



## **SIRN 20/20 SURVEY AND NEEDS ASSESSMENT SUMMARY**

11.4 FINAL REPORT SUPPLEMENTAL DOCUMENT

**Contract Deliverable #: Sub Task of Deliverable 6 (Stakeholder Outreach)**

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## CONTENTS

Document Content Overview.....	3
Stakeholder Outreach and Needs Assessment Approach.....	4
Survey Topics and Overview.....	4
Adoption Factors and Considerations .....	5
Summary of Adoption Considerations.....	5
Asset Contribution .....	6
Cost .....	7
Input on Funding Sources .....	8
SIRN 20/20 Governance .....	9
Coverage Gaps and Requirements .....	9
Existing Coverage Gaps .....	10
Minimum Acceptable Coverage for SIRN.....	11
Network Features.....	12
Network Interoperability .....	12
Dedicated Talkpaths/Capacity Enhancements .....	13
Data Capabilities.....	14
Current Devices and Future Needs .....	15
Training.....	15
Summary of Adoption/Participation Requirements .....	15

## DOCUMENT CONTENT OVERVIEW

This document provides an overview and analysis of the feedback collected during the survey and needs assessment process pertaining to existing operational gaps and future needs for SIRN 20/20, which affect willingness and ability to subscribe to the network. Based on this input, a set of operational requirements that should serve as a benchmark for the success of a statewide solution were established and are presented in this document.

## STAKEHOLDER OUTREACH AND NEEDS ASSESSMENT APPROACH

The objective of the needs assessment process was to engage each county in such a way to inform them about the SIRN project, collect information about their current radio systems and devices, identify their needs for the radio network, and identify their ability/willingness to join the network. The Study employed multiple methods<sup>1</sup> to achieve this objective including:

- Regional Conferences
- Online Surveys
- Individual County Meetings and Web-conferences

The Study engaged stakeholders affiliated with state, county, and local jurisdictions including all major public safety disciplines and key public service agencies. In addition, some local legislators participated in the regional conferences and online surveys. The table below summarizes the number of stakeholders who participated in each of the main needs assessment forums.

Outreach and Information Forums	Participants/Audience
Individual Meetings	2014: 30 Counties, 2 State Agencies, 1 Tribal Entity 2016: 8 Counties, 2 State Agencies, North Dakota Association of Counties, Indian Affairs Council
16 Regional Conferences	151 Attendees - 46 Counties, 3 State Agencies
April 2016 Online Survey	145 Responses - All 53 Counties, 6 State Agencies, 1 Tribal Entity
October 2014 Online Survey	320 Responses - 43 Counties, 5 State Agencies, 3 Others

## SURVEY TOPICS AND OVERVIEW

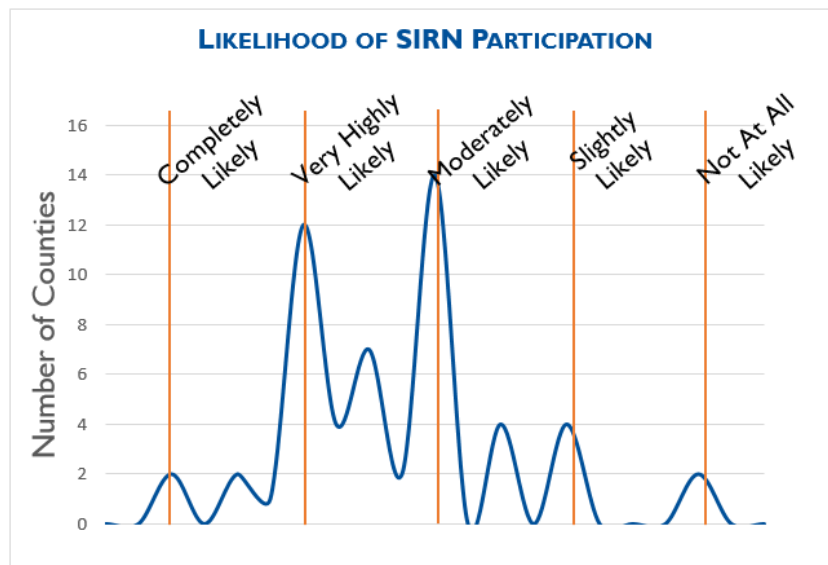
Information collected during both the SIEC-sponsored North Dakota Statewide Radio Systems Assessment and Evolution Study (2014 - 2015), and the 64<sup>th</sup> State Legislature-issued SIRN 20/20 Feasibility Study are discussed as applicable in this document. Phase I of the Statewide Radio Systems Assessment (2014) focused on identifying the gaps that North Dakota public safety end users experienced with their current systems, while the Phase 2 SIRN 20/20 Feasibility Study (2016) sought to identify whether a statewide radio network was a desirable and feasible solution to address existing gaps and enhance communications (See below).

2014 Focus	2016 Focus
Current Communications Tools Overview Current Systems Strengths and Gaps Interoperability Gaps Training Requirements Tower and Subscriber Quantities (Managers Only) General Feedback on Evolution Strategies	Likelihood of Participation in SIRN Willingness/Ability to Contribute Assets SIRN Adoption Criteria and Barriers Service and Feature Requirements County Cost-Sharing Recommendations Governance Structure Recommendations

<sup>1</sup> See SIRN\_D6D8\_Outreach and Data Collection\_FinalReportv1 for further information on the process and scope of the needs assessment and survey approach.

