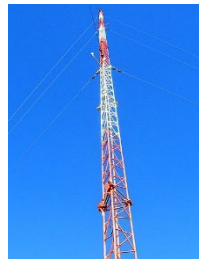


# ND SIRM Project Buildout and Transition

- Project Phases
- Status Reporting
- Transition Process

[SIRM2020.ND.GOV](http://SIRM2020.ND.GOV)



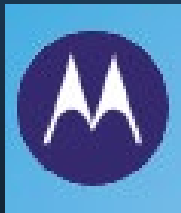
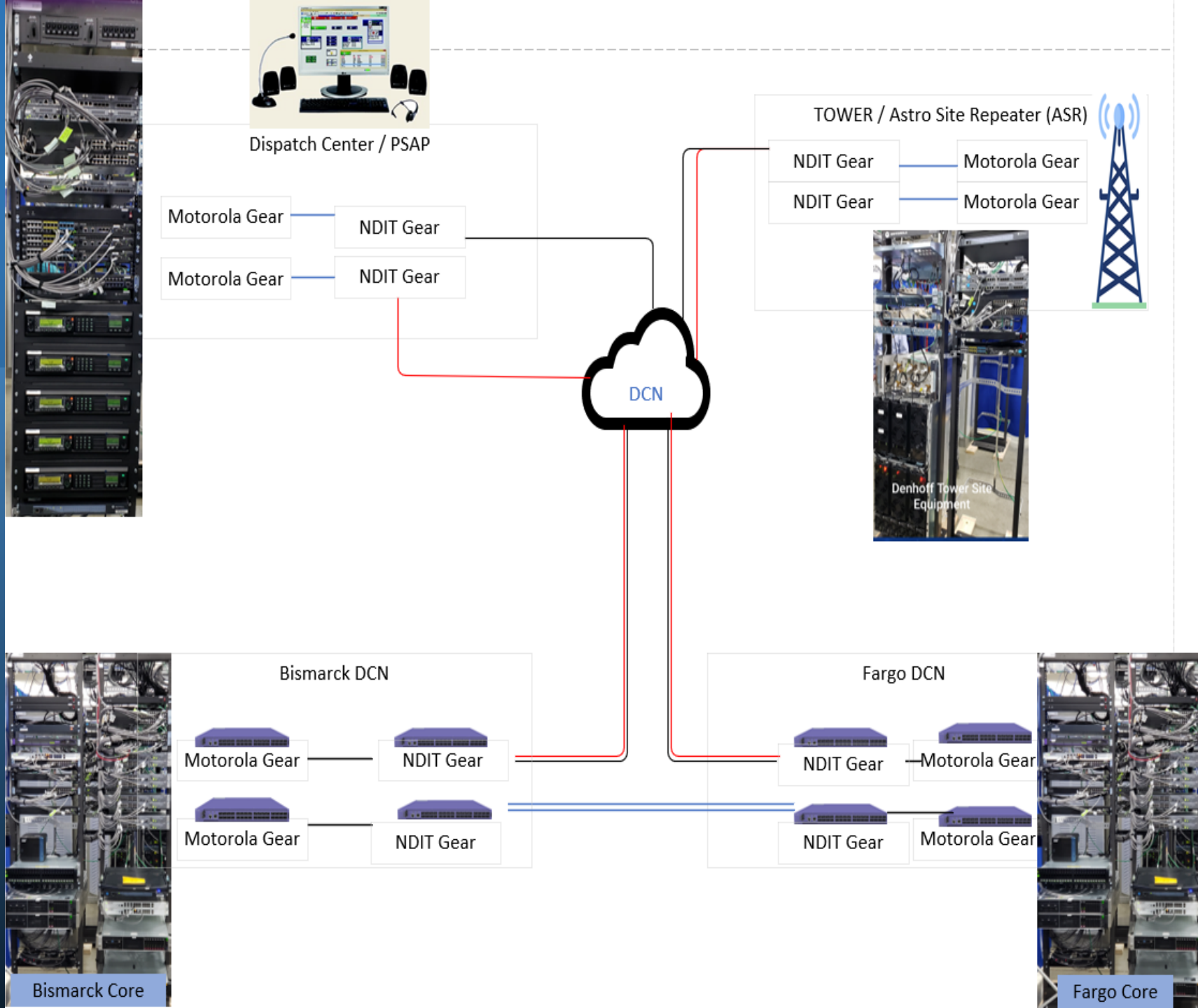
# PUBLIC SAFETY COMMUNICATIONS IN ND

