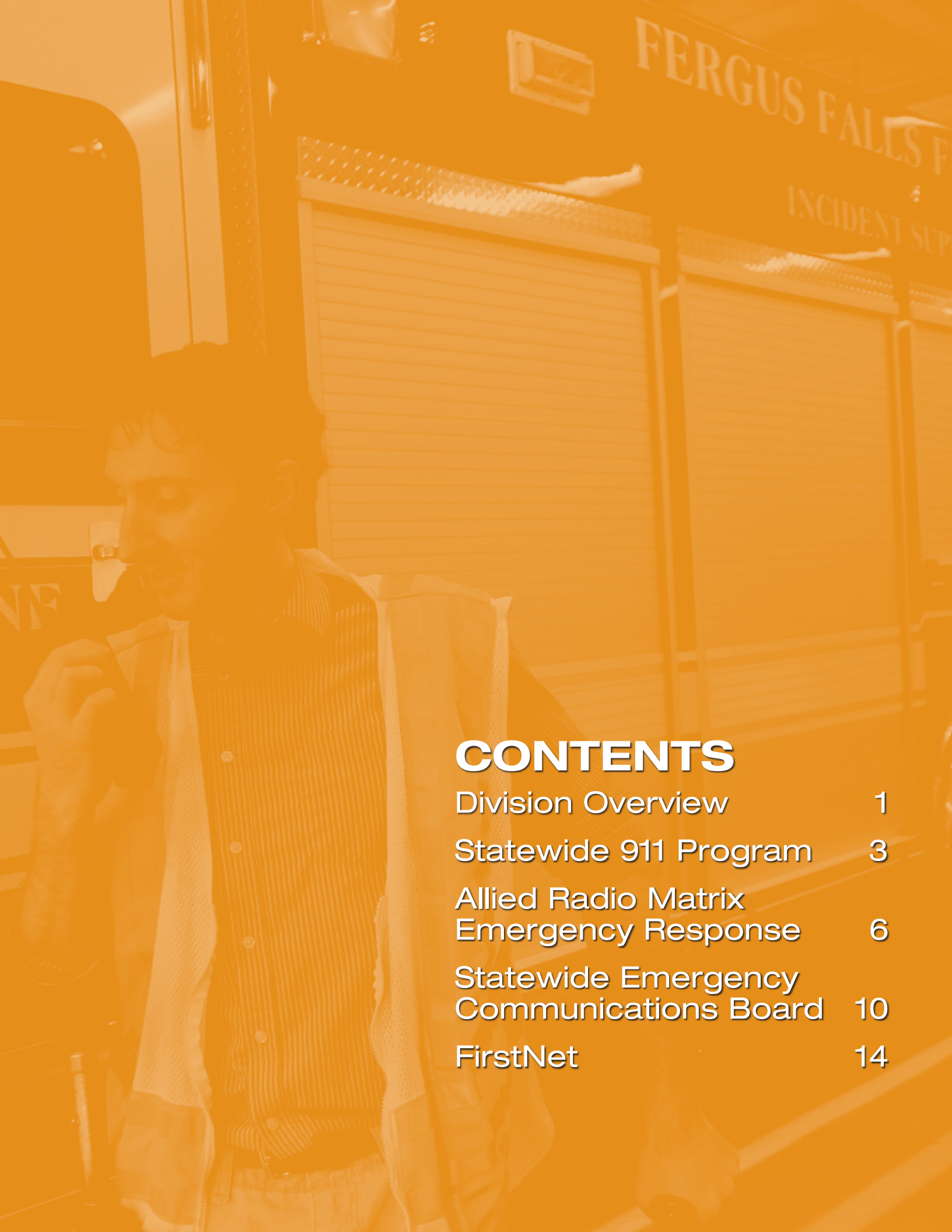
DEPARTMENT OF PUBLIC SAFETY

DIVISION OF EMERGENCY COMMUNICATION NETWORKS

2014 ANNUAL REPORT



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DIVISION OVERVIEW

The Department of Public Safety (DPS) Division of Emergency Communication Networks is led by Director Jackie Mines and has 10 employees who work in the following areas:

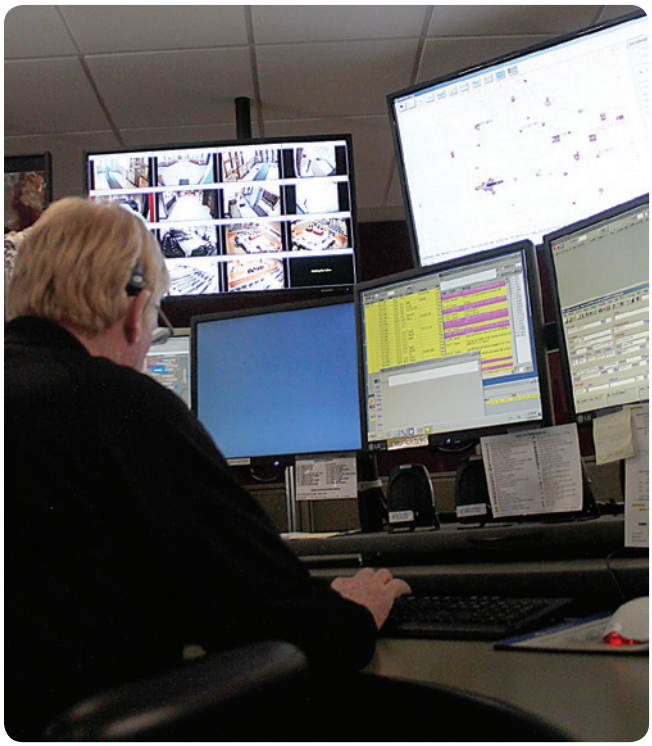
- Statewide 911 Program
- Statewide shared radio communications network — Allied Radio Matrix for Emergency Response (ARMER)
- Statewide Communications Interoperability Plan (SCIP)
- Wireless Public Safety Broadband Project