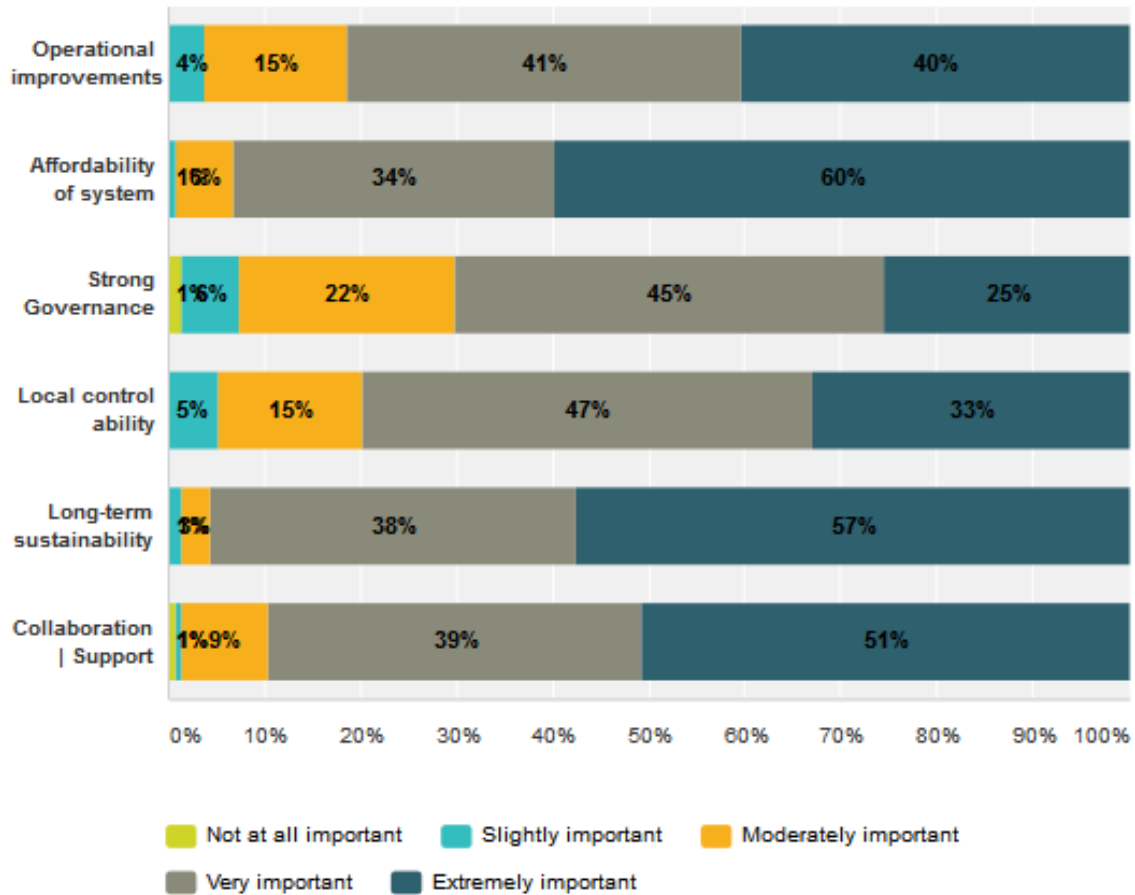
## ADOPTION FACTORS AND CONSIDERATIONS

Overall, provided that the network met their needs, a majority of North Dakota counties would be interested in a statewide radio solution. Ten counties had some or all respondents with a “slightly likely” (8) or “not at all likely” (2) to join SIRN typically citing concern on affordability, executive resistance and loss of local control. As discussed later in this document, the primary consideration across proponents and opponents of SIRN is the cost and affordability of SIRN.



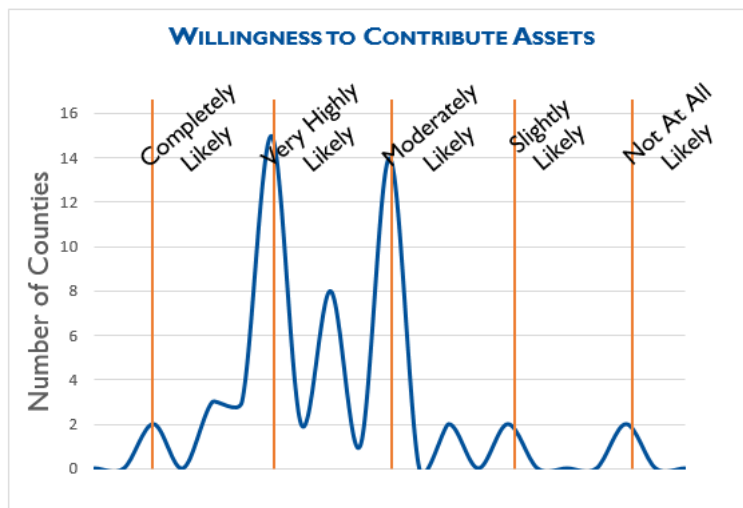
### SUMMARY OF ADOPTION CONSIDERATIONS

The following graph reflects survey data indicating the importance—as identified by State, County, Local, and Tribal study participants—of various elements of the prospective network and its operations. Affordability, improved technologies, equitable representation and regional collaboration were all rated as highly or extremely important factors influencing local entities’ decision-making.



