METROPOLITAN EMERGENCY SERVICES BOARD
RADIO TECHNICAL OPERATIONS COMMITTEE AGENDA

March 22, 2023, 1:00 p.m.

This meeting will be conducted in-person at the MESB Office, 2099 University Ave W, St Paul ONLY

1. **Call to Order** – Committee Chair, Jake Thompson

2. **Approval of Agenda** – Thompson

3. **Approval of Minutes of January 25, 2023 Meeting** – Thompson

4. **Action Items**
   - A. Hennepin County CCGW Request – Mike Parker
   - B. City of St Paul LMR-53 Waiver Request – Mike Mihelich
   - C. Review/Approval of New Standard for LSEC Talkgroups – Tracey Fredrick/Ron Jansen
   - D. Regional Needs Document Approval – Fredrick

5. **Moves, Additions & Changes to the System**

6. **Committee Reports**
   - A. Metro Mobility Usage Update – Chad LeVasseur
   - B. System Managers Group Update – Jansen
   - C. MnDOT ARMER System Update – John Anderson/Dave Klema/Shane Chatleain
   - D. SECB Committees
     - i. Steering – Fredrick/Jill Rohret
     - ii. LMR – Nate Timm/Nick Schatz
     - iii. WBBA – Rod Olson/Jake Thompson
     - iv. IOC & Workgroups
       - a. IOC – Thompson/Timm
       - b. STR Workgroup – Schatz/Mike Parker
       - c. COMU Workgroup – Timm/Dan Anderson
     - v. IPAWS – Scott Haas
     - vi. Finance/Grants Workgroup – Fredrick/Rohret
     - vii. State Encryption and Change Management Workgroups – all members

7. **Other Business**
   - A. METAC Permission update – Fredrick
   - B. Metro Change Management Update (if needed) – Jansen
   - C. SAFECOM Nationwide Survey Information – Fredrick
   - D. BDA Information – Jansen/Timm
   - E. ARMER Firewall at Subsystem Sites – Schatz
   - F. Contract Review RFP Discussion – Fredrick
   - G. Quarterly Metro Tech Meeting – Jansen/Fredrick

8. **Adjourn**

Reminder: Next meeting scheduled for April 26, 2023

Metropolitan Emergency Services Board

Radio Technical Operations Committee
January 25, 2023
Draft Meeting Minutes

Members
Airport - **absent**
Anoka County - Cory DeMuth
Carver County - Peter Sauter
Chisago County - Jake Thompson
Dakota County - Ron Jansen
Hennepin County - Mike Parker
Isanti County – John Elder
Metro Region EMS - Victoria Vadnais
Metro Transit - Chad LeVasseur
Minneapolis - Rod Olson
Minnesota Fire Chiefs - Patrick Maynard
Ramsey County - **absent**
Scott County – Nick Schatz
Sherburne - Derek Baas
Washington County - Nate Timm
U of M - Jeff Lessard

Guests: Marcus Bruning, *ECN*; Mark Erickson, *South Metro Fire*; Kevin Matthews*, McLeod County;* Mike Melby, *North Memorial EMS*; James Schnoor, *Met Council*

MESB Staff: Tracey Fredrick, Jill Rohret, Martha Ziese

1. Call to Order
Jake Thompson, Chair called the meeting to order at 1:00 p.m.

2. Approval of January 25, 2023 Agenda
Motion by Ron Jansen, seconded by Peter Sauter to approve the January 25, 2023 agenda. Motion carried.

3. Approval of October 26, 2022 Minutes
Motion by Peter Sauter, seconded by John Elder to approve the October 26, 2022 meeting minutes. Motion carried.

4. Action Items
A. COMU Recognitions - Dan Anderson AUXC Recognition
Tracey Fredrick said that Dan Anderson completed everything in the task book to recommend approval of the AUXC Recognition.

Motion by Ron Jansen, seconded by Nate Timm to approve Dan Anderson AUXC Recognition be moved on to the COMU workgroup. Motion carried.

B. McLeod County METAC Usage Request
Kevin Matthew, McCleod County said the request is to get METAC 11 and 12 encrypted talkgroups approved for law enforcement only.

Nick Schatz asked if there was some added language that should be included from the current talkgroup permission form.

Fredrick said they would do a key loader.

Motion by Nick Schatz, seconded by Ron Jansen to approve McLeod County's request for METAC usage with the added language that a key loader would be used and the metro form is filled out. Motion carried.

C. ECN Equipment Cache Regional Authorization Request
Marcus Bruning said after reading several action reports including one co-authored by the MESB, ECN indicated there should be an encrypted radio cache including a cache housed at the state.

Ron Jansen asked if each region could program its own radios or would the state do it. Bruning said that the region could program the new radios if it chooses.

Jill Rohret asked if the encryption would create any operational issues between different users or differences in encryption levels. Jansen said that thus far, no switchable encryption talkgroups have been created. A dispatch guide will also be needed for patching requests.

Bruning asked Fredrick to send him two request forms.

Motion Ron Jansen, seconded by Nick Schatz to approve the ECN Equipment Cache Regional Authorization Request. Motion carried.

D. South Metro Fire LMR-LTE Connectivity Request
Mark Erickson, South Metro Fire said the request would allow Fire Chiefs to monitor activities for responders that may be on the road and not have access.

Cory DeMuth asked if there was internet exposure. Jansen said the statewide standard will be used.

Nick Schatz asked what security standard will be used. Erickson said that the networks follow the city standard.