OUR MISSION

Fund and support interoperable public safety grade mission-critical communication solutions that allow public safety 911 dispatchers, emergency services personnel, state, local, and federal agencies to communicate easily with each other to provide an immediate response to all Minnesota citizens and visitors requesting emergency assistance.

NOTABLE ACHIEVEMENTS

- Migration to the Next Generation 911 Emergency Service IP Network (ESInet) is complete. This is the conversion of the 911 network from an analog voice network to a high-speed voice and data network.
- Minnesota's Allied Radio Matrix for Emergency Response (ARMER) program continues to be a model for the nation. Ninety-seven percent of the ARMER backbone is on the air. Seventy-eight of 87 counties have migrated to ARMER, with seven of the remaining counties exploring the feasibility of joining ARMER in the near future. The continued support of state and local elected officials reinforces our commitment to interoperable communications during disasters and emergencies
- Advancing the deliverables for the FirstNet consultation project (State and Local Implementation Grant Program, or SLIGP,) will promote the implementation of a public safety wireless broadband network.



DIVISION OVERVIEW

SERVICES PROVIDED BY ECN

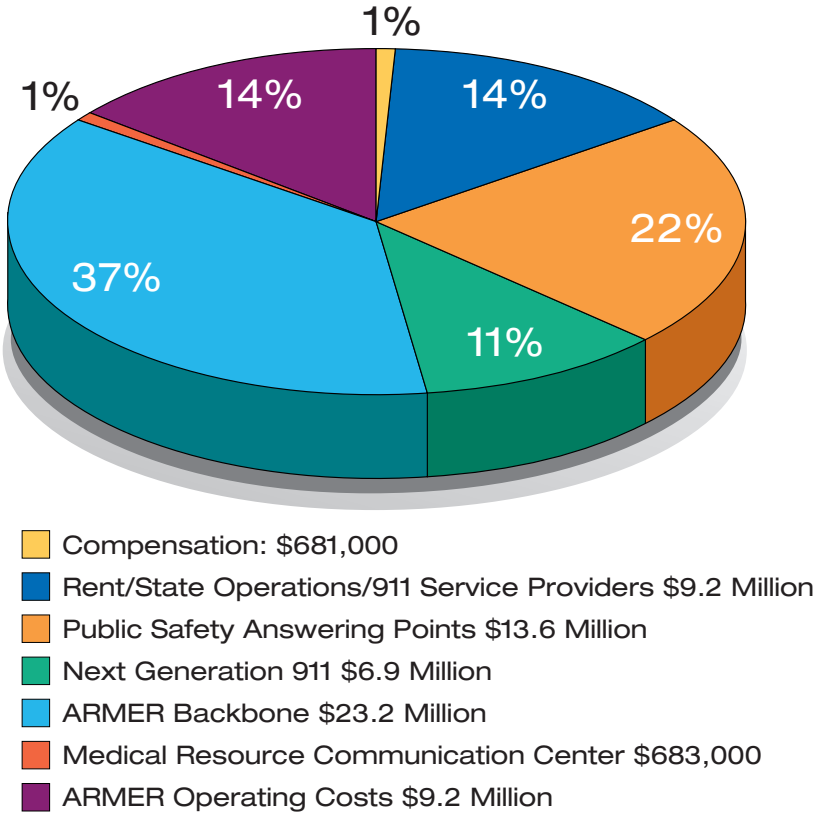
- State-of-the-art voice and data communications backbone to 100 percent of Minnesota residents and visitors requesting emergency assistance
- Achieving 95 percent mobile radio coverage across all rural and metro counties, enabling emergency responders to communicate seamlessly with each other, as well as with every Public Safety Answering Point (PSAP) when responding to requests for emergency assistance
- Grant dollars to local units of government to purchase necessary equipment for emergency responders
- Training applications to support comprehensive region-wide training and exercises for 911 dispatchers and emergency responders
- Support to the established statewide and regional emergency communications governance structure to ensure each user has a voice in how Minnesota's interoperable public safety systems function through collaboratively developed and implemented standards

FUNDING FOR OPERATING EXPENSES

ECN programs are funded with revenues collected from a 911 fee paid by every Minnesota telephone communications customer and deposited in the 911 Special Revenue Account. The 911 fee is 78 cents per wireless, wireline, VoIP and prepaid wireless subscriber. Those funds support:

- Statewide 911 program
- NG911 network backbone
- Wireline telephone company costs to connect to the 911 network
- Equipment and dispatch proficiency expenses for 104 PSAPs
- Debt service on the revenue bonds sold to construct the ARMER system
- ARMER backbone maintenance and operation costs
- Minnesota's interoperability program
- Statewide Emergency Communications Board (SECB)