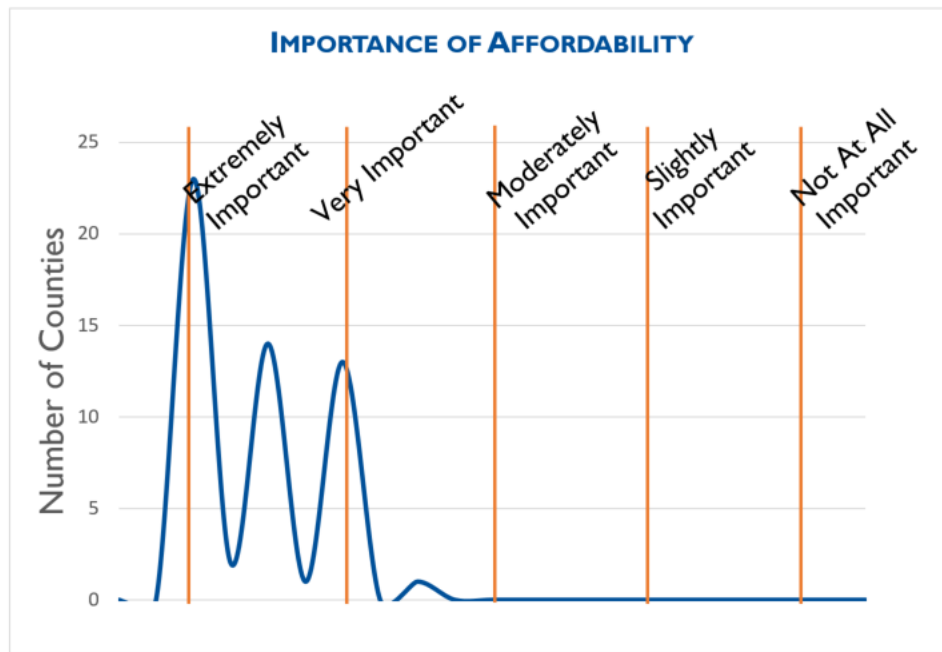
## ASSET CONTRIBUTION

Majority of counties were very likely or moderately likely to contribute or share assets including tower space and infrastructure and channels for incorporation into SIRN 20/20 (See figure below). A strong correlation exists between counties with high likelihood of joining and high likelihood of contributing assets.

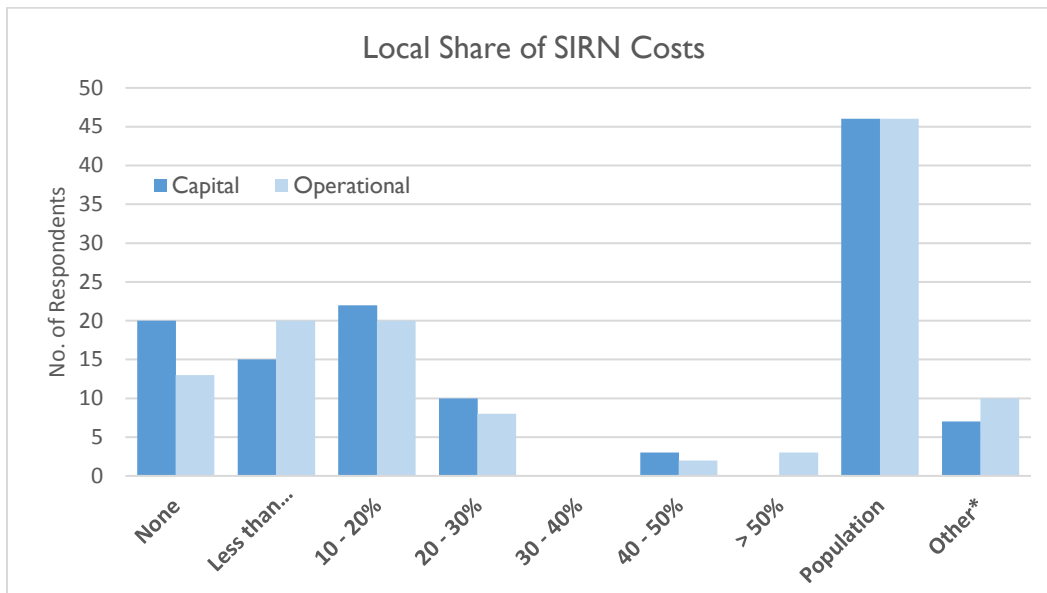


## COST AND AFFORDABILITY OF SIRN 20/20

Cost was consistently listed as a primary factor influencing a county's participation. This concern is reemphasized repeatedly in the open-ended survey responses, with 38% of the 64 optional responses to the question of the willingness and ability to participate indicating a concern about the cost and/or who would pay for it. The cost of participation was identified not only as "Extremely Important," but also as the primary barrier to adoption. During interviews, the ability to afford participation in the network varied from an inability to pay more than their current rate, to a few counties that were willing to pay slightly more for an improved network that better suited their operational needs.

