State of Minnesota

Application for the National Telecommunications and Information Administration State and Local Implementation Grant Program

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Division of Emergency Communication Networks

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Introduction

The Middle Class Tax Relief and Job Creation Act of 2012 directed the National Telecommunications and Information Administration (NTIA) to execute the State and Local Implementation Grant Program (SLIGP) to fund state, local, and tribal planning and consultation activities in order to successfully integrate into the Nationwide Public Safety Broadband Network (NPSBN) to be deployed by the First Responder Network Authority (FirstNet). The NTIA released its notice of Federal Funding Opportunity (FFO) on February 6, 2013.

This document is Minnesota's application for SLIGP. It is organized per the structure of the NTIA's FFO, with each heading roughly corresponding to each prompt and/or direct inquiry in the FFO.

A significant amount of information in this document is adapted from the 2012 Minnesota Public Safety Wireless Data Network Requirements Project and the 2013 Minnesota Public Safety Broadband State and Local Grant Plan.

Electronic copies of these plans are available at:
https://dps.mn.gov/divisions/ecn/programs/armer/Pages/studies-reports.aspx

For more information on the applying agency, please see http://ecn.dps.mn.gov.

For more information on the NTIA SLIGP, please see http://www.ntia.doc.gov/other-publication/2013/sligp-federal-funding-opportunity.

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Project Feasibility

Applicant Capacity and Qualifications

The Minnesota Department of Public Safety, Division of Emergency Communication Networks (ECN) will handle staffing, administration, and management under SLIGP.

ECN's Qualifications:

ECN has provided leadership in public safety communications for the state for many years and has the full support of public safety organizations throughout the state to carry out this project.

ECN has most recently served Minnesota under the following initiatives:

- Governance forming and staff support for the Minnesota Statewide Radio Board and the 7 Regional Radio Boards.
- Executive management, funding, outreach, education, and training for the ARMER network, a statewide, trunked, shared radio system utilized by nearly every public safety agency in the state, including every major metropolitan area. ARMER is built in partnership with the Minnesota Department of Approximately 90,000 active subscriber radios are anticipated on the system by end of calendar year 2013.
- Service as statewide 9-1-1 authority, who collects and administers the 9-1-1 fund for the state, reimburses PSAP expenses for over 100 PSAPs throughout the state, and builds and maintains the statewide 9-1-1 telecommunications backbone.
- Construction of a Next-Generation 9-1-1 (NG9-1-1) network which will provide a dedicated emergency calling IP backbone to every PSAP in the state. As of this writing, approximately 1/3 of PSAPs in the state are operating on the Next-Generation 9-1-1 IP backbone with all PSAPs to be migrated by end of calendar year 2014.
- Numerous projects related to public safety broadband planning, including the groundbreaking 2012 Public Safety Wireless Broadband Data Network Requirements Study and the 2013 Minnesota State and Local Grant Plan.

ECN's Capacity:

ECN will rely on contracted services to execute most work under SLIGP. ECN anticipates the SWIC at half time for three full years with support from three half-time employees throughout the performance period of the grant and contract staff under deliverable-based contracts.

Staffing Plan

State Manager: Oversight of the entire broadband program within the state. Reports directly to the Statewide Radio Board (SRB) or the Single Point of Contact (SPOC) and manages the project team and the overall effort. Serves as the State representative for the program and keeps executives within the State informed on the program. This individual is the SWIC who is a full time employee. Anticipated dedicated to this project ½ of time for three full years.

RICs: Three Regional Interoperability Coordinators (RICs) who report to the SWIC. These are half-time employees. Anticipated dedicated to this project ½ of time for three full years, for ¼ FTE each.

Project Team: Conducts the primary body of work identified in the tasks above. Collects stakeholder information, performs outreach on behalf of the state, organizes meetings, and reports on status and other factors to the State Manager. Includes one or more analysts, one or more engineers, and administrative support hired on a deliverable-base contract. Related tasks are broken down in the *Detailed Budget Justification*.

Stakeholders: Volunteers from county and local units of government. Participate in the online and web-based surveys to provide agency data. Participate in subcommittees and attend meetings and workshops.

Detailed Budget Justification

Overview

Minnesota was awarded $2,987,075, of which $597,415 is state share and $2,389,660 is Federal share. Minnesota's high-level budget by expense category is shown in *Table 1: Minnesota High-Level Budget by Expense Category*. $1,194,830 of Federal funds (one half) will be held in reserve until the second phase of this grant program and will be awarded upon notice by NTIA and FirstNet that Minnesota is approved to begin Phase 2 of the grant program. Minnesota anticipates spending no more than $972,928 of Federal funds during phase 1.

Table 1: Minnesota High-Level Budget by Expense Category

By Category:	Fed Share	State Share (cash)	Total
A (Personnel)	$140,816	$35,204	$176,021
B (Fringe Benefits)	$23,301	$5,825	$29,126
C (Travel)	$143,424	$35,856	$179,280
D (Equipment)	$0	$0	$0
E (Supplies)	$0	$0	$0
F (Contractual)	$2,031,920	$507,980	$2,539,900
G (Construction)	$0	$0	$0
H (Other)	$50,199	$12,550	$62,749
Indirect Costs	$0	$0	$0
Total:	$2,389,660	$597,415	$2,987,075

Minnesota will allocate Federal and state funds in each work area at an 80%-20% ratio; meaning, each work area is funded 80% by Federal dollars and 20% by state dollars on an invoice-by-invoice basis. The state match is a cash match supported by Statewide Radio Board funds which are appropriated annually from the statewide 9-1-1 surcharge on consumer telecommunications services in the state.

Minnesota's exact budget numbers are detailed in the attachment *Budget Justification Spreadsheet.*

Personnel

See the Detailed Budget Spreadsheet for calculations.

SWIC

The SWIC will provide oversight for the SLIGP grant, ensuring that all activities are completed on time and within budget and will serve as primary project manager. The SWIC will interface with the primary point of contact for consultation with FirstNet (the Commissioner of Public Safety). Budgeted costs (50% of time) are only for the duties associated with public safety broadband and SLIGP, not the additional land mobile radio and general interoperable communication duties of the SWIC.

Web-based training

Interagency agreement to produce online training and outreach modules related to SLIGP with Minnesota State Colleges and Universities System (MNSCU). These interagency agreements are structured much like contracts. ECN anticipates approximately 400 hours/year at a cost of $60 per hour under these agreements. This work will include producing a series of web-based self-paced classes using the Blackboard software which will be hosted by a participating MNSCU member. These classes will be approximately 1-2 hours each and will cover topics such as FirstNet basics, Public Safety Broadband 101, an LTE technical introduction, and stakeholder responsibilities under the FirstNet consultation process.

Fringe Benefits

See the Detailed Budget Spreadsheet for calculations.

SWIC

Fringe benefits for the SWIC are determined at 28% of salary, divided by ½ on account of one half of the SWIC's time being spent on broadband and SLIGP. Benefits include FICA, retirement, unemployment, and health insurance.

Travel

See the Detailed Budget Spreadsheet for calculations.

Project Team, Phase 1

ECN will hire a consulting firm to provide professional services to carry out many of the activities of this grant program. ECN anticipates a total of 9 trips for up to three years for phase 1 of the grant program. Because it is possible the firm's assigned staff may be located outside of Minnesota, airfare is included in these travel expenses.

Project Team, Phase 2

Per the above, ECN anticipates a total of 6 trips for up to three years for phase 2 of the grant program.

Stakeholders, Phase 1

Reimbursable travel costs for stakeholders, including state employees, county and city officials, and other government organizations to attend meetings, workshops, and other eligible SLIGP events. Includes mileage, meals, and hotel. ECN anticipates a total of 40 trips for up to three years for phase 1 of the grant program.

Stakeholders, Phase 2

Per the above, ECN anticipates a total of 80 trips for up to three years for phase 2 of the grant program.

FirstNet Meeting, Pre-Award

1 meeting for up to 10 individuals to attend a FirstNet regional FirstNet consultation meetings prior to SLIGP award. This meeting is held in St Louis, Missouri.

FirstNet Meetings

Up to 7 meetings for up to 10 individuals to attend FirstNet regional FirstNet consultation meetings. These meetings are held are geographical centers and potentially all of them may be outside of Minnesota.

Partial Travel Costs

40% of travel costs for stakeholders to attend annual Minnesota interoperability conference. 40% of conference topics are directly related to NPSBN and SLIGP.

Equipment

N/A

Supplies

N/A

Contractual

See the Detailed Budget Spreadsheet for calculations. Certain tasks are phase 1 tasks and others are phase 2 tasks; for detail, see the Detailed Budget Spreadsheet.

ECN will hire a firm to provide professional and technical services in support of much of the labor under SLIGP. Tasks and deliverables under contract will be closely aligned with NTIA SLIGP deliverables and will include:

- Task 1. Review and Revise the Minnesota State and Local Grant Plan and Minnesota's SLIGP application to develop a full project plan.
- Task 2. Enhance Minnesota's public safety communications governance structure to be sufficient for the Minnesota-FirstNet consultation.
- Task 3. Ensure adequate tribal representation.
- Task 4. Conduct education and outreach sufficient to equip stakeholders to support the Minnesota-FirstNet consultation.
- Task 5. Develop stakeholder entity list and identify potential users for the network.
- Task 6. Develop standard legal documents, including Memoranda of Agreement (MOA), Memoranda of Understanding (MOU), and Service Level Agreement (SLA).
- Task 7. Organize State and stakeholder volunteers to conduct the Minnesota-FirstNet consultation.
- Task 8. Perform Detailed Individual Stakeholder Entity Requirements Gathering.
- Task 9. Provide recommendations to update the Statewide Communications Interoperability Plan (SCIP) to accommodate MnFCP and the NPSBN.
- Task 10. Conduct a discovery and data collection process to identify and value all publicly and private-owned infrastructure and other resources in the state which may contribute to the network.
- Task 11. Completion of Phase 2 activities under SLIGP for FirstNet-State consultation according to standards and guidelines to be provided by FirstNet and by NTIA.

RICs

Minnesota has 3 Regional Interoperability Coordinators (RICs) who are half-time contract employees stationed in geographically strategic locations of the state. The RICs report to the SWIC. RICs will spend half of their time 2(1/4 FTE each) supporting SLIGP and public safety broadband by hosting workshops, representing the SWIC and SLIGP project at various governance meetings, answering program questions for local stakeholders, and performing similar duties.

Interoperability Conference

Partial costs of professional services to manage and staff Minnesota's annual interoperability conference. 40% of conference topics are directly related to NPSBN and SLIGP.

Keynote Speaker Fees

Full cost of keynote speakers at Minnesota's annual interoperability conference. Keynote speakers in past years have exclusively covered broadband topics.

Regional Radio Boards

The 7 Regional Radio Boards (RRBs) in Minnesota will have a number of meetings primarily or exclusively related to broadband and SLIGP activities. $12,500 in each project phase is allocated to execute contracts with each RRB to pay administrative costs related to regionalized governance activities under SLIGP.

Outreach and Education

Professional services to develop and deliver in-person education and outreach materials for SLIGP, including classroom sessions and facilitated workshops.

Construction

(N/A)

Other

See the Detailed Budget Spreadsheet for calculations.

Venue at Conference

Partial costs for venue at Minnesota's annual interoperability conference. 40% of conference topics are directly related to NPSBN and SLIGP.

Meals at Conference

Partial costs for meals and catering at Minnesota's annual interoperability conference. 40% of conference topics are directly related to NPSBN and SLIGP.

Planning Meetings

Cost of holding special planning meetings and workshops, such as a SCIP broadband workshop or SLIGP project meetings, to be reimbursed to participants.

Printing Costs

Costs related to printing informational materials like pamphlets, slick sheets, etc.

Indirect Costs

N/A.

State and Local Implementation Grant Program (SLIGP) Supplemental Narrative Questions

1. Existing Governance Body

a. *Describe the organizational structure and membership of the existing Statewide Interoperability Governing Body (SIGB), or its equivalent that is responsible for public safety communications in the State.*

The Statewide Radio Board (SRB) and Regional Radio Boards are at the center of Minnesota's interoperable communications governance structure. Reporting to each board are sub-committees and workgroups.

