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Virginia FirstNet Outreach “FirstNet 101”

Tom Gagnon
Interoperability Program Manager



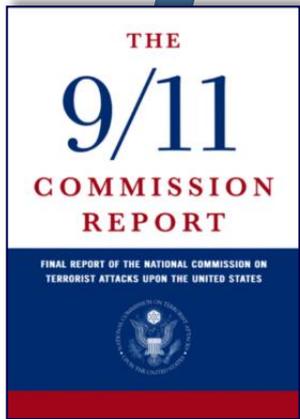
Agenda



- What is FirstNet?
- Opt In or Opt Out.
- FirstNet Functionality.
- VA PSBN Outreach Plan.
- Q&A

- You don't have to buy or commit to anything.
- We are here to share the FirstNet information that has been provided.
- We will keep you updated through the process with new information as it is available.

Public Safety's Network



Associations Supporting D-Block Reallocation

| | |
|--|--|
| <i>National Governors Association</i> | <i>National Criminal Justice Association</i> |
| <i>National Association of Counties</i> | <i>National Association of Police Organizations</i> |
| <i>National League of Cities</i> | <i>National Volunteer Fire Council</i> |
| <i>United States Conference of Mayors</i> | <i>National Troopers' Coalition</i> |
| <i>Council of State Governments</i> | <i>National Organization of Black Law Enforcement Executives</i> |
| <i>International City/County Managers Association</i> | <i>Association of Air Medical Services</i> |
| <i>National Conference of State Legislatures</i> | <i>Advocates for Emergency Medical Services</i> |
| <i>International Association of Chiefs of Police</i> | <i>Emergency Nurses Association</i> |
| <i>International Association of Fire Chiefs</i> | <i>National Association of Emergency Medical Services Physicians</i> |
| <i>National Sheriffs' Association</i> | <i>National Association of Emergency Medical Technicians</i> |
| <i>Major Cities Chiefs Association</i> | <i>National Association of State Emergency Medical Service Officials</i> |
| <i>Metropolitan Fire Chiefs Association</i> | <i>National Emergency Medical Services Management Association</i> |
| <i>Major County Sheriffs' Association</i> | <i>American Probation and Parole Association</i> |
| <i>Association of Public-Safety Communications Officials</i> | <i>National Association of Regional Councils</i> |
| <i>National Emergency Management Association</i> | |
| <i>International Association of Emergency Managers</i> | |
| <i>Police Executive Research Forum</i> | |



THE LAW

2.22.12

FirstNet becomes law

PL 112-96

What is FirstNet?



➤ Mission

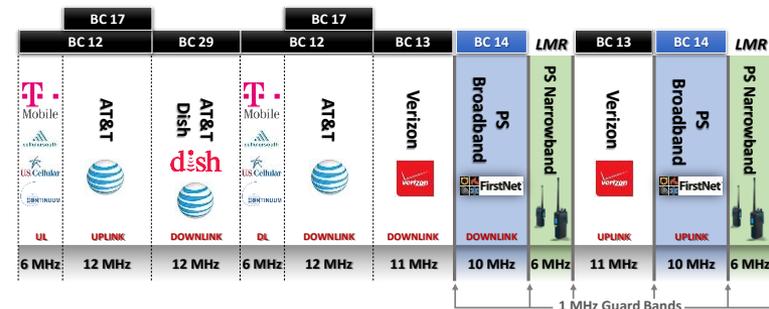
- Based on 9/11 Commission Report recommendations, FirstNet will ensure the building, deployment, and operation of the nationwide public safety broadband network

➤ Organization

- FirstNet is an independent authority authorized by Congress

➤ Funding and Assets

- FirstNet will spend up to \$7B to deploy a nationwide Public Safety mobile broadband network
- FirstNet brings 20 MHz of Band 14 spectrum to enable a Public-Private Partnership



➤ Governance

- 15 member Board, CEO, President and management team
- Mandate to coordinate with the 50 states, 5 territories, and Washington, D. C.
- Advised by Public Safety Advisory Committee (PSAC), a 40-member committee

