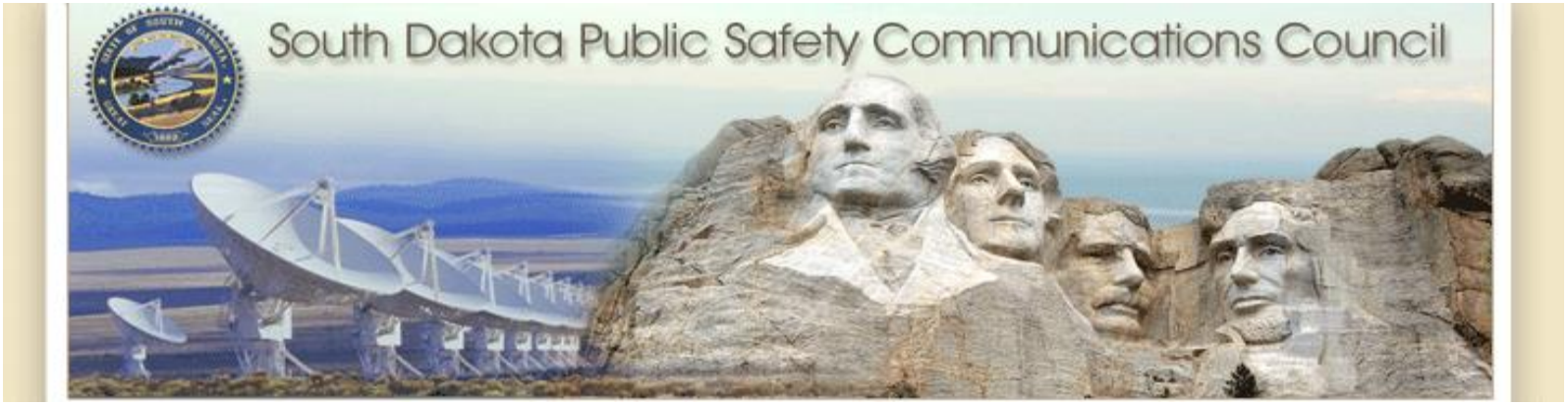


March 2016 Meeting

Pierre

6/16/2016

Agenda

Call to order -- Matt Tooley
Roll Call of Members

Police Chiefs – Dave Kull
Sheriffs Organization -- Dave Ackerman
Division of Criminal Investigation – Dan Satterlee
South Dakota Game, Fish, & Parks -- Andy Alban
South Dakota Department of Transportation -- Greg Fuller
South Dakota National Guards – SSG David Goodwin
South Dakota Emergency Managers Association – Harold Timmerman
South Dakota Fire Fighters Association -- Dennis Gorton
South Dakota Association of Health Care Organizations – Scott Duke
South Dakota Department of Public Safety – Jason Husby
South Dakota APCO/NENA Chapter -- Matt Tooley
South Dakota Emergency Medical Technicians Association -- J.D. Geigle
South Dakota Department of Agriculture/ Wildland Fire – Paul Reiter
South Dakota Association of County Commissioners -- Bob Wilcox
South Dakota Department of Health -- Rick LaBrie
Tribal Government – Chris Saunsoci
Federal Government – Open
Bureau of Information and Telecommunications -- Jeff Pierce

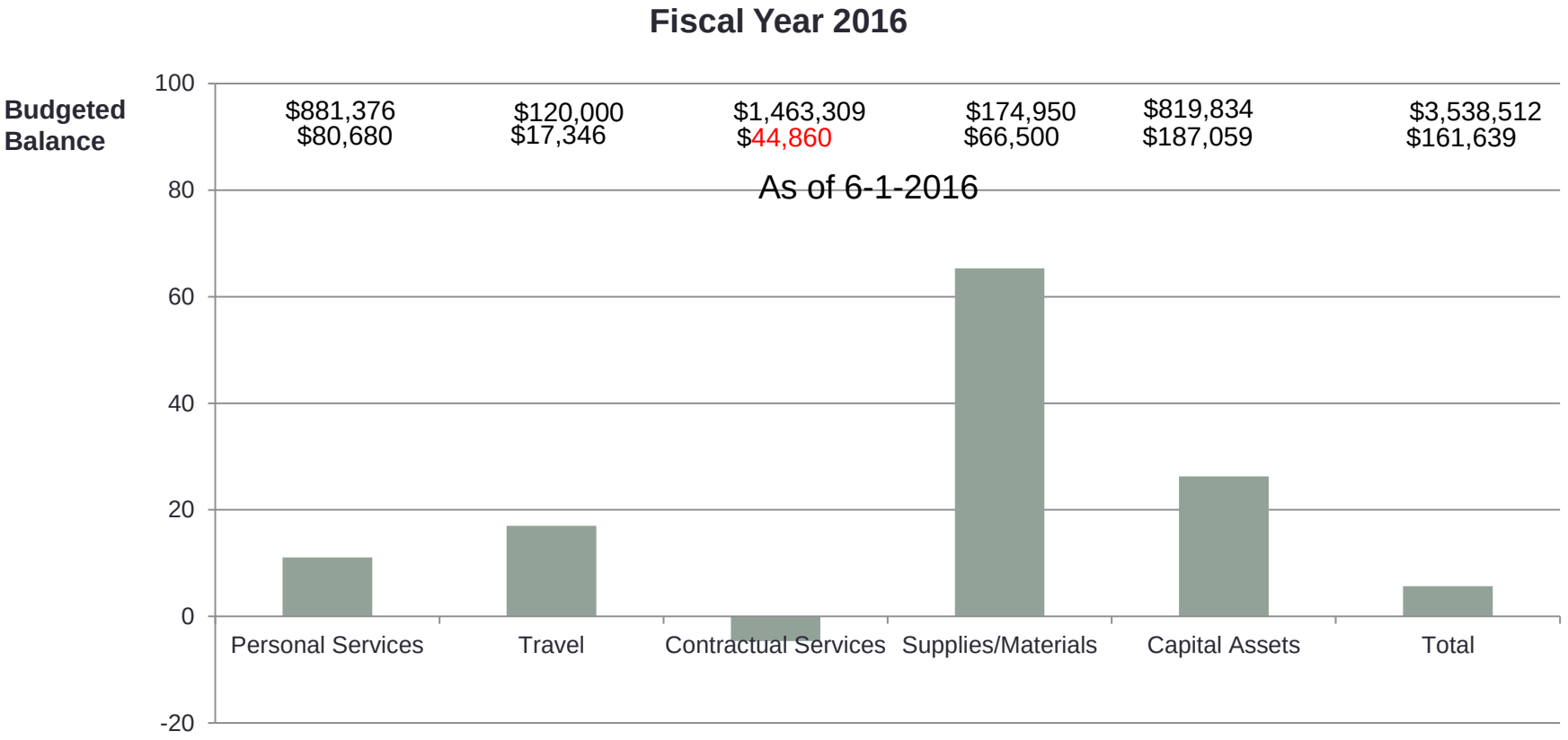
Additional Agenda Items

Approval of March meeting minutes --

Old Business

1. 2016/2017 Budget

- Deferred $198,000 to FY2016 for Motorola support payment.
- Appx. $100k. to install sump pumps in basement of Becker-Hanson to protect Master Site.
- SLIGP funds expended total $62,302 State match and Federal Funds $121,369
- Tower revenue fund $325,000 but need to replace Madison and Corson towers.
- Requested $200,000 in general funds to pay for the system support (software & security). Last two years we have deferred $200k to pay for this, which puts everything else behind. This was approved.



Senator Gary Cammack, Chair | Representative Dean Wink, Vice Chair
Jason Hancock, Director | Sue Cichos, Deputy Director | Doug Decker, Code Counsel
500 East Capitol Avenue, Pierre, SD 57501 | 605-773-3251 | LEGIS.SD.GOV

South Dakota Legislature
Legislative Research Council

Joint Committee on Appropriations
SENATOR DEB PETERS, CO-CHAIR
REPRESENTATIVE JUSTIN CRONIN, CO-CHAIR

April 1, 2016

Jeff Pierce
State Radio Communications
Bureau of Information and Telecommunications
700 Governors Drive
Pierre, SD 57501

Dear Mr. Pierce:

The Interim Joint Committee on Appropriations has scheduled a meeting for July 13, 2016, in LCR1, in the State Capitol.