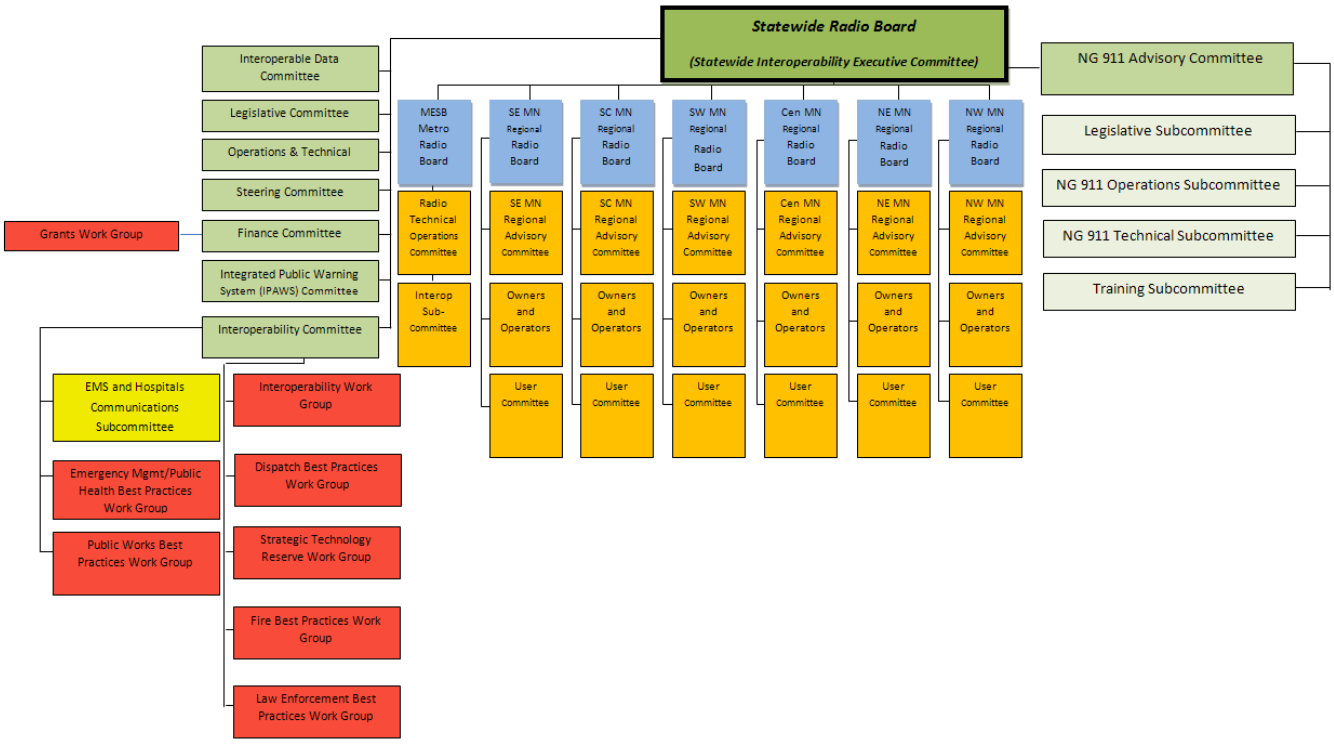

Figure 1: Minnesota's Communications Governance Structure

Radio Board committees and workgroups are composed of subject-matter experts who advise the board in rulings pertaining to each committee or workgroup's particular area of expertise. Meanwhile, Regional Radio Boards perform a similar function for each multi-county Radio Board Region of the state.

This governance structure ensures that the Statewide Radio Board acts on issues with the full input of public safety and government officials across Minnesota representative of the diverse geographies, disciplines, authorities and areas of expertise through the state.

The Statewide Radio Board includes the following permanent seats:

- The commissioner of public safety (chair)

- The commissioner of transportation
- The state chief information officer
- The commissioner of natural resources
- The chief of the Minnesota State Patrol
- The commissioner of management and budget
- The chair of the Metropolitan Council
- Two elected city officials, one from the nine-county metropolitan area and one from Greater Minnesota, appointed by the governing body of the League of Minnesota Cities
- Two elected county officials, one from the nine-county metropolitan area and one from Greater Minnesota appointed by the governing body of the Association of Minnesota Counties
- Two sheriffs, one from the nine-county metropolitan area and one from Greater Minnesota, appointed by the governing body of the Minnesota Sheriff's Association
- Two chiefs of police, one from the nine-county metropolitan area and one from Greater Minnesota, appointed by the governor after considering recommendations made by the Minnesota Police Chief's Association
- Two fire chiefs, one from the nine-county metropolitan area and one from Greater Minnesota, appointed by the governor after considering recommendations made by the Minnesota Fire Chiefs' Association
- Two representatives of emergency medical service providers, one from the nine-county metropolitan area and one from Greater Minnesota, appointed by the governor after considering recommendations made by the Minnesota Ambulance Association
- The chair of the regional radio board for the metropolitan area
- A representative of Greater Minnesota regional radio boards selected in accordance with ARMER Standard 8.1.0, adopted on January 24, 2011

b. Describe the SIGB's authority to make decisions regarding public safety communications and how these decisions are implemented.

Minnesota's existing governance body is the Statewide Radio Board (SRB) and its 7 Regional Radio Boards (RRBs).[1] The Statewide Radio Board and its membership are established by law;[2] meanwhile, Minnesota law authorizes any unit of government within the state to enter into a joint powers agreement to form a regional radio board.[3]

ECN will provide staff and management for activities under SLIGP. The Statewide Radio Board is an all-volunteer organization with no dedicated employees. ECN is an executive-branch agency under the Department of Public

[1] The Regional Radio Boards for the Twin Cities metropolitan area and for a consortium of counties in Central Minnesota are the Metropolitan Emergency Services Board and the Central Minnesota Emergency Services Board, respectively.

[2] *See* Minn. Stat. 403.36-403.40.

[3] *See Id.*

Safety, which provides personnel to carry out Statewide Radio Board projects and initiatives, such as specific interoperability projects, infrastructure projects, authoring of standards and procedures, and other activities.

c. *Describe how the State will leverage its existing SIGB, or its equivalent, to coordinate the implementation of the Public Safety Broadband Network (PSBN) in the State.*

The State will leverage the existing statewide governance structure to govern the grant program. The SRB and regional boards will be called upon to make or endorse any major policy decisions regarding the implementation of the grant program.

According to the Act, the State must establish a single point of contact. That single point of contact for the State is the Commissioner of Public Safety, Romona L. Dohman.[4] On February 28th, 2013, the SRB formally endorsed ECN as the agency to carry out activities under SLIGP. Additionally, on January 24, 2013 the SRB formally endorsed the Commissioner of Public Safety as the governor's designated point of contact for SLIGP.

Also on February 28th, the SRB adopted the Minnesota Public Safety State and Local Grant Plan, which is a general strategy for conducting both Phase 1 and Phase 2 activities under SLIGP. This plan is designed around the criteria in the NTIA's *Development of Programmatic Requirements for the State and Local Implementation Grant Program to Assist in Planning for the Nationwide Public Safety Broadband Network* public notice dated August 21, 2012. This plan was developed by ECN with funding provided by the SRB. Finally, the state's matching funds of $611,750 for SLIGP were provided by the SRB.

d. *How does the State plan to expand its existing SIGB to include representatives with an understanding of wireless broadband and Long Term Evolution (LTE) technology in order to facilitate its consultations with FirstNet?*

The SRB has established the Interoperable Data Committee, to assist the board in the state's consultation with FirstNet. The following is extracted from the SRB's bylaws:[5]

> *[Mission:] To advise the Statewide Radio Board on all matters relating to wireless broadband for public safety and to represent Minnesota on a national level.*
>
> *Membership is comprised of one Primary and one Alternate from each of the following: Minnesota Department of Public Safety, Office of Enterprise Technology (MN.IT Services), Minnesota Management and Budget, Minnesota Department of Transportation, Minnesota Department of Natural Resources, Minnesota State Patrol, Minnesota Sheriff's Association, Minnesota Fire Chief's*

[4] *See letter addressed to the Assistant Secretary for Communications and Information, Lawrence E. Strickling, from Governor Mark Dayton, February 26, 2012.*

[5] The Statewide Radio Board's bylaws are available online at the following address: https://dps.mn.gov/entity/srb/governance/Pages/bylaws.aspx (last retrieved March 18, 2013)

Association, Minnesota Police Chief's Association, Minnesota Ambulance Association, League of Minnesota Cities, Association of Minnesota Counties, Minnesota Indian Affairs Council, and each regional radio board or equivalent.

Because the Statewide Radio Board has no staff, ECN will carry out all staff and project management activities under SLIGP.

ECN will require Interoperable Data Committee approval for major deliverables and decision points under SLIGP and will report to the Interoperable Data Committee and the Statewide Radio Board on project status on a monthly basis. For a limited number of major deliverables under SLIGP, ECN will also require final approval by the Statewide Radio Board after approval by the Interoperable Data Committee. For SLIGP, the purpose of the Interoperable Data Committee and Statewide Radio Board in relationship to ECN is to ensure ample oversight and opportunities for stakeholders to provide input into the work process.

e. *Does the State currently dedicate sufficient financial resources to adequately support the SIGB? Does the State intend to invest funds received from SLIGP to financially support the SIGB? If so, provide the amount the State expects to request and describe the SIGB functions that these funds will support.*

The SRB receives an annual legislative appropriation of $1M. This funding is sufficient to support the day-to-day functioning of the SRB itself. However, RRBs outside of the metro area have expressed significant challenges in supporting administrative expenses and have requested funding from SLIGP to support activities related to FirstNet consultation.

ECN has included in its SLIGP budget funds for the SRB, RRBs, various committees and other stakeholders in order to cover the cost of travel and other administrating expenses for activities under SLIGP. Direct operational funding, such as to hire staff and consultants, will be handled by ECN per the SRB's resolution that ECN manage funds and staffing under SLIGP.

2. Statewide Communications Interoperability Plan (SCIP)

a. *Are there existing strategic goals and initiatives in your SCIP focused on public safety wireless broadband? If so, what are they?*

The Minnesota SCIP includes under *Section 4: Technology—Data* a number of benchmarks directly related to public safety broadband. As the most recent update of the SCIP was published in July 2012, these benchmarks do not directly correspond to the NTIA's FFO or any FirstNet activity. These benchmarks are as follows:

1. Establish a statewide body under the Statewide Radio Board to officially sanction public safety interoperable data planning activities and to represent the State before regional and national entities such as Firstnet, the FCC, NTIA, and standards bodies including 3GPP (7/31/2012)
2. Develop a full assessment of State and local assets that may contribute to the Minnesota build out of the NPSBN (7/31/2013)

3. Develop a Minnesota Public Safety Wireless Interoperable Data Plan based upon existing planning activities and current research, including continued requirements research and planning efforts such as expansion of its existing financial models, network design, network requirements, and user needs (7/31/2013)
4. Develop applications and data interoperability standards, both on a statewide basis and in cooperation with larger national and global efforts, such as standardized Software Development Kits (SDKs), Application Programming Interfaces (APIs), network interfaces, media codecs, signaling formats, and container formats (7/31/2014)
5. Investigate potential formal partnerships for the NPSBN to clearly identify all feasible avenues for financial models for construction and maintenance of the network (7/31/2013)
6. Continue to foster public safety interoperability planning on a regional basis to ensure data interoperability with adjacent States and the provinces of Manitoba and Ontario (7/31/2014; pending national direction from Firstnet)
7. Monitor, and participate when appropriate, in larger planning and standards-setting with organizations such as Firstnet, PSCR, NPSTC, and 3GPP to support development of national standards and a national network model that fully support the needs of the State of Minnesota. (Ongoing)

Minnesota annually holds a SCIP workshop in the Spring, where all stakeholders throughout the state are invited to review previous initiatives, measure progress, and develop new initiatives. Following this workshop, ECN updates the SCIP and presents to the SRB for approval. In Spring 2013, ECN's SCIP workshop will focus largely on SLIGP and FirstNet and initiatives specifically provided for in the NTIA's FFO.

b. Describe how the State has engaged local governments and tribal nations, if applicable, in public safety broadband planning activities that have been completed to date.

Minnesota's SCIP workshops generally have very broad representation of public safety interests throughout the state. The output of these workshops is a revised plan which is then approved by the Statewide Radio Board and its committees; accordingly, this process is one which provides all stakeholders the opportunity to provide input on any changes to the SCIP.

Minnesota's 2012 workshop was attended by the following:

Table 2: 2012 Minnesota SCIP Workshop Attendance

Name	Agency	Region/State Department of
Micah Myers	City of Saint Cloud	Central Region
Kristen Lahr	Stearns County	Central Region
Troy Langlie	Grant County	Central Region
Roger Laurence	Hennepin County	Metropolitan Region
Scott Haas	Scott County (Metropolitan Region)	Metropolitan Region
Jackie Mines	Emergency Communication Networks	Minnesota Department of Public Safety
Brandon Abley	Emergency Communication Networks	Minnesota Department of Public Safety
Steve Borchardt	Emergency Communication Networks	Minnesota Department of Public Safety
John Tonding	Emergency Communication Networks	Minnesota Department of Public Safety
Bill Bernhjelm	Emergency Communication Networks	Minnesota Department of Public Safety

Tom Johnson	Emergency Communication Networks	Minnesota Department of Public Safety
Matt McGuire	Ottertail County	Minnesota Department of Public Safety
Rick Juth	Minnesota State Patrol	Minnesota Department of Public Safety
Tim Lee	Office of Electronic Communications	Minnesota Department of Transportation
Robert Schornstein	Allina Health Care	n/a
Mark Lallak	Itasca County	Northeast Region
Scott Heide	Crow Wing County	Northeast Region
Brian Zastoupil	Red River Communications Center (Clay County, MN and Cass County, ND)	Northwest Region
Pat Novacek	Roseau County	Northwest Region
Scott Camps	St Louis County	Northwest Region
Tom Phillip	Sibley County	South Central Region
Scott Rehmann	McCleod County	South Central Region
Rick freshwater	Olmsted County	Southeast Region

Additionally, the 2012 Minnesota Public Safety Wireless Data Network Requirements Project and the 2013 Minnesota Public Safety Broadband State and Local Grant Plan were overseen by a multi-agency project steering committee representing varied state, local, and tribal interests. The final deliverables for these projects were approved by the Statewide Radio Board prior to publication by the state.

c. *Does the State intend to use SLIGP funding to support efforts to update the SCIP by adding public safety wireless broadband strategic goals and initiatives? If so, provide the amount the State expects to request and describe the activities that these funds will support.*

ECN maintains the SCIP as a routine function, and so will most likely not use SLIGP resources to hire a consultant to author updates to the SCIP. However, ECN plans to use SLIGP funds to offset some cost to stakeholders to host its annual workshop and cover other related administrative costs stemming from repurposing sections of the SCIP for broadband planning. ECN also plans to use SLIGP funds to support foundational research and to work with stakeholder groups that will support updates to the SCIP.