First Responder Communications



Non-Mission Critical

The Current State

Mission Critical

Commercial LTE Service / Devices



Data

Voice

Land Mobile Radio (LMR) for Public Safety



Voice

FirstNet Network Benefits



**Dedicated to
Public Safety**



**Public Safety
Apps /
Services**

**QoS, Priority
& Preemption
(QPP)**



**Situational
Awareness**



**Local
Control**

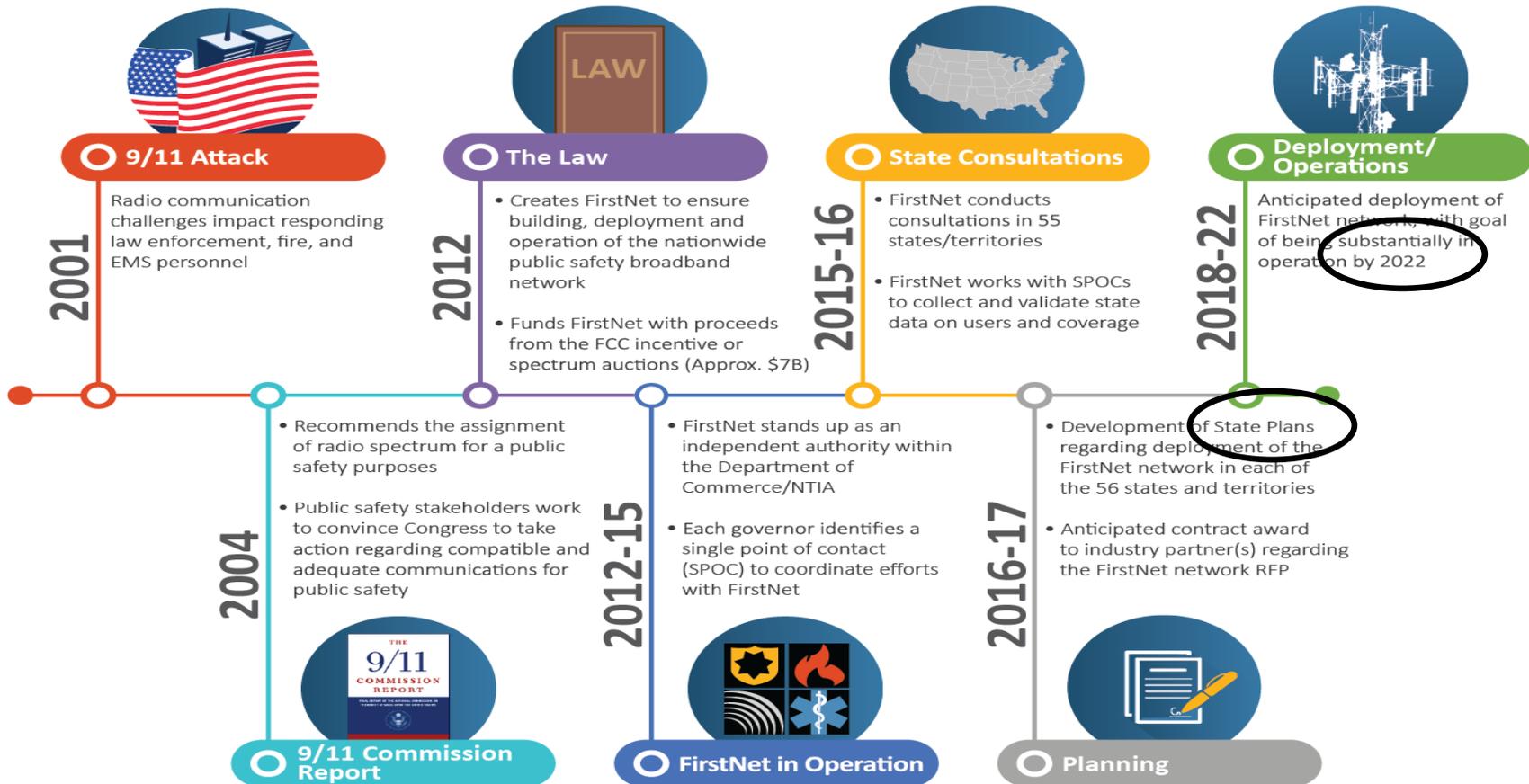


**Public Safety
Grade**

FirstNet Timeline



The Future of Public Safety Communications



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

Award RFP
for Network
Partnership

Architect
State Plans
Process &
Elements

Final FCC
Opt-Out
Rules and
Further
NTIA Opt-
out Grant
Guidance

Complete
Draft State
Plans

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

State Plan Process

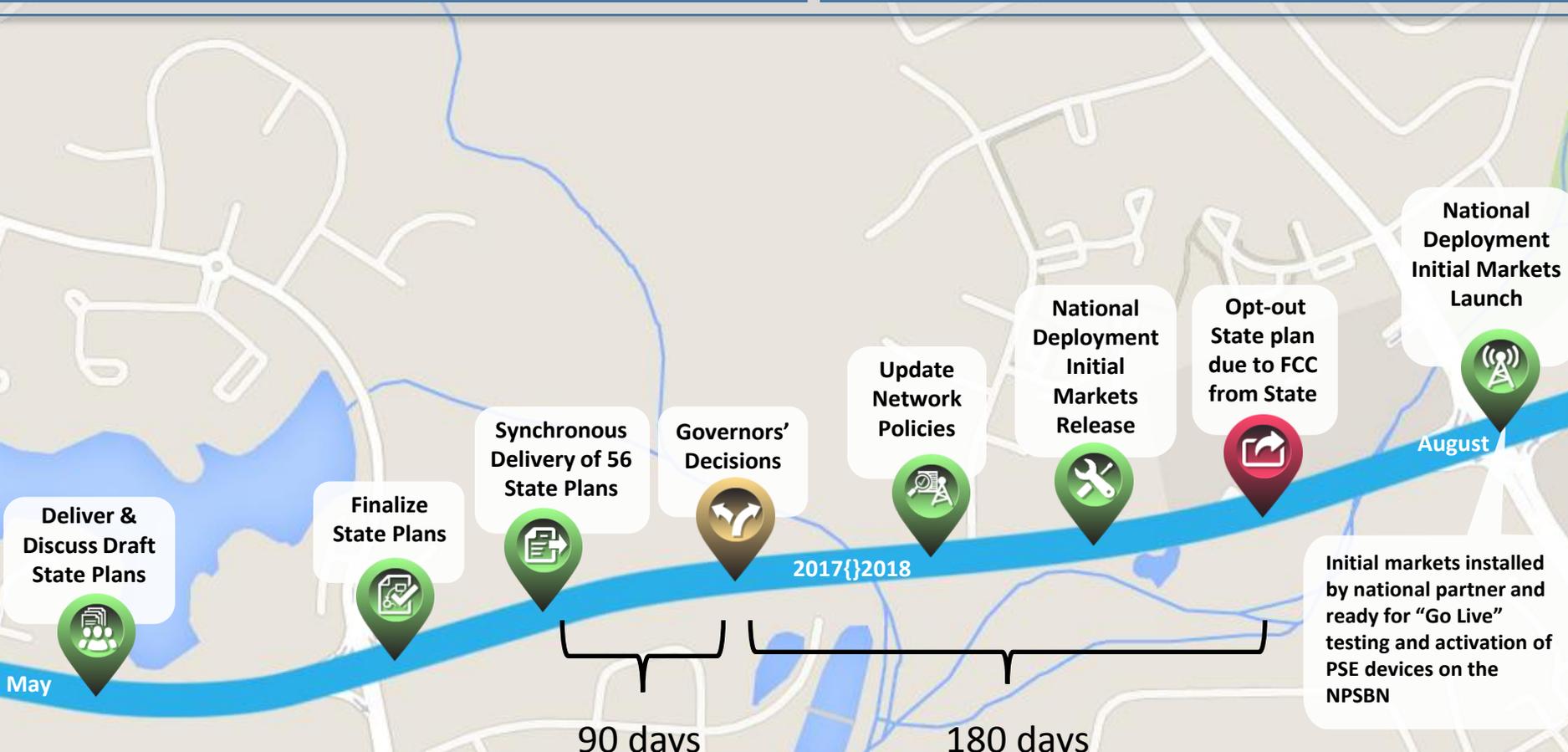
Opt Out Process

2016-17

* "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



- State Plan Process
- Opt Out Process

2017-18

* "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."

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

RFP Statement of Objectives



Building, Deployment, Operation & Maintenance of the NPSBN



Financial Sustainability



First Responder User Adoption



Device Ecosystem



Applications Ecosystem



Accelerated Speed to Market



User Service Availability



Service Capacity



Cyber Security



Priority Services



Integration Of Opt-out State RANs



Integration of Existing Commercial/ Federal/ Tribal/State/ Local Infrastructure To Support NPSBN Services



Life-cycle Innovation



Program and Business Management



Customer Care and Marketing



Facilitation of FirstNet's Compliance With The Act & Other Laws

Evaluation Criteria in the RFP



Business Management Factor

- Leadership and Program Management
- Public Safety Customer Acquisition
- Customer Care and Lifecycle Sustainment
- Financial Standing
- Delivery Mechanism for State Plans



Coverage & Capacity Factor

- Band 14 & Non-Band 14 * Coverage and Capacity
- RAN solutions
- IOC/FOC Milestones for Coverage and Capacity
- Ability to demonstrate rural partnerships



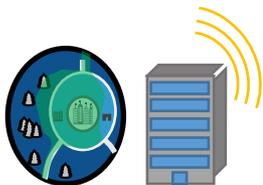
Value Proposition Assessment

- Meets FirstNet sustainability objective
- Use of FirstNet's \$6.5B
- Demonstrated synergies & added value
- Unbalanced/unreasonable value determination



Past Performance Factor:

- Successful project completion history (e.g., similar scope, within schedule, within budget, quality deliverables)
- Quality of cooperation and responsiveness
- Performance measure implementation and improvement



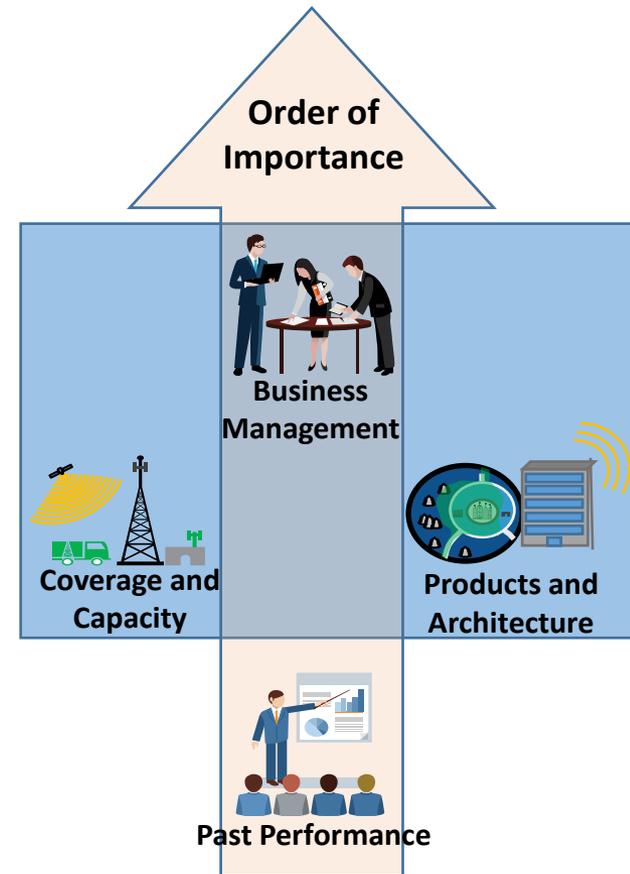
Products & Architecture Factor

- Service (public safety features)
- Applications
- Device
- Architecture and Infrastructure
- Operations
- Security