FY 2014 EXPENSES



STATEWIDE EMERGENCY COMMUNICATIONS PROGRAM BUDGET

911 ARMER PROGRAM — SPECIAL REVENUE FUND
FORECAST OF REVENUES AND EXPENDITURES — FEBRUARY 2014 FORECAST

($ in thousands)	Actual Fiscal Year 2014	Forecast Fiscal Year 2015	Forecast Fiscal Year 2016	Forecast Fiscal Year 2017
Forecast Resources				
Prior Year Ending Balance	$19,126	$18,954	$10,417	$22,403
911 Fee Collections	$63,571	$61,914	$75,624	$75,928
Transfers from Other Funds	$0	$0	$0	$0
Prior Year Adjustments	$0	$0	$0	$0
Subtotal Current Resources	$63,571	$61,914	$75,624	$75,928
Total Revenues Plus Prior Year Ending Balance	$82,697	$80,869	$86,042	$98,331
Authorized Expenditures and Transfers				
Appropriation Transfers:				
Debt Service — Metropolitan Council	$0	$0	$0	$0
Debt Service — ARMER Backbone	$23,261	$23,261	$23,261	$23,261
MnDOT — ARMER Operating Costs	$9,250	$9,650	$9,650	$9,650
Medical Resource Communication Center	$683	$683	$683	$683
Subtotal Transfers	$33,194	$33,594	$33,594	$33,594
Expenditures[2]				
Compensation	$681	$693	$710	$728
Rent / State Operations / 911 Service Providers	$9,256	$16,470	$15,670	$15,652
Public Safety Answering Points (PSAPS)	$13,664	$13,664	$13,664	$13,664
Next Generation 911	$6,946	$0	$0	$0
Grants to Local Units of Government	$0	$6,030	$0	$0
Subtotal Expenditures	$30,548	$36,857	$30,045	$30,045
Total Transfers and Expenditures	$63,742	$70,451	$63,639	$63,639
Fund Balance	**$18,954**	**$10,417**	**$22,403**	**$34,692**

NEXT GENERATION 911

Next Generation 911 (NG911) will be faster, more flexible and, resilient to parallel the communication technology used by the public today. Today's 911 networks carry only voice. NG911 will allow for voice, text, messages, photos and videos to be sent from the public, through the 911 system and on to emergency responders.

The technology to implement NG911 systems is available now, but the transition to NG911 involves much more than just new computers. Implementing NG911 will include the initiatives of many skilled people, who will coordinate efforts to plan and deploy a continually evolving system of hardware, software, standards, policies, protocols, and training.

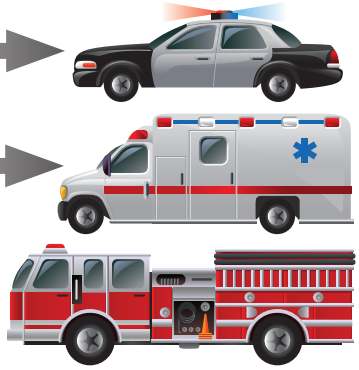
CRASH: HAZARDOUS MATERIALS TANKER VS TELEMATICS EQUIPPED VEHICLE

Vehicles send telematics data to PSAP.

Bystander calls 911 using iPhone and sends photos and video of crash to PSAP.

PSAP sends data to DOT for intelligent traffic reroute.

PSAP forwards photos and video sent by 911 caller to law enforcement and fire.



HAZMAT acknowledged at time of crash.

Hospital activates burn unit.

TEXT TO 911

Consumers and members of the deaf and hard of hearing community are looking forward to the ability to text to 911 when a voice call is not possible. ECN is working to implement text to 911 in 2015.

MINNESOTA VISION

- Statewide implementation using a well-planned and coordinated deployment approach, perhaps starting at a regional level
- Statewide public education campaign to precede implementation
- Single vendor solution for all of Minnesota
- Accept text-to-911 from all four major wireless carriers and any smaller carriers capable of provisioning
- Integrate the solution directly into PSAP call answering equipment to the greatest extent possible
- Implement a single web-based solution for text-to-911 when PSAP answering equipment cannot integrate
- Ability to transfer text messages between PSAPs

Text-to-911 is a complement to, and not a substitute for, the existing 911 voice-based call. Call if you Can! Text if you Can't!

GEOGRAPHICAL DATABASE FOR PSAPS

Geographic Information Systems (GIS) play a supporting role in today's PSAPs and will become increasingly more important in the advancement of NG911. GIS will become the data source for the routing of 911 calls, assisting with location of the 911 caller, and determining the appropriate responding agencies.

- Today's 911 is based on the phone number of the caller
- NG911 is based on the location of the calling device and allows for voice calls, along with all types of communications media, to connect with PSAPs and first responders
- With NG911, all requests for emergency assistance are associated with a location. The location can be a street address, a geodetic shape, or a latitude and longitude coordinate

The synchronization of the street address database and the geospatial database will improve the accuracy of GIS data, and the location identification (ALI) displays in the PSAP, which will improve PSAP map displays for all types of emergency calls.

ALLIED RADIO MATRIX EMERGENCY RESPONSE ARMER

Minnesota established the ARMER Program in 2004. It is administered in coordination with the Statewide Emergency Communications Board and manages the implementation of the 700/800 megahertz (MHz) shared, digital trunked radio communication system.