3. State-Level Involvement

a. *What is the status of the Statewide Interoperability Coordinator (SWIC) for your State? Does this person work full-time in the SWIC capacity? How will this person be involved with SLIGP?*

The Statewide Interoperability Coordinator (SWIC) is a full-time permanent position at ECN, the agency designated to manage activities under SLIGP. One of the SWIC's job responsibilities is to assist in FirstNet-related activity on behalf of the state. The SWIC will be assigned as primary project manager for SLIGP.

b. *How will the State's Chief Information Officer/Chief Technology Officer be involved with SLIGP and with activities related to the implementation of the nationwide public safety broadband network?*

The Chief Information Officer (CIO) has a seat on the Minnesota Statewide Radio Board, which has executive oversight over all activities under SLIGP according to the state's planning document for SLIGP-related activities. Accordingly, the CIO will have some degree of direct authority in influencing the direction of SLIGP-related activities for the state.

The SWIC will interface with the CIO through the Interoperable Data Committee and Statewide Radio Board. The CIO has a seat on both of these bodies. Because the SWIC is required to report to these bodies with project status and to secure approval for major deliverables, the CIO will have many opportunities to shape the outcome of SLIGP activities in Minnesota.

c. What other State-level organizations or agencies will be involved with SLIGP?

The following state agencies have seats on the SRB, and so, have direct executive over executive oversight over all activities under SLIGP according to the state's planning document for SLIGP-related activities:

- Department of Public Safety
- Department of Transportation
- MN.IT Services[6]
- Department of Natural Resources
- Minnesota State Patrol
- Metropolitan Council
- Minnesota Management and Budget

The above is not an all-inclusive list of seats on the SRB; it is only a list of the state agencies with seats on the SRB.

ECN intends to work to establish a formal partnership with the Governor's Task Force on Broadband. The task force is a public/private partnership created by Executive Order in 2011 and is chartered to strengthen Minnesota's information infrastructure and foster a strong business climate. The Task Force is charged with expanding broadband access in Minnesota, with the goal of "border-to-border" high-speed Internet and cell phone access throughout Minnesota. It is made up of 15 members appointed by the Governor. Members of the taskforce represent a balance of broadband interests, including consumers, business and residential users, educational and health care institutions, telephone and cable companies, wireless providers as well as metro and rural local units of government. DPS has testified to the task force in the past regarding public safety broadband and the potential for extensive public/private collaboration in this area.

ECN has collaborated with Connect Minnesota and Connected nation for broadband-related activities prior to beginning work under SLIGP and intends to continue this partnership into the future. Connect Minnesota is a neutral, trusted broadband stakeholder across the state and can help conduct outreach and education to stakeholders in targeted areas and broker mutually beneficial partnerships. Connected Nation has experience helping communities structure such models, which could be of value under SLIGP. Also, Connect Minnesota collects and maps broadband inventory data from across the state as part of the NTIA's Small Business Initiative (SBI) program. This data directly informs the visualization of state's broadband coverage on the FCC/NTIA National Broadband Map.

[6] Minnesota's consolidated state information technology organization. This organization is headed by the state Chief Information Officer, a commissioner-level governor designee.

Primary staffing and project management for SLIGP will be provided by ECN.

ECN sees the following benefits from collaborating with the Governor's Task Force on Broadband and Connection Nation:

- Both have performed extensive data collection activity for both wired and wireless broadband in the state. While this research is for consumer internet purposes, the degree of discovery related to underlying infrastructure and capabilities of potential partners has potential benefits to SLIGP's data collection efforts which cannot be underestimated.
- Both have established extensive contacts in the broadband industry in the state which can be leveraged for SLIGP.
- Connect Minnesota has developed robust tools for mapping and data gathering related to wired and wireless broadband infrastructure. These tools may be useful under SLIGP.
- Connect Minnesota has a significant database of assets and infrastructure which would likely be redundant to SLIGP's data collection database.

The Task Force will play no formal role in shaping SLIGP implementation in Minnesota. However, because the Task Force is formally charged with ensuring broadband adoption in the state, Public Safety Broadband is a key interest area of the Task Force, and Task Force activities are a key interest area for any program dedicated to ensuring widespread availability of Public Safety Broadband.

d. *What are the specific staffing resources the State requires to effectively implement the consultation process with the First Responder Network Authority (FirstNet) and perform the requirements of SLIGP? If the application requests funding for additional staffing, provide the amount the State expects to request and describe the positions these funds will support.*

ECN will dedicate approximately one FTE with administrative support at near full-time through the performance period of SLIGP and will utilize contracted services for the remaining work. Assuming a 2-3 year performance period for a full consultation process, ECN anticipates the following roles need be fulfilled to manage a successful broadband consultation process:

- State Program/Project Manager (1 FTE)
- Administrative Support (0.1-0.25 FTE)
- Analyst/Consultant (1-3 FTE)
- Engineering Support (1-3 FTE)
- Outreach and other miscellaneous support (1 FTE)

For an estimate of labor hours, see *Table 5: Estimated Effort Under SLIGP.*

e. *How is the State engaging private industry and secondary users (e.g., utilities)?*

The general process for the evaluation of private partners is as follows:

- Creation and release of a RFI or NOI to all interested parties
- Follow-on interviews/meetings with private entities

- Consolidate findings into reports to SRB and FirstNet

The RFI will explore the viability of the various partnership offerings and invite the private parties to propose solutions to meet the three prime objectives of the State. The RFI will ask questions that will provide the state an ability to evaluate the value and risks associated with their business proposal. The RFI will focus on the primary objectives of the state and allow entities to reply on their unique methods to achieve the State's objectives. The RFI process will assure the vendor community that they can segregate information between confidential and non-confidential elements. This should enable the State to capture more impactful information as the vendors are generally concerned with losing control of proprietary information otherwise. In addition, Non-Disclosure Agreements may also be required to secure the appropriate information from various vendors. The entities that are expected to engage the state through this process include:

- Utilities
- Cellular Carriers (national and regional)
- Integrators
- Service Providers
- Non-primary public safety government users
- Community Anchor Institutions (schools, healthcare organizations, schools, colleges and universities, libraries, and community support organizations [e.g., a local chamber of commerce])

Interviews and meetings shall be with select private entities who present a compelling proposal. The purpose of the meetings will be to delve into greater detail the business case proposed. The interviews will allow the State to assess the viability of each partner's offering to the State. This may include a greater assessment of their assets, their business model, and other factors to fully assess the opportunity with the entity.

Once ECN identifies viable private partners, it will include these partners as stakeholders in its full assessment of all stakeholders.

Table 3: Estimated Effort Under SLIGP

Task Area	Project Team Hours	State Manager Hours	Stakeholder Hours
Task 0 - PM & Regional Status Meetings (Phase 1)	574		
Task 1 - Establish a Governance Structure	636	232	4,152
Task 2 - Develop Procedures for Local & Tribal Consultation	514	66	819
Task 3 - Create Education & Outreach Process	3,683	796	4,814
Task 4 - Identify Potential Public Safety Users	112	52	3,465
Task 5 - Develop a Standard Memorandum of Agreement	312	104	448
Task 6 - Develop Staffing Plans	152	52	-
Task 7 - Prepare a Comprehensive Plan (SCIP or alt. plan)	336	88	816
Task 8 - Phase 2 Data Collection	2,952	522	1,232
Totals:	9,271	3,301	15,746

4. Coordination with Local Government Jurisdictions

a. *Describe the local government jurisdictional structure (e.g., municipalities, cities, counties, townships, parishes) located within the boundaries of the State, Commonwealth, Territory, or District applying for a grant. How many of these local jurisdictions exist within the State's boundaries?*

Minnesota has 87 counties and 11 tribal governments. Minnesota includes one large metropolitan area (the Minneapolis/St Paul Twin Cities metropolitan area) in which 60% of the state's total population resides. There are four cities of first class[7] in Minnesota (Minneapolis, St Paul, Duluth, and Rochester). The majority of the geography of the state is rural. There are a number of Joint Powers Agreement (JPA) entities in the state, including the Metropolitan Council and 7 RRBs.

[7] Over 100,000 residents, or no fewer than 75% the number of residents that last qualified the city as a city of first class.

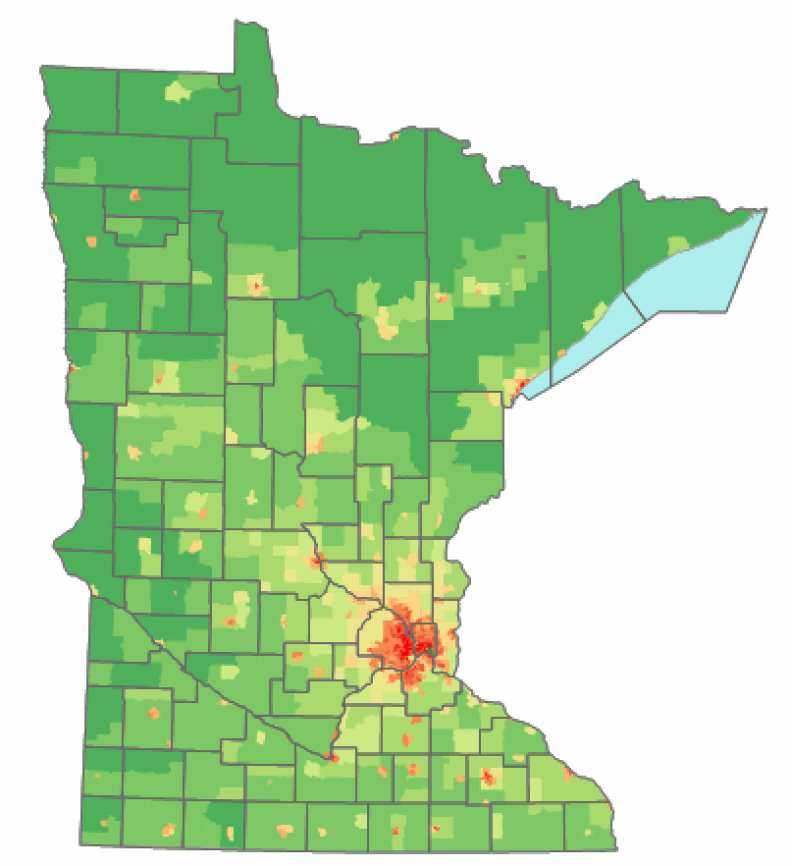

Figure 2: Population Distribution of Minnesota[8]

b. *Describe how your State will involve these local jurisdictions to ensure there is adequate representation of their interests in the FirstNet consultation and in the planning and governance for SLIGP.*

Minnesota has developed a discovery process under its Public Safety Broadband State and Local Grant Plan to ensure it coordinates with state and local public safety agencies as well as secondary and public/private partnership users to the fullest extent possible.

ECN will organize contacts and user agencies by PSAP. Each entity will have a designated single point of contact. Once ECN has compiled a directory of user agencies, it will assess the user population available within each PSAP. The discovery process is outlined in *Figure 3: Stakeholder Discovery.* For public safety agencies without a PSAP per se, ECN will interface with the entity directly. Entities that will not be organized by PSAP include, for example:

- Several public safety state agencies, other than State Patrol
- Most Federal agencies

[8] Source: Wikimedia Commons. Based on Census 2000 data.