Risk

- Proposal Risk
- Performance Risk



* Where applicable

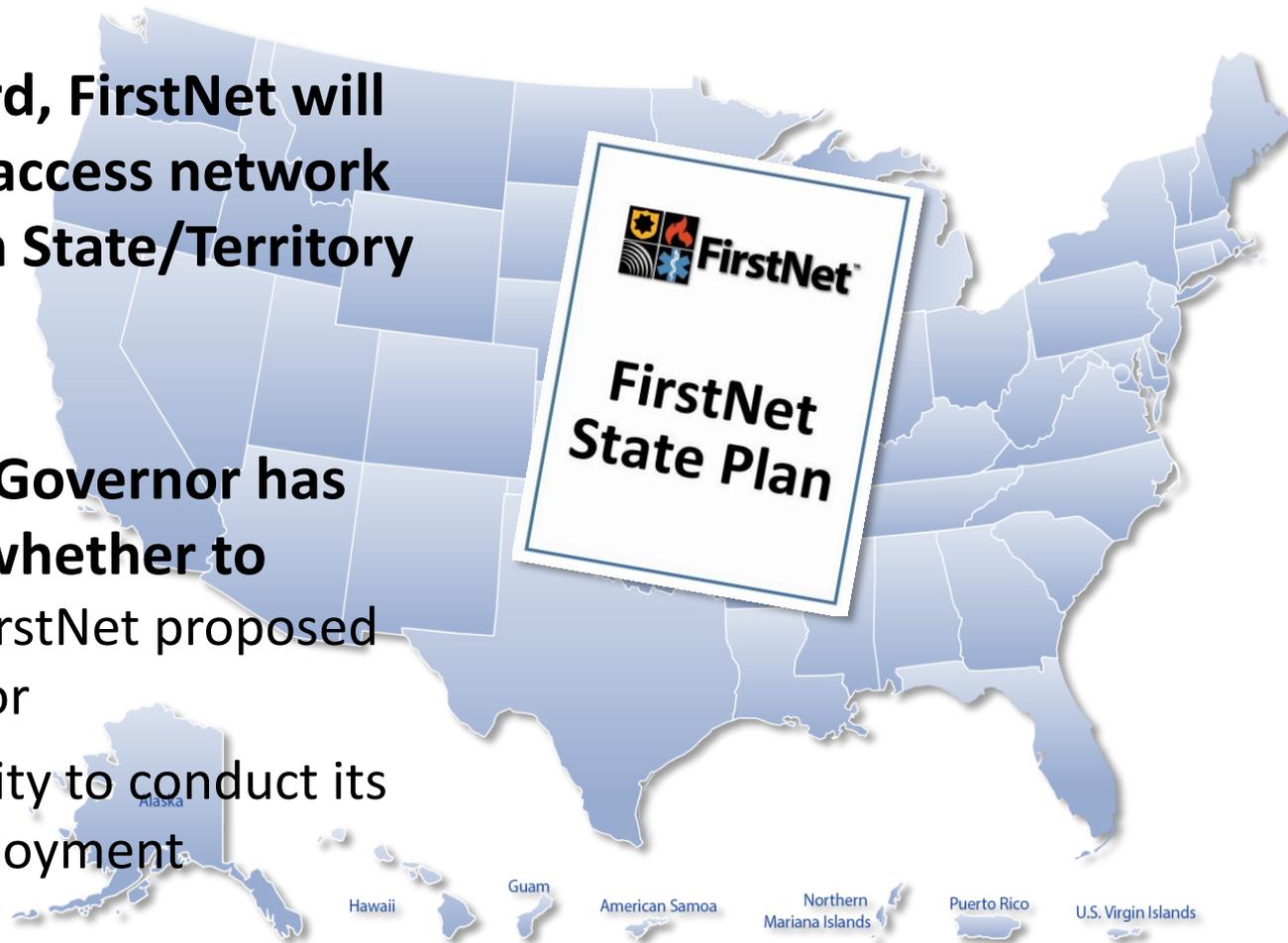
Post RFP Award: State Plan Delivery



Following RFP award, FirstNet will deliver State radio access network (RAN) Plans to each State/Territory

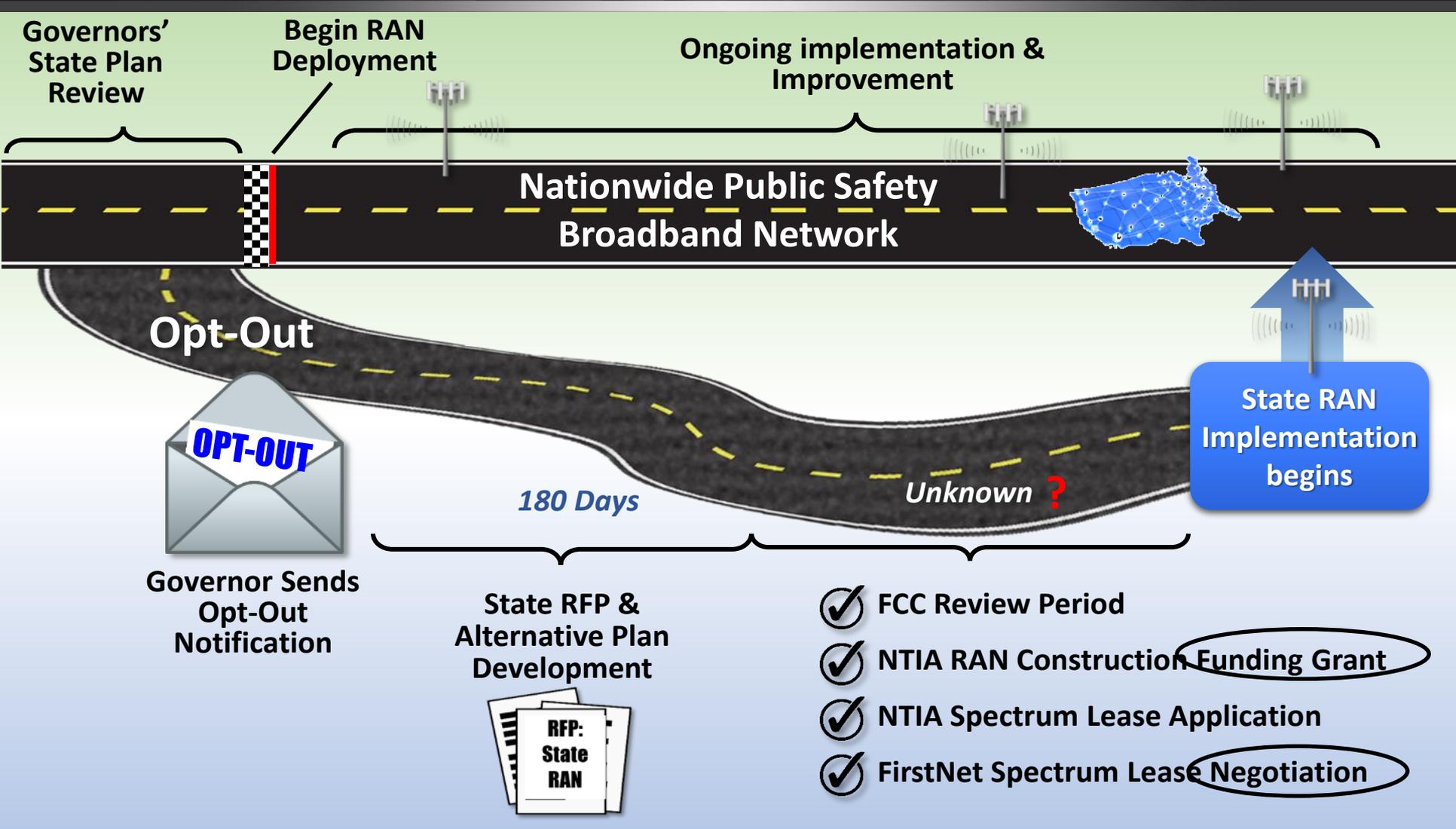
Under the Act, the Governor has 90 days to choose whether to

1. Participate in the FirstNet proposed RAN deployment or
2. Assume responsibility to conduct its own state RAN deployment.



Opt-In or Opt-Out?