The Committee requests that you be present on July 13, 2016, to provide information on emergency radio communications within the State of South Dakota. Specifically, the Committee would like information regarding underserved areas within the State and the number of people who do not have access to the statewide radio network. Please identify the priority areas that have been recognized by the South Dakota Public Safety Communications Council and how State Radio Communications plans to improve and expand coverage to these areas that are currently underserved. Lastly, the Committee requests an update on the timeline and progress of upgrading the radio system to Project 25.

If you have any questions, please contact Annie Mehlhaff with the Legislative Research Council at 773-3251.

Thank you for your cooperation.

Senator Deb Peters
Co-Chair, Joint Committee on Appropriations

Representative Justin Cronin
Co-Chair, Joint Committee on Appropriations

cc: Marty Guindon, Auditor General
Jason Dilges, Commissioner, Bureau of Finance and Management

SOUTH DAKOTA

Statewide Communications System

Before the System

1940's to 2003:

- Statewide lowband system (39MHz). Dispatch to car communications primary, car to car limited to 10 miles or less 70-75% coverage, very prone to interference, limited equipment availability.
- DOT highband system (150MHz). System used by DOT only, 22 sites, dispatch to car, car to car over coverage of a single site. 75-80% coverage.
- Forestry highband system (150MHz). Dispatch to car, car to car over coverage of a single site. Black Hills area only.
- Deployable UHF (450MHz) and VHF (150MHz) system for interoperability during events and disasters.
- Local agencies began migrating off of lowband in 1960's and 1970's because system no longer met their needs. Agencies operated on UHF and VHF without any coordination. State/local/federal/tribal communications were problematic at best, and in many cases no radio communications existed between the groups.

The Tipping Point, Spencer Tornado

1998

- Davison County Units 450MHz
- DOT & adjacent County units 150MHz
- Highway Patrol 39MHz

Result?

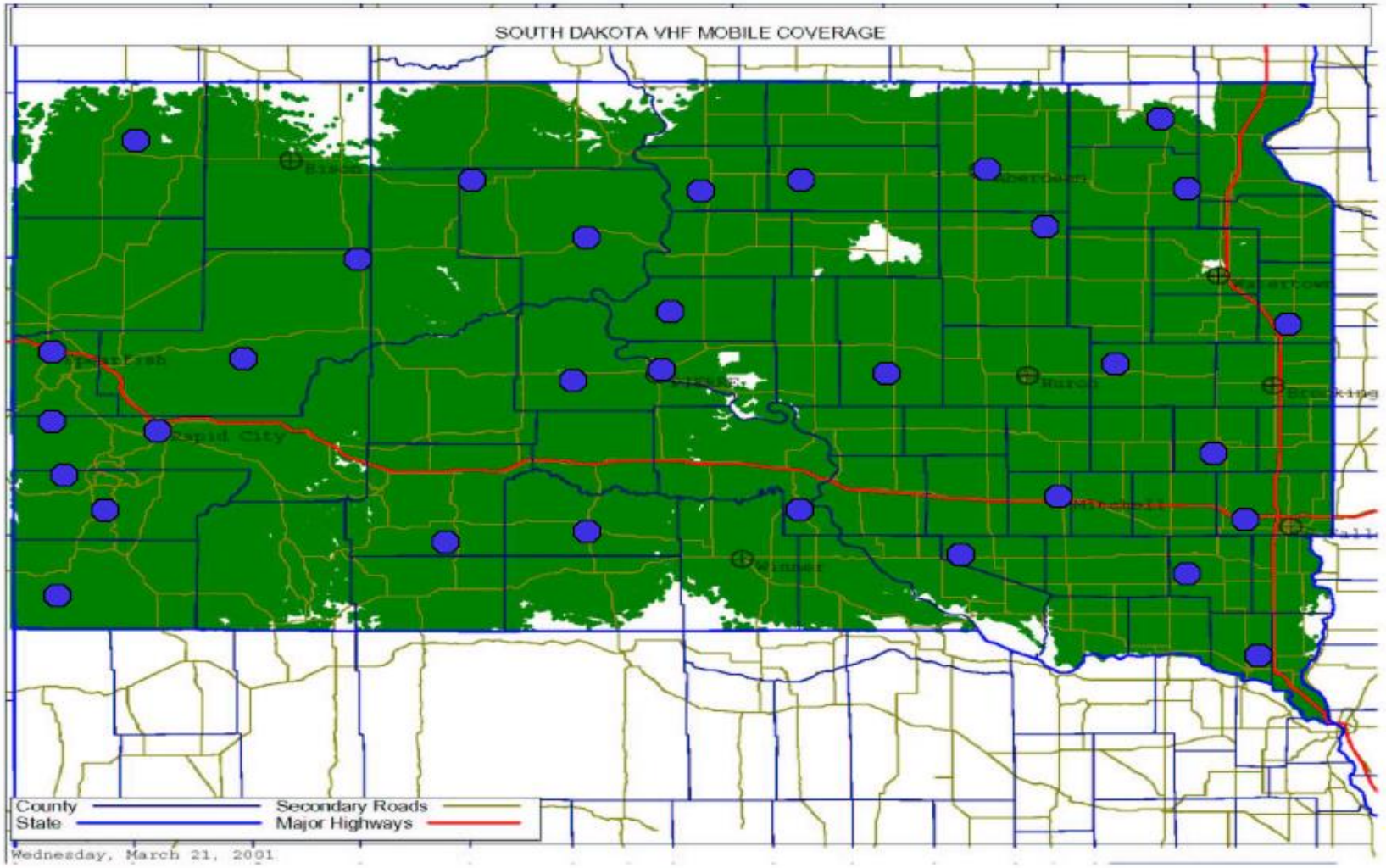
No coordinated communications. Governor Janklow ordered a deployable system in and handed out radios. This is the lowest level of emergency interoperability as currently defined by DHS.

