State of 911 Webinar

NATIONAL 911 PROGRAM

FEBRUARY 10, 2015

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State of 911 Webinar Series

Designed to provide useful information about Federal and State participation in the planning, design, and implementation of Next Generation 911 (NG911) coupled with real experiences from leaders overseeing these transitions throughout the country

Webinars are held every other month and typically include presentations from a Federal-level 911 stakeholder and State-level 911 stakeholder, each followed by a 10-minute Q&A period

For more information on future webinars, access to archived recordings and to learn more about the National 911 Program, please visit 911.gov

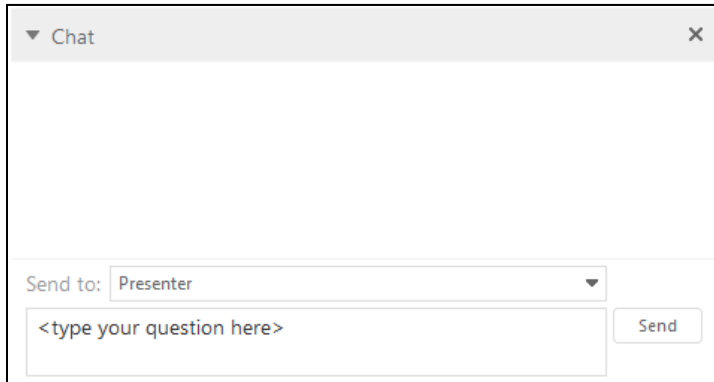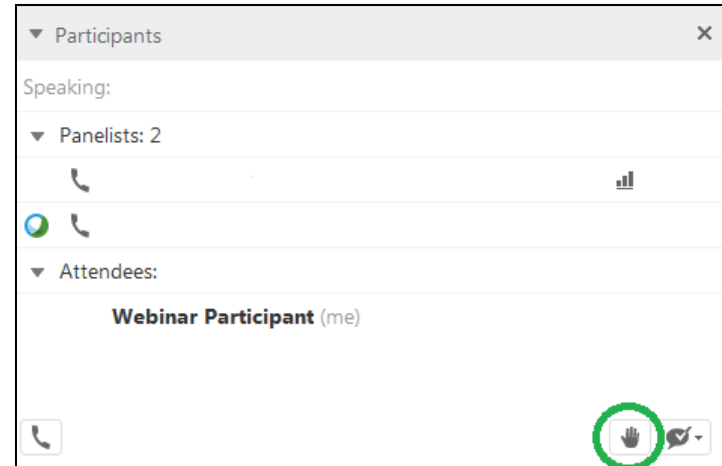Feedback or questions can be sent to: National911Team@mcp911.com

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Update on FCC 911 Proceedings

State of 911 Webinar Series
National 911 Program
February 10, 2015

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Overview

- Indoor Location Accuracy

- Text-to-911

- 911 Reliability

- Task Force on Optimal PSAP Architecture

- 6th Annual 911 Fee Report

INDOOR LOCATION ACCURACY

911 Calling Trends

The Indoor Location Problem:

- Increased likelihood that wireless 911 calls will come from indoor environments:
    - Consumers replacing traditional landline telephony with wireless phones
    - The majority of wireless calls are now made indoors
    - The majority of calls to 911 are from wireless phones, even if landline is available

- Location information for indoor wireless calls lacks the address-specific information provided with most wireline calls

- Traditional location accuracy technologies optimized for outdoor calling

Indoor Location Proceeding: Key Milestones

Date	Milestone
February 2014	**Third Further Notice of Proposed Rulemaking** ▪ Feb. 20: http://www.fcc.gov/document/proposes-new-indoor-requirements-and-revisions-existing-e911-rules
March – December 2014	**Extensive Period of Comment and Record Building**
November 2014 – January 2015	**APCO, NENA, & Nationwide Carrier Roadmap** ▪ Nov 18: http://apps.fcc.gov/ecfs/document/view?id=60000986637 ▪ Jan 21: http://apps.fcc.gov/ecfs/document/view?id=60001014958 ▪ Jan 23: http://apps.fcc.gov/ecfs/document/view?id=60001016138
January 2015	**CCA Parallel Path** ▪ Jan 16: http://apps.fcc.gov/ecfs/document/view?id=60001014209 ▪ Jan 23: http://apps.fcc.gov/ecfs/document/view?id=60001016022
January 29, 2015	**Fourth Report and Order** ▪ http://transition.fcc.gov/Daily_Releases/Daily_Business/2015/db0203/FCC-15-9A1.pdf

