Technology Update

Jeff Bratcher
Chief Technical Officer

October 1, 2015

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CTO Hiring Update

Since the last Technical Committee briefing in June:

Director of Standards **Dean Prochaska** EOD: July 12

Dean's Standards Career Highlights:

- National Coordinator for Smart Grid Conformance, Smart Grid and Cyber Physical Systems at NIST
- 20+ years' experience in the telecommunications industry
- Director of Global Technology Standards for Sprint's wireless and wireline businesses
- Numerous positions on formal Standards Boards

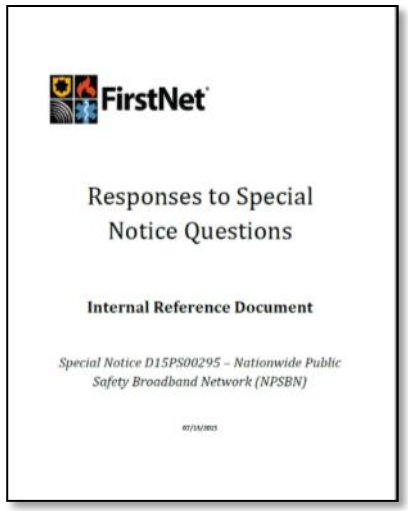
CTO Office at a Glance

CTO Federal Staff Facts (23 Onboard or w/start dates)

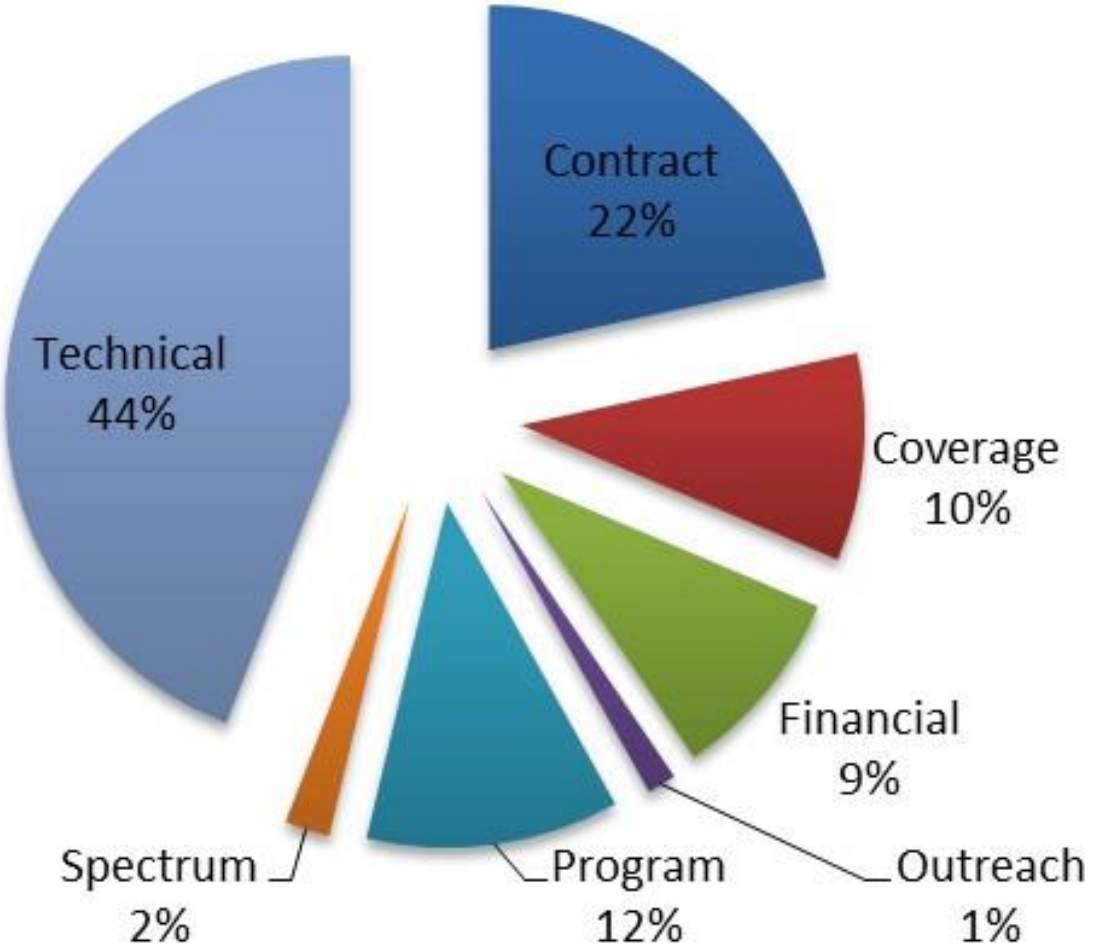
- 90% have significant (+5 years) or exclusively private-sector/wireless industry experience
- 22% are military vets representing nearly all branches of service
- 2 have direct public safety experience
- Technical headquarters in Boulder, CO established in March 2014
- Facility is 28,614 sqft; office (~14.5K sqft), warehouse (~10K sqft), and lab (~4k sqft)