Post State Plan Process



State Decision: Snapshot of Key Steps



The State Decision: Opt-In

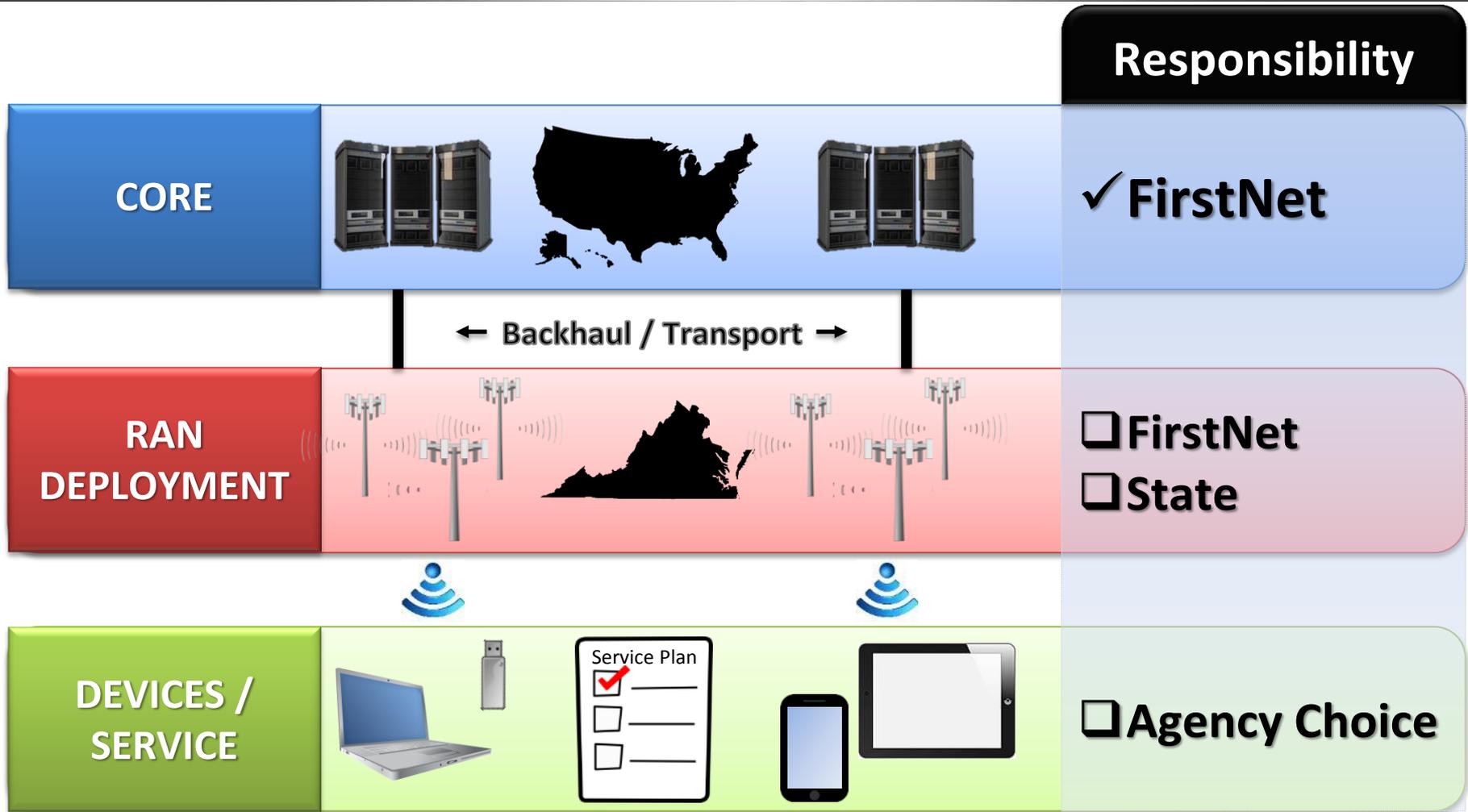


Opt-In — RAN only — FirstNet takes on responsibility to deploy, operate, and maintain RAN

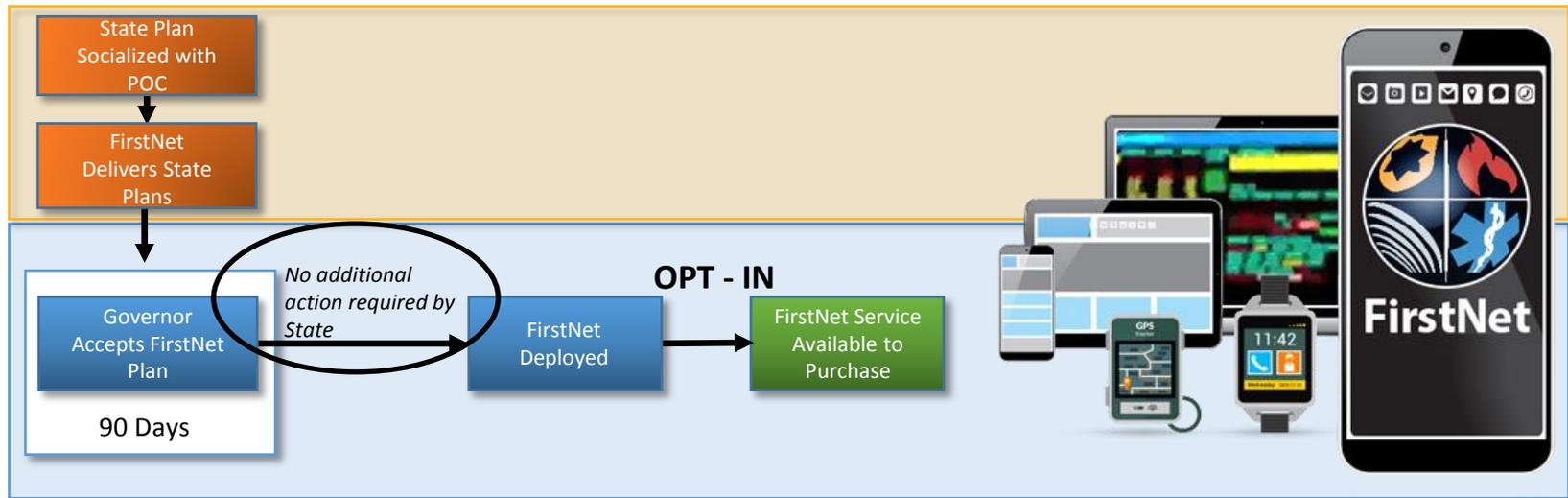
- Funds to build network — funded by FirstNet/partner
- Funds to operate/upgrade network — funded by FirstNet/partner
- User fees — funded by individuals/agencies
- Continuing consultation — staffing funded for by the state, as needed or requested



Responsibilities for Network Components



Opt-In Process



Localities don't have to opt-in!

The State Decision: Opt-Out



Opt-Out — RAN only — state takes on responsibility to deploy, operate, and maintain RAN

