Presentation Purpose

To provide information that will promote a fruitful discussion of how we can transition to Next Generation 9-1-1.

Address the challenges
Discuss the needs
Face the realities
Identify relevant questions
Relevant Questions

- Why does California need Next Generation 9-1-1?
- What happens if California does nothing?
- What are the important transition considerations?
- How does State 9-1-1 ensure the PSAP is not forgotten?
- How will Next Generation 9-1-1 be procured?
- How will Next Generation 9-1-1 be funded?
- When will Next Generation 9-1-1 be implemented?
- How will Next Generation 9-1-1 change my PSAP?
Presentation Roadmap

- Mission and structure of CalOES and 9-1-1 Branch
- 9-1-1 in California today
- Quick peek at Next Generation 9-1-1 design
- Multiple ESInet implications
- Planning challenges and Procurement options
- State and PSAP roles and governance
- System monitoring
- Implementation timeline
- PSAP Preparations
Mission and Structure of CalOES and 9-1-1 Branch

“To the person who does not know where he wants to go there is no favorable wind.”
— Seneca
To enable Public Safety Answering Points (PSAPs) to provide the fastest, most reliable, and cost-effective access to emergency services for any 9-1-1 caller in California from any communications device.
CalOES Mission

We protect lives and property, build capabilities, and support our communities for a resilient California. We achieve our mission by serving the public through effective collaboration in preparing for, protecting against, responding to, recovering from, and mitigating the impacts of all hazards and threats.
CA 9-1-1 BRANCH STRUCTURE

California 9-1-1 Emergency Communications Branch

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CA 9-1-1 Branch
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Effective February 13, 2017
9-1-1 in California Today
9-1-1 in California Today

2016 California 9-1-1 Call Statistics

Total 9-1-1 Calls: 28,507,534

- 80% Wireless
- 16% Wireline
- 3% Voice over IP
- 1% Other to include Telematics
- ~ 5k Text Messages
Basic 9-1-1 Architecture

- CPE – Customer Premise Equipment
- ESN - Emergency Service Number
- ALI – Automatic Location Information
- ANI – Automatic Number Identification
- pANI - Psuedo ANI
- VoIP – Voice over IP
- MSC – Mobile Switching Center
- VPC – VoIP Positioning Center

**End-Office Switch** sends number to data base for caller location

**VoIP Service Provider**

**Selectve Router**

**Data Bases**

**MSC or VPC**

**ALI Data Base**

**PSAP**

**Text Control Center**
Quick Peek at Next Generation 9-1-1 Design
Potential Next Generation 9-1-1 Architecture

This diagram represents a basic and TDM transitional NG9-1-1 architecture. The objective is to demonstrate how a hierarchical distribution of functional elements facilitate a public caller’s ability to be routed to the proper PSAP.
Budge’s Stubby Pencil Design

- CPE – Customer Premise Equipment
- ESN - Emergency Service Number
- ALI – Automatic Location Information
- ANI – Automatic Number Identification
- pANI - Psuedo ANI
- VoIP – Voice over IP
- MSC – Mobile Switching Center
- VPC – VoIP Positioning Center

End-Office Switch

Phone Number and Voice

MSC or VPC

Data Bases

Location Info

VoIP Service Provider

VoIP

9-1-1

Data Bases

Location Info

pANI

VoIP Location Info

ALI Data Base

Wireless Location Info

PSAP

Text Control Center

Text to 9-1-1
9-1-1 Statistics

California
- 45 Selective Routers
- 11 Local Access Transport Areas
- 443 PSAPs
- 28,507,534 9-1-1 calls

For Comparison and Perspective
Other Western APCO States

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<tr>
<th>State</th>
<th>Number PSAPs</th>
<th>Number Calls</th>
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<td>Totals</td>
<td>556</td>
<td>28,573,907</td>
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Quick Peek at Next Generation 9-1-1 Design for California

- Multiple Regional ESInets are likely
- Critical Design Components
  - Open Architecture – Multi-Vendor
  - Security and system monitoring
  - Flexibility to accommodate new technology
  - No single point of failure
  - Dynamic routing
  - Driven by operational requirements of PSAP
Potential Next Generation 9-1-1 Design for California

This diagram represents a basic and TDM transitional NG9-1-1 architecture. The objective is to demonstrate the distribution of functional elements and the caller’s ability to be routed to the proper service provider.
Multiple ESINet
Implications
Implications of Multiple ESInets

