State of Wisconsin
NG 9-1-1 Overview Workshop

May 2016

Homeland Security

Provided By
Office of Emergency Communications (OEC)

Introductions

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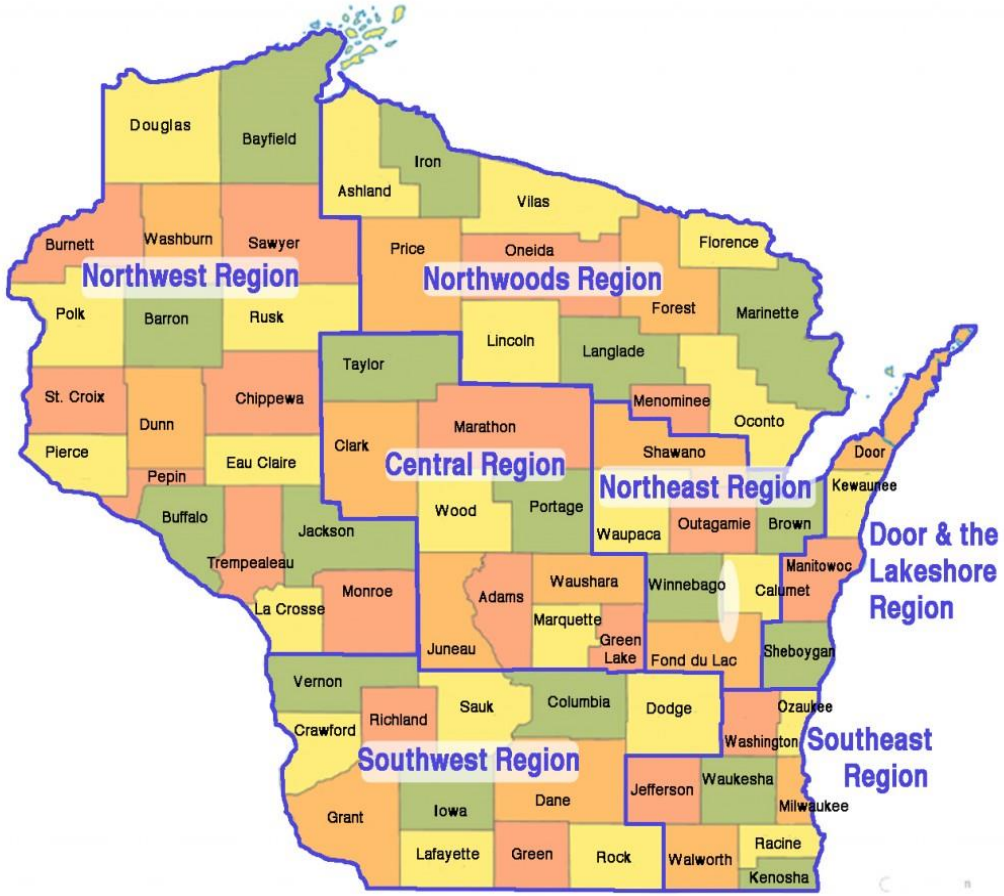
Agenda

- **Why NG 9-1-1**
  - NG 9-1-1 Standards
  - 9-1-1 Today
- **Other State Efforts**
- **Challenges and successes**
  - Obstacles
  - Risks and consequences
- **Planning Considerations**



NG 9-1-1 Overview

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NENA Committees

- Data Structures
- **Interconnection and Security**
- NG 9-1-1 Transition Planning

Main Components of NG 9-1-1

- Customer Premise Equipment
- **Network (Emergency Services IP Network- ESInet)**
- GIS (e.g. Geospatial Routing)
- **NG 9-1-1 Core Services**

NG 9-1-1 Overview

- **NG9-1-1** is an effort to enhance 9-1-1 capabilities by improving the hardware, software, and data and operational policies and procedures to:
  - **Process various types of emergency calls including non-voice (multimedia) messages**
  - Acquire and integrate additional data useful to call routing and handling
  - **Deliver the calls/messages and data to the appropriate Public Safety Answering Points (PSAP) and other appropriate emergency entities**
  - Support data and communications needs for coordinated incident response and management
  - **Address operational changes that will occur within the PSAP**

What is NG 9-1-1?