Decision to Upgrade

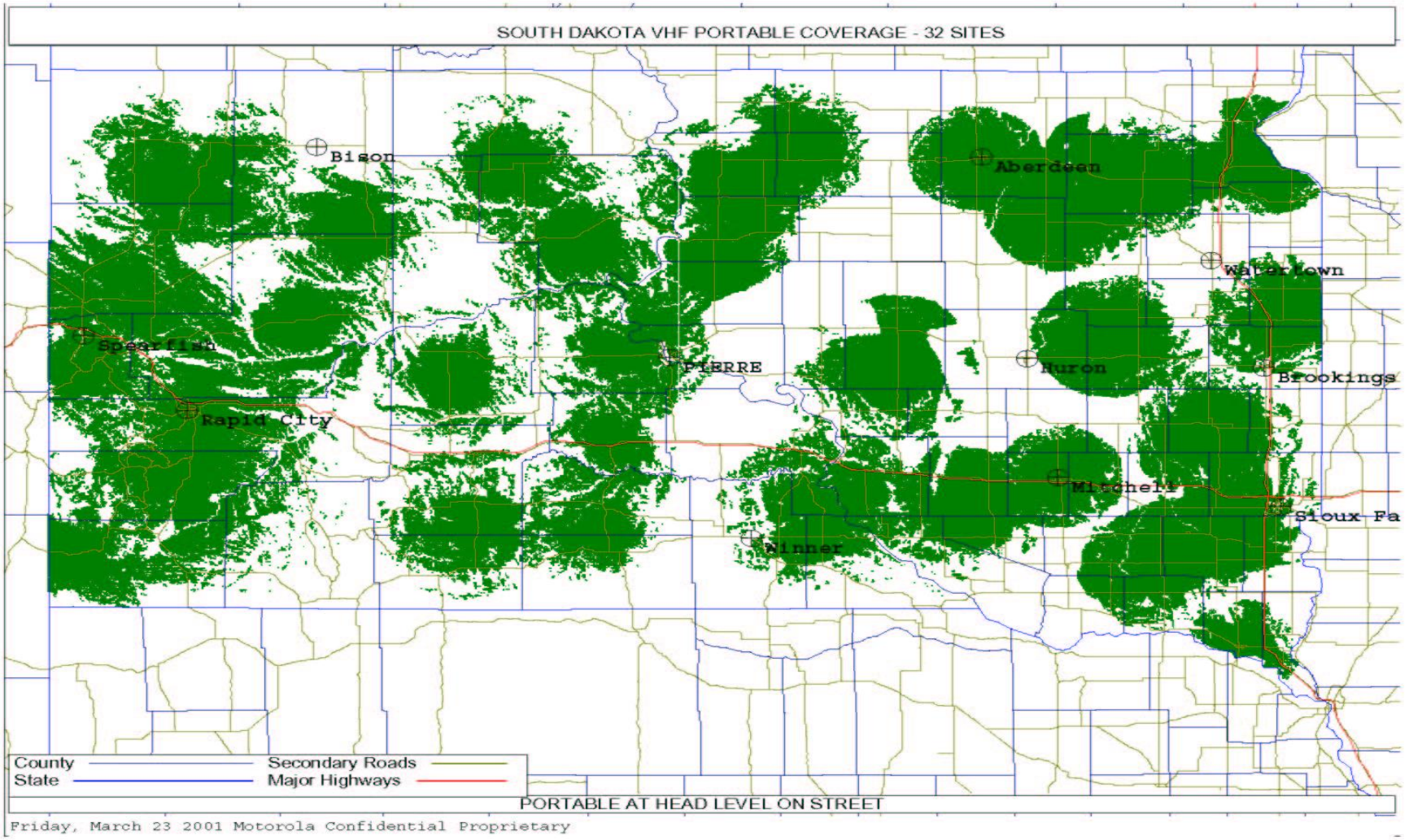
- Legislative action in 1999. HB1292 directed the 8 state agencies using radio communications to integrate into a common system, initial scope was expanded by the Governor to include local agencies.
- 1999 to 2000 decision process.
- 2000 to 2002, system design, built master site & first 5 sites for testing.
- 2002-2003, finish buildout of initial 35 sites.

System was designed to provide the maximum area coverage with the minimum of sites. Vendor claims that we are still the only entity to request a budget-based system, as opposed to an objectives-based system.

Original 35 Sites



Original Portable Coverage



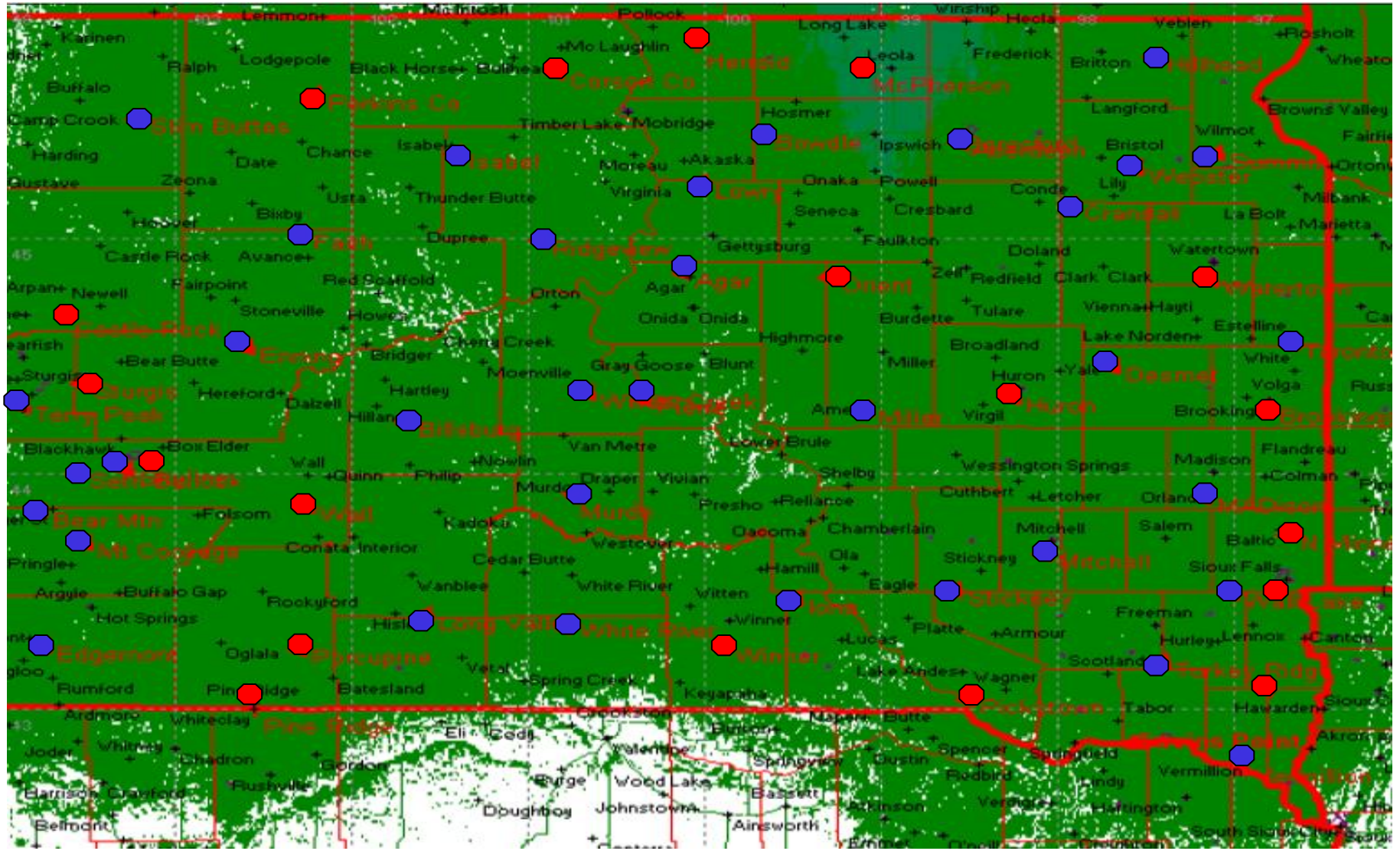
Continue to Expand

- 2003-2004, Corson, Charles Mix, Baltic, Perkins County(DHS Funds), SF Simulcast (3 sites, local funds), Watertown, Brookings, Huron, Yankton (CDBG funds)
- 2005-2007, Wall, Winner, Butte County, Beresford, Herreid, Orient, Sturgis (DHS funds).
- 2008-2013, Porcupine and Pine Ridge (BIA funds), RC Simulcast (2 sites, local funds)
- 2014 McPherson County, (Local/DHS/SRC project)

