Minnesota-FirstNet
Initial Consultation

Minnesota’s Preliminary Findings, Recommendations and Questions

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Emergency Communication Networks, Minnesota Department of Public Safety

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Agenda

• Minnesota Governance Structure
• MnFCP Project Overview
• Education and Outreach
• Preliminary Findings
  – Working Groups
  – User Population Survey
  – Coverage Assessments
• Examples of Wireless Data Use
• Informal RFI
• Questions for FirstNet
SECB

**Overview:**

- "Statewide Emergency Communications Board"
- Oversees ARMER, NG9-1-1, IPAWS, broadband
- Adopts, enforces communications SOPs
- Established by Minn. Stat. § 403.36
  - Membership equally representative of state agencies, urban jurisdictions and rural jurisdictions
- Serves as Minnesota’s SIEC

**FirstNet, SECB, and State**

SECB has legal authority and obligation to consult with FirstNet

Through MnFCP, the SECB has delegated this work to DPS
Regional Governance

Communications Regions

- Seven regions defined in statute
- Established through JPA
  - Regional boards have legal identity
  - Administer grants, own property
- Membership is voluntary
  - 100% county participation statewide
  - Most tribes also participate
- Adopts, enforces regional SOPs
  - No more strict than SECB
MNFCP PROJECT OVERVIEW
The Minnesota-FirstNet Consultation Project is designed to fulfill all SLIGP obligations.

MnFCP Objectives:
1. Prepare the State and its public safety communications governance structure for FirstNet consultation
2. Perform the consultation process required under The Act
3. Develop the Minnesota Strategic Plan

- Phase One: Schedule and activities on track with expectations
- Phase Two: Awaiting FirstNet requirements
EDUCATION AND OUTREACH
Education and Outreach

Conferences and Regional Meetings

Training Modules
Click to view

Newsletters and Brochures
(Handouts, email, Website)
Tribal Outreach

Overview:

- 11 tribal governments
- Approx. population: 50,000 total
- Anishinaabe
  - Grand Portage
  - Bois Forte
  - Red Lake
  - White Earth
- Dakota
  - Shakopee
  - Prairie Island
- Early outreach success in Leech Lake
Leech Lake Outreach

Major Findings:
1. Representatives were very pleased that the State engaged its leadership.
2. The tribe has not been contacted by FirstNet.
3. Publicly available cellular coverage maps significantly inflated in Leech Lake.
4. Leech Lake has its own telecommunications carrier very interested in partnerships.

Recommendations for Formal RFI:
1. Facilitate the tribe’s interest in operating a public/private partnership with FirstNet.
2. Resolve legal issues related to tribal sovereignty and Tribal Engagement rules.
3. Investigate potential synergies with ONAP (FCC Native Affairs).
4. Obtain Leech Lake drive-test cellular data.
5. Continue to leverage the state’s governance structure for grant funding initiatives.
Surveys

Point of Contact (POC) Survey

- Collect contact information from personnel at each public safety agency within the state
- Determine **authorized person** to provide user and device counts

User Population (POP) Survey

- **Minimum barriers to wireless adoption** specific to each agency in the State
- **Potential number** of NPSBN subscribers
- Quantity/types of devices currently in service,
- Current spending on wireless devices
Workgroups

Purpose:
Express Minnesota stakeholder requirements with deep-dive feedback from the state’s technical and operational experts and thought leaders.

Five Workgroups:
1. Devices
2. Applications/NG911
3. Coverage
4. System (IT)
5. Security

Requirements Development and Approval Process:
- Solicit for Volunteers
- Hold Workgroup Sessions
- Report to Sponsor
- ECB Committee Approves
- Regional Boards Endorse
- SECB Adopts

Guiding Principles:
1. Focus on launch
2. Establish minimum requirements for adoption
3. “Mission Critical”, “Public Safety Grade” = long term
Workgroup Feedback Cycle

1. Hold Meeting
2. Feedback
3. Leader Prep
4. Finalize Requirements
MAJOR CONSULTATION CHALLENGES
Major Consultation Challenges

FirstNet Requirements
- What does FirstNet expect out of the consultation process?
- How will our State requirements be integrated into the FirstNet network implementation?
- Standard MOUs/MOAs?
- Can FirstNet provide data collection ("Phase 2") timetables and formats?

