Cover Letter

January 15, 2003

The Honorable Governor Tim Pawlenty

The Honorable Leo Foley, Chair
Senate Crime Prevention Committee

The Honorable Jane Ranum, Chair
Senate State Government Budget Division

The Honorable Keith Langseth, Chair
Senate Capital Investment Committee

The Honorable Rich Stanek, Chair
The Honorable Mary Murphy
House Judiciary Finance and Policy Committee

The Honorable Phil Krinkie, Chair
The Honorable Alice Hausman
House Capital Investment Committee

RE: Public Safety Statewide Radio Project Plan

Dear Governor Pawlenty and Members,

As acting Commissioner of Public Safety and the State Homeland Security Director, I am pleased to present to you a plan for a Statewide Public Safety Radio System. Implementation of the plan will improve the safety and security of Minnesota citizens and the state and local government workforce that serves them. It will also improve public safety providers' ability to communicate and respond in a coordinated manner to natural and man made disasters. I encourage you to support the recommendations of the planning committee as outlined in the attached plan.

The attached plan was developed by the Public Safety Radio System Planning Committee, established by the 2002 legislature, with representatives from State and Local government and both metro and out state interests. The plan responds to requirements set fourth in two sections of the anti-terrorism legislation passed in the 2002 session (Chapter 401, Art.1, Sec. 12; and Chapter 401, Art. 2, Sec.1, subd. 8).

The plan:

- Defines a project scope for a state owned and operated radio infrastructure, and identifies other business objectives such as needs, opportunities and benefits.
- Recommends a project approach, which outlines a phased deployment and recommends the Planning Committee established in statute as the governance structure for the system.
- Contains a project description outlining deliverables, risk assessment and mitigation, constraints, dependencies, and measures of project success.
- Establishes project estimates within the phased implementation plan, identified with time lines and itemized costs.
- Establishes project controls to ensure that accepted project management techniques are used for each phase of the project.
- Includes appendices that document established standards and policies for network management, operational management, licensing excess tower space and use of capacity of the radio system.

Nationwide, numerous reports have been developed prior to and since the September 11 terrorist attacks that identify communications and interoperability as critical needs for public safety at the local, State and Federal levels. The State of Minnesota has a proven record of implementing shared interoperable radio systems in the Minneapolis –St. Paul Metro area through development of a Shared Regional Public Safety Radio System. The State has also documented a significant need for improved communications throughout the balance of the state. This state plan, developed for a Statewide Public Safety radio system backbone, is poised to deliver improved services statewide. The total cost to deploy this backbone statewide is estimated at $201 million.

Through the use of advanced technology, users of the Shared System will be capable of interoperable communications that has not been available with our older systems. The Shared System performance and shared infrastructure will provide expanded, improved and more reliable communications at significant savings overall.

Deployment of the system will:

- Improve officer and worker safety
- Improve security of first responders and the public
- Improve Interoperability
- Ensure standardization
- Develop and enhance partnerships
- Encourage shared use of resources
- Provide opportunities for aggregate purchasing and support, resulting in cost savings

In response to the requirements of the 2002 legislation the Public Safety Radio System Planning Committee also proposes the following statutory changes be made to effectively implement and administer the plan:

- Recommend an increase of the 911 sur charge. An additional 27 cents to be allocated to deployment of the radio system.
- Recommend an amendment to the existing statute allowing local government levy authority for public safety radio systems. Extend this authority to all counties statewide.
- Recommend extending current legislation that provides tax-exempt status for purchase of public safety radio system equipment.

In summary, Public Safety communications is a critically important issue to state government and homeland security. Minnesota has a history of success in this area. There are significant needs statewide for improved radio communications. Minnesota is ready to deliver with a defined plan and migration strategy. Your attention to this important public safety issue is greatly appreciated.

Sincerely,

Mancel Mitchell
Acting Commissioner

Cc: Legislative Reference Library
Chief Clerk of Court
Secretary of Senate

State of Minnesota

Department of Public Safety
Department of Transportation
Department of Administration
Department of Natural Resources

Public Safety Statewide Radio Project

Project Plan and Scope Statement

Revised

December 2002

Submitted by: ***Mancel Mitchell***
Acting Commissioner, Department of Public Safety
The Public Safety Statewide Radio System
Planning Committee

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Executive Summary (Brief)

State and local government's public safety and services workers use two-way radio on a daily basis to conduct business and serve the public. This includes routine day-to-day business such as traffic stops, investigations, road repair, and other general administrative duties. During times of emergency such as floods, tornados, fires, explosions, and other disasters or incidents, radio systems are a critical component in the communication and coordination of resources.

Issues exist today that jeopardize the effectiveness of many public radio systems:

- Lack of spectrum for radio users causes interference and the inability to expand or develop new systems.
- Problems with interoperability—communications problems exist today between local jurisdictions and units of governments and services, in the future the problem will grow. As the benefits of digital technology are understood and federal regulatory changes push users across the state to upgrade their antiquated systems unilaterally, the technology choices and spectrum issues will further divide public services and hamper their ability to communicate.
- The events of September 11, 2001 have exposed and reinforced the urgent need for modern interoperable public safety communication systems.

The purpose of this project is to provide a reliable communication system to meet the needs of state agencies and their local government partners, and to improve the safety, security, and mobility of the public. By creating partnerships with other units of government and public service organizations we will improve interoperability between the levels of government and share resources to build a statewide communication infrastructure on which to move into the future in an integrated, practical and strategic way.

Over the last several years the State, in partnership with local governments and the Metro Radio Board, has made headway into installation and upgrades within the metro area, and has set up the opportunity for interoperability throughout the state. Many areas throughout the state are using antiquated communications systems, some 30 and 40 years old, including many state agencies and entities. New public safety concerns, federal pressure, and normal wear and tear on equipment is leading many communities throughout the state to pursue changes in their systems. It is an appropriate and prudent action within state government's set of responsibilities to research and establish the standards and infrastructure for public and private public safety entities to utilize throughout the state, leveraging and integrating state and local efforts and investments in pubic safety communications technology.

1. Business Objective

Project Scope

A state-managed, owned, and operated statewide infrastructure is proposed. The positioning of the "backbone" would be statewide, offering the option of state, local public, and private public safety entities as defined by *FCC Rules & Regulations 90.20(a)(1)(2)*, to purchase compatible radio equipment and take full advantage of the ubiquitous system.

The infrastructure must be built with open standards so additional public and private public safety entities have the option, and are in fact encouraged, to plug-in to the statewide infrastructure as it is completed and as capacity is available with full interoperability and integration. The scope of this effort includes all aspects of planning and construction of the greater Minnesota system, fully integrating, leveraging, and encompassing the metro area work to date resulting in the seamless deployment of communication facilities.

The Minnesota Department of Transportation's Office of Electronic Communications has the experience, skills, abilities, and resources to manage and implement the statewide technical infrastructure over the next several years. Full consideration is given to the metro project, and complete integration and interoperability is guaranteed by these continuing and new efforts.

The digital network represents improved communications performance, increased capacity and new capabilities. The system will be capable of supporting not only state operations, but could also be shared with local jurisdictions throughout the state as deemed appropriate by the OEC, and the Project Owners and Sponsor. Excluded from the project scope is the direct provision of services to all comers, public or private—the system will be deployed first to serve the public safety and public services (as defined by *FCC Rules & Regulations 90.20(a)(1)(2*)) communications needs in Minnesota, and secondarily will support local jurisdictions and other public/private interests to the greatest extent possible under the FCC guidelines.

Business Need or Opportunity

A child is reported as missing, lost or abducted. A traffic accident causing multiple injuries requires instant response from paramedics to save lives or prevent further injury. A major fire requires assistance from several fire departments, law enforcement agencies and medical help. A toxic substance is spilled during transit. An instant response is necessary in all these situations to save lives and limit damage to property and the environment. A statewide radio communications system would help city, county, state and some private services coordinate resources and respond to emergencies quickly and effectively.

