

FirstNet Information Session



March/April 2014

Amherst

Worcester

Plymouth

Peabody

Waltham

This presentation was prepared by the Massachusetts Executive Office of Public Safety and Security using funds under award 25-10-S13025 from the National Telecommunications and Information Administration (NTIA), U.S. Department of Commerce (DOC). The statements, findings, conclusions, and recommendations are those of the author(s) and do not necessarily reflect the views of the NTIA, DOC, or FirstNet.

Agenda



- Introductions
- Overview of the Public Safety Broadband Office
- What is FirstNet and the National Public Safety Broadband Network (NPSBN)?
- Long Term Evolution (LTE) Technology
- Implementation Considerations and Challenges
- FirstNet Progress Update and State Consultation Approach
- What's Next?



OVERVIEW OF THE PUBLIC SAFETY BROADBAND OFFICE (PSBO)

The PSBO Leadership Team



Governor Patrick named Curt Wood the Commonwealth's **mandated single point of contact** with NTIA and FirstNet.

Curt Wood

Undersecretary, Forensic
Science & Technology

Steve Staffier

Commonwealth Statewide
Interoperability Coordinator

Sean Hughes

Assistant Secretariat Chief
Information Officer

Michael Saltzman

Project Director

The Role of the PSBO



The PSBO will collaborate with first responders, public safety entities and other stakeholders in preparation for the deployment of the network in Massachusetts.

- Support the Commonwealth's **mandated single point of contact** with NTIA and FirstNet
- Hold **outreach and information sessions**
- **Solicit feedback** concerning public safety broadband needs and expectations
- **Answer questions**
- Provide **up-to-date information about FirstNet** and public safety broadband activities via our website

SLIGP Phases I and II Activities

The NTIA has provided funding via the State and Local Implementation Grant Program (SLIGP) for the **first two phases of the NPSBN implementation**. The PSBO is working on these activities.

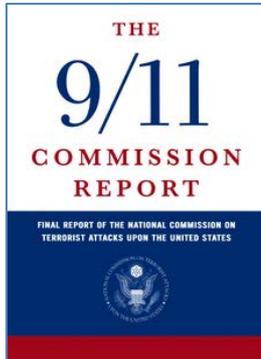


- Phase I focuses on **governance, consultation** with FirstNet, **engagement** of all relevant stakeholders, **education and outreach**, and **identification of potential users** of the NPSBN
- Prior to moving to Phase II, **FirstNet will advise NTIA it is ready** for the commencement of data collection
- Phase II focuses primarily on **collecting requested data for FirstNet** in preparation for the public safety broadband network, as well as continuing activities started in Phase I



WHAT IS FIRSTNET AND THE NPSBN?

Origins of FirstNet and NPSBN

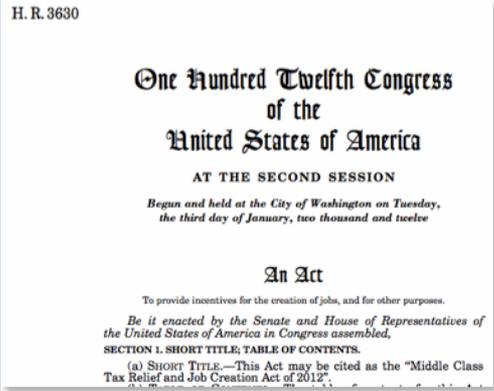
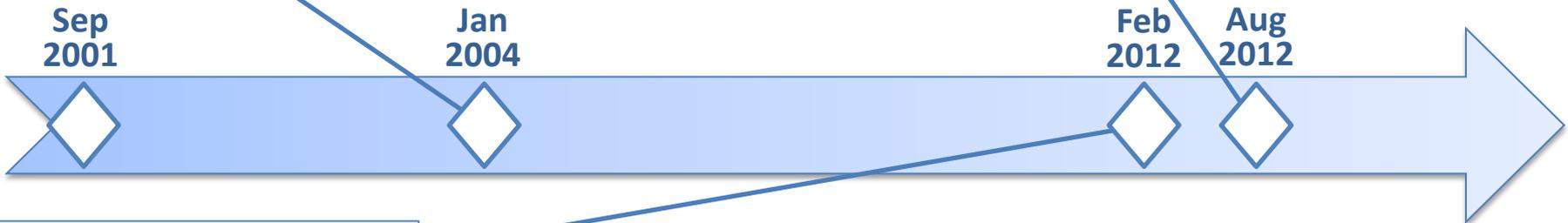


9/11 Commission
recommends improved communications for public safety and first responders.



FirstNet™

Dept of Commerce
establishes **FirstNet Board**



Middle Class Tax Relief and Job Creation Act of 2012

- Establishes **Technical Advisory Board** for First Responder Interoperability within the FCC
- Authorized the NTIA to establish **FirstNet**
- Directed FirstNet to establish the NPSBN based on a **single, national network architecture**
- Reallocated **700 MHz D Block spectrum** to public safety (under license to FirstNet)
- **Authorized funding** through spectrum auctions

FirstNet and NPSBN Overview



The First Responder Network Authority is an independent authority within the National Telecommunications and Information Agency. FirstNet **holds the single public safety wireless license** granted to ensure the building, deployment, and operation of the nationwide public safety broadband network.

The National Public Safety Broadband Network is the **data network** established in the 2012 Middle Class Tax Relief and Job Creation Act.

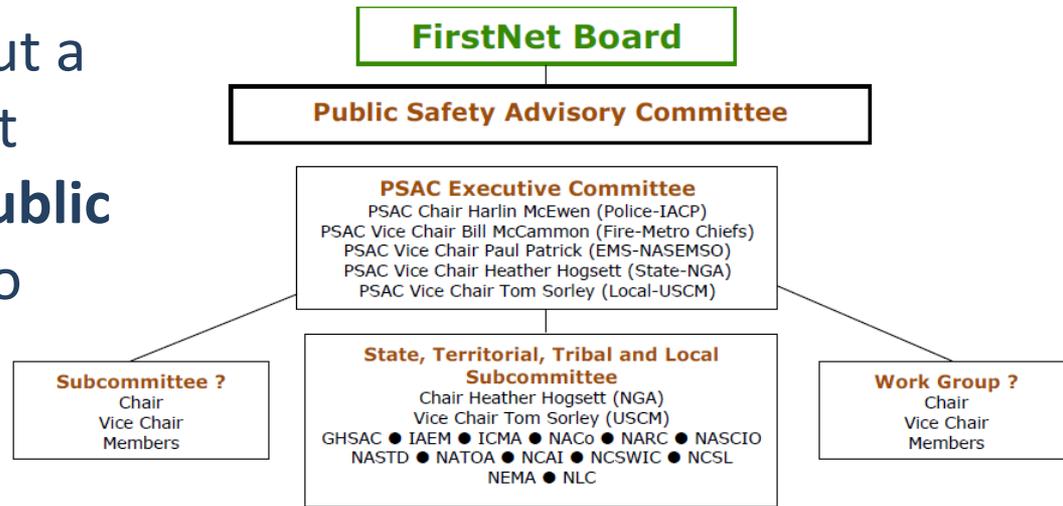
- The network will be designed to **Public Safety grade standards**
- FirstNet will build and **operate a core network** and **design State Radio Area Networks (RANs)** in consultation with each State
- The network will provide coverage to public safety in **every state and territory**