Sites Relocated for Better Service

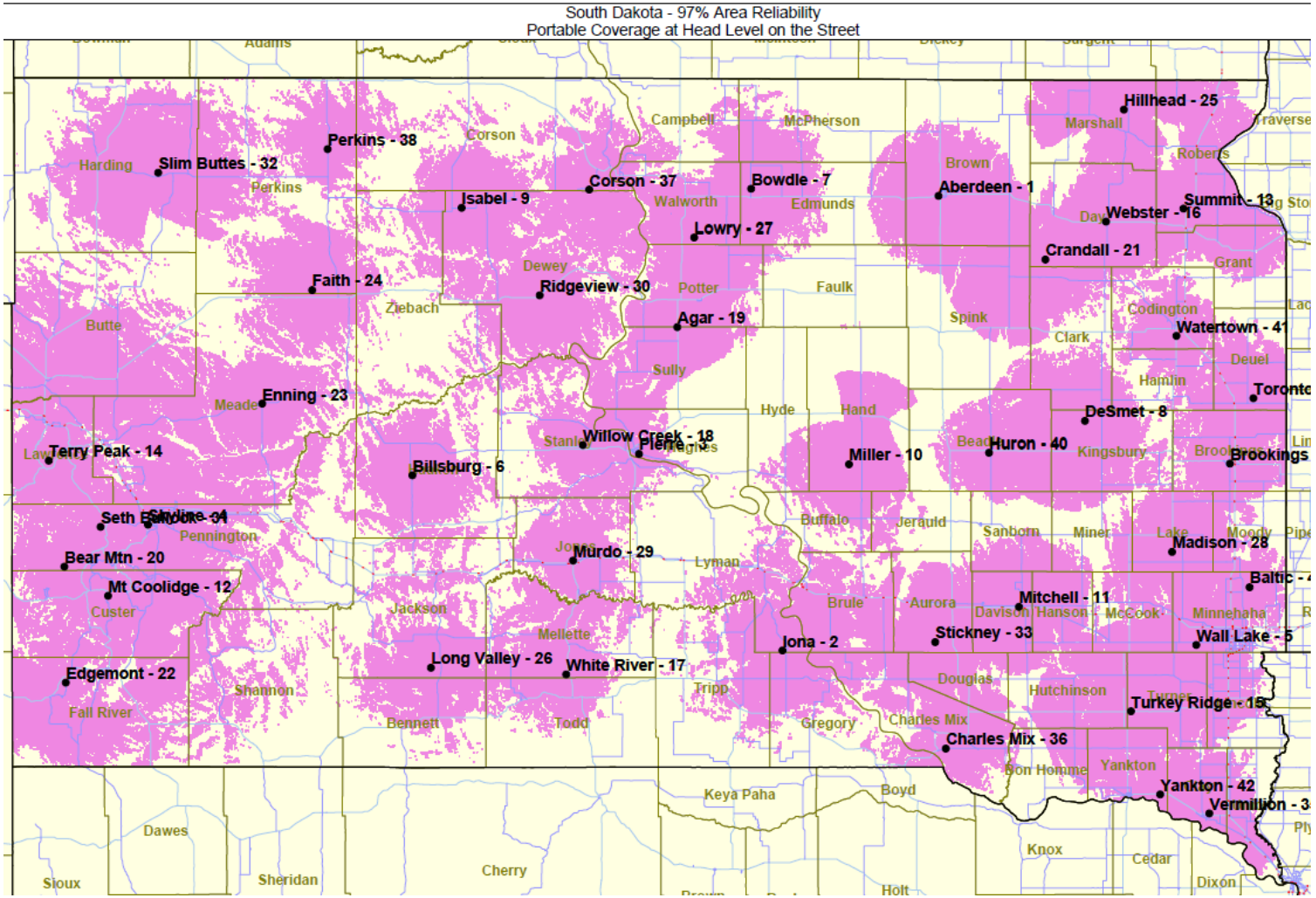
- Murdo, from I-90 site in Murdo to site north of town, much higher elevation
- Yankton County site from Gayville to Federal tower across river from Yankton
- Pierre, from old DCI building to Mickelson building, much higher elevation

State Radio Sites



- Original 35 sites, 85% geographic coverage
- Additional 22 sites, appx. 98% geographic coverage.

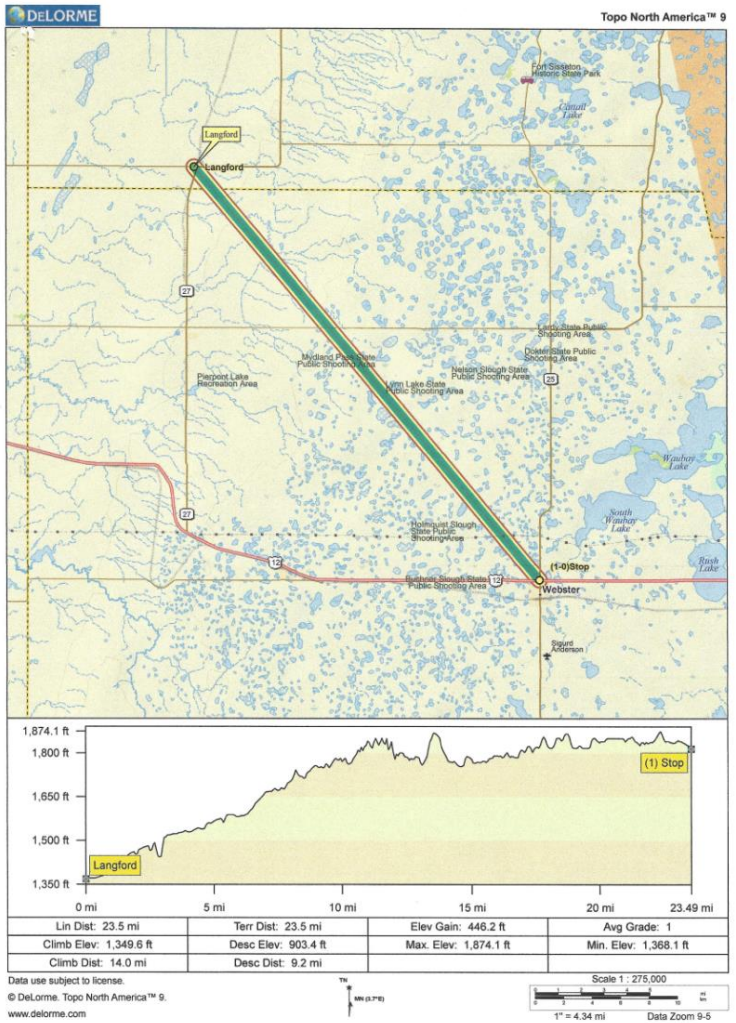
Portable Coverage 42 Sites



Factors Affecting Coverage

- Topography -- Radio waves do not sharply bend around hills or valleys.
- Site – equipment issues, antenna connections.
- Radio type -- Portable 5 watts, mobile radio 45 watts + external antenna.
- Subscriber condition – big factor. We manage around 1/3rd of radios on the system. Condition/programming of radio, and antenna condition have a major impact on interaction with system. We cannot control that element.

Topography Example



Factors Affecting Further Buildout

- DHS grant funds are 1/10th of what they were at peak, primary funding source
- 2012-2014 major upgrades required to Master Site, Dispatch sites, and site equipment to keep equipment in support. This fully involved staff.
- 2012-2014 upgrades require an additional $200k in support because of the move to an IP-based system. We now have the same software updates and security requirements associated with data networks.
- Coverage area investment. The McPherson County site turned up in 2014 covers approximately 1200 sq. miles, the proposed site in Union County will cover approximately 200 sq. miles. Outside of tower, site costs are the same