Some instances where shared communications are essential:

- Terrorist attack or threat
- Chemical fire - Smoke plume drifting to multiple jurisdictions
- Train derailment – Hazardous spill – plume drifting to multiple jurisdictions
- Nuclear Plant Incident – Radiation plume drift – Evacuation
- Hazardous spill on Highway or interstate system
- Tornado and related affects – clean-up and aid
- Explosions
- High speed Pursuit

- Forest Fires
- General fire fighter response
- Manhunt
- Drug Interdiction
- Traffic Control
- Plane crash
- Crowd control – International Society of Animal Geneticists, Political Conventions, Sports

The various agencies of the State of Minnesota who use two-way radios to conduct state business are facing a growing number of issues that are impacting the operation of their radio systems. Following is a partial list of the issues:

- Aging systems
- Many systems will require total replacement, or a partial upgrade to remain in contact
- High costs associated with isolated instances of full system implementation
- Spectrum
- Inadequate number of frequencies
- FCC regulations
- New regulations for spectrum use
- New spectrum opportunities
- Technology/industry
- Narrowband
- Digital
- Interoperability
- Limited ability or complex maneuvering with today's systems

The Minnesota Department of Transportation (Mn/DOT), Office of Electronic Communication (OEC) is the department that designs and maintains a majority of the radio systems used by the state. OEC planners and engineers have been managing these issues for several years. Due in part to its size, and sheer volume of users, the Metro area has had the most immediate problem. After many years of planning and debate, the legislature directed Mn/DOT to implement a jointly owned and operated 800 MHz digital trunked radio system throughout the nine County Metro area. Partners in that system include: Hennepin County, the City of Minneapolis, North Memorial Health System, and Carver County. More users continue to join once the system becomes operational in 2002.

With a solution to the Metro problem at hand, the OEC planners and engineers are turning their attention to greater Minnesota, where problems similar to the Metro are occurring with state agencies. A planning group was formed and over a period of three years explored several options that could potentially meet the challenges. The planning group concluded that a statewide radio system using 800MHz digital trunking technology would best meet the needs of the state agencies. The planning group also discovered that the issues noted above were not unique to state agencies. Many county and city government radio systems were, and are, suffering from the same problems.

The cost to implement a statewide 800 MHz system solely for state use may seem prohibitive, but if the focus is placed on building a shareable infrastructure that could meet the needs of all governmental jurisdictions throughout the state, similar to the concept used in the Metro area, then it seems that the benefits will far outweigh the costs incurred by all.

Business Objectives

- To improve the safety, security and mobility of the public.
- To replace the aging, disparate radio systems across the state with a coordinated, leveraged, communications infrastructure.

- To respond quickly, professionally, and safely to dangerous or threatening situations affecting our citizens.
- To maximize efficiency between units of work by streamlining communications and reducing complexity in operations.
- To save money by aggregating demand and purchasing power, as well as through standardized tools reducing the need for technician and user re-training and re-tooling.

Benefits

General

- Shared resources; spectrum, towers, land, infrastructure equipment
- Enhanced radio coverage
- Better first responder coordination, resulting in improved citizen care.
- Multi agency, multi jurisdictional interoperability
- Capacity to accommodate local units of government as deemed appropriate
- Wide-area communications
- Shared or lowered costs
- Secure channels (digital transmissions make it very difficult for unauthorized monitoring)
- Loss control (lost or stolen radios can be disabled by the agency prohibiting unauthorized use)
- Increased capability of interoperability for all users
- Statewide functionality

Technology

- Open infrastructure to be used via opt-in by locals, and approved non-state entities
- Full integration readiness for CriMNet, and other public safety and transportation applications
- Allows 800 MHz digital, 800 MHz analog, and all other users to communicate

2. Project Approach

The opportunity is rare to get to take advantage of a technology revolution that is perfectly matched and absolutely critical to the quality of life and safety and security of citizens. This opportunity has presented itself in Minnesota. Digital radio is changing the way our wireless communications systems operate. The advent of digital radio communication has changed the way systems are designed and vastly improved the functionality delivered to the users in the field.

The process of moving to a totally digital communication network began approximately ten years ago. One of the primary catalysts driving the process was the public safety communications community. The APCO Project-25 committee was established in October of 1989 with the charter to develop new standards for digital radio. The further development and ever-greening process continues today. In May of 1990 the Public Safety Community documented a strong need for digital radio in their response to the FCC Notice of Inquiry. And finally, the Public Safety Community continues to demand better solutions and enhanced communications to improve operations and their ability to respond to emergency situations. While the need for better solutions continues to be an issue, the current analog technologies are having a difficult time keeping pace. There are several communities throughout the state where the radio systems are literally falling apart around the users.

Recommendations

1. In addition to the established project oversight Planning Committee, establishment of a project team to deploy the project, led by and consisting of the executive steering committee, a core project team, a technology sub-team, and a stakeholder communication sub-team.

2. The development and application of statewide standards and guidelines for a statewide communications infrastructure. (Appendix I)

3. Initiation of an education program around radio usage, and optimization of the benefits and opportunities presented by this statewide shared infrastructure.

4. Exploration of various funding mechanisms that maybe available to support the implementation of this system, including but not limited to 911 fee expansion (Appendix II).

5. State leadership (Department of Public Safety) in the design, implementation, and maintenance of a statewide digital radio system, according to the current processes and practices of the Office of Electronic Communications.

6. Modification of the current statute for project governance to remove the distinction of a metropolitan-only representative from the League of Cities. It is the feeling of the Planning Committee that the project would be well served by the best candidate from anywhere in the state rather than specifically representing the metro region. (Appendix IV)

Approach

The State backbone within the metro area (phase One) is complete. As local government participation in the metro system (Phase Two) continues, the State will proceed with the phased deployment of state backbone systems in greater Minnesota (phases Three-Six). Local governments in greater Minnesota will be welcomed to integrate with or join the State system throughout the phased deployment or after the system is fully completed, at their option. It is critical that the statewide infrastructure is viewed as a migration option for greater Minnesota communities, or it will be less likely to be successful. Acceptance of the strategy and resulting deliverables must be assured up-front by the project organization and communications plans. Equally as important, the greater Minnesota State backbone build out must be fully interoperable with the State's Metro backbone system.

Mn/DOT will design, construct, maintain, and manage the infrastructure of the statewide digital trunked radio system. Infrastructure is defined as: the towers, shelters, backup, power generators, base stations, microwave equipment, and system controllers. In addition Mn/DOT will establish the technical operating standards to which the users of the system must adhere. Local government agencies choosing to participate on the system would contract for services from the state. This method of management is similar to the Department of Administration's existing ITG services. Local units of government would have supervisory control of their portion of the system. Local units of government can form local advisory units within their regions and these groups can develop local operating protocols and procedures (within state standards).

The system will be designed to meet the needs of state agencies first, primarily the State Patrol, Mn/DOT, and DNR. The systems will also be available to other state agencies and stakeholder groups such as BCA, Emergency Management, Fire departments, Department of Corrections, Emergency Medical Services, colleges and universities, state hospitals, and other institutions and agencies

Governance

The membership and structure of the Public Safety Radio System Planning Committee, as described in statute 473.907 subd. 1, shall serve as the governance body for the statewide radio system.

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Sec. 12.  [473.907] [PUBLIC SAFETY RADIO SYSTEM PLANNING
10.15  COMMITTEE.]
10.16     Subdivision 1.  [PLANNING COMMITTEE.] (a) The commissioner
10.17  of public safety shall convene and chair a planning committee to
10.18  develop a project plan for a statewide, shared, trunked public
10.19  safety radio communication system.
10.20     (b) The planning committee consists of the following
10.21  members or their designees:
10.22     (1) the commissioner of public safety;
10.23     (2) the commissioner of transportation;
10.24     (3) the commissioner of administration;
10.25     (4) the commissioner of natural resources;
10.26     (5) the chair of the metropolitan radio board;
10.27     (6) the president of the Minnesota sheriffs' association;
10.28     (7) a representative of the league of Minnesota cities from
10.29  the metropolitan area; and
10.30     (8) a representative of the association of Minnesota
10.31  counties from greater Minnesota.
10.32     Additionally, the commissioner of finance or a designee
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10.33 shall serve on the committee as a nonvoting member.
10.34

The duties and obligations of the group include:

- Implement the phased project plan to establish a statewide trunked radio system backbone infrastructure.
- To set, monitor and audit compliance with the standards, protocols, and procedures necessary for the smooth operation of the expanding statewide shared radio system.
- To expedite and manage with the Department of Transportation the technical design process, the contracting for and leasing of sites, and the negotiating of cooperative agreements among agencies, jurisdictions, and municipalities.
- To review, approve and administer implementation of moves, additions, and changes to the backbone system.
- To have governance authority over and responsibility to coordinate activities of the Metropolitan Radio Board, and will strive to integrate and leverage the learnings and accomplishments of that Board to date. (Appendix III)
- To provide core training for constituent agencies and interoperability training for non-participating agencies.
- To allocate system costs fairly among participants
- To resolve complaints, disputes, and grievances from system users.
- To provide a structure for managing the system's growth and expansion.
- To administer the ongoing business of the system such as making lease and utility payments
- To manage and facilitate communication among users on issues affecting system participants at all levels.