Key Features of the Order

- Establishes clear metrics and timelines for wireless carriers to implement technical solutions that will improve location for indoor wireless calls

- Draws from the November 2014 APCO-NENA-Nationwide Carrier Roadmap Agreement and Addendum, as well as the CCA Non-Nationwide Carrier Parallel Path Agreement

- Adopts dispatchable location and improved horizontal location requirements

- Requires near term delivery of uncompensated barometric pressure data and long term development and deployment of z-axis solution

- Builds in "backstop" requirements to ensure measurable improvement in indoor location

- Creates an open, independent, transparent, and realistic test bed

- Assesses performance using live 911 call data in representative cities

Dispatchable Location

- Public safety's "gold standard"
    - Equivalent to wireline location information
    - Important advantages for deaf, hard of hearing, and speech disabled
- Leverages Wi-Fi, beacons and other technologies to provide street address information with wireless 911 calls
- Defined as "street address of the calling party, plus additional information such as suite, apartment or similar information necessary to adequately identify the location of the calling party"
    - 445 12th St, SW Wash., DC, Floor 7, 7-A727 vs. coordinate of:38.883463,-77.028342, + 10m above ground height
- Establishes National Emergency Address Database (NEAD)

Horizontal Standards

CMRS providers must provide:

- Dispatchable location, or

- Latitude/Longitude (x/y) coordinates within 50 m of the caller for:

  - 40% of calls within **2 years**

  - 50% of calls within **3 years**

  - 70% of calls within **5 years**

  - 80% of calls within **6 years**

- Non-nationwide carriers can extend the 5- and 6-year deadlines by six months and one year respectively based on timing of VoLTE deployment in their networks

Vertical Standards

Within three years:

- Provide uncompensated barometric data to PSAPs from any capable device
- Develop z-axis metric proposal to be submitted for Commission approval

Z-axis Metric:

- In **top 25 CMAs within 6 years** and **top 50 CMAs in 8 years**:
    - Populate NEAD with reference points equal to 25% of population of CMA, or
    - Deploy z-axis technology to cover 80% of population of CMA
- Non-nationwide carriers have an additional year to achieve these benchmarks

List of Top 50 Most Populous Cellular Market Areas[1]

1. New York-Northern New Jersey-Long Island, NY-NJ-PA
2. Los Angeles-Long Beach-Santa Ana, CA
3. Chicago-Joliet-Naperville, IL-IN-WI
4. Dallas-Fort Worth-Arlington, TX
5. Philadelphia-Camden-Wilmington, PA-NJ-DE-MD
6. Houston-Sugar Land-Baytown, TX
7. Washington-Arlington-Alexandria, DC-VA-MD-WV
8. Miami-Fort Lauderdale-Pompano Beach, FL
9. Atlanta-Sandy Springs-Marietta, GA
10. Boston-Cambridge-Quincy, MA-NH
11. San Francisco-Oakland-Fremont, CA
12. Detroit-Warren-Livonia, MI
13. Riverside-San Bernardino-Ontario, CA
14. Phoenix-Mesa-Glendale, AZ
15. Seattle-Tacoma-Bellevue, WA
16. Minneapolis-St. Paul-Bloomington, MN-WI
17. San Diego-Carlsbad-San Marcos, CA
18. St. Louis, MO-IL
19. Tampa-St. Petersburg-Clearwater, FL
20. Baltimore-Towson, MD
21. Denver-Aurora-Broomfield, CO
22. Pittsburgh, PA
23. Portland-Vancouver-Hillsboro, OR-WA
24. Sacramento--Arden-Arcade--Roseville, CA
25. San Antonio-New Braunfels, TX
26. Orlando-Kissimmee-Sanford, FL
27. Cincinnati-Middletown, OH-KY-IN
28. Cleveland-Elyria-Mentor, OH
29. Kansas City, MO-KS
30. Las Vegas-Paradise, NV
31. San Jose-Sunnyvale-Santa Clara, CA
32. Columbus, OH
33. Charlotte-Gastonia-Rock Hill, NC-SC
34. Indianapolis-Carmel, IN
35. Austin-Round Rock-San Marcos, TX
36. Virginia Beach-Norfolk-Newport News, VA-NC
37. Providence-New Bedford-Fall River, RI-MA
38. Nashville-Davidson--Murfreesboro--Franklin, TN
39. Milwaukee-Waukesha-West Allis, WI
40. Jacksonville, FL
41. Memphis, TN-MS-AR
42. Louisville/Jefferson County, KY-IN
43. Richmond, VA
44. Oklahoma City, OK
45. Hartford-West Hartford-East Hartford, CT
46. New Orleans-Metairie-Kenner, LA
47. Buffalo-Niagara Falls, NY
48. Raleigh-Cary, NC
49. Birmingham-Hoover, AL
50. Salt Lake City, UT