- Partner entities
- Public works
- Administration
- Educational Institutions
- Hospitals

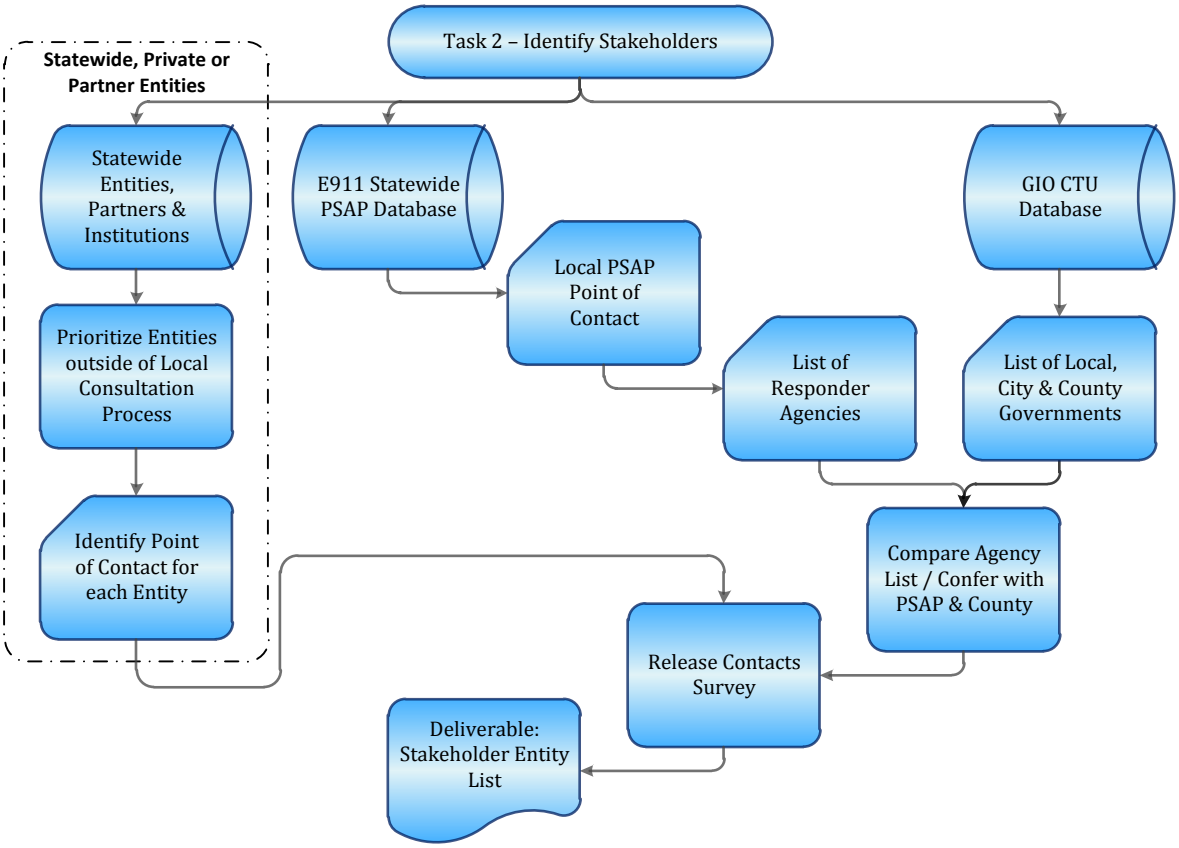

Figure 3: Stakeholder Discovery

Minnesota's project team will compare the list of contacts developed under the discovery process to the list of more than 2900 jurisdictions and named places detailed in the Minnesota Geospatial Information Office (MnGeo) database. The MnGeo database identifies all individual jurisdictions and named places; it is regularly updated and represents the most accurate representation of local government entities within the State.

Once completed, the deliverable entity list will be used for a variety of activities under SLIGP, including:

- Sending out informational materials, including project updates, announcements, and other related items.
- Inviting individuals to workshops, meets, conferences, and other events.
- Identifying potential users of the network by performing a survey of each individual stakeholder entity

- Conducting business case analysis to ensure high adoption of the NPSBN by developing a standard business case for the state and applying that business case to each stakeholder entity
- Infrastructure and asset discovery by surveying each stakeholder entity
- Investigation of formal partnerships by assessing stakeholder entities of their capabilities to enter into formal partnerships as well as their potential to benefit from other formal partnerships

c. *Describe past methods the State has used to successfully coordinate state-wide projects or activities with local government jurisdictions.*

Historically, ECN and the state have coordinated with local governments through the RRBs. Because each county and city of first class is a member of an RRB, and several tribal governments also are members various RRBs, the RRB has served as a convenient and effective means to manage stakeholders. ECN intends to continue to leverage this resource through SLIGP.

d. *What have been some of the State's primary challenges when engaging with local jurisdictions? What are some of the strategies that the State will employ to overcome these challenges during implementation of SLIGP?*

The state's most significant challenge when dealing with local governments has been ensuring accurate and timely information is available for its stakeholders. ECN's strategy to address this is to maintain constant lines of communication throughout the state.

One of the most effective tools ECN has leveraged to manage this communication are its 3 Regional Interoperability Coordinators, who are available as a resource as to local governments. These individuals are remote employees who are available to conduct training, answer questions, attend meetings, and provide other support. These individuals are employees of ECN and report to the SWIC. They have built a camaraderie and trust with local stakeholders which have significantly aided a variety of communications projects in the past and will continue to be a vital resource throughout SLIGP. They will be assigned to SLIGP at approximately ¼ FTE each to carry out direct project activities, such as holding remote project meetings, leading workshops, consulting with individual stakeholders, and other related outreach activities.

5. Regional Coordination

a. *Does your State have intrastate regional committees that are involved with public safety communications? If so, please describe their organizational structure and membership and how they provide input to the SIGB.*

Minnesota has 7 Regional Radio Boards (RRBs) which represent each county and city of first class in the state, except for the City of St. Paul, which is represented by Ramsey County. Regional boundaries are shown in *Figure 4: Radio Board Regions Map.* The regions are as follows:

- Metropolitan Emergency Services Board
- Central Minnesota Emergency Services Board
- Southeast Regional Radio Board
- South Central Regional Radio Board

- Southwest Regional Radio Board
- Northwest Regional Radio Board
- Northeast Regional Radio Board

Each regional radio board, except for the Metropolitan Emergency Services Board, has a Radio Advisory Council (RAC) to advise the board in making technical decisions related to communications interoperability. The Metropolitan Emergency Services Board has a Technical and Operations Committee which fulfills a similar purpose.

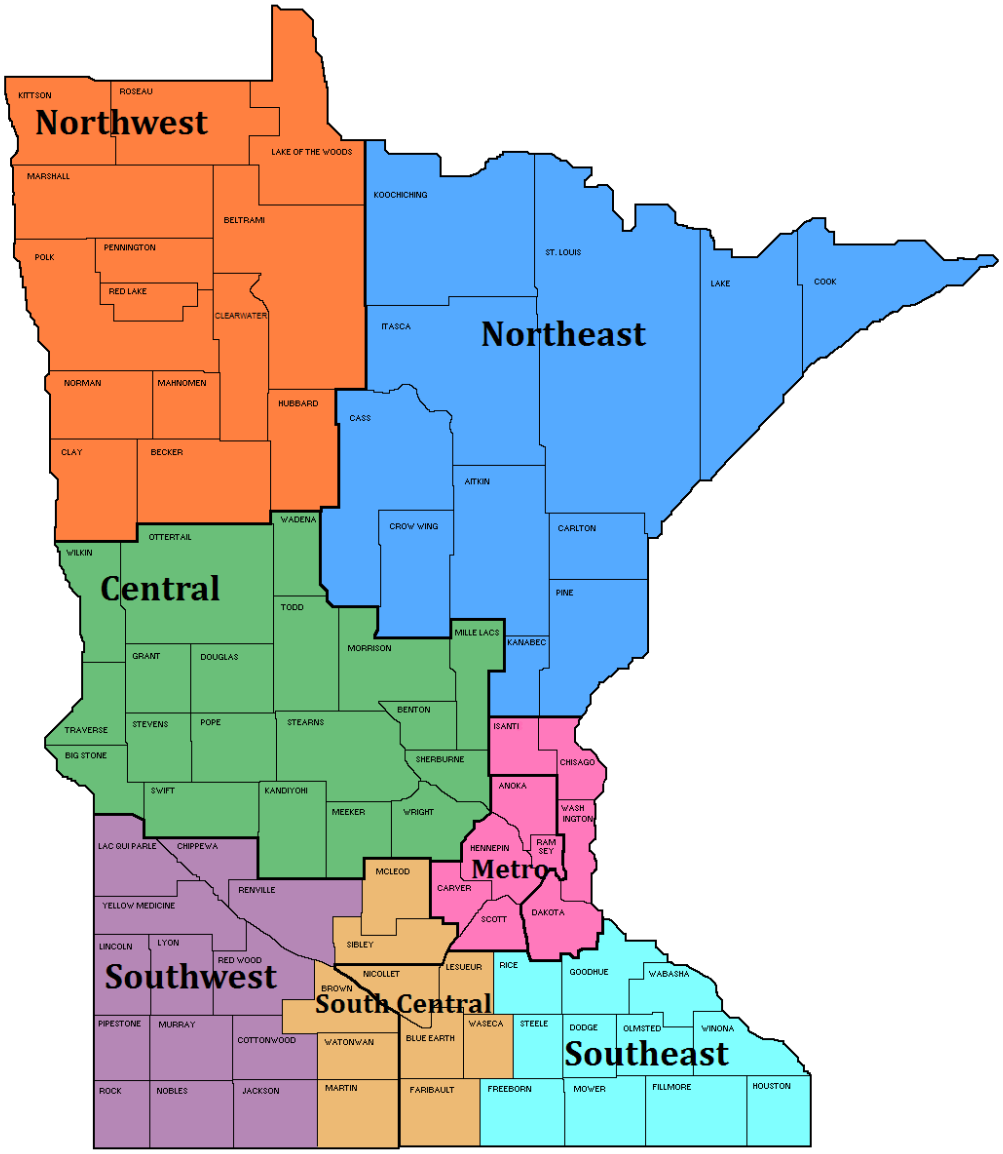

Figure 4: Radio Board Regions Map

b. *Describe any interstate regional bodies in which your State participates that are involved with public safety communications in the State.*

Minnesota has engaged in significant interstate coordination regarding broadband through the FEMA Region V Regional Emergency Communications Coordination Working Group (RECCWG), which represents Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. For example, the RECCWG jointly filed comments in response to the NTIA's SLIGP RFI released early 2012. Minnesota will continue to collaborate with the RECCWG to address interstate issues as they arise throughout executing SLIGP.

c. *How does the State plan to engage and leverage these existing regional coordination efforts in the nationwide public safety broadband network planning?*

ECN will ask the RRBs to form subcommittees to review the requirements gathered during its statewide requirements assessment. To facilitate the selection of technical committee members, the project will leverage advice of state and regional radio boards. Subcommittees will be created to develop specific recommendations on the different components of the network or the various functional requirements necessitated by the operational needs as defined by the first responders. These subcommittees will be made up of representatives from all Minnesota regional radio boards.

It should be noted that the National Public Safety Telecommunications Council (NPSTC) has developed a very comprehensive Statement of Requirements (SOR) that covers many of the technical requirements envisioned for consideration by these subcommittees. FirstNet may adopt all or in part the technical requirements outlined within the NPSTC SOR or it may develop its own requirements for the broadband service or network. As a result, the subcommittees may be limited to providing differentiation between the national and Minnesota requirements. The technical subcommittees in Minnesota will be asked to consider NPSTC's requirements as a foundation.

All recommendations made by the subcommittees will be distributed statewide to stakeholders for comment. The Regional Radio Boards, Counties and PSAPs will all serve as the conduit for the distribution of information to all affected user groups.

These subcommittees are as follows:

- Service Area Requirements Subcommittee
- Device Requirements Subcommittee
- System Requirements Subcommittee
- Security Requirements Subcommittee
- MOU Subcommittee
- Applications Subcommittee

d. *Please identify, if applicable, any other state, territory, or regional entity with which the State collaborated or coordinated in the development and preparation of this application and describe the nature of that collaboration or coordination.*

Minnesota consulted with the states of Oregon, Mississippi, Washington, Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin, and with Connected Nation and Connect Minnesota, in preparing this application. Minnesota exchanged SLIGP application drafts with the states of Oregon, Mississippi, and Washington.

6. Tribal Governments

a. *How many federally recognized tribes are located within the State boundaries? (If the answer is zero, please skip to question #7.) Information on federally recognized tribes may be located at the Department of Interior, Bureau of Indian Affairs website: http://www.bia.gov/WhoWeAre/BIA/OIS/TribalGovernmentServices/TribalDirectory/index.htm*

In Minnesota, there are seven Anishinaabe (Chippewa, Ojibwe) reservations and four Dakota (Sioux) communities. Tribal lands in Minnesota are pictured in *Figure 5: Tribal Lands in Minnesota*.