NPSBN

Public Safety Advisory Committee (PSAC)



The FirstNet legislation set out a requirement that the FirstNet Board establish a **standing public safety advisory committee** to assist it in carrying out its duties and responsibilities.



- To ensure public safety and first responder input into the design of the broadband network
- 40 representatives of public safety organizations
- Partnering with DHS to leverage current breadth and depth of knowledge from the SAFECOM program

Other FirstNet Partners



- DHS Office of Emergency Communications (OEC)
- DHS Office of Interoperability and Compatibility (OIC)
- Department of Justice (DOJ)
- Federal Communications Commission (FCC)
- Federal Emergency Management Agency (FEMA)
- National Institute for Standards and Technology (NIST)
- National Public Safety Telecommunications Council (NPSTC)
- National Telecommunications and Information Administration (NTIA)
- Public Safety Communications Research (PSCR)
- Other Government and Industry Partners

FirstNet Business Model

What is the FirstNet business model?

Break even and build a self-sustaining network

- Fee for service
- Leverage value of the spectrum
- Reflect value of contributed assets and partnerships

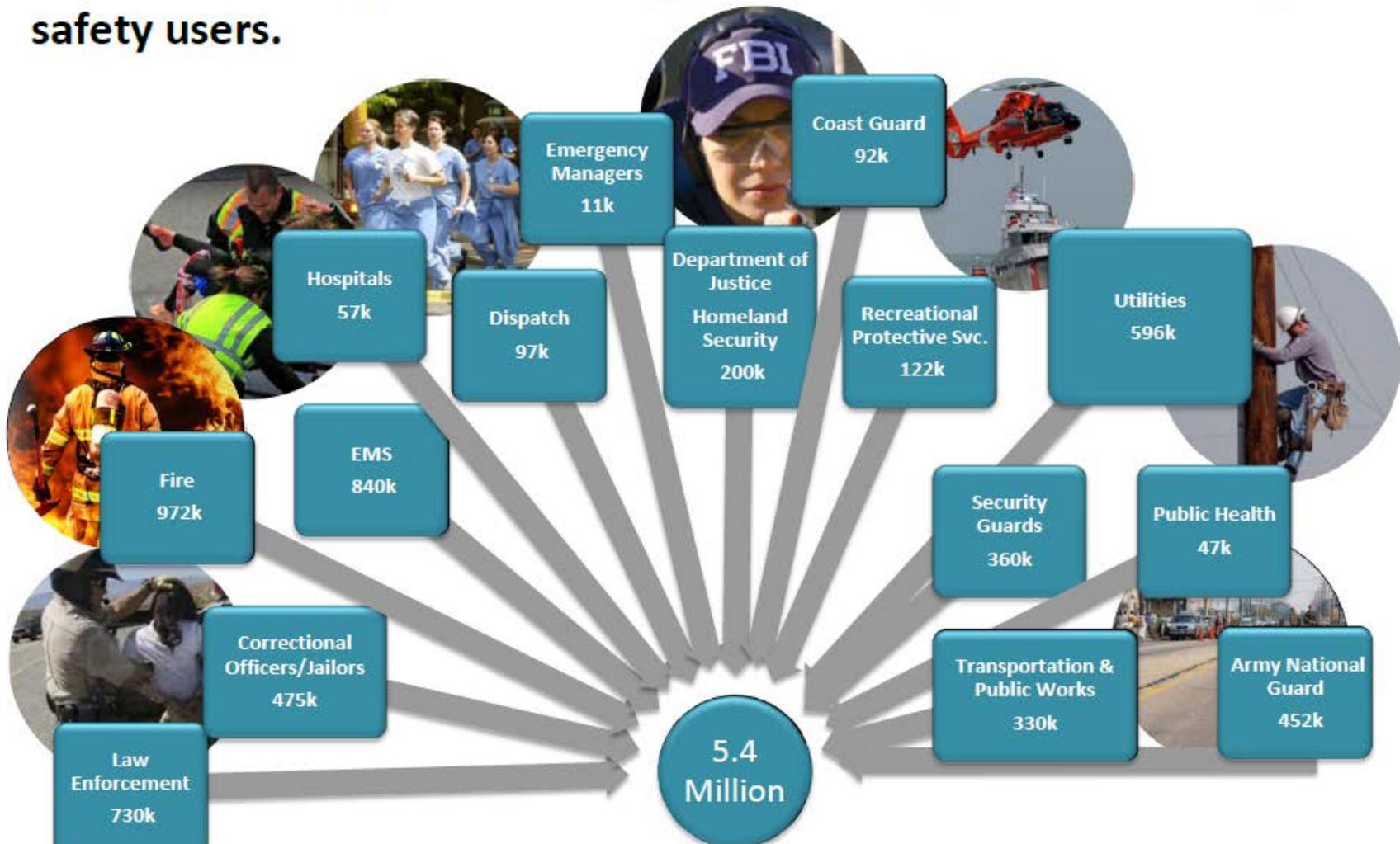


“FirstNet intends to offer public safety grade services at a cost that’s compelling to users.”

— FirstNet Tenet

FirstNet User Community

FirstNet has the potential to support a broadly defined set of public safety users.



Examples Uses

The NPSBN will provide **fast access to applications** which can be shared broadly or on a limited, credentialed basis. Examples include:

- Streaming video / surveillance
- Large file transfer / download
- Situational awareness
- Field fingerprinting
- Field reporting
- GIS / Mapping tools
- Locations of local resources / infrastructure
- Electronic access to building blueprints
- Medical histories



- Medical telemetry
- Material safety information
- Command post operations
- Database queries

Benefits of FirstNet

- Priority access and local control
- Enables more coordinated emergency response
- Improved situational awareness across the entire incident team
- Coverage based on geography, not just population
- Coverage solutions for rural and wilderness areas
- Capacity tailored to expected traffic loads and special event spikes



FirstNet Misperceptions

FirstNet has also addressed some **commonly held misperceptions** about the Authority and the NPSBN.