- NG 9-1-1 Interstate Playbook (Iowa, Minnesota, North Dakota, and South Dakota)
  - [https://www.911.gov/docs/NG911-Interstate-Playbook-FINAL-111516.pdf](https://www.911.gov/docs/NG911-Interstate-Playbook-FINAL-111516.pdf)

- ESInets are designed to accommodate dynamic routing between PSAPs

- ESInet traffic can dynamically route to another ESInet
  - How do we address call volume?
  - How can we throttle back the roll over?
  - How do I protect my ESInet?
Planning Challenges and Procurement Options
Planning Challenges

- Information sharing
- Collaborative planning
- Keeping up with Technology
  - Location data from Wireless carriers
  - Aging selective routers
  - Network Security
  - Outage reporting and monitoring
- Baseline of PSAP CAMA trunk needs
- Patience and willingness to reach consensus
- Stakeholder dominating requirements
- Contract / Procurement Process
Procurement Options

- Typical for Regional ESInet Procurement
  - ~24 months to develop contract
  - ~18 months to deploy ESInet
  - Typically a 5-7 year contract term
  - Imagine we have 6-12 ESInets – the implication is perpetual procurement

- Other Options
  - Contract Vehicle that allows services to transition
  - National Association of State Procurement Officials (NASPO – Formerly WSCA)
  - Tariff???
  - Other Contracts
State and PSAP Roles and Governance
Next Generation 9-1-1 Governance Structure

- 9-1-1 Emergency Communications Branch
  - State 9-1-1 Advisors
    - PSAPs
  - Next Generation 9-1-1 Implementation Team
- Vendor Community
- State 9-1-1 Technology Division
  - Next Generation 9-1-1 System Management
- PSAP Working Group
  - State 9-1-1 Regional Coordinator
    - County Coordinators
- 9-1-1 Advisory Board
  - Long Range Planning Committee
Aligning Roles

**State (Likely Roles)**
- Develop regulations and requirements
- Coordinate ESInet interconnections
- Procure and monitor network(s)
- Ensure contracts support NG 9-1-1 ESInet functionality
- Coordinate training

**PSAP (Likely Roles)**
- Participate in Working Groups
- Coordinate install and testing timelines
- Identify alternate answer needs (Dynamic Routing)
- Governance Needs: MOU, JPA.
- Call Handling (CPE)
- Voice concerns early
System Monitoring
System Monitoring

- Network monitoring 24x7x365
- Monitor each ESInet
- Monitor traffic between ESInets
- Event management and detection
- Outage management & detection
- ESInet vendors
  - Report monitoring data in real time
  - Must use format that can be consolidated
  - Outage and Denial of Service procedures
  - Intrusion detection and prevention
  - Escalation
  - Notification – 9-1-1 Branch and PSAP(s) affected
Next Generation 9-1-1 Estimated Cost

- Current rough order of magnitude costs

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<th>Deployment Year</th>
<th>NG9-1-1 Build Out Cost</th>
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<td><strong>Total</strong></td>
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- Updated cost estimate May 2017
Implementation Timeline
Implementation Timeline for CA

- Transition Plan completed June 30, 2017
- First Regional ESInet
  - Northeast Project - Contract Award by April 2017
  - Pasadena RING – Contract Award by June 2017
- PSAP Discussions – Week of July 17th ??
  - Please contact 9-1-1 Branch if you are interested
    - Sacramento July 17th
    - Northern July 19th
    - Southern July 21st
- Vendor Discussions – Week of August 6th ??
  - Please contact 9-1-1 Branch if you are interested
  - Goal is to schedule individual meetings with each vendor

Nationwide ESInet deployment by 2020...
Public Safety Communications

PSAP Preparations
PSAP Preparations

- True ESInet and Next Generation
  - Computer Aided Dispatch (CAD)
  - Call answering equipment (CPE)
  - Records Management System (RMS)
  - Radio Console

- Maintain Operational Needs
- Procedures Versus Technology
- Review
  - Number of Trunks
  - Number of Positions
  - How to ensure “local” look and feel

- Think Regionally
  - Shared CPE, CAD, RMS, Radio
  - Integrated GIS data
Reality Check

- Collaboration and interaction is required
- There will be challenges
- The pace of the transition

Message to PSAPs
- Thank you
- Partnership
- We need your input to validate operational design considerations

Message to Vendors
- Thank you
- Collaboration
- Help us engineer, design, install and maintain the best 9-1-1 system possible
- SLA’s versus common sense
QUESTIONS