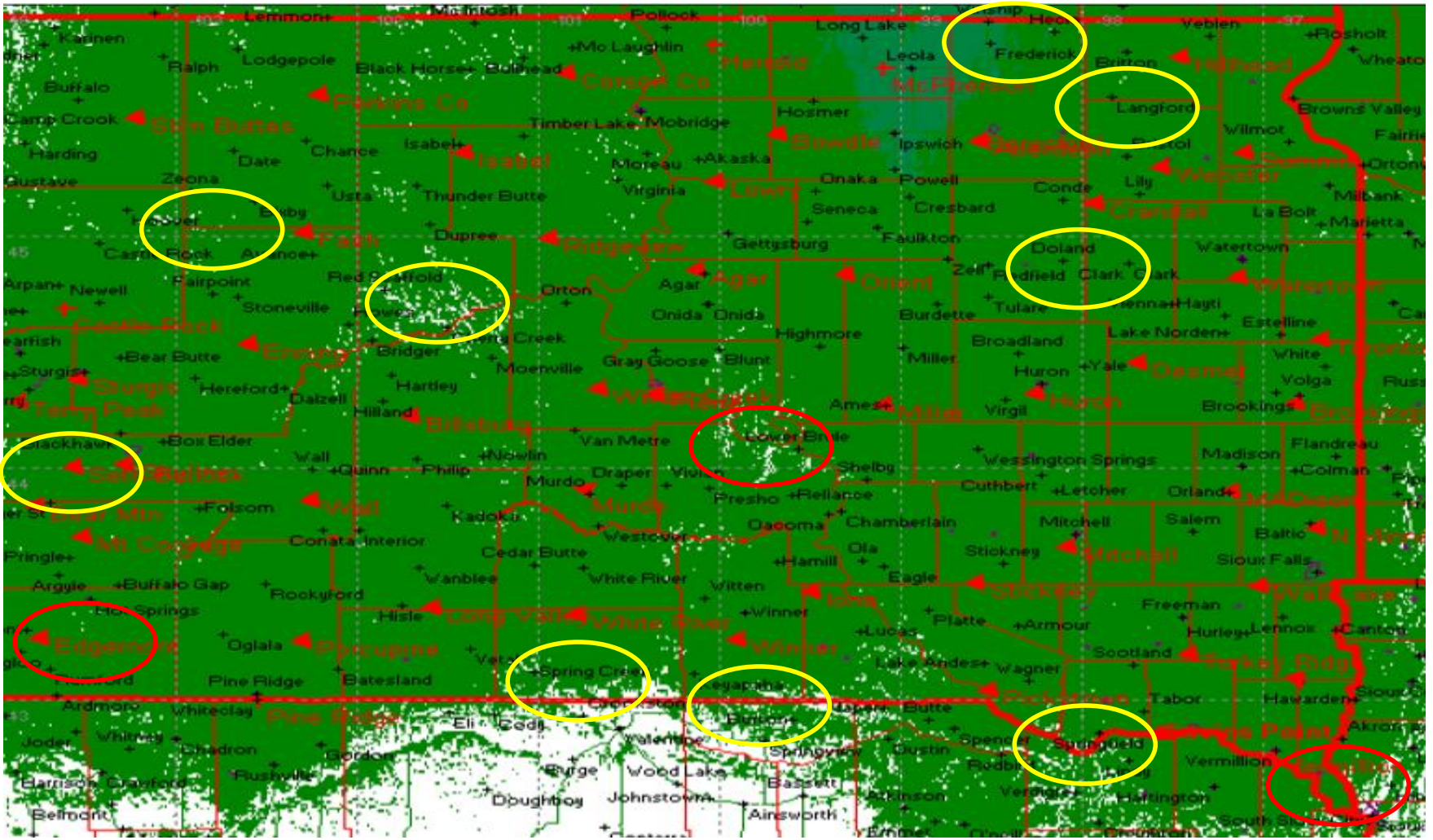
SDPSCC Designated Priority Sites

1. Union County – Southern end of Union County <200 Sq. miles. HIDTA route, I-29, lots of commuter traffic.
   - Have tower in place, equipment quote, frequency study completed, site will take about $300k to finish.

2. Northern Lyman County. Area north of I90 underserved. Have Reliance SDPB tower in place. Est. $300k to install.

3. Fall River County. Very problematic areas along Hwy 18. We have Battle Mountain tower in place. Est. $300k to install.

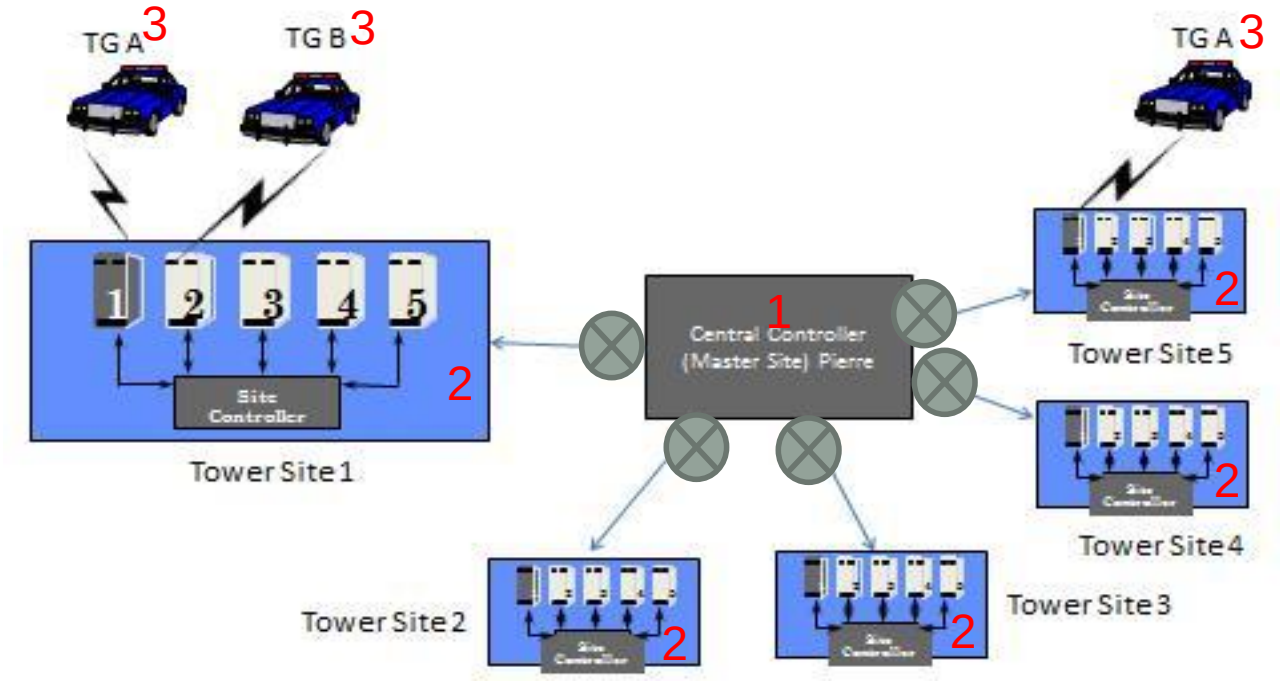
Priority and Identified Underserved Areas



Radio System Upgrade (P25)

Radio System Components

1. Network Controller (Master Site)
2. Tower sites
3. Mobile/handheld radios



What is P25

- Project 25 (P25) is a radio network operating system developed in 1989 by a coordinated effort by 6 national communications associations and federal agencies to address a lack of system interoperability between vendors equipment.
- The P25 standard is under constant review, type acceptance process, and has multiple vendors building product that is compatible. This is and will continue to be the national standard for public safety comms.
- P25 has two separate components: digital voice, and networking.

- When the South Dakota system process was started in 1999, P25 networking standards for the VHF spectrum had not been developed. A hybrid system of P25 voice and a Motorola proprietary networking was installed.