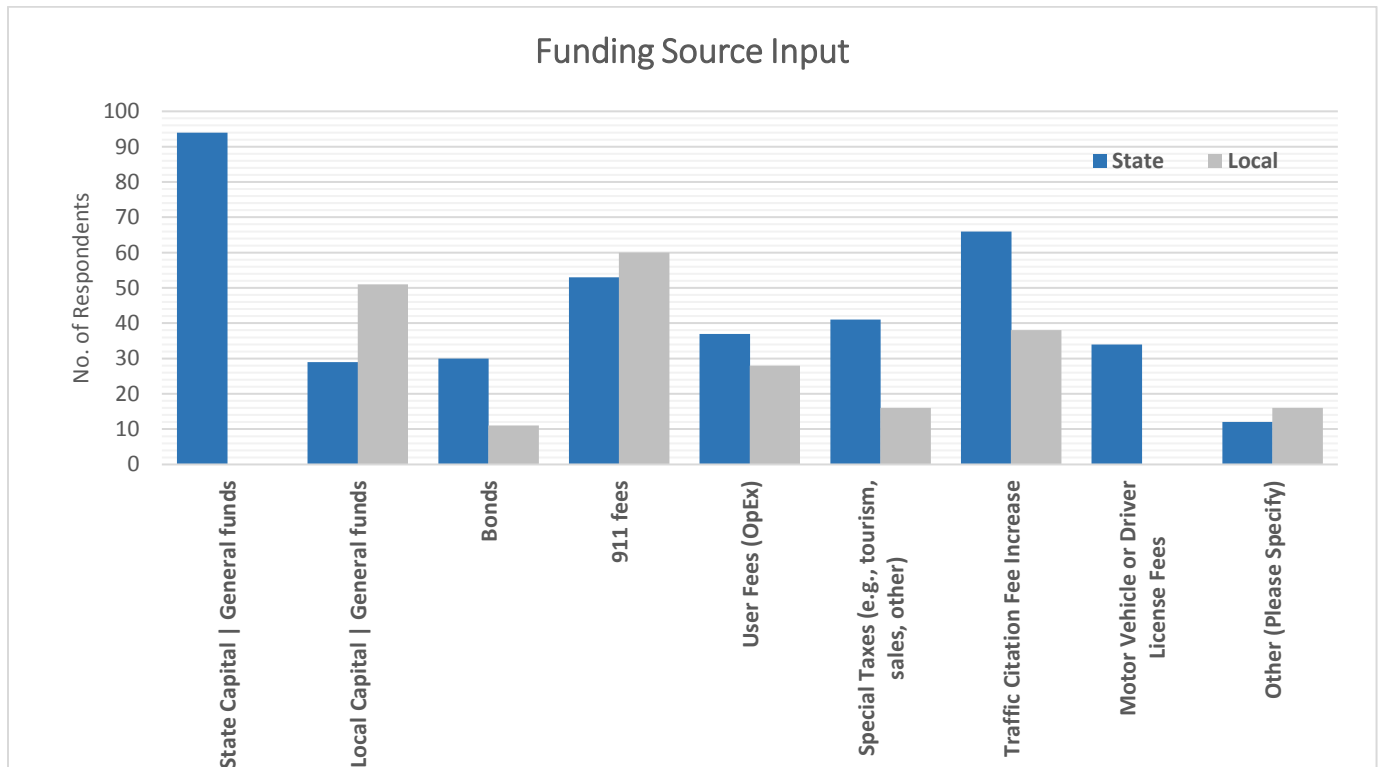


Despite the concerns about the cost of the network however, a majority participants did believe that there should be some local input into the costs of SIRN. As illustrated in the figure below, most respondents deemed a local contribution of 1% – 30% reasonable. (The open-ended "Other" category often captured a reluctance to make a determination without knowing the cost.) In general, most counties indicated an 80%-20% State-County split, with the local share distributed proportional to the user base or population.



**INPUT ON FUNDING SOURCES**

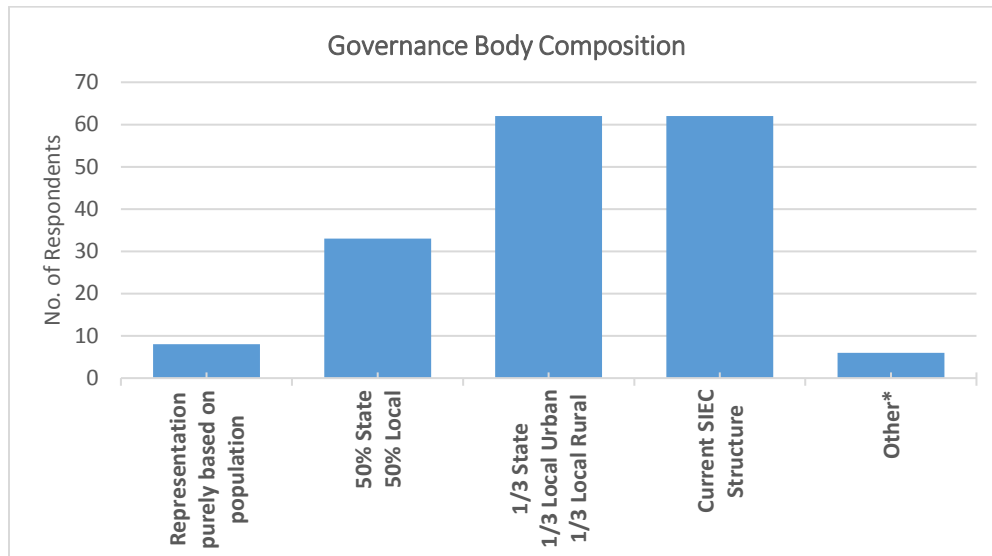
A discussion about cost cannot exist without a discussion about funding, and strategies for doing so were major topics during interviews and regional meetings. Phase I and the current Study both found major funding challenges for rural counties with small tax bases, and critical systems (such as paging systems) that were ineligible for grants. During Phase 2, participants considered a variety of sources for network funding based on which sources the participants believed would be acceptable and plausible pursuits within their jurisdictions (See graphic below)