Alternative plan approval process —

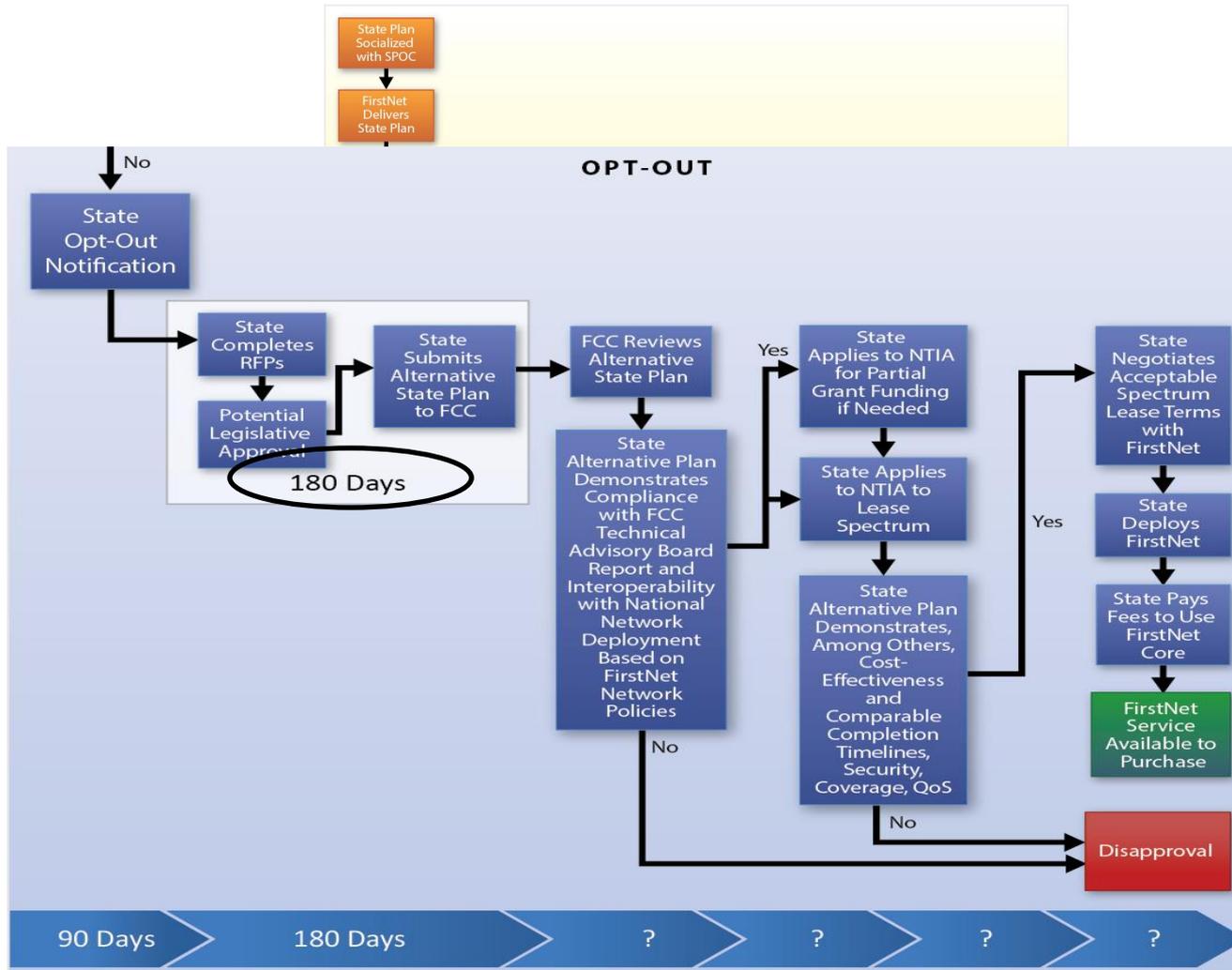
- submission to and approval by **FCC** of the interoperability requirements under the Act of the alternative RAN plan
- application to and approval by **NTIA** of technical interoperability and other Act requirements to negotiate spectrum lease terms with FirstNet
- negotiation of spectrum capacity lease with **FirstNet**

Funds to build network — funded by state resources with **potential** NTIA grant for some portion

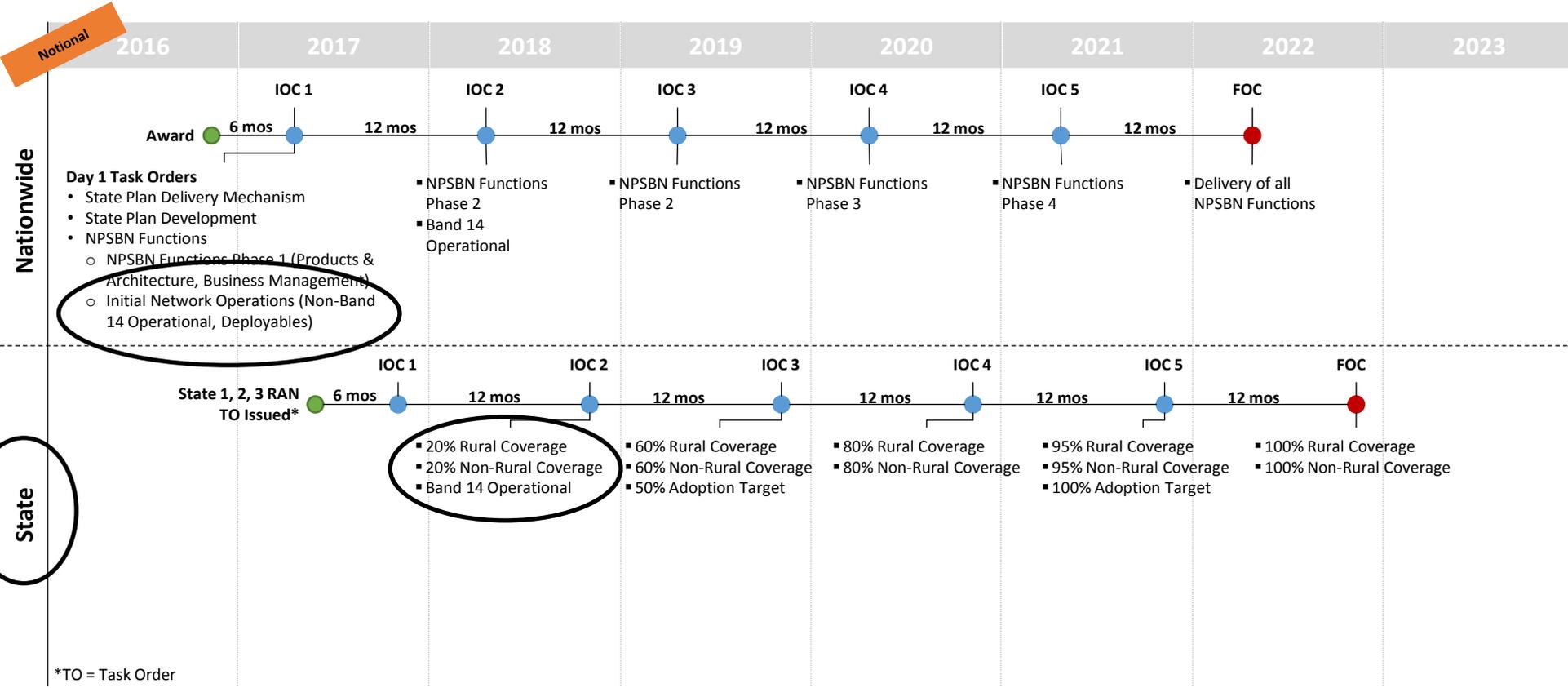
- Funds to deploy, operate, and maintain network including compliance with national network policies and use of national core — funded by state resources
- User fees — funded by individuals/agencies