IP Radio Soup – Hardware, Software, Security

Lifecycle Guidance Provided By Vendor

March 14, 2003

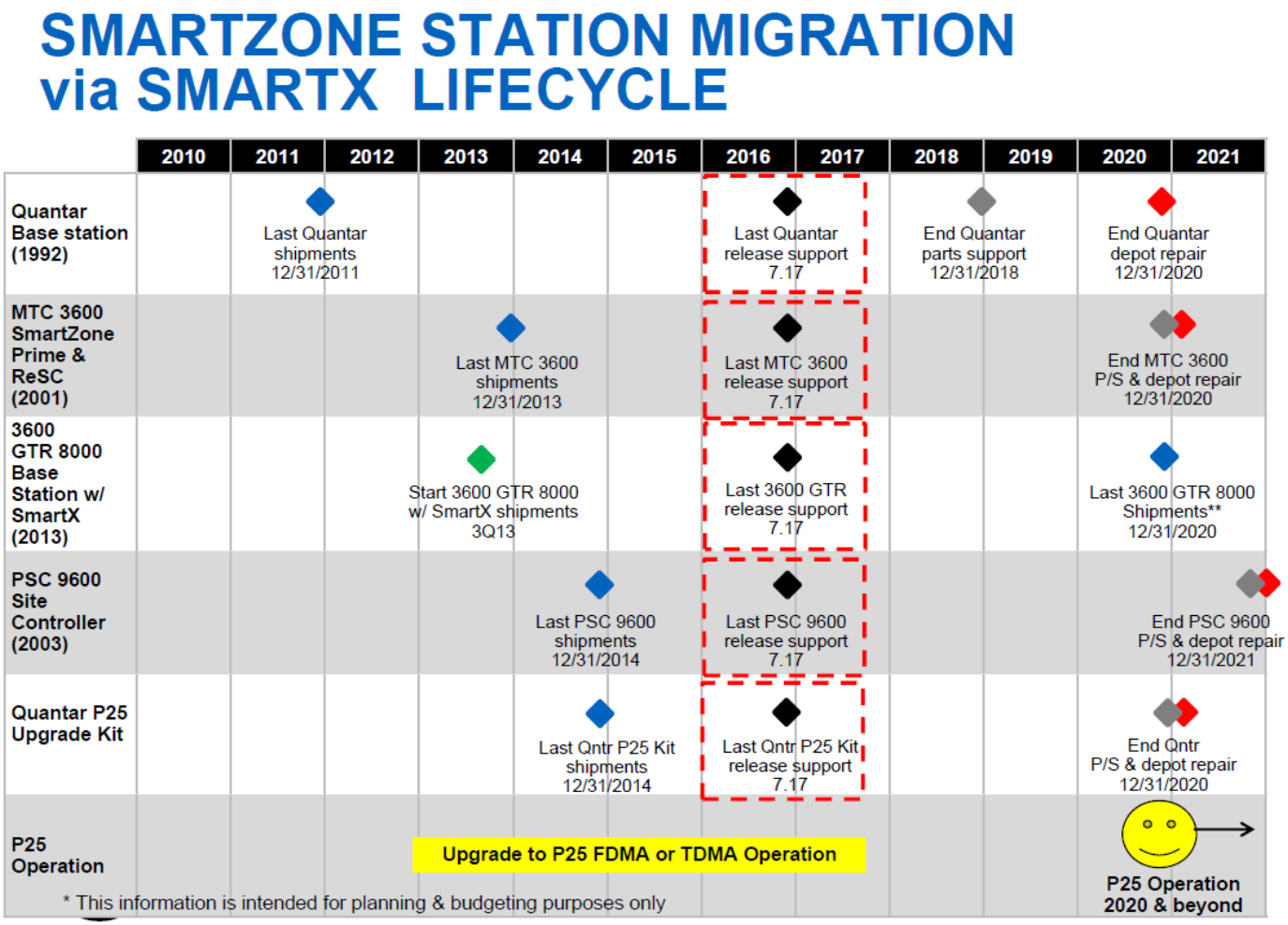
- Update network controller to P25 (Completed 2012)
- Update Quantar repeaters at sites (Completed 2014)

System will be supportable through 2025

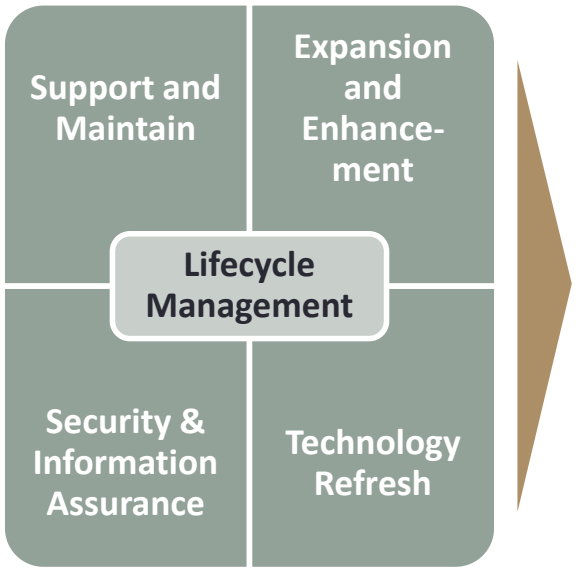
March 10, 2016

- Majority of subscriber radios on the system if not upgraded by the end of 2017 to P25 will not have support offered thereafter and would need to be replaced

All System Components Have A Life Expectancy



Lifecycle planning must take into consideration the trade-offs associated with elapsed-time between system updates



Years between system upgrades

1 | 2 | 3 | 4 | 5 | 6 | 7

Within 2 years

Within 3 to 4years

≥ 5 yrs behind

Green Zone

- Maximum access to expansion products
- Complete AV and third-party SW patch support
- Complete service and technical support

Yellow Zone

- Increased cost of expansion due to incompatibilities
- Limitations on AV and third-party SW patch support
- Limitations on support from third-party OEM

Red Zone

- Limitations on access to expansion
- No AV and third-party SW patch support
- Limited support from third-party OEM

As time elapses between upgrades:

- **Decreasing level of serviceability and supportability**
- **Increasing costs to implement new features or expand system**

Current Options

Option 1, Stay Current Path:

Benefits:

1. Utilize current functional system & subscriber configurations
2. Upgrade radios over next 5-7 years
3. Maintain current budget
4. Allows us time to see where industry is heading

Risks/Issues:

1. Non-supported component in system fails, puts network at risk
2. No idea of cost to upgrade network and radios in future
3. If industry has no other options, where are we?
4. We still have no plan to improve system coverage

Current Options

Option 2, Update System and Subscribers:

Benefits:

1. Allows us to leverage current radios until normal replacement
2. Vendor will be responsible for radio updating and programming
3. System will be standards-based
4. Future programming will be possible over-the-air
5. System will have full product and software support
6. We will have a plan in place to gradually fill coverage problems

Risks/Issues:

1. Some radios may fail during update, always a possibility
2. Cost of upgrade itself
3. Increased cost of vendor support
4. If we expand number of sites, we may need an additional FTE
5. Will need tower sites beyond the three identified, build or lease may be necessary
6. Spectrum availability may be a challenge in some areas
7. Will still have cost of connectivity, antenna systems, generators, etc.

Update Proposal

- Update 20,039 radios on system (vendor will supply resources)
- Update all sites on system
- Add Integrated Voice & Data (will allow remote programming)
- Upgrade MOSCAD site alarm & monitoring system
- Provide site equipment for up to 12 additional sites

Quoted Cost 5-19-2016 = $16,796,286

or

If financed for 10 years = $2,399,469/annually

Cost to replace radios out of support = 19,091 x $3,767 = $71,918,162

Other Cost Considerations

- 12 Additional sites, support @ $15,000 each = $180,000
- Additional software, security, and technical support = $80,000
- FTE, at some point we will need additional help to maintain sites.
- If sites are not available to build on, complete sites would have to be built greenfield. Land acquisition, permitting, environmental and historical studies, tower, building, telecommunications, possibly utilities, access road, generator, etc. Each project would be a design build because of the variables, very hard to average.

3. Corson/Madison tower replacement:

- Currently receiving bids on the Corson tower. Should be in that $150k range expected.
- Easement agreement for Madison tower is completed, procurement process is underway.

4. FY2017 Budget

- State Radio budget was approved with the $200,000 requested intact. Summer study upcoming on coverage and moving ahead. Looking for PSCC volunteers to participate.

5. WAVE Project

- Installed, but issues with firewall preventing system from functioning correctly.
- Sioux Falls/Minnehaha County has installed their equipment.
- We need to decide what talkgroups will be priority.
- After initial local install, license & support will run about $26/month.

6. Union County

- Southern Union County is our next priority area as decided by this body in 2013, accomplished to date:
  1. Union County has installed a self-supporting tower at the old port of entry near Jefferson.
  2. Equipment quote was secured in 2014 ($224,000), estimating another $76,000 for antenna's, feedlines, generator, grounding, electrical, licensing, spectrum, etc.
  3. Lt. Governor and DPS Secretary received correspondence from the area requesting additional coverage in that areas from county officials.