Tribal Governance
- How will FirstNet coordinate with tribes in Minnesota?
- FirstNet has had no formal contact with State tribes.
- State has taken initiative and included in MnFCP; does FirstNet consider this appropriate?

Potential Barriers to Leveraging State and Local Assets
- FirstNet has not formally expressed interest, terms or conditions for use of assets
- Unknown potential political and legal barriers
Quick Start Counties

Our Expertise

• Broadband Networks (700 MHz, 4.9 GHz, LTE, Wi-Max, Wi-Fi, Microwave, Fiber)
• Land Mobile Radio (P25 Voice & Data, Narrowbanding, RF Testing)
• Network Planning and Project Management
• Business Modeling and Development
• Interoperable Communications
• Strategy and Planning

Jurisdiction Population Area of Minnesota’s population represented in this sample

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Population</th>
<th>Area (Sq. Mi.)</th>
<th>Pop. Density (Per/Sq. Mi.)</th>
<th>Trade Center</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ramsey</td>
<td>508,640</td>
<td>152</td>
<td>3,342</td>
<td>St. Paul</td>
</tr>
<tr>
<td>Hennepin</td>
<td>1,152,425</td>
<td>554</td>
<td>2,082</td>
<td>Minneapolis</td>
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<tr>
<td>Sherburne</td>
<td>88,499</td>
<td>433</td>
<td>204</td>
<td>St. Cloud</td>
</tr>
<tr>
<td>Stearns</td>
<td>150,642</td>
<td>1,343</td>
<td>112</td>
<td>St. Cloud</td>
</tr>
<tr>
<td>Clay</td>
<td>58,999</td>
<td>1,045</td>
<td>56</td>
<td>Moorhead</td>
</tr>
<tr>
<td>Carlton</td>
<td>35,386</td>
<td>861</td>
<td>41</td>
<td>Carlton</td>
</tr>
<tr>
<td>Saint Louis</td>
<td>200,226</td>
<td>6,247</td>
<td>32</td>
<td>Duluth</td>
</tr>
<tr>
<td>Murray</td>
<td>8,725</td>
<td>705</td>
<td>12</td>
<td>Slayton</td>
</tr>
<tr>
<td>Leech Lake</td>
<td>9,372</td>
<td>1,058</td>
<td>9</td>
<td>Cass Lake</td>
</tr>
<tr>
<td>Reservation</td>
<td>10,866</td>
<td>2,109</td>
<td>5</td>
<td>Two Harbors</td>
</tr>
</tbody>
</table>
CASE STUDIES
Case Studies

- Provide insights on data use during major incidents
- Presented by representative jurisdiction/agency

Clay County: Red River Flooding
Hennepin County: I-35W Bridge Collapse
Lake County: Pagami Creek Wildfire
Ramsey County: Fugitive Search
Saint Louis County: Various Challenges and Needs
Stearns County: Paper Mill Fire
CLAY COUNTY: RED RIVER FLOODING
Red River Flooding

- Caused by heavy snows or rains in conjunction with a northward flow of the river
  - 10 significant flood events over the last 20 years
  - Damages range from $3M to $820M (1997)

- Warning & Preparation Notification
  - General warning is weeks in advance; however, only few hours notice can be expected Flash Floods; except
  - Dammed Ice Packs can cause immediate localized flooding

- Flooding been has increasing in the past two decades
  - Potential ties to global warming?