Test Bed Specifics

- Open, transparent, and technology-neutral

- Will utilize realistic indoor environments across four morphologies: dense urban, urban, suburban, and rural

- Managed by an independent administrator

- Will demonstrate and characterize performance of each technology, which will be later validated by that technology's performance as reflected by live call data

Using Live 911 Call Data

- Beginning at 18 months, providers will report aggregate live 911 call data from the six test cities:
    - Quarterly for all nationwide providers
    - Every 6 months for non-nationwide providers
- The data will show percent of time each location method was used (satellite, DL, z-axis, other technologies or hybrids) to meet accuracy requirements
    - Measurements will be reported for each of the morphologies in each city
- PSAPs will be entitled to obtain live call data from CMRS providers and seek Commission enforcement of these requirements within their jurisdictions, but they may seek enforcement only if:
    - they have implemented policies that are designed to obtain all 911 location information made available by CMRS providers; and
    - they have first attempted to resolve the issue informally with the CMRS provider

Test Cities for Live 911 Call Data

- Six test cities chosen by ATIS ESIF as representative of all dense urban, urban, suburban and rural morphologies:
  - San Francisco Bay Area, CA
  - Chicago, IL
  - Atlanta, GA
  - Denver/Front Range, CO
  - Philadelphia, PA
  - Manhattan, NYC

Measuring Compliance

Technology	Test Bed Call Performance	Actual 911 Call Performance	Carrier Performance	
Technology A	<50 m for 90% of test calls	<50 m for 50% of live calls	90% * 50% = 45%	45% + 20% = 65%
Technology B	<50 m for 100% of test calls	<50 m for 20% of live calls	100% * 20% = 20%	
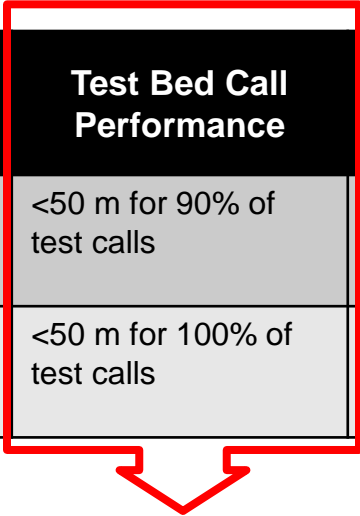
- *Technologies should perform at an ideal level in the test bed*
- *Performance in the test bed will be certified by the provider and will serve as a baseline against which the live call performance of that technology will be measured*

Carrier Performance	Year	FCC Benchmark
65%	2	40%
	3	50%
	5	70%
	6	80%
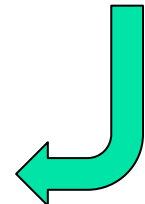
Reporting Requirements

- At 18 months, nationwide CMRS providers must
  - Begin reporting live 911 data
  - Submit initial implementation plan for meeting indoor requirements at 3- and 6-year benchmarks
    - Non-nationwide providers have an additional 6 months to submit these plans
  - Submit a progress report on the deployment and implementation of indoor requirements
  - Submit a privacy and security plan for the NEAD
- At 36 months, all CMRS providers must submit a progress report on the implementation of their initial plan and assessment of any dispatchable location deployment efforts
  - Nationwide CMRS providers must submit a z-axis metric to Commission for review and approval

Certification Requirements

- **Compliance Certification**
  - Certification is required within 60 days of each location benchmark
  - Providers must certify:
    - that technology being used has been certified in the test bed;
    - that the technology deployed across carriers' networks is consistent with test bed deployments AND deployments in test cities for live 911 call data
  - Providers must re-certify any time a new technology is introduced into the network
- **NEAD Privacy and Security**
  - Prior to activation of database, CMRS providers must certify that NEAD is only being used for responding to 911 calls

Other Requirements

- ## Confidence and Uncertainty (C/U)
  - Sets a standardized confidence level of 90%, which eliminates uncertainty around this information

- ## Maximum latency (Time To First Fix)
  - Establishes a 30-second maximum latency period for E911 location
    - For a 911 call to be counted towards compliance with existing location accuracy requirements, the location fix must be provided within 30 seconds of call initiation
  - Applies to outdoor calls under the existing Phase II rules
  - Defers applying latency standards to indoor calls pending further development of indoor location technology

TEXT-TO-911

Text-to-911 Implementation

Covered Text Providers (CTPs)

- By December 31, 2014: CTPs must be capable of supporting text-to-911, independent of whether they have received a PSAP request.