Motion by Nate Timm, seconded by Cory DeMuth to approve South Metro Fire LMR-LTE Connectivity Request. Motion carried.

E. Approval of New SECB Standard FIN-2
Tracey Fredrick said this new standard was presented to the Finance Committee. During that meeting it was requested that each region approve and return its reviews of the standard to get full approval from the SECB. This new standard and attached forms for how to deal with forfeiting and reassigning grant dollars.

Motion by Nate Timm, seconded by Ron Jansen to approve the new SECB Standard FIN-2. Motion approved.

5. Moves, Additions & Changes to the System
Nate Timm said that Woodwinds Hospital in Woodbury that it is putting a DAS system, cellular and ARMER. The tower site is 3000 feet away from building. After meeting with the project team and their vendor, it was made know that the same systems will be installed in all eleven MHealth Fairview sites. There was no coverage study for ARMER done in those buildings.

Jill Rohret asked if there was a BCA standard stating private entities connecting to ARMER and this sound like this vendor might be going that way. It may be worth sending a letter of concern.

Jeff Lessard said the U of M has three sites also affected by this work.

Nate Timm said there was another space in Woodbury which went live in July and were not notified.

Cory DeMuth said Anoka County had the same experience with Bearcom also.

Jansen said Shane Chatleain from MnDOT should be included in these discussions since it is the license holder.

Fredrick asked if those that have meetings scheduled with this vendor for this week to let her know what the response is and if a letter will still need to be drafted and what the focus of the letter should be.

Other change noted; Mike Parker said Hennepin County is about ready to put out an RFP for replacement of the IMB brightcell downtown Minneapolis area.

6. Committee Reports

A. System Owners Group Update

Ron Jansen said at the meeting today there was an update from Motorola. There is no replacement for Phil Bruha yet. Also discussed is the ongoing ethernet back haul conversion. The repeater was disabled.

B. MnDOT ARMER System Update – no report

C. SECB Committees

i. Steering

Tracey Fredrick said the Steering Committee met earlier this month. The Chair and Vice-Chair were elected. There was a discussion about keeping the Steering Committee going.

ii. LMR

Nate Timm said the LMR Committee met on January 10, 2023.There was a Cass County amendment for additional talkgroups and Radio IDs. There was a discussion for Clearwater County Participation Plan to add MCC500 consoles. There was discussion about SCIP support and strategies.

iii. WBBA

Rod Olson said the Wireless Broadband Committee met on January 17, 2023. Brandon Larson was elected Chair and John LaValley from City of Duluth as Vice-Chair. There was discussion on the survey being put together on the use of LTE and individual or state-wide level usage.

iv. IOC & Workgroups

a. IOC

Jake Thompson said there were recognitions for AUXCOMM, COMT, and ITSL positions, and discussion on SCIP goals.

b. STR Workgroup

Mike Parker said the meeting was held December 6, 2022. The state radio cache was discussed, along with changing batteries on other STR trailers.

c. COMU workgroup

Nate Timm said at the last meeting task books were reviewed and the upcoming communication drills at Fort Ripley were discussed.

v. IPAWS – no report

vi. Finance/Grants Workgroup

Tracey Fredrick said both met earlier this month. Standard FIN-2 was discussed and written. Decisions about the SECB Symposium to be held this spring was also discussed. The MOU for financial management was also discussed.

Jill Rohret said there also was discussion about creating a work group for the SECB budget.

vii. State Encryption and Change Management Workgroups
Marcus Bruning said there was one meeting so far for Change Management that discussed state encryption. The meetings will be on the first Monday of the month starting in March.

Fredrick said she got an email last week that said the original FBI requirement about 256-bit encryption that came out about a year ago was now missing some wording, but does not state it has been officially removed.

Marcus Bruning said he got a letter from Susan Bowler, which he forwarded to BCA. The BCA commented that this was not the correct document.

7. Other Business
A. METAC Permission update
Tracey Fredrick said McLeod County were approved for the ten clear channels.

B. Metro Change Management Update
Ron Jansen said there was a handout with a list of Regional Change Management items that should be discussed with operations.

For other information, Jansen said Heidi Hieserich has been appointed as the new Dakota 9-1-1 Director.

Cory DeMuth said Anoka ECC has recently voted to go away from 2800 to Anoka dispatch for both fire and law enforcement.

The meeting was adjourned at 2:05 P.M.

SHERIFF DAWANNA S. WITT
Hennepin County Sheriff's Office, 350 South Fifth Street, Room 6, Minneapolis, MN 55415
(612) 348-3744 • hennepinsheriff.org

February 9, 2023

Metropolitan Emergency Services Board
Radio Technical Operations Committee

Dear Radio TOC Chair,

The Hennepin County Sheriff's Office is requesting review and approval of a non-ARMER radio connection in reference to LMR-53 Standard for Foreign Radio System and Non-ARMER Radio Connections.

The Sheriff's Office at times assists in providing licensed peace officer support in locations and at events where non-P25 radio equipment is being utilized. The Sheriff's Office is currently contracted to assist Twins security at Target Field, and this currently requires deputies to carry two radios, one for each desperate radio system.

The Sheriff's office would like to connect a MotoTRBO mobile radio to an HCSO dispatch site CCGW to provide the ability to patch the audio resource to an ARMER talkgroup. The ARMER P25 talkgroup used in the patch will be an HCSO agency talkgroup, that is only requested on the Hennepin East and West subsystems and are site preferenced in subscriber radio programming to Hennepin East and West subsystems.