- Coordinated response from Federal, State (MN & ND), Local Agencies and NGOs
  - Federal Agencies and NGOs play a significant role in the response
Red River Flooding

- Response Requirements:
  - Need to communicate and share data with multiple command posts and responder agencies
  - Access to Federal websites for weather updates and hydrology
  - Flood prediction key to evacuation planning and response; necessitating real-time access to:
    - Monitoring stations
    - Cameras
    - Mapping & data sharing
• Sufficient bandwidth to allow the efficient operations of the remote personnel; commercial networks are insufficient and not very reliable
  – Would consider a deployable solution
• Scalability is key to provide sufficient connectivity to coordinate evacuation (mapping) and asset tracking (AVL, including personnel)
• Must facilitate dedicated access to key Federal websites & resources (separate from public access)
  – FEMA (need something more robust than chat room & voice communications, including the ability to upload real-time data)
  – National Weather Service, real-time feeds
  – USGS – Hydrology
• Video monitoring becoming a growing requirement for better situational awareness
HENNEPIN COUNTY: I-35W BRIDGE COLLAPSE
I-35W Bridge Collapse

- August 1, 2007, the eight-lane, 1,907-foot highway bridge collapsed over the Mississippi River in Minneapolis
- 13 fatalities, 145 injuries
- Massive Emergency Response included:
  - Minneapolis Police Department
  - Minneapolis Fire Department
  - Hennepin County Sheriff’s Office
  - 12 other public safety agencies and 28 watercraft
  - U.S. Army Corps of Engineers
  - U.S. Coast Guard
  - FBI underwater search and evidence response team
  - U.S. Naval Sea System Command mobile diving and salvage teams
  - ~31 ambulances, including Hennepin County Medical Center, North Memorial Ambulance, Allina Medical Transportation, Kanabec County Ambulance, and Lakes Region EMS
  - Included the active support from many private companies and organizations
- Duration of Incident: +21 days

Source: http://www.dot.state.mn.us/i35wbridge/photos/aerial/aug-2/images/35W%20bridge%20070.jpg
I-35W Bridge Collapse

- Command Bus was on-scene within minutes
- Victim Assessment was the Highest Priority
  - Suffered several delays and needed to rely on video CD of security footage
  - Heavy reliance on investigative efforts of law enforcement for victim/vehicle identification
- Wireless data was inoperable during the critical first hours and at best intermediate for the rest
- Mass notification of the event complicated the communications at the response (since revised)

- Major Challenges:
  - Accountability of personnel & coordination of assets
    - It was very difficult to assess who was on-scene in the early hours and to coordinate the response
    - No remote access to AVL
  - Wireless data was unusable
    - On second day a temporary AP was set up to provide data connectivity
  - Data sharing between responders was limited to hand carried items, SMS & ARMER voice
I-35W – Lesson Learned

• Providing dedicated bandwidth to public safety agencies is the highest priority
  • Local Twins game forced public safety to compete for bandwidth
  • In addition, a scalable temporary solution needs to be provided to offer greater capacity to the incident commander at peak times

• Standards for AVL interoperability would help manage the chaos as the event ramps up
  – Knowing who and what has arrived on scene allows the incident commander to better allocate resources

• Interoperability with Federal Agencies is a necessity
  – National Guard and several Federal agencies played critical roles in the response
LAKE COUNTY:
PAGAMI CREEK
WILDFILE
August 18, 2011, a lightning strike ignited a forest fire in Lake County that lasted over three months and spanned 93,000 acres.

Emergency response included:

– Over 60 agencies
  • Local Law Enforcement and Fire
  • State Law Enforcement and Fire
  • Federal Fire Fighters (USFS)
– Multiple Fire and Security Teams

Source: http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=521
Pagami Creek Wildfire

• Two Command Posts:
  – Isabella and Ely (50 miles by road)
• Insufficiency of the existing commercial networks (Verizon installed a portable solution)
• Communications Requirements
  – Mapping
  – AVL for Assets
  – AVL for Personnel
  – Weather / Plume
  – Deployment
  – Voice