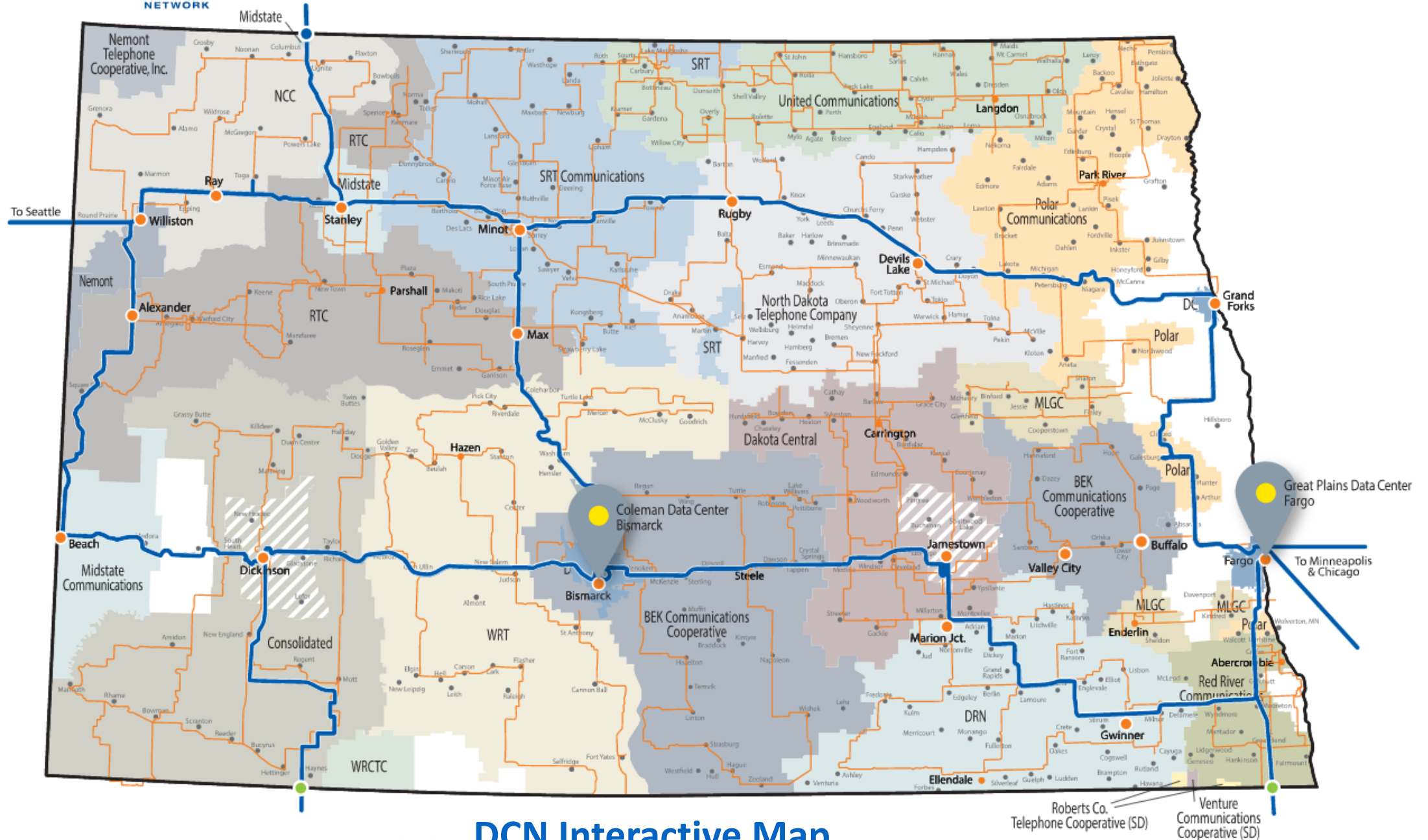


## ➤ SIRN Project Has 3 Main Phases

- Phase 1: Backhaul and PSAP Console Replacement
- Phase 2 – Group 1: Radio Frequency (RF) Buildout for Mobile (In-Car Radio) Coverage to include Simulcast Early Adopter Locations
- Phase 2 – Group 2: Radio Frequency (RF) Buildout for Portable (Handheld Radio)

# Phase 1 - Backhaul / Networking Design





**DCN Interactive Map**



# Phase 1 - Console Replacement

- By December 2021, 75% of Dispatch Centers on the new Motorola MCC 7500E Consoles compatible to transmit 800Mhz and VHF

**Grand Forks**

**Minot**

**Stutsman**

**Barnes**

**Richland**

**Mountrail**

**McKenzie**

**Walsh**

**Williston**

**Cavalier/Towner**

**Bottineau/Renville**

**Dickinson**

**CenCom**

**MHA – Three Affiliated**

**Lake Region**

**McLean**

- Remaining 5 Dispatch Centers (Pembina, Traill/Steele, Rolette, Mercer/Oliver, & Pierce) to be scheduled 2022
  - State Radio to transition in 2024

# Phase 2 – Radio Frequency (RF) Build Out Mobile (In-Car) Radio Coverage

- **Group 1 of the Radio Frequency (RF) Buildout consists 82 Tower Sites – Currently 67% complete**
  - Group 1 Towers (RF) will provide 95% Coverage by Region with 95% reliability
  - This Phase includes the early adopter locations which provide Mobile & Portable Coverage
    - Williston Simulcast / Williams County
    - Grand Forks Simulcast
    - Minot Simulcast
    - Bismarck/Mandan Simulcast and Burleigh County
  - Approximately 50% of these sites are DOT locations
    - Approximately 30 sites are new tower builds on the same location as the old DOT towers
    - Several are also getting new shelters
  - Remainder are lease site locations
    - Site leases are either political subdivisions or private leases







# Civil Work / Site Work

**Whether a lease site or state-owned site, much of the work is similar.**

Site Analysis

Structural Analysis

Geo Study & Analysis

Local Permitting

Federal Cultural Review

Site Drawings

Construction Drawings

Civil Work

- Tower Base
- Guy Wire Anchor Pad
- Shelter Pad
- Ground Ring
- Fiber Connectivity
- Site Electrical Work

Concrete Testing

Tower Construction

Antenna and Lines

Shelter Work

- Power Termination
- Network Connectivity
- SORN Gear Installation
- Site Monitoring

Inspection(s)

Site Optimization (tuning)

Radio Frequency Testing

More Inspections

Final Site Review / Approval

**Site is Operational**

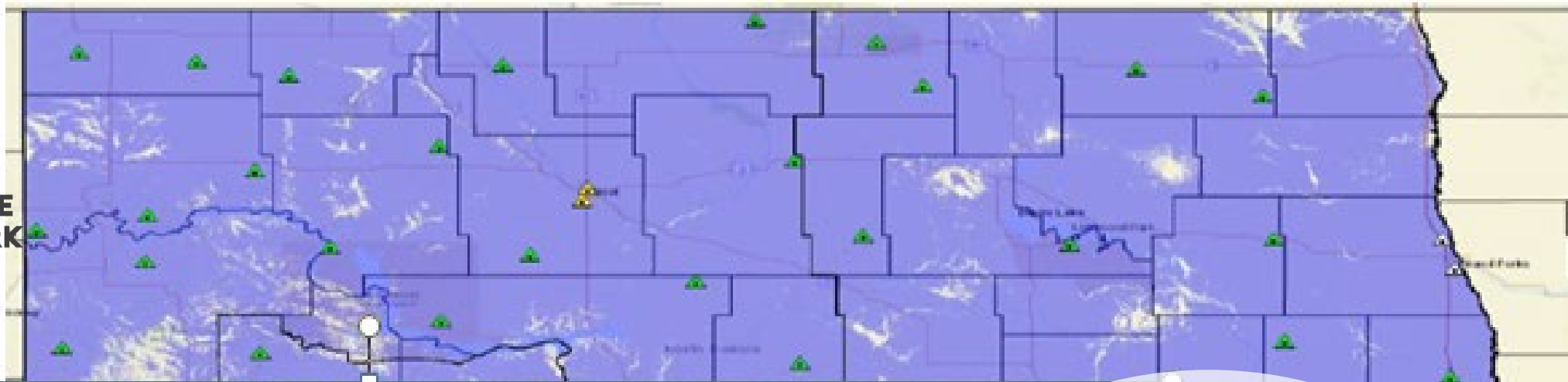


# Phase 2 – Group 2: Radio Frequency (RF) Build Out Portable (Handheld) Radio Coverage

- **Group 2 of the Radio Frequency (RF) Buildout consists approx. Approximately 58 additional Tower Sites**
  - This Phase will provide 85% Coverage by Region with 95% reliability
  - This phase will fill in the areas between the sites in Group 1 – Mobile (In-Car) Coverage
  - Most of these sites are lease sites
    - Sites will get a shelter
    - Antenna and Line work
    - Some sites allow for colocation within the owner's shelter







The Buildout as a  
Whole



*NORTH DAKOTA*  
**STATEWIDE  
INTEROPERABLE  
RADIO NETWORK**

[SIRN2020.ND.GOV](http://SIRN2020.ND.GOV)


[Project Status Reporting](#)


# SIRN 20/20


## Recent news

SIRN Buildout & Transition  (January 2022)

SIRN 101 Presentation  (October 2020)

Project Status as of January 2022 

Project Status as of December 2021 

Project Status as of November 2021 

SIRN - Infographic 



[SIRN2020.nd.gov](https://SIRN2020.nd.gov)