## SIRN 20/20 GOVERNANCE

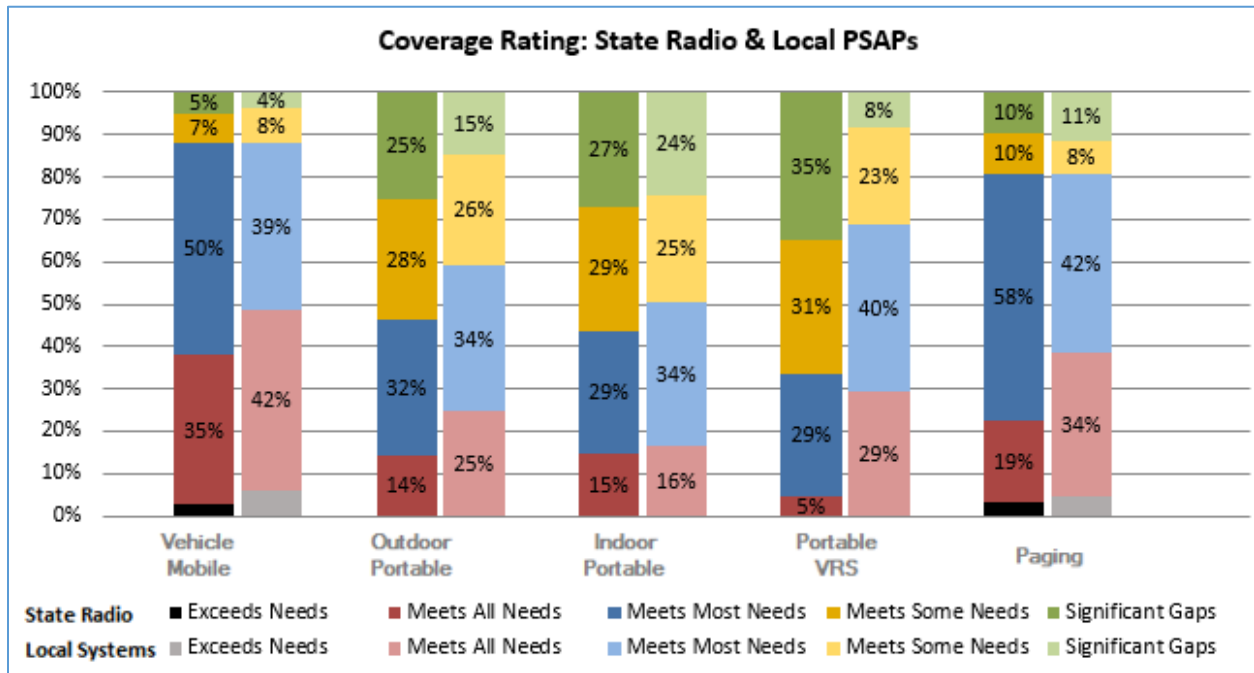
Although State and federal programs are perceived as well-intentioned, Study participants indicated a need for local input and representation as well, and open-ended survey responses reflected concern with a loss of local control in a statewide network. Support for the current SIEC structure was only slightly greater than support for a governance structure that represented State, local urban, and local rural interests equally.



## COVERAGE GAPS AND REQUIREMENTS

Beyond financial and governance considerations, a network simply must offer improved service in order to be appealing to subscribers. Phase I of the Statewide Radio Systems Assessment identified significant outdoor and indoor portable coverage gaps in existing systems; coverage gaps and/or decreased reliability in the Western portion of the state, low-lying terrain, and remote rural areas; widespread use of vehicular repeaters to extend network coverage; and, in some cases, use of cell phones to replace insufficient radio coverage.

The figure below shows the results identifying the respondents' satisfaction with the State Radio and/or local systems coverage. As evidenced by the graph, most respondents reported that at least some of their coverage needs were unmet. In particular, while most mobile radio coverage needs are met, almost 50% of respondents stated that their handheld portable service had *significant gaps* or *met some needs*. Extension of portable service through the use of a vehicle-mounted repeater system (VRS) was generally considered cumbersome and prone to failure.



### EXISTING COVERAGE GAPS

During individual county and regional meetings, a number of existing coverage gaps were identified. In addition to multiple counties that reported coverage issues along the Canadian border, these gaps include:

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>Benson: Western corner and Southwest portion of the county</li> <li>Billings: City of Medora</li> <li>Burleigh: Area along the river, area south of I-94, and Bismarck/Mandan in-building</li> <li>Cass: In-building coverage in Casselton, Fargo Dome</li> <li>Emmons: South and Southwest portions of the county</li> <li>Grand Forks: Western part of the county</li> <li>Mercer: Southwest portion of the county</li> <li>McHenry: Northwest portion of the county and the valley in Sawyer</li> <li>McKenzie: Highway 68 and Roosevelt Park by Long X Bridge</li> <li>McLean: Near Fort Berthold Reservation</li> <li>Mountrail: Southern portion of the county near the lake</li> </ul> | <ul style="list-style-type: none"> <li>Oliver: East and Southeast portions of the county</li> <li>Pembina: Central portion of the county</li> <li>Pierce: Southern county line</li> <li>Ramsey: In-building coverage in hospital and Walmart</li> <li>Renville: West of Sherwood</li> <li>Rolette: East and Southeast portion of the county</li> <li>Sheridan: Southern portion of the county</li> <li>Slope: Western portion of the county</li> <li>Stark: Southeast portion of the county</li> <li>Steele: Southwest portion of the county</li> <li>Ward: Northeast and Southwest portions of the county, in-building coverage in Minot</li> <li>Wells: Northwest portion of the county</li> <li>Williams: In-building coverage</li> </ul> |
|--|--|

The map illustrates a portion<sup>2</sup> of the gaps currently experienced by public safety users.

<sup>2</sup> Not all counties in this specific coverage issues mapping exercise.



**MINIMUM ACCEPTABLE COVERAGE FOR SIRN**

The following tables show the minimum coverage levels SIRN would need to meet in order for users to consider or adopt the statewide network solution, as reported by areas of varying population density, and varying disciplines. Notable considerations of these data include:

- Primarily, SIRN should have equal or better coverage than existing systems
- Law Enforcement expects better on-street portable coverage
- While on-street portable coverage in “populated areas” was less important to some agencies, it is known that current systems, particularly, analog and paging systems provide this level of service (hence indirectly becomes a requirement in adherence to delivering equal or better coverage)
- No notable variations for these requirements across topographies and county densities

	Average of 95% mobile coverage throughout my jurisdiction	Average of On-street portable coverage in populated areas and along roadways	Average of Equal or better than my current system(s) coverage
High Population Density	59%	41%	78%
Medium Population Density	65%	30%	61%
Low Population Density	63%	56%	81%
Other	83%	33%	67%

	Average of 95% mobile coverage throughout my jurisdiction	Average of On-street portable coverage in populated areas and along roadways	Average of Equal or better than my current system(s) coverage
Emergency Management	71%	38%	74%
EMS	60%	40%	60%
Fire Services	73%	13%	53%
Highway and DOT	67%	0%	67%
Law Enforcement	60%	47%	74%
PSAP/911	44%	44%	83%

