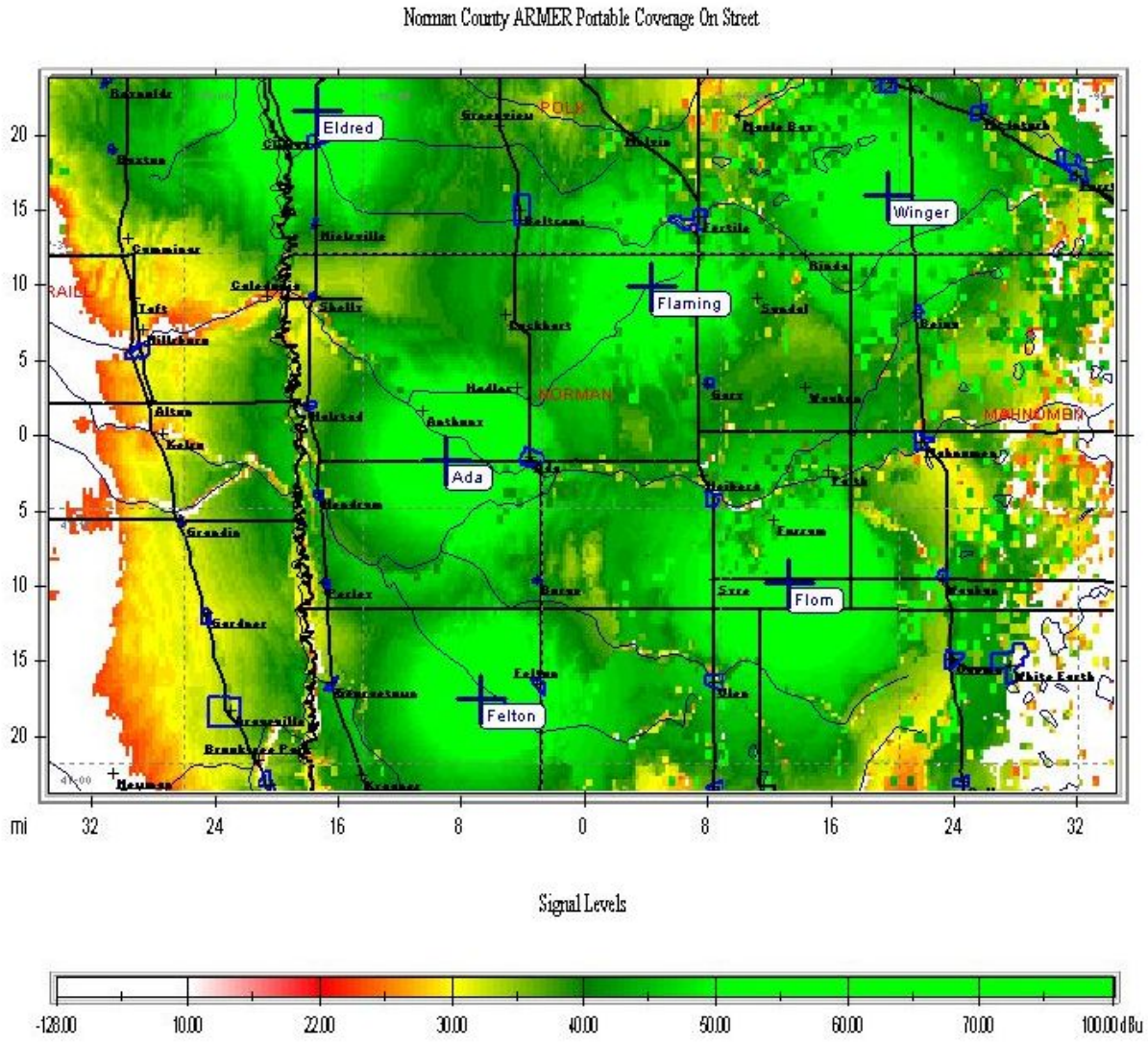


Map 2: The map shown below, prepared by RFCC for the county's ARMER planning process, demonstrates the predicted coverage to be expected for Mobile (vehicle-mounted) radios from the ARMER tower sites to be located within Norman County, including the first-tier sites outside the county borders.



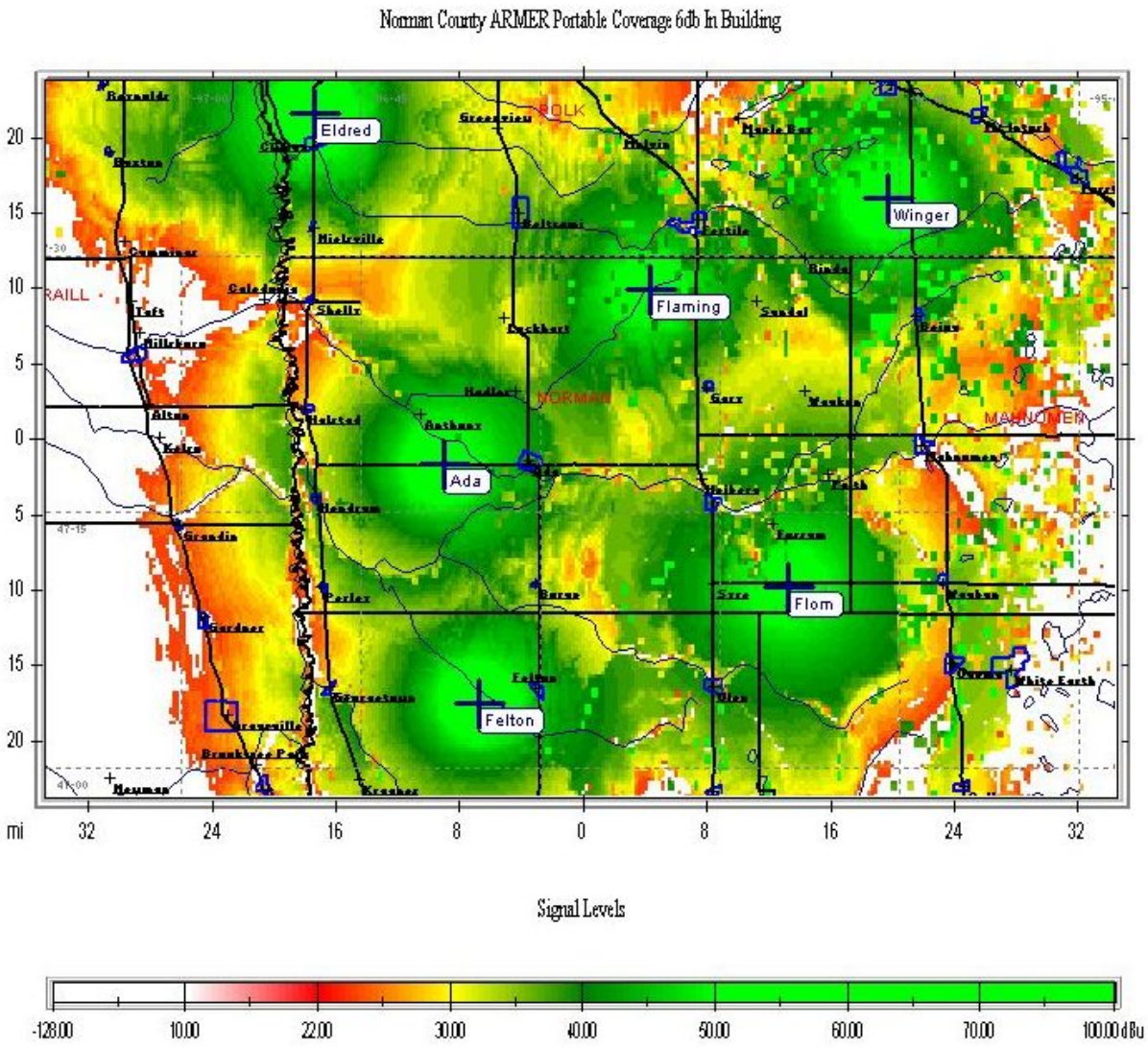
The predicted mobile radio coverage throughout all of the county is excellent with the planned tower sites, and coverage within the county is enhanced by tower sites outside of the county borders.

Map 3: The map shown below demonstrates the predicted coverage to be expected for portable (handheld) radios "On Street/Outdoors" from the ARMER tower sites to be located within Norman County, including the first-tier sites outside the county borders.



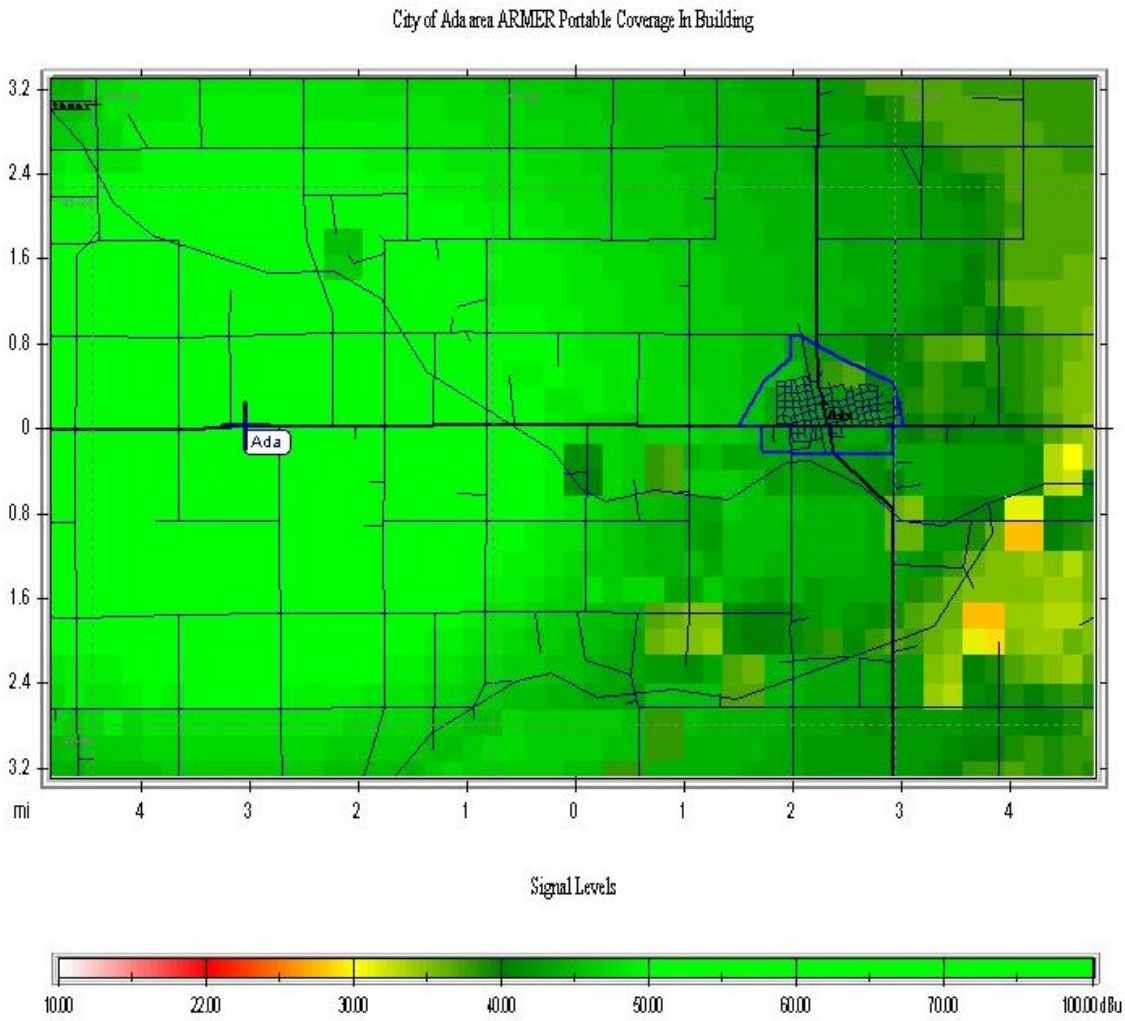
The predicted portable radio coverage throughout most of the county is very good with the planned tower sites, and coverage within the county is enhanced by tower sites outside of the county borders.