This would allow deputies working an event at Target Field to utilize their assigned P25 portable to communicate on the Twins security MotoTRBO talkgroup, while also still being able to access ARMER talkgroups.

Upon approval, Hennepin radio technical staff will be involved in completing the configuration and testing of patched radio systems and the overall on-going maintenance and troubleshooting as needed.

Respectfully,

Mike Parker
HCSO Radio Subsystem Administrator

SAINT PAUL
MINNESOTA

DEPARTMENT OF EMERGENCY MANAGEMENT
RICK SCHUTE, DIRECTOR

367 Grove Street, 5th Floor
Saint Paul, MN 55101
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March 7, 2023

To: MESB Radio TOC members, Jake Thompson Chair

CC: Tracey Fredrick

Subject: City of Saint Paul – LMR to LTE Connectivity

Good Afternoon,

Saint Paul Emergency Management would like to request permission to be able to install LMR to LTE interface equipment to the Ramsey County sub-system. This equipment would be in accordance to LMR-53 standard and follow the SECB Push to Talk Application/Selection/Deployment – Best Practices Guide.

Saint Paul Emergency Management is requesting the ability to add twenty (20) permanent or enduring radio frequency (RF) interfaces between City owned talkgroups and LTE devices by utilizing donor radios and a Cubic Vocality radio gateway. This LMR-53 request will be applied to all Saint Paul Emergency Management and may be applied to other users in the City of Saint Paul and users in Ramsey County.

In accordance with LMR-53 the donor radios will be on the ARMER approved radio list and comply with the standard for programming requirements. Ramsey County Radio Services will provide the radio programming and administrative services for these radios and ID's. This equipment will be installed in a secured location at the Saint Paul Emergency Operations Center. Saint Paul Emergency Management maintains a full-time operating staff so in the event there is an issue with this equipment it can be disabled remotely or by on site staff. Ramsey County Radio Emergency Communications staff also will have access to this equipment, if needed, 24/7/365.

City of Saint Paul Departments and associated Ramsey County agencies may choose PTT applications (apps) that meet their operational requirements so long as they integrate appropriately with the Cubic Vocality gateway devices. PTT application system administrators for the Saint Paul Emergency Management will have the ability to enable and disable individual users as well as each user's ability to access radio gateway talkgroups via the PTT application.

The initial setup of the equipment will utilize two (20) XTL 2500 series mobile radios set to low power. The initial application package being implemented will be AT&T Enhanced Push to Talk (EPTT).

If there are any questions on this request, please feel free to reach out to Saint Paul Emergency Management.

Respectfully,

Rick

Metro Region ARMER Standards

Section 3 – Metro 3.15.0 Use of Metro ARMER ME LSEC Talkgroups
Date Established **03-22-23**
Date Revised/Reviewed **03-22-23**

1. **Purpose or Objective**
   The purpose of this standard is to establish policy and procedures for use of the metro region ARMER ME LSEC 1E – 8E talkgroups. These talkgroups are designated for Law Enforcement only and are configured as region-wide resources to facilitate interoperability communications. This policy will serve to minimize usage conflicts when an interoperability talkgroup is needed for an event or operational task that requires secured communications.

2. **Technical Background**
   - Capabilities –
     It is possible to have access to ME LSEC talkgroups in radios used by metro Law Enforcement agencies that share use of the ARMER system. These common talkgroups can be used for a wide range of interoperable communication when coordination of activities between personnel of different agencies is needed on an event or operational task. Patching of these talkgroups is prohibited to non-encrypted (clear mode) talkgroups.

   - Constraints –
     Some of these talkgroups may be used as part of a soft patch to local encrypted talkgroups that are restricted for use by personnel of specific services. The dispatch center creating the patch is responsible for checking for proper talkgroup authorizations when creating soft patches.

     Because many different agencies may be communicating with one another, for purposes of safety, plain English/common terminology must be used when communicating on these regional resources. The use of ten codes is not permitted. This pertains to direct or indirect (when in a soft patch) use of these regional resources.

     Radio User personnel using these talkgroups should understand the restrictions and availability of the use of these resources as primarily communications as it relates to their communication needs.

     ME LSEC are not to be used for an internal operations or events where only local agencies are communicating. ME LSEC should be used when secured interoperable communications is needed, or likely, with multiple regional agencies.

     ME LSEC 1E – 4E are DES-OFB encrypted

     ME LSEC 5E – 8E are AES encrypted

     Metro region-wide ARMER talkgroups may only be in one patch at a time.

Commented [JR1]: Should we add home zone mapping info here as well?

Commented [JR2]: Should we add home zone mapping info here as well?

3. **Operational Context**
These talkgroups are metro region resources meant to facilitate communication between Law Enforcement agencies that typically do not communicate with each other on a regular basis.

If regional non- Law Enforcement agencies desire use of the ME LSEC talkgroups, a waiver proposal should be sent to the MESB Radio Service Coordinator for consideration by the Radio Technical and Operations Committee (TOC).

Law Enforcement Agencies not included under the MESB joint powers agreement require written permission from the MESB for use of the ME LSEC talkgroups. A proposal request should be sent to the MESB Radio Service Coordinator for consideration by the Radio Technical and Operations Committee (TOC).

4. **Recommended Protocol/Standard**

ME LSEC 1E – 4E Talkgroups

TG Requirements	**For Whom?**
Highly Recommended	Metro Law Enforcement mobiles and portables
PSAPs	
Highly Recommended	All Console positions where Law Enforcement agencies are dispatched, mobiles and portables

In order to meet the communication needs for an event or operational task, ME LSEC 1E – 4E talkgroups may be patched to local encrypted talkgroups only.