PERCEPTION

REALITY



Public safety may have to give up autonomy and control.



FirstNet will be a nationwide platform; Public safety sets rules locally.

Public safety will lose management of devices, users and talk groups.



Public safety will maintain local management.

FirstNet will cost too much to build and operate.



FirstNet has substantial opportunities to partner to lower construction and operating costs.

States can use FirstNet spectrum to generate revenue.



Fees from the use of FirstNet spectrum must, by law, be reinvested to build, operate, maintain, and improve the network.

FirstNet will replace LMR networks.



FirstNet will augment LMR for many years.

FirstNet has already begun designing the network.



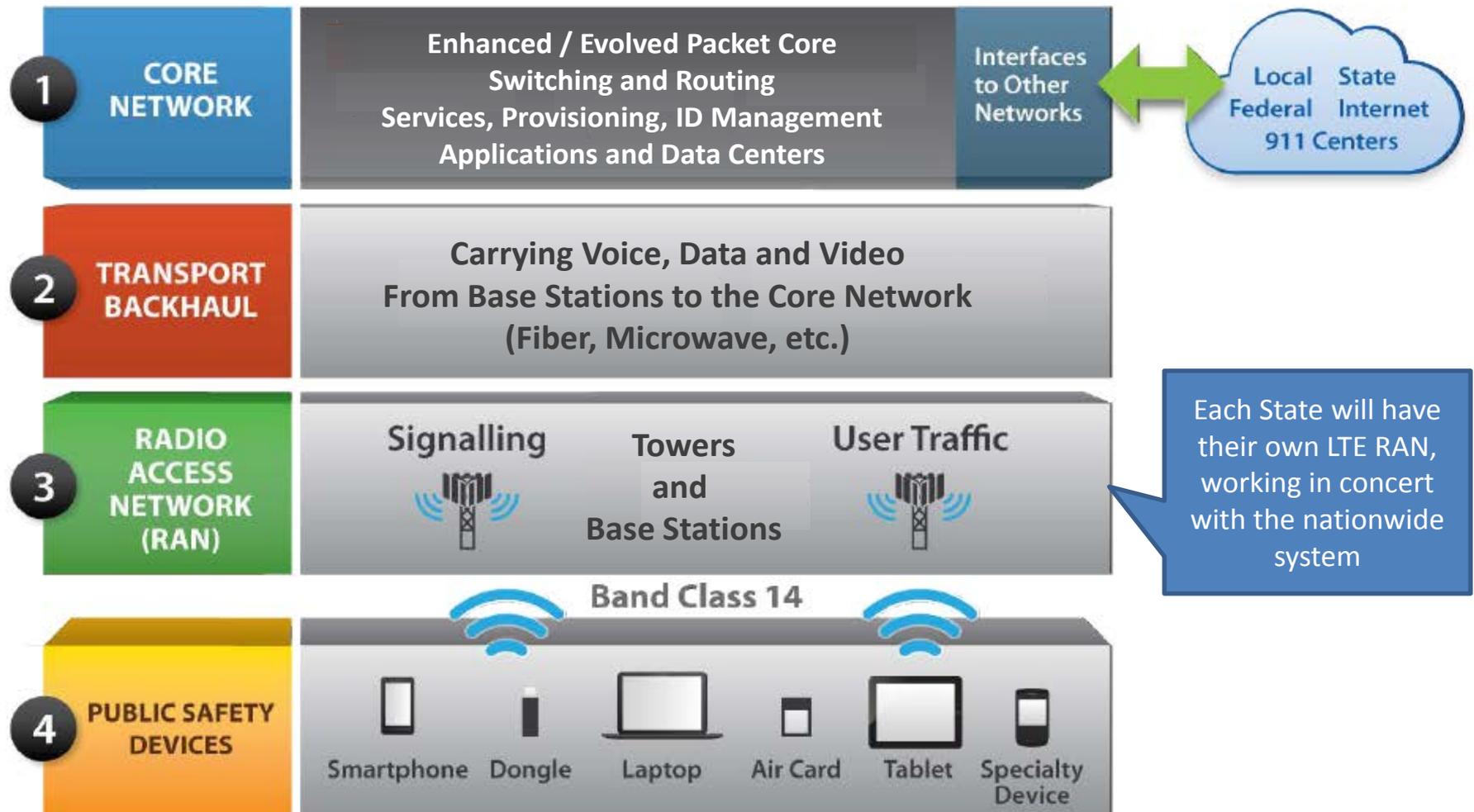
FirstNet is in the research and analysis phase and must have input from states and territories to design the network.



LONG TERM EVOLUTION (LTE) TECHNOLOGY

Anatomy of the NPSBN

Four fundamental building blocks that make up a network



FirstNet Technology Vision – 4G LTE



4G LTE: A Proven Next Generation Technology

- Global technology standard
 - Widely deployed
 - Economy of scale, time to market
 - Rapidly evolving for commercial and consumer use and now for public safety
- Dramatic improvements over previous technologies
 - Higher bandwidth
 - Lower latency
 - Greater capacity
 - Better efficiency
 - Lower deployment cost

Devices

FirstNet will work with the vendor community on portable devices and in-vehicle routers

	Portables	In-Vehicle Routers	Specialized	Accessories
Device Types				
Category Driver	Build out to gain economies of scale		Special operational needs	Unique uses
Function	<ul style="list-style-type: none"> • Smartphone • Tablets • Modems 	<ul style="list-style-type: none"> • Routers • Hotspots • Consoles 	<ul style="list-style-type: none"> • Drones • Portable repeaters • Rovers 	<ul style="list-style-type: none"> • Ruggedized cases • Battery packs • Chargers, mics.
Connectivity	<ul style="list-style-type: none"> • LTE, CDMA, HSPA • LMR/ P25 • Wi-Fi, Bluetooth • Direct mode 	<ul style="list-style-type: none"> • LTE, CDMA, HSPA • Wi-Fi • Ethernet • USB 	<ul style="list-style-type: none"> • LTE, CDMA, HSPA • LMR/ P25 • Satellite repeaters • Location services 	<ul style="list-style-type: none"> • Bluetooth • USB • WiFi
Location Enabled	Yes	Yes	Some	n/a
Band 14 Support	2014	2013/2014	2015+	n/a