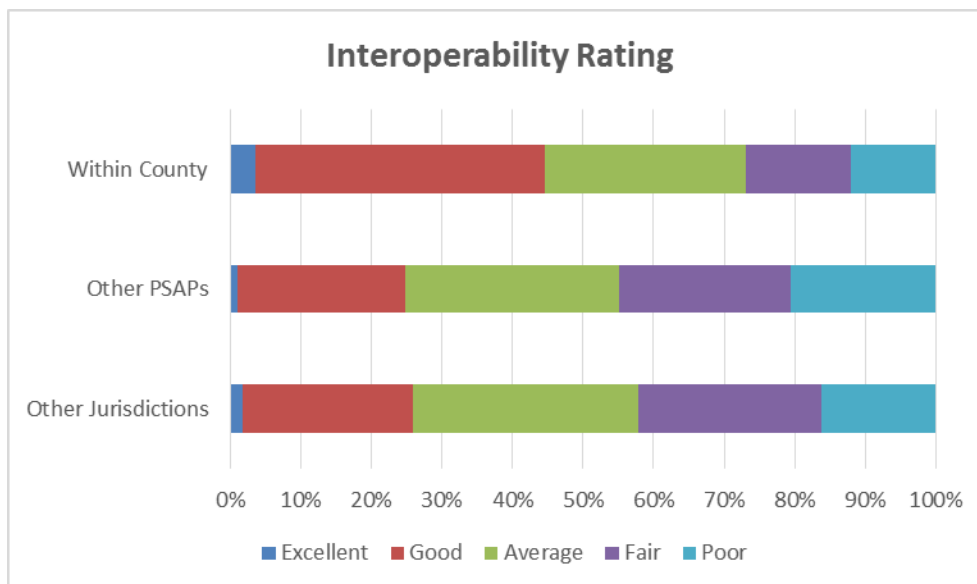
Note that because the items were not mutually exclusive, totals are greater than 100%.

## NETWORK FEATURES

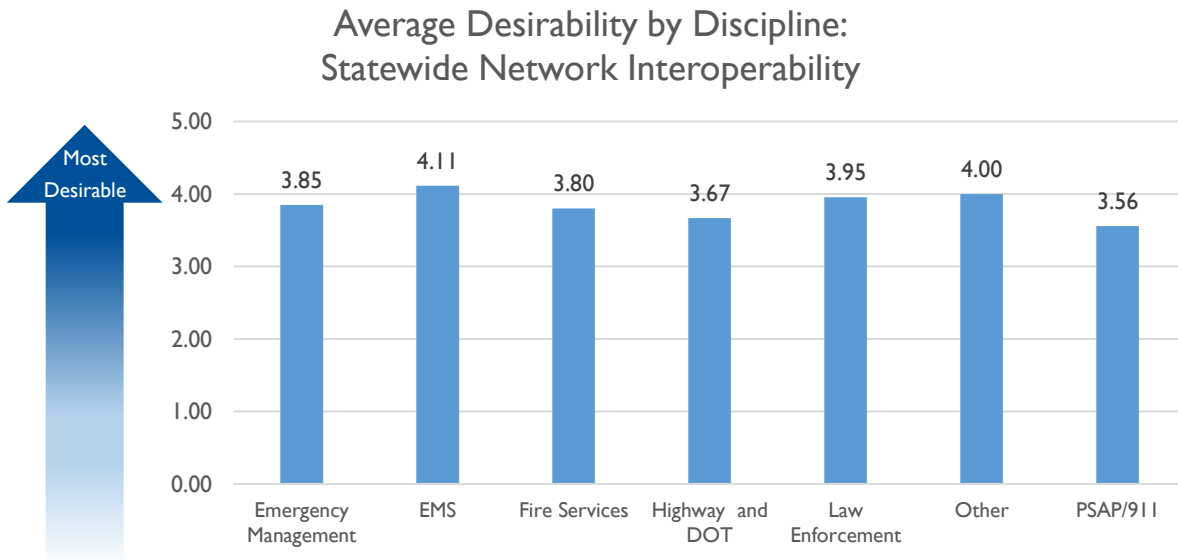
Features of modern technologies offered under SIRN 20/20 also make up a compelling part of the reason for users to subscribe. The Study found that users experienced a lack of interoperability, cross-talk and interference on their channels, insufficient capacity and noted that the current systems required intensive manual operations.

### NETWORK INTEROPERABILITY

The Phase I predecessor to this Study found impediments to communication with mutual aid partners that stemmed from a lack of frequency sharing and various decentralized systems. In some cases, this meant cell phones were used to replace radio communications. Further difficulties arose when attempting to communicate with federal partners and Canada. End user interoperability ratings of the current systems are shown below.

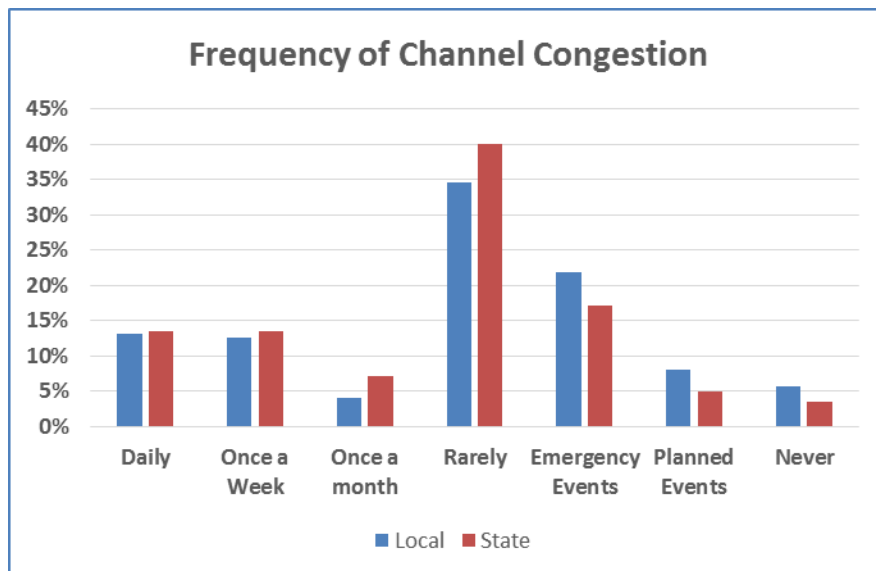


Interviews and surveys both echoed the need for improving interoperability both within the State and with neighboring states. The graph below shows the average desirability for improved interoperability, sorted by discipline, with EMS reporting the highest average want.