• Deployable wireless solution (commercial carrier) overwhelmed by media satellite trucks
• Wireless Data requirements for:
  – Data Sharing
  – Logistics
  – Credentialing
  – Mutual Aid
  – Communication Plans
Communications requirements that you would like FirstNet to address:

- Public Safety Dedicated Bandwidth
  - Large Operation Base Camps resemble a small city and require access to data systems

- Remote area coverage
  - What are the plans for deployable solutions?
  - What devices would be available for a satellite solution?
RAMSEY: FUGITIVE SEARCH
Lyle Marvin "Ty" Hoffman
- August 11, 9a.m. shooting at Arden Hills gas station leaves one dead, suspect on the loose, several sightings were reported

Large mobilization: Prior Lake neighborhood
- +100 officers & several SWAT teams
- Line search through the wooded area
- Helicopter support
- 5-6 hours to coordinate
- 18hrs deployment

No remote access to video from static cameras or helicopter

Typical whiteboard for incident command
- No geo-positioning or mapping
- No AVL used for deployment of assets or the tracking of personnel
- No automated messaging (distribution of suspect’s photo)
  - Relied on hardcopy & minimal softcopy distribution
Remote access to video or a localized deployable drones would help considerably.

AVL for FirstNet equipped vehicle assets and personnel needs to be integrated to allow incident commander better situational awareness of deployed resources.

Existing commercial service prohibit and/or hinder the distribution of multimedia over their networks (video), FirstNet needs to support the distribution of video from multiple sources—Helicopter, bearcat / tactical vehicle, DOT, helmet / body cams on tactical operators, etc.

County has had problems provisioning new devices in emergency situations, especially those requiring static IP addresses.

Aforementioned items are relevant for all search types including missing persons.
ST. LOUIS COUNTY: VARIOUS CHALLENGES & NEEDS
St. Louis County

- Largest County East of Mississippi River,
- Larger than three states.
- St. Louis PSAP dispatches for 184 PS agencies
- Includes Duluth, City of First Class to Canadian Border
- Metropolitan, rural and wilderness - BWCA
- Three attempts at COPS Technology Grant for Mobile Data with Superior and Douglas County, Wisconsin
- Operate a Motorola Private DataTac system for five counties

Source: http://www.northlandnewscenter.com/
Duluth Port Security

- Most inland international seaport
- 2nd largest dry bulk port in the U.S.
- Foreign flagged vessels regularly in port
- General cargo terminal, Marine fueling depot
- Shipyard with two dry docks and tug/barge service
- 49 miles of waterfront and docks handle commodities:
  - iron ore, coal, grain, limestone,
  - cement, steel coil, oil
  - salt to wood, pulp/paper,
  - wind turbine components, etc.

Source: http://www.northlandsnewscenter.com/
• Sophisticated centralized records management system that is shared between 5 counties: (22% of State)
  – St Louis, Cook, Lake, Carlton and Pine Counties
  – Joint CAD, Records and Mobile data
  – Incorporates AVL for mobile assets

• Incident Scenarios
  – June 30,1992 spill and evacuation
  – Port Security
  – Underwater marine communications
  – Senator Wellstone plane crash in Eveleth, Minnesota
Communications requirements that you would like FirstNet to address:

- Integration with existing security system (port)
  - Require the ability to stream video from cameras
- Integration with CAD/RMS system
  - System Services multiple counties and cities in the Northeast
  - What level of integration can we assume for the integration of these systems with the FirstNet NPSBN? Increased coverage!
- Border Patrol & International Port of Entry
  - Will we have service (coverage) near the Canadian border?
Verso Paper Sartell Mill Fire

- May 29, 2012 explosion resulted in a fire that killed one worker and injured five
  - Duration: 10 days
    - Event stabilized within 8hrs; afterward the challenges became logistical in nature
  - 15 mutual-aid fire departments within 1hr
  - St Cloud Hazmat
  - St Cloud Command Bus
  - State patrol helicopter
  - 96 fire departments
  - 5 police departments
  - Rolling 12hr shifts