Questions & Answer Process and Outcomes

- 650+ questions submitted to FirstNet
- Responses posted by 1 July at www.fbo.gov
- FirstNet continues to analyze for lessons learned, outcomes, and key metrics



Questions by Area



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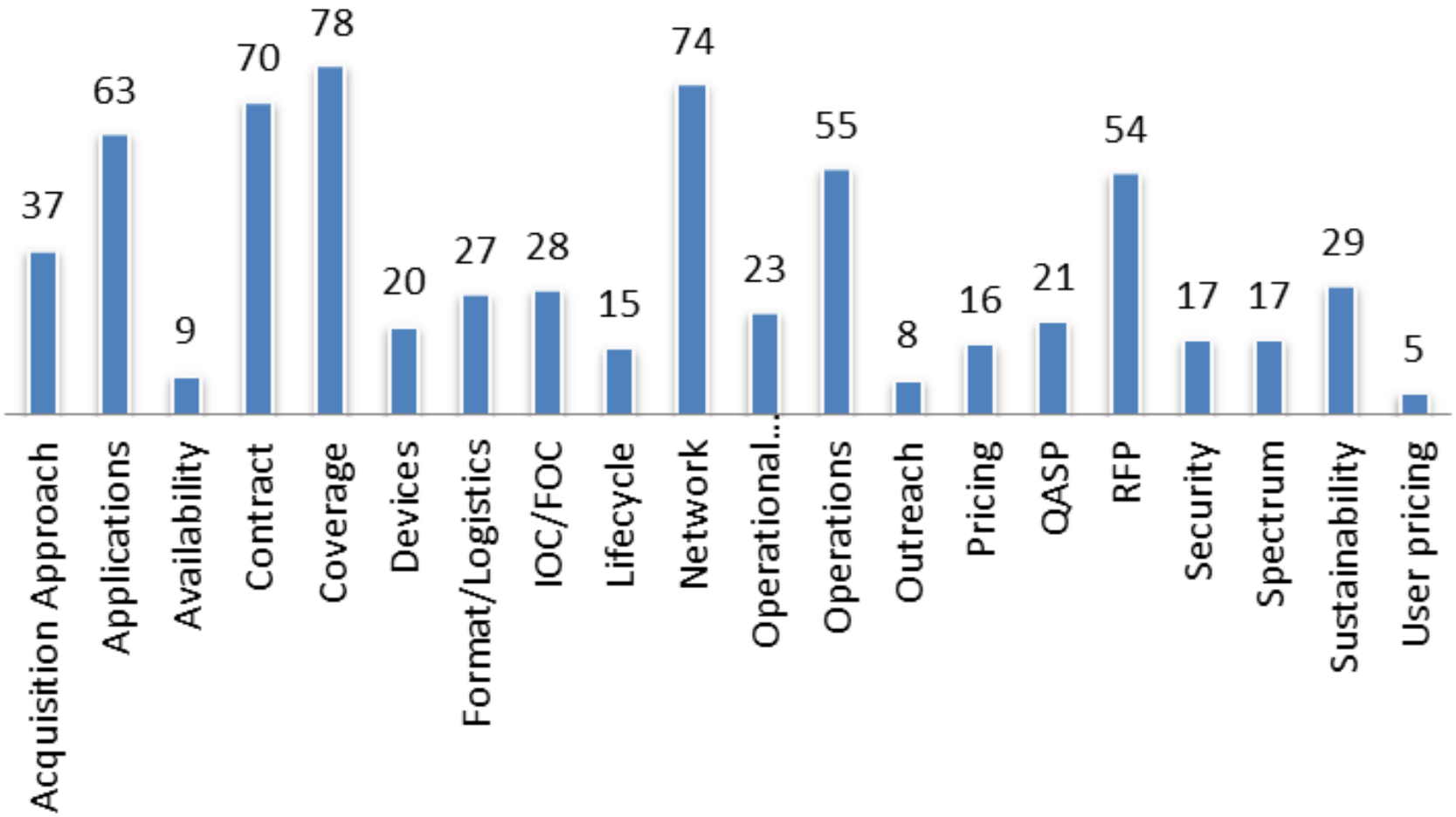
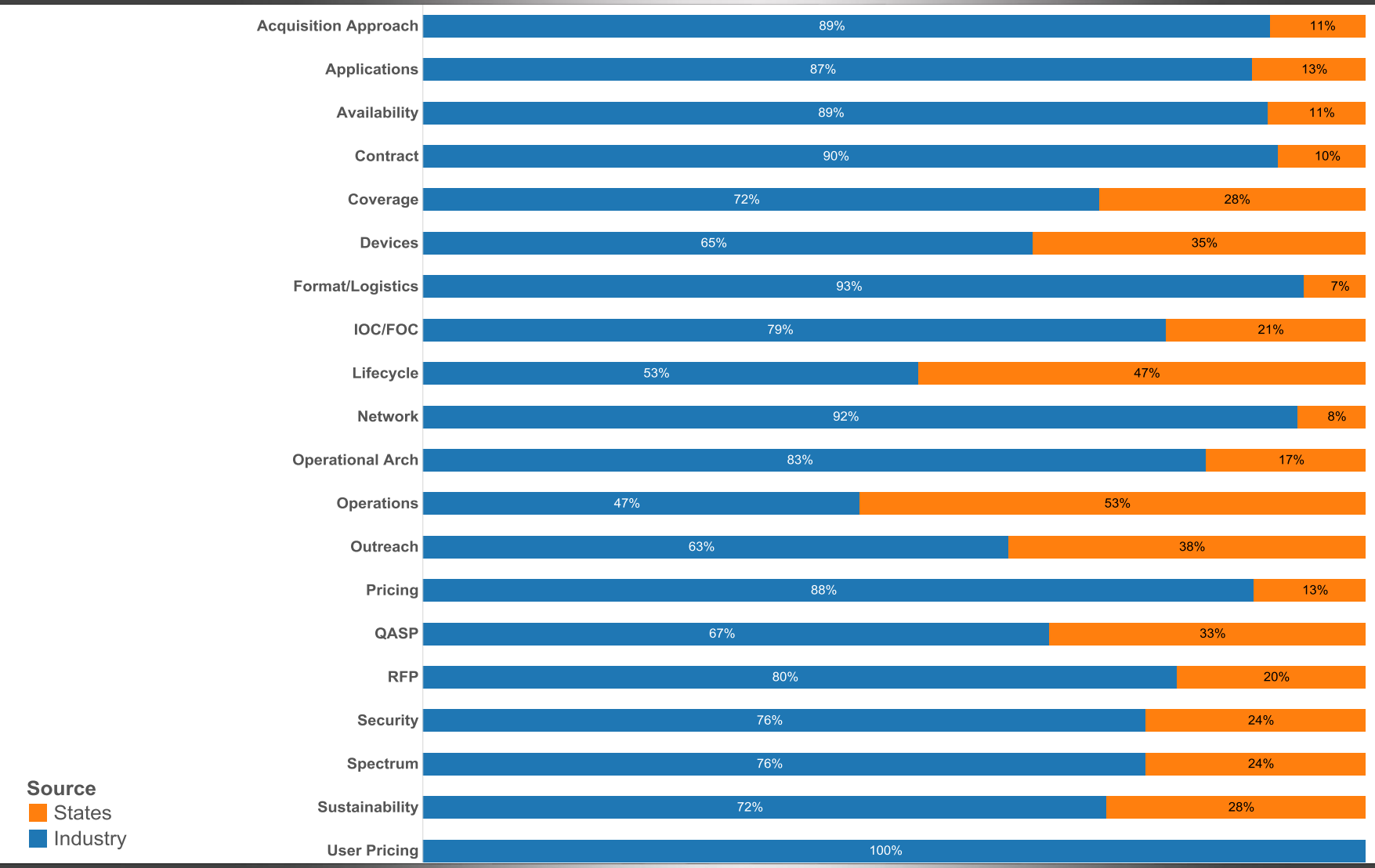