Table 4: Tribal Governments in Minnesota

Anishinaabe Reservations	Grand Portage Bois Forte Red Lake White Earth Leech Lake Fond du Lac Mille Lacs
Dakota Communities	Shakopee Mdewakanton Prairie Island Lower Sioux Upper Sioux

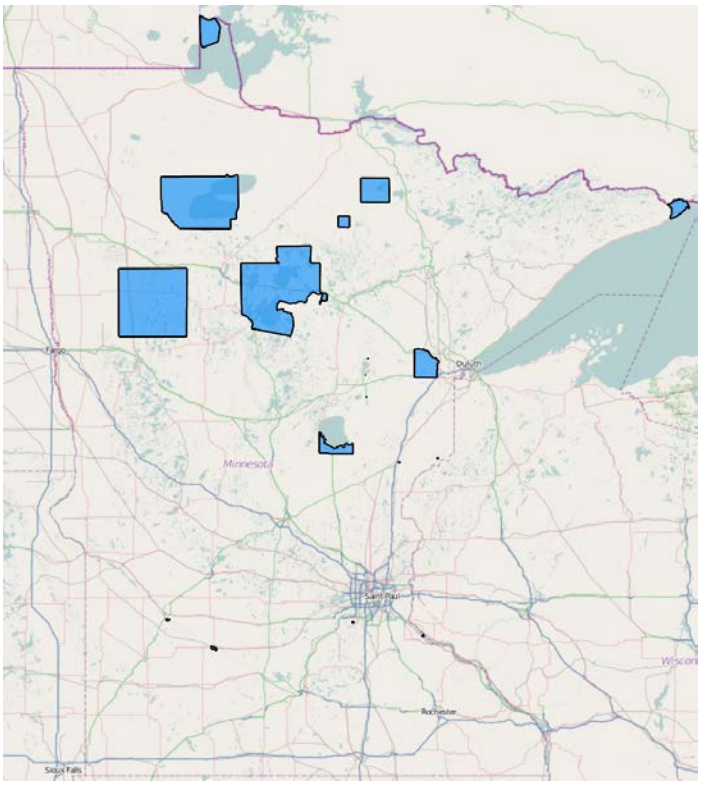

Figure 5: Tribal Lands in Minnesota[9]

b. *Describe how the State will involve the tribal nations to ensure there is adequate representation of their interests in the FirstNet consultation and in the planning/governance for the grant program. Does the State have a process for consulting with the tribes located within State boundaries? If so, please provide a description of that process.*

For the purposes of preparing for the state's consultation with FirstNet, each tribal nation shall be treated as a separate jurisdiction or government entity similar to County and State entities.

Each nation has varying degrees of organization and governmental responsibilities. These responsibilities extend to property rights and likewise have a direct impact on the development of the NPSBN on tribal lands. In most respects, the process for documenting requirements for tribal entities will be similar to the process used for any other stakeholder entity in the state. The consultation with tribal entities shall follow the following process:

- Identify a primary stakeholder within each tribe
- Document the areas of jurisdiction and level of services offered by the tribe
- Consult with the tribe's jurisdictional agencies

[9] Information from ESRI *USA Federal Lands* (April 4, 2011) and Minnesota Indian Affairs Council (http://www.indianaffairs.state.mn.us/index.html, retrieved February 27, 2013) used to create this image. Figure is inclusive of most, but not all, tribal lands in the state.

- Coordinate and confer requirements with non-tribal local government agencies (county government(s), neighboring cities, etc.
- Document requirements and coordinate issues of governance

Additionally, the State will leverage its opportunity under SLIGP to encourage those remaining tribal entities who are not already signatories to Regional governance agreements to begin formally participating in the statewide governance structure.

c. *Describe past methods the State has used to successfully coordinate with tribal nations.*

All tribal governments in Minnesota are invited to participate in Minnesota's governance structure as valued interoperability partners. Minnesota has had a reasonable amount of success in coordinating with tribal governments through its regionalized governance structure.

The Minnesota Indian Affairs Council is the formal liaison for interactions between the State and tribal governments. From its website:[10]

> *Established in 1963, the Indian Affairs Council is the oldest council in the nation and serves as a liaison of the Indian tribes and the state of Minnesota. The Indian Affairs Council Offices, located in St. Paul and Bemidji, Minnesota, carry out the mission of the Indian Affairs Council, which is "to protect the sovereignty of the eleven Minnesota tribes and ensure the well being of all American Indian citizens throughout the state of Minnesota."*

It is worth noting that, based on advertised coverage areas (see *Section 7. Rural Coverage*), there is a very high degree of overlap between native lands and areas unserved by commercial carriers in the state of Minnesota.

d. *Are there tribal representatives who regularly attend your SIGB meetings? If so, please identify the tribes represented.*

Leech Lake Band of Ojibwe and Mille Lacs Reservation are members of the Northeast Regional Radio Board as signatories to the region's Joint Powers Agreement. As of this writing, Grand Portage Chippewa are currently working to join the Northeast Regional Radio Board and are midway through the overall process.

The White Earth Nation is a member of the Northwest Regional Radio Board as a signatory to its Joint Powers Agreement. Red Lake Nation has expressed interest in joining this board and the State has provided necessary information to do so.

Bois Fort, Fond du Lac, Lower Sioux, Prairie Island, Shakopee Mdewakanton, and Upper Sioux have not expressed interest in joining any Regional Radio Board. The State remains committed to supporting their efforts to participate in communications governance.

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[10] *See* http://www.indianaffairs.state.mn.us/

e. *What have been some of the State's primary challenges when engaging with tribal nations? What are some of the strategies that the State will employ to overcome these challenges during implementation of SLIGP?*

As with other local and county governments, the most significant issue in dealing with tribal governments has been opening and maintaining lines of communication. Under SLIGP, ECN plans to work with each tribal nation to ensure each is adequately represented in the overall consultation with FirstNet.

7. Rural Coverage

a. *Please classify your local jurisdictions into rural and non-rural areas and identify the criteria used in making these rural and non-rural determinations.*

In 2012, the Minnesota published its Public Safety Wireless Data Network Requirements Study. This study categorized coverage requirements by into Urban, Suburban, and Greater Minnesota areas and included a baseline network coverage model. After conferring with hundreds of stakeholders in Minnesota and presenting findings to the Statewide Radio Board for endorsement, the State adopted the coverage requirements and designations detailed in *Table 5: Rural/Urban Classification and Coverage Requirements.*

Table 5: Rural/Urban Classification and Coverage Requirements[11]

Classification	Areas Included	User Requirement
Urban Areas	City of Minneapolis City of St Paul City of Rochester City of Duluth City of St. Cloud	In-building coverage on hip-worn device, 95% of area inclusive of city limits plus an additional 5 miles.
Suburban Counties	County of Hennepin County of Ramsey County of Washington County of Anoka County of Isanti County of Sherburne County of Wright County of Carver County of Scott County of Dakota	Outdoor coverage on hip-worn device, 95% of the geography of each county.
Greater Minnesota	All other counties	Outdoor Mobile Coverage with exterior vehicle antenna, 95% of the geography of each county.

[11] *See Minnesota Public Safety Wireless Data Network Requirements Project*, http://ecn.state.mn.us (2012).

b. Please describe the coverage area and availability of broadband service and LTE technology in the rural areas of the State as defined in response to 7.a.

Advertised consumer-grade wireless broadband for each of the major four carriers is pictured in *Figure 6: Sprint Advertised 3G Coverage and Better in Minnesota, Figure 7: T-Mobile Advertised 3G Coverage and Better in Minnesota, Figure 8: AT&T Advertised 3G Coverage and Better in Minnesota* and *Figure 9: Verizon 3G Coverage and Better in Minnesota*.[12] Generally, each of the four major carriers has extensive 3G coverage throughout populated areas of the state and limited 4G coverage outside of the Twin Cities metropolitan area. Verizon advertises significantly higher rates of 4G coverage throughout rural Minnesota than its competitors.

Meanwhile, *Figure 10: Mobile Broadband Coverage in Minnesota* shows the availability of consumer mobile broadband service. In this case, "mobile broadband" is defined as at least 3 Mbps on the downlink and 0.768 Mbps on the uplink. It should be noted that areas with lower mobile data rates are not pictured on this map at all. As shown in *Table 6: Broadband Availability in Minnesota*, most rural households and most of the state's rural geography have some degree of mobile data service, although a relatively small percentage of households in rural Minnesota (under 40%) report access speeds about 3 Mbps.

ECN has no maps specific to pre-existing LTE coverage in the state. However, it is worth noting that while LTE is the predominant "4G" radio network technology used by commercial operators today, other technologies currently deployed in the state are capable of providing access speeds comparable to LTE, including WiMAX and HSPA+.

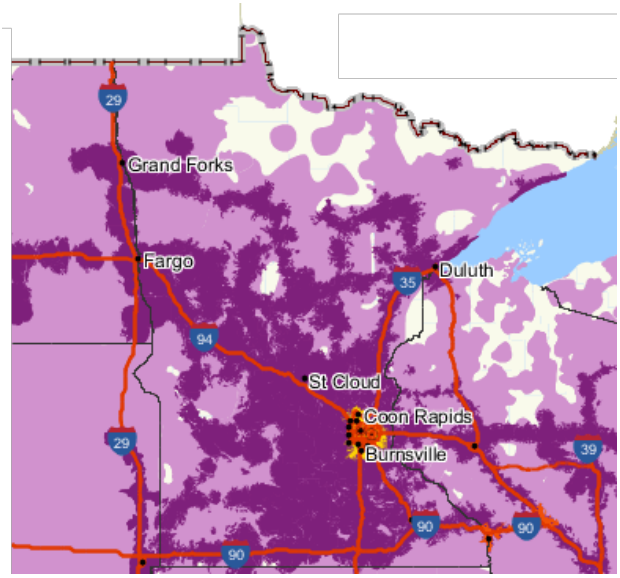
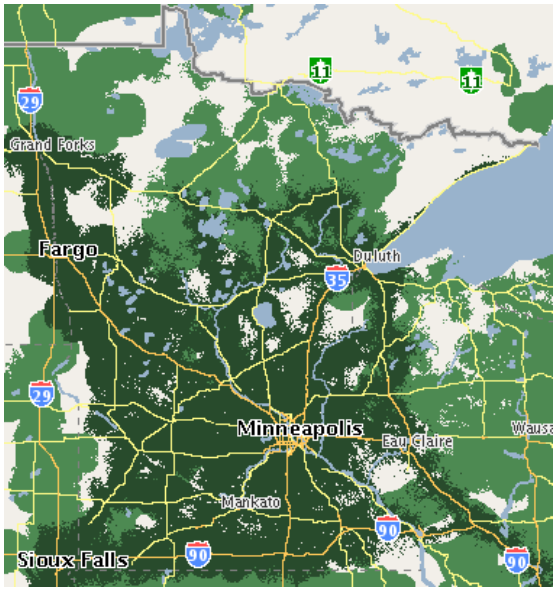


Figure 6: Sprint Advertised 3G Coverage and Better in Minnesota



[12] Retrieved March 5, 2013 from http://www.verizonwireless.com/b2c/support/coverage-locator, http://www.wireless.att.com/coverageviewer/#?type=data&lat=46.55245473632812&lon=-93.1780228515625&sci=3, http://www.t-mobile.com/coverage/pcc.aspx/, and http://coverage.sprint.com/IMPACT.jsp?#