State of North Dakota

SIRN 2020 Status Update

August 30, 2021



# Status Report explained

## Radio Frequency (RF) Phase Status



- Each Phase has groups of towers being worked on at any given time
- Each group of towers can be at various stages at any given time
  - Planning / Site Walks
  - Lease Acquisitions / Negotiations / Legal Reviews / Execution
  - Site Review/Site Walks
  - Civil Work
    - Permitting
    - Cultural Reviews (NEPA)
    - Geo Testing
    - Structural Analysis of the existing towers
    - Lease Exhibits / Site Drawings for review
    - Construction Drawings & Review & Approval
  - Notice to Proceed (NTP)
    - Order tower steel, shelter, antennas, lines, power supply, network / fiber construction (backhaul), site monitoring
- Breaking Ground
  - Site Preparation for Large Vehicles
  - Tower Base Construction / Concrete / Testing
  - Guy Wire Anchor Base Construction / Concrete / Testing
  - Shelter Pad Construction / Concrete / Testing / Ground Ring
  - Electrical Service
  - Fiber / Connectivity Service
  - Curing Period for all Concrete
- Tower Construction
  - Delivery of tower steel, anchors, guy wire, antenna, lines/coax, etc.
- Shelter Delivery
  - Crane lift shelter to the shelter pad and anchoring
  - Power termination
  - Installation of Radio Frequency (RF) gear
  - Monitoring
  - Testing (Monitor, Generator, Radio Frequency (RF), HVAC,

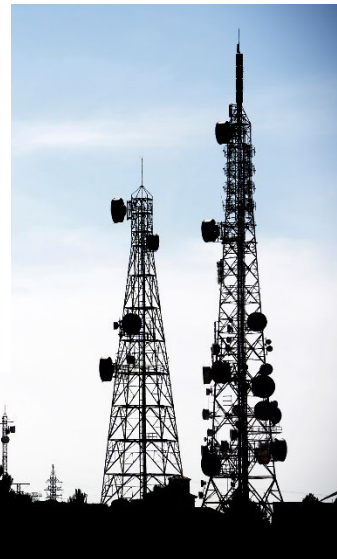
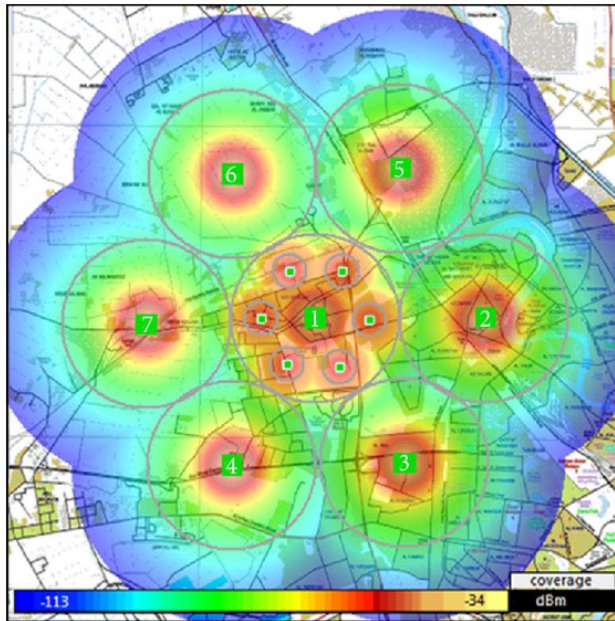
**Several 1000's of tasks in the schedule**

# Simulcast Areas and Drive Tests



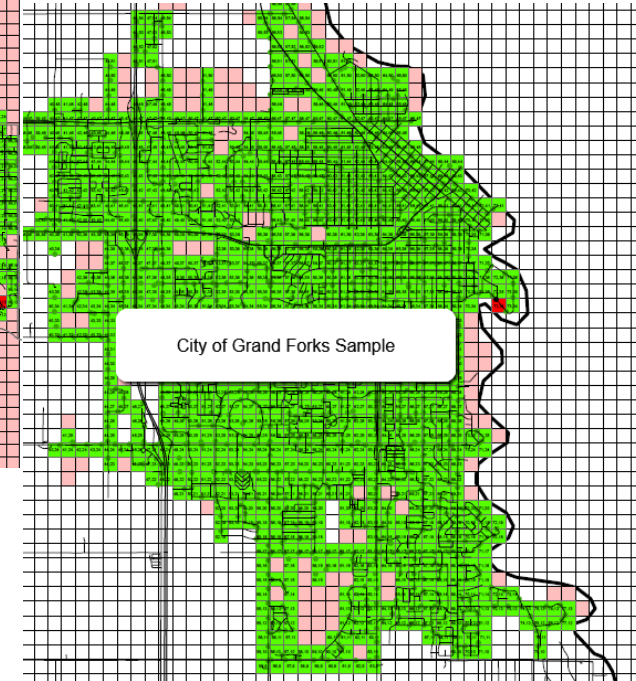
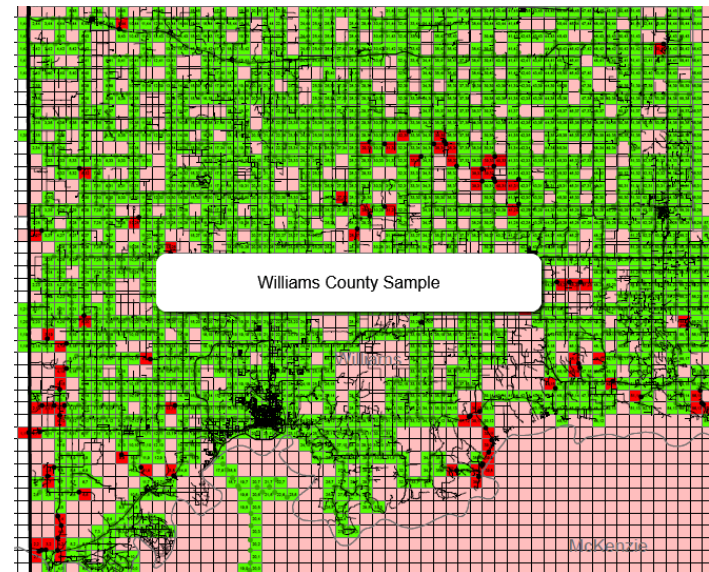
## Simulcast Areas