Special Notice Questions by Topic and Source



Technical Committee Briefings

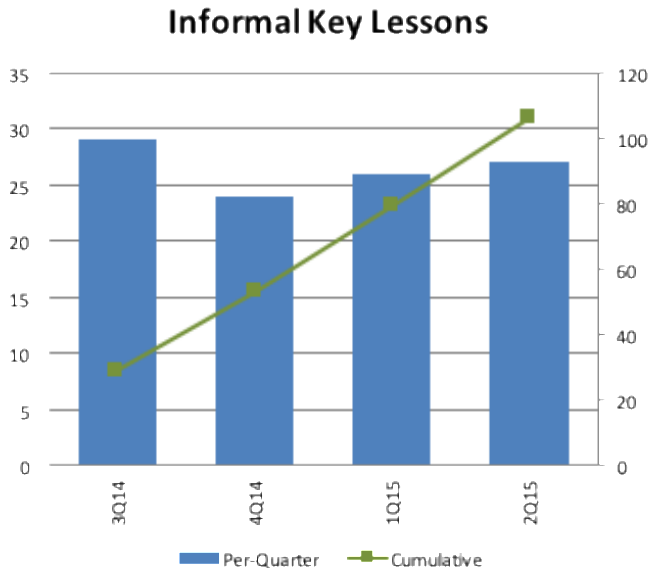
- Briefings held Sep. 9th at FirstNet Boulder and PSCR Lab