- CTPs have six months from December 31, 2014 – until June 30, 2015 – to begin delivering 911 text messages to PSAPs that have submitted a valid request for text-to-911 service on or before December 31, 2014, unless another timeframe is mutually agreed upon by the individual PSAP and the covered text provider.

- CTPs have six months from any valid PSAP request received after December 31, 2014, to commence delivery of text-to-911 for that PSAP.

- Text-to-911 PSAP Registry
  - http://www.fcc.gov/encyclopedia/psap-text-911-readiness-and-certification

PSAPs

- "Valid PSAP Request"
  - Requesting PSAP certifies that it is technically ready to receive 911 text messages in the format requested and authorized to accept texts
  - The requesting PSAP has notified the covered text provider that it is both technically ready to receive 911 text messages and has been authorized to accept such messages.

- Notification to Covered Text Providers
  - FCC-maintained centralized database reflecting text-readiness of individual PSAPs
  - Registration in the database commences a six-month implementation timeframe for CTPs
  - PSAPs may provide other written notification to CTPs

- Readiness and Certification Form
  - http://transition.fcc.gov/pshs/911/PSAP_Readiness_Certification_Form.doc
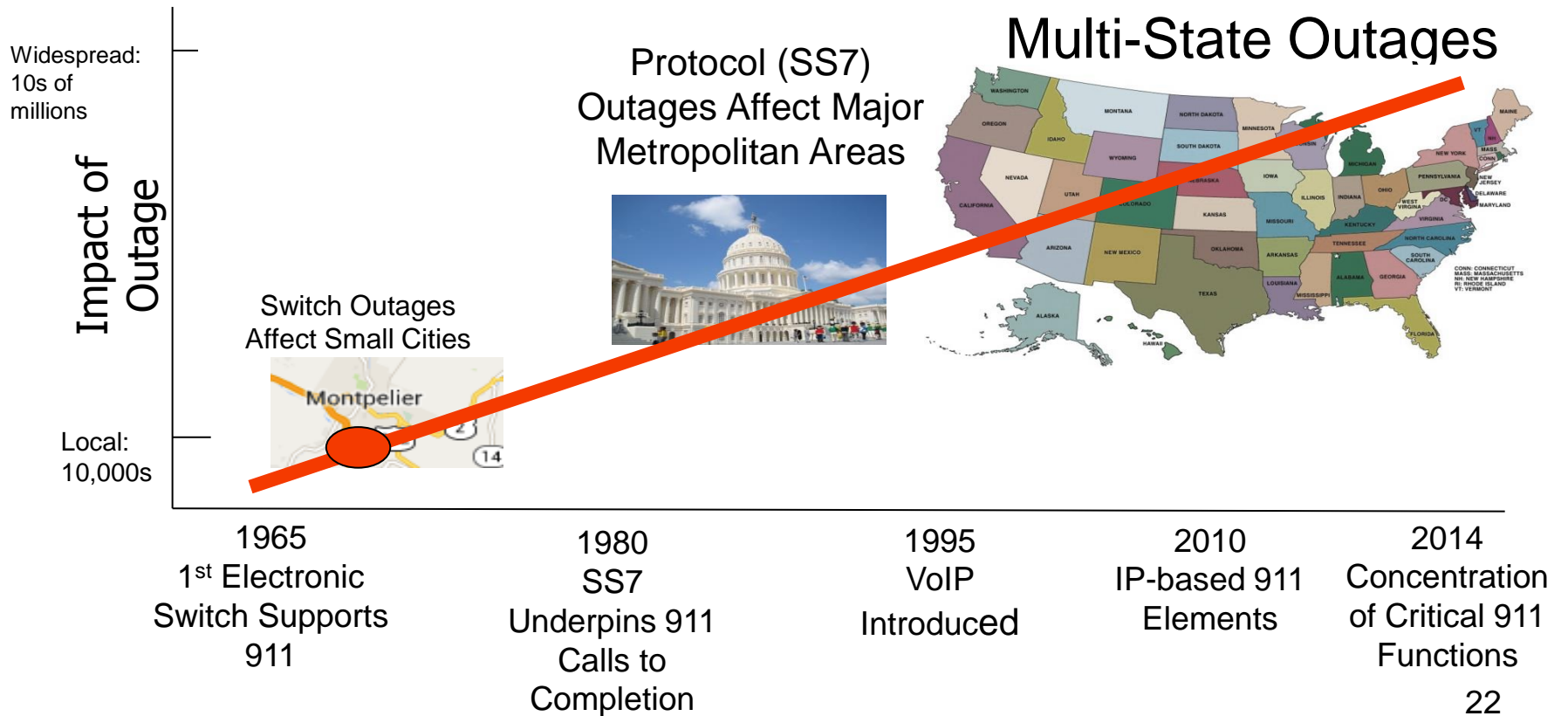 - Email the completed form to: T911PSAPREGISTRY@fcc.gov