- Saturation of Towers around Metro Areas which provide In-Building Penetration



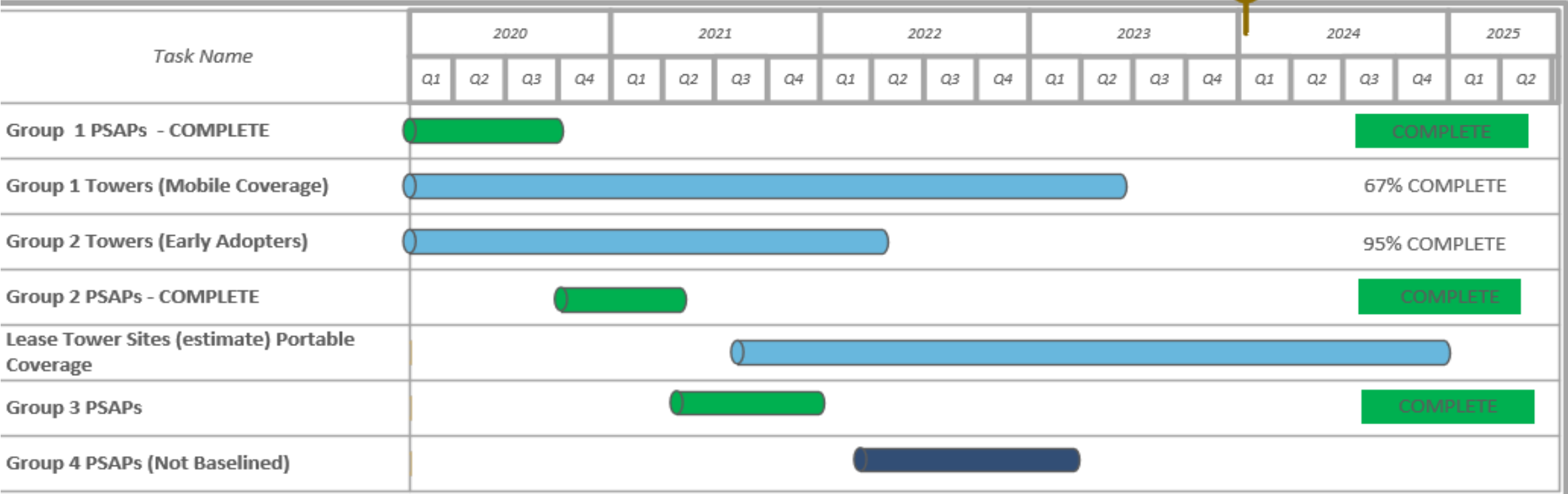
## Drive Tests

- Motorola Team(s) Drive the target area with Radio Signal Measuring Devices in grid squares on established roads
- Produces a final City or County Report

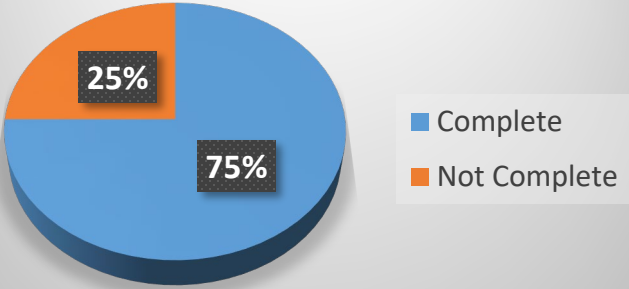


# Project Timeline and Estimates

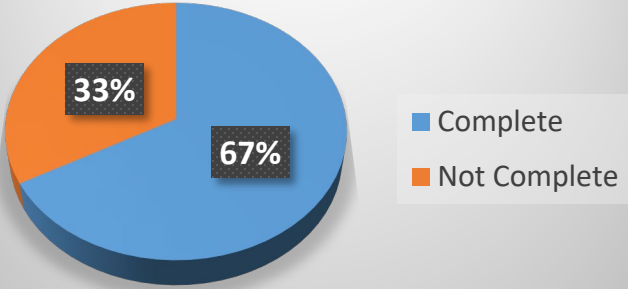
1/19/2024  
Contract Extension



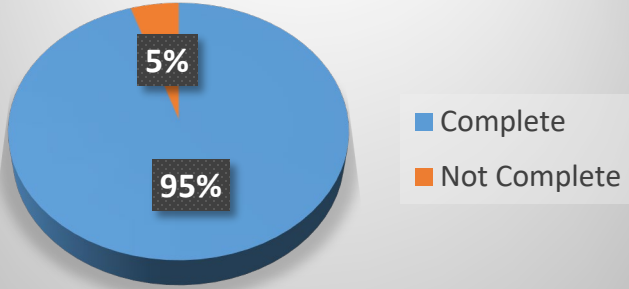
Console Replacement



Mobile Buildout



Early Adopters






# Transition to the SIRN 800Mhz System



# Channels versus Talkgroups

A Talkgroup is a defined group of subscribers that have the necessary permissions to communicate together on a trunked radio system. To access a talkgroup a subscriber must have permission to access that talkgroup as well as a valid encryption key (if the talk group is encrypted)



Fleetmaps which contain the talkgroups can be structured along geographic, discipline, functional, agency, and other criteria. Each talkgroup has geographic boundaries that define which towers it can be utilized on.