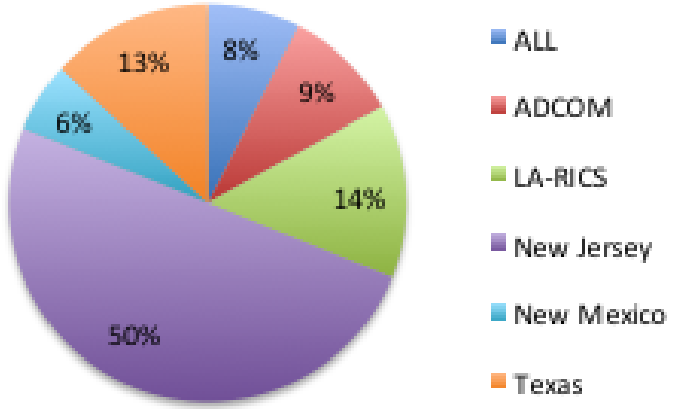
Early Builder Projects

SMLA: Spectrum Manager Lease Agreement
KLCP: Key Learning Conditions Plan

Project	SMLA	KLCP	Sites	Primary Focus Areas / Key Learning Conditions	On-Air
1. **LA-RICS**	Yes	Yes	77	Secondary responders partnerships, Quality of Service, priority/pre-emption	3Q15
2. **NM**	Yes	Yes	7	Hosted core, int'l border spectrum management, Federal partnerships	Now*
3. **NJ**	Yes	Yes	29	Deployable assets, Disaster Recovery, training exercises, Network Operations Center notification	Now*
4. **ADCOM**	Yes	Yes	20	Public Safety Communications Research program/FirstNet test support, Band Class 14 device testing, demonstration access	Now
5. **TX**	Yes	Yes	93	Core migration, data analytics, rural coverage, special events, LTE training	Now

Early Builder Informal Key Lessons Learned





- Surpassed 100 IKLs logged during second quarter
  - 106 cumulative
- New Jersey and Texas continue to provide the widest breadth and quantity of IKLs
- LA continues to provide IKLs focused on use of public safety assets
- Team expects volume of informal IKLs to reduce as focus shifts to formal KLC execution

NIST - PSCR Updates

- NIST R&D Funding - Public Law 112-96: $100-$300M
  Focus on stakeholder driven R&D Roadmap areas:
  - Development of broadband requirements, standards, technologies, and applications for public safety:
    Mission Critical Voice over LTE
    Land Mobile Radio (LMR) to LTE integration
  - Addressing R&D necessary for critical features identified by public safety beyond current generation of broadband technology:
    Location-Based Services (Summit to be held on Oct. 21-22 @ NIST)
    Data Analytics
    Device Usability/User Interface

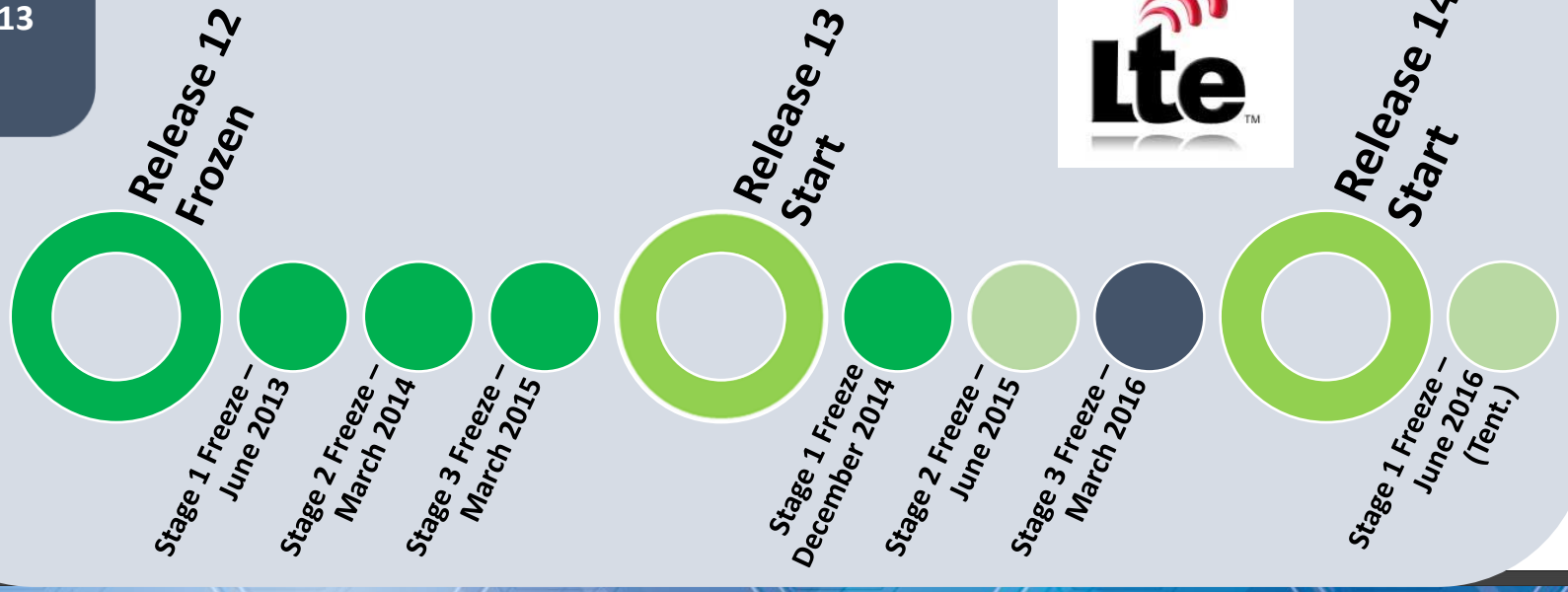
Standards Development

Proximity Services
Release 12 & 13
(PROSE)