Map 4: The map shown below demonstrates the predicted in-building (6db loss) coverage to be expected for portable/hand held radios in Norman County from the ARMER system when all tower area sites in the region are included in the calculations.



The predicted 6db in-building coverage for Norman County is good in most areas, including the city of Ada (county seat). There are concerns in the far northwest and southwest corners of the county (Shelly and Perley), near the border with North Dakota. Refer to the map on the next page for more detail of the predicted coverage in the Ada area.

Map 5: This map demonstrates the predicted in-building (6db loss) portable radio coverage to be expected in the City of Ada (county seat) area from the ARMER system when all tower area sites in the region are included in the calculations.



The blue lines on the map indicate the city limits of Ada, and the dark blue lines indicate highways and main roads. The predicted in-building coverage should be good within the city, although this will depend on the type of building involved. The closest ARMER tower site (Ada) is 5 miles from town, but the terrain is relatively flat, allowing good signal propagation.

C. Contingency Planning

In planning for ARMER system migration and connecting to the ARMER system the following failure modes are being addressed:

1. Loss of connectivity between the dispatch center and the ARMER system.
2. Loss of microwave network (to ARMER tower sites), which will result in the system reverting to Site Trunking mode.

The primary method of redundancy for Norman County operations will be the implementation of multiple 800 MHz RF control stations at the main PSAP location. This would typically include one control station for each primary public safety discipline, such as:

- Law operations
- Fire operations
- EMS operations

Because the planned PSAP equipment for Norman County will use 800 MHz RF control stations (vs. microwave, fiber optic or T-1 links), these stations will have access to multiple ARMER tower sites, and therefore the loss of one local site should not cause a loss of ARMER system access for the dispatch center.

If scenario 2 occurs, (local ARMER sites lose connectivity to the master site in Detroit Lakes, or the master site experiences a failure), the sites will revert to a Site Trunking mode, which results the sites operating independently from each other. The effect on field units is that they can only communicate with each other if they are in range of the same tower site. If they are not, communication is not possible. This is due to the local sites and network operating in a multicast mode of operation (rather than simulcast).

The resulting effect on the dispatch center is the same; however, Norman County will be implementing multiple RF control stations at the dispatch center, with access to several of the tower sites within the county. The challenge with this approach is that the number of stations could be cumbersome and difficult to manage, depending on the number of talk groups incorporated in the backup station plan.

No final determination has been made for Norman County as to the specific number of 800 MHz RF control stations that will be implemented at the PSAP, but a final plan will be based on the county's final system planning.

D. Training

ARMER system implementation and associated operational standards require that all personnel who will be using the system receive proper training on the use, capabilities, and features of the system. Trunked radio systems, including the ARMER system, have operational requirements that differ from traditional conventional repeater systems, and it is necessary that dispatchers and end users be trained on the capabilities and proper operation of the system.

Norman County agencies recognize this need, and are planning to enlist the services of independent contractors recognized by the state as proficient in the operation of the ARMER radio system. The program will include training for the following workgroups and functions:

- Radio end user training
- PSAP dispatchers
- Local system administrator
- Interoperability

Funding for the end user and dispatcher training has been included in the project budget.

E. Interoperability

The need for interoperability exists on multiple levels within public safety radio operations. Establishing or enhancing interoperability at each of these levels has been a primary consideration in Norman County's decision to migrate to the ARMER system. The areas specifically addressed are:

Internal: Between the many agencies within the general jurisdictional are of Norman County (i.e. law enforcement, fire service, and EMS agencies). The implementation of a common 800 MHz trunked radio system for all public safety agencies, as well as other units of local government, should resolve most interoperability communications issues that may currently exist. To make the ARMER system work effectively will require careful fleet map planning and the proper training of all radio system users.

External: Between the county agencies and other public safety (law, fire, and EMS) and government agencies operating both within and sharing borders with Norman County, to include the following:

- Clay County agencies
- Polk County agencies
- Mahnomen County agencies
- Becker County agencies
- Minnesota State Patrol, Mn/DOT, Department of Natural Resources (DNR) enforcement, and fire agencies
- Traill County North Dakota law and fire agencies
- Federal law enforcement and fire agencies

Most of the agencies within the Northwest Region of Minnesota have been moving forward with the ARMER participation planning and implementation process, which will improve communications

interoperability for those agencies. Norman County is currently bordered by county agencies operating both on 800/ARMER and VHF systems, which will require a combination of solutions to ensure reliable communications between all agencies in the region, regardless of radio system type. Norman County will have neighboring agencies operating on both types of systems for the foreseeable future.

- North Dakota agencies, which border the west side of Norman County, will remain on VHF long-term. As such, Norman County agencies will need to retain VHF capabilities for interoperability with these agencies.

To accommodate communications between agencies that may operate with Norman County that are not on the ARMER system in the short-term using legacy system technology, access to the ARMER radio system, a variety of interconnectivity options will be needed:

- The most basic requirement will be for Norman County to continue operation of their VLaw31 155.4750 MHz base station. This can be patched to an 800 MHz talkgroup via the PSAP console system when required.
- Some of the existing Norman County Law Enforcement repeater channels will be retained, and will become local "interoperability" channel resources, capable of being patched to the ARMER system, to allow local VHF radio users a simple and effective link to county agencies operating on the ARMER system.

F. Standards

The primary technology standard applied to this project is that of the Project 25 (P25) ARMER system. The P25 standard is specifically for digital radios systems for public safety. In this case, the Phase 1 Frequency Division Multiple Access (FDMA) standard is currently in use.

Norman County will adopt and comply with the standards published by both the State Radio Board and the Northwest Minnesota Regional Radio Board. Use of these standards will ensure that users in Norman County will adopt the same naming conventions, talkgroup usage, and other operational and technical standards that are in use throughout the state.

G. Alarms and Monitoring

Mn/DOT – ARMER will have the primary tower site alarm monitoring for sites in the county.

H. Maintenance

Maintenance of the primary ARMER tower sites within Norman County will be handled by the Mn/DOT staff. Norman County will contract with a local authorized service facility for maintenance of any additional 800 MHz system equipment planned for the Norman County implementation, including the PSAP equipment.

I. System Administration

Local system administration for Norman County will be the responsibility of the Norman County Sheriff's Office.

J. Other Local Enhancements

The primary local enhancements to the planned system implementation are:

- ☐ No tower site or 800 MHz channel expansion local enhancements are planned for this system implementation

3. Project Costs and Budget

Funding for implementation of the ARMER system within Norman County is being considered from three different sources:

- Local bonding
- Local levy
- Grant opportunities

Grant funding has been received for the purchase of a number of 800 MHz portable radios for the Sheriff's office. Funding for the remaining system infrastructure equipment has not yet been finalized, but is being reviewed by the county and considered for year 2016 or beyond.

Project Cost Estimates:

Item/Category	Estimated Costs (Phase 1)	Estimated Costs (Phase 2)	Estimated Costs (Phase 3, long term plan)
MCC5500 Console Modifications and 800 MHz RF Control Stations	$85,000	NA	NA
MCC7500 Console and Connectivity (Future, long term)	NA	NA	$375,000
800 MHz Subscriber Radios (Law Enforcement)	$99,300	NA	NA
800 MHz Subscriber Radios (Fire & EMS – see Notes below)	$146,400	$351,500	NA
Project Management	$ 10,000	$ 5,000	$20,000
Grand Total Estimated Costs	**$340,700**	**$356,500**	**$395,000**

Notes: The Phase 1 costs shown for Fire/EMS agencies provides two 800 MHz ARMER-capable portable radios to each agency for basic ARMER system use.

Phase 2 provide all remaining 800 MHz ARMER mobile and portable radios for the Fire/EMS agencies within the county. The costs in Phase 1 and 2 should be added together to understand the total cost for Fire/EMS agency radios.

Phase 3 replaces the existing MCC5500 radio dispatch consoles with new MCC7500 consoles and provides connectivity into the ARMER network.

4. Project Implementation

A. Schedule

The implementation of the ARMER radio network for an organizational group the size of Norman County, with the number of agencies, tower sites, and quantity of radios being planned, is typically expected to require a 12-month period to complete. This process will encompass several work categories, including:

- ☐ Preliminary planning processes and approvals
- ☐ Funding approvals
- ☐ Detailed project planning and final system design
- ☐ Establish contract with vendor for equipment and services
- ☐ FCC licensing
- ☐ Equipment installation and configuration
- ☐ Radio user training
- ☐ System cut over

On the following page is an estimated schedule for the implementation of the ARMER system for Norman County agencies. Please note that the schedule only tentative at this time, and is subject to many factors, including Norman County securing the funding to move forward with the project.

B. System Cut Over Plan

Norman County would continue to utilize their existing VHF radio systems during the installation of the ARMER system equipment, as well as 800 MHz RF control stations on the ARMER system. The PSAP console equipment would be configured to operate both systems (legacy VHF and ARMER) until the ARMER system, as well as mobile and portable radios, are fully programmed, installed, and radio users trained for use of the new system.

Due to the expected overlap in timing with neighboring agencies, and the conversion from VHF to ARMER, the need for VHF radios will continue for several years. As such, county agencies will retain VHF radios in many vehicles, along with the new 800 MHz ARMER radios.

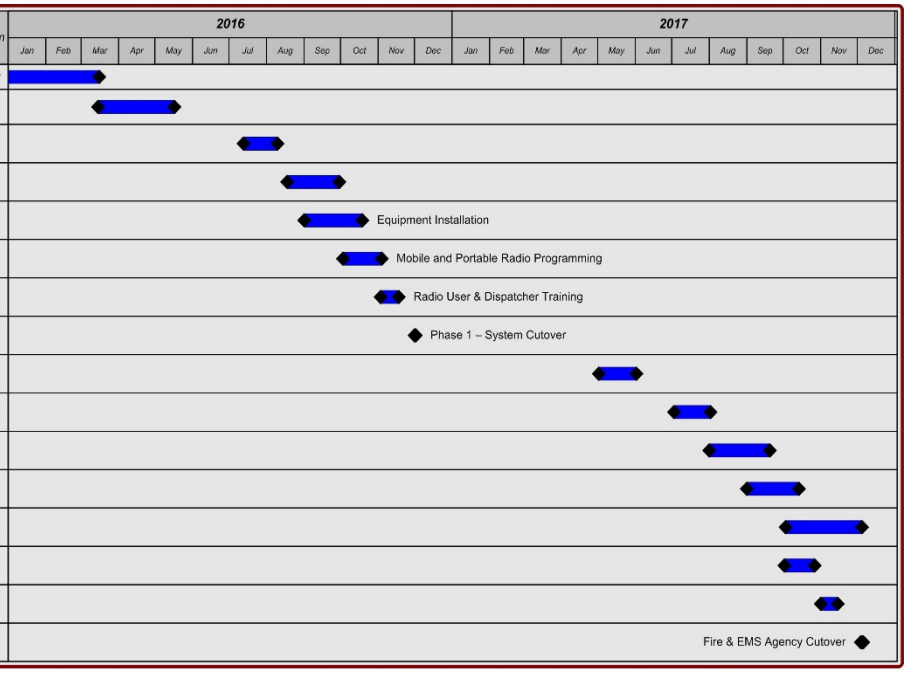
Norman County Draft Implementation Schedule

Implementation of the ARMER system for an agency typically requires 12 to 18 months from start to completion if new PSAP console equipment is required, and also depends on the number of radios and agencies involved in the process.