Source: http://minnesota.cbslocal.com/2012/06/03/small-fires-continue-to-burn-in-verso-paper-mill/
Command Post Requirements:
- Command was set up within 2hrs
- Safety Officer critical due to the extended nature of the event
- Rail Liaison provided
- Extensive support was provided by the Sartell Mill staff that included:
  - Building plans, Facilities, Communications, logistics, food

Overall support during the event was optimal

Relyed extensively on St Cloud for plume analysis and Hazmat assessment

Relied on cache radio for volunteers and mutual aid

Lesson Learned:
- AVL for vehicles & personnel
- Video from helicopter would have been very useful
- Little in way of training to access video and other resources
- No capability to review pre-plans or inspection history & records
- No capability to distribute incident maps & plans
INFORMAL RFI
Informal RFI

Objectives:

1. Prepare the state to describe partnership opportunities to FirstNet
2. Educate state and stakeholders about partnership opportunities
3. Support development of comprehensive RFI in Q4 2014

RFI Process:

Informal RFI → Formal RFI → FirstNet Consultation/ Business Development → Report Findings

Stats

- Responses: 17
- Published: 8/20/2014
- Responses due: 9/2/2014
- Response length: 750 Words
- Submission: e-mail
Informal RFI

Major Findings:

1. There is tremendous interest in Public-Private Partnerships in the State.
2. Minnesota and FirstNet have a wide variety of options to pursue in the state.
3. Rural carriers in the state see FirstNet partnership as their primary growth opportunity.
4. Consumer Band-Class 14 Devices are essential to the viability of partnerships.

Recommendations for Formal RFI:

1. RFI should target respondents who are able to provide capital to the network.
2. The RFI should target the value of secondary access to the network.
3. The RFI should investigate suitability of partners for complete network solutions.
4. The RFI should target parameters for valuing privately-owned infrastructure.
5. The RFI Should Target Device Manufacturers’ Plans for Consumer Band Class 14 Devices.
PRELIMINARY FINDINGS — WORKING GROUPS
**Workgroups Overview**

**Purpose:**
Express Minnesota stakeholder requirements with deep-dive feedback from the state’s technical and operational experts and thought leaders.

**Five Workgroups:**

1. Devices 
2. Applications/NG911 
3. Coverage 
4. System (IT) 
5. Security
Coverage Working Group

Workgroup Rejects OEC Coverage Model

- Much of state satellite/deployable only
- Poor handheld service in 90%+ of state
- Almost no handheld service outside of metro
- Worse commercial service outstate today
Findings so far:

1. Strong interest in rugged handhelds; little interest in existing rugged models on the market today
2. iOS is required by many agencies
3. Existing consumer devices strongly desired on the network
4. Less interest in special, public safety-specific devices at launch

Launch Requirements:

<table>
<thead>
<tr>
<th>SHALL</th>
<th>SHOULD</th>
<th>SHALL NOT</th>
<th>SHOULD NOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer Smartphone</td>
<td>Dual-mode Handheld</td>
<td>Fixed Camera</td>
<td></td>
</tr>
<tr>
<td>Vehicular Router</td>
<td>Deployable Camera</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Portable Router</td>
<td>Microphone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tablet</td>
<td>Weather Sensors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laptop</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personnel Camera</td>
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</table>
Applications Working Group

Purpose: To express Minnesota stakeholder user requirements for applications and NG911 on the NSPBN that would facilitate adoption of FirstNet services.