3. Project Description

Deliverables

- Electronics/technology physical build-out and on-going support agreement
- A phased migration strategy that will provide a digital radio system to be live at the end of phase Three in 2009, with all other Districts in the state completed by 2012.
- Demonstrated and consistent radio-to-radio communication at scene of incident in simplex mode
- Tower and electronics deployment in accordance with the statewide planning map.
- Technical white papers describing:
    - Technology research and strategy validation paper
    - Standards,
    - Architecture,
    - Infrastructure technology,
    - Interoperability requirements,
    - Implementation process replication,
    - Expansion opportunities and process,
    - User and system documentation.

Completion Criteria

The project will be segmented into six phases to facilitate budgeting, management and resourcing. The shared radio infrastructure will be completed when the digital radio infrastructure is completed and adequate to support state agency needs. Additionally, maximum capacity will be provided wherever possible to facilitate plug-ins by local governments and private public safety service concerns. The infrastructure will be deployed in such a way to allow and encourage integration of non-state entities where appropriate, and full support will be provided to the integration needs of those wishing to interoperate within the state system.

- Digital communications infrastructure physically built throughout the state, beginning with Phase Three (Rochester and St. Cloud State Patrol districts), and continuing in phases until statewide coverage is achieved (approximately 2012).
- Validated open architecture allowing for full interoperability among public and private public safety entities and future expansion and optimization of the system.
- Enhanced stability in the first responders, network and reductions in error or complexity in emergency response.

Risk Assessment and Mitigation

1. Project discipline through traditional a project management approach is essential for success in a project of this complexity and breadth. It is necessary to install a project manager at the program level, with oversight for all aspects of the project including the technology, communication and marketing plans, budget responsibility, integration with the metro project, legislative interface, and scope and change control.

Mitigation Strategy: Assign a dedicated project manager with full funding, span of control, and executive support to construct a project team of appropriately skilled resources to carry out completion of the multi-year project.

2. Risks associated with a build-out of this infrastructure because it will span a number of years.
   a) Vendor/contractor sustainability
   b) Dedicated project staff resource
   c) Project staff continuation

Mitigation Strategy: Evaluate and select standard tools and technologies to position the system within the mainstream industry and vendor offering. In addition, a reliable funding stream must be established now for the future, and dedicated to support the project resources and activities until the year 2012.

3. The costs associated with the build-out are substantial.
   a) Project expenses are significant for this phase
   b) Future funding for subsequent phases is unreliable but essential for full infrastructure benefits

Mitigation Strategy: Where possible and prudent, vendor and technology pricing should be acquired on a fixed bid basis to anticipate future funding needs. In addition, a strategy for leverage, integration, and re-use must be well established and required by the project leadership and system builders.

4. The technology could become stagnant or obsolete over the multi-year life of the project and against architectural requirements.
   a) Dangerous and costly missteps in design and implementation may occur
   b) Even if proved necessary, shifts in direction are difficult, costly, and time consuming

Mitigation Strategy: The technology builder (Mn/DOT) must commit to an “ever-greening” process whereby it is validated repeatedly over time against architectural and functional requirements

5. Collaborative methods can be time-consuming and difficult, though the potential for an extraordinary result is much greater—the value of purposeful and energized partnering efforts cannot be shortchanged.

Mitigation Strategy: Diligent management oversight by the cross-functional representation of the Planning Committee will assure collaboration and integration between agencies and stakeholders that is critical to project success.

6. The state must take the lead in conveying to rural jurisdictions that this build-out is a benefit to them, and encourage them to partner with the state to leverage their purchasing choices and spending and the power of aggregated demand.

Mitigation Strategy: Diligent management oversight by the cross-functional representation of the Planning Committee will assure collaboration and integration between system architects and builders with local jurisdictions agencies and stakeholders that is critical to project success.

7. Local jurisdictions and stakeholders may not have either faith in the recommendations of the infrastructure project or the capability to implement the recommended solutions.

Mitigation Strategy: The state must be available and supportive, as well as stand behind (post-implementation) the choices it is guiding others to make relative to standards in tools and technologies.

Constraints

Cost:
Cost constraints will guide choices that are made, and diligence must be strictly maintained to achieve the greatest value proposition for the project.

Standards:
Must comply with existing Project 25 standards, FCC rules and regulation, and interoperability architecture established in the Project (see Conceptual Plan Document).

Resources:
Resources in each department, local municipality and board membership will have other demands on their time and attention. Adequate resources must be made available to the project as defined in project plan at every level of involvement and effort. Project management resources are critical, and must be made available to the project. Policy, and possibly statute, must be modified so the acquisition of land for the construction of towers can be completed in a timely manner.

Stakeholders:
In some instances stakeholder cooperation and coordination of disparate goals may be difficult to manage, and constraints will be placed on the project by special interests.

Dependency Linkages

- Seamless integration with Metro Radio Board technology infrastructure and feature set
- Standards organizations continue to endorse and support selected technology standards
- Vendor strategic direction continues to support technology installation
- State agencies commitment to this project evidenced via departmental prioritization
- Appropriate levels of financial support required for infrastructure build-out in each phase of completion must be made available
- Metro, local and regional jurisdiction cooperation
- Land is available for tower construction or shared space is available
- Staff resources remain available and dedicated to completion project goals

Measures of Project Success

- Complete implementation of infrastructure statewide
- Buy-in and integration to the greatest degree possible with state agencies as well as local jurisdictions
- Full integration with metro project activities and results
- Seamless interoperability within metro, greater Minnesota and each subsequent phase completion
- Continued proliferation, acceptance and support of selected technology standards
- Statewide radio infrastructure built within specified time and budget expectations
- Statewide radio infrastructure feature set delivered meets expectations of stakeholders and project administration
- Statewide radio infrastructure positioned to continue expansion throughout the state with each phase completion.

Critical Success Factors

The successful and timely outcome of the project described in this document is dependent on the following:

- Where suitable state land is available, the state should be allowed to exercise the powers provided in MSS 394.24, Subd. 3. A “meet and confer” meeting should take place with the local unit of government with zoning responsibility to inform at body of government (not the public) of the state’s intent. The state will attempt to mitigate local concerns when and where practical and feasible as determined by sound engineering principles. The state should proceed with construction after said meeting.

- Policy must be developed whereby State agencies/departments owning land suitable for the construction of towers must respond to Mn/DOT OEC within 30 days after contact is made with an analysis of facilities, capacity and shared use opportunities, and construction schedules--provided that the proposed tower will not interfere or conflict with planned future use of the land, and not conflict with environmental policies.

- Adequate funding must be made available over the life of the project by the legislature for the construction of the system infrastructure. In addition, supplemental funding alternatives must be explored and resources made available for the purchase of mobiles and portables for state agency radio users.

- The proposed system must be fully compatible and interoperable to the existing radio system implemented in the metro area. This means that components of the system are interchangeable, and fully functional.

- The existing state contract between the State and Motorola must be considered for extension to include Greater Minnesota. Not allowing this will result in higher costs, and likely incompatible equipment/functionality.

- The state must be allowed to initially construct the system infrastructure for State use. This does not preclude state representatives from meeting with local officials to discuss planning strategy and design considerations.

- For expansion of the system beyond state use the legislature must make funding mechanisms available to local units of government that will allow locals to join the system. This can be in the form of low/no interest loans, or through legislative requests.

Roles and Project Stakeholders

Roles

The following role definitions are being applied to the resources assigned to this project:

Project Sponsor	Provides executive team approval and sponsorship for the project. Has budget ownership for the project and is the major stakeholder and recipient for the project deliverables.
Project Owner	Provides policy definition to the Project team. Resolves all policy issues with the appropriate policy owners in order to provide a clear, decisive definition. Makes final decisions and resolves conflicts or issues regarding project expectations across organizational and functional areas. The project owner and the project manager have a direct link for all communication. The project manager will work directly with the project owner on all policy clarification.
Project Manager	Provides overall management to the project. Accountable for establishing a Project Charter, developing and managing the work plan, securing appropriate resources and delegating the work and insuring successful completion of the project. All project team members report to the project manager. Handles all project administrative duties, interfaces to project sponsors and owners and has overall accountability for the project.
Planning Committee	Provide assistance in resolving issues that arise beyond the project manager's jurisdiction. Monitor project progress and provide necessary tools and support when milestones are in jeopardy.
Stakeholder	Key provider of requirements and recipient of project deliverable and associated benefits. Deliverable will directly enhance the stakeholder's business processes and environment. Majority of stakeholders for this project will be agency heads, CIO's and project management representatives.
User Support Analyst	Working project team member who analyzes, designs and ultimately improves or replaces the business processes. This includes collaborating with teams to develop high level process designs and models, understanding best practices for business processes and partnering with team members to identify appropriate opportunities, challenging the old rules of the business and stimulating creating thinking, and identifying organizational impact areas.