The Norman County ARMER implementation will be a "phased" process, as discussed earlier in this plan. The County is planning the Phase 1 implementation for 2016. The Phase 2 implementation (Fire and EMS agencies) will be considered in 2017, depending on the funding options available for the purchase of the required equipment. The Phase 1 process will allow the county's law enforcement agencies to migrate quickly, to be followed by fire and EMS agencies as funding allows for the purchase of new ARMER-capable mobile and portable radio equipment. No plans for MCC7500 consoles in dispatch are included in this schedule.

Norman County Proposed ARMER Radio System Project Schedule

ID	Task Name	Start	End	Duration
1	ARMER Participation Plan Development	11/6/2015	3/15/2016	18.6w
2	**ARMER Plan Approvals (RRB, SRB/OTC)**	3/15/2016	5/16/2016	9w
3	**Phase 1 System Design & Planning**	7/13/2016	8/9/2016	4w
4	Order Equipment from Vendor	8/18/2016	9/29/2016	6.2w
5	Equipment Installation	9/1/2016	10/18/2016	6.8w
6	Mobile and Portable Radio Programming	10/3/2016	11/3/2016	4.8w
7	Radio User & Dispatcher Training	11/3/2016	11/17/2016	2.2w
8	**Phase 1 – System Cutover**	12/1/2016	12/1/2016	.2w
9	**Phase 2 – Fire & EMS Radios**	5/2/2017	6/1/2017	4.6w
10	Order Equipment from Vendors	7/3/2017	8/1/2017	4.4w
11	Equipment Order Processing & Mfgr	8/1/2017	9/19/2017	7.2w
12	Equipment Delivery	9/1/2017	10/13/2017	6.2w
13	Radio Installations	10/3/2017	12/4/2017	9w
14	Radio Programming	10/2/2017	10/26/2017	3.8w
15	Radio User Training	11/1/2017	11/14/2017	2w
16	**Fire & EMS Agency Cutover**	12/4/2017	12/5/2017	.4w



Revised 2-16-2016

Attachment 1: Norman County Fleet Map

	Law Enforcement Operations	TG Alias
1	Norman County Law 1	NR Law 1
2	Norman County Law 2	NR Law 2
3	Norman County Law 3 Encrypted	NR Law 3E
4	Norman County Law TAC 1	NR Law TAC 1
5	Norman County Law TAC 2	NR Law TAC 2
6	Norman County Law Car-Car	NR L C2C
7	Norman County Emergency Management	NR EM
8	Norman County Law Admin	NR LW Adm
	Fire and EMS Operations	**TG Alias**
9	Norman County Fire 1 (Main)	NR Fire 1
10	Norman County Fire 2	NR Fire 2
11	Norman County Fire TAC 1	NR F TAC 1
12	Norman County Fire TAC 2	NR F TAC 2
13	Norman County Fire TAC 3	NR F TAC 3
14	Norman County Fire TAC 4	NR F TAC 4
15	Norman County Fire TAC 5	NR F TAC 5
16	Norman County EMS 1 (Main)	NR EMS 1
17	Norman County EMS 2	NR EMS 2
18	Norman County EMS TAC 1	NR E TAC 1
19	Norman County EMS TAC 2	NR E TAC 2
	Local Interoperability	**TG Alias**
20	Norman County Announcement Group	NR ANNC ALL
21	Norman County Emergency Button	NR EM BT
22	Norman County Emergency 911	NR 911
23	Norman County Public Safety Statewide Roam	NR PS Roam
24	Norman County All Statewide Roam	NR All Roam
25	Norman County Public Safety Common 1	NR Com 1
26	Norman County Public Safety Common 2	NR Com 2
27	Norman County Public Safety Common 3	NR Com 3
28	Norman County Event 1	NR Event 1
29	Norman County Event 2	NR Event 2
30	Norman County Event 3	NR Event 3
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Attachment 1: Norman County Fleet Map (continued)

	Public Works and Schools	TG Alias
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33	Norman County Highway Operations 2	NR Hwy 2
34	Future County Agency use	NR TBD
35	Future County Agency use	NR TBD
36	Future Public Works 1	NR PW 1
38	Future Public Works 2	NR PW 2
39	Norman County School Transportation 1	NR School 1
40	Norman County School Transportation 2	NR School 2

All regional and statewide interoperability talk groups will be incorporated into Norman County radios as defined by ARMER standards.

Attachment 2: References

1. State of Minnesota "Local Agency and Regional Planning and Contracting for ARMER Participation" dated September 8, 2008, as published at www.srb.state.mn.us
2. Federal Engineering "Radio System Needs Assessment and Alternatives Report for Norman County" December, 2009
3. RadioSoft™ ComStudy2™ Terrain Database
4. ARMER Status Map, as posted at http://www.srb.state.mn.us/ dated April 2, 2014
5. Region 22 (Geographic State of Minnesota) 800 MHz Regional Planning Committee "Regional Band Plan" as filed with the FCC, General Docket 87-112; 800 MHz NPSPAC Plan Amendment WT Docket No. 20-55; NPSPAC PR Docket No 93.130 dated June 2009

REQUEST FOR SPECIAL
WIDE AREA SITE ACCESS
FOR AN ARMER TALKGROUP

Talkgroup/ Announcement Group Name(s): Norman County All Statewide Roam (NR All Roam)

If Announcement Group List all Contained Talkgroups: _____

Sites Requested:

☒ Statewide (Requires Statewide Radio Board Approval)

☐ Other (Specify Sites or Regions):

Talkgroup Owner Agency (Include Point of Contact Information):

Agency Name: Norman County Sheriff's Office
Contact Name: Sheriff, Norman County (Jeremy Thornton)
Address: 15 – 2nd Ave E
Ada, MN 56510
Phone: 218-784-7114
Email: Jeremy.thornton@co.Norman.mn.us

Talkgroup or Announcement Group Type (Check all that Apply):

☐ Shared

☐ Private

☒ Special Roaming Only Talkgroup – Occasional Use.

☐ Special Operations Tactical Talkgroup – Occasional Use. **If yes,** describe or list the counties or regions covered by a mutual aid agreement, memorandum of understanding, joint powers agreement, incident response plan or other relevant agreements here: _____

☐ Main Dispatch or Tactical Talkgroup – Day to Day Use. If yes, applicant must demonstrate that the users of this talkgroup conduct their "Normal Day to Day Business Operations" throughout the requested coverage area. Describe or list the counties or regions where the users of this talkgroup conduct their "Normal Day to Day Business Operations" here: _____

** For additional information, please refer to: State Standard 2.9.0 and State Standard 2.11.0*

Describe the users, entities or agencies that will operate on this talkgroup:

The "NR All Roam" talk group is intended to allow all Norman County agency personnel (public works, public safety, school transportation) using the ARMER network the ability to contact Norman County dispatch when outside of the Norman County geographical service area, primarily if emergency assistance is needed.

Describe the type of operations that will occur on this talkgroup:

The anticipated use of this talk group would be by school buses when transporting students to and from sporting and band events outside the Pennington County geographical operating area.

Describe the anticipated frequency, duration and extent of use of this talkgroup:

The use of this talk group will be very minimal, perhaps one trip a week, again primarily for communications with Norman County dispatch if emergency situations are encountered and support is needed (bus breakdown, bad weather, student illness, etc). There will NOT be any routine dispatch or operational traffic on this talk group. Cell phones will remain a primary communications resource, but there remain many areas of poor cell phone coverage in the rural areas of Minnesota.

Describe why the Statewide Shared Incident Response talkgroups or other shared roaming talkgroups are not suitable to meet these operational requirements:

It is unlikely that the Norman County PSAP would be monitoring the various Statewide Shared Incident Response or Roaming talk groups, and the purpose for which Norman County units would need to communicate would not necessarily appear to fit the intended use of those talk groups.

Jeremy Thornton 4-21-2016

Talkgroup Owner Agency Authorized Official – Signature & Date

Jeremy Thornton, Sheriff – Norman County MN

Printed Name and Title

* ***For additional information, please refer to: State Standard 2.9.0 and State Standard 2.11.0***

REQUEST FOR SPECIAL
WIDE AREA SITE ACCESS
FOR AN ARMER TALKGROUP

Talkgroup/ Announcement Group Name(s): Norman County Public Safety Statewide Roam (NR PS Roam)

If Announcement Group List all Contained Talkgroups: _____

Sites Requested:

☒ Statewide (Requires Statewide Radio Board Approval)

☐ Other (Specify Sites or Regions):

Talkgroup Owner Agency (Include Point of Contact Information):

Agency Name: Norman County Sheriff's Office
Contact Name: Sheriff, Norman County (Jeremy Thornton)
Address: 15 – 2nd Ave. E.
Ada, MN 56510
Phone: 218-784-7114
Email: Jeremy.thornton@co.norman.mn.us

Talkgroup or Announcement Group Type (Check all that Apply):

☐ Shared

☐ Private

☒ Special Roaming Only Talkgroup – Occasional Use.

☐ Special Operations Tactical Talkgroup – Occasional Use. **If yes,** describe or list the counties or regions covered by a mutual aid agreement, memorandum of understanding, joint powers agreement, incident response plan or other relevant agreements here: _____

☐ Main Dispatch or Tactical Talkgroup – Day to Day Use. If yes, applicant must demonstrate that the users of this talkgroup conduct their "Normal Day to Day Business Operations" throughout the requested coverage area. Describe or list the counties or regions where the users of this talkgroup conduct their "Normal Day to Day Business Operations" here: _____

** For additional information, please refer to: State Standard 2.9.0 and State Standard 2.11.0*

Describe the users, entities or agencies that will operate on this talkgroup:

The "NR PS Roam" talk group is intended to allow Norman County public safety agency personnel the ability to contact Norman County dispatch when outside of the Norman County geographical service area. It may also be used for two or more Norman County public safety personnel to communicate with each other when operating outside of the county geographical area (and outside the operational range of an SOA channel).

Describe the type of operations that will occur on this talkgroup:

The two most common uses of this talk group are 1) Prisoner transports, and 2) Communications between two or more Norman County field units when outside of the county geographical operating area.

Describe the anticipated frequency, duration and extent of use of this talkgroup:

The use of this talk group will be minimal, perhaps twice a week, primarily for prisoner transport. There will NOT be any routine dispatch or operational traffic on this talk group.