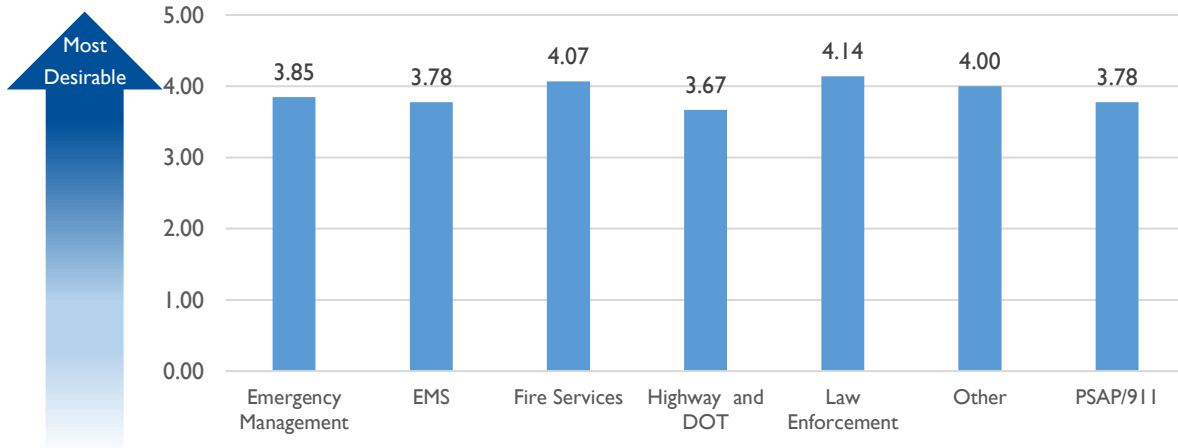
## DEDICATED TALKPATHS/CAPACITY ENHANCEMENTS

Independent county interviews revealed issues with cross-talk and nuisance communications stemming from inefficient and uncoordinated systems. In addition to experiencing cross-talk, some counties reported that systems could be overwhelmed when multiple agencies were using the network, and higher populated counties have reported that city police departments experience congestion. Other counties that may not have encountered problems yet acknowledged the possibility of running into capacity issues if multiple incidents ever occurred at the same time. End users provided the following view of the congestion they experienced, with few respondents stating that congestion was never an issue.

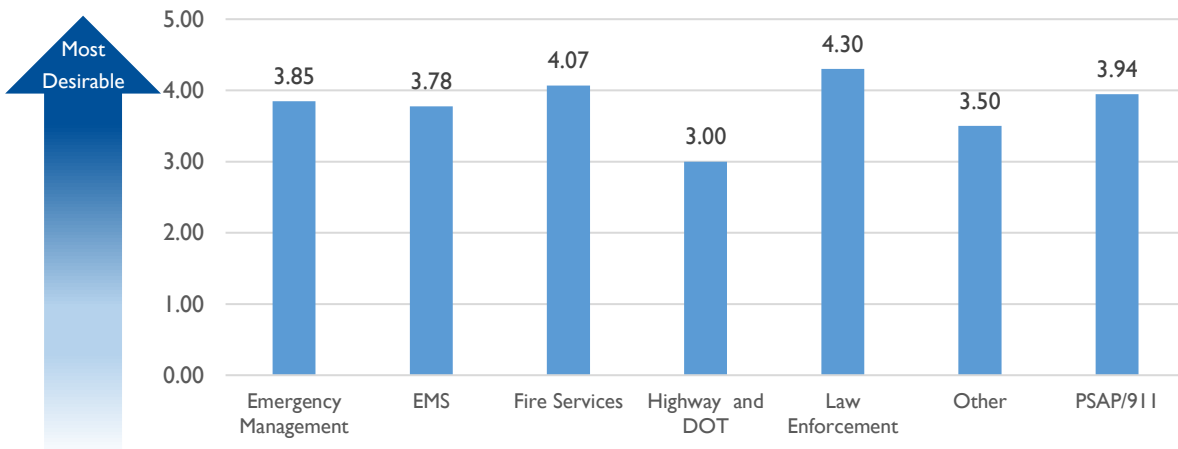


The 2016 Study survey results showed that on average, participants—especially law enforcement—were interested in dedicated talkpaths or in reducing congestion.