# HOW TG's SIRS WORKS



LTE Main



Trauma 1

LE Main - Encrypted



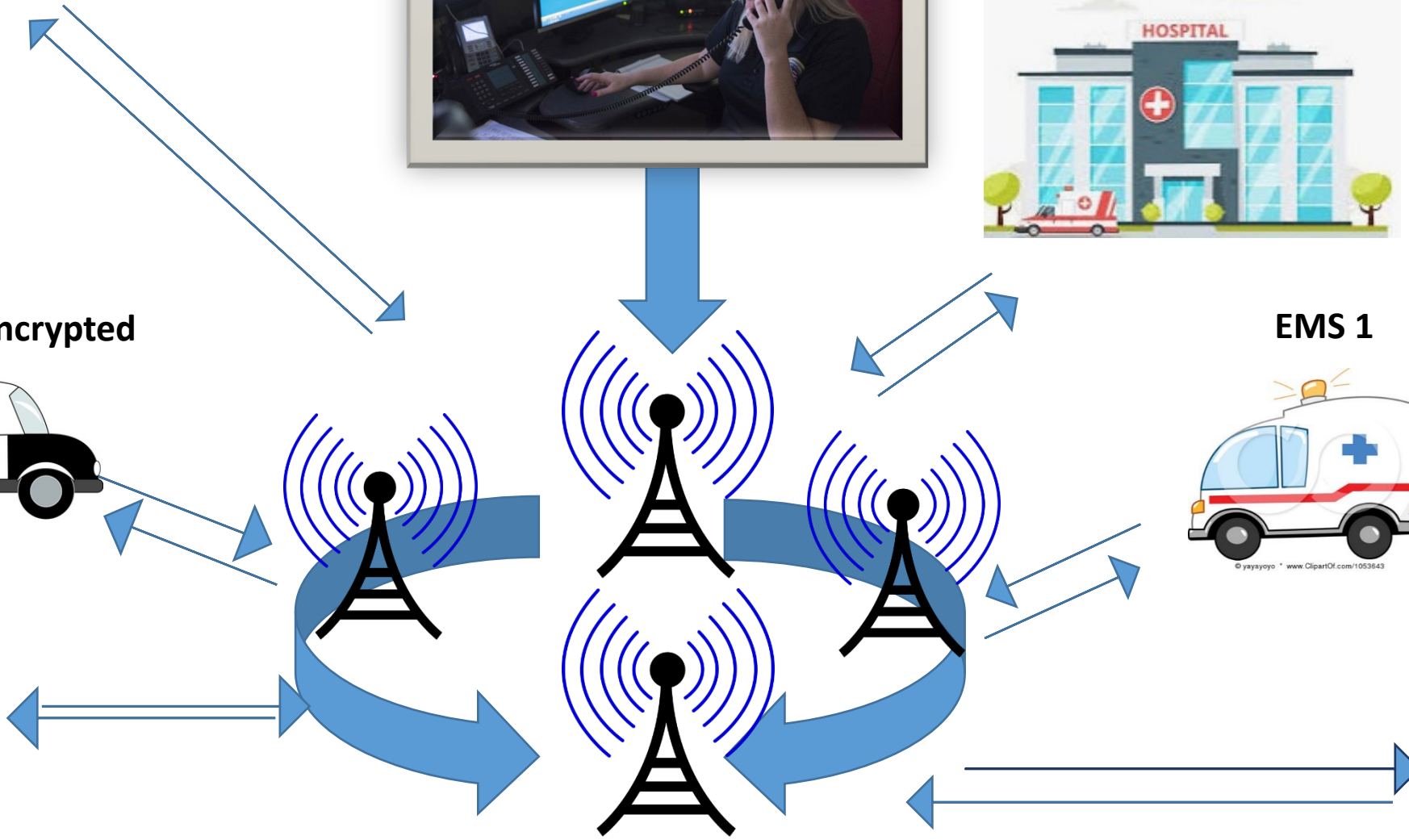
FIRE 1



EMS 1



HP





City	Agency Name	Prefix #	Sort	START TG ID	TG ID	DUP	TG Full Name	TG Name (14- CHAR)
	Sheriffs Office	51	1	51000	51101	1	SHERIFF MAIN	SO MAIN E
	Sheriffs Office	51	3	51000	51103	1	SHERIFF OPS 1	SO OPS 1E
	Sheriffs Office	51	4	51000	51104	1	SHERIFF OPS 2	SO OPS 2E
	Sheriffs Office	51	5	51000	51105	1	SHERIFF OPS 3	SO OPS 3E
	Sheriffs Office	51	6	51000	51106	1	LE PURSUIT	LE PURSUIT
	Sheriffs Office	51	7	51000	51107	1	SHERIFF OPS FAIR	SO OP FAIRE
	Sheriffs Office	51	8	51000	51108	1	SHERIFF SP OPS	SO SP OPSE
	Multi	51	10	51000	51110	1	WCNTF (BCI)	WCNTF_BCI E

# Fleetmap Sessions with PSAPs

- Naming Sessions with PSAPs
- Naming Sessions with responding agencies within the PSAP area
- Radio Layout Sessions

# SIRN

Transitioning to the future



**NORTH DAKOTA  
STATEWIDE  
INTEROPERABLE  
RADIO NETWORK**

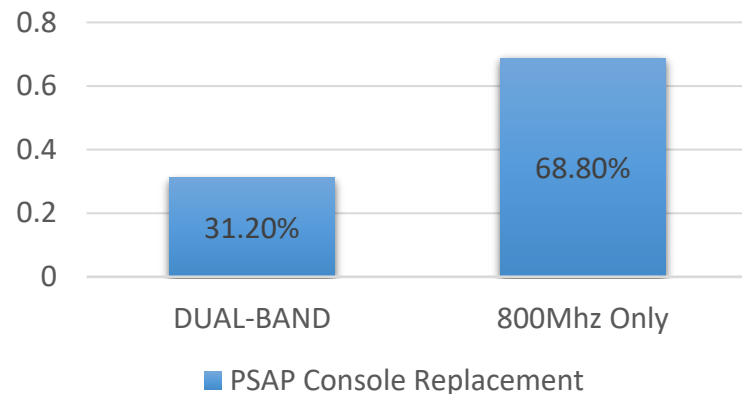
## **PSAPs Preparing to Transition to 800Mhz**

- Fleetmaps and Meetings
  - A fleetmap is a list of talkgroups each PSAP and jurisdiction will have in the radios (think of them as channels).
  - Final Naming, how do we communicate, breaking old thought processes
  - Working with all agencies within your PSAP jurisdiction
  - Approval by every entity/department is needed
  - Then work begins on the Agency Radio Layout

# Multi-band / Dual Band or 800 MHz only.....

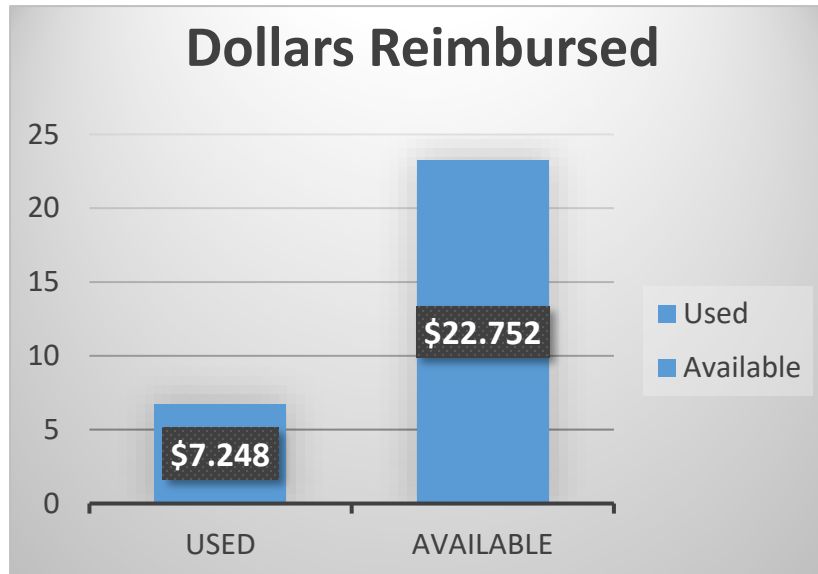
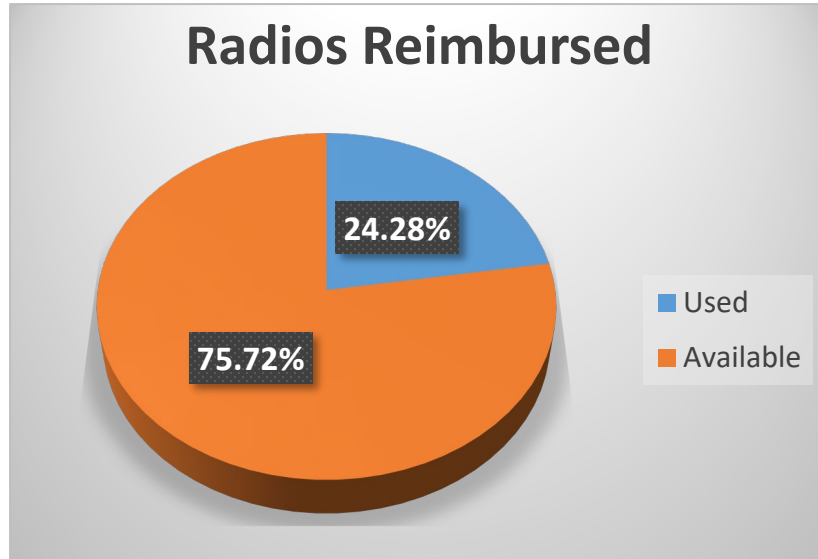
- Large majority of agencies are installing Dual Band Mobiles and then 800MHz Portables
- Questions to ask:
  - When are your neighbors transitioning?
  - Do your neighbors use State Radio Counties or Lake Region?
  - Options to overcome challenges
    - Side mount mobile, VHF portables, etc.
- **82 Site Mobile Coverage first, then fill in portable**