<table>
<thead>
<tr>
<th>Service</th>
<th>Deployed by FirstNet at launch</th>
<th>Enabled by FirstNet at Launch</th>
<th>Deployed by FirstNet long-term</th>
<th>Enabled by FirstNet long-term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephony (cell phone)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>NG911 Emergency Services</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CMAS/IPAWS</td>
<td>Yes</td>
<td>N/A</td>
<td>Yes</td>
<td>N/A</td>
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<tr>
<td>Messaging</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Push-to-Talk Voice</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Mission-Critical Push-to-Talk</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Video Services</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Status Web Page</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>IPAWS</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>ARMER Interconnect</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Mission-Critical ARMER Intct.</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
- 42 applications assessed

- Start with applications, work backwards:
  - Define data types
  - Define Mission-critical and priority
  - Define interoperability requirements
  - Define related NG911 requirements

- Assess future needs based on present use cases and needs gaps

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**Applications Inventory**

**In-use Today**

<table>
<thead>
<tr>
<th>Application</th>
<th>Count</th>
</tr>
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<tbody>
<tr>
<td>Database Queries</td>
<td>23</td>
</tr>
<tr>
<td>Records</td>
<td>22</td>
</tr>
<tr>
<td>Image/Data Transfer</td>
<td>19</td>
</tr>
<tr>
<td>Incident Command</td>
<td>14</td>
</tr>
<tr>
<td>AVL</td>
<td>9</td>
</tr>
<tr>
<td>Alerting and Messaging</td>
<td>8</td>
</tr>
<tr>
<td>Video</td>
<td>1</td>
</tr>
<tr>
<td>Voice</td>
<td>0</td>
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</table>
PRELIMINARY FINDINGS — USER POPULATION SURVEYS
Quick Start Counties

Our Expertise

- Broadband Networks (700 MHz, 4.9 GHz, LTE, Wi-Max, Wi-Fi, Microwave, Fiber)
- Land Mobile Radio (P25 Voice & Data, Narrowbanding, RF Testing)
- Network Planning and Project Management
- Business Modeling and Development
- Interoperable Communications
- Strategy and Planning

County Population Estimate | Area (Sq. Mi.) | Pop Density (Per/Sq. Mi.) | City
--- | --- | --- | ---
Carlton | 35,386 | 861 | 41 | Carlton
Clay | 58,999 | 1,045 | 56 | Moorhead
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Lake | 10,866 | 2,109 | 5 | Two Harbors
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Sherburne | 88,499 | 433 | 204 | St. Cloud
Stearns | 150,642 | 1,343 | 112 | St. Cloud
User Population Survey

Agencies that Pay for Wireless Services*

- Yes: 62%
- No: 38%

*Note: This item includes fewer responses.

Means of Purchasing Commercial Wireless Services

- Statewide Contract
- GSA Contract
- Local Contract
- Private or Individual Contract

Total Devices Currently in Service

- Smartphones
- USB Modems
- Toughbooks
- Other Devices
- Mobile Hotspot
- Vehicular Modems
- Tablets

Smartphones Purchased

- Consumer-Grade: 17%
- Ruggedized: 17%
- Both: 66%

Tablets Purchased

- Consumer-Grade: 35%
- Ruggedized: 51%
- Both: 14%
User Population Survey

Average Percent Assigned Wireless Devices

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Personnel</td>
<td>38%</td>
</tr>
<tr>
<td>Vehicles</td>
<td>50%</td>
</tr>
</tbody>
</table>

Percent of Agencies Indicating Each Type of Personnel Is Assigned Wireless Devices

<table>
<thead>
<tr>
<th>Personnel Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frontline Personnel</td>
<td>46%</td>
</tr>
<tr>
<td>Upper Management</td>
<td>54%</td>
</tr>
<tr>
<td>Administration</td>
<td>59%</td>
</tr>
<tr>
<td>Other Personnel</td>
<td>28%</td>
</tr>
</tbody>
</table>

Current Barriers to Adoption

- Cost: 60% Yes, 40% No
- Peripherals: 40% Yes, 60% No
- Coverage: 50% Yes, 50% No
- Network Saturation: 80% Yes, 20% No
- Applications: 80% Yes, 20% No
Effect of Subscription Cost Compared to Commercial

- Decrease Cost by 50%+
- Decrease Cost by 1-49%
- Match Cost
- Increase Cost by 1-49%
- Increase Cost by 50%
- Not Subscribe