Describe why the Statewide Shared Incident Response talkgroups or other shared roaming talkgroups are not suitable to meet these operational requirements:

It is unlikely that the Norman County PSAP would be monitoring the various Statewide Shared Incident Response or Roaming talk groups, and the purpose for which Norman County units would need to communicate would not necessarily appear to fit the intended use of those talk groups.

Jeremy Thornton 4-21-2016

Talkgroup Owner Agency Authorized Official – Signature & Date

Jeremy Thornton, Sheriff – Norman County MN

Printed Name and Title

* ***For additional information, please refer to: State Standard 2.9.0 and State Standard 2.11.0***

St. Louis County
Minnesota

ARMER Participation Plan
Addendum 2
April 12, 2016

Bruce Hegrenes
Technical Supervisor
St. Louis County Sheriff Office
Emergency Communications Division

Executive Summary

The St. Louis County ARMER Participation Plan was completed and approved by St. Louis County Board, Northeast Region Advisory Committee, Northeast Region Radio Board, Minnesota Department of Transportation-Electronic Communications Division, Operations and Technical Committee of the State Emergency Communications Board and the State Emergency Communications Board in late 2010. The plan was changed in April of 2014 with Addendum 1. This addendum is an update to that plan due to additional review and equipment upgrades.

In this Addendum St. Louis County proposes to add an additional channel to the Virginia/Midway Simulcast. Two additional T1 ports are requested from the Zone 5 router for additional bandwidth. An additional BDA is proposed at a critical site.

2. **ARMER System review and design**

ii Local Equipment Additions and Enhancements

Virginia/Midway Simulcast

St. Louis County proposes to add one additional channel to the Virginia/Midway simulcast. One GCM8000 comparator will be added to the Virginia/Midway prime site. One additional GTR8000 will added to the Midway/Virginia, Hibbing, Chisholm, Idington, Erie Hill, Tower and Soudan sites in existing cabinets.

Bi-directional Amplifiers

FCC registered NFPA compliant bi-directional amplifier is proposed for the new Duluth Police office located in the new Transit Center in downtown Duluth.

vii) PSAP Console Planning and Logging

St. Louis PSAP

St. Louis County requests two additional T1 ports to be aggregated to the existing two T1s from the Zone 5 core router to the St. Louis County dual site routers for the existing MCC7500 12 position console for additional bandwidth. This will also provide additional shared connectivity to the previously approved Regional Recorder. T1 connectivity from St. Louis PSAP Zone 5 MSO will be provided by St. Louis owned dual path protected microwave links.

St. Louis County Emergency Operations Center (EOC)

Two additional Motorola MCC 7500 console positions are proposed for a total of four for the Emergency Operations Center (EOC) to be used as a regional dispatch training center.

Attachment 4 List of Participating Agencies

Public Service Agencies

Public Works

Add Mountain Iron Public Works

Interoperability

Add Minnesota Power

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

May 26, 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 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. 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:
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 Local System Administrator or Regional Advisory Committee (RAC).

Section IV: 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 the Statewide Radio Board's website at this link: dps.mn.gov/entity/SRB. Standards will be under the ARMER section.

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 12-40-015, MSP Hailing talkgroup: MSP –CALL General Order, may be found on the ECN website under 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."

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 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.

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

[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 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.

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 System Administrator.

Section IX: 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.

Section 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. 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 XI: Minnesota Emergency Communication Networks Contacts

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

Section XII: 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 SECB website under Regional Boards and Committees.

Section XIV: 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~~ May 26, 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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  - Interoperability: How to Communicate Outside Your Agency
- FEMA NIMS Courses:
  - 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

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- State Standard 1.11.4, Training 800 MHz Users
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- State Standard 2.6.0, ARMER Fleetmap Planning Guidance
- State Standard 2.8.0, Talkgroup and Radio User Priority
- ~~State Standard 2.9.0, 800 MHz Statewide Wide Area Talkgroup Access and Management~~
- State Standard 2.12.0, Scanning
- ~~State Standard 3.12.0, Talkgroup and Multigroup Ownership~~
- State Standard 3.15.0, Use of Scene of Action (SOA)

Section IV: Interoperability

- ~~Minnesota Public Safety Mobile VHF Interoperable Frequency Plan~~
- Regional Tactical Interoperable Communications Plan (TICP)
- State Standard 2.7.0, Use of Shared Talkgroups
- ~~State Standard 3.5.0, National/Statewide VHF Interoperability Resources (MNSEF)/VLAW31, (National EMS)/VMED28, (Statewide Fire)/VFIRE23, (MIMS)/MNCOMM~~
- State Standard 3.16.0, 800 MHz Statewide STAC Interoperability Talkgroups ~~Incident Response Talkgroups: STACs, ETACs, FTACs, & LTACs~~
- ~~State Standard 3.16.2, Use of Statewide 800MHz STAC 1-4 Talkgroups~~
- ~~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~~

- ~~State Standard 3.16.5, Cross Spectrum Interoperability System VHF Variable Frequency Station (VFS) Resources~~
- ~~State Standard 3.31.0, ARMER System StatusBoard~~
- State Standard 3.32.0, Statewide Interoperable Plain Language Policy
- Use of Minnesota State Patrol Call Talkgroup – Minnesota State Patrol General Order 12-40-015, MSP Hailing Talkgroup: MSP -CALL
- Bordering States and Provinces Interoperability
- State Standard 3.35.0 ~~43.0~~, Use of National Weather Service Standard
- Standardized ARMER system wide incident command zone for major incident response coordination.
- Standard Minnesota VHF Interoperability Resources

~~**Section VI: Strategic Technology Reserve**~~

~~State Standard 3.33.0, Establishment of Strategic Technology Reserve~~

~~State Standard 3.33.1, STR Radio Cache~~

~~Accompanying Regional Standard~~

~~State Standard 3.33.2, STR – Transportable Tower/Repeater~~

~~Accompanying Regional Standard~~

~~**Section VII: COML and COMT**~~

~~How and when to use a COML and/or COMT~~

Section V~~III~~: Compliance & Conflict Resolution:

- State Standard 7.1.0, Audit/Monitoring Process
- State Standard 7.2.0, Response to Non-Compliance
- State Standard 7.3.0, The Appeal Process

Section VII~~IX~~: Refresher Training Plan

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

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

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

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

Section X~~IV~~: Radio Affiliated Acronyms

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 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. 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:

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~~l~~ocal System Administrator or Regional Advisory Committee (RAC).

Section IV: 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 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 12-40-015, MSP Hailing talkgroup: MSP –CALL General Order, may be found on the ECN ~~SRB~~ website under Guide Books 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. 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.

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.

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~~ ~~s~~System A~~a~~dministrator.

~~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 IX: 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 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. 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 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~~
~~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~~

~~DECN Grants Project Coordinator, 651-201-7555~~

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

Section XII: 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 SECB website under 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~~

~~Charles Koetter – Charles.Koetter@ci.stcloud.mn.us~~
~~DJ Goman – dgoman@ci.spring-park.mn.us~~
~~Jack Stansfield – Stansfield.Jack@co.olmsted.mn.us~~
~~John Tonding – John.Tonding@state.mn.us~~
~~Cathy Anderson – Cathy.Anderson@state.mn.us~~
~~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 XIV: 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 System (ARMER)
Standards, Protocols, Procedures

Document Section 7	**Compliance and Conflict Resolution**	**Status:** Complete
State Standard Number	**7.1.0**	
Standard Title	**Audit/Monitoring Process**	
Date Established	**3/16/2001**	**SECB Approval:** 8/28/2008
Replaces Document Dated	**08/28/2008**	
Date Revised	**04/11/2016**	

1. Purpose or Objective

The purpose of this standard is to describe the process by which users of the ARMER system will be audited to ensure compliance with the standards, policies, and procedures set forth by the Statewide Emergency Communications Board (SECB).

Audits may be routine or event-stimulated. This could be a review of resource usage or security compliance and may include monitoring of talkgroup activity.

2. Technical Background

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

3. Operational Context

The SECB is charged with setting standards and determining protocols and procedures for the smoothest possible operations between and among users of the ARMER system.

The improper use of ARMER resources can have minor to grave consequences. These standards, protocols, and procedures have been set forth by teams consisting of radio users and managers to maximize service to Minnesota citizens and to minimize potential negative consequences. Responsible management of this resource requires that compliance be monitored and audited.

4. Recommended Protocol/ Standard

The SECB Chair, Statewide System Administrator, Operations and Technical Committee (OTC) Chair, Regional Emergency Communications Board (ECB)/Emergency Services Board (ESB) Chairs, or Sub-System Managers all may call for audits in response to an event or incident that caused damage to or had the potential to cause damage to users or resources of

the ARMER system. Events and incidents may include monitoring outcomes consistently showing non-compliance.

5. Recommended Procedure

The appropriate authority will, at their own discretion, assign a system manager, an internal team, or an external agency to conduct the appropriate level of an audit.

6. Management

The SECB Chair, acting on behalf of the Statewide Emergency Communications Board, will manage this process. Any action taken by staff shall be reported to the SECB Chair and shall be subject to review and/or appeal.

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

Document Section 7	**Compliance and Conflict Resolution**	**Status:** Complete
State Standard Number	**7.1.0**	
Standard Title	**Audit/Monitoring Process**	
Date Established	**3/16/2001**	**SECRB Approval:** 8/28/2008
Replaces Document Dated	**~~2/19/2008~~08/28/2008**	
Date Revised	**~~7/9/2008~~04/11/2016**	

1. Purpose or Objective

The purpose of this standard is to describe the process by which users of the ARMER system will be audited to ensure compliance with the standards, policies, and procedures set forth by the Statewide Emergency Communications ~~Radio~~ Board (SECB~~SRB~~).

Audits may be routine or event-stimulated. This could be a review of resource usage or security compliance and may include monitoring of talkgroup activity.

2. Technical Background

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

3. Operational Context

The SECB~~Statewide Radio Board~~ is charged with setting standards and determining protocols and procedures for the smoothest possible operations between and among users of the ARMER system.

The improper use of ARMER resources can have minor to grave consequences. These standards, protocols, ~~policies,~~ and procedures have been set forth by teams consisting of radio users and managers to maximize service to Minnesota citizens and to minimize potential negative consequences. Responsible management of this resource requires that compliance be monitored and audited.

4. Recommended Protocol/ Standard

The SECB~~RB~~ Chair, Statewide System Administrator, Operations and Technical Committee (OTC) Chair, Regional Emergency Communications Board (ECB)/Emergency Services Board (ESB) ~~Radio Board (RRB)~~ C~~c~~hairs, or Sub-System Managers all may call for audits in response to an event or incident that caused damage to or had the potential to cause damage to users

or resources of the ARMER system. Events and incidents may include monitoring outcomes consistently showing non-compliance.

5. Recommended Procedure

The appropriate authority will, at their own discretion, assign a system manager, an internal team, or an external agency to conduct the appropriate level of an audit.

6. Management

The SECB~~RB~~ Chair, acting on behalf of the Statewide Emergency Communications ~~Radio~~ Board, will manage this process. Any action taken by staff shall be reported to the SECB~~RB~~ Chair and shall be subject to review and/or appeal.

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

Document Section 7	**Compliance and Conflict Resolution**	**Status:** Complete
State Standard Number	**7.2.0**	
Standard Title	**Response to Non-Compliance**	
Date Established	**3/31/2001**	**SECB Approval**: 8/28/08
Replaces Document Dated	**08/28/2008**	
Date Revised	**04/11/2016**	

1. Purpose or Objective

The purpose of this standard is to describe the consequences of non-compliance with ARMER Standards, Protocols, and Procedures.