Group Communications
Release 12 & 13
(GCSE)

Mission Critical Push-To-Talk
Release 13
(MCPTT)

Mission Critical Push-to-Talk standards also supported by the United Kingdom, South Korea, Australia, Canada, France, Germany, and the Netherlands.



PSCR Testing and Evaluation Recent Focus Areas

FirstNet®

Identify Standard Tools

Cell
AC Barring

User/Device
Access Class
Establishment Cause
ARP
Pre-Emption

Application
Bearer Admission
Bearer Modification
QoS

Vendor Discussions

Road Maps
Features
Releases

Deep Dives
Admission Control
Auto-ACB

Functional Evaluation

Limits
Max Users
Max Bearers
Max Throughput

Scenarios
Ramp Up
Saturation
Overload*
Triggers

PSCR Testing and Evaluation Current Priority Tasks

FirstNet®

Core Networks	Devices	Applications	RAN
-Local QPP -Dynamic QPP -End-to-End QPP	-Mobile Device Secure Container Technology -MCU (Satellite Focus) -Inter-Network Mobility	-Security Validation Tools and Methods (Static and Dynamic) -Federated Identify Management, Trust Frameworks, ABAC	-RF Measurements

Early Goal: Rapid Transfer of information in key task areas.

User Advocacy Update

Amanda Hilliard
Director of Outreach

David Buchanan
Director of State Consultation

October 1, 2015

Recent Stakeholder Events

Executed well attended stakeholder events this quarter

- July 9 Single Point of Contact (SPOC) Webinar with 78 attendees
- August 27 Industry Day with 425 attendees
- August 28 Public Safety Briefing Webinar with 120 attendees
- September 22 Public Safety Advisory Committee (PSAC) Webinar
- September 30 PSAC Executive Committee Meeting

Outcomes: Socialized, addressed questions, and obtained input on key FirstNet activities including data collection, draft RFP documents, and public notices

Recent Stakeholder Events (continued)

APCO 2015
August 16-19 | Washington, DC

NIJ National Institute of Justice

National Sheriffs' Association

International Association of Fire Chiefs

NW Tribal Emergency Management Council

NASTD
National Association of State Technology Directors
Technology Professionals Serving State Government

EMS World

National Governors Association

NCSL
National Conference of State Legislatures

NACo National Association of Counties

Board members and staff provided FirstNet updates at over 100 stakeholder events since the June 2015 Board Meeting

Fall 2015 SPOC Meeting Preview

- State and territory representatives invited
  - SPOC plus 2 additional representatives per State or Territory
  - PSAC Executive Committee
  - PSAC Tribal Working Group
- Meeting Outcomes:
  - Engage state and territory representatives who are involved in FirstNet planning
  - Fine-tune FirstNet planning activities based on input received from SPOCs
  - Share successes and lessons learned for FirstNet planning activities

Over 130 representatives from 52 states and territories have registered for the Fall 2015 SPOC Meeting

Fall 2015 SPOC Meeting Sessions

- Acquisition Updates
- State Consultation in 2016
- State Plan Process for 2016
- Data Collection and Analysis Process
- State and Location Implementation Grant Program Updates
- Regional Breakout Sessions
- PSAC Updates
- CTO Updates
- Early Builders Update Panel Discussion

- Education and Outreach Lessons Learned
- Metropolitan Engagement
- Tribal Engagement
- Federal Engagement
- Public Notice
- Operational Architecture Overview and Feedback
- Quality of Service, Priority and Preemption