Stakeholders and Communication Plan Requirements

Agency/ Area	Name, Title	Role	Communication
Department of Public Safety	Commissioner	Project Sponsor	Monthly Report Quarterly Presentation
Department of Public Safety	Commissioner	Project Owner	Monthly Report Quarterly Presentation
Department of Transportation	Commissioner	Project Owner	Monthly Report Quarterly Presentation
Department of Natural Resources	Commissioner	Project Owner	Monthly Report Quarterly Presentation
Department of Administration	Commissioner	Project Owner	Monthly Report Quarterly Presentation
		Project Manager	
Department of Public Safety	Commissioner	Planning Committee Member	Semi-monthly Report Monthly Presentation
Department of Transportation	Commissioner	Planning Committee Member	Semi-monthly Report Monthly Presentation
Department of Administration	Commissioner	Planning Committee Member	Semi-monthly Report Monthly Presentation
Department of Natural Resources	Commissioner	Planning Committee Member	Semi-monthly Report Monthly Presentation
Metro Radio Board	Chair	Planning Committee Member	Semi-monthly Report Monthly Presentation
League of Minnesota Cities	Representative	Planning Committee Member	Semi-monthly Report Monthly Presentation
Association of Minnesota Counties	Representative	Planning Committee Member	Semi-monthly Report Monthly Presentation
Minnesota State Sheriffs' Association	Representative	Planning Committee Member	Semi-monthly Report Monthly Presentation
	User Team State Patrol representative Sheriff's representative Police and Fire representative Technology Team Mn/DOT Public Safety Office of Technology Additional TBD…	*Core Project Team*	*Weekly Meetings*
	Mn/DOT Additional TBD…	*Technical Sub-Project Team*	*Weekly Meetings/as needed*
	User Community Additional TBD…	*Stakeholder Sub-Project Team*	*Weekly Meetings/as needed*

Stakeholders and Communication Plan Requirements, continued

Agency/ Area	Name, Title	Role	Communication
	DPS *State Patrol* *BCA* *DEM* *Fire Marshal* *Alcohol and Gambling Division* *Additional TBD…* **MN Chiefs of Police Assoc.** **MN Police and Peace Officers** **"First Responders"** **Local elected officials** **Governor's Office** **DNR** *Enforcement Division* *Forestry* *Parks* *Trails and Waterways* **DHS** *State Hospital System* **DOT** *Maintenance Operations* *Construction* *ROW* *Surveys* *Additional TBD…* **University of MN** **MNSCU** *Security* *Maintenance* **Military Affairs** **State Legislature** **CriMNet Project leadership** **Other Project leadership**	*Stakeholders:*	*Quarterly Written Updates* *Community Meetings as appropriate.* *Individual Stakeholders as appropriate.*

4. Project Estimates

Phased Implementation Plan and Schedule

Implementation of the new 800 MHz trunked system in Greater Minnesota will occur in four (4) phases. Each phase will consist of implementing components of the system within two to three complete Patrol districts. For operational purposes, it is highly recommended that complete districts be converted to the new system, rather than portions of a district or specific highway corridors. The tables below show the cost details of each phase.

The work to be completed during each phase consists of constructing and or installing the following components: towers, 800 MHz base stations, Interop base stations (VHF), controllers, switching equipment, and microwave transmitters/receivers.

Specific tasks that must be completed in each phase are as follows:

Form planning group with local government/public safety entities within district

- Locate suitable existing local government towers in required areas. If none then;
- Identify land parcels for tower construction
- Purchase land
- Prepare specifications for towers and shelters
- Bid for towers and shelters
- Prepare site for tower erection
- Erect towers and place shelters, generators
- Prepare specifications for trunked radio system and microwave
- Bid for trunked radio system and microwave
- Finalize detailed design with successful vendor
- Order trunked radio equipment (base stations) and microwave
- Factory staging of all electronic components
- Equipment delivery and installation
- Testing
- Acceptance

Special consideration will be given to the interoperational system (Interop) that will be needed to permit communications between users of the new 800 MHz trunked system and the users who chose not to migrate or join the new system. See page I-7 in the Conceptual Plan Document for a more detail description of the Interop requirements.

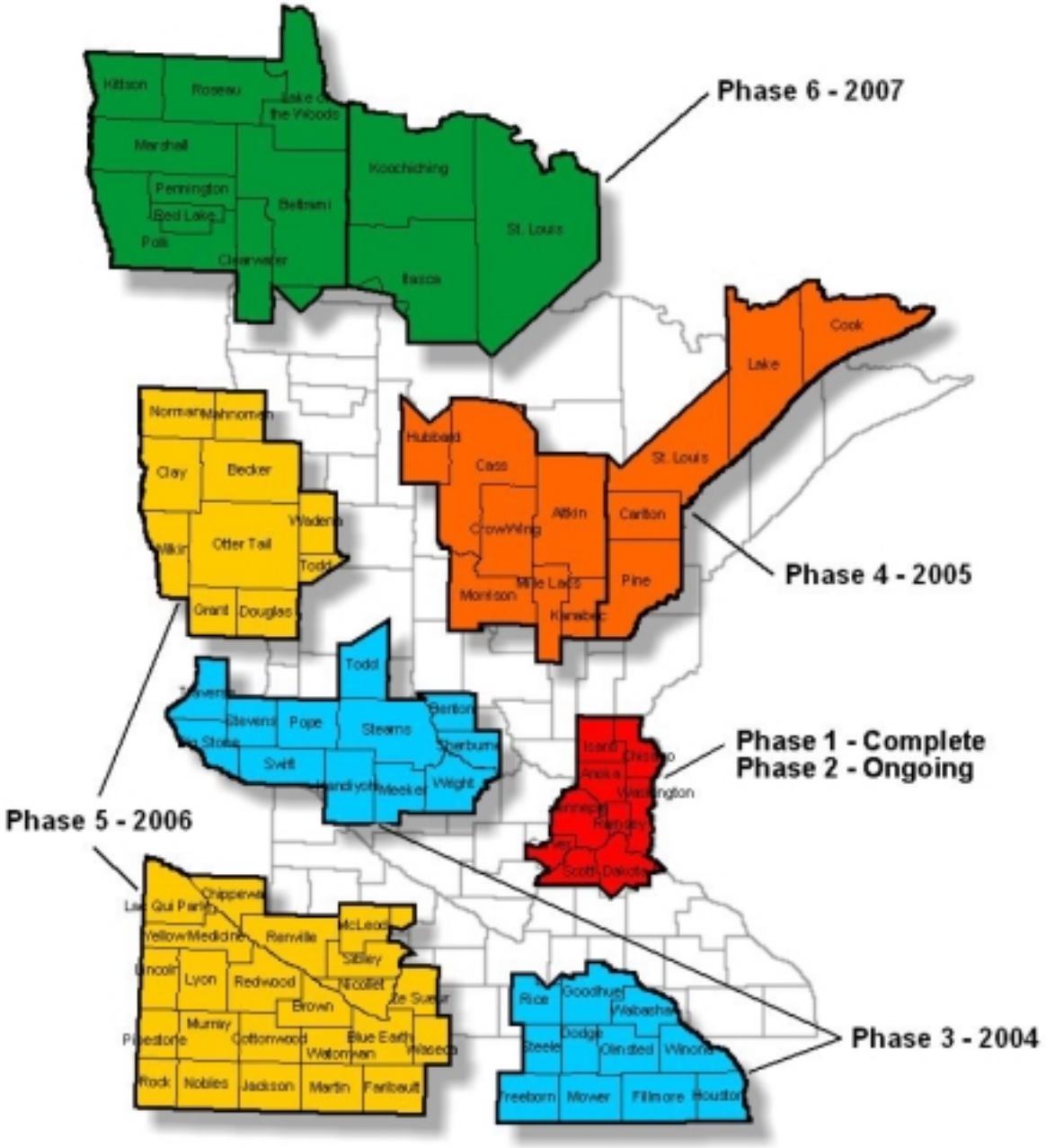
Phase Three- Phase Three will begin in FY2004 if funding is made available. This phase will provide coverage throughout 23 counties in the Rochester and St. Cloud Patrol districts.