2. Technical Background

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

3. Operational Context

The Statewide Emergency Communications Board (SECB) is charged with setting standards and determining protocols and procedures for the smoothest possible operations between and among users of the ARMER system. A Regional Emergency Communications Board (ECB)/Emergency Services Board (ESB) is also charged with setting standards and may set more stringent criteria regarding non-compliance issues; however, a Regional Radio Board may not set less stringent criteria.

REVIEW BODY	ROLE
Operations and Technical Committee (OTC)	Peer review, fact finding, recommend action
Operations and Technical Committee (OTC)	Endorse/ sign-off on action
Statewide Emergency Communications Board (SECB)	Approval or disapproval of recommended action

4. Recommended Protocol/ Standard

Consequences of failure to comply with these standards, protocols, and procedures fall into three categories of non-compliance**:**

a. **If an imminent threat** is perceived to affect the system that cannot wait for formal action by a committee, the following individuals would be empowered to take immediate, corrective action at their discretion, and the appropriate Regional ECB/ESB will be notified:
   - Statewide Emergency Communications Board Chair and Vice Chair
   - Operations and Technical Committee (OTC) Chair and Vice Chair

b. **Moderate to high potential for serious adverse affect** on participants and/or non-participants of the ARMER system.

▪ **First violation**	Written order to immediately stop the non-compliant practice. Either the SECB Chair or owner agency of affected Systems/Sub-System may send this letter, with a copy to the OTC Chair in both cases. The governing body of the violating agency shall be notified of the violation.
▪ **Failure to correct problem and respond within 30 days <u>or</u> 2nd offense within 180 days**	Suspension of user access on the ARMER system to the extent of time determined by the SECB Chair and the OTC Chair.
▪ **Failure to respond within 60 days or 3rd offense within 180 days**	Revocation of user access on the ARMER system. This action must be recommended by the OTC and requires approval of the SECB.

c. **Low potential for adverse affect** on participants and/or non-participants of the ARMER system:

▪ **First violation**	Written warning calling attention to the non-compliant practice. The violator is asked to stop the non-compliant practice(s) or apply for a formal waiver or variance within 30 days. (See State Standard 1.5.0) The SECB Chair or owner agency may send the warning, with a copy to the OTC in both cases. The governing body of the violating agency shall be notified of the violation.
▪ **Failure to respond within 30 days or 2nd offense within 180 days**	Written order to immediately stop the non-compliant practice or be subject to suspension or revocation of user privileges. The SECB Chair or the owner agency may send this letter, with a copy to the OTC Chair.
▪ **Failure to respond within 60 days or**	Suspension or revocation of user privileges

3rd offense within 180 days	on the ARMER system. The specific penalty must be recommended by the OTC and requires the approval of the SECB and the OTC.

d. The OTC will be the first review body for discovery or report of non-compliance.

5. Recommended Procedure

Non-compliance may come to the attention of various personnel as a result of routine monitoring, an audit, a report, complaint from radio users, or other sources. Regardless of how the issue arises, as soon as there is awareness of non-compliance:

- The individual discovering non-compliance is obliged to immediately report it to their Local System Manager or Administrator. If local management fails to resolve the situation within a reasonable time, the System Manager or Administrator will notify the OTC Chair and the SECB Chair.

- Concurrently, the System Manager or Administrator will notify the OTC Chair of the non-compliance.

- If the matter is determined to be urgent by either the OTC Chair or the SECB Chair, it will be placed on the next OTC agenda.

- Should immediate action be required, the non-compliant agency will be notified of:
  - The required action. This will include a request to explain the reason for non-compliance.
  - The date the matter will come before the OTC.
  - Their rights to request a variance or waiver and, ultimately, to appeal (See State Standard 7.3.0).

- The SECB will hear the issue and recommend corrective action or consequences.

- These will be communicated to the violator within ten days.

- The Local System Manager or Administrator will follow up to ensure that all next steps and/or corrective action has been completed within the time frame established.

- The SECB Chair will review results, follow up with the Local System Manager or Administrator on next steps, study trends/impact, and take action if appropriate.

6. Management

The SECB Chair will manage this process. Any action taken by staff shall be reported to the SECB and shall be subject to review and/or appeal.

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

Document Section 7	**Compliance and Conflict Resolution**	**Status:** Complete
State Standard Number	**7.2.0**	
Standard Title	**Response to Non-Compliance**	
Date Established	**3/31/2001**	**SECRB Approval**: 8/28/08
Replaces Document Dated	**~~12/12/07~~08/28/2008**	
Date Revised	**~~7/9/08~~04/11/2016**	

1. Purpose or Objective

The purpose of this standard is to describe the consequences of non-compliance with ARMER Standards, Protocols, and Procedures.

2. Technical Background

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

3. Operational Context

The Statewide Emergency Communications ~~Radio~~ Board (SECRB) is charged with setting standards and determining protocols and procedures for the smoothest possible operations between and among users of the ARMER system. A Regional Emergency Communications Board (ECB)/Emergency Services Board (ESB) ~~Radio Board (RRB)~~ is also charged with setting standards and may set more stringent criteria regarding non-compliance issues; however, a Regional Radio Board may not set less stringent criteria.

REVIEW BODY	**ROLE**
Operations and Technical Committee (OTC)	Peer review, fact finding, recommend action
Operations and Technical Committee (OTC)	Endorse/ sign-off on action
Statewide Emergency Communications~~Radio~~ Board (SECRB)	Approval or disapproval of recommended action

4. Recommended Protocol/ Standard

Consequences of failure to comply with these standards, protocols, and procedures fall into three categories of non-compliance**:**

a. **If an imminent threat** is perceived to affect the system that cannot wait for formal action by a committee, the following individuals would be empowered to take immediate, corrective action at their discretion, and the appropriate Regional ECB/ESB ~~Radio Board~~ will be notified:
   - Statewide Emergency Communications ~~Radio~~ Board Chair and Vice Chair
   - Operations and Technical Committee (OTC) Chair and Vice Chair

b. **Moderate to high potential for serious adverse affect** on participants and/or non-participants of the ARMER system.

▪ **First violation**	Written order to immediately stop the non-compliant practice. Either the SEC~~R~~B Chair or owner agency of affected Systems/Sub-System may send this letter, with a copy to the OTC Chair in both cases. The governing body of the violating agency shall be notified of the violation.
▪ **Failure to correct problem and respond within 30 days or 2nd offen~~c~~se within 180 days**	Suspension of user access ~~privileges~~ on the ARMER system to the extent of time determined by the SEC~~R~~B Chair and the OTC Chair.
▪ **Failure to respond within 60 days or 3rd offen~~c~~se within 180 days**	Revocation of user access ~~privileges~~ on the ARMER system. This action must be recommended by the OTC and requires approval of the SEC~~R~~B.

c. **Low potential for adverse affect** on participants and/or non-participants of the ARMER system:

▪ **First violation**	Written warning calling attention to the non-compliant practice. The violator is asked to stop the non-compliant practice(s) or apply for a formal waiver or variance within 30 days. (See State Standard 1.5.0) The SEC~~R~~B Chair or owner agency may send the warning, with a copy to the OTC in both cases. The governing body of the violating agency shall be notified of the violation.
▪ **Failure to respond within 30 days or 2nd offense within 180 days**	Written order to immediately stop the non-compliant practice or be subject to suspension or revocation of user privileges. The SEC~~R~~B Chair or the owner agency may send this letter, with a copy to the OTC Chair.

▪ **Failure to respond within 60 days or 3rd offense within 180 days**	Suspension or revocation of user privileges on the ARMER system. The specific penalty must be recommended by the OTC and requires the approval of the SECRB and the OTC.

d. The OTC will be the first review body for discovery or report of non-compliance.

5. Recommended Procedure

Non-compliance may come to the attention of various personnel as a result of routine monitoring, an audit, a report, complaint from radio users, or other sources. Regardless of how the issue arises, as soon as there is awareness of non-compliance:

- The individual discovering non-compliance is obliged to immediately report it to their respective Local System Manager or Administrator. If local management fails to resolve the situation within a reasonable time, the System Mmanager or Administrator will notify the OTC Chair and the SECBRB Chair.

- Concurrently, the System Manager or Administrator will notify the OTC Chair of the non-compliance.

- If the matter is determined to be urgent by either the OTC Chair or the SECRB Chair, it will be placed on the next OTC agenda.

- Should immediate action be required, the non-compliant agency will be notified of:
  - The required action. This will include a request to explain the reason for non-compliance.
  - The date the matter will come before the OTC.
  - Their rights to request a variance or waiver and, ultimately, to appeal (See State Standard 7.3.0).

- The SECRB will hear the issue and recommend corrective action or consequences.

- These will be communicated to the violator within ten days.

- The Local System Manager- or Administrator s will follow up to ensure that all next steps and/or corrective action has been completed within the time frame established.

- The SECRB Chair will review results, follow up with the Local System Manager- or Administrator s on next steps, study trends/impact, and take action if appropriate.

6. Management

The SECRB Chair will manage this process. Any action taken by staff shall be reported to the SECRB and shall be subject to review and/or appeal.

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

Document Section 7	**Compliance and Conflict Resolution**	**Status:** Complete
State Standard Number	**7.3.0**	
Standard Title	**The Appeal Process**	
Date Established	**04/02/2001**	**SECB Approval**: 8/28/08
Replaces Document Dated	**08/28/2008**	
Date Revised	**04/11/2016**	

1. Purpose or Objective

The purpose of this standard to describe the process by which a decision of the owner agency, Operations and Technical Committee (OTC), or the Statewide Emergency Communications Board (SECB) may be appealed.

2. Technical Background

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

3. Operational Context

The SECB is charged with setting standards and determining protocols and procedures for the smoothest possible operations between and among users of the ARMER system.

4. Recommended Protocol/ Standard

All participants of the ARMER system, whether full or limited, have the right to appeal a procedure, a decision, or a sanction set forth by the OTC Chair or Vice Chair or the SECB Chair or Vice Chair.

5. Recommended Procedure

Step 1: APPEAL

- In the event of a dispute regarding the outcome of non-compliance procedure under State Standard 7.2.0, an aggrieved party may file a written appeal to reverse recommendations or sanctions within 30 days of issuance of directives or sanctions.

- Within ten days of receiving a request for appeal, the SECB shall provide written notice of the request to all involved parties and set a date for an appeal hearing by the full SECB Board within 45 days.

DECISION - The SECB, after a hearing on the matter, shall make a decision regarding the dispute within 60 days and transmit an order to all parties involved. Unless a request for mediation by an aggrieved party is received within 30 days, the action called for shall be implemented in accordance with the Order. Copies of the Order will be mailed to all affected parties, as well as the SECB Chair.

Step 2: MEDIATION

- If a dispute between an aggrieved party and the SECB is not satisfied by Step 1 (above), an aggrieved party may file a written request for mediation with the SECB Chair. This may be filed at any time prior to a deadline for action or within 30 days of a final action.

- Within ten days of receiving a request for mediation, the SECB shall provide written notice of the request for mediation to all parties involved. The SECB shall also provide a list of neutral parties experienced in the ARMER system, public safety, and public service issues. Within 30 days, the affected parties shall select a mediator from the list of neutrals, or someone else mutually acceptable to all parties, and submit to mediation for a period of 30 days.