Figure 7: T-Mobile Advertised 3G Coverage and Better in Minnesota

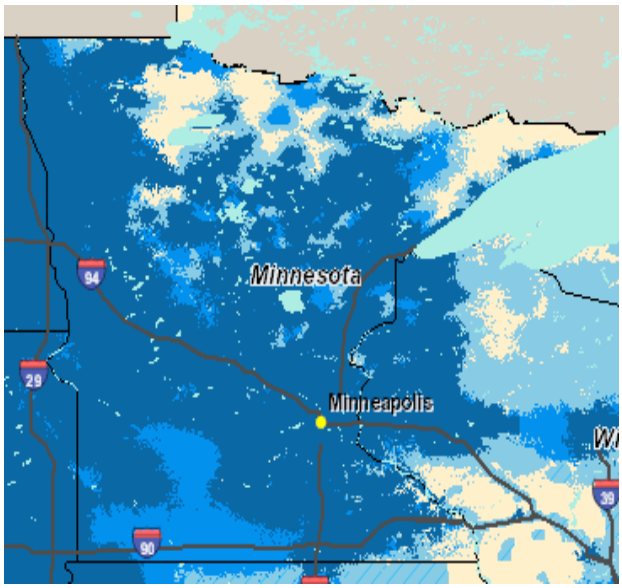


Figure 8: AT&T Advertised 3G Coverage and Better in Minnesota

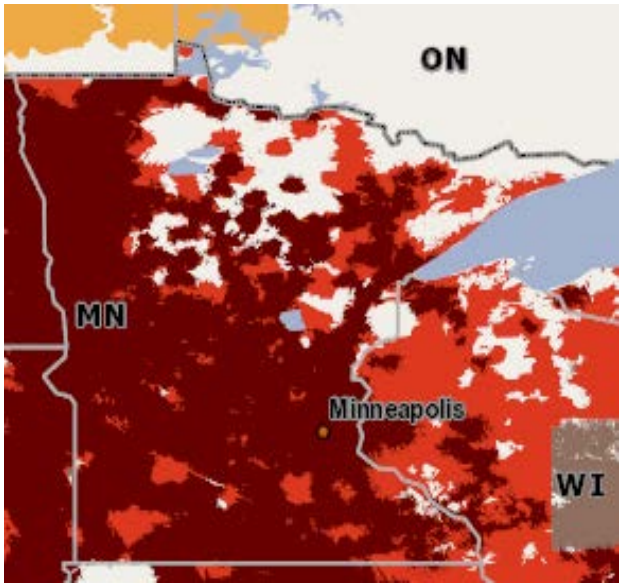


Figure 9: Verizon 3G Coverage and Better in Minnesota

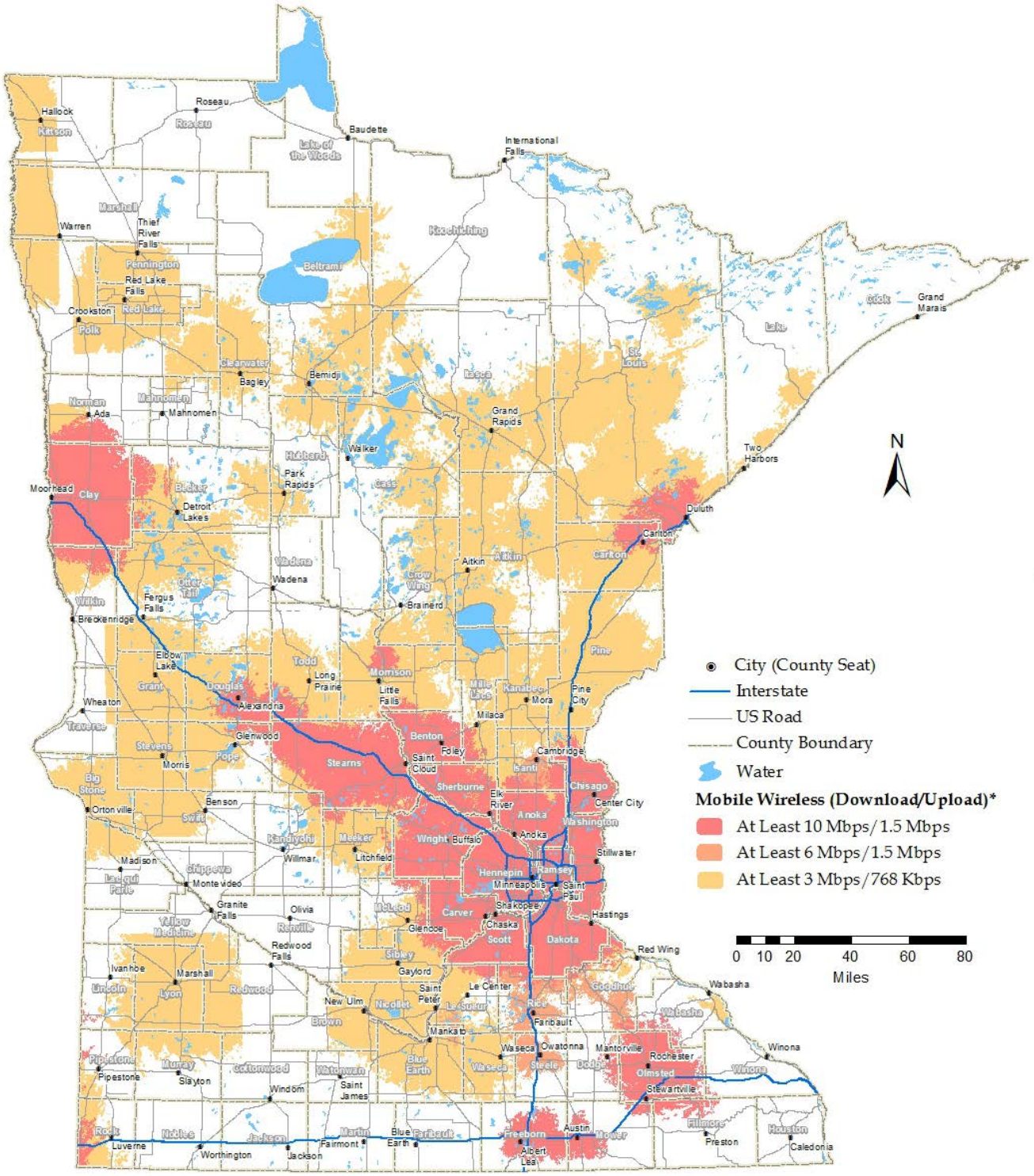


Figure 10: Mobile Broadband Coverage in Minnesota[13]

[13] Source: Connect Minnesota (October 1, 2012)

Table 6: Broadband Availability in Minnesota[14]

State Broadband Initative Download/Upload Speed Tiers	STATEWIDE				ACROSS RURAL MINNESOTA			
	Percent Households Served by Fixed Terrestrial Broadband By Speed Tier	Percent Geographic Area Served by Fixed Terrestrial Broadband by Speed Tier	Percent Households Served by Mobile Broadband By Speed Tier	Percent Geographic Area Served by Mobile Broadband By Speed Tier	Percent Households Served by Fixed Terrestrial Broadband By Speed Tier	Percent Geographic Area Served by Fixed Terrestrial Broadband By Speed Tier	Percent Households Served by Mobile Broadband By Speed Tier	Percent Geographic Area Served by Mobile Broadband By Speed Tier
At Least 768 Kbps/200 Kbps	97.99	69.61	99.67	88.79	95.34	68.99	99.12	87.79
At Least 1.5 Mbps/200 Kbps	97.54	65.85	97.96	80.54	94.29	65.14	95.30	79.18
At Least 3 Mbps/768 Kbps	94.51	55.24	86.35	47.26	87.29	87.29	69.42	45.24
At Least 6 Mbps/1.5 Mbps	86.81	27.81	71.98	13.29	69.81	26.46	38.12	11.15
At Least 10 Mbps/1.5 Mbps	85.45	23.56	69.91	12.31	67.28	22.28	35.91	10.22
At Least 25 Mbps/1.5 Mbps	72.82	11.00	0.00	0.00	39.71	9.62	0.00	0.00
At Least 50 Mbps/1.5 Mbps	68.58	4.69	0.00	0.00	35.58	3.25	0.00	0.00
At Least 100 Mbps/1.5 Mbps	67.82	3.92	0.00	0.00	30.84	2.46	0.00	0.00
At Least 1 Gbps/1.5 Mbps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

c. *Please describe how the State plans to prioritize the grant activities to ensure coverage in, and participation by, rural areas. Please include specific plans, milestones, and metrics to demonstrate how you will achieve these requirements.*

ECN will perform a local needs and assets assessment for each stakeholder identified as part of its discovery process, the goal of which is to determine the agency's requirements as well as the value of their existing infrastructure. Because one of the key outputs for each assessment is an identification of the stakeholder's required coverage area, these assessments will serve to identify rural coverage requirements. The data collected under these assessments will document the following:

- Coverage Requirements: Defined by stakeholders within each county
  - Identify the geographical coverage area on a county-by-county basis
  - Identify unique coverage requirements, such as indoor coverage, in-vehicle and handheld
  - Evaluate historical CAD data to map activity
- Capacity, Throughput and Performance Factors: predominantly determined by the technical subcommittees; however, there may be some local need collected via the surveys and interactive sessions

[14] Source: Connect Minnesota (October 1, 2012)

- Devices Requirements: partially collected from survey questionnaires; more technical aspects would be collected from regional radio board technical subcommittees
    - Form factors and estimated demand for each
    - Device functionality; examples smartphone, modem or specific buttons for whether the device require a button for emergency call (”man-down button”)
- Asset Assessment: review of basic attributes such as location, ownership, lease cost, suitability, availability, access to backhaul and survivability factors (redundancy, emergency power, etc.) for available agency assets
    - Infrastructure Assessment and Cost Assumptions
    - Revenue Sources
    - Human Resources
- Feasibility Assessment: assessment of existing spending level and evaluation of the unmet demand or the community that is unserved
    - Barriers to adoption of the FirstNet service
    - Assessment of unserved community
    - Projected number of subscribers
    - Financial assessment and spending on commercial wireless services; a potential resource for NPSBN user fees

The agency data gathering task is broken into two separate collection processes: web-based interactive sessions and online web survey tools (however face-to-face interviews may be organized for unique cases). The review of coverage requirements and the assessment of available infrastructure are both geographically dependent and require a high degree of interaction to capture the precise requirements. Therefore, map based tools are heavily leveraged during these highly-interactive sessions. A web-based on-line meeting tool (WebEx or similar) will be used to collect coverage and asset information to facilitate the discussion. Face-to-face meetings are anticipated to be too costly in terms of lost productivity due to travel requirements for both the stakeholders and the project team. Financial, user quantity, and high-level requirements data can easily be conducted via web survey, and therefore, that tool presents the most economical method for collecting these data sets.

In developing its 2013 Minnesota Public Safety Broadband State and Local Grant Plan, ECN performed two small pilot assessments to measure the efficacy of its plan. In one pilot, ECN performed a trial assessment for Leech Lake Reservation. In this pilot, ECN reviewed historical CAD data to assess high-activity areas of public safety activity within the reservation and drew contours to include approximately 99% of incidents. In doing so, ECN was able to identify approximately one half of the reservation land which consisted of key coverage zones. A graphic illustrating coverage zones is shown in *Figure 11: Key Coverage Areas, Leech Lake Reservation*.

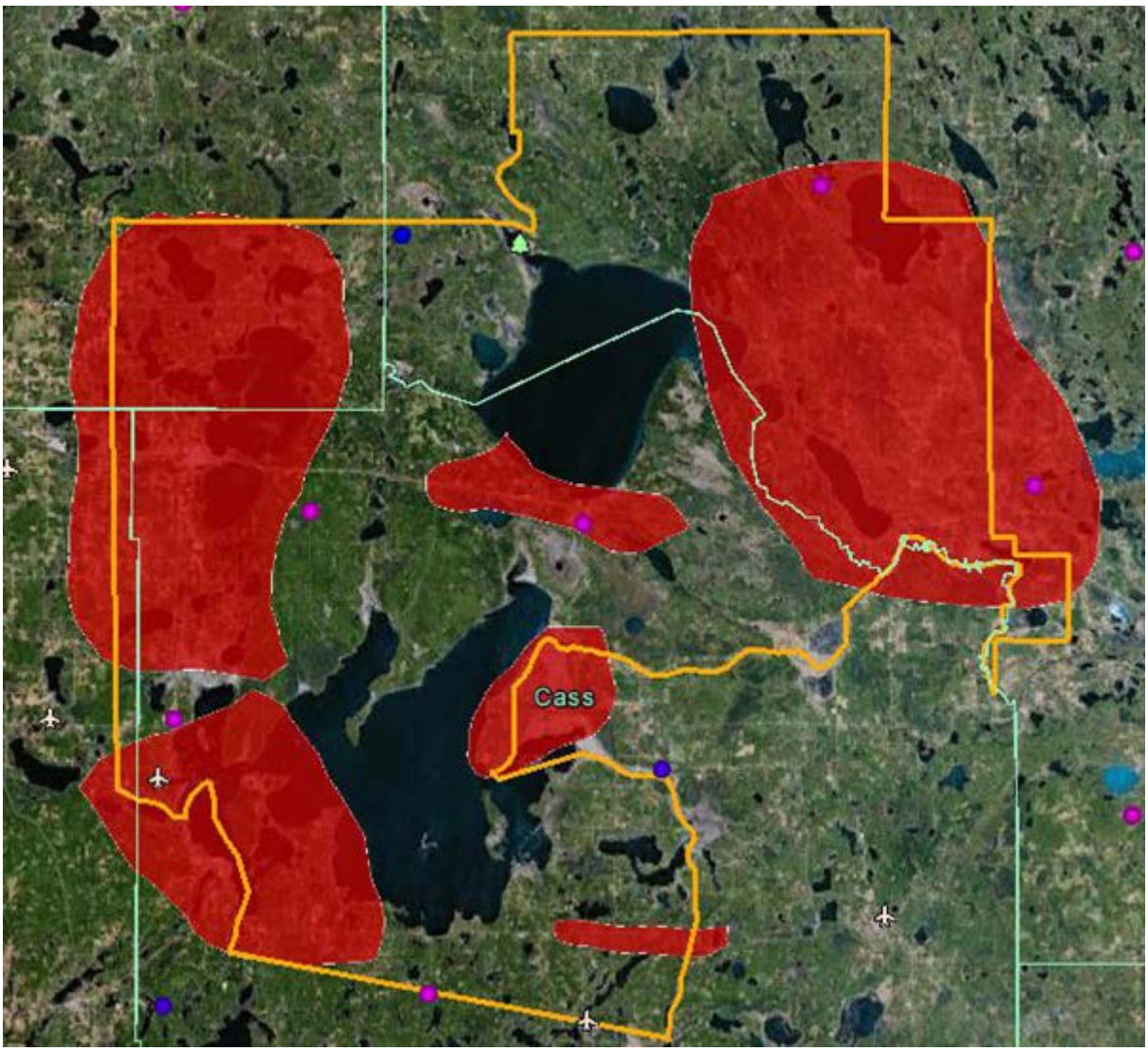


Figure 11: Key Coverage Areas, Leech Lake Reservation

8. Existing Infrastructure

a. *What, if any, databases exist that collect data on government-owned wireless and/or communications infrastructure for the state, local, and/or tribal governments?*

The Minnesota ARMER system represents the most significant piece of incumbent public safety wireless communications infrastructure in the state. This system includes over 300 sites owned and operated by the state of Minnesota and nearly 100 locally-owned sites that provide 95% or greater geographical area coverage in each county of the state.[15]

[15] Excluding the Boundary Waters Canoe Area Wilderness, a 1,090,000-acre wilderness area within the Superior National Forest in northeastern Minnesota under the administration of the U.S. Forest Service