The ARMER backbone is built, owned and operated by the Minnesota Department of Transportation (MnDOT). It is a robust, scalable, state-of-the-art system capable of servicing the radio communications needs of every city, county, state agency, tribal government, and non-government public safety entity in the state. It is the infrastructure upon which emergency responders rely.

STATUS

- To date, 78 of the 87 Minnesota counties have migrated to ARMER. Seven additional counties have or will be creating a participation plan to assess the feasibility of migrating to ARMER within the next few years
- 315 out of 324 tower sites are on the air; however, some of these sites are supported on old or temporary towers. They are counted as operational but require construction of new tower sites.
- 10 sites are pending deployment, due to delays for land acquisition in difficult to reach bog or forest land (three areas in the northwest and seven areas northeast.)

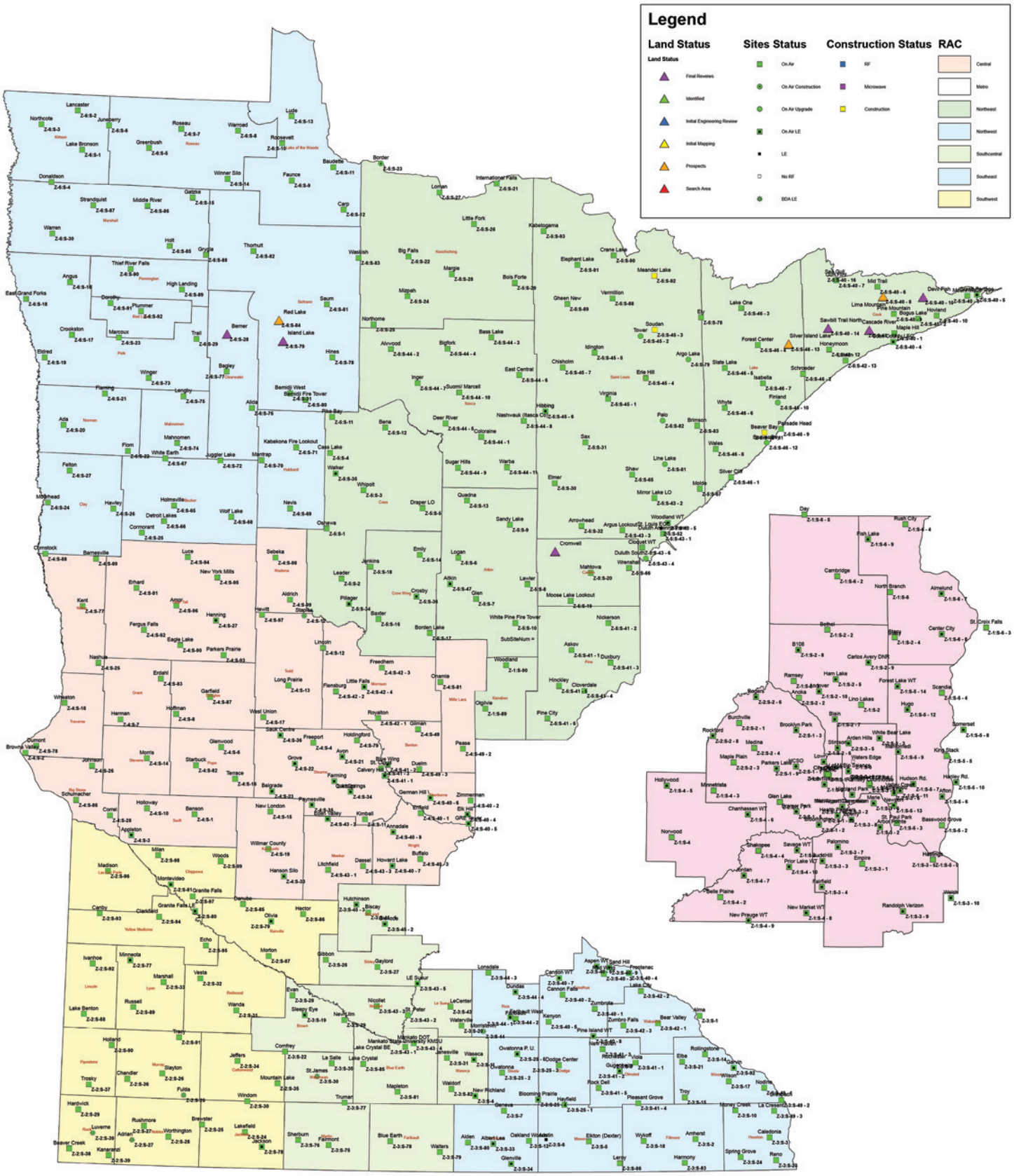
RESULTS

- 95% mobile coverage achieved
- 97% of ARMER sites on the air

ADDITIONAL PROJECT IMPROVEMENTS:

- A VHF Interop Overlay has been installed to ensure interoperability with agencies operating on VHF systems.
- Redundant routers will be added to all sites. This redundancy will improve the instances of site outages related to weather and other atmospheric conditions. The SW, SC, and SE regions are complete; work is progressing in Central, NE, and the NW regions.
- A number of towers are on the air on old towers that were constructed in the 1950's. Although the towers are not at risk for immediate replacement, the ARMER budget allows for new towers to be built in these locations. This work is ongoing, as other projects permit and as contingency funds remain.
  - MnDOT continues to review high-capacity routes and outage records to implement microwave redundancy, space diversity, and realignment of towers to improve functionality.