LTE and LMR

FirstNet will Augment LMR



- Public safety will rely on LMR for mission critical voice for many years
- LMR systems generally provide deeper coverage with fewer towers
- LTE needs to provide similar wide area and in-building coverage for data
- Ultimately voice may pass between the LTE and LMR networks



IMPLEMENTATION CONSIDERATIONS AND CHALLENGES

Coverage Challenges



- 50 States
- 6 Territories
- 3250 Counties
- 3.8 Million Square Miles



DC



Guam



Puerto Rico



Virgin Islands



Guam



NMI



Wilderness
27% of U.S. Land
Mass



Rural
68% of U.S. Land Mass

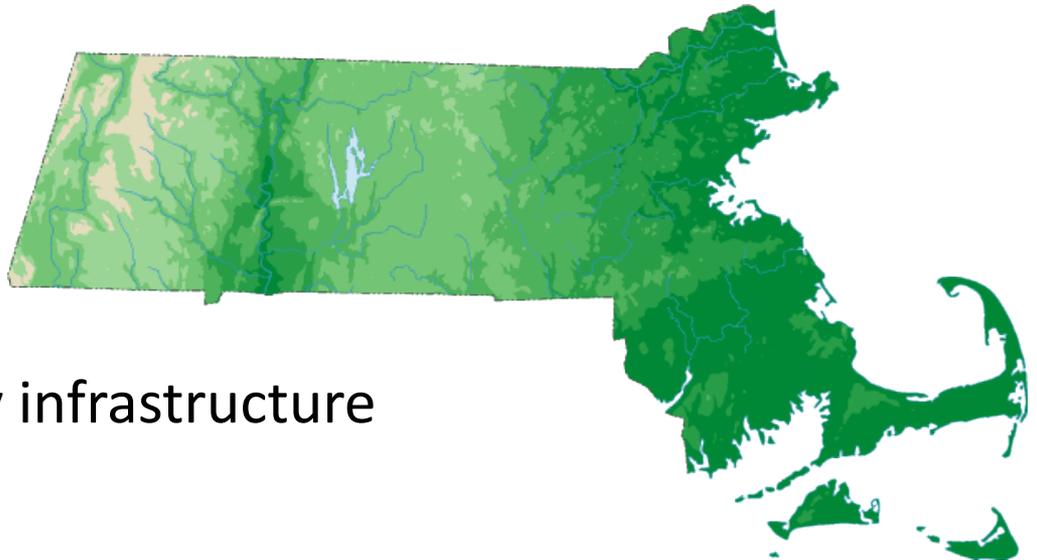


Suburban **Urban** **Dense Urban**
5% of U.S. Land Mass

Coverage Challenges

The nature of the terrain, the density of populations, and the preexistence of other infrastructure are **factors when determining coverage approaches.**

- Rugged terrain
- Land use
- Population density
- Critical infrastructure
- Transportation and utility infrastructure
- Rural coverage
- Parks and open areas
- Tribal lands



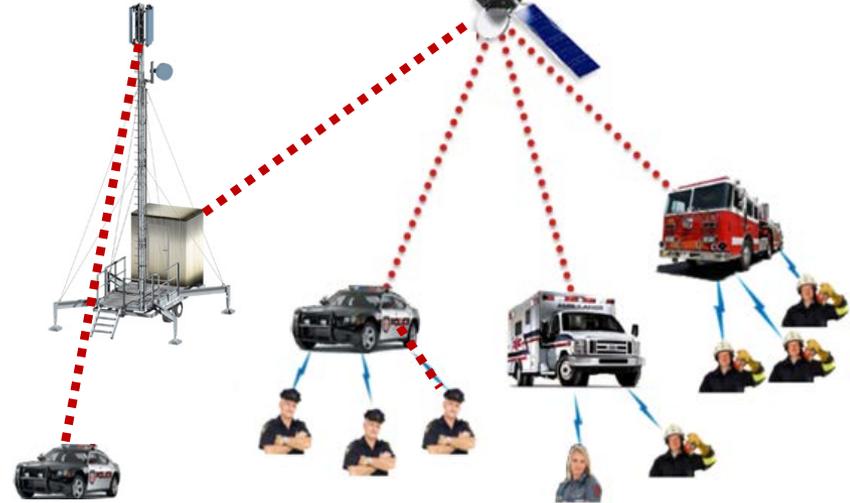
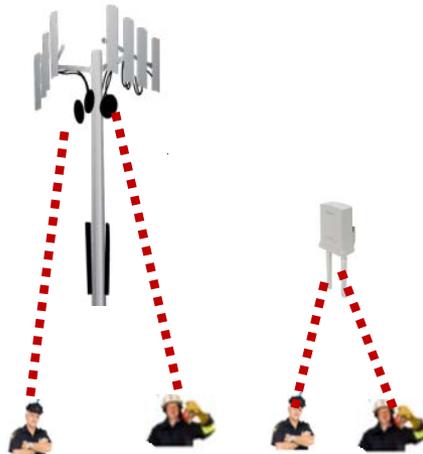
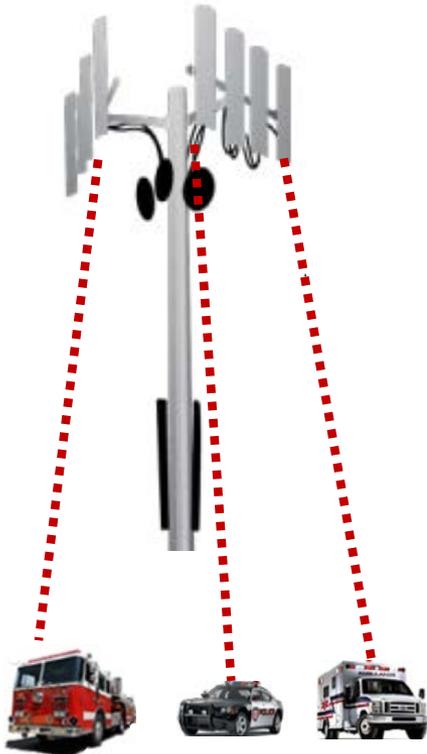
Coverage Approaches

Big Cells

Small Cells

Deployables

Satellite



MacroCells

MicroCells
PicoCells
FemtoCells

CoWs
SoWs

Repeaters
Vehicles
Deployables

Public Safety Grade Considerations

- Physical Resiliency
 - Diverse routing of cell site links
 - Redundant core
 - Site hardening (security, shelters, etc.)
 - Backup power (UPS and Generator)
- Operational Reliability
 - Security
 - Capacity and availability
 - Spares, support, time to repair
- Coverage
 - Where and when its needed
 - Deployable systems
 - Satellite
 - New technologies
- Ongoing Testing at NIST's PSCR lab in Bolder, CO
- Possible partnering with commercial carriers