  If the parties are not able to mutually select a mediator, a mediator will be selected by the Chief Judge of the State Supreme Court.

- Any cost incurred throughout this process will be shared equally by all involved parties.

DECISION – The mediator will assist the parties in their attempt to achieve a negotiated agreement.

If no agreement is reached, the SECB's previous sanctions, directives, or findings will remain in effect. The aggrieved parties may need to seek other remedies as provided by law.

The SECB Chair will maintain a master schedule and calendar for each event to ensure timely response.

6. Management

The SECB Chair, acting on behalf of the Statewide Emergency Communications Board, will manage this process.

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

Document Section 7	**Compliance and Conflict Resolution**	**Status:** Complete
State Standard Number	**7.3.0**	
Standard Title	**The Appeal Process**	
Date Established	**04/02/2001**	**SECRB Approval**: 8/28/08
Replaces Document Dated	**05/24/0108/28/2008**	
Date Revised	**12/12/0704/11/2016**	

1. Purpose or Objective

The purpose of this standard to describe the process by which a decision of the owner agency, System Manager's Group (SMG), Operations and Technical Committee (OTC), or the Statewide Emergency Communications Radio Board (SECRB) may be appealed.

2. Technical Background

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

3. Operational Context

The SECB tatewide Radio Board is charged with setting standards and determining protocols and procedures for the smoothest possible operations between and among users of the ARMER system.

4. Recommended Protocol/ Standard

All participants of the ARMER system, whether full or limited, have the right to appeal a procedure, a decision, or a sanction set forth by the OTC any committee Chair or Vice Chair or the SECB Chair or Vice Chairand the SRB Chair.

5. Recommended Procedure

Step 1: APPEAL

- In the event of a dispute regarding the outcome of non-compliance procedure under State Standard 7.2.0, an aggrieved party may file a written appeal to reverse recommendations or sanctions within 30 days of issuance of directives or sanctions.

- Within ten days of receiving a request for appeal, the SECRB shall provide written notice of the request to all involved parties and set a date for an appeal hearing by the full SECB tatewide Radio Board within 45 days.

DECISION - The SECRB, after a hearing on the matter, shall make a decision regarding the dispute within 60 days and transmit an order to all parties involved. Unless a request for mediation by an aggrieved party is received within 30 days, the action called for shall be implemented in accordance with the Oorder. Copies of the Oorder will be mailed to all affected parties, as well as the SECRB Chair.

Step 2: MEDIATION

- If a dispute between an aggrieved party and the SECBtatewide Radio Board is not satisfied by Step 1 (above), an aggrieved party may file a written request for mediation with the SECRB Chair. This may be filed at any time prior to a deadline for action or within 30 days of a final action.

- Within ten days of receiving a request for mediation, the SECRB shall provide written notice of the request for mediation to all parties involved. The SECRB shall also provide a list of neutral parties experienced in the ARMER system, public safety, and public service issues. Within 30 days, the affected parties shall select a mediator from the list of neutrals, or someone else mutually acceptable to all parties, and submit to mediation for a period of 30 days.

  If the parties are not able to mutually select a mediator, a mediator will be selected by the Chief Judge of the State Supreme Court.

- Any cost incurred throughout this process will be shared equally by all involved parties.

DECISION – The mediator will assist the parties in their attempt to achieve a negotiated agreement.

If no agreement is reached, the SECRB's previous sanctions, directives, or findings will remain in effect. The aggrieved parties may need to seek other remedies as provided by law.

The SECRB Chair will maintain a master schedule and calendar for each event to ensure timely response.

6. Management

The SECRB Chair, acting on behalf of the Statewide Emergency Communications Radio Board, will manage this process.

Allied Radio Matrix for Emergency Response (ARMER)

Change Proposal

1. Administrative Information:

Type of Change (Technical or Operational)

Technical and Operational

Date Submitted:

Submitter (e.g., Regional Radio Board or state agency):

Metropolitan Emergency Services Board - MESB

Change Sponsor (Individual) Contact Information:

Curt Meyer, Hennepin County – curtis.meyer@hennepin.us, 612-596-1922

2. Summary of proposed change(s):

Add 2 statewide encrypted law enforcement talk groups (LTAC9E & LTAC10E)

3. Existing SRB standards impacted:

3.19.0 - Use of 800 MHz Statewide LTAC and SIU Interoperability Talkgroups

4. Scope of Change:

Impact on users (e.g., majority of users, minority of users, number of counties/regions):

All law enforcement radios that are equipped with DES-OFB encryption.

Impact on the placement of resources in communications equipment (e.g., upgrades):

2 encrypted talk groups to be added to encrypted law enforcement radios.

Impact on operational procedures (e.g., changes to operational standards):

Language for statewide encrypted law enforcement talk groups must be updated in the existing radio standard.

Impact on user training (e.g., training required for compliance):

Minimal training would be required as currently there are statewide encrypted talk groups.

Impact on reprogramming or configuration of end-user equipment:

Subscribers: Some training would be required as currently there are no regional encrypted radio resources.

Consoles: All law enforcement PSAP radio consoles would add the resources.

Other equipment: These new resources should be recorded.

5. Existing deficiencies, problems, needs addressed by the proposed changes:

Frequently all 4 encrypted statewide encrypted law enforcement talk groups are in use leaving none available for use.

Expected improvements & benefits resulting from the change:

More encrypted interoperable law enforcement statewide talk groups are available for use. This will relieve current congestion making additional encrypted interoperable law enforcement talk groups available. More encrypted law enforcement radios are being added. This will allow for future expansion.

6. Proposed implementation & transition plan including timeline, milestones and training:

Start and End Date:

Beginning of the next Change Management radio programming cycle. No end date.

Description of Implementation Plan:

Add to dispatch consoles, then to subscriber radios.

7. Preliminary assessments which have been completed (documentation attached):

See attached documentation.

8. List of Attached proposed new or revised Standards, Plans or Best Practices Guides:

3.19.0 - Use of 800 MHz Statewide LTAC and SIU Interoperability Talkgroups

9. Other Attachments:

10. Tracking and Approvals:

Submitter Approval:

Signature Date

DECN Receipt:

Signature Date

OTC/IOC Determination of Need:

Signature Date

MnDOT/ECN Approval:

Signature Date

OTC/IOC Approval of Assessments:

Signature Date

Finance Committee Approval:
(if required)

Signature Date

Final SRB Approval:

Signature Date

LTAC5E

	User Total	PTT Total	Usage
State Agencies - MN	37	1988	1.2%
Federal Agencies	96	26333	15.9%
Non Metro Agencies	182	19592	11.8%
Metro Agencies	333	117897	71.1%

Total	
165810	100%

LTAC6E

	User Total	PTT Total	Usage
State Agencies - MN	39	2000	1.2%
Federal Agencies	95	26327	15.9%
Non Metro Agencies	181	19586	11.8%
Metro Agencies	333	117897	71.1%

Total	
165810	100%

LTAC7E

	User Total	PTT Total	Usage
State Agencies - MN	12	843	2.0%
Federal Agencies	48	13244	31.6%
Non Metro Agencies	119	6084	14.5%
Metro Agencies	108	21789	51.9%

Total	
41960	100%

LTAC8E

	User Total	PTT Total	Usage
State Agencies - MN	22	4382	4.7%
Federal Agencies	40	41055	44.2%
Non Metro Agencies	113	17244	18.6%
Metro Agencies	82	30201	32.5%
		Total	
		92882	100%

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

Document Section 3	**Interoperability Standards**	**Status:** Complete
State Standard Number	**3.19.0**	
Standard Title	**Use of 800 MHz Statewide LTAC and SIU Interoperability Talkgroups**	
Date Established		**SRB Approval:** 3/28/2013
Replaces Document Dated	**03/19/2013**	
Date Revised	**3/25/2016**	

1. Purpose or Objective

The purpose of this standard is to establish policy and procedures for use of the 800 MHz statewide law enforcement interoperability talkgroups. The LTAC and SIU talkgroups are a system wide resource to facilitate communications between law enforcement agencies including, but not limited to, Special Investigative Units that typically do not communicate with each other on a regular basis.

2. Technical Background

- **Capabilities**

It is possible to have access to one or more common pool of clear and encrypted talkgroups in radios used by agencies that share the statewide 800 MHz radio system. These clear and encrypted talkgroups can be used for a wide range of intercommunication when coordination of activities between personnel of different agencies is needed on an event.

- **Constraints**

LTAC5E through LTAC10E can be used by all law enforcement agencies with encrypted radios and can be programmed in law enforcement dispatch consoles.

Deleted: LTAC8E

The LTAC5E through LTAC10E and SIU1E through SIU4E talkgroups are always encrypted.

Deleted: LTAC8E

SIU1E through SIU4E are only to be use by Special Investigation Units; for example, Gang and Drug task forces, SWAT, etc. SIU1E through SIU4E may not be programmed in dispatch consoles.

When using SIU1E through SIU4E, if non-Special Investigation Unit officers and dispatchers need to participate in an activity, it is up to the local incident command to supply those persons with radios that have SIU1E through SIU4E.

SIU1E through SIU4E are not to be patched with any other talkgroup.

3. Operational Context

The LTAC and SIU talkgroups are a system wide resource to facilitate communications between law branch agencies including, but not limited to, Special Investigative Units that typically do not communicate with each other on a regular basis.

4. Recommended Protocol/ Standard

LTAC1 through LTAC4 TALKGROUPS

TG Requirements	For Whom?
Required	All Law Enforcement Users & PSAP
Recommended	
Optional	
Not Allowed	Non-law Enforcement
Site Access	System Wide – All Sites

Cross Patch Standard	YES / NO	To TalkGroups
Soft Patch	Optional	As Needed
Hard Patch	No	

LTAC5E through LTAC10E TALKGROUPS

Deleted: LTAC8E

TG Requirements	For Whom?
Required	All Law Enforcement users with Encrypted Radios
Recommended	All Law Enforcement PSAPs
Optional	
Not Allowed	All others

Cross Patch Standard	YES / NO	To TalkGroups
Soft Patch	Optional	Encrypted TGs only
Hard Patch	No	

SIU1E through SIU4E TALKGROUPS

TG Requirements	For Whom?
Required	
Recommended	SIU communications, i.e. Gang, Drug, Swat task forces
Optional	
Not Allowed	All others

Cross Patch Standard	YES / NO	To TalkGroups
Soft Patch	No	
Hard Patch	No	

The StatusBoard application will be used to manage the law enforcement pool talkgroup resources.

Console Resource Requirements and Patching

Integrated law enforcement ARMER dispatch consoles (Gold Elite, MCC7500, etc.) shall have LTAC1 through LTAC4 in their configuration, available for patching. If the patched talkgroups have different "home zones," multiple repeaters will be assigned, impacting system loading. Therefore, extended duration patching of statewide interoperability talkgroups to other talkgroups should be avoided. Users should transition to the statewide talkgroup as soon as it can be done safely, and the patch should be terminated. LTACs should not be patched to other statewide interoperability talkgroups. In order to meet the communications needs for an event, the LTAC talkgroups may be patched to:

- Conventional RF resources, such as VHF, UHF, etc.
- Private agency talkgroups, such as dispatch mains, tactical talkgroups, pools, etc.
- Patches between the LTAC talkgroups and regional TACs, although this would not be preferred as a method of resolving communications needs, because it reduces the number of talkgroups available for an incident.