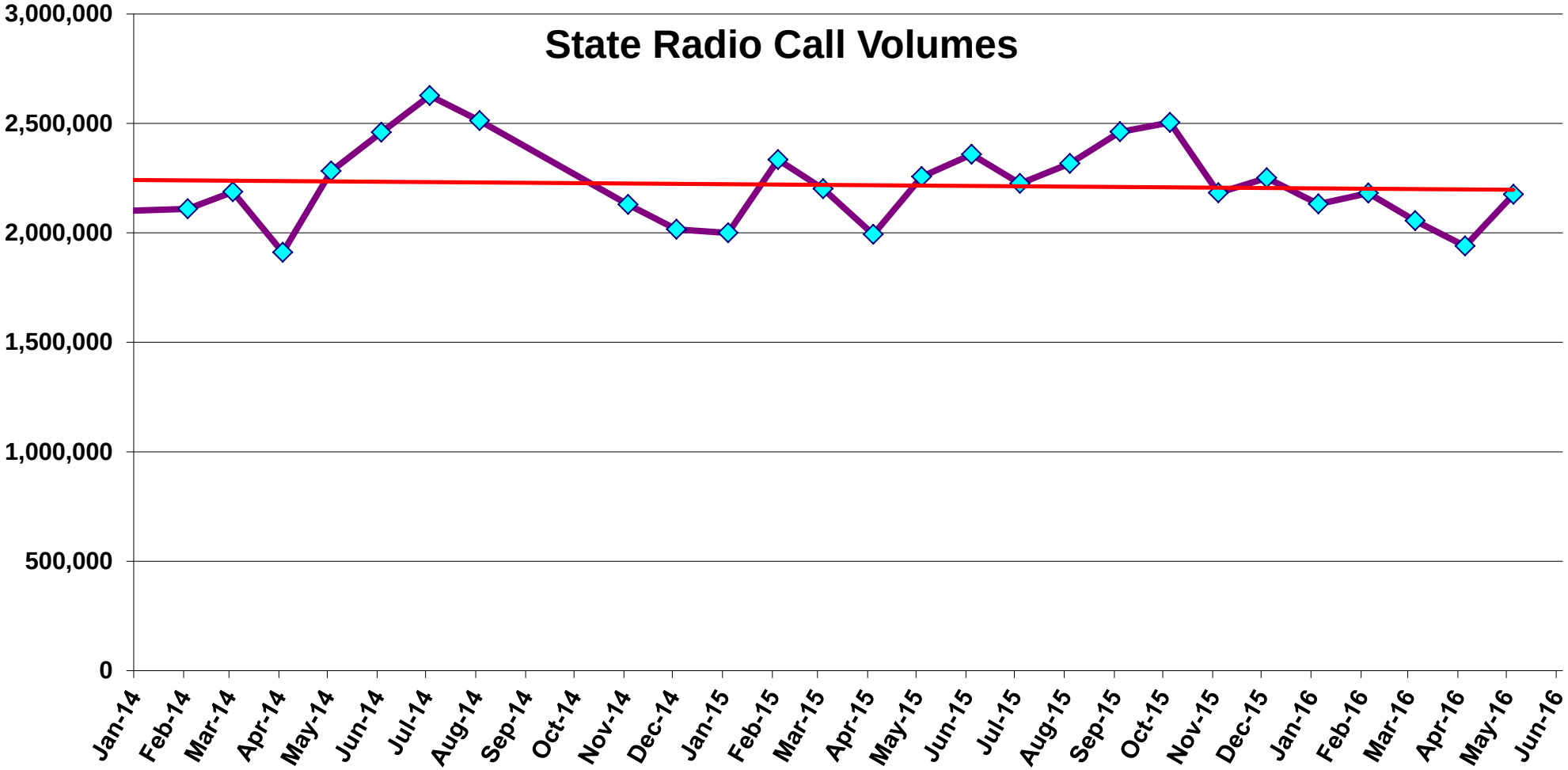
Old Business

1. Grant Status

- SLIGP Grant: $1,238,103(federal), $309,528(State), $1,547,631(total) – Expended to date $182,913
- Phase 2 (Data collection) portion of the grant is underway, full amount of the grant is now available.

2. Digital Radio Infrastructure Updates

- Updates on sites– Pierce/Dravland
- NICE recorder, checking on Simultaneous TG recording, we can go to 128 Max Simultaneous TG.
- Completed working with Rushmore Communications on clearing up issue with site interference to West River Electric repeater.
- Looked at options for Fall River County coverage into box canyon outside of Hot Springs.
- 700 Mhz plan, on FCC desk, waiting for final approval.
- Train the Trainer: Test codeplug installed in Ipswich radios and they are trying it out before we finalize.
- Radio Collection/ distribution: We are still receiving back ID's of radios that have been removed, not in use. And we have small requests for 2 to 4 radios at a time to fill needs, so they receive Spectra dash-mounts or EFJ radios, and occasionally portables, do we continue to distribute radios that can't be updated?
- We currently have 25,934 Unit ID's in the system, and 1483 Talkgroups, working radio count by type and programming
- Interviewed two for Aberdeen position, still no great candidates.
- No solutions for Hot Springs area other than site.
- Replacing frequency at Edgemont due to interference.


State Radio Call Volumes
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
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Jun-15
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16

3. SCIP Update

- The E-SCIP is out on pstools.info, but is password protected, working on seeing if getting a public interface
- Working on getting the annual update completed

4. 700 MHz Plan

- Waiting on FCC concurrence from John Evanoff.

5. OEC Updates

6. Train the Trainer Program

http://www.sdpscc.sd.gov/documents/RadioTrainer5_000.pdf

We have been referring folks to this resource for local radio training programs.

- Significant training of DOT staff west river.
- OEM would like trained resources in field.

7. NPSBN

- RFP responses received 5-31-2016.
- South Dakota team working on the NPSBN project is pondering a 2016 strategy for outreach.

8. Broadband Subcommittee

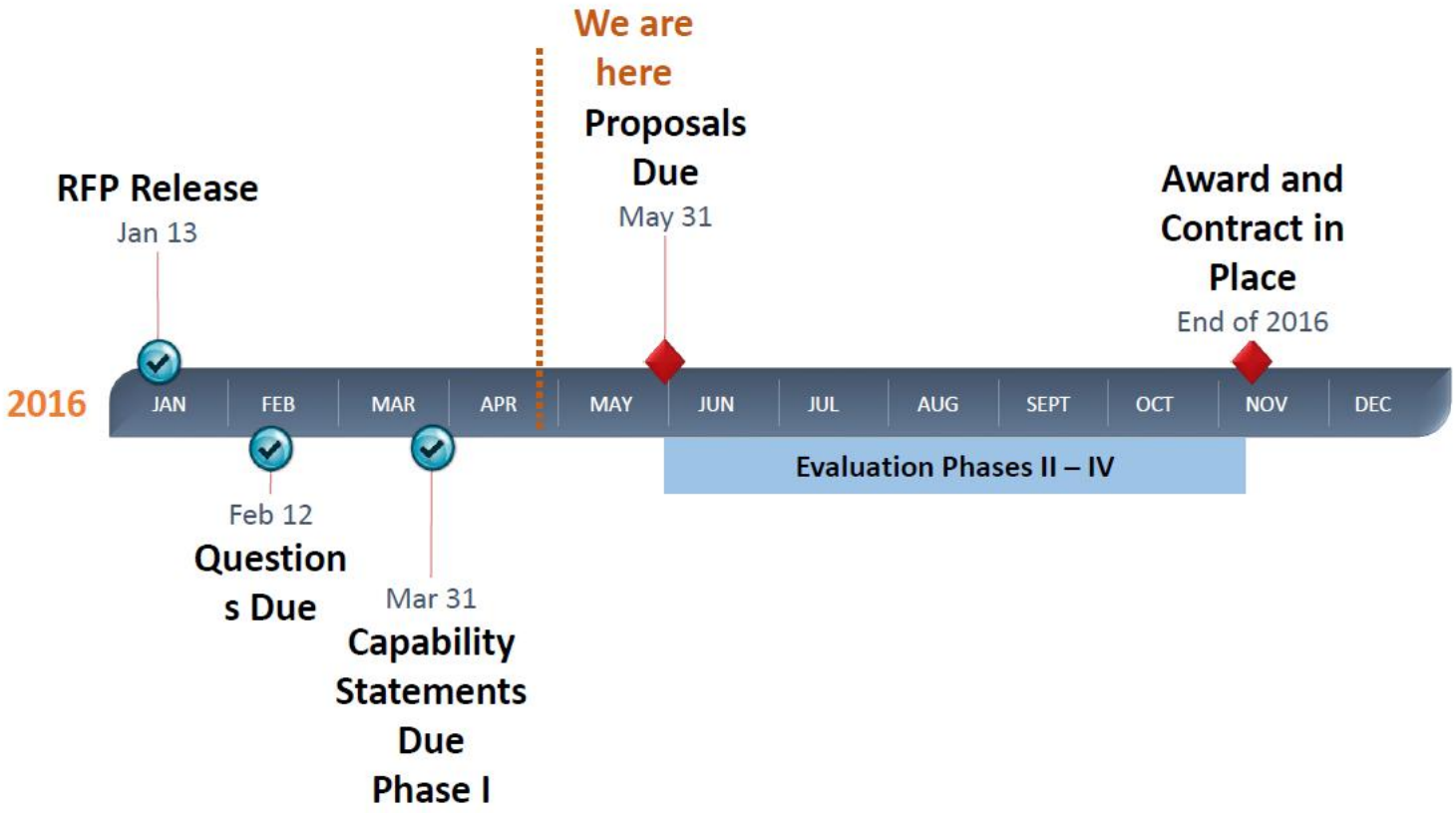
- Request from FirstNet for folks to participate of a Consultation Task Team (CTT). Montana has offered to host a regional meeting on 8-25-2016 in Bozeman MT, which will cover Quality of Service, Priority and Pre-emption (QPP) for users on the FirstNet system. If interested let Jeff know.