Commented [JR3]: Do we need to define what level is required in the soft patch

ME LSEC 5E – 8E Talkgroups

TG Requirements	**For Whom?**
Optional	Metro Law Enforcement mobiles and portables
PSAPs	
Optional	All Console positions where Law Enforcement agencies are dispatched, mobiles and portables

In order to meet the communication needs for an event or operational task, ME LSEC 5E – 8E talkgroups may be patched to local encrypted talkgroups only.

Commented [JR4]: Do we need to define what level is required in the soft patch

ME LSEC 5E – 8E talkgroups use AES encryption algorithm and may not be supported in all subscriber radios or console positions.

Note: Some PSAP's may not have the current console capacity to accommodate ME SEC 5E – 8E ME LSEC 1E, ME LSEC 2E, ME LSEC 5E and ME LSEC 6E are all home zone mapped to Zone 1 talkgroups.

Cross Patch Standard	**Yes/No**	**Talkgroup(s)**
Soft Patch	Yes	Encrypted only
Hard Patch	No	None
LTE Gateway	No	None

Commented [JR5]: Newly added any concerns with this requirement.

It is important to note the ME LSEC 1E, ME LSEC 2E, ME LSEC 5E and ME LSEC 6E are all home zone mapped to Zone 1. While ME LSEC 3E, ME LSEC 4E, ME LSEC 7E and ME LSEC 8E are all home zone mapped to Zone 2. This should be taken into consideration when reserving these resources in the event they need to be included in a soft patch.

Commented [JR6]: Do we need to outline the technical reason why?

ME LSEC talkgroups may only be patched to another talkgroup encrypted by ADP, DES, or AES encryption.

None of the ME LSEC talkgroups shall be part of any system-configured multi-group configuration

The ME TAC talkgroups shall only be used when there is a significant need for interagency communications and other suitable means for interagency communications are unavailable, to avoid a reduction in availability of these resources when needed for important events.

The Status Board application will be used to manage reservations and usage of these talkgroup resources.

5. **Recommended Procedure**
   The ME LSEC talkgroups may either be used directly or be patched to other encrypted resources to meet the communication needs of an event or operational task.

   When formulating communications plans, COMLs should check with the agencies involved in interoperability events to see what shared resources are available.

   When a resource is needed, the requesting agency will contact the appropriate metro region ARMER dispatch center to have the next preferred available talkgroup granted. The dispatch center will utilize the Status Board application to identify the status of the resource.

   At the conclusion of the event, the ARMER dispatch center will remove any patches that were used for the event and update Status Board.

   NOTE: Dispatch centers initiating any soft patches must announce the patch after it is set up AND prior to it being taken down.

6. **Management**
   Metro Region dispatch center managers and supervisors for agencies on the ARMER system shall ensure that this procedure for usage and assignment of the ME LSEC talkgroups be adhered to, as well as the setting up of soft patches for which they are responsible.

   The Minnesota Status Board System Administrator shall be responsible for the Status Board application.

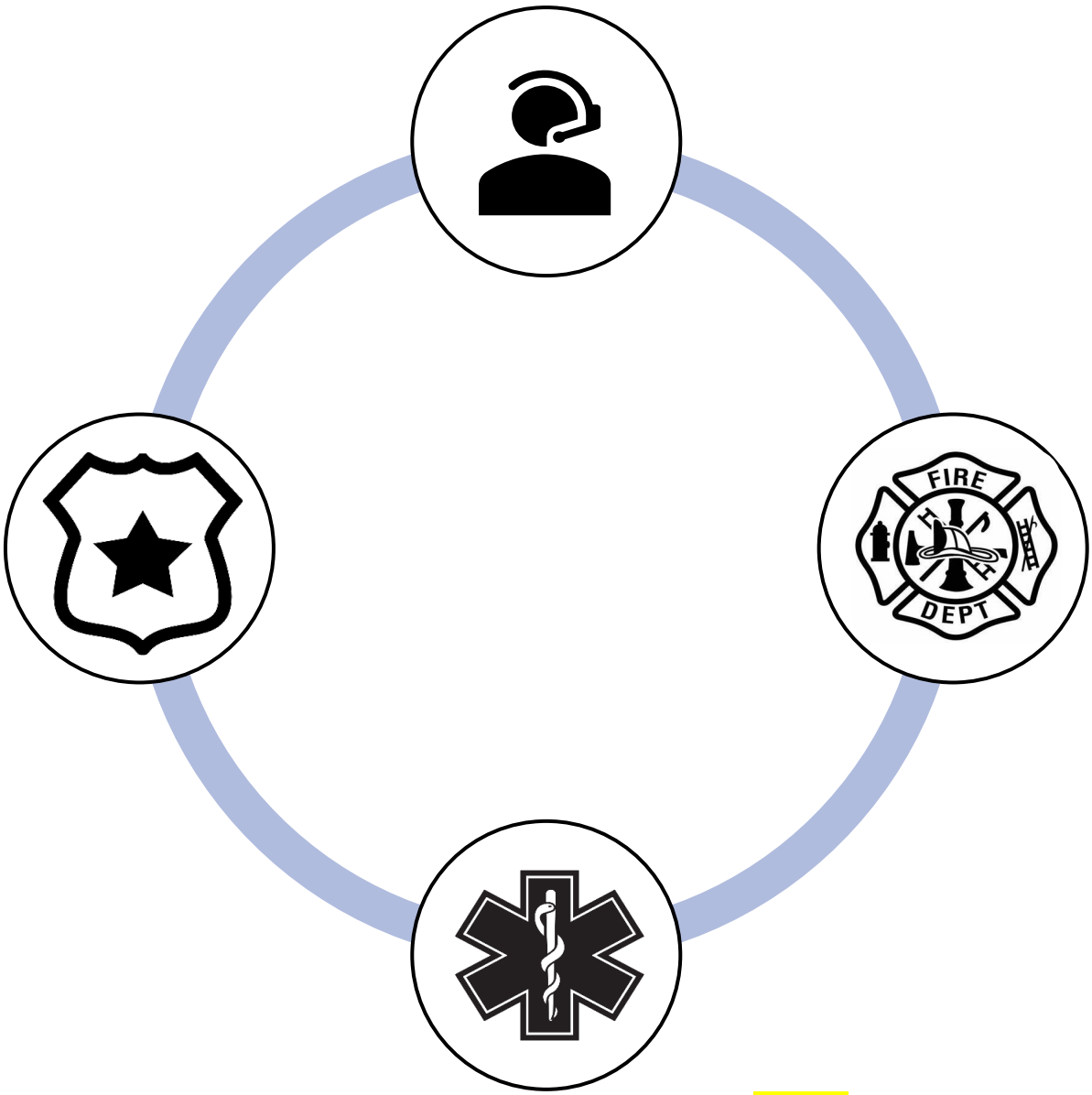
   Dispatch center operators shall receive initial and continuing training on the use of this procedure.