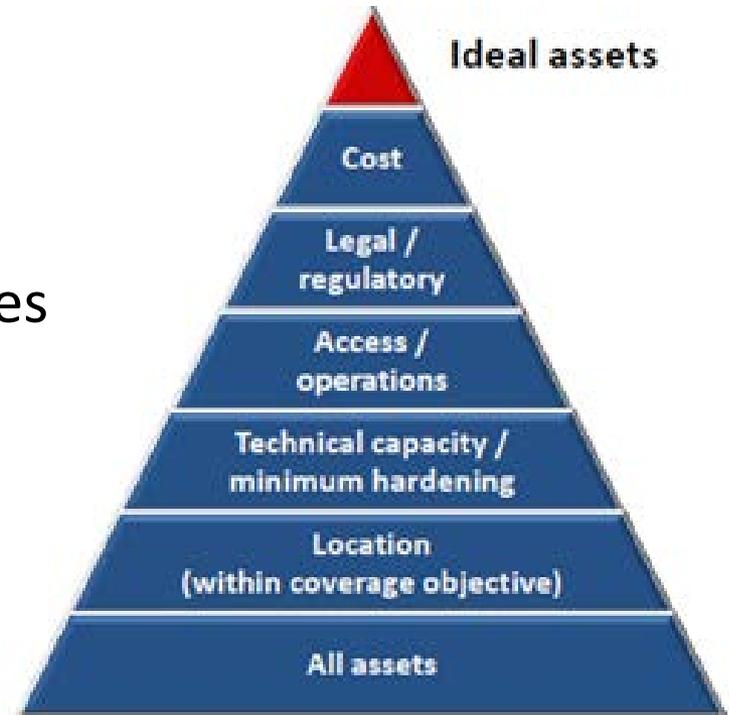
Public Safety Features

- Priority Access
- Preemption
- Quality of Service
- Direct device-to-device
- Group communications
- Push to talk



Reuse of Existing Assets

- Reuse of existing assets
- Principally Towers and Backhaul
- Many local, legal, and regulatory issues
- The PSBO will be staffed to address these matters



The next phase of the SLIGP grant will focus on data collection, in part to inform investment decisions for the State Plan.



www.firstnet.gov

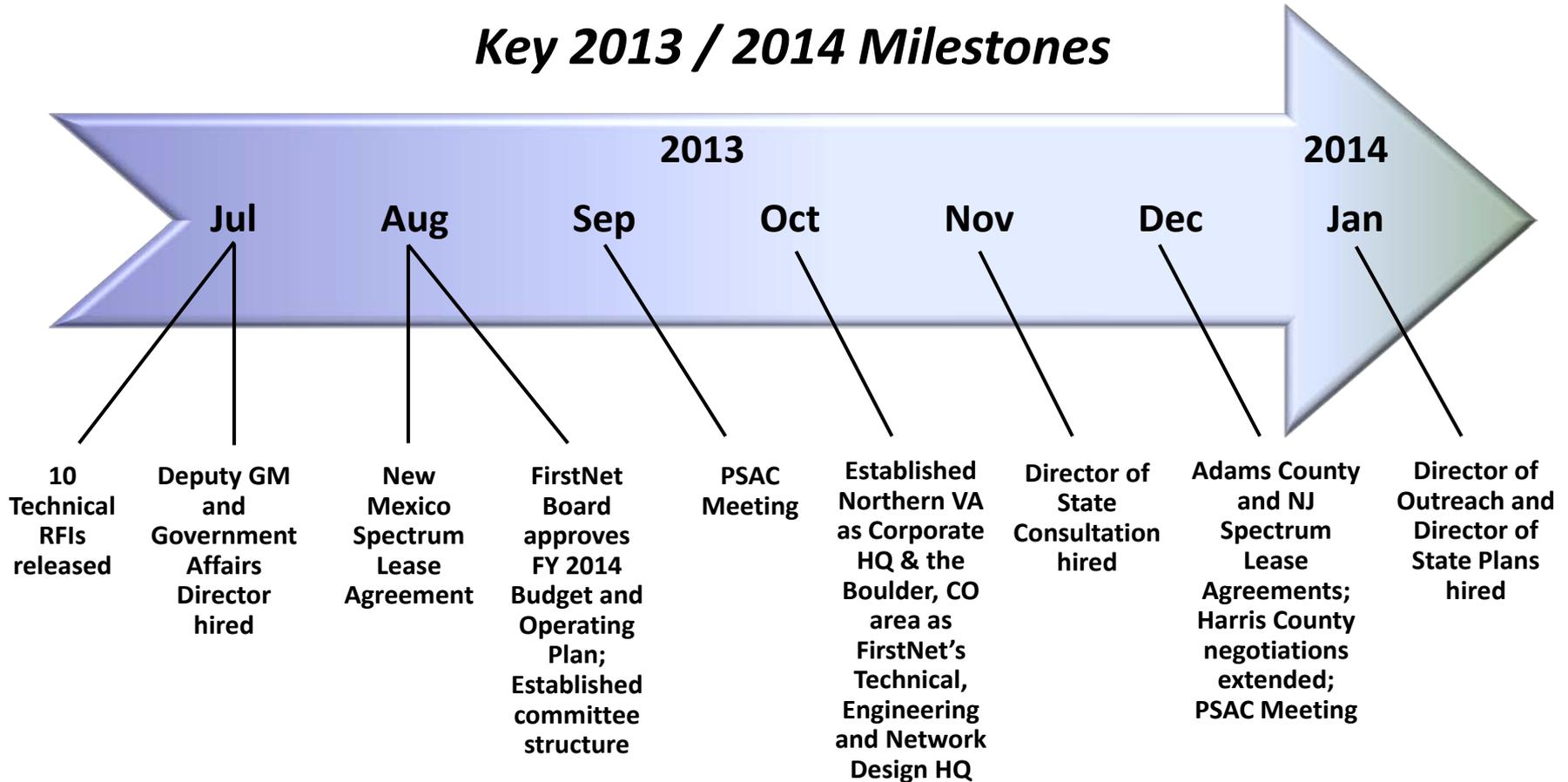
FirstNet Progress Update and State Consultation Approach