LTAC5E through LTAC10E can optionally be programmed in law enforcement dispatch consoles but may not be patched to unencrypted ARMER talkgroups.

Deleted: LTAC8E

SIU talkgroups may not be programmed in dispatch consoles or any ARMER resource. When using SIU1E through SIU4E, incident command will provide radios for other non-SIU entities assisting, such as patrol officers, dispatchers, etc.

None of the SIU and LTAC-E talkgroups shall be part of any multi-group.

All radios using LTAC5E through LTAC10E and SIU1E through SIU4E must use the state assigned Data Encryption Standard (DES) encryption keys. The Minnesota Department of Transportation (MnDOT) System Administrator will be responsible for managing and periodically updating the statewide encryption keys.

Deleted: LTAC8E

It is highly recommended that SIU radio users program a sufficient quantity of SIU and LTAC-E talkgroups into their subscriber radios to meet interagency communications needs, starting with LTAC5E.

Dual Naming

Existing LETAC-1 through LETAC-4 talkgroups are renamed LTAC5E through LTAC10E. Existing LESIU-1 through LESIU-4 are renamed SIU1E through SIU4E. Dual names will be added to PSAP consoles and used for the renamed talkgroups and will remain in place until June 26, 2015, or until all affected ARMER radios have been reprogrammed. The old name will be primary until June 26, 2014, then secondary until June 26, 2015. Dual naming will be removed from PSAP consoles on June 26, 2015.

Deleted: LTAC8E

5. Recommended Procedure

The usage of LTAC1 through LTAC4 for **PREPLANNED NON-EMERGENCY** interoperability events should be LTAC4 through LTAC1, in that order.

The usage of LTAC1 through LTAC4 for **UNPLANNED EMERGENCY** incidents should be LTAC1 through LTAC4, in that order.

LTAC5E through LTAC10E may be patched **ONLY TO OTHER ENCRYPTED TALKGROUPS** during PREPLANNED NON-EMERGENCY interoperability events and UNPLANNED EMERGENCY incidents.

Deleted: LTAC8E

SIU1E through SIU4E may only be used directly and not be patched to other resources to meet the communications needs of an event or incident.

The dispatch center will use the StatusBoard application to identify use of the LTAC and SIU resources.

When an SIU resource is needed, any SIU agency may contact an appropriate 800 MHz dispatch center, capable of assigning SIU resources, to have the next preferred available SIU assigned and recorded on the StatusBoard. There must be an agreement between the SIU agency and the dispatch center to provide this service.

At the end of the event, the 800MHz assigning dispatch center must clear the status, so the other dispatchers will know this resource is available for use.

6. Management

The PSAP managers for agencies on the statewide 800 MHz radio system shall ensure that there is a procedure for assigning LTAC and SIU talkgroups.

The MnDOT System Administrator shall be responsible for the StatusBoard application.

Dispatch center operators shall receive initial and continuing training on the use of this procedure.

Responsibility for monitoring performance and for modifying this procedure shall be a function of the agencies using this resource.

City of
Maple Grove
12800 Arbor Lakes Parkway, P.O. Box 1180, Maple Grove, MN 55311-6180

FIRE-RESCUE DEPARTMENT

Fire Department
763-494-6300

Fire Inspection
763-494-6090

23, March 2016

Curt Meyer
800 MHz Coordinator / Assistant Radio Systems Manager
Hennepin County Sheriffs' Office
1245 Shenandoah Ln
Plymouth, MN 55447

Mr. Meyer,

This letter is in regards to our conversation regarding reprogramming of Maple Grove fire department portable radios.
I understand there is an issue in the programming of LTAC 1, 2, 3 and 4 due to a rule change regarding their use.
I am requesting permission on behalf of Maple Grove Fire, Police and Emergency Management to retain these talk groups in the police fleet map in our 10 command encrypted radios. These talk groups had been in our fleet map previously and had not encountered any issues

The 10 Command radios currently have the complete fleet map for each discipline (police, fire, public works, and emergency management) and are used to provide extra command encrypted capable radios for police or fire command staff.

There is no need for fire personnel to have access to these talk groups however it gives the Maple Grove public safety command staff additional interoperability.

I appreciate your assistance with this request.

Sincerely,

Kurt Kramer
Deputy Fire Chief
Emergency Management Coordinator
City of Maple Grove

Allina Health
EMERGENCY
MEDICAL SERVICES

March 14, 2016

Metro Region Radio Board

Technical Operations Committee

To Committee Members,

Allina Health Emergency Medical Services (AHEMS) respectfully requests to modify its ARMER system participation plan. AHEMS is in the process of adding a Motorola AIS server on the ARMER system to accommodate for logging with a new Eventide logger. This configuration will be required due to the obsolescence of the Motorola Gold Elite console configurations.

Sincerely,

Victoria Peckman

Victoria Peckman
Communications Technology Specialist
Allina Health Emergency Medical Services

SOAR

SCENE OF ACTION REPEATER

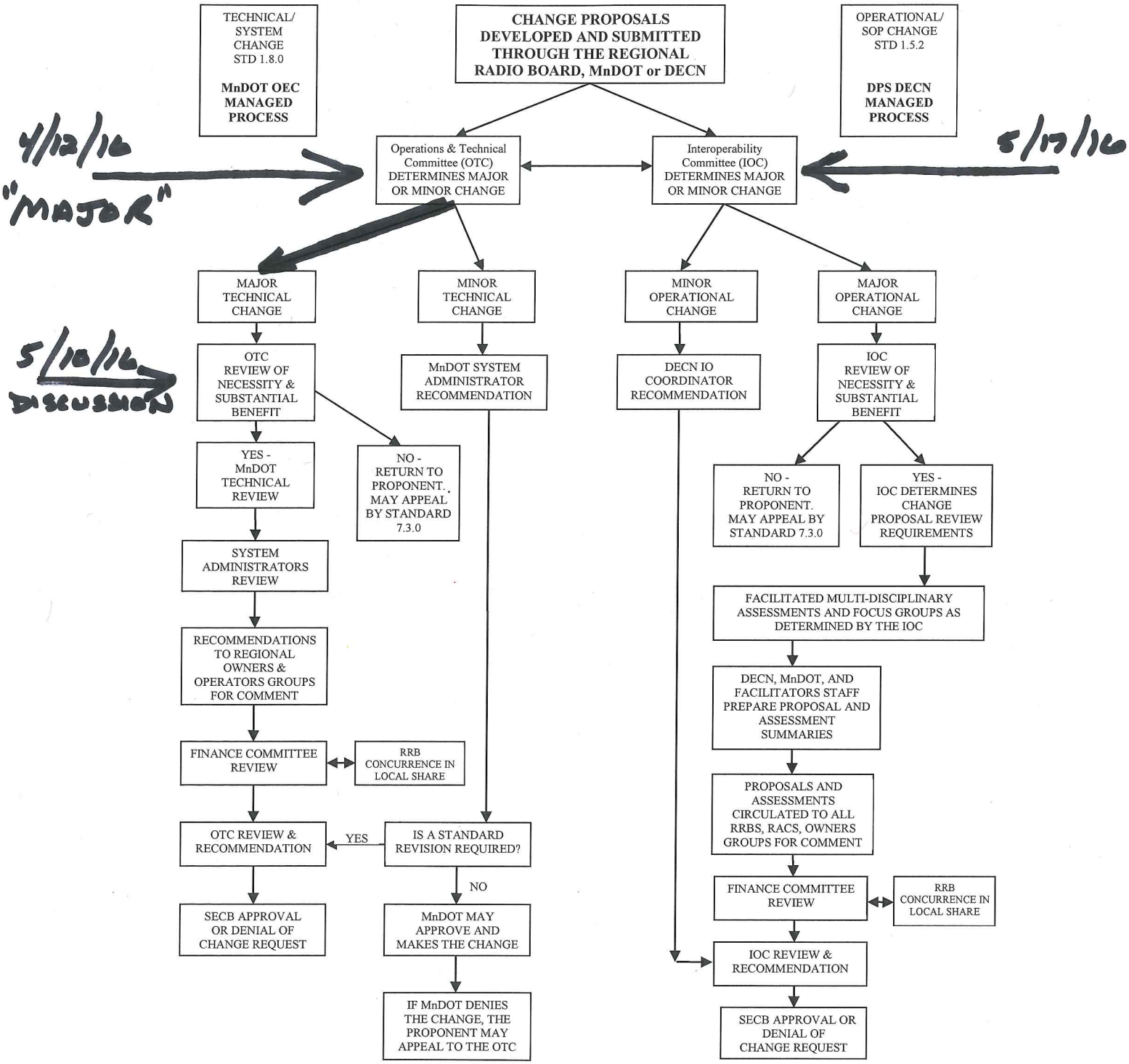

Figure 1 Change Management Process

5/3/2016

To: SECB Operations and Technical Committee
From: Jim Stromberg, ARMER Program Manager
Date: April 12, 2016
Subject: SOAR (Scene of Action Repeater) Change Management Request

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On October 13, 2015, Kandiyohi and Stevens Counties requested of the OTC that the SECB consider changing the way one of Minnesota's Scene of Action (SOA) channels is used. The goal of the request is to enhance ARMER coverage in rural communities where in-building ARMER coverage suffers by repurposing a statewide simplex "Scene of Action" channel to be used as a repeated channel. The request has come to be known as SOAR (Scene of Action Repeater).

Because the proposed change would be both technical and operational and impacted all radios on the ARMER system, the request warrants review under the Change Management process prescribed in standards #1.5.2 and #1.8.2. During early discussions, Kandiyohi County withdrew its request. The remaining Stevens County request was conditionally approved by the OTC contingent on approval by the Interoperability Committee and that the request be considered through the Change Management process.

The SOAR request has remained idle while a call was put out for additional Change Management items and while the Change Management process was under review. This matter is now due for consideration.

The requested change would use the simplex Scene of Action channel SOA-3 as a repeated channel and would tie that channel in small geographic areas to a local ARMER talkgroup. Users in areas where ARMER coverage suffers and the SOAR solution is installed could switch to SOA3 and effectively communicate with ARMER users. The proposers reported that a BDA solution is problematic and a search for another pair of statewide-available frequencies yielded no results.

There are six 800 MHz SOA channels licensed in Minnesota and all are presently set up to be used in a simplex mode. Four of the SOAs (SOA-1 through SOA-4) are reserved for all users and should be installed in every ARMER radio. The remaining two are dedicated to the fire/EMS service, are known as FSOA-1 and FSOA-2, and should be installed in all fire/EMS service ARMER radios.

Repurposing SOA-3 to be used in a repeated mode on a local scale compromises statewide uniformity of that channel and could create confusion. The requestors have recommended that the

change be implemented statewide so that all users would have the same functionality and all areas could consider the same solution.

The use of SOAs is covered in Standard 3.15.0. The standard specifies that SOAs are to provide short-range, simplex interoperability. SOA-4 was earmarked for use at jail sally ports and was also identified as employed in the Strategic Technology Reserve SATCOW.