ARMER BUILD OUT STATUS MAP



CONSTRUCTION BUDGET STATUS AS OF JANUARY 1, 2015

Project Funding	Original Budget	Spent to Date	Balance Remaining	Encumbered	Available Balance
Phase 3	$45,000,000	$44,952,397	$47,602	0	*Complete
SRB Funds (FY09)	$1,902,831	$1,902,831	0	0	Complete
Phase 456 (FY 09)	$61,996,957	$61,981,069	$15,887	$15,887	0
Phase 456 (FY 10)	$62,015,407	$61,826,943	$188,464	$188,464	0
Phase 456 (FY 11,12,13)	$61,987,634	$41,126,887	$20,860,746	$7,245,933	$13,614,813
Total Phase 456	$186,000	$164,934,901	$21,065,098	$7,450,285	$13,614,813

Contingency as of July 2015** **$729,813**

* Phase 3 remaining balance cancelled ($36,163) after funding for Phase 3 ended 12/31/10.

** As mentioned above some sites were placed on older towers. Any contingency money will be used to build new towers to replace old towers as needed.

BONDS SOLD

The state of Minnesota issued and sold 911 revenue bonds for the ARMER system in the following years:

- 2008 — $42,205,000
- 2009 — $60,510,000
- 2011 — $60,308,000

The bonds, which received a high 3-A rating from all bond-rating agencies, are backed with a dedicated funding source in the 911 Special Revenue account. The rating and sustainable funding contributed to the sale of all bonds even during the challenging economic period of the mid 2000's.

ARMER SUCCESS STORIES

Basswood Lake Boy Scout Rescue

The weather was cold and windy on June 12, 2014 as five Boy Scouts and three adult chaperones canoed on Basswood Lake in the Boundary Waters Canoe Area. One of the canoes capsized, and the campers became separated in the high wind and waves.

Three members of the group were able to get to land and use radios they carried for safety to call the Boy Scouts of America (BSA) base camp in Ely and report the emergency. They informed base officials that they were on an island in Canada, but they were not sure about the location of the other canoeists. The BSA base called the Ontario Provincial Police, who called the Minnesota State Patrol (MSP) for assistance. Within minutes, eight agencies — county, state, and federal — were working together to save the lives of the stranded scouts and their chaperones.

In one of the most remote areas of Minnesota, they used the ARMER system to talk directly to each other.

In this case, responders had to find the correct talk-group on their radios in order to communicate with other agencies. The Lake County dispatcher did an outstanding job coordinating talkgroups and patching ARMER talkgroups to VHF frequencies in order to maintain interoperable communications. This is a great example of why continued training and pre-planning through annual exercises is so important.

Agencies involved were the Lake County Sheriff's Office, Lake County Rescue, U.S. Forest Service dispatch and float-plane pilots, MSP dispatch, MSP Trooper 8 helicopter and crew, the Minnesota Aviation Rescue Team (MART) through the St. Paul Fire Dept., St. Louis County dispatch and rescue, Minnesota Department of Natural Resources, the Ontario Provincial Police, and Ely and Babbitt ambulance services.

Once all stranded canoeists were located, the MSP helicopter crew lifted two of them and transferred them to a Department of Natural Resources (DNR) boat. The rest of the group was transported to safety by a U.S. Forest Service Beaver floatplane.

B.J. Kohlstedt, Lake County Emergency Management Director, expressed gratitude for the ARMER system. "In our large, remote counties with low population and scarce staffing resources, we rely heavily on mutual aid with our neighboring jurisdictions. Having us all on a common, statewide radio system is an immeasurable improvement."

Kohlstedt added that Lake County switched from VHF to ARMER when only five of the county's 10 ARMER sites were on the air. She says that, although there were still dead spots in the system, it was already better than the previous system that ARMER replaced.

Gunflint Lake Rescue

On Gunflint Lake, a nice August day can turn dangerous very quickly, as two teenaged resort guests discovered the hard way.

The boys rented a small boat and headed out about noon. Soon after, the waves turned so rough that the motor fell off their boat, leaving them adrift. The pair washed up onshore far from their resort, where they spent the night in an empty cabin with no way to let anyone know they were safe.

The resort owner, a member of Cook County Search and Rescue, began looking for the pair when they did not return as scheduled. He requested additional resources, and responders in six boats extended the late-afternoon search into the night. The next morning, a U.S. Forest Service aircraft spotted a person waving a shirt from a dock. It was one of the boys. They were cold, wet, tired, and grateful to be brought to safety.