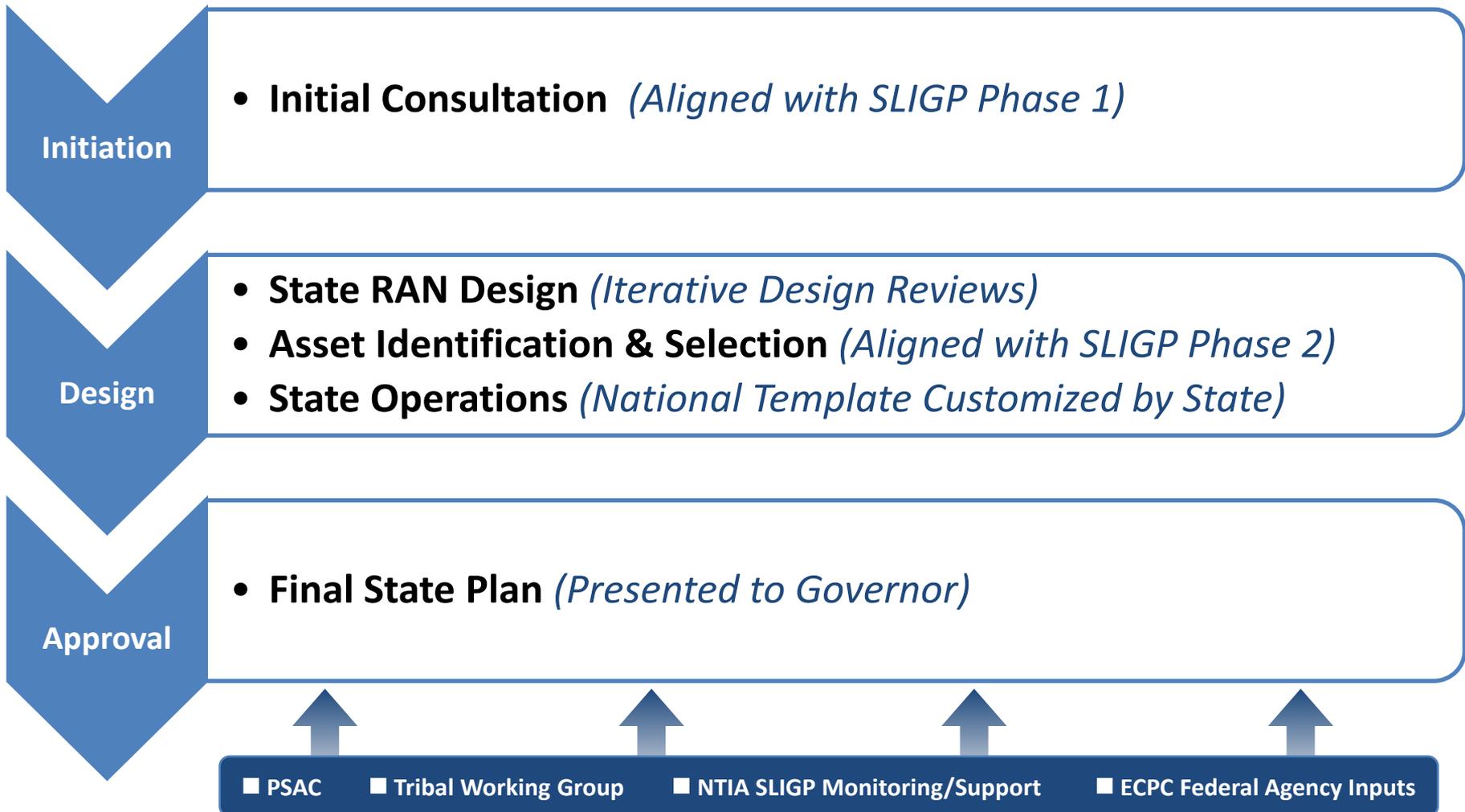
William M. Casey
Region 1 Liaison

Progress Update

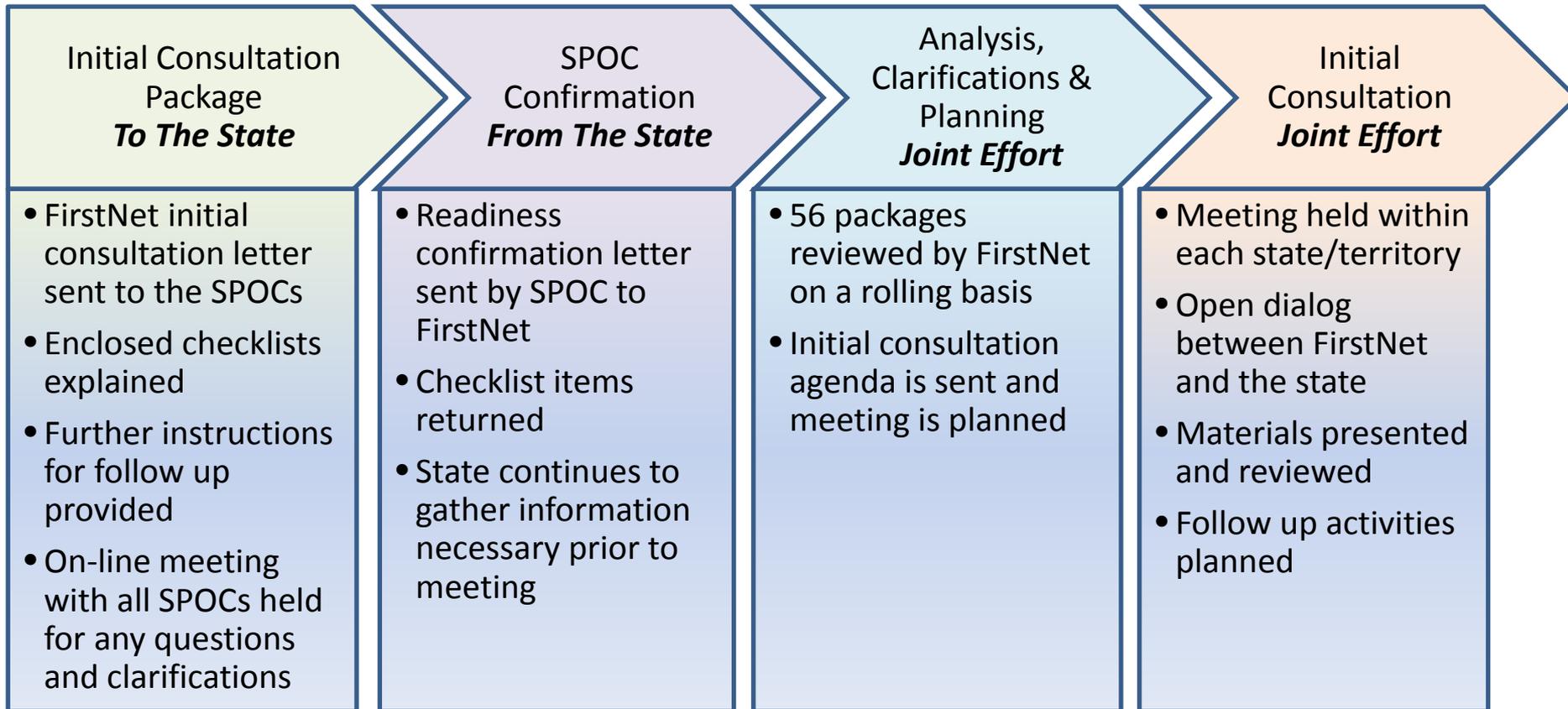
Key 2013 / 2014 Milestones



Defining the Consultation Process

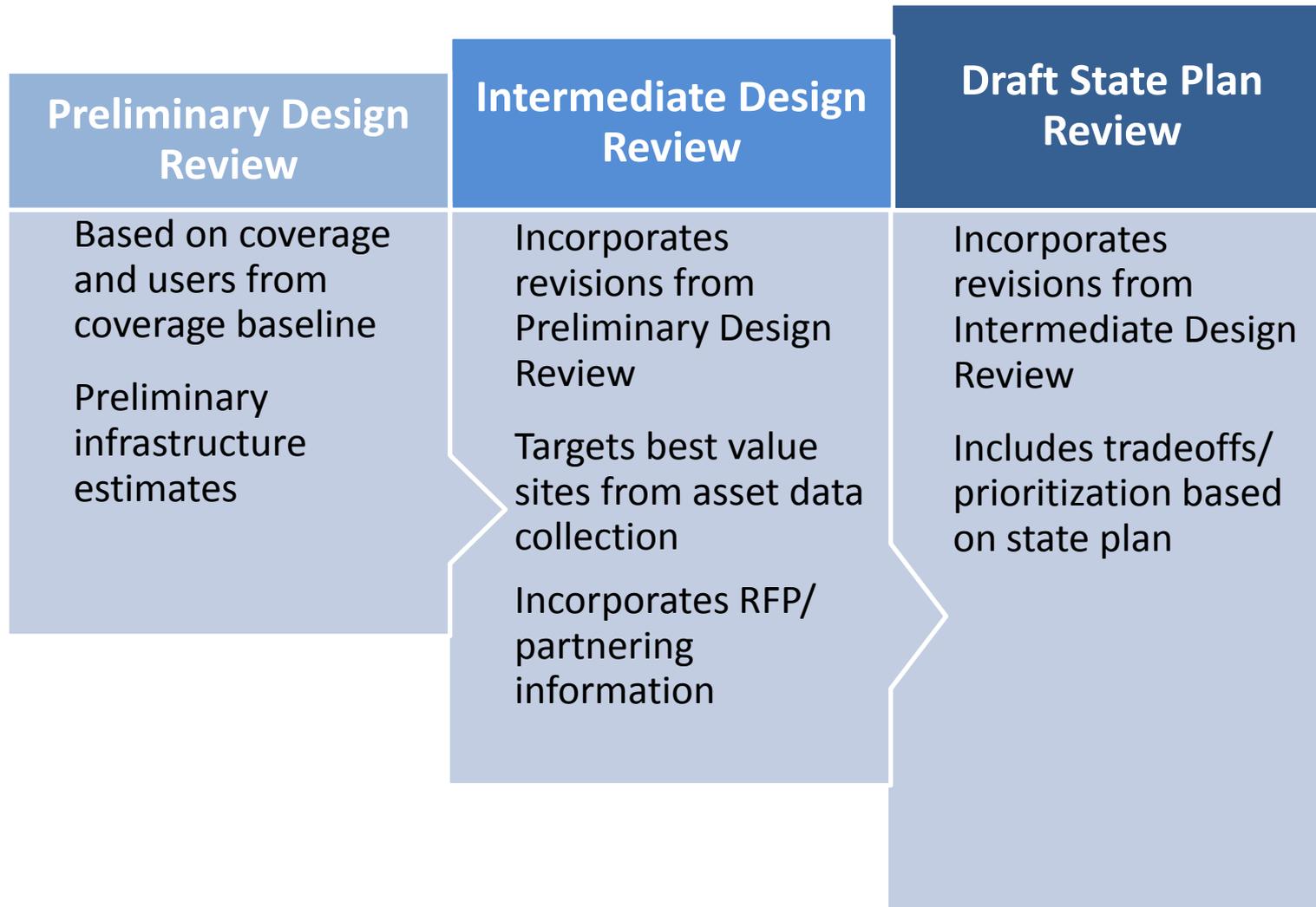