911 RELIABILITY

Increasing Threats to 911 Reliability

Impact of Outage

Widespread: 10s of millions

Local: 10,000s

Switch Outages Affect Small Cities

Protocol (SS7) Outages Affect Major Metropolitan Areas

Multi-State Outages

1965
1st Electronic Switch Supports 911

1980
SS7 Underpins 911 Calls to Completion

1995
VoIP Introduced

2010
IP-based 911 Elements

2014
Concentration of Critical 911 Functions

22

Significant Spike in "Sunny Day" 911 Outages – Four in 2014 Alone

October 17, 2014: Multistate Outage Report

❑ Failure in subcontractor's 911 support services resulted in the Multistate 911 Outage - **11 million people affected for six hours**

❑ Nine statewide 911 failures in Hawaii - **1.4 million people affected for a total of 20 hours**

❑ Two simultaneous failures resulted in statewide 911 failure in Vermont - **625,000 people affected for 1 hour**

❑ Nationwide wireless carrier 911 outage – **Over 40 million people affected for 2 hours**

Number of Complete 911 Outages Affecting an Entire State or Multi-States
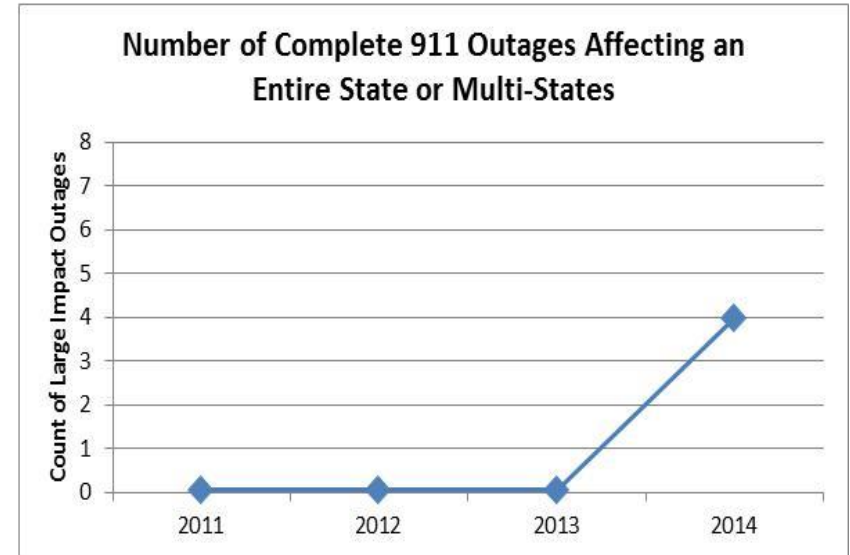
Consumer impacts are increasing in scope and frequency.

Need for Improved 911 Accountability and Governance

- The Commission is working to protect 911 service, as well as to encourage transparency in operations and accountability during outages, both before and during the approaching Technology Transition.

- These outages indicate that risks to reliability of 911 service are increasing as the 911 ecosystem migrates to an all-IP environment:
    - IP-based networks have new technological capabilities but also new vulnerabilities.
    - Outages are increasingly likely to be statewide, multi-state, or nationwide in scope
    - Increased number of providers and proliferation of new services is blurring traditional lines of accountability
    - Need for increased focus on 911 governance at state and federal levels

- November 21, 2014: Policy Statement and Notice of Proposed Rulemaking (NPRM) regarding governance and oversight of 911 communications and accountability for reliable 911 service in light of changing technologies and the transition to Next Generation 911
    - Comments due on or before March 9, 2015, and reply comments will be due on or before April 7, 2015
    - NPRM: http://www.fcc.gov/document/911-governance-and-accountability-policy-statement-and-nprm