Phase Four – Phase Four, which will begin in FY2005 or one year after the start of Phase Three. This phase will cover the Duluth and Brainerd Patrol districts. The two districts cover 12.5 counties (half of St. Louis Co.)

Phase Five – Phase Five will begin in FY2006 or 1 year after the start of Phase Four. This phase encompasses three Patrol districts – Mankato, Marshall, and Detroit Lakes. This phase will include 31 counties.

Phase Six – Phase Six, will begin in FY2007 or 1 year after phase Five begins. This phase will cover the Virginia and Thief River Falls Patrol districts. These two districts include 11.5 counties.

Statewide Plan Implementation Areas



Timeline Activities and Expenditures

	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11
Land Purchase PHASE 3	$500,000	$500,000	$550,000	----------	----------	----------	----------	----------
Tower, Shelters, Generators, & Site Prep work PHASE 3	----------	$2,980,000	$2,980,000	$3,278,000	----------	----------	----------	----------
Tower Modifications PHASE 3	$385,462	$384,462	$384,462	$511,614	----------	----------	----------	----------
Design & Engineering 800 MHz Trunked & Microwave PHASE 3	$1,300,000	$1,300,000	$1,300,000	$1,300,000	$1,300,000	----------	----------	----------
Purchase 800 Eqp. PHASE 3	----------	----------	$10,561,690	----------	----------	----------	----------	----------
Purchase Microwave PHASE 3	----------	----------	$9,984,340	----------	----------	----------	----------	----------
Interop & Control Eqp. PHASE 3	----------	----------	$4,000,000	$728,000	----------	----------	----------	----------
TOTAL PHASE 3	**$44,228,030**	----------	----------	----------	----------	----------	----------	----------
Land Purchase PHASE 4	----------	$650,000	$650,000	$650,000	----------	----------	----------	----------
Tower, Shelters, Generators, & Site Prep work PHASE 4	----------	----------	$3,840,668	$3,840,668	$3,840,664	----------	----------	----------
Tower Modifications PHASE 4	----------	$166,000	$166,000	$166,000	----------	----------	----------	----------
Design & Engineering 800 MHz Trunked & Microwave PHASE 4	----------	$1,300,000	$1,300,000	$1,300,000	$1,300,000	$1,300,000	----------	----------
Purchase 800 Eqp. PHASE 4	----------	----------	----------	$10,669,200	----------	----------	----------	----------
Purchase Microwave PHASE 4	----------	----------	----------	$13,065,000	----------	----------	----------	----------
Interop & Control Eqp. PHASE 4	----------	----------	----------	$4,000,000	$966,000	----------	----------	----------
TOTAL PHASE 4		**$49,170,200**	----------	----------	----------	----------	----------	----------
Land Purchase PHASE 5	----------	----------	$650,000	$650,000	$700,000	----------	----------	----------
Tower, Shelters, Generators, & Site Prep work PHASE 5	----------	----------		$3,874,000	$3,874,000	$4,172,000	----------	----------
Tower Modifications PHASE 5	----------	----------	$196,858	$196,858	$295,284	----------	----------	----------
Design & Engineering 800 MHz Trunked & Microwave PHASE 5	----------	----------	$1,300,000	$1,300,000	$1,300,000	$1,300,000	$1,300,000	----------
Purchase 800 Eqp. PHASE 5	----------	----------	----------	----------	$9,727,800	----------	----------	----------
Purchase Microwave PHASE 5	----------	----------	----------	----------	$15,640,000	----------	----------	----------
Interop & Control Eqp. PHASE 5	----------	----------	----------	----------	$4,000,000	$868,000	----------	----------
TOTAL PHASE 5	----------	----------	**$51,344,800**	----------	----------	----------	----------	----------
Land Purchase PHASE 6	----------	----------	----------	$500,000	$500,000	$600,000		
Tower, Shelters, Generators, & Site Prep work PHASE 6	----------	----------	----------	----------	$2,980,000	$2,980,000	$3,576,000	----------
Tower Modifications PHASE 6	----------	----------	----------	$348,572	$348,572	$522,856	----------	----------
Design & Engineering 800 MHz Trunked & Microwave PHASE 6	----------	----------	----------	$1,300,000	$1,300,000	$1,300,000	$1,300,000	$1,300,000
Purchase 800 Eqp. PHASE 6	----------	----------	----------	$8,315,700				
Purchase Microwave PHASE 6	----------	----------	----------	$12,200,000				
Interop & Control Eqp. PHASE 6	----------	----------	----------	$4,756,000				
TOTAL PHASE 6	----------	----------	----------	**$44,127,700**				
YEARLY EXPENDITURES	**$2,185,462**	**$7,280,462**	**$37,864,018**	**$72,949,612**	**$48,072,320**	**$13,042,856**	**$6,176,000**	**$1,300,000**
SALES TAX	**$ 142,055**	**$ 473,230**	**$ 2,461,161**	**$ 4,741,724**	**$ 3,124,700**	**$ 847,785**	**$ 401,440**	**$ 84,500**
YEARLY TOTALS	**$2,327,517**	**$7,753,692**	**$40,325,179**	**$77,691,336**	**$51,197,020**	**$13,890,641**	**$6,577,440**	**$1,384,500**
GRAND TOTAL	**$201,147,325**							

Resource Requirements – Team and Support Resources

Resource	**Phase III**	**Phase IV**	**Phase V**	**Phase VI**
Oversight (>FTE)				
Sponsor	X	X	X	X
Steering Committee	X	X	X	X
Dedicated FTE				
Project Management Team	X (3)	X (3)	X (3)	X (3)
User Design Team	X (3)	X (3)	X (3)	X (2)
Technical Development Team	X (7)	X (9)	X (11)	X (9)
Total Dedicated FTE	**13**	**15**	**17**	**14**

Estimated Cost

(In 000's)

Type of Cost	Phase III	Phase IV	Phase V	Phase VI
Staff Resource	$ 975	$ 1,125	$ 1,275	$ 1,050
Equipment and Infrastructure	$44,228	$49,179	$51,345	$44,128
Estimated Total	$45,203	$50,304	$52,620	$45,178

5. Project Controls

Risk/Contingency Management

This project's overall risk management strategy is guided by a commitment to risk management as a project management best practice and by risk assessment requirements in Minnesota statute. Risk assessment and risk mitigation planning are part of the program throughout its phases. The Project will conduct a formal risk assessment and risk management planning effort, engaging an outside consultant when appropriate or necessary. The risk identification and analysis and risk response plans will be available to project stakeholders in separate documents. The effort will include an identification and assessment of project risks and a framework for proactive decision making to:

- *Assess continuously what could go wrong (risks)*
- *Determine which risks are important to deal with (impact and prioritization)*
- *Implement strategies to deal with those risks (mitigation)*
- *Monitor and control (tracking)*

Issue Management

The purpose of the issues management process is to provide a mechanism for organizing, maintaining, and tracking the resolution of issues that have an impact on achieving the objectives of the project, that is, issues related to the information integration effort as well as issues that have an impact beyond the scope of any specific component.

A description of the issues management process and mechanisms will be posted on a website to be established once the project has been formally launched, and communicated to all program personnel. The approach is to capture and document discussion points that arise in meetings or are brought to the attention of the program team by other means. The project manager is responsible for separating out action items, open points, or other items that may be captured in the same settings, but are not in fact issues.

Documentation consists primarily in a project issue log. When an issue is complex, an additional "issue description" document may be created as well. The project team will use the issue log to:

- Identify each issue and the impact on the project, including any pertinent details such as the date and who reported it.
- Determine a priority for the issue. Label it as high, medium, or low.
- Assign the issue to a team member.
- Set a target date for resolution.
- Track the status of the resolution. Label it as open, in progress, or closed.
- Document the process by which the issue was resolved. This will help the team note any lessons that can be learned from the problem's solution.

The project manager is accountable for managing issues and will aggressively act to resolve issues as rapidly as practicable. The project manager may assign other team members to resolve specific issues. The project manager reports on issue status to the Planning Committee. If the project manager cannot resolve an issue, the issue is presented to the Planning Committee for resolution.