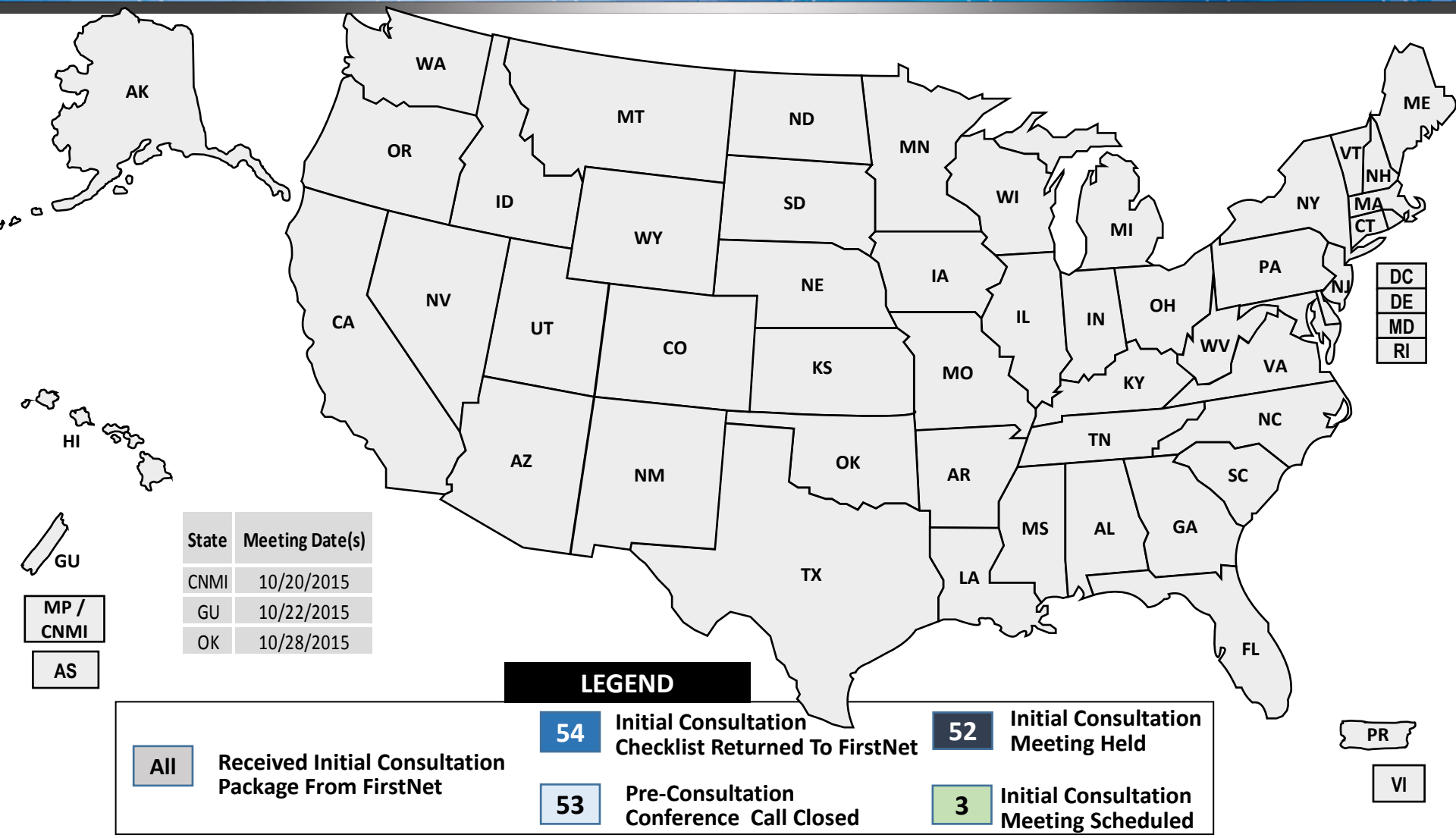
September PSAC EC Meeting

- Executive Committee Session
- FirstNet Briefings
  - Outreach
  - Consultation
- Working Groups Review
- Task Team Deliverables Review
- New Tasking Discussion
- Board and Senior Management Meetings

New PSAC Members

- ***Guy Cameron*** – Governors Homeland Security Advisors Council
- ***Scott Edson*** – Major Cities (Police) Chiefs Association
- ***Len Humphries*** – National Association of Counties
- ***Tony Anderson*** – National League of Cities
- ***Jeff Stern*** – National Emergency Management Association
- ***Michael Jacobson*** – National Consortium of Justice Information Statistics (SEARCH)
- ***Reid Vaughan*** – National Volunteer Fire Council
- ***Jimmy Gianato*** – National Governors Association
- ***Steve Correll*** – Nlets (The International Justice and Public Safety Network)

State Consultation Activities
As of October 1, 2015



State	Meeting Date(s)
CNMI	10/20/2015
GU	10/22/2015
OK	10/28/2015

LEGEND

All	Received Initial Consultation Package From FirstNet
54	Initial Consultation Checklist Returned To FirstNet
53	Pre-Consultation Conference Call Closed
52	Initial Consultation Meeting Held
3	Initial Consultation Meeting Scheduled

State Consultation Activities
As of October 1, 2015

2016 User Advocacy Strategic Goals

Broaden consultation and outreach efforts to:

- Obtain input from a wide range of stakeholders from local, state, tribal and federal entities to inform network planning
- Prepare Governors for state plan decision
- Prepare stakeholders for adoption and use of the FirstNet network