TASK FORCE ON OPTIMAL PSAP ARCHITECTURE

Task Force on Optimal PSAP Architecture

Working Group	Description
WG1: Optimal Cybersecurity for PSAPs Chair: Jay English, Director Comm Center and 911 Service, APCO Intl	▪ Address cybersecurity issues, make recommendations for PSAP-specific cybersecurity practices based on the NIST Cybersecurity Framework and other foundational sources ▪ Identify resources and tools for PSAPs to use when developing cybersecurity strategies ▪ Make recommendations for PSAP cybersecurity workforce development and training ▪ **Duration: First Report Due to Task Force September 2015**
WG2: Optimal NG911 Architecture Implementation Chair: David Holl, National Association of State 911 Administrators	▪ Develop recommendations on how PSAPs can improve 911 functionality and cost-effectiveness through consolidated NG911 network architecture design and operation ▪ Develop recommendations for optimal NG911 system and network configurations for a range of existing PSAP use cases (e.g., large urban, rural); projected costs and transition periods associated with optimized configurations; and ensuring and improving access to NG911 for people with disabilities. ▪ Update previous best practices for legacy PSAPs identified by CSRIC to address the specific requirements that PSAPs will face in the NG911 environment. ▪ **Duration: First Report Due to Task Force September 2015**
WG3: Optimal Resource Allocation Chair: Philip Jones, WA State Public Utilities Commission	▪ To examine ways for state, local, and tribal governments to address these issues. ▪ Develop recommendations on optimal resource allocation and budgeting for PSAPs to transition to NG911, and identifying potential models for sustainable funding of PSAP NG911 operations. ▪ Examine strategies for optimizing use of state 911 fees to expedite the transition to NG911 and creating incentives to discourage fee diversion ▪ **Duration: First Report Due to Task Force July 2015**

Task Force Website: http://www.fcc.gov/encyclopedia/task-force-optimal-public-safety-answering-point-architecture-tfopa

Cybersecurity and 911

- The Commission's core mission is to protect the safety of life and property, and in the modern context, that necessarily includes the security of IP networks.

- The NG911 environment presents real cyber risks that must be addressed in PSAP planning and operations.

- The National Institute for Standards and Technology (NIST) has developed a framework that PSAPs can use to evaluate risk and develop plans for addressing risk.

- CSRIC IV Working Group 4 is examining ways to implement the NIST framework in the communications sector

911 FEE REPORT

Annual 911 Fee Report

- Each year, PSHSB submits a report to Congress on state-level funding for 911, E911, and NG911 service

- Congress mandated this report to put spotlight on 911 fee diversion for non-911 purposes.

- 6th Annual Report, covering calendar year 2013, finds states and other reporting jurisdictions collected 911/E911 fees or charges totaling approximately $2,404,510,787.64

- In calendar year 2013, six states (California, Illinois, New Jersey, New York, Rhode Island, and Washington) and Puerto Rico reported diverting or transferring 911/E911 fee collections for purposes other than 911/E911

6th Annual Report:
http://www.fcc.gov/encyclopedia/9-1-1-and-e9-1-1-services

Table 5 – Total Funds Diverted from 911/E911 Uses in 2013

State/Territory	Total Funds Collected (Year End 2013)	Total Funds Used for Purposes Other than 911/E911	Percentage Diverted
California	$75,714,948.00	$6,878,000.00	9%
Illinois	$71,200,000.00	$9,000,000.00	13%
New Jersey	$121,000,000.00	$107,000,000.00	88%
New York	$183,219,891.00	$20,000,000.00	11%
Puerto Rico	$19,507,889.00	$12,000,000.00	62%
Rhode Island	$17,454,000.00 (fiscal year 2013)	$12,093,000.00 (fiscal year 2013)	69%
Washington	$95,887,087.00	$16,300,000.00	17%
Total	**$583,983,815.00**	**$183,271,000.00**	**31%**
Percent Diverted From Total Funds Collected by All States			
Total	**$2,404,510,787.64**		**8%**