Initial State Consultation

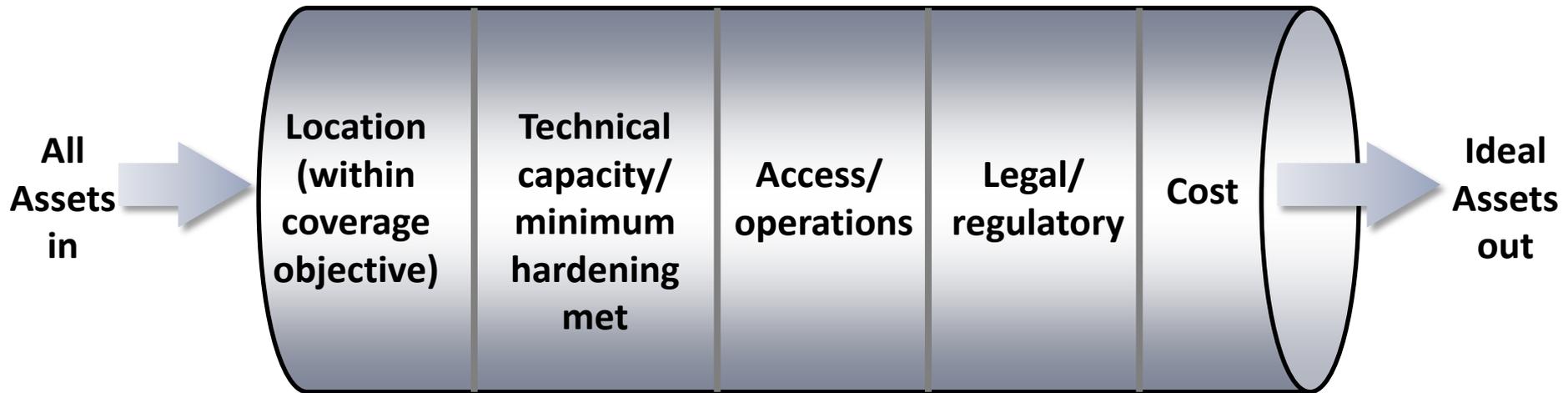


Initial state consultation will cover a number of items to help FirstNet and the states begin the exchange of information, which will ultimately lead to the development of a state plan.