- Increase Devices
- Maintain Devices
- Decrease Devices

User Population Survey
PRELIMINARY FINDINGS — COVERAGE ASSESSMENTS
Coverage Assessment Process

• Provide an overview of the MnFCP and FirstNet
• Explain the objective and methodology of the assessment process
• Determine typical commercial carrier device types and usage environments
• Determine commercial carrier(s) subscriptions
• Share data to support coverage assessment
  – Commercial carrier coverage footprint (drive test data where available)
  – Computer Aided Dispatch (CAD) incident locations, types and frequency
  – Critical infrastructure
• Define process and draw coverage area and type (indoor, in-vehicle, on-street, mobile) requirements
Types of Coverage

- Critical Service Area
  - Where we want FirstNet service first and where it is needed the most, high-activity areas (CAD data)

- Extended Service Area
  - Areas where commercial carrier coverage is insufficient and;
  - Where a deployable or satellite is not acceptable

- Required Service Area
  - The minimal service area required to adopt the service (Verizon depicted*)

Example: Clay County

* Coverage obtained from broadband.gov
Types of Coverage

Purpose: To express Minnesota stakeholder user requirements for devices on the NPSBN that would facilitate adoption of FirstNet services.

<table>
<thead>
<tr>
<th>Mobile Coverage</th>
<th>Outdoor Coverage</th>
<th>In-Vehicle Coverage</th>
<th>Indoor Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>• External Antenna</td>
<td>• Hand-held device</td>
<td>• No External Antenna</td>
<td>• Varying degrees of building loss</td>
</tr>
</tbody>
</table>

Stronger Signal Required = more sites, more $$$
CAD Incident Data

Incident Impact Calculation incorporates:

- Calls for service over a 3-yr timeline (2011-13)
- Aggregated incidents within ½ mile bins
- Number of units responding
- Priority of the incident
- Category of incident type and the wireless data requirement
- Rating of “4” or higher have been deemed “critical” areas
- Eight levels of incidents ranging from highest to lowest number per grid

Clay County, MN
Coverage Reviews

Hennepin County

Ramsey County

* Some CAD data missing
Coverage Reviews

Leech Lake Tribe

Murray County
Coverage Reviews

Stearns County

Sherburne County

* Some CAD data missing
Sample counties identified the type of coverage required by referring to the likely usage cases.

In addition to cellular phones, laptops, and tablets, agencies are using other devices.

- In-Vehicle Boosters with external antennas
- USB Modem
- LIFEPAK
- MiFi/JetPACK
QUESTIONS FOR FIRSTNET
Questions for FirstNet

Purpose:

1. Clearly communicate the State’s and its stakeholders’ concerns to FirstNet

2. Set the tone for the ongoing Minnesota-FirstNet consultation process.

3. Guide early FirstNet consultation in the region toward specific, high-level issues

We Don’t Expect Answers Today.

*These questions are intended to direct FirstNet’s attention to our high-priority issues.*
Sample Questions:

- **What outcome** does FirstNet seek from the FirstNet-state consultation process?
- What is the timetable for **service availability**?
- What is FirstNet’s plan, if any, for **incorporating findings and requirements gathered under SLIGP** into the consultation process and its network design?
- Is adoption of FirstNet **services voluntary** at the local level?
- What are expectations for **capital costs** contributed by user agencies or the State?
- Will FirstNet operate a **NOC**? What is expected of State and local government?
Lessons Learned

- Branding and messaging are essential.
- Never underestimate the stakeholder community.
- Never overestimate the stakeholder community.
- Communication with stakeholders is extremely labor-intensive.
- Tribal outreach is extremely challenging.
- Good coverage assessments require many inputs.
- Give them homework.
- Share with your peers.

Leverage the community’s expertise.

Stakeholders from all areas of the state need to be given a voice. They have very good ideas and are just waiting for you to come and ask.
Questions?

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