Percentage of Dual-Band Radios





# Radio reimbursement



➤ 2019 & 2021 Legislative Sessions provided funding for radios in HB 1435 & 1146

➤ Anticipate most agencies will purchase radios in 2023-2024

➤ \$1,500 cost share per radio

➤ [Organized by Tiers](#)

➤ Must complete survey

➤ Radios must be purchased between 4/2019-1/2024

➤ Agencies purchase approved radio

➤ Submit receipts and proof of payment reimbursement

➤ As of April 2022

➤ 4,856 Radios Submitted out of the 20,000 estimated (24.28%)

➤ \$7.248M reimbursed out of \$30M available (24.16%)

# SIRN Today Continued

## Transitioning to the future



# **NORTH DAKOTA STATEWIDE INTEROPERABLE RADIO NETWORK**

## PSAPs Preparing to Transition to 800Mhz Continued

- Radio Talkgroup Layouts
  - State minimums on all radios
  - How, what types of events, patching to make interoperability happen

[illegible]

# Transitioning to the future



# ***NORTH DAKOTA* STATEWIDE INTEROPERABLE RADIO NETWORK**

[illegible]

- Radio Talkgroup Layouts
  - State minimums on all radios



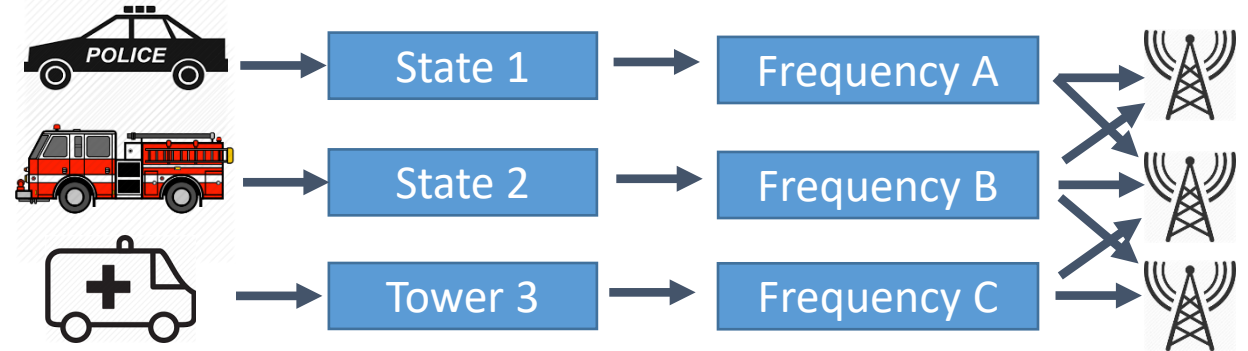
# SIRN HISTORY

## CONVENTIONAL VS TRUNKING



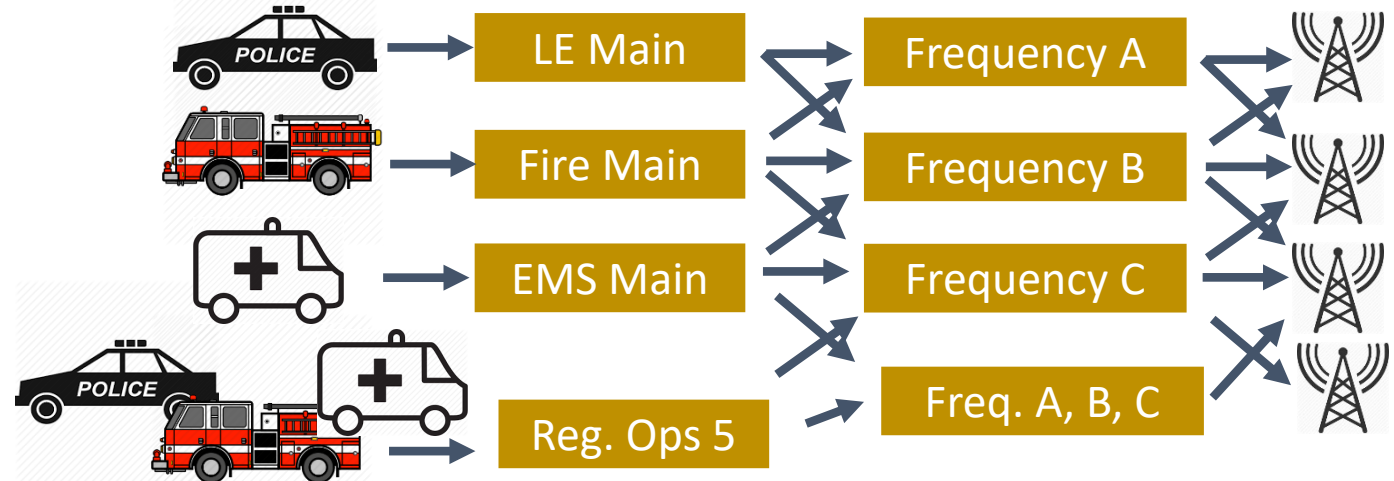
### Conventional Radio System:

- User chooses a frequency
- Bound to a specific set of towers
- Assigned to a specific purpose