From: Strategic Program Roadmap Release
To: RFP Release
Release Strategic Program Roadmap
Public Notices & Comments
Initial State & Territory Consultations
Release Draft RFP Documents
Gather Early Builder Key Lessons
Receive PSAC Findings
Start Expanded Outreach & Consultation
RFP Released
2015{}2016
DRAFT
• Initial Consultation meetings in 55 states/territories
• Data Collection in state/territories
• Industry Days with 400+ attendees
• Tribal outreach and consultation
• NEPA/HIPA consultation
Phases I & II
2014-15


From: RFP Release
To: Complete Draft State Plans
FCC opt-out NPRM and Spectrum Relo. Order
NTIA opt-out Review Notice
Focused Consultation with Expanded Outreach
NTIA Final Fee Review Rules
Award RFP for Network Partnership
Architect State Plans Process & Elements
Final FCC Opt-Out Rules and Further NTIA Opt-out Grant Guidance
Finalize Priority Network Policies
Complete Draft State Plans
DRAFT
March
2016{}2017
May
• Consultation Task Teams
• Governance Body Mtgs
• Executive Consultations
• In-Person SPOC meetings
• PSAC Findings
Culmination of:
• Extensive Q&A Process
• Pre-proposal Conference
• Capabilities Statements
• Proposal Submissions
• Best Value Determination
Phase III
* "These milestone are exclusively controlled by the respective agencies and we have provided target dates based on the best current information available to FirstNet. However, the final timing and outcomes from the relevant proceedings may materially change based on the decisions of the relevant agency."


From: Deliver Draft State Plans
To: Initial Markets Launch
Deliver & Discuss Draft State Plans
NTIA FFO Release
Finalize State Plans
Synchronous Delivery of 56 State Plans
Governors' Decisions
Update Network Policies
National Deployment Initial Markets Release
opt-out State plan due to FCC from State
National Deployment Initial Markets Launch
May
2017{}2018
August
Initial markets installed by national partner and ready for "Go Live" testing and activation of PSE devices on the NPSBN
Phase IV
* "These milestone are exclusively controlled by the respective agencies and we have provided target dates based on the best current information available to FirstNet. However, the final timing and outcomes from the relevant proceedings may materially change based on the decisions of the relevant agency."

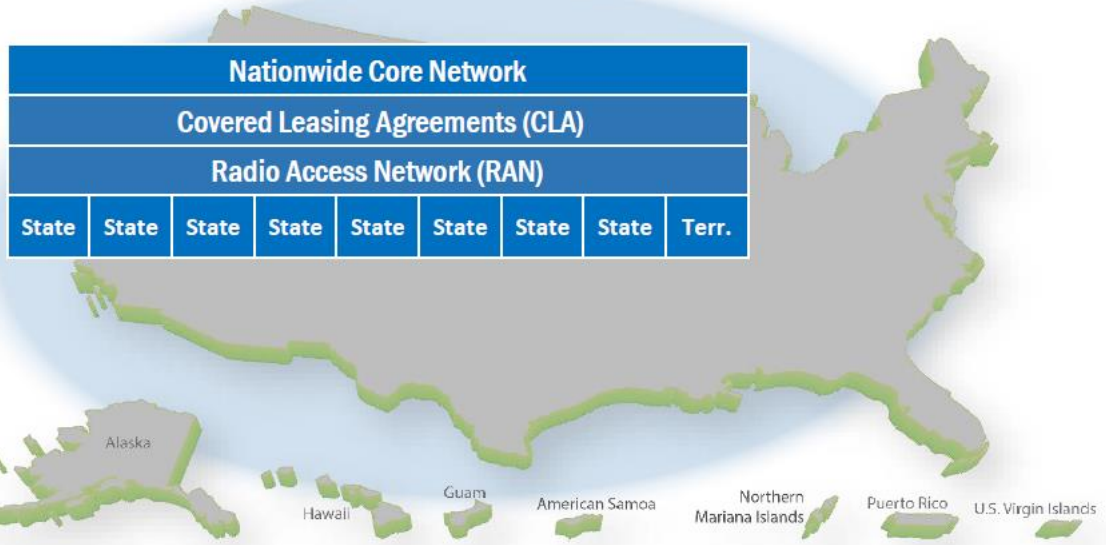
RFP Process – Current Status



RFP Partnership Benefits

Awardee responsible for deployment of

- Network Core and Opt-in RANs
- Devices and application ecosystem
- Network security



Key Partnership Benefits:

- Speed to Market
- Economies of Scale
- Leverage partner infrastructure

Public–Private Partnership Enables FirstNet Success

A Unique Public–Private Partnership Will Achieve FirstNet's Mission

FirstNet Provides

- 20 MHz of low-band spectrum
- Billions in cash
- Relationship with public safety stakeholders
- 25-year contract ordering term (IDIQ)

Contractor Provides

- Assets, capabilities, and synergies to meet FirstNet's stated objectives:
  - Deploy, operate, and maintain the NPSBN
  - Public safety adoption and use of the NPSBN
  - Applications and device ecosystems
- Payments to FirstNet to ensure sustainability and network reinvestment

FirstNet Gets

- Nationwide public safety mission achieved with priority, preemption, and a resilient network
- Improved public safety communications capabilities that increase mission performance
- Annual payments to ensure sustainability

Contractor Gets

- Cash payments based on buildout milestones
- Rights to monetize 20 MHz of spectrum with significant revenue potential for 25 years
- Sticky market of millions of public safety users
- Domestic/global pull-through benefits

9. Radio Collection/Distribution Process

10. Other

Travel reimbursement forms

Organizational Reports
- Police Chief's Assn. – Dave Kull
- Sheriffs Assn. -- Dave Ackerman
- DCI -- Attorney General – Dan Satterlee
- GFP -- Andy Alban
- DOT -- Greg Fuller
- National Guard – SSG David Goodwin
- Emergency Managers – Harold Timmerman
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- Wildland Fire/DOA – Paul Reiter
- County Commissioners -- Bob Wilcox
- Health Dept. -- Rick LaBrie
- Tribal Governments -- Chris Saunsoci
- Federal Government – Open
- BIT Engineering -- Jeff Pierce

Closing Comments
- Vice-chair – JD Geigle
- Member at Large – Dave Ackerman
- Chair -- Tooley

Next Meeting: date, time, location.