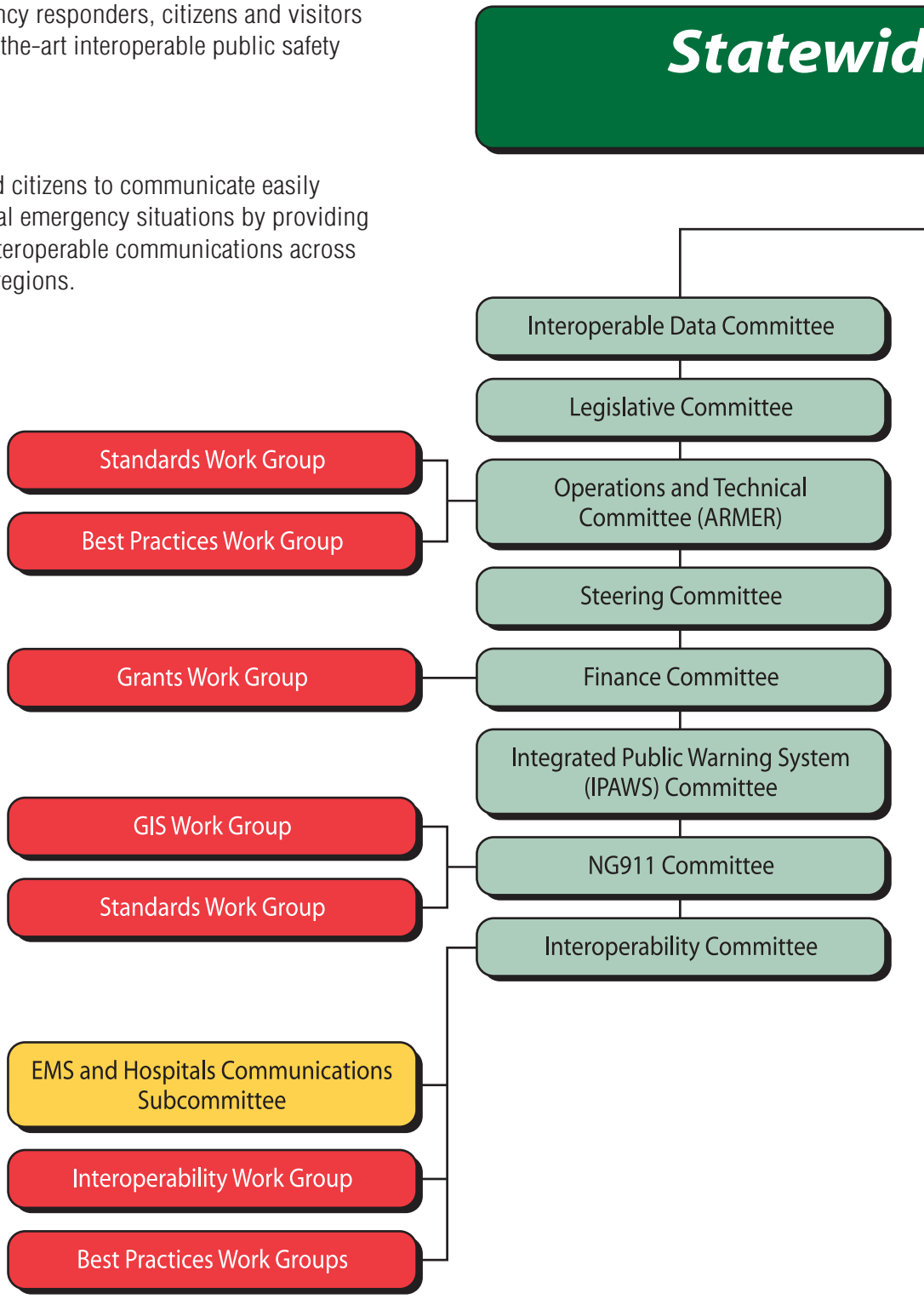
The Cook County Sheriff's Office, Cook County Search and Rescue, Gunflint Trail Volunteer Fire Dept., U.S. Forest Service, U.S. Border Patrol, Minn. Department of Natural Resources, and Minn. State Patrol assisted with the search, using the ARMER system to communicate with personnel in search boats, ground vehicles, and air support vehicles.