Opt-Out Process



Nationwide and State IOC/FOC Tasks/Milestones

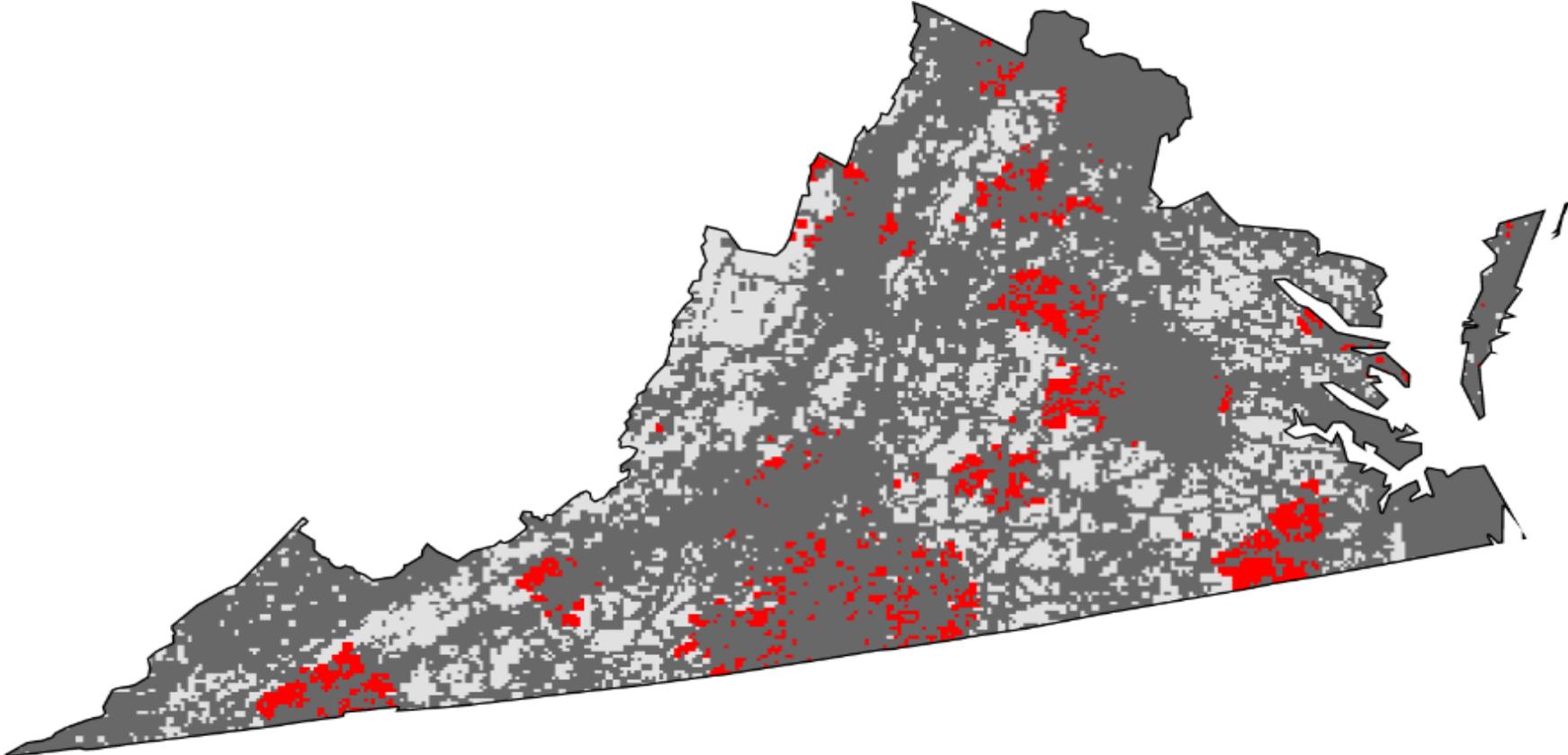


Functionality

Coverage



- states
- FirstNet_Coverage_Objective_Baseline_Aggregation
 - Non Terrestrial
 - State Input
 - FirstNet Original Baseline



Rural Deployment



Requirements of the Act

"...shall require deployment phases with substantial rural coverage milestones as part of each phase of the construction and deployment of the network"

- State Consultation Topic – identifying coverage objectives and inputs on a phased deployment

Potential Technical Options

- High power tower sites
- High power devices
- Deployable solutions (including SATCOM)



Fiscal Approach

Nationwide Reinvestment of Revenues
(As proposed in 2nd public notice)

Contractual Measures

- Considering RFP incentives for rural
- Network policies with partner(s) to evaluate existing infrastructure beyond initial deployment

Note: The definition of rural does not determine coverage, our resources will determine coverage. The definition of rural will be used to measure whether substantial rural milestones have been included in each phase of deployment. Being included in the definition of rural does not guarantee coverage, nor does being excluded from it deny coverage.

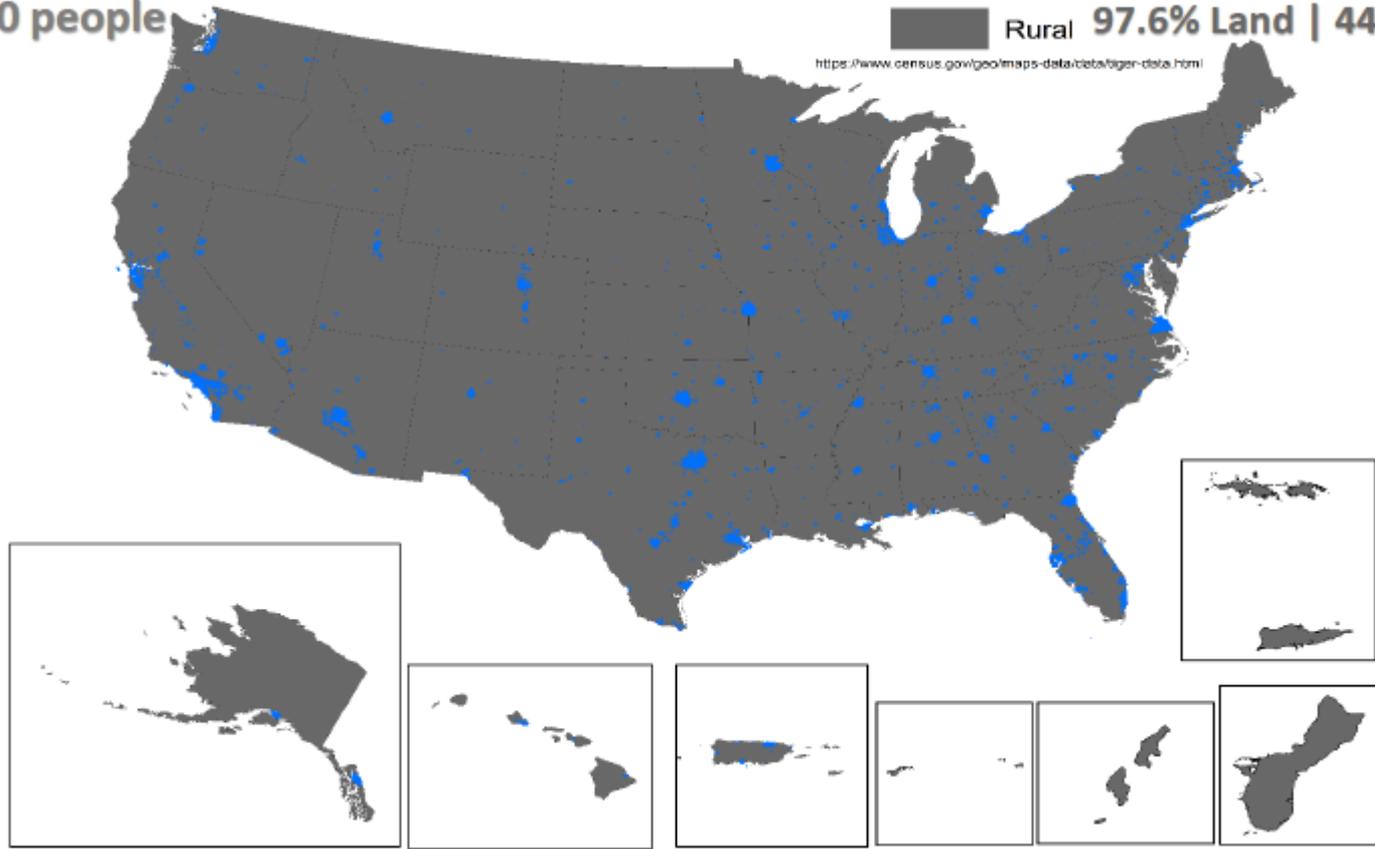
What is Urban and Rural?

All US Census Places >20,000 & adjacent to >50,000 people



| | | | | |
|---|-------|------------|--|------------|
|  | Urban | 2.4% Land | | 55.8% Pops |
|  | Rural | 97.6% Land | | 44.2% Pops |

<https://www.census.gov/gov/maps-data/data/tiger-data.html>



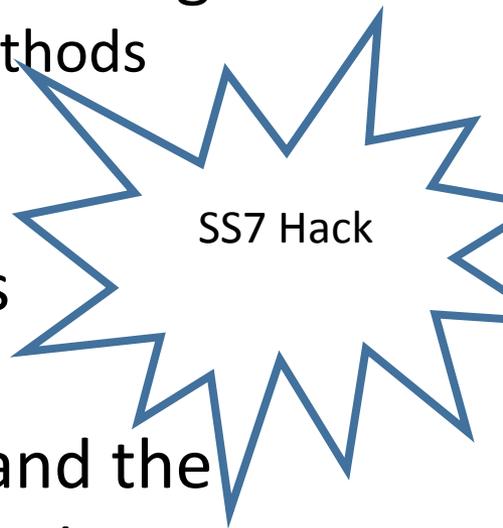
Bring Your Own Device (BYOD)



- FirstNet will support robust BYOD capabilities
 - Designate requirements and approved devices
 - Develop recommended guidelines
 - Support agencies to specify their own BYOD policies
 - Support personal and public safety use in parallel (secure containers)
 - Support advanced device and application management (MDM/MAM)
- BYOD brings along support issues:
 - Device management
 - User / agency configuration
 - Security concerns
 - Data separation and isolation
 - Identity management
 - Profile administration
 - Subscriber provisioning
 - Life cycle support
 - Device firmware & apps updates