   The Metropolitan Emergency Services Board will be responsible for the ME LSEC encryption keys

Commented [JR7]: I know this is currently used by some agencies; however, do we want to limit patching to lesser algorithms without a waiver?

Metropolitan Emergency Services Board

Regional Needs: The Public Safety Emergency Communications Ecosystem



DRAFT: March 10, 2023

The Metropolitan Emergency Services Board

The Metropolitan Emergency Services Board (MESB) is one of seven regional Emergency Communications Boards (ECBs) and Emergency Services Boards (ESBs) in the state of Minnesota. The MESB was established under MSS 471.59, MSS 403.39 and MSS 403.392 to provide local governance on matters related to emergency communications (9-1-1 and ARMER), as well serving as the regional EMS system for the metro region. The MESB is a joint powers board composed of the following entities: Anoka County; Carver County; Chisago County; Dakota County; Hennepin County; Isanti County; Ramsey County; Scott County; Sherburne County; Washington County; and the City of Minneapolis.

The Public Safety Emergency Communications Ecosystem

With approximately 94,000 active radios (MnDOT, October 2022), the statewide Allied Radio Matrix for Emergency Response (ARMER) system, built by Motorola Solutions and owned and operated by the Minnesota Department of Transportation (MnDOT), provides interoperable Land Mobile Radio (LMR) communication capabilities to 9-1-1 dispatch centers (also known as Public Safety Answering Points or PSAPs), law enforcement, fire, Emergency Medical Services (EMS), emergency management, public works, and other public safety users across Minnesota.

Construction of the ARMER system in the Twin Cities metropolitan region in the late 1990s and expanded to include greater Minnesota in the mid-2000s. In late 2020, the MnDOT completed its backbone of the ARMER system buildout. There are now 335 state maintained and 100 locally maintained ARMER tower sites on-the-air across Minnesota that provide ARMER system radio coverage (mobile only) to 95% of the state's geographic area. Of the 100 locally maintained ARMER tower sites, 54 are in the metro region.

As the ARMER system matures, there is a need to maintain and replace or upgrade aging infrastructure, equipment, and technology. The Statewide Emergency Communication Board (SECB) and state agencies are currently working to develop a capital improvement plan to address this need.

In 1979, the Metropolitan 9-1-1 Telephone Board was formed as a joint powers board of the seven metropolitan counties to plan, design, and implement the first multi-jurisdictional enhanced 9-1-1 (E9-1-1) system in the United States. This system went live at midnight, December 1, 1982, and provided the basis for the statewide buildout of E9-1-1. Today, all 108 PSAPs in the state are part of the statewide 9-1-1 network. Of the 108 PSAPs, 24 are located in the metro region. The 9-1-1 network is in process of transitioning from E9-1-1 to Next Generation 9-1-1, which will provide PSAPs, and 9-1-1 callers, additional abilities to answer texts, receive photos and videos, provide improved 9-1-1 caller location, and provide pre-determined rules for routing of 9-1-1 calls.

Today, the Department of Public Safety contracts and pays for the statewide 9-1-1 system. Local governments pay for costs associated with receiving and dispatching responders to 9-1-1 calls. These costs include maintaining the physical PSAP; salaries/benefits for PSAP

employees, including telecommunicators, administration staff, technical staff, and in some cases, dedicated GIS staff; purchase and maintenance of call handling equipment (CHE) used to answer 9-1-1 calls; purchase and maintenance of communications/radio equipment used to dispatch response to 9-1-1 calls; software or subscription services to maintain the PSAP's 9-1-1 data, including GIS data; and software or subscription services to provide Integrated Public Alert and Warning Systems (IPAWS) alerts to the public. Much like the ARMER system, as the 9-1-1 network and 9-1-1 systems continue to evolve, there is a need to maintain, upgrade, or replace aging equipment to allow for new technology to meet the expectations of the public, which would like to communicate with 9-1-1 in the way the public communicates with one another.