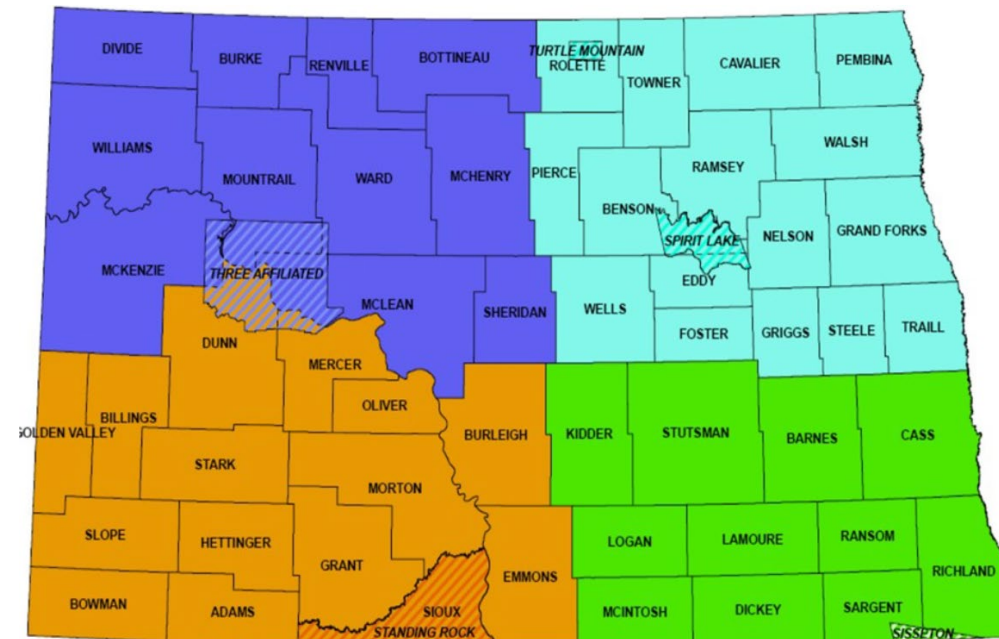
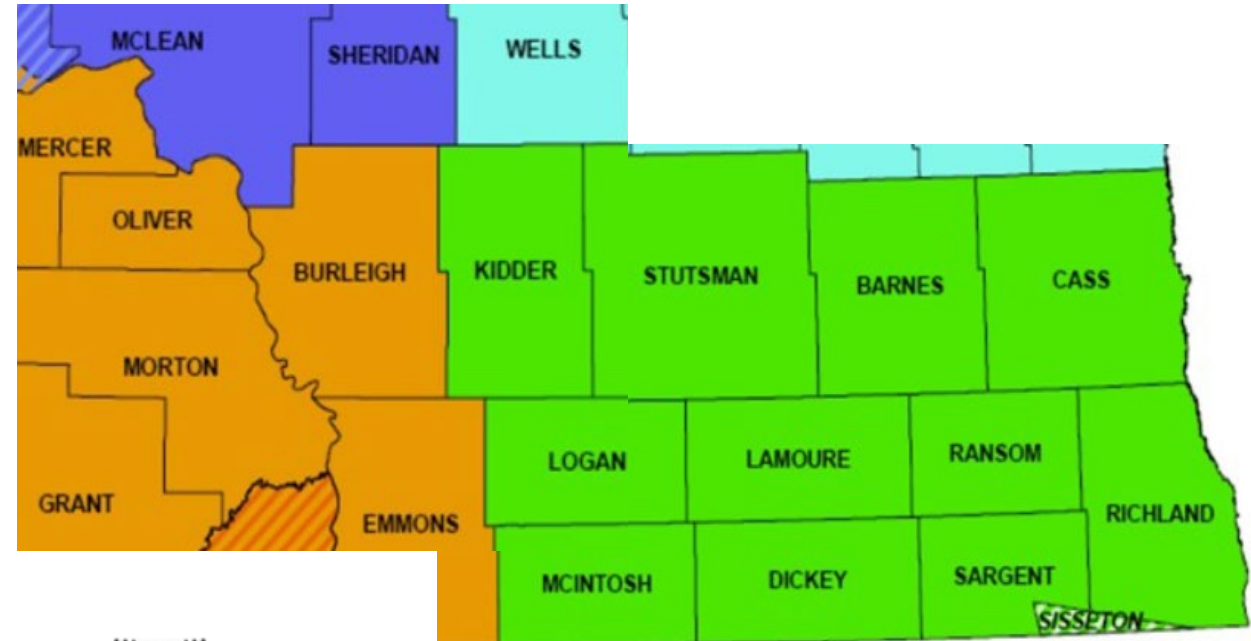
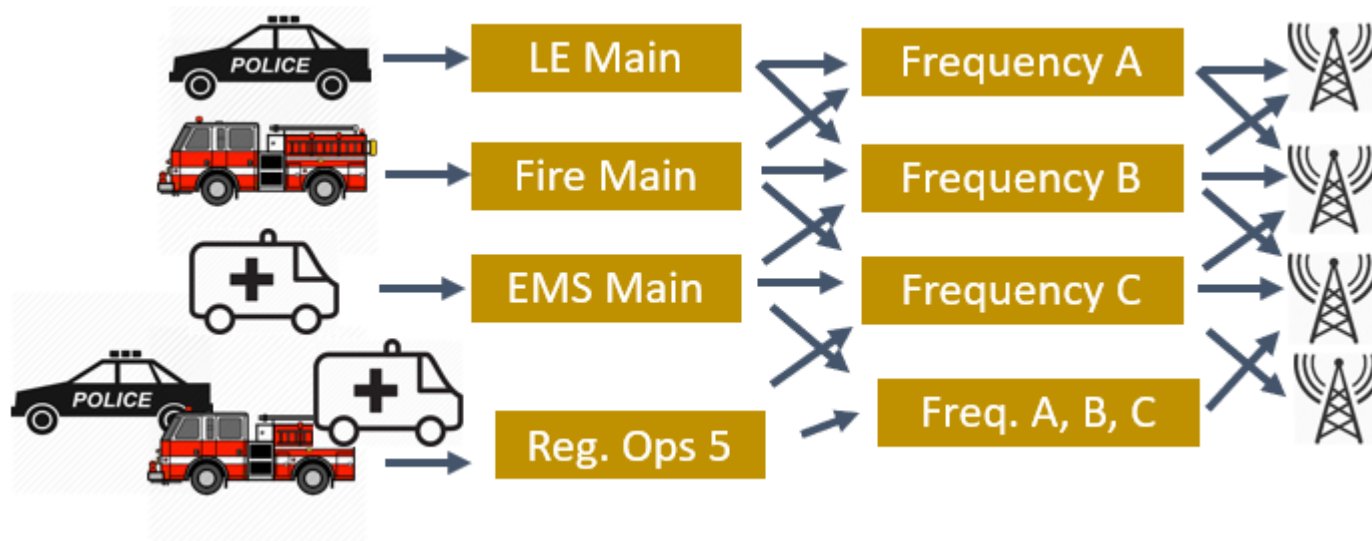
### Trunked Radio System:

- User chooses a specific talk group
- Assigned to a specific purpose
- Not bound to a frequency
- Not bound to a specific set of towers
  - System programmable
- Can be local, county, regional, state, federal