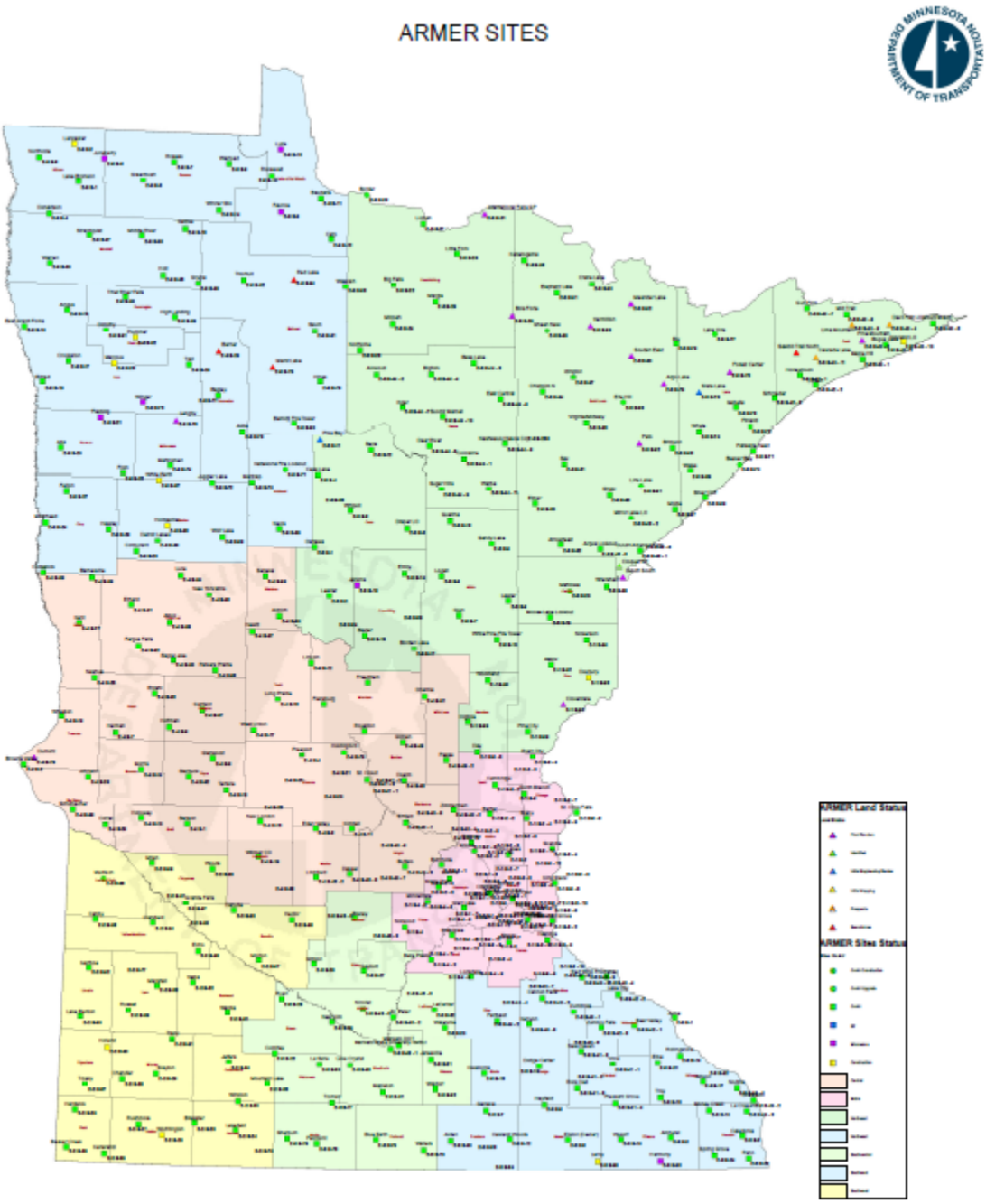


Figure 12: ARMER sites as of March 1, 2013, including state-owned and local enhancement sites

Additionally, Connect Minnesota maintains an extensive database of vertical assets and broadband infrastructure throughout the state. ECN will investigate leveraging this data to avoid duplicating effort. An example of the GUI application used to visualize Connect Minnesota's data is depicted in *Figure 13: Connect Minnesota ConnectView Application*.

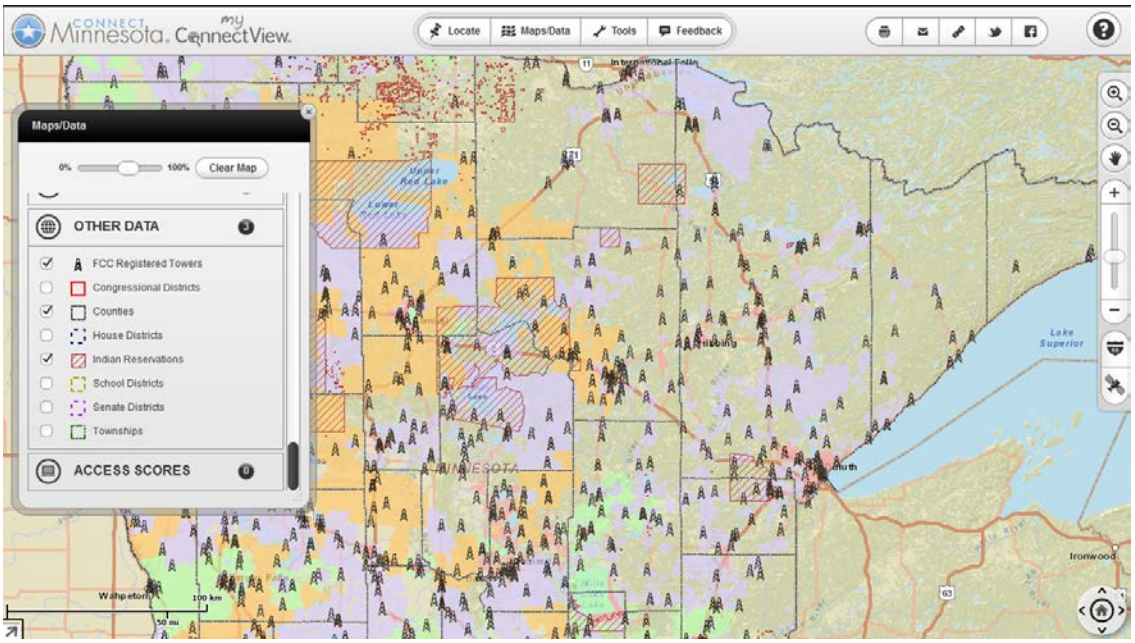


Figure 13: Connect Minnesota ConnectView Application

b. If these databases exist, what is the process for updating them and how often do these updates occur?

The Minnesota Department of Transportation maintains extensive records of the ARMER system.

Additionally, under SLIGP ECN will invest significant resources into identifying and assessing any remaining new government-owned infrastructure. There are several levels of investigation that will be performed to assess the feasibility of identified infrastructure. ECN's assessment will cover the most significant components of the existing infrastructure to quantify what can be leveraged or interconnected with the FirstNet RAN. The project team will cover the following items during its assessment:

- The Availability of the Infrastructure: The team will generally assess the availability of the infrastructure. This is a judgment call by the local stakeholders as far as they have the knowledge as to whether there is space on the structure and it is suitable for deployment of LTE equipment. The project team will also ask as to whether there is a recent Architecture and Engineering assessment available. Lastly the team will inquire about any restrictions in place that may affect the development of the site.
- Rent or lease cost: All rent or lease costs that may be incurred. Often if the structure is owned by the public, there is no cost incurred
- Redevelopment Requirements: Any necessary redevelopment based upon templates for cost projection purposes
- Power Availability: Whether there is available backup power at the site, sufficient access and adequate run-time duration
- Physical Security
- Network Connectivity
- Medium: Fiber, Microwave and leased lines; can include spectrum & equipment specifications
- Capacity

- Upgrade or scalability costs

Additionally, each county and first responder agency operates critical data centers to which network connectivity must be guaranteed in order to ensure continued operations of the agency. These locations must be connected to the NPSBN and it connectivity must be reliable with a very high level of availability. The project team will note these locations and will tally their details within a list of critical sites.

9. Existing Government-Owned Networks

a. *Describe how you plan to identify any hardening, security, reliability, or resiliency requirements that are currently required for existing government-owned networks within the State, including those networks at the local and tribal governments.*

As part of its 2012 Minnesota Public Safety Wireless Data Network Requirements Project, Minnesota investigated over 300 state-owned sites and approximately 100 locally-owned land-mobile radio sites and assessed their utility as part of a statewide building of a mission-critical LTE network. ECN built a number of assumptions into its final figures for this study, and under SLIGP, will investigate the resiliency and hardening requirements for locally-owned sites on a stakeholder-by-stakeholder basis.

b. *Describe how you plan to identify any existing contractual requirements regarding hardening, security, reliability, or resiliency for commercial carriers providing wireless data services within the State, including those at the local and tribal governments.*

ECN will investigate the contractual requirements of meeting the user needs revealed during the assessment of each stakeholder throughout SLIGP. This assessment process is described elsewhere in this application and the 2013 Minnesota State and Local Grant Plan.

10. Network Users

a. *Describe how you plan to identify the potential users of the nationwide public safety broadband network within the State, including at the local and tribal governments.*

ECN will assess the potential user populations amongst public safety agencies through its assessments of stakeholders identified through its discovery process. These processes are detailed elsewhere in this document and the 2013 Minnesota State and Local Grant Plan.

Minnesota has estimated that, in order for broadband deployment in the state to be sustainable and to be competitive with commercial service, the NPSBN must reach market penetration in Minnesota between 70,000 and 100,000 users. And so, ECN's goal under SLIGP is to discover up to 100,000 potential users in Minnesota. As a point of reference, as of this writing, Minnesota's ARMER radio system, which is utilized by the vast majority of public safety personnel in the state, has approximately 65,000 active subscriber radios and approximately 78,000 total registered subscriber radios. Up to 90,000 total active subscriber radios are anticipated by end of year 2013 according to subscriber counts from county and local participation plans. Due to the popularity of the ARMER system in Minnesota, which has a subscriber base generally sufficient to support statewide deployment

of the NPSBN under a fee-for-service model, ECN will pattern its outreach and data collection for nationwide broadband after the same methods that have made the ARMER program such a success.

Minnesota's cost curves based on various broadband network implementation models are outlined in *Figure 14: Implementation Cost Per Subscriber.* One of ECN's objectives under SLIGP is to identify a sufficient subscriber base to support to sustainable broadband program in Minnesota.

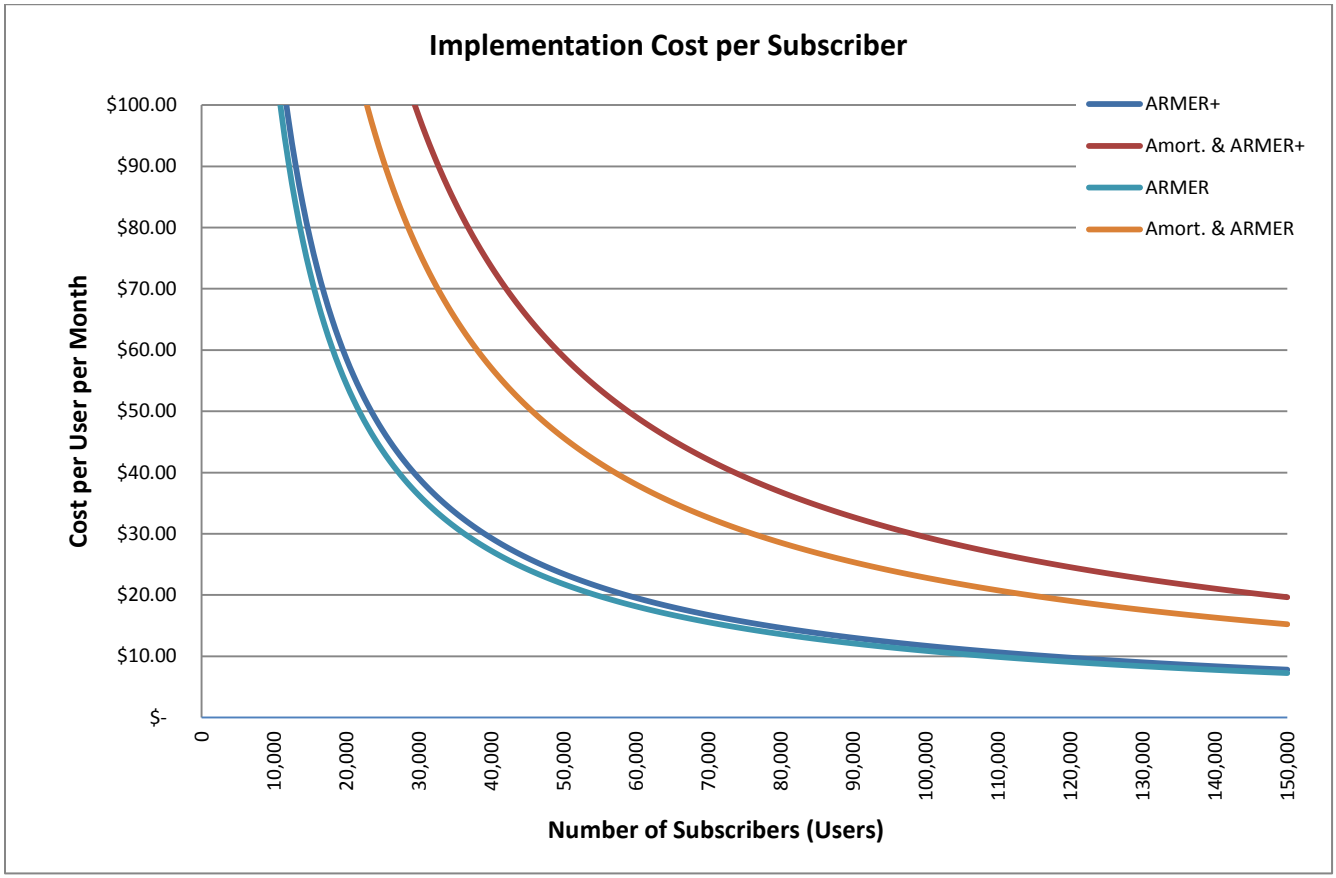


Figure 14: Implementation Cost Per Subscriber[16]

11. Education and Outreach

a. *Describe how you plan to educate and train multi-discipline, public safety and other government users of the nationwide public safety broadband network at your State, local, and tribal levels.*

An important part of the stakeholder assignment process will be the communication of expectations as they pertain to the objective of the program. It is vital to brief the stakeholders so that they have a proper understanding of the entire program, to set the expectations for their participation and to solicit buy-in from

[16] In Minnesota's budgetary implementation models, "ARMER+" and "ARMER" refer to broadband network designs that would utilize all or most ARMER sites; they do not specifically refer to the ARMER Project-25 trunked radio system.

them as their participation will define the overall success of the program. Hence the project team shall prepare and deliver to each participating stakeholder briefing presentations, lists of pending tasks, explanations of each task and the estimated schedule for completion.