- Critical to ensure a very high level of security and privacy, yet maintain access and support for BYOD
- Millions of disparate users, dozens of device models, and thousands of agency types present challenges:
 - Data isolation, access control, encryption methods
 - FirstNet access via LTE, Bluetooth, Wi-Fi
 - Removable media (e.g., SD cards)
- Supporting a variety of operating systems complicates the security model issues
- Inherent conflict between security tools and the paramount importance of operational needs



SS7 Hack

Applications Ecosystem *Vision*



ICAM



Federated ICAM

App Dev Env



Platform for developers

Test & Cert



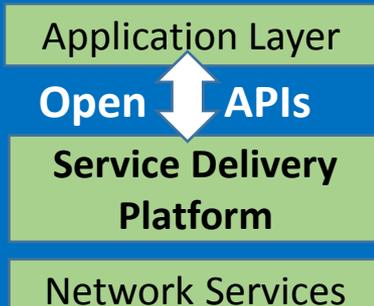
Certify as public safety grade

App Store



Coexist with commercial apps

SDP



Cloud Services



Cost-effective agency options

Local Control



Agency controls

Security



App and data security

Services and Applications Vision



Mission Critical Services

- Mission Critical –Push To Talk (MC PTT)
- Mission Critical Text, Data, Video
- Proximity Services (ProSe) & Group Communications
- Offnet Communications

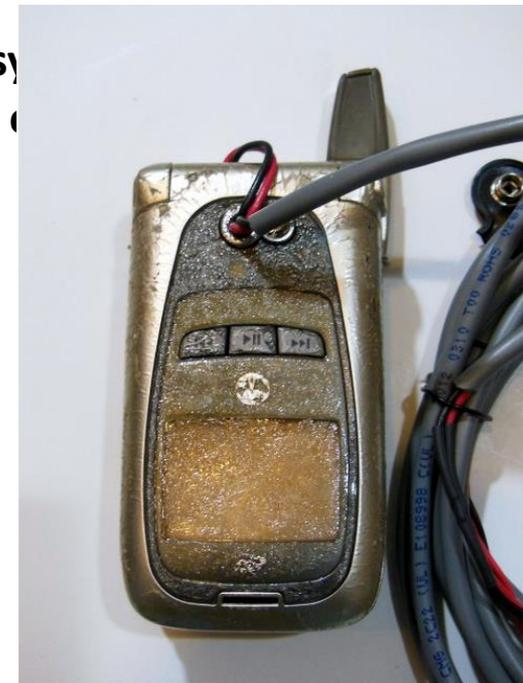
Public Safety Applications

- Mobile Local Control
- Mobile Computer-Aided Dispatch (CAD) – (vendor specific)
- Mobile Situational Awareness - (vendor specific)

Services and Enablers for Public Safety

- Enhancing Location including Z-axis (vertical)
- Enhancing Virtual Assistants for Public Safety
- Mobility Management
- MDM/MAM & Configuration Management
- ICAM Support
- Secure Runtime, Data, and Transport

What is Public Safety Grade?



PSG Features



Applications



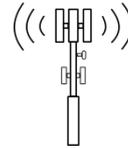
- Low Latency
- Prioritized access
- Enhanced levels of review to become certified
- May be centrally configured and managed
- Follow stricter standards of security, privacy, and data isolation
- Follow design guidelines specific to public safety

Device



- Hardened devices
- Authentication
- Storage Encryption
- Device Approval Program
- Supporting accessories

RAN



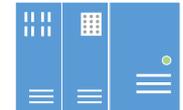
- Hardened sites
- Deployables
- Self-Organizing Networks
- eNodeB Authentication
- Fail Soft Operation
- Isolated Operation for Public Safety
- Direct Mode, ProSe and LTE Relay
- Inter-Radio Access Technology Hand Over and Roaming
- Quality of Service, Priority and Preemption
- Encryption

Backhaul



- Redundant Backhaul
- Hierarchical QoS
- Software Defined Networking
- Transport Encryption

Core



- Geo-Redundancy
- High Availability Design
- Policy Control
- Network Function Virtualization
- Physical and Cyber Security

←----- End to End All-IP, Tunneling, Encryption and Quality of Service -----→



FirstNet[®]



Virginia PSBN Outreach

Working together to bring broadband to Public Safety Entities



May 16, 2016

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Introducing the Va. Team



Project Leadership and Policy Issues

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Outreach, Education and Data