Change Management

The purpose of change management for the project is to provide a process and mechanisms to ensure that program scope; budget and schedule changes are understood and agreed to by the Planning Committee. The approach is to use change control procedures for the project that are consistent with project management industry best practices and include the following tasks:

- Identify potential scope change through the use of a *Change Request* document and *Change Request Log.*
- Evaluate impact of potential scope change.
- Determine if additional funds, resources and time will be required.
- Ensure that the scope change is beneficial.
- Planning Committee discuss the potential change and its anticipated impact on the project and determines whether to authorize the change.
- Changes that are agreed upon must be documented and signed as a matter of formal scope control.
- Update planning documents with scope change impacts.

Communication Management

The project manager in cooperation and with support from the Planning Committee and the core project team will facilitate the communications plan according to the standards established for project management and as indicated in the *Stakeholder and Communications Plan Requirements* section of this document.

6. Authorizations

The Scope Statement will be approved by:

The Project Manager

The Planning Committee

The Project Sponsor

Project changes will be approved by:

The Planning Committee

The Project Manager

Project deliverables will be approved/accepted by:

The Planning Committee

The Project Sponsor

The Project Manager

Stakeholders

Specific task responsibilities of project resources are defined as indicated in the Project/work Plan.

7. Scope Statement Approval Form

Scope Statement Approval Form

Project Name:

Project Manager:

The purpose of this document is to provide a vehicle for documenting the initial planning efforts for the project. It is used to reach a satisfactory level of mutual agreement between the project manager and the project sponsors and owners on the objectives and scope of the project before significant resources are committed and expenses incurred.

I have reviewed the information contained in this Scope Statement and agree.

_____

Commissioner of Public Safety Date

_____

Commissioner of Transportation Date

_____

Commissioner of Natural Resources Date

_____

Commissioner of Administration Date

_____

Metro Radio Board Chair Date

_____

League of MN Cities Representative Date

_____

Association of MN Counties Representative Date

_____

MN State Sheriff's Association Representative Date

_____

Commissioner of Finance Date

_____

Project Manager Date

8. Scope Change Approval Form

Scope Change Approval Form

Project Name:

Project Manager:

The purpose of this document is to provide a vehicle for documenting the changes to the initial scope for the project. It is used to reach a satisfactory level of mutual agreement between the project manager and the project sponsors and owners on the cost and other project impacts before significant resources are committed and expenses incurred.

I have reviewed the information contained in this Change Request Statement and agree.

_____

Commissioner of Public Safety Date

_____

Commissioner of Transportation Date

_____

Commissioner of Natural Resources Date

_____

Commissioner of Administration Date

_____

Metro Radio Board Chair Date

_____

League of MN Cities Representative Date

_____

Association of MN Counties Representative Date

_____

MN State Sheriff's Association Representative Date

_____

Commissioner of Finance Date

_____

Project Manager Date

9. Appendices

APPENDIX I

Source: SECTION III of the Mn/DOT OEC *Conceptual Plan and Design Document*

STANDARDS AND POLICIES

NETWORK MANAGEMENT STANDARDS

There are two types of standards that are needed to implement a shared statewide trunked radio system. The first is the "network architecture" standards. For the purpose of this document this standard is defined as Project 25, described later in this section. The second required standard involves the operation and administration of the system. These standards will establish the protocols, and procedures for users of the system. The topics covered by the standards manual will include, but not limited to, the areas listed below. While most standards have already been written, they are too lengthily to include in this document.

PROTOCOL & PROCEDURES STANDARDS

1. Management
    a. Agency roles in operational management of system
    b. Network management
    c. Database management
    d. Maintenance of names and naming standards
    e. Changing policy & standards
    f. Security
    g. Equipment standards
    h. Moves, additions and changes
    i. Managing participation issues
    j. Training standards
2. Configuration and Allocation
    a. Naming conventions
    b. Talk-group and radio ID allocations
    c. Fleet-mapping standards
    d. Use of shared Talk-groups
    e. Talk-group & radio user priorities
    f. Telephone interconnect
    g. Subsystem roaming
    h. Scanning
    i. Recording/Logger ports
    j. Private call
    k. Status & message transmission/warning signals/AVL/text messaging
    l. Emergency button
    m. Multi-group announcement
3. Interoperability Guidelines
    a. MINSEF
    b. Statewide Fire Mutual Aid
    c. MIMS
    d. Statewide EMS
    e. Recording common interagency Talk-groups
4. Guidelines for Project 25 Trunked Users
    a. Talk-group and Multi-group ownership
    b. Interoperability between statewide 800 MHz system and other 800 MHz systems
    c. Statewide tactical Talk-groups

    d. Interoperability between statewide 800 MHz and federal agencies
5. Guidelines for Conventional Users
    a. Connecting into the Interop System
    b. RF control stations and portables
    c. Radio to radio cross band repeaters
6. Maintenance
    a. Agency maintenance plans
    b. Develop standards for preventive maintenance
    c. Record-keeping requirements
    d. Contact information & procedures
    e. Spare equipment
    f. Equipment configuration information
    g. Software location
    h. Notification of maintenance activities
    i. Outage responsibility/Time standards/Repair Standards
7. Media Policy
    a. Media access to Talk-groups
    b. Selling radios to the media
    c. Programming media radios
8. Agency Billing & Cost Allocation
    a. New Users
    b. Fees for service
    c. Operational costs
    d. Billing management
    e. Insurance
9. Compliance & Conflict Resolution
    a. Auditing and monitoring process
    b. Non-compliance
    c. Appeal process
10. Disaster recovery Plan
    a. Contingency procedures
    b. Procedures/responsibility for system restoration
    c. Levels of response

STANDARDS FOR OPERATIONAL MANAGEMENT

The purpose of these Standards is to define each agency's role in the operational management of the Statewide Shared Digital Trunking System.

Each User of the System will formally designate a Local System Administer (LSA) who will have the authority to represent their respective Agency(s) interests and make decisions on issues related to the day-to-day operation on their portion of the system and any urgent or emergency system operational or repair decisions. The Mn/DOT System Administrator will represent the statewide infrastructure portion of the system. Each LSA shall designate a backup who shall have the authority to represent their respective portion of the System in the absence of the primary LSA.

An urgent or emergency situation would be one where immediate decision authority is needed to allow the System as a whole, or any of the Subsystem components, to continue supporting normal wide-area communications services. It is recognized that each Local Systems Administrator (LSA) may have to obtain authorizations from higher levels of their own organization to make longer-term or non-emergency capital or repair expenditure decisions.

Each LSA will be responsible for the day-to-day management, operation and oversight of the system components within their portion of the System. Specific duties will not be detailed in this document. However, the general duties will include, but are not limited to, the following:

1. ***Monitoring the system and its components for normal operations.***
2. Participating in the diagnosis of system performance problems and the development of corrective action recommendations.
3. Dispatching appropriate repair services in the event of a malfunction in the system equipment.
4. Managing the database elements including Subscriber IDs, talk-group IDs, and the various parameters that relate to their effective operation.

Due to the complexity and distributed administration & maintenance of the System, typical problems can appear when changes are made to hardware or software. In order to keep all representatives informed of any updates, notifications will need to be sent to all primary & alternate Local System Administrator (LSA) representatives in the event of any of the following:

a. Any planned maintenance work being done on the Statewide or Local Systems that would affect the System performance for the other users would be preceded with reasonable notification of the maintenance work being done.
b. Any equipment malfunctions or failures that would affect system performance for the other users of the local systems or statewide system.
c. Any configuration changes in equipment or software by any one of the users that may affect system performance for the other users.

In addition to the responsibilities as a Statewide System Administrator, the Mn/DOT System Administrator will also be responsible for:

a. Arranging for System Administration meetings at least monthly to review operations of the System and share ideas or issues that have arisen in local subsystems that may be of interest to the other Local System Administrators.
b. Being available to work with any of the other Local System Administrators or the technical staff of any of the local systems to diagnose and resolve any system operational problem that involves parameter changes, maintenance or repair of the regional equipment.
c. Being the identified point of contact with the vendor for issues related to the statewide network equipment.
d. Providing timely information to the other Local System Administrators on any System issue that arises or repair/maintenance issue related to the system equipment.
e. Monitoring the performance of the entire network for normal operations, particularly the performance of the statewide infrastructure equipment.
f. Monitoring the configuration of the system database for normal operations, particularly the properties of the statewide equipment & database objects. And conducting the periodic database backups.

The Local System Administrators along with Mn/DOT's System Administrator will be the representatives forming the System Managers Group (SMG). The SMG is responsible for the operational management of the entire statewide system.