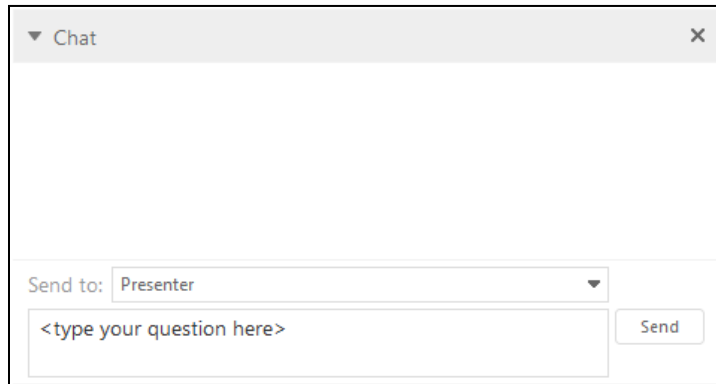# Thank You

Questions:
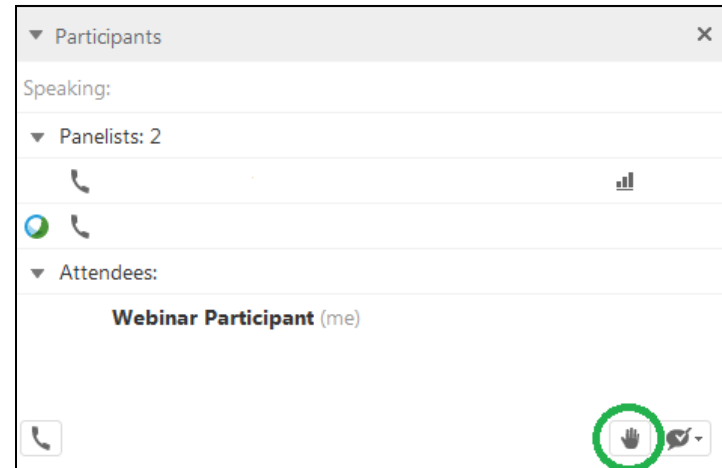
timothy.may@fcc.gov

Q&A Period

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Next Generation 9-1-1 in Johnston County, North Carolina

Jason Barbour
911 Director, NENA Past President
Johnston County E-911 Communications

Agenda

- Our Next Gen Journey
  - Needs Assessment
  - Solutions Assessment
  - Procurement
  - Service Implementation
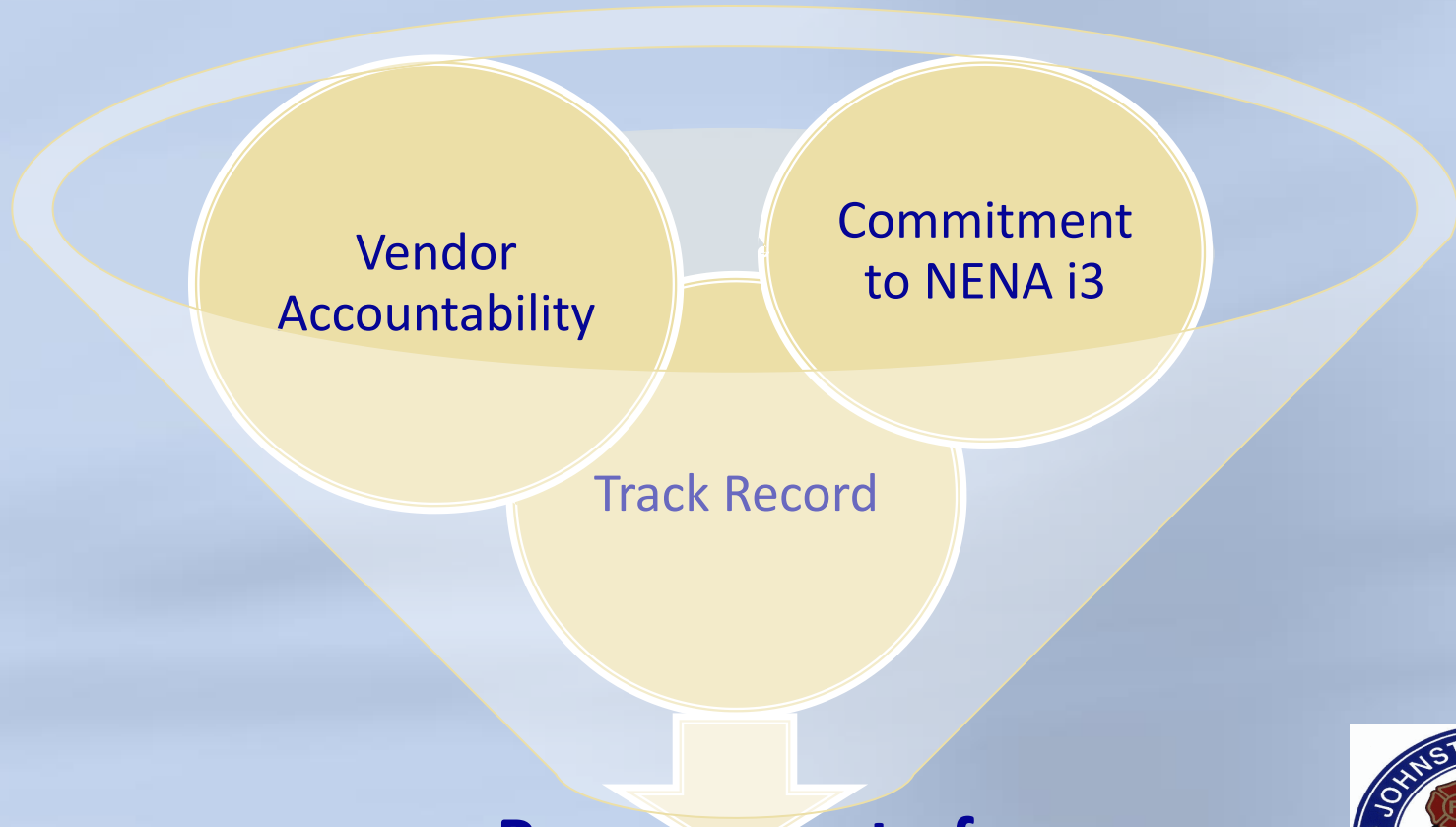 - Journey Ahead/Next Steps
- Lessons Learned