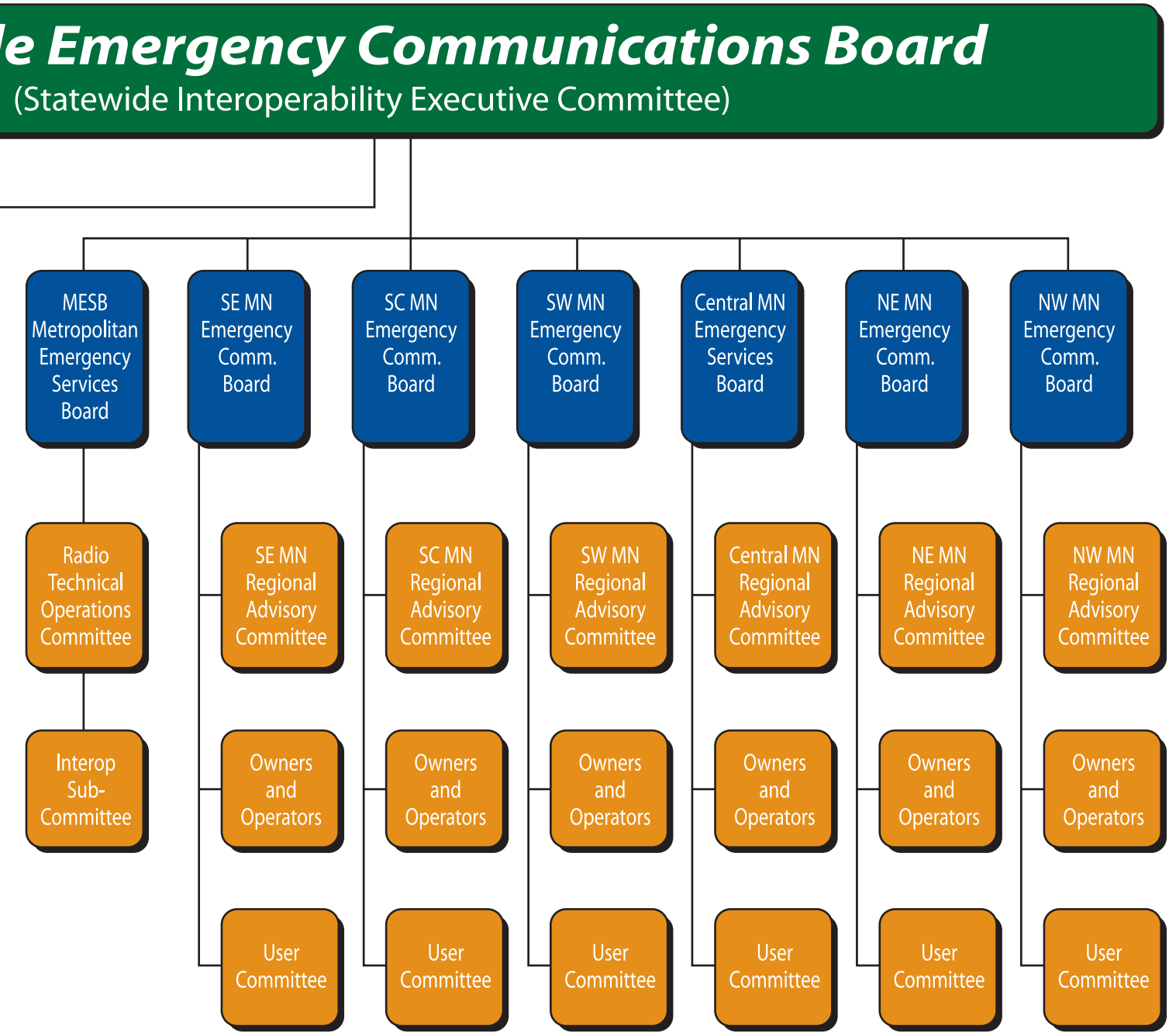
VISION

The safety of Minnesota's emergency responders, citizens and visitors is accomplished through state-of-the-art interoperable public safety communications systems.

MISSION

Enable emergency responders and citizens to communicate easily and respond immediately in critical emergency situations by providing reliable and robust systems for interoperable communications across counties, state, federal and tribal regions.




le Emergency Communications Board
(Statewide Interoperability Executive Committee)
MESB Metropolitan Emergency Services Board
SE MN Emergency Comm. Board
SC MN Emergency Comm. Board
SW MN Emergency Comm. Board
Central MN Emergency Services Board
NE MN Emergency Comm. Board
NW MN Emergency Comm. Board
Radio Technical Operations Committee
Interop Sub-Committee
SE MN Regional Advisory Committee
SC MN Regional Advisory Committee
SW MN Regional Advisory Committee
Central MN Regional Advisory Committee
NE MN Regional Advisory Committee
NW MN Regional Advisory Committee
Owners and Operators
User Committee

SECB GOAL 1

Evaluate technology to provide optimal systems to secure paramount public safety solutions for Minnesota citizens, visitors and emergency responders.

ARMER

- Evaluate and implement software upgrades to ensure efficient system performance and avoid large upgrade costs at a later date
- Provide seamless interoperable communication to all 87 counties and 11 tribal nations
- Create matching equipment grant funding to support upgrades for end-of-lifecycle equipment and software upgrades

NEXT GENERATION 911

- Implement a statewide interoperable Text-to-911 solution to meet FCC mandate by spring of 2016 and provide an alternate method for those who are deaf or hard of hearing, as well as in situations where speaking might create a dangerous situation (i.e. burglary in progress, domestic, adult/child abduction)
- Implement statewide Geographical Information Systems (GIS) database to support location-based routing of current technology devices for 911 that will enable emergency responders to locate a wireless caller with more speed and accuracy

INTEGRATED PUBLIC ALERT AND WARNING SYSTEM (IPAWS)

- Promote statewide deployment and adoption of IPAWS to facilitate communications to the public when the need arises. This alerting system has uses ranging from severe weather alerts to mass communications in situations requiring citizens to take protective action, such as an active shooter scenario, train derailment or nuclear power plant incident

WIRELESS BROADBAND FOR PUBLIC SAFETY

- Evaluate the requirements and features of a reliable dedicated public safety broadband which would guarantee access to data in high-demand situations when commercial carriers are not available
- Continued consultation with FirstNet regarding the Nationwide Public Safety Broadband Network
- Advise the Governor about the risks and benefits of participating in the FirstNet Nationwide Public Safety Broadband Network (NPSBN)

SECB GOAL 2

Secure funding for state and local units of government to support the most efficient, reliable and cost-effective public safety communications systems.

- Raise the 911 fee from $.78 cents to $.95 cents, as allowed by statute, to support SECB initiatives
- Encourage regional funding prioritization
- Create on-going grant programs to support local regional priorities
- Pay off ARMER bonds early to prepare for future funding expenditures in later years
- Explore other possible funding mechanisms, such as other technologies that can initiate a 911 request for assistance but do not currently collect 911 fees

SECB GOAL 3

Educate decision-makers about the criticality of public safety communications systems and changes necessitated by consumers' changing technology behaviors. Train system users to ensure first-rate performance on new and infrequently used technologies.