2016 Consultation – Focus Areas

Preparing for the NPSBN	Planning for RAN Deployment	Making the FirstNet Decision	The Value of FirstNet
▪ Network Management and Operations ▪ Public Safety Grade ▪ Priority Services ▪ Cyber Security ▪ Current Uses of Broadband in Public Safety ▪ Training ▪ Post State Plan Consultation	▪ Data Validation ▪ Coverage, including Rural and Urban ▪ State Planning Template, including Core and RAN	▪ Value of FirstNet ▪ FirstNet Business Model ▪ Opting In to the FirstNet buildout	▪ Metropolitan, Rural, and Tribal Engagement ▪ FirstNet Difference ▪ Enhancing the Customer Experience

CRM Tool Launched

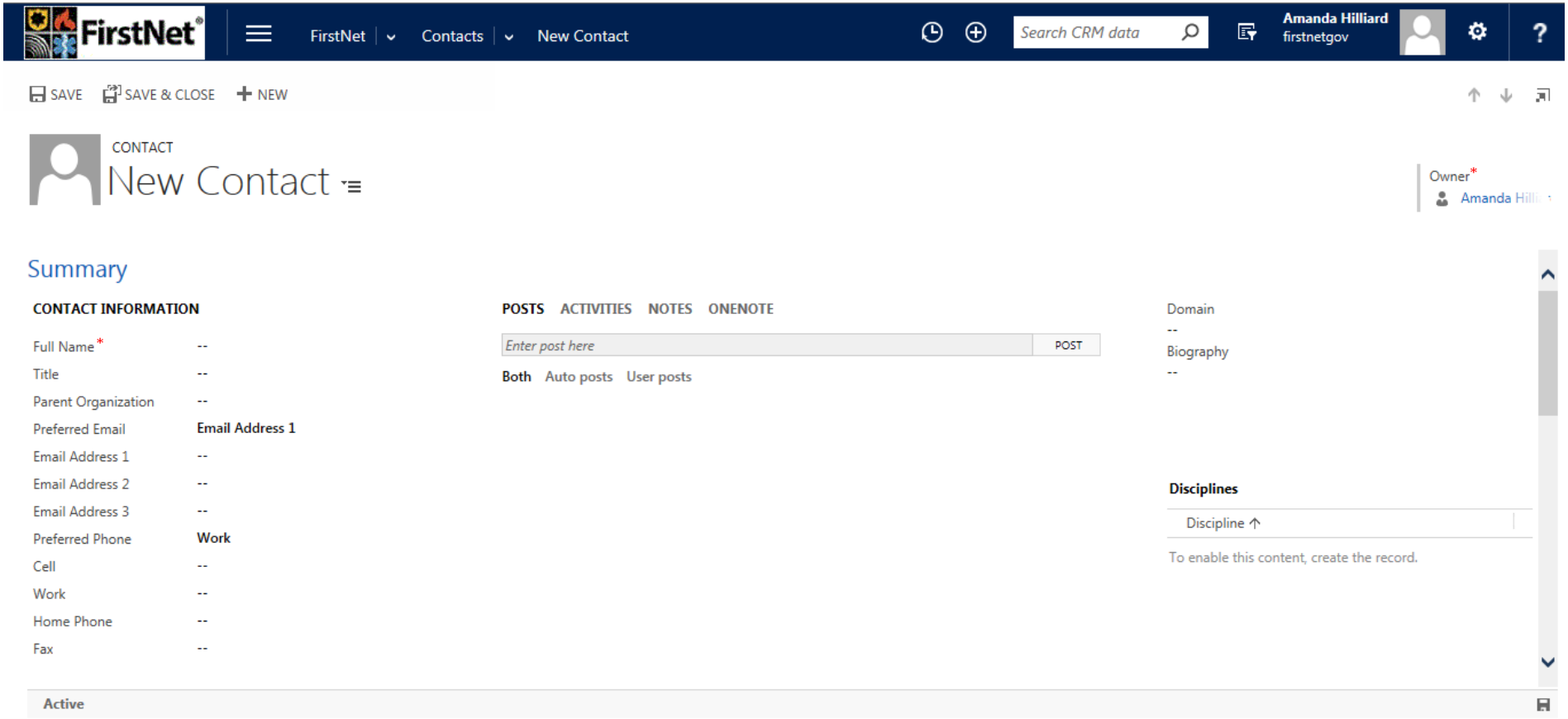
✓ **Phase 1 Launched**

- **Contacts Management:** Logging contacts and ongoing communications with contact
- **Event Management:** Tracking events from initial planning through post event follow-up

Phase 2

- **Project/Task Management:** Tracking of tasking, deliverables, and events
- **Stakeholder Portals:** Providing online forum for key stakeholder groups to collaborate

CRM Screenshot



State Plan Update

Rich Reed
Director of State Planning

October 1, 2015

One Plan / Different Needs

What the Law requires…

What the States are looking for…

What the RFP will produce…

What the FCC & NTIA need …

State Plan Delivery

- **Issues to consider include:**
  - Timeline / speed
  - Development cost
  - Security
  - Vendor sensitive information / control
  - Ability to disseminate / collect feedback
  - Version / access control
  - FCC/NTIA comparison
  - Complexity / level of detail
  - Supports Governor-level decision