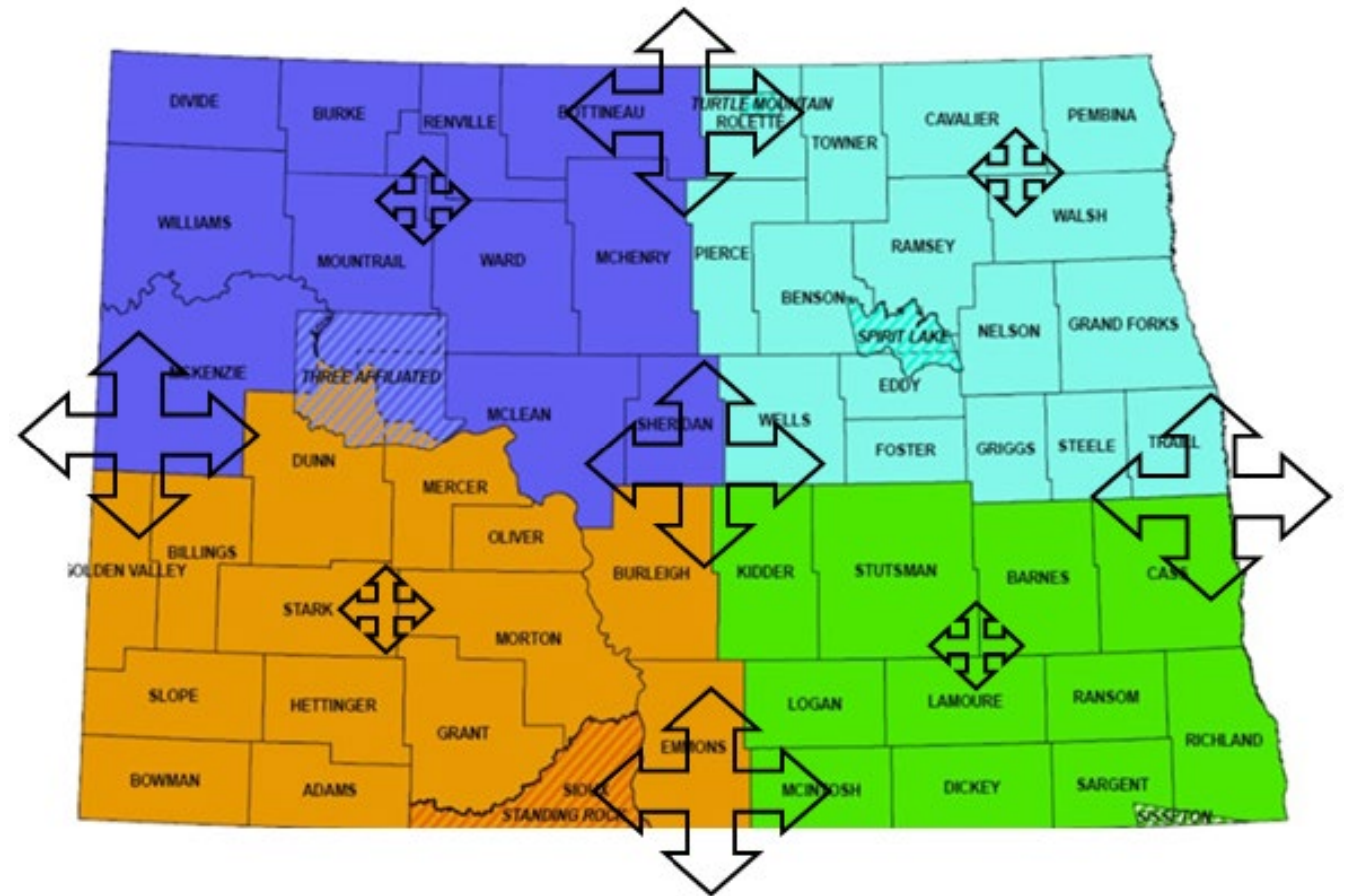
# Talkgroups are organized by coverage area as follows:

- Simulcast
- County Plus+
- Regional
- Statewide



- **County to County Interoperability** – CW MA 3 & CW MA 4 will be shared with adjacent counties to provide county to county interoperability
- **Interoperability with Minnesota (MN)** – use consolettes to consume each other's regional mutual aid talkgroups. This will be achieved by consolettes on each side of the Red River to consume each other's Regional Hailing talkgroups. There are also PSAP to PSAP interoperability agreements in place for Grand Forks/East Grand Forks along with Fargo/Moorhead.
- **Interoperability with South Dakota (SD)** – once South Dakota's system is upgraded we will do the same as MN. However, until then dual-band radios can be used as well as control channel gateways at strategic sites to aid in interoperability. This will be a combination of the two processes until North Dakota's SIRM system is complete. Counties will still be able to talk to SD on dual-band radios or combination of 800MHz or side mounts as discussed in area and county responder meetings
- **Interoperability with Montana (MT)** – Since Montana is fragmented like ND is today, interoperability will be achieved via control channel gateways at strategic sites. MT is in the process of a new radio project too. However, they are years away. So currently in Williams County there is a gateway at Grenora to achieve interoperability with Richland & Roosevelt Counties and responders. We will do a similar thing with the State Radio dispatched Counties. As we prepare to transition, we will be in communications with MT SWIC, MT Highway Patrol, and local jurisdictions as we approach ND State Radio's cutover and transition.
- **Interoperability with Canada** – Manitoba will be much like MN and SD yet to be determined. Saskatchewan will be more like MT also yet to be determined as our Western Border Conference has been postponed the past two years
- **Simplex/Car to Car** – old VHF VLAW, VMED, etc. all have federally licensed 7-800MHz versions of these channels for use which are listed in the Minimum Programming Standard

# Interoperability with Neighboring Agencies





# SIRN

## SOLUTION



**NORTH DAKOTA  
STATEWIDE  
INTEROPERABLE  
RADIO NETWORK**

- Shared Infrastructure Utilized by All Public Safety Users
- 800 MHZ Frequency Band
- Project 25 Technology
- 99.999 Reliable is the national standard for public safety communications hardware
- Hardware Meeting Standards Usable on SIRN System
- Guaranteed Coverage
  - 95% Mobile Coverage
  - 85% Portable Coverage
- Addresses End of Life & End of support of Equipment
- Future Integration with LTE & Wi-Fi Technology
- Guaranteed System Support for 25 years

## SOLUTION – 800 MHZ SYSTEM



- 140 Tower Sites
- Better In-Building Penetration
- Reduces Congestion
- Open Spectrum – No Channel Scarcity
- Lessens Interference
- Eliminates VHF Skip
- Lower Noise Floor
- Consistent Predictable Coverage

# SIRN

## GOVERNANCE & POLICY



- SIEC Governance structure allows for INVOLVEMENT at all levels
- User involvement is critical to successful implementation of SIRN
- Workgroups developing standards which are then reviewed / approved by Subcommittee / SIEC
  - [SIRN Standards Page](#)
  - [Governance Page](#)





# SIRN Today, Tomorrow and beyond

- SIRN 2020 into the future...
- Interoperability with MN, SD, Manitoba, Federal Agencies
- LTE Integration via Critical Connect / Smart Connect
  - NOT meant to replace Land Mobile Radio (LMR), but to augment
  - Cost savings to agencies which can use LTE Push to Talk
  - Mission Critical Push to Talk (MCPTT) over FirstNet & Verizon
- Centralized Logging – Recording State & Regional LMR Talkgroups
- Over The Air Programming (OTAP)
- Over the Air Rekeying (OTAR)



## Other SORN Presentations

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[SORN 101 Presentation](#)

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[NDFA Meeting](#) (February 2021)

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[9-1-1- Association Meeting](#) (March 2021)

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[Chief and Sheriff's Association Meeting](#) (May 2021)

# Contact Information:

- Darin Anderson
- NDIT
- Public Safety Program Manager
- [darinanderson@nd.gov](mailto:darinanderson@nd.gov)
- 701-328-1104



*NORTH DAKOTA*  
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