STANDARDS FOR NETWORK MANAGEMENT

The statewide network consists of, but not limited to, channel banks, hubs, switches, routers, servers, Local Area Networks at the equipment locations, and Wide Area Links connecting sites together consisting of the microwave & fiber optic equipment, and the network management tools provided by the equipment manufacturer.

The System architecture is primarily constructed around an Internet Protocol based network.
The network is composed of industry standard equipment, which also provides flexibility and a large variety of management & diagnostic tools.

The vendor will provide equipment configuration information as part of the system documentation. The system network is complex and unusual problems may be difficult to identify and resolve. The system documentation will have to be kept up to date or will lose its value in supporting the system network.

The system network is protected from other agency data networks, and shall remain so. This is to protect the security and functionality of the system. If there is a connection to another data network, it shall be through an appropriately designed & maintained firewall.

The components of the network shall be considered as "owned" by the State of Minnesota, unless otherwise designated as a local component, in which case that component would be owned by the local unit of government. The individual owners will then be responsible for the maintenance of the sites & equipment that they own. Agreements between the Owners and/or Maintenance Contractors are at each agency's discretion, but the Owner is still ultimately responsible for their portion of the system.

The Backbone system is structured on an integrated network; any infrastructure hardware and software upgrades or changes that may impact the system network will need reasonable discussion and subsequent approval by the System Managers Group.
All maintenance work being scheduled that may affect the statewide system and/or a local system performance shall be preceded by reasonable and appropriate notification to the other Local System Managers.

The equipment configurations of the components of the network will need to be documented. This is primarily for the purpose of maintenance, but also affects future planning. The vendor will provide the original "as built" documentation.

The methods for performing detailed network operations will be defined in the technical resource manuals and training for the system. The technical resource manuals will be classified as "Security Information" and "General Non-Public Data" pursuant to Minn. Stats. §13.37 Subd. 1a.

The details on procedures not otherwise defined will be at the discretion of the System Managers Group.

The MnDoT System Administrator and Local System Administrators are responsible for managing the data attributes that they are individually responsible for. The Mn/DOT System Administrator shall be responsible for the statewide portion of the network.

NETWORK ARCHITECTURE

TECHNOLOGY STANDARDS

APCO Project 25 is a joint effort of U.S. federal, state, and local government, with support from the U.S. Telecommunications Industry Association (TIA). State government is represented by the National Association of State Telecommunications Directors (NASTD) and local government by APCO. The

standards process is called “APCO Project 25” and the standards themselves are called “Project 25.” Of the three groups of users, APCO (i.e., local government) members are the largest group of users of Land Mobile Radios (LMR).

The primary objectives of the APCO Project 25 (P25) standards process are to provide digital, narrowband radios with the best performance possible, to meet all public safety user needs, and to permit maximum interoperability. Secondary objectives include obtaining maximum radio spectrum efficiency, ensuring competition throughout the life of systems, and ensuring that equipment is user-friendly. During the process, the needs of the user have been put first. Performance and meeting user needs were always placed higher in priority than spectrum efficiency or reducing technical complexity.

The Project 25 documents were developed by TIA, based on user needs, and then approved by the APCO Project 25 Steering Committee (representing federal, state, and local governments) before being published as TIA documents.

Project 25 Phase I (12.5 kHz bandwidth) is essentially complete, 30 of the 32 Phase I Project 25 documents have been published by TIA, containing more than 1,800 pages of technical information. The two remaining documents are on inter-sub-system interface conformance and network management conformance. These documents are expected to be published shortly.

The basic characteristics of Project 25 radios are these:

- A Phase I emission designator 8K10F1E (C4FM [compatible four-level frequency modulation]) for operation in a 12.5 kHz channel and a Phase II emission designator of 5K76G1E (CQPSK [compatible quadrature phase shift keying]) for operation in a 6.25 kHz channel.

- Use of a common receiver for both C4FM and CQPSK to ensure full interoperability between the two signals.

- Encryption defined for the U.S. Data Encryption Standard (DES) algorithms, but other techniques can also be employed.

- Use of an IMBE (improved multiband excitation) vocoder with 4400 bits/s of digitized voice, 2800 bits/s of error correction on the voice, and 2400 bits/s of signaling overhead, for an aggregate bit rate of 9600 bits/s.

Project 25 Migration Strategy and Phase II Plans Project 25 has a well-planned migration strategy, both in the forward and backward direction. It was assumed in the basic planning that (1) no virgin spectrum was available and (2) users would need to affect a gradual phase-in and phase-out of equipment.

For the transition from 25-kHz to 12.5-kHz digital, all Project 25 Phase I radios will be capable of both 25 kHz analog FM and 12.5-kHz digital C4FM operation. Radios can thus be procured gradually, and channels or talk-groups converted to P25 operation whenever all the radios on them are P25

The primary track of Project 25 Phase II has been announced to be 6.25-kHz CQPSK. The only difference between Phase I C4FM and Phase II CQPSK is the modulation method in the radio transmitter. A smooth transition is possible since Phase I radios can be gradually replaced by Phase II radios. The Project 25 Steering Committee is currently receiving proposals for a secondary TDMA [Time Division Multiple Access] track for Phase II. Here are two requirements for such.

A TDMA radio:

- To have a Phase I mode of operation (non-trunked mini mum), for operation with other P25 radios.

- To be able to patch digital audio (i.e., have a common vocoder) and signaling information to/from other P25 radios.

Other Standards Planned for Project 25 Phase II the U.S. Telecommunications Industry Association is pursuing standards for more than a basic radio air interface as a part of the APCO Project 25 Phase II standards process. One of these efforts is to develop a standard interface to consoles.

Another standard that TIA plans to develop as a part of Project 25 Phase II is a standard interface between repeaters and other subsystems (e.g., trunking system controller). This will allow users to purchase equipment from multiple manufacturers for a single site, rather than being locked into the offerings of any one company.

Users should consider their individual situation in making procurement decisions. Overall, the users in the United States have concluded that FDMA is the preferred solution for the vast majority of their needs.

Project 25 standards were designed primarily for the public safety user, with range and performance given high priority. Also, unique flexibility has been designed into the standards to enhance interoperability, privacy, gradual phase-in of new technologies, and the reliable transmission of voice and data. Several other of the seven techniques provide greater spectrum efficiency, and several are less complex (with potentially lower costs). However, the Project 25 Steering Committee believes none of the others provides greater performance, at greater range, or has more public safety-oriented features.

REF: A complete copy of the Standards described in this document may be obtained from the MN/DOT-OEC library. Contact the Office of Electronic Communications at (651) 296-7421 for further information.

LICENSING EXCESS TOWER SPACE

Minnesota Statute 174.70 Subdivision 2 empowers the Department of Transportation to enter into agreements to permit privately owned communications equipment on Mn/DOT owned communications towers. The following process has been created to enable the Lease of excess space.

PROCESS

Following is the process that is followed to lease space on Mn/DOT towers to commercial wireless providers or other eligible private companies. At the recommendation of the Dept. of Administration, Real Estate Management Div. it was agreed upon that Mn/DOT will enter into License Agreements, rather than a Lease. This process is not necessary when dealing with local units of government, or federal government requests.

STEP 1 – The Department of Administration (DOA) publishes annual notice to potential lessees.

STEP 2 – Mn/DOT, Office of Electronic Communications will review each requests to License space on MnDoT towers. Criteria for selecting who will be granted a License are described below. Requests must be submitted to DOA in writing.

Criteria:

1. Licensing will be done on a first come, first served basis. The date of receipt at DOA will establish the receipt date. If more than one request is received on the same day, then the time indicated on the postmark will be the next criteria for establishing the date of receipt.
2. Technical compatibility of the requested system with existing or planned systems at the tower site.
3. Agreement by requesting company to accept published fee and all other terms of the License Agreement

Written request must include as a minimum, the following data:

a. A statement indicating the desire to install antennas, and house equipment, or construct a shelter (platform) at a Mn/DOT tower.
b. The request should include a site plan that describes the specific number, size, make and model of the antenna(s), the desired height and azimuth on the tower, type of coax cable, shelter, power, and other utility arrangements.

STEP 3 - Mn/DOT's Office of Electronic Communications will request an intermodulation (intermod) study from the commercial carrier. The intermod study will consider all existing and planned frequencies for the site, against the frequencies proposed to be used at the site by the carrier. This study must be submitted in a format that can be easily reviewed by the OEC engineering staff.