- Conduct annual training for elected officials at pertinent conferences and quarterly meetings
- Foster a core group of legislators to champion public safety communication initiatives
- Provide quarterly updates via newsletters and email distribution lists
- Update training materials on our online training website annually
- Provide grant funding opportunities to local units of government and public safety entities to promote on-going training and exercises

MINNESOTA SCIP MISSION

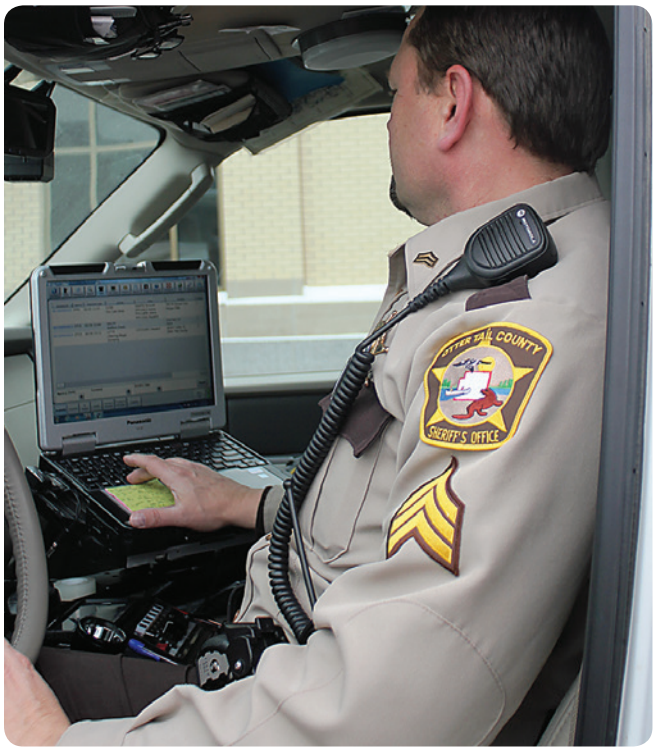
The Minnesota Statewide Interoperability Plan reflects the SECB's mission to enable emergency responders and citizens to communicate easily and respond immediately in emergency situations by providing reliable and robust systems for interoperable communications across counties, state, federal, and tribal regions. All agencies supporting public safety in Minnesota will:

- Operate on or have access to a standards-based, shared voice and data system that has integrated National Incident Management System (NIMS) standard operating procedures
- Be supported by regional committees working in conjunction with the SECB that provides comprehensive training and regional exercises

PUBLIC SAFETY WIRELESS BROADBAND NETWORK — FIRSTNET

The landmark Middle Class Tax Relief and Job Creation Act of 2012 secured radio spectrum and federal grant funding for the development of a Nationwide Public Safety Broadband Network (NPSBN), and created an independent authority, FirstNet, to oversee the implementation and operations of the NPSBN — a dedicated Wireless Broadband Network for Public Safety.

FirstNet's ultimate goal is to deploy the NPSBN to meet the requirements of emergency responders nationwide. To assist FirstNet in the gathering of public safety requirements, and to support the development of a strategic plan, the State of Minnesota received a grant award under the State and Local Implementation Grant Program (SLIGP).



The resulting Minnesota FirstNet Consultation Project (MnFCP) is focused on identifying the wireless broadband needs of our State, County, Local and Tribal public safety agencies. The primary goals of the project are:

- Conduct education and outreach on FirstNet
- Accurately assess public safety user requirements
- Develop a fiscal sustainability plan for the network
- Gather the necessary information to assist FirstNet with designing and deploying the network
- Prepare the state and its public safety governance structure for the Minnesota FirstNet consulation
- Develop a memorandum of understanding to facilitate asset sharing
- Provide support for the deployment of the NPSBN in the State of Minnesota

Providing a new communications tool to first responders will benefit Minnesota greatly, which is why our state is leading the way toward a dedicated public safety wireless broadband network. This network will bring a stand-alone, mission-critical public safety Long Term Evolution (LTE) broadband network to first responders in Minnesota.

MILESTONES

- In January and February 2014, DECN held 14 "kick off" meetings in Minneapolis, Rochester, Mankato, Marshall, St. Cloud, Thief River Falls, and Duluth. These workshops provided an overview to stakeholders
- Developed Web-based training modules
- Presentations at Minnesota Annual Interoperability Conference
- Gathering user requirements
  - Coverage interviews
    - Commercial carrier coverage
    - Computer Aided Dispatch (CAD) data
    - Critical infrastructure
  - Workgroup meetings
  - User population surveys

SEPTEMBER 2014

Minnesota is leading the way toward a public safety wireless broadband network. FirstNet officials learned of the progress Minnesota has made to assess the needs and preferences of first responders. ECN Director Jackie Mines and T.J. Kennedy, the Deputy General Manager of FirstNet held a day-long meeting Sept 24 to share important updates with FirstNet and key public safety leaders from across Minnesota.

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Minnesota Department of Public Safety
Division of Emergency Communication Networks

ecn.dps.mn.gov