Considered Formats

- **Comprehensive paper plan**
- **Interactive web-based portal**
- **PowerPoint format**

State Plan Progress

ONLINE State Plan Approach
(FirstNet Leadership)

Analyzing Info from Initial Consultation
(53 Complete as of Sept 30)

Data Collection / Analysis
(Sept 30 Due Date)

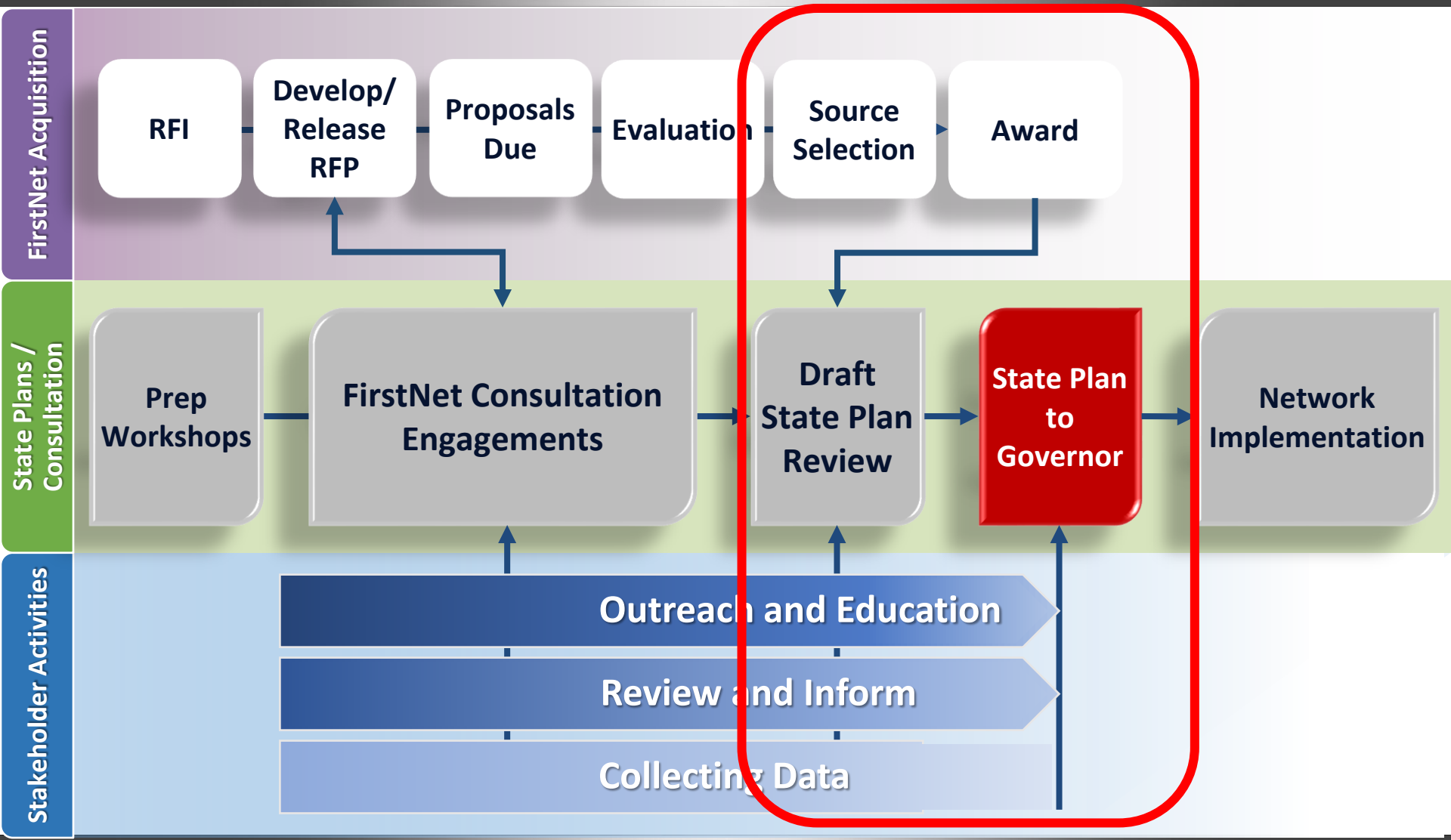
CTO/UA State Plan Elements
(Sept 15-16 Meeting)

NTIA / FCC Alternate Plan Approach
(Weekly Meeting)

State Plan Elements

- State Consultation
- Federal Input
- State Radio Access Network (RAN) Plan
- Public Safety Grade Recommendations
- Users
- Network Operator/User Training Requirements
- State Decision Process/Requirements /Timeline
- FirstNet Nationwide Design
- Device Strategy, Roadmap, and Support
- Applications
- Network Operations
- Deployable(s) approach
- In-Building approach
- Financials (cost to build, user fees)

State Plan – Bringing Everything Together



The Committee is now in closed session