State RAN Design Process



Asset Identification & Selection (Aligned with SLIGP Phase 2)



State Operations

■ Key Steps

- Ensure state RAN design is supported by business planning and cost considerations
- Leverage PSAC and other key groups to discuss the overall approach to:
 - Local control
 - Prioritization
 - Training
 - Security
- Develop operations template with areas for input/customization
- Develop system cost structure / business plan for state based on preliminary RAN design and potential user base



Final State Plan

■ Key Steps

- Document proposed coverage and associated cost
- Supply projected funding level
- Provide final review with state's SPOC / governing body
- Submit to the Governor

■ Guiding Principles

- Address areas of consultation required by law
- Ensure public safety stakeholders have robust involvement before state plan is presented to the Governor

State Plan Requirements

- Completion of the RFP process
- Details of proposed build-out in the state
- Funding level for the state

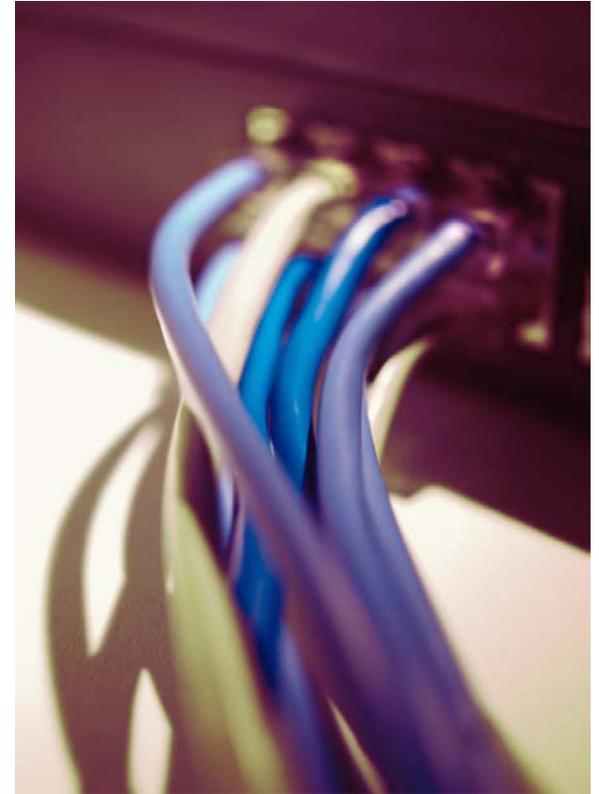




WHAT'S NEXT?

What Comes Next?

- Prepare for the **data gathering and State consultation phase** of the implementation
- Conduct **more targeted meetings** with Massachusetts stakeholders for user and coverage requirements
- Establish a **working group** to support the consultation and implementation process



Information on the Web



Follow updates at:

mass.gov/psbo



Home > Public Safety Agencies > Commonwealth Public Safety Broadband Office (PSBO)

Commonwealth Public Safety Broadband Office (PSBO)

PSBO Information

[PSBO Leadership Team](#)

[PSBO Upcoming Events](#)

[Frequently Asked Questions \(FAQs\)](#)

News & Updates

[FirstNet Presentation at MIT/BPD \(FirstNet 11/13\)](#)

[The Process for Working with FirstNet \(FirstNet 11/13\)](#)

[The Promise of FirstNet \(FirstNet 9/13\)](#)

[FirstNet Organization and Membership \(FirstNet 2/13\)](#)

[NPSBN Factsheet \(DHS 12/12\)](#)

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Contact the PSBO

Mail the PSBO at:
Commonwealth of Massachusetts
Exec. Office of Public Safety & Security
Attn: Public Safety Broadband Office
One Ashburton Place - Room 2133
Boston, MA 02108

Email the PSBO at:
PublicSafetyBroadband@state.ma.us

[Request to be included on the PSBO Contact List](#)

Welcome to the PSBO

The Executive Office of Public Safety and Security has established the Public Safety Broadband Office to oversee and direct all Commonwealth planning and implementation activities associated with FirstNet.

This office will coordinate and collaborate with public safety entities, local and state officials, and other stakeholders in preparing the Commonwealth for participation with FirstNet in the building and deployment of the National Public Safety Broadband Network (NPSBN).



Docs & Updates

[FirstNet Documents and Updates](#)



Outreach Kit

[National Public Safety Broadband Outreach Kit](#)



FAQs

[Frequently Asked Questions](#)

[Learn More »](#)

PSBO's Role with FirstNet and the NPSBN

Initially envisioned by the 9/11 Commission and enacted by the Middle Class Tax Relief and Job Creation Act of 2012, the First Responder Network Authority (FirstNet) is an independent Federal authority within the National Telecommunications and Information Administration (NTIA) that was established to provide emergency responders with a nationwide, high-speed, wireless network dedicated to public safety. The envisioned National Public Safety Broadband Network (NPSBN) will facilitate communications amongst first responders during emergencies and provide reliable, secure access for public safety users every day.

To begin the process of implementing the network nationally, the NTIA has issued initial grants through the State and Local Implementation Grant Program (SLIGP). Phase One of this grant program started in the fall of 2013 and focuses on education and outreach. Phase Two will focus on data collection and FirstNet requirements, including considerations specific to implementing the NPSBN in the Commonwealth. The PSBO will coordinate activities with the FirstNet regarding the creation of the NPSBN and its implementation in the Commonwealth. [More](#)

Broadband Resources

[MA Statewide Communications Interoperability Plan](#) 16MB

[NPSBN Recommended Minimum Technical Requirements](#)

[National Broadband Map](#)

[FCC Broadband Plan](#)

[DHS Nationwide Public Safety Broadband Network Outreach](#)

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Related Links

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[DHS Office of Emergency Communications \(OEC\)](#)

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[Federal Communications Commission \(FCC\)](#)

[Federal Emergency Management Agency \(FEMA\)](#)

[Nat. Public Safety Telecommunications Council \(NPSTC\)](#)

Contact the PSBO



You can email the PSBO at:

PublicSafetyBroadband@state.ma.us

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