### Average Desirability by Discipline: Dedicated Talkpaths



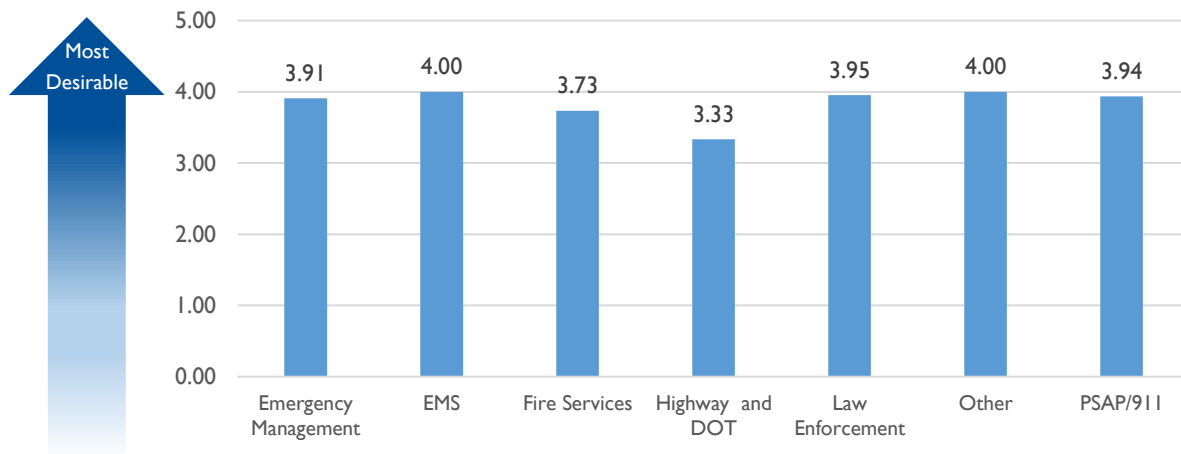
### Average Desirability by Discipline: Increased Capacity/Reduced Congestion



## DATA CAPABILITIES

Interviews reflected a range in support for different data features, but with some agencies already using these features, a new system must offer the option. During discussions, the availability of location services was positively received. Some participants also verbalized concerns highlighting the need to ensure the system is designed in a coordinated fashion, allowing those with encryption to interoperate seamlessly with those without.

Average Desirability by Discipline:  
Data (GPS/Encryption)



## CURRENT DEVICES AND FUTURE NEEDS

A great deal of the data collection efforts focused on assessing the upgradability of existing North Dakota devices and assets. Based on the devices surveyed throughout the entirety of the State, 35% of communications devices are upgradeable, 40% must be replaced, and 25% may need to be replaced depending on the specific device. This means that the ability to obtain compatible devices, at an affordable rate will be a significant factor in an agency's ability to participate in SIRN.

## TRAINING

During many county and regional meetings, participants identified the need for greater end user training on how to properly use their devices, and articulated difficulties obtaining sufficient participation, especially from volunteer agencies, and dealing with high dispatcher turnover (particularly during the peak of the oil boom). Participants suggested options for how to improve training including introducing a range of training options depending on the agency's needs and availability (such as evening, online/video, or hands-on training), conducting training more frequently, and establishing grants to pay for trainers. Other end user suggestions for how to make the network more easily usable included standardizing channel names and hosting applications trainings.

## SUMMARY OF ADOPTION/PARTICIPATION REQUIREMENTS



Through work sessions, surveys, and interviews, the participating stakeholders collectively outlined and examined various objectives for improving public safety communications in the State. To ensure broad adoption and satisfaction, a statewide system should

- Maximize mobile radio coverage throughout the State to provide a baseline means of communications for first and second responders
- Improve portable radio coverage in populated areas, roadways and high-incident areas
- Minimize system interference and establish a coordinated frequency plan
- Enhance network capacity to support private group communications paths for different disciplines and functions

# SIRN 20/20 SURVEYS AND NEEDS ASSESSMENT

- Leverage existing State and Local assets to benefit all network users
- Automate various network functions to simplify dispatcher and field user operations
- Establish policies, procedures, technical standards and funding requirements to ensure sustainable networks anchored on long-term technology goals and objectives
- Support enhanced features such as end-to-end encryption and GPS location services
- Achieve seamless interoperability across all State, Local and Tribal users and neighboring states
- Maintain independent Public Safety Answer Point (PSAP) service area autonomy over locally based assets and resources

These overarching themes were translated into Baseline Operational Needs (listed below)--a set of technical and operational attributes that maximize broad adoption, fulfill first-responder needs, and are necessary for SIRN to serve as a replacement of all current and planned county and municipal systems. These Baseline Operational Needs drove the SIRN framework development across all tasks of the SIRN 20/20 Feasibility Study.

ATTRIBUTE	BASELINE OPERATIONAL NEEDS	SERVICE OBJECTIVES
 <p>RADIO COVERAGE</p>	<ul style="list-style-type: none"> <li>▪ Equal or Better overall coverage than current systems (“Coverage Equivalence”)</li> <li>▪ 95% Mobile Radio coverage in each county</li> <li>▪ Portable Radio service along roadways and in populated areas</li> <li>▪ Reliable in-building coverage in dense areas of the State</li> </ul>	<ul style="list-style-type: none"> <li>▪ Provide continuous and similar coverage experience for state, local, and municipal users and services</li> <li>▪ Leverage mobility management to enable seamless roaming and transition from tower to tower for all approved users</li> <li>▪ Support individual agency or function, and “announcement” communications capabilities</li> </ul>
 <p>FEATURES   MAINTENANCE</p>	<ul style="list-style-type: none"> <li>▪ Interoperability capabilities inter-county and inter-state</li> <li>▪ Fire and Emergency Medical Services (EMS) paging systems support</li> <li>▪ PSAP (911 call center) applications integration capability</li> <li>▪ Network features capability support<sup>3</sup></li> <li>▪ Reliable and timely maintenance and issue resolution</li> </ul>	<ul style="list-style-type: none"> <li>▪ Develop solution that delivers or incorporates all land mobile radio (LMR) based services and applications as an integrated service</li> <li>▪ Support communications among any and all radios and dispatch centers at all times by linking all wireless and wired services</li> <li>▪ Ensure regional support and maintenance of all integrated elements through central remote monitoring and resolution by distributed staff</li> </ul>

<sup>3</sup> “Support” refers to the ability of SIRN to support agency or county specific features. These features may not be initially delivered; however, SIRN would originally be designed to accommodate them and they may be funded by agency requiring the feature.





GOVERNANCE |  
FINANCE

- Collaborative and equitable decision process
- Financially and operationally sustainable
- Significant State funding allocation
- Ensure adequate local representation in network deployment and decision-making
- Fund the solution primarily through State initiatives