Much like hardships of recruitment and retention of staff across public safety disciplines, PSAPs today face difficulty in maintaining a full-complement of telecommunicators which are needed to answer a PSAP's specific volume of 9-1-1 calls. PSAPs also face difficulty in recruiting new people to serve as public safety telecommunicators, as many people do not wish to work nights, weekends, and/or holidays, which is required in a public safety field.

Funding Considerations

The State of Minnesota's portion of the costs associated with operating the ARMER system is funded through a combination of trunk highway funds, 9-1-1 special revenue funds, and radio tower lease receipts.

Except for PSAP equipment and a limited portion of local infrastructure expenses which can be funded via the 9-1-1 special revenue fund, local costs (including tower site leases, utilities, and system and equipment maintenance) associated with the ARMER system are typically funded via local property tax revenues or per radio charges to ARMER system users in a county. Due to these constraints, public safety agencies across Minnesota face significant funding challenges related to the escalating costs of maintenance of ARMER system infrastructure, equipment, and technology. Without access to stable, adequate supplemental funding sources, it will be increasingly difficult for local entities to support their ongoing ARMER system maintenance and sustainment needs.

Regional Priorities

Though this document covers region-wide needs only, and does not include individual needs of counties, that is not to say that these regional priorities will not benefit each of the ten metro counties individually. What follows are priorities that metro region agencies agree are a priority.

Computer-Aided Dispatch (CAD)-to-CAD Interoperability Solution

The 23 primary and secondary PSAPs in the metro region desire to acquire a CAD-to-CAD integration solution designed to connect disparate CAD systems for the purpose of expediting emergency response which may cross jurisdictional and PSAP boundaries. The solution would also provide improved situational awareness for metro region PSAPs. Such a solution was found to be a need in the Metropolitan Emergency Services Board's May/June 2020 Civil Unrest After-Action Report/Improvement Plan. The solution could allow other PSAPs to answer 9-1-1 calls intended for a PSAP which has been inundated with 9-1-1 calls; this will provide 9-1-1 callers with better service in extraordinary situations/events.

Estimated Metro Region cost: ~$180,000 per year, plus one-time implementation costs of approximately $30,500*

*This item is included in HF 2431/SF 2454

BDA Requests

Several buildings in the region have been identified as having radio coverage gaps and would benefit from having bi-directional amplifiers (BDA) installed. This would assist first responders with radios be able to assist and be heard on the radio no matter where in a building the responder is located.

Estimated Metro Region cost: ~$3 million*

*This item included in HF 2431/SF 2454

GIS Software Services – School Mapping

With the frequency of mass shootings/armed assailant incidents increasing nationwide, and in reviewing the response to recent school shootings, primarily in Uvalde, TX, the metro region would like to implement school mapping, whereby maps of schools would be available in each PSAP, which could facilitate the location of 9-1-1 callers within the building. Additionally, having these resources available could provide first responders with information that could affect emergency response, such as locations of chemistry labs, etc. which could alter responders' plans.

Estimated Metro Region cost: ~$400,000 in one-time implementation costs and $40,000 per year in annual maintenance costs*

*This item included in HF 2431/SF 2454

GIS Software Services

GIS software services are needed to support the creation, conversion, and maintenance of GIS-derived Master Street Address Guides (MSAGs) for the PSAPs in the ten-county metropolitan region. These services would further integrate the region's legacy 9-1-1 data processes with those needed for NG9-1-1. The outcomes include improving 9-1-1 data accuracy, gaining operational efficiency, and maintaining 9-1-1 data synchronization during the transition to full i3 NG9-1-1 implementation. Additionally, a web-based map viewer will allow for all metro region PSAPs and GIS partners to have visibility to the region's current NG9-1-1 and related geospatial datasets in a secure, shared environment, allowing for seamless data sharing, greater collaboration, and improved data integrity.

Estimated Metro Region cost: ~$180,000 per year, plus one-time implementation costs of approximately $30,500 for generalized GIS software services
~$344,059 for five years for the web-based data viewer, plus $8,279 in one-time implementation costs.

AES Encryption

The Statewide Emergency Communication Board (SECB) recommends a transition to a higher level of encryption (AES or Advanced Encryption Standard) for sensitive radio transmissions on the ARMER system. To achieve this capability, supplemental funding is necessary to replace and/or upgrade existing ARMER system equipment.

Estimated Metro Region cost: ~$8.4 million

Geo-Diverse 9-1-1 Call Handling Equipment (CHE) ESInet Connections

Many Minnesota PSAPs are taking advantage of geo-diverse technology with new CHE platforms that allow for 9-1-1 calls to be delivered to two locations simultaneously. Geo-diverse configurations split the A and B servers typically found at one location, into two separate geo-diverse locations, which allows for additional staff at another location, or PSAP, during extremely busy times or special events to answer 9-1-1 and administrative calls while the main PSAP is still active. It also allows the PSAP to abandon its primary location while the backup location is fully operational and gives the opportunity for a staged evacuation while staff is enroute to the backup location. Additionally, the main PSAP can operate on the connections that exist at its backup location if the main PSAP experiences any technical issues with its connections. To allow for full redundancy and resiliency, each PSAP utilizing geo-diverse CHE should have two Emergency Services Internet (ESInet) connections at each location to ensure the maximum number of 9-1-1 calls can be received at either location at any time, regardless of any problems occurring at the other location. Currently, ECN only pays for two ESInet connections at each PSAP, which is the typical setup for legacy CHE. ECN should reconsider its position and pay for four ESInet connections for PSAPs which implement geo-diverse CHE systems. Having four ESInet connections provides improved resiliency and redundancy to a PSAP's 9-1-1 system and best serves the residents of its jurisdiction.