STEP 4 - If the intermod study is deemed satisfactory by the OEC engineering staff, then the requesting commercial carrier must submit a structural analysis of the Mn/DOT tower. The analysis must be completed and certified by a licensed engineering firm qualified to do structural analysis in the State of Minnesota. This report must be in a format that is easily read and interpreted by engineering staff.

STEP 5 – If the structural analysis is favorable, then the process to develop the License Agreement will begin.

a. If the structural analysis is not favorable, then a letter will be sent to the requesting carrier informing them that they cannot install their equipment as proposed. They would have the option to modify their request, or withdraw.

b. If withdrawn, the state would consider the next request as determined in STEP 2, and begin the process over again.

STEP 6 – Draft License Agreement Terms

a. License term for a five-year period, with the option to renew for three (3) additional five-year periods.
b. Fees – As published annually. Once an Agreement has been signed then the rate in effect at that time will remain for the entire License Term.

STEP 7 – Execute License documents as prescribed by policy/law.

REVENUE ISSUES

The revenue received as a result of Licensing Mn/DOT towers will be used to operate and maintain the communications systems of the State of Minnesota. This includes but is not limited to:

- Mn/DOT, State Patrol, and DNR two-way radio system equipment.
    - Tower maintenance (reinforcement, painting, lighting, and new construction)
    - ITS wireless applications (road signs, cameras, sensors, R/WIS etc.)
- Microwave system

Ref: A complete copy of the Policy and Licensing Package described in this document may be obtained from the Mn/DOT-OEC library. Contact the Office of Electronic Communications at (651) 296-7421 for further information.

EXCESS CAPACITY OF RADIO SYSTEM

This discussion pertains specifically to Public Safety Agencies. Public Safety for the purpose of this plan is defined as: Law Enforcement, Fire, Emergency Medical Services, and Highway Dept's. Public Works, Forestry Conservation, School Districts, and any other service provided for and funded by government agencies. Herein after referred to as: "local(s)", "local government" or "public safety agency".

As noted previously in this Plan, the Radio System will be planned and implemented to meet the needs of the State. However, attempts will be made to design the system to meet local needs where and when feasible. This may involve moving a planned tower to an area that will meet local coverage needs while still meeting the needs of the state. However, it must be noted that this must be done at no additional cost to the state. If the local government needs exceed or expand the system beyond that needed by the state, then that portion of the system will be the fiscal responsibility of the locals. As a minimum this plan recommends the following:

- The expanded local portion of the system must still meet the Network and Operational Standards as stated in this plan. This will ensure compatibility to the statewide system.

There may be times when the state system as planned and implemented may meet the local needs. As a minimum this plan recommends the following when and where this occurs:

- A policy be developed that prescribes the manner in which local units of government will be allowed to use the excess capacity of the system.

LOCAL INVOLVEMENT

Early on in the Planning Process for each phase as described in Section I, local government agencies will be involved in the planning process through information exchange meetings. These meetings will assist planners in determining where local resources can be used in the system. It will also identify local agency radio requirements that may be resolved by the proper placement of the state infrastructure. The infrastructure of the statewide system will be available to local government agencies that chose to use the system. Locals may accept the system performance as provided by the state, or add enhancements to the system to meet their specific needs. This plan recommends the following:

- Local use should be on a voluntary basis.
- Enhancements will be the fiscal responsibility of the affected local unit of government.
- Locals will be responsible for purchasing and maintaining their subscriber units (mobiles and portables).
- Locals using the system will pay an annual subscriber fee. The fee will be based on the previous year cost to maintain the system. The total number of mobiles and portables on the statewide system would then divide this cost. Each agency would then be charged this amount based on the number of mobile and portable radios used by that agency.

Other tasks of the Planning Team working with locals:

- Explain project goals and benefits of system to local representatives
- Determine local interest in system participation
- Review Plan to determine if local needs can be met, and or what changes could be made to meet local needs while still satisfying state needs at no additional expense.
- Inform local representatives of how state will proceed and how the plan may or may not fulfill local requirements.

TYPICAL PROCESS WITH LOCAL ENTITIES

- State Engineers target area

- State arrange meeting with local officials of targeted area(s)
    - Meeting
        - Discuss local communication status
        - Discuss what state is proposing
        - Look for common areas

- State engineers develop detail design for targeted area
    - Meeting
        - Present plan to locals
        - Adjust plan if necessary
        - Work out details of shared resources (if any)
        - State begins process to acquire land (if necessary)
        - Modifications to existing facilities if necessary
            - Work with locals if involves their facility
        - State Bid letting for tower(s) shelter(s) etc
        - Site construction
            - Meet with locals to keep informed of progress
        - Specifications for radio equipment developed
        - Bid letting
        - Negotiate contract
        - Award contract
        - Negotiate Service Agreements with Locals for use of system
            - What system will do for locals State responsibilities
            - Local responsibilities
            - Rates
            - Maintenance
            - Training
            - Administration

911 FEE INCREASE

The Public Safety Radio System Planning Committee recommends an increase of 27 cents in the existing 911 surcharge to fund the expansion of basic infrastructure to support a statewide shared public safety radio system that would be compatible with the existing metropolitan system. Currently Minnesota Statute 403.11 provides that the 911 fee may be not less than eights cents nor more than 33 cents per month for each customer access line.

A total of $189 million is needed to cover the costs of the radio system infrastructure, including telecommunication towers, digital radio system fixed equipment, microwave backbone equipment and interoperability equipment. A one cent increase on each wire line and wireless line in Minnesota generates $700,000 in revenue to the 911 fund and would fund $7 million in capital improvement bonds. Debt service costs for out years have not been determined.

METROPOLITAN RADIO BOARD PROPOSAL

Proposal submitted by the Metro Radio Board as accepted by the Statewide Public Safety Radio System Planning Committee on December 18, 2002.

The Metropolitan Radio Board, as a political subdivision of the State of Minnesota, is, by law, responsible for overseeing the planning, development, implementation, and operation of the First Phase of a region-wide public safety radio communications system in the Minneapolis-St Paul metropolitan area. Among its duties and responsibilities are to set standards, procedures, and protocols for the operation of the system, to provide partial financing for the capital costs of the first phase system, to review the plans of metropolitan counties for deployment of their public safety radio system and to review and approve such plans for compatibility with the First Phase system. In the 2002 legislative session a new enactment defined the Second Phase as "The Metropolitan Radio Board building subsystems for local units of government in the metropolitan area that did not build subsystems in the First Phase." That language, which appeared in the senate version of the anti-terrorism legislation, anticipated full funding by the Metropolitan Radio Board of a system-wide metropolitan region build-out. In the conference bill that became law, the definition remained. Although the Board is limited to providing 30 percent of the funding, the Board's policy is to take the lead in encouraging local units to participate and take a broad view of fostering the metro build-out. In keeping with this responsibility, the Board has commissioned the development of detailed design specifications for those jurisdictions in the metropolitan area that did not participate in the First Phase. Integration of the Second Phase system with the First Phase system is necessarily a Board responsibility.

Because the First Phase system will serve as an initial backbone for region-wide public safety radio communications system in a portion of the State of Minnesota and both the First and Second Phases will integrate with and be fully compatible with the Statewide System, the Planning Committee recommends that the Metropolitan Radio Board continue to exist in its present form until the Planning Committee considers the metropolitan area build-out to be complete or the Planning Committee determines or develops a more efficient or effective method of governance for the metro area, as well as the whole state.

PROPOSED CHANGE TO GOVERNANCE STATUTE

The membership and structure of the Public Safety Radio System Planning Committee, as described in statute 473.907 subd. 1, shall serve as the governance body for the statewide radio system.

Sec. 12. [473.907] [PUBLIC SAFETY RADIO SYSTEM PLANNING COMMITTEE.]

Subdivision 1. [PLANNING COMMITTEE.] (a) The commissioner of public safety shall convene and chair a planning committee to develop a project plan for a statewide, shared, trunked public safety radio communication system.

(b) The planning committee consists of the following members or their designees:

(1) the commissioner of public safety;

(2) the commissioner of transportation;

(3) the commissioner of administration;

(4) the commissioner of natural resources;

(5) the chair of the metropolitan radio board;

(6) the president of the Minnesota sheriffs' association;

(7) a representative of the league of Minnesota cities from greater Minnesota, and

(8) a representative of the association of Minnesota counties from greater Minnesota.

Additionally, the commissioner of finance or a designee shall serve on the committee as a nonvoting member.