The Emergency Communication networks has reviewed this request and generally supports it. It appears to be a practical and cost-effective solution. The ECN recommends that the following items be considered as this matter is deliberated:

- Consider reassigning both SOA-3 and SOA-4 as repeated resources. The SOAR solution may work well in one town but may not be available in the next town because another repeater on the same frequencies may conflict with the first repeater.
- Two all-user simplex SOAs (SOA-1 and SOA-2) are probably adequate. The ECN does not know of any entities that routinely use three or more SOAs simultaneously. The SOAR solution using SOA-3 and SOA-4 would not preclude those channels from being used either repeated or simplex for an event under the guidance of a COML provided that the standard prescribed that they would be programmed both ways in all radios.
- Whether one or two SOAs are dedicated to a repeater, those channels should be renamed and dedicated to that function. Suggestions: SOAR1 & SOAR2 (repeated) and SOAR1D & SOAR2D (direct/simplex).
- Standard #3.15.0 should be updated if the SOAR suggestion is adopted.
- Action taken on SOAs may impact the Strategic Technology Reserve SATCOW. The SATCOW's technology staff and standard #3.33.3 should be consulted.
- If adopted, all ARMER radios in the state would need to be reprogrammed. Because of the limited geographical scope and infrequent use of SOAs, the ECN recommends that a very long window of time be provided for reprogramming to be completed.

Allied Radio Matrix for Emergency Response (ARMER)

Change Proposal

1. Administrative Information:

Type of Change (Technical or Operational): Both Technical and Operational

Date Submitted: 01/12/16

Submitter (e.g., Regional Radio Board or state agency): Central Mn Regional Radio Board

Change Sponsor (Individual) Contact Information: Central MN RAC & Stevens County

Summary of proposed change(s): Local use of 8SOA3 during an emergency, training, exercises or special events.

Weak and no coverage areas that are low traffic, multi structure with poor or no portable coverage from the ARMER system will benefit from a SOAR. These areas are small in size and with too many structures to warrant an indoor BDA, and where Outdoor BDA will not penetrate the structures, yet these areas are critical enough for indoor coverage for emergency responders.

2. Existing SRB standards impacted:

New Standard written and included.

CM- 3.15.0 How to Use Scene of Action (SOA)

State- 3.15.0 - Use of 700 MHz and 800 MHz Statewide Scene of Action (SOA) Channels *effective 11/22/13*

3.24 RF Control Stations?

3.25.0 - Radio to Radio Cross Band Repeaters?

3. Scope of Change:

Impact on users (e.g., majority of users, minority of users, number of counties/regions): Potentially all

Impact on the placement of resources in communications equipment (e.g., upgrades):

The footprint of the SOAR must be contained to address immediate poor coverage area and not over extend beyond the intended coverage area.

Impact on operational procedures (e.g., changes to operational standards): New Standard (attached)

Impact on user training (e.g., training required for compliance):

Users would need to be instructed on where the talkgroup is located in their radio, how to use it, and informed of any pertinent ARMER standards. SOAR procedures will need to be addressed in the training of all personnel operating within the SOAR system. Training will cover the different on scene procedures utilized by all users. It is critical that all users are aware of the rules and procedures and limitation in utilizing the SOAR channel.

Impact on reprogramming or configuration of end-user equipment:

Subscribers: Use of SOA 3 as a repeater pair 853.950/808.950 with a NAC code of 293 operating in Project 25 Phase 1 and not utilizing any Encryption.

The need or necessity for the SOAR channel to be programmed into radios will be determined by each agency. If an agency opts to not place this channel into their radios they will be responsible for any limitations on their ability to communicate within the SOAR coverage area.

Consoles: Control Stations currently set up for Site Trunking would need to be reprogrammed (if made mandatory).

Other equipment:

4. Existing deficiencies, problems, needs addressed by the proposed changes:

The Hancock School, Hancock Police Department, Chokio Fire Hall, Chokio School and other buildings within these cities have limited to no indoor coverage. A SOAR repeater is designed for radio to radio coverage in a poor or no coverage area of the ARMER radio system, also giving the radio one talk group on the ARMER system. With a use of a gateway the SOAR would tie to the ARMER talk group, effectively improving coverage for one talk group and also increasing the radio to radio coverage in the affected area.

Once on the ARMER system a local dispatch agency will control and direct the traffic from the SOAR repeater.

5. **Expected improvements & benefits resulting from the change:**
   Interoperability

6. **Proposed implementation & transition plan including timeline, milestones and training:**

Start and End Date: Start date could begin immediately.

Description of Implementation Plan: Stevens County is in line for a 2016 Central MN grant, the Stevens County Board of Commissioners has approved this grant and the 50 % match required.

After OTC/Change Management approval: Application for a SOAR will be submitted from the agency to the CM ESB for approval. Application will include.

- Letter explaining reason for SOAR
- Intended coverage area, how they will limit coverage foot print
- Agency who will be responsible for SOAR and contact information
- FCC form 601, schedule D, schedule H showing SOAR location and coverage area will be attached with the application.
- Other SOAR's within a 30 air mile radius
- A Valid FCC License has been obtained

Local System Administrator will be responsible for ensuring that users follow the standards, protocol and procedures.

- Training
  SOAR procedures will need to be addressed in the training of all personnel operating within the SOAR system. Training will cover the different on scene procedures utilized by all users. It is critical that all users are aware of the rules and procedures and limitation in utilizing the SOAR channel.

7. **Preliminary assessments which have been completed (documentation attached):**

System Tested:

We have used a Quantar 800Mhz repeater with an antenna system low enough to give us town coverage, yet contain the signal to the areas that need indoor coverage and a small radius around the town.

A gateway system, consisting of two mobile radios, one on the 8TAC94 and the other on a County ARMER talk group as the interface, this was tested in Hancock and Atwater and both operational.

Test Results:

In both cases (Atwater and Hancock) we found no internal buildings that we could not penetrate using the 8TAC94 repeater. The Dispatch centers choose to use a lower County interop talk group which dispatch would monitor, and patch when required. All users inside and outside of the structures understand what channels and "talk groups" to use.

Audio Delays:

A concern of ours was if the audio delays in our system design would cause users on the 8TAC94, ARMER subscriber radios and dispatchers too much delay and make the system unusable. We did not find this to be the case, technically there is a slight delay, but not much more than what users experienced on a VHF repeater system.

8. **List of Attached proposed new or revised Standards, Plans or Best Practices Guides:** Proposed Standard Included

9. **Other Attachments:**

Draft Standard, Letter to OTC Dated 09/23/15 & Letter Dated 05/29/15

10. Tracking and Approvals:

Submitter Approval: 01-11-2016

Signature Date

DECN Receipt:

Signature Date

OTC/IOC Determination of Need:

Signature Date

MnDOT/ECN Approval:

Signature Date

OTC/IOC Approval of Assessments:

Signature Date

Finance Committee Approval:
(if required)

Signature Date

Final SRB Approval:

Signature Date

Monthly Project Summary

James Stromberg
ARMER Program Manager & Statewide Interoperability Coordinator

Date	May 3, 2016		**Committee Priority**	OTC
Project	7.19 Upgrade Monitoring			
Progress	**1st Quarter**	**2nd Quarter**	**3rd Quarter**	**4th Quarter**
	On Track	On Track		

Summary

The project objective is to monitor the ARMER 7.19 upgrade to ensure that hardware and software upgrades are installed consistent with contract.

The key steps are:

- Meet with Motorola and MnDOT to identify tracking process.
- Create a tracking tool to monitor process

Current Status

- First meeting with MnDOT and Motorola was held. Discussions about how to best and most efficiently roll out upgrade. Follow up meetings to be scheduled with Rochester, St. Cloud, and Metro regions.
- MnDOT scheduled follow up meeting with regions. Follow up conversations scheduled with MnDOT.

Challenges

- No specific challenges are apparent

Monthly Project Summary

James Stromberg
ARMER Program Manager & Statewide Interoperability Coordinator

Date	May 3, 2016		**Committee Priority**	OTC & IOC
Project	Strategic Reserve Equipment Review			
Progress	**1st Quarter**	**2nd Quarter**	**3rd Quarter**	**4th Quarter**
	On Track	On Track		

Summary

The project objective is to review the current practices associated with the strategic reserve equipment and to explore ways to enhance the usability and availability of the equipment.

The key steps are:

- Identify and catalogue all Strategic Technology Reserve equipment
- Identify custodians of STR equipment
- Identify current practices in place to exercise and test equipment
- Evaluate current practices and explore new ways to ensure equipment is ready
- Identify working group to review Standards and to consider updates
- Encourage use of equipment through training and exercises

Current Status

- SharePoint tool developed to track all STR equipment, custodians, and reviews.
- Collection of regional standards underway
- Site visit to one region completed and second is scheduled.

Challenges

- No specific challenges are apparent

Monthly Project Summary

James Stromberg
ARMER Program Manager & Statewide Interoperability Coordinator

Date	May 3, 2016		**Committee Priority**	OTC
Project	Change Management			
Progress	**1st Quarter**	**2nd Quarter**	**3rd Quarter**	**4th Quarter**
	On Track	Delay		

Summary

The project objective is to review, revise, and implement a new Change Management process and state standard.

The key steps are:

- Create a working group to address the issue
- Refine the current process
- Carefully consider timelines of state and local budget cycles as part of the process
- Memorialize new process in an updated standard
- Seek approval of the new process and standard from OTC and SECB

Current Status

- The Workgroup has created a new standard and submitted it to the OTC for approval.
- The Standard was approved by the OTC and forwarded to the SECB. The SECB has tabled the matter for additional review by the Metro region.
- ECN has reached out to the Metro region for additional input and is awaiting its feedback.

Challenges

- The concerns of the Metro region need to be clearly identified so they can be addressed.
- The standard needs to either be amended or put to a vote as is.

Monthly Project Summary

James Stromberg
ARMER Program Manager & Statewide Interoperability Coordinator

Date	May 3, 2016		Committee Priority	IOC & OTC
Project	Website Updates of ARMER and Interop Pages			
Progress	**1st Quarter**	**2nd Quarter**	**3rd Quarter**	**4th Quarter**
	On Track	Delay		

Summary

The objectives of this project are:

- to define a clean, efficient look and feel for the ECN website so that information is plainly presented and easy to find
- to provide guidelines and a roadmap for refinement of other ECN webpages
- to reorganize and clean up the ARMER pages of the ECN website
- to reorganize and clean up the Interoperability pages of the ECN website

The key steps are:

- Take inventory of the current ECN website, in its entirety
- Work with DPS Communications to create a plan of action
- Identify and implement global site changes necessary to ensure uniformity
- Identify and implement changes specific to the ARMER and Interoperability pages
- Add content to the new ARMER and Interoperability pages and seek approval for publishing
- Publish the update pages

Current Status

- A full inventory of the ECN website has been taken and outlined on a spreadsheet.
- DPS Communications has been engaged and supports the proposed look and feel changes
- DPS Communications is willing to review requested changes for policy compliance and to make the requested changes
- A cleaned up look and feel has been defined for the ECN website
- New content for several of the ARMER and Interoperability webpages is drafted but awaiting the actual page for it to be placed
- A request has been made of DPS Communications to make 40 different website changes that could not be made by ECN staff. The requests were prioritized with 14 of the requests identified as a first priority.
- DPS Communications has made some of the requested changes.

Challenges

- ECN staff does not have authority to change page architecture, only content. Look and feel changes, page additions and deletions, and webparts (e.g. automatic lists) may only be done by DPS Communications staff. Defining the request via work tickets and waiting for the change to be made is a tedious and sluggish process.