Estimated Metro Region cost: ~$12,000 per PSAP per year, or $216,000 annually in addition to ECN's current costs

Vendor-provided Radio Technical Training

According to SECB standard, system administrators must go through training at least once every two years. To keep current with evolving technology, administrators request to attend training provided by a contracted technical vendor to fulfill this need.

Estimated Metro Region cost: ~$40,000 per year

CRTF Training and Exercising

The Metro Communications Response Task Force (CRTF) holds quarterly training/exercises for deployable personnel to remain current on local, state, and national standards. These deployable personnel typically are assigned to assist in the field, the command post, EOCs, and PSAPs during planned and emergent events.

Estimated Metro Region cost: ~$10,000 per year

Staff Recruitment & Retention

Public safety disciplines, including PSAPs and LMR technology departments, struggle to recruit and retain employees. There is a need to establish a program to actively recruit new staff and to retain employees. The Emergency Medical Services Regulatory Board has established a pilot grant to focus on EMS employee sustainability. Similar programs should be instituted for other public safety disciplines, though with this request the focus is on public safety telecommunicators and system technologists. The metro region would like to contract with a vendor to place targeted recruitment ads via radio, flyers, videos, and social media platforms.

Estimated Metro Region cost: ~$100,000 per year

ARMER Infrastructure not included in SUA2+ Contract

Every five years, the State of Minnesota (specifically MnDOT) enters into a service contract with Motorola for maintenance and upgrades to the ARMER system. There is a current upgrade need to transition sites from T1 to Ethernet backhaul transport.

Estimated Metro Region cost: ~$500,000

Metro Mobility Usage
(Hours:Mins:Secs)
2023

Please Note: The report from Metro Mobility will be given at the end of the quarter beginning in 2023

Month	City Center	Anoka (Lino Lakes)	Dakota	Norwood	Hastings	North Branch	Hennepin West	Overall
January	81:59:20	39:25:48	39:16:49	16:23:38	48:09:18		23:34:05	248:48:58
February	50:43:52	20:04:18	21:58:55	7:24:28	30:58:53		12:56:15	144:06:41
March								
April								
May								
June								
July								
August								
September								
October								
November								
December								
Difference since Jan. 12	656:57:50	385:58:45	298:06:15	222:53:22	265:34:15	0:26:46	152:56:51	1982:54:04
Target	150:00:00	75:00:00	75:00:00	75:00:00	75:00:00	0:00:00	75:00:00	525:00:00

SAFECOM® NATIONWIDE SURVEY

COMING SOON

The SNS Drives Emergency Communications

The SAFECOM Nationwide Survey (SNS) is a nationwide data collection tool that enables partners in the emergency communications ecosystem to have their voices heard. Data obtained from the SNS is used to advance emergency communications capabilities.

Benefits to Your Organization

SNS results help government officials and emergency responders better understand emergency communications needs so they can make data-driven funding, policy, and programmatic decisions to strengthen emergency communications capabilities. SNS data helps:

- Shape policy and funding
- Tailor programs and services
- Build knowledge and awareness of capabilities and gaps

Make Your Voice Heard!

Any agency or organization that is charged with a public-safety related mission and uses emergency communications technology is encouraged to take the survey. To achieve statistical validity of results, we need respondents from various disciplines, geographies, and levels of government.

In particular, the survey targets the following disciplines:

- Emergency Communications Centers/Public Safety Answering Points
- Emergency Management
- Emergency Medical Services
- Fire & Rescue
- Law Enforcement

Want More Information?

Visit cisa.gov/safecom/sns for the most up-to-date information.

Have more questions about spreading the word? Contact sns@cisa.dhs.gov.

How Can You Help?

SPREAD THE WORD!

- ✓ Encourage colleagues to take the survey
- ✓ Emphasize the importance of the SNS in meetings and conferences
- ✓ Contact us for an outreach toolkit (fact sheets, social media messages, slide decks)

SAFECOM NATIONWIDE SURVEY

DAKOTA COUNTY ECHOING AUDIO
FEB 3-15, 2023 SYNOPSIS

Environment

Dakota County MN operates a 16 channel, simulcast P25 trunked subnetwork on the Minnesota ARMER network. There are 10 RF sites serving the County. The simulcast prime site is located is known as “Empire”.

Summary of Symptoms

Note: All of these symptoms were intermittent. Not every call resulted with the exact same symptom. Most calls were normally processed.

1. Dispatchers would hear themselves talking
2. Dispatch and subscribers would hear an echo of the last syllable from one to ten times. It would subside on its own without any intervention.
3. This phenomenon occurred randomly on different Talkgroups.
4. While Dakota seemed to have most of the echo’s on their Talkgroups, several geographically close agencies also reported the issue. (Washington County, Bloomington, and others)
5. Instant Call Recorders (IRR) and Talkgroup recorders also recorded and showed anomalies in the recordings.

Brief Summary of Findings

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(More detailed technical information in the Addendum for those who wish to see it)

Initial investigations focused on identifying any pattern in the events since it was intermittent. Through various techniques it was found that, initially, it appeared Channels 6 and 9 on the Dakota simulcast system seemed to be the source. Those channels were disabled Dec 3rd and left that way until Tuesday, Feb 7th. There were no further reports of issues during that time.

Between Feb 7 and 8, it was determined the issue was truly intermittent and it had changed to possibly affecting Channels 6,9,10,13,14, and 15. It was determined that there was a source of intermittent interference on the repeater receivers (inbound from the mobiles) affecting these channels, at Empire site only, but it was unpredictable as far as when it would happen. Basically, there was Repeater Receive activity when there should not have been any.