Johnston County's Path to NG9-1-1

Implementation

Procurement

Solution Assessment

Needs Assessment

Needs Assessment

Solution Assessment

Vendor Accountability

Commitment to NENA i3

Track Record

Procurement of

Turn-key, Bundled Suite of Services

In the last 12 months…

Build ESInet

Ingress Network Design

PSAP Connectivity

Tertiary LTE Network Design

System Provisioning

Call Handling System

Solution Requirements

Interface Specifications

GIS Development

Address Points

Database Comparisons

Johnston County's NG9-1-1 Path

Scheduled in Q1/Q2 2016

To be completed Q3-4 2015

Scheduled Late Q1 2015

Live in January 2015

i3 Routing

GIS Address Point

Supplemental Data

Text to 9-1-1

Cloud-hosted Call Handling

IPSR

ESInet

Lessons Learned…

- Understand the needs of your operations

- Diligence in vendor discussions

- Persistence with solutions providers

- If you don't have the subject matter expertise, find it!

Questions and Answers

Jason Barbour

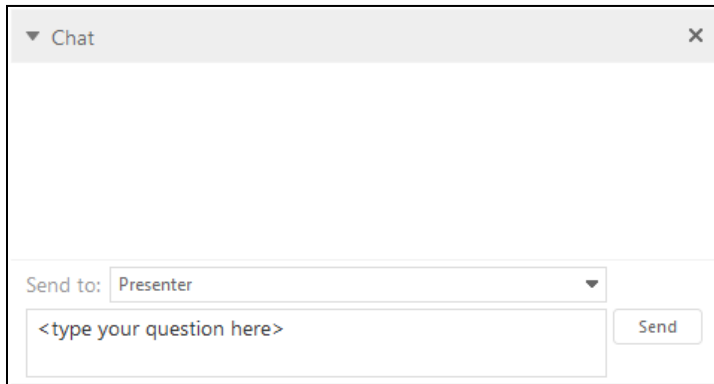Johnston County E-911 Communications

919-989-5059

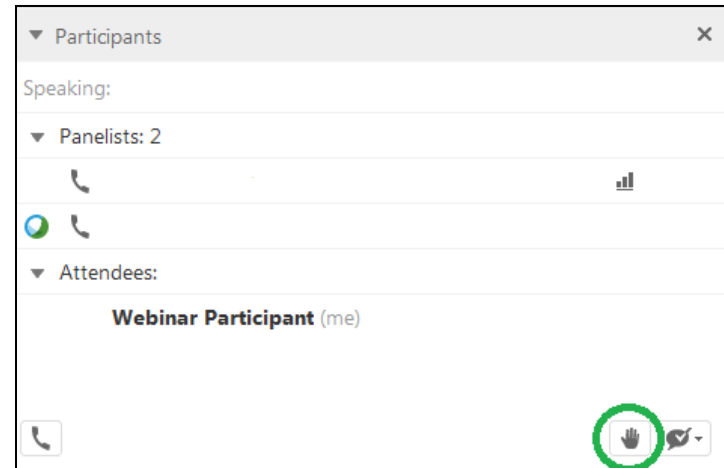jason.barbour@johnstonnc.com

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Future Webinars

Next Scheduled Webinar: Tuesday, April 14, 2015 at 12 noon ET

Presenters will be announced shortly and registration will be available early next month

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