ECN will invest significant effort into ensuring that it has compiled the appropriate stakeholder agencies and points of contact for each stakeholder. With the advice of the key stakeholders identified in the initial discovery process, ECN will ensure that each the project team has identified experts and responsible parties for the collection of all required information in the program. ECN will organize and group each agency to ensure that the project team can collect user requirements and quantities, financial resources, and other asset data for the required entities throughout the state. Prior to performing any data collection, ECN will perform an orientation with each stakeholder group and confirm their willingness and competency to participate in the process. If the stakeholder cannot, ECN will start over in its discovery process before performing any data collection. This orientation will include the following:

- An asynchronous informational video hosted on ECN's free training website provided in partnership between ECN and Alexandria Community and Technical College
- An interactive webinar or face-to-face presentation (as appropriate based on resource availability and distance) with stakeholder entity agents and ECN staff and/or contractors
- A post-meeting interview to asses the stakeholder entity's delegates' ability to properly represent the entity. If the delegates cannot, for example due to lack of technical understanding or lack of legitimate authority, ECN will request the stakeholder entity send new delegates and ECN will begin the orientation over again.

Actual anticipated data collection work, once stakeholder delegates are properly vetted, is outlined in *Figure 15: Stakeholder Refinements*.

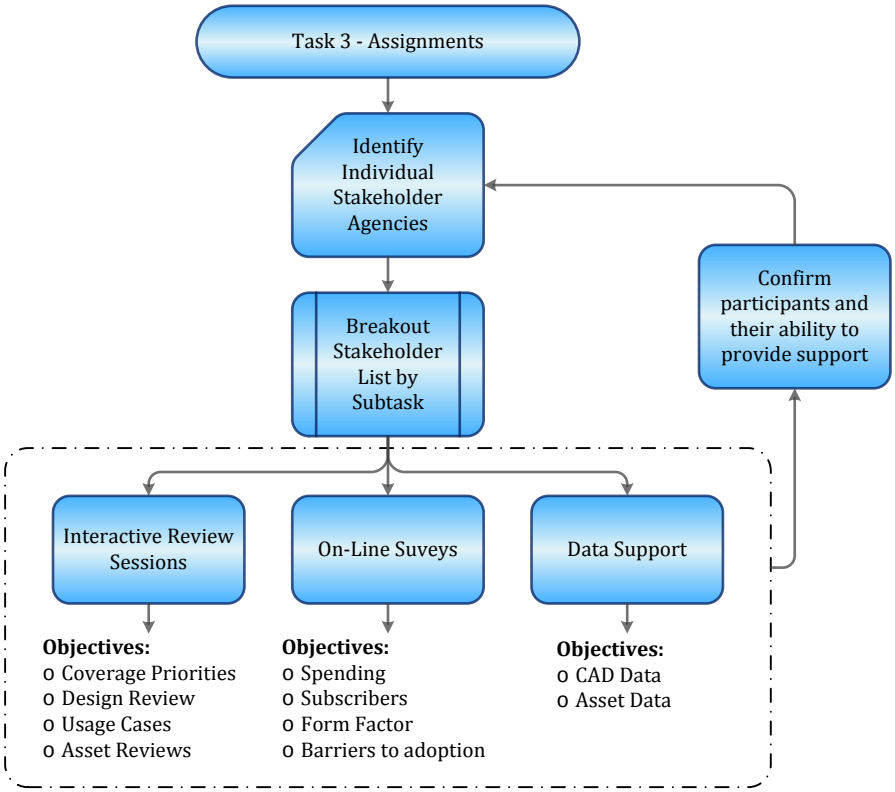


Figure 15: Stakeholder Refinements

The stakeholders are to provide data that fit into three broad categories. While a single individual may be capable of providing multiple categories of information, experts must be identified in each area in order to capture the required information that achieves the State's objectives. Activities performed to collect this information are:

- Web-Based Interactive Sessions
- On-Line Surveys
- Data Support

Interactive Review Sessions: The primary purpose of this type of information is to provide the general network requirements for the agency and to suggest infrastructure that can be leverage for the implementation of the NPSBN. The actual participation of each working member will vary from step to step depending on the tasks and assessment at hand. The network and assets group shall address the following items:

- Coverage Priorities
- Usage Cases
- Asset & Infrastructure Review

The participants who provide this information must address the following items:

- Ancillary System e.g. generators, backhaul, etc.

- Typical usage characteristics and coverage requirements for their agency's wireless devices
- Availability of connectivity within their jurisdiction that may be leveraged by the NPSBN; to include available fiber, leased and microwave connections
- Locations of key data centers that require connectivity to the future NPSBN

On-Line Surveys: The one item that will greatly impact the adoption of FirstNet services is the user fee. The FirstNet NPSBN user fee is for the intended purpose of covering the operational expenses thus helping to ensure the sustainability of the network for the long term. Therefore, it is important to assess the potential number of subscribers, as the greater the number of subscribers brought on to the network, the lower the fees would be for all. Additionally, the program must capture the ability for users to pay for the service and understand how limited funds could curb adoption. The on-line survey information providers shall address the following items:

- Current and projected subscriber numbers
- Current spending on wireless communications
- Preferred form factors
- Barriers to wireless data adoption

Data Support: The Data Support stakeholders will be convened on an ad hoc basis, where necessary, to obtain specific data sets that will aid in the collection of user needs and agency assets. For example, CAD data may be used in the identification of coverage areas and capacity requirements. The historical CAD record can provide a geographical representation to the public safety stakeholders on likely critical service areas. Additionally, network diagrams may be used in the identification of usable assets in the design or for interface requirements. Examples of the expected participants for ad hoc Data Support are as follows:

- CAD Administrators and Vendors
- Database Administrators
- Network and IT Managers
- Radio Administrators and Managers
- Property Managers

12. Memoranda of Agreement (MOA)

a. *Describe any specific obstacles, laws, and/or legal issues that will likely impede your ability to participate fully in the nationwide public safety broadband network or in SLIGP.*

ECN does not anticipate any existing laws or other legal issues would prevent Minnesota agencies from fully participating in participating in the network. However, ECN would leverage its extensive governance structure in executing any required agreements between different units of government should such a need arrive. DPS and DOT have executed countless contracts, sharing agreements, and MOUs/MOAs through the deployment of ARMER, and accordingly, public safety in Minnesota has a significant library of reference material to model future agreements from.

13. Tools

a. *What are some of the software tools that the State has used and could apply to the planning and data collection activities associated with this program?*

ECN possesses no special tools or software it will leverage for this assessment outside of common commercial productivity software and common engineering tools such as coverage mapping and network planning software.

However, the state of Minnesota possesses a large body of knowledge under its 2012 Minnesota Public Safety Wireless Data Network Requirements Project and the 2013 Minnesota Public Safety Broadband State and Local Grant Plan. These efforts have prepared the state to begin substantial work under SLIGP immediately upon award of funds without delays associated with project ramp-up.

b. *Is the State aware of additional tools that could be useful for implementing allowable grant activities?*

FirstNet and NTIA may consider adopting is OEC/ICTAP's new Site Survey Tool, a component of CASM, which will be available in the summer. It will greatly expand on the infrastructure than can be collected for existing LMR equipment including shelters, backhaul, power/backup, capacity, and other pieces of information. This tool could be invaluable to streamline and standardize infrastructure-related data collection entry performed under Phase 2 of SLIGP.

Additionally, Connected Nation and Connect Minnesota have robust tools they have developed for their SBI program which may be relevant to SLIGP efforts. Their platform has been specifically designed to facilitate network engineering and business planning efforts. For example, the platform allows credentialed users to extract datasets in shapefile, geodatabase, spreadsheet, and static PDF formats. ECN will investigate utilizing these tools under SLIGP.

14. Phase Two Funding

a. *Describe the activities that you expect to undertake with the Phase 2 funding when it is made available to the State, Territory, or District.*

ECN has a comprehensive plan in its 2013 Minnesota Public Safety Broadband State and Local Grant Plan[17] for collecting information and performing Phase 2 activities under SLIGP. The state's objectives for the program are to collect the required information to ensure that FirstNet and its vendor will be able to build, operate, and maintain a network in the State of Minnesota that:

1. Is highly adopted by public safety, and therefore, substantially benefits public safety in the state. As a result, the service must broadly meet the needs of the state's public safety users including its coverage, reliability, cost, and other requirements.
2. Is sustainable, and therefore, that the user fees and other sources of revenue for FirstNet are sufficient to sustain the network for the long term. This includes not only recovery of network user fees, but also "technology refresh", system upgrades, and other requirements of the public safety community in perpetuity.

[17] The full plan is available at http://ecn.dps.mn.gov (last retrieved March 18, 2013).

3. Enhances interoperability. Simply providing a more reliable and robust network to carry state and local public safety is insufficient. The new network must enhance the sharing of information among the state's public safety community.

In carrying out this plan, the project team will leverage the work completed during the 2012 Minnesota Public Safety Wireless Data Network Requirements Project and seek greater and stakeholder-specific accuracy in its predictions. Each implementation scenario shall be accompanied by a full explanation of the advantages and disadvantages of each scenario.

Each implementation scenario will include an estimate of the potential revenue that may be had by leasing on a secondary basis the extra capacity of the network. In this instance, the State may be able to choose from a variety of commercial operators or resellers. As this revenue cannot be guaranteed without contract negotiations, this estimate of revenue may not be available during implementation of this process. In total the implementation models will incorporate the following attributes:

- Service Scenarios: coverage predictions based upon various deployment scenarios
- Financial Modeling: Cost projections for the utilization of different assets, both in terms of capital and operational expenditures
- Revenue: Estimated revenue projections based upon various partnership scenarios if possible

ECN anticipates tasks identified in the Minnesota plan will fall into the following phases under SLIGP:

Task	Phase
Task 0 - Grant Application	n/a (pre-award)
Task 1 - Initial Administrative Items	Phase 1
Task 2 – Develop a Stakeholder Entity List	Phase 1
Task 3 – Stakeholder List Refinements	Phase 1
Task 4 – Agency Needs and Asset Assessment	Phase 2
Task 5 - Statewide Requirements Assessment	Phase 2
Task 6 - Partnership Evaluation	Phase 2
Task 7 – Implementation Modeling	Phase 2
Task 8 – Detailed Asset Information Collection	Phase 2
Task 9 – Develop Final Report	Phase 2

15. Other

a. *Please list any consultants, vendors, or other entity that assisted in the preparation of this application.*

ECN authored this application using internal staff resources and utilized no professional services to write the application narrative itself.

This application incorporated sections from, the 2012 Minnesota Public Safety Wireless Data Network Requirements Project final report and the 2013 Minnesota Public Safety Broadband State and Local Grant Plan which were produced with contract support from Televate LLC. Approximately one-tenth to one-fifth of the text of this application is taken from those two documents.

A small amount of text regarding Connect Minnesota and Connected Nation was authored by Connect Minnesota and Connect Minnesota.

Attachments

Budget Justification Spreadsheet

Standard Form 424, Application for Federal Assistance

Standard Form 424A, Budget Information--Non-Construction Programs

Standard Form 424B, Assurances--Non-Construction Programs

CD-511 Certification Regarding Lobbying

Standard Form LLL, Disclosure of Lobbying Activities

Letter of State Designation

Minnesota Public Safety Broadband State and Local Grant Plan