In an effort to minimize the affects to the system, all receivers at the Empire tower were taken out of service. This did cause a talk-in coverage issue in the footprint around Empire area until a solution was found.

Investigation began to locate this intermittent interference. It was discovered that the interference only occurred during two types of calls.

1. Console transmissions from any agency.[1]
2. Transmissions where the mobile sourcing the call was in a different site (ex. Washington) and the repeaters were keyed in Dakota County so a listening mobile would be joined to the call.

Any calls where the originating mobile was in the Dakota site did not cause the issue.
The issue still had the time of day variable. Troubleshooting was limited too when the interference was active.

[1] Dakota's subnet is part of a wide area trunked system having a statewide footprint.

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Several days of searching for this interference, which was at a very low signal level, resulted in locating the source in a building near the Empire site that had just turned on an undocumented BDA/DAS[2] system.

The BDA/DAS system is supposed to be limited, by programming, to only focus on specific channels to repeat and amplify. This system had lost its programming values and that caused it not to perform correctly. This database normally does not get corrupted but it did in this case.

Since the BDA/DAS system was actually in the construction phase, power was being cycled and programming was in process. It would explain why we saw the interference coming and going.

Also, the default values that the unit was repeating just happened to affect only certain channels.

Reprogramming the BDA/DAS unit by the installing contractor resolved the issues.

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[2] Bi-Directional Amplifier—- Distributed Antenna System— these are used to improve radio and/or cellular performance inside of a building that has poor coverage

Addendum
Deeper Dive for the Technical People

This section contains technical details for someone to have if this type of event happens again. Hints and tips used in this case.

Thanks are to be sent to Hennepin County who was willing to share some of their experiences with locating a similar situation in Hennepin County. It significantly shortened the time it took to locate the Dakota County issue.

Most of this will be an expansion on abbreviated statements in the summary.

Summary of Symptoms—- Recordings

1. When operators said they could hear themselves, the analog IRR actually had two streams of audio at the same time recorded. Very garbled.

2. The same audio, on the long term digital Talk Group logger, showed two different Tracks, but the time stamp was off by about a second. One of the recordings also did not have any of the data. Just blank.- no Talk group info.

One of the major pointers to the issue was an alarm seen on the system that reported “Unexpected Receive Activity” reported by the Voters. There were many channels that would have this message occasionally, but the affected channels were loaded up with many messages.

Hennepin County had defined the foreign site sourced mobile and the console key as the source so it strongly reinforced an improperly operating BDA as being the source when the Dakota system was doing the same thing.

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Disabling the channels was accomplished in each voter simply by turning off the voting from the Empire Site through CSS.

Determining if the problem was occurring and on what channels was accomplished by having ZoneWatch up and CSS on each Empire Channel. Watching ZoneWatch to identify if it was a console call, a foreign site sourced call or a locally received type call was the first step. By monitoring the RSSI level under Test and Measurement, any Console Call or foreign call source, the local receiver should not have any signals coming in. If there was no interference, the levels were all less than -125 dBm. If there was interference, the signals were -120 dBm or stronger. In Dakota's case, it varied channel to channel and hour by hour from -115 dBm to -104 dBm. Watching the voting activity on the Local Status screen and CSSing into the stations also proved that other sites in the Dakota system were not being affected. If this would have affected multiple sites, that information could be used to point in a geographic area. Since Empire was the only site affected, it limited our search area to a rough circle approximately half way to the next tower.

Using an Anritsu SiteMaster (with Spectrum Analysis option) we could see the signal while plugged into the RX TTA system at Empire. It was about 10-14 dB above the noise floor. In all the testing, it's very important to have a narrow bandwidth to improve the noise floor. Too wide and it's lost in the noise. We found 20 - 50 Khz span about the best for searching for this. We did have an older HP monitor available but the noise floor was too high even using the TTA system.

Keeping the signal up to chase down the interference was accomplished by locking the PTT on on the console headset Tx switch after we got it on the channel we wanted to work with.

We first searched in the areas of known BDA's but it wasn't fruitful. We started suspecting an undocumented unit.

Initial drive testing with a directional antenna (we were using a 15 dB parabolic but a high gain Yagi should work also) the search didn't work well. Either we didn't see the signal or the front end of the test equipment kept getting swamped with high RF issues. Attenuation of the signal fixed the high RF but blinded us to the low level we were looking for.

The only way it was able to be located (-110 is pretty low) was to install a decommissioned TTA unit, including the DC powered base unit to power up the top unit, in a vehicle to get the filtering and the gain. When the noise was found it

was only about 10-12 dB above the noise floor and we had to be within 1000 feet of the signal to recover it on the SiteMaster. That's a pretty small search grid. A secondary issue is the powering of the base unit. We were lucky enough to have a small 48v supply and and vehicle with an inverter in it to power the 48v supply and Anritsu.

After finding the location, we were lucky enough to find the vendor quickly and it had happened to them before so they knew what to do. Part of the issue of loosing its programming was their backup battery systems had not been installed yet although, in theory, they should not depend on the batteries to retain their programming.

After BDA programming resolution, we went through all the steps of monitoring for the offending signal and then returned the voting capabilities and close monitoring and found no repeat of the interference.

Another note—- The Astro transmitters are part of the mix and that is why the Astro receivers would continue to process the call. The imbedded data made it look like real signals to the receivers and voters.

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