Collection

Jean Plymale

Broadband Project Manager

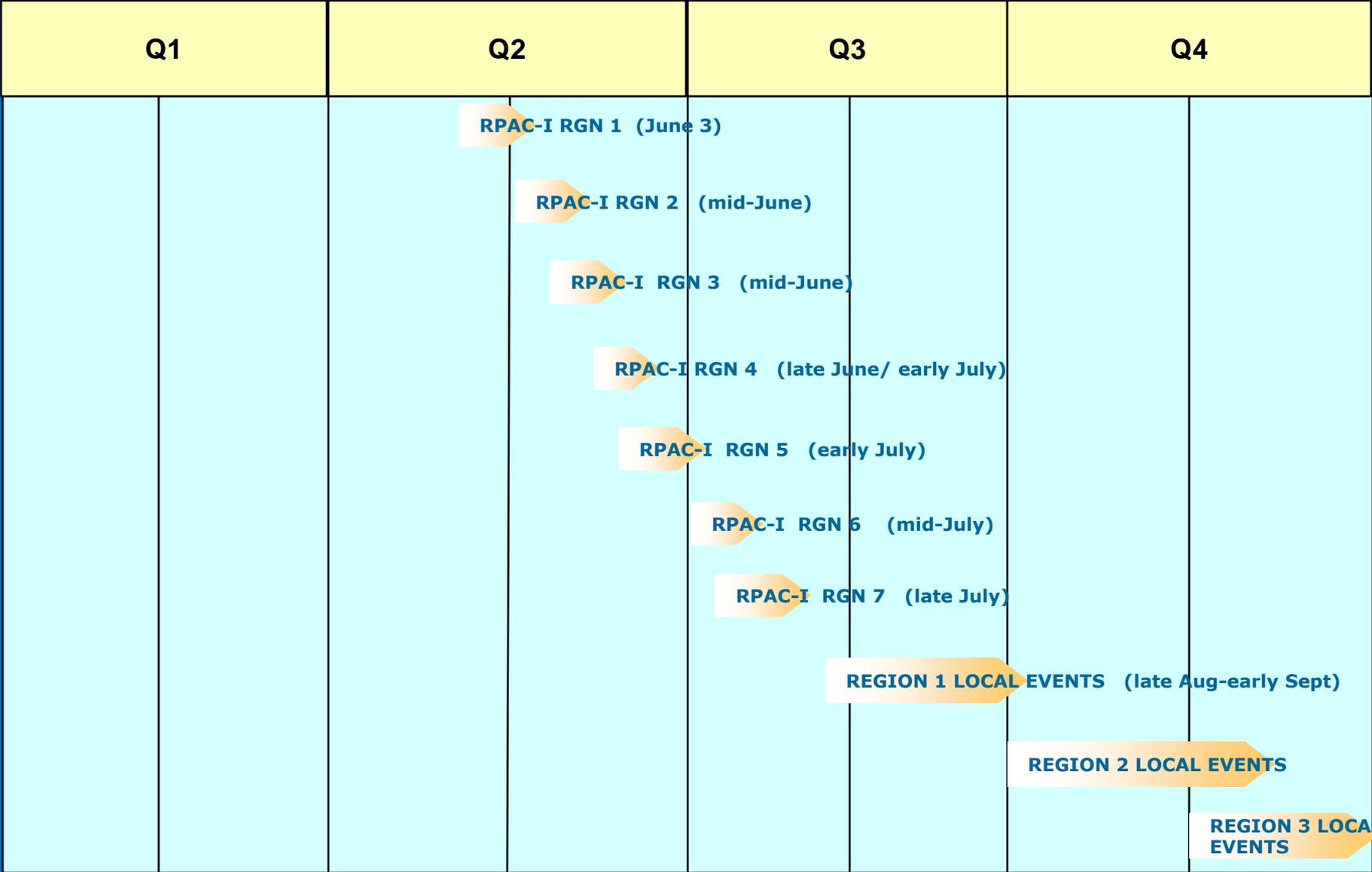
Center for Innovative Technology

Jean.Plymale@cit.org



Va FirstNet Outreach Sequence/Timeline

2016



Virginia FirstNet Outreach Plan

| 2016 | | | | | | | | 2017 | | | |
|-------------------------|----------------------|---------------------|--|--|---|---------------------|---|--|--|--|----|
| MAY | JUNE | JULY | AUG | SEP | OCT | NOV | DEC | Q1 | Q2 | Q3 | Q4 |
| - RPAC-I Chairs Webinar | - RPAC -I REG1 Event | - RPAC-I REG2 Event | - RPAC-I REG3 Event | - RPAC-I REG4 Event | - RPAC-I REG5 Event | - RPAC-I REG6 Event | - RPAC-I REG7 Event | | | | |
| | | | - Region 1 Events (5 – K&Q, Richmond, Chesterfield, Dinwiddie, Sussex) | | | | | | | | |
| | | | | - Region 2 Events (4- Winchester, Warren, Madison, Caroline) | | | | | | | |
| | | | | | - Region 3 Events (6 – Harrisonburg, Staunton, C’Ville, Lynchburg, Halifax) | | | | | | |
| | | | | | | | - Region 4 Events (4 – Norton, Scott, Bland, Washington, Galax) | | | | |
| | | | | | | | | - Region 5 Events (6- Northumberland, Gloucester, Newport News, Surry, Portsmouth, Accomack) | | | |
| | | | | | | | | | - Region 6 Events (6 – Bath, Botetourt, Roanoke, C’burg, Rocky Mount, Danville)) | | |
| | | | | | | | | | | - Region 7 Events (2 – Fairfax, Prince Wm) | |



Typical Outreach Event

RPAC-I Events (June –July)



- One per region / 2hr.
- Outreach team: Interop. PM / SME(s) / CIT
- Audience: RPAC-I, LSPOCs, PSAP managers
- Outreach consists of two parts:
 1. FirstNet 101 and implementation update.
 2. Data Collection
 - a. PSAP calls for service data to inform capacity planning and coverage discussions.
 - b. PSE usage survey to inform capacity planning and Governor.

Locality Outreach Events



- 4-6 localities meeting at a single location.
- Outreach team: Interop. PM / SME(s) / CIT
- Audience: Local public safety leadership.
- Outreach consists of two parts:
 1. FirstNet 101 and implementation update
 2. Data discussion
 - a. Proposed FirstNet coverage vs. PSAP calls for service.
 - b. PSE usage survey findings.

Key Outreach Personnel

The LSPOC's Role



- LSPOC job description: An individual who **facilitates** the VA FirstNet outreach team's engagement with their respective locality. This person assists the VA FirstNet outreach team with identifying a location and time that enables maximum meeting attendance by the leadership of local public safety disciplines, emergency management, and emergency communications. The LSPOC also assists from time to time, by **disseminating** FirstNet outreach and FirstNet deployment updates to local leaders who are interested in FirstNet, thereby promoting widespread awareness and knowledge of FirstNet matters and outreach events. LSPOCs **will not be expected** to gather data from agencies outside their own or conduct outreach themselves, but only serve as facilitators assisting the VA FirstNet outreach team by leveraging their personal knowledge of the locality to develop an effective/thorough outreach strategy for their geographic area. LSPOCS **will not be appointed or considered** in any way as designated spokespersons/representatives for their respective localities in matters pertaining to FirstNet.
- LSPOC Knowledge: An individual cognizant of all public safety disciplines, emergency management, and emergency communications agencies within their locality. Ideally, this person has **established rapport** with the leadership of each of these agencies. Examples could be a Police, Fire, Sheriff Lieutenant/Captain; Assistant Emergency Manager; Assistant PSAP manager.
- LSPOC Skills/Abilities: This person should be comfortable engaging with their leadership counterparts at applicable agencies to disseminate information and facilitate coordination of schedules to meet with the VA FirstNet outreach team. The individual should be a recognized **“key influencer”** within their locality who can encourage participation and interest for attending outreach events.

The SME's Role



- SMEs possess the professional credibility to connect with audiences and relate the potential of FirstNet to their audiences' respective disciplines.
- Deliver outreach and education to public safety on the FirstNet initiative.
 - Presentations will utilize slide decks created by the VaPSBN team and will be delivered at events scheduled by the VaPSBN team.
 - *SMEs are NOT FirstNet salespersons*, rather they serve as conduits for disseminating information provided by FirstNet to the localities.
 - SMEs should take questions from the audiences, answering to the best of their ability.
- Solicit and collect feedback from Virginia's entire public safety community to inform the state's decision on how to proceed with FirstNet's proposal for the Commonwealth.
- Advise primary decision makers in order to prepare them for the state consultation with FirstNet.



Outreach Data Collection

State Data Sharing Opportunities



FirstNet
Data Collection
Guidance Released



FirstNet RFP
Released



FirstNet
Contract
Award

Inform RFP and
Reading Room



Mar
2015

Sept
2015

Jan
2016

Apr
2016

Sept
2016

Nov
2016

Data Collection

Collect Optional Data Updates

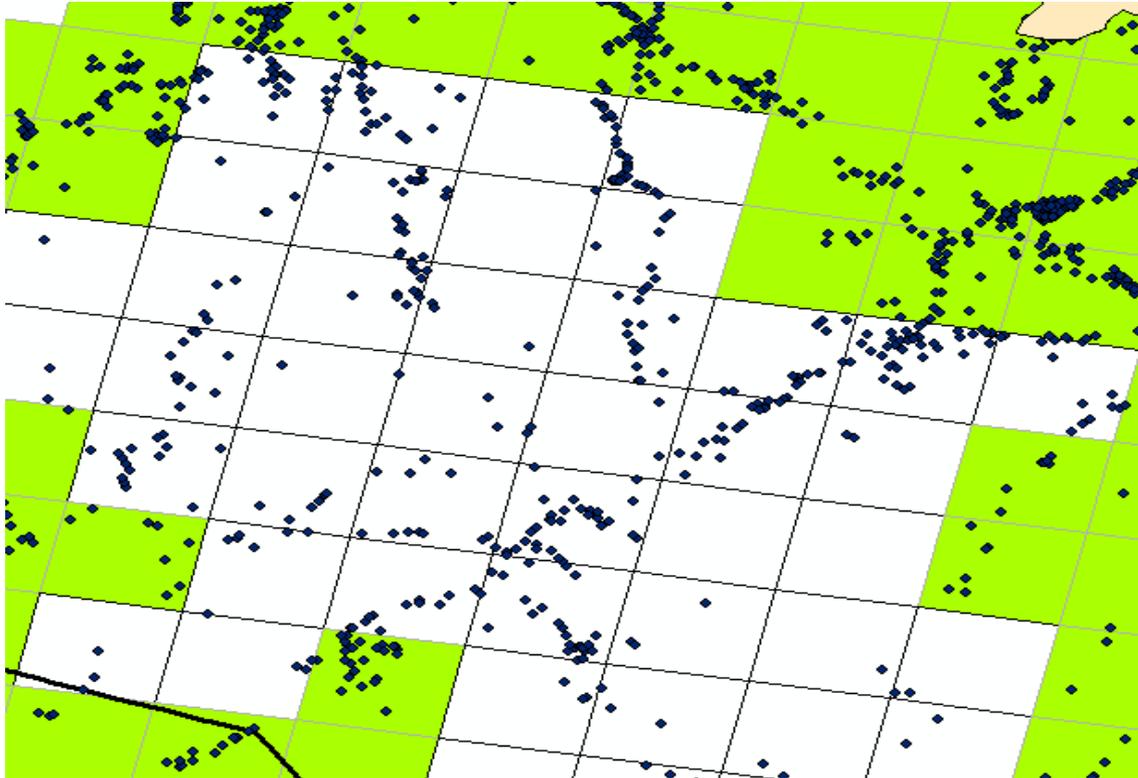
Initial Submissions
9/30/2015

Updated
Submissions
9/30/2016

Calls for Service Data



PSAP data can be used to identify areas where coverage is needed



PSAP data can help validate coverage objectives, provide insights on common operational areas and aid in capacity estimations.

For More Information



Project Leadership and Policy Issues

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Outreach, Education and Data Collection

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