- Involves transitioning to internet protocol (IP) based technologies
- **Allows for the transmission of more mission critical information related to the 9-1-1 call for emergency services**
- Examples of NG9-1-1 services include: pictures, videos, crash or telemetry data and real time location information of an emergency situation
- **The overall goal is to provide first responders with critical information so that a proper response can be achieved and the emergency situation resolved**

NG9-1-1 Improvements and Capabilities

Expand PSAP Capabilities

- **Control Call Routing**
  Transfer voice and data between all NG911 PSAPs nationwide
- Expanded data sharing
  Facilitate emergency response
  Comprehensive incident management

Process Data from Numerous Devices

- Non-voice messaging of various types
- Text-to-911
- Devices, such as sensors, generating data-only messages
- Photo and video transmission
- Telematics

Fully Integrate with Other Emergency Services

- Other PSAPs
- Emergency Operations Centers
- DHS and other emergency management entities

NG9-1-1: Community Expectations

- Same 9-1-1 access & service regardless of location, device
- High standards and requirements
- Reliable equipment & processes, especially in disasters
- Warning notifications on social media, multimedia devices
- Equal access for special needs community

NG9-1-1 Myths and Truths

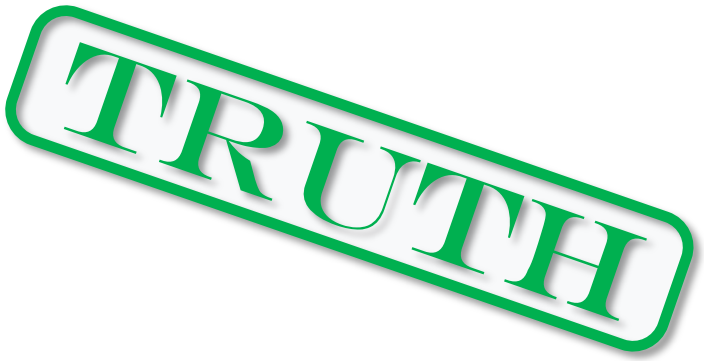
- There are several myths and misconceptions encountered when discussing NG9-1-1:
  - The PSAP working environment will change radically overnight
  - Accurate location data is guaranteed
  - NG9-1-1 will immediately begin to save money
  - Harassing or malicious 9-1-1 calls will be eliminated
- Instead, NG9-1-1 is:
  - Migrating 9-1-1 from Legacy Circuit-Switched Technology to IP solutions
  - Establishing interconnected broadband networks for the processing and routing of calls for service and information exchange between agencies

MYTH

TRUTH

NG9-1-1 Myths and Truths continued

- Instead, NG9-1-1 is:
  - Embedding location data in each call for service (no need to query databases)
  - Implementing dynamic management of call routing policy (e.g., operator loading, time-of-day, malfunctions)
  - Modernizing PSAP Customer Premise Equipment (CPE) (as needed)



Biggest Obstacles to NG9-1-1

Funding

- Funding is the primary reason NG9-1-1 activity varies across the country
- Funding can become a challenge for a variety of reasons to include competing budgetary requirements (e.g., capital costs in budget requests) or collected 9-1-1 fees used to pay for things other than 9-1-1 costs

Lack of Authority at State Level Agency

- Only 35 states have an authorized and staffed public safety function related to 9-1-1

Legislation

- 9-1-1 language exists in many state statues that enable, regulate and require 9-1-1 service. In some instances, it is so specific so as to exclude new service providers or alternative forms of technology that are necessary for NG9-1-1

Biggest Obstacles to NG9-1-1 cont

Contractual Obligations

- Some states are bound by existing, long standing contractual obligations based on old technology and how things used to be. The cost of terminating these types of contracts can be prohibitive and have prevented some jurisdictions from doing anything other than planning

Current NG9-1-1 Activities

Status of State Planning & Preparation

- Approximately 30 States have developed NG9-1-1 Master Plans or Strategic Plans which define the technology, operations, governance associated with the transition to an IP-based NG9-1-1 capable system
- Twenty-five States have begun deploying aspects of an IP-based NG9-1-1 system
  - The number is growing
  - Many are implementing statewide IP networks
  - In some cases, regional systems are leading the states
- The following slides provide a small sampling of different implementation approaches; with additional detail for Pennsylvania, Massachusetts, Maine and Connecticut

Transitional NG9-1-1 by State

Texas

The Texas NG9-1-1 system will be a network-of-networks with multiple vendors/solutions deployed across the state. The state-level ESInet will provide NG9-1-1 services directly and indirectly. Direct services will be provided to those entities that subscribe to thestate-level ESInet services. Indirect services will provide region-to-region ESInet interoperability facilitated by the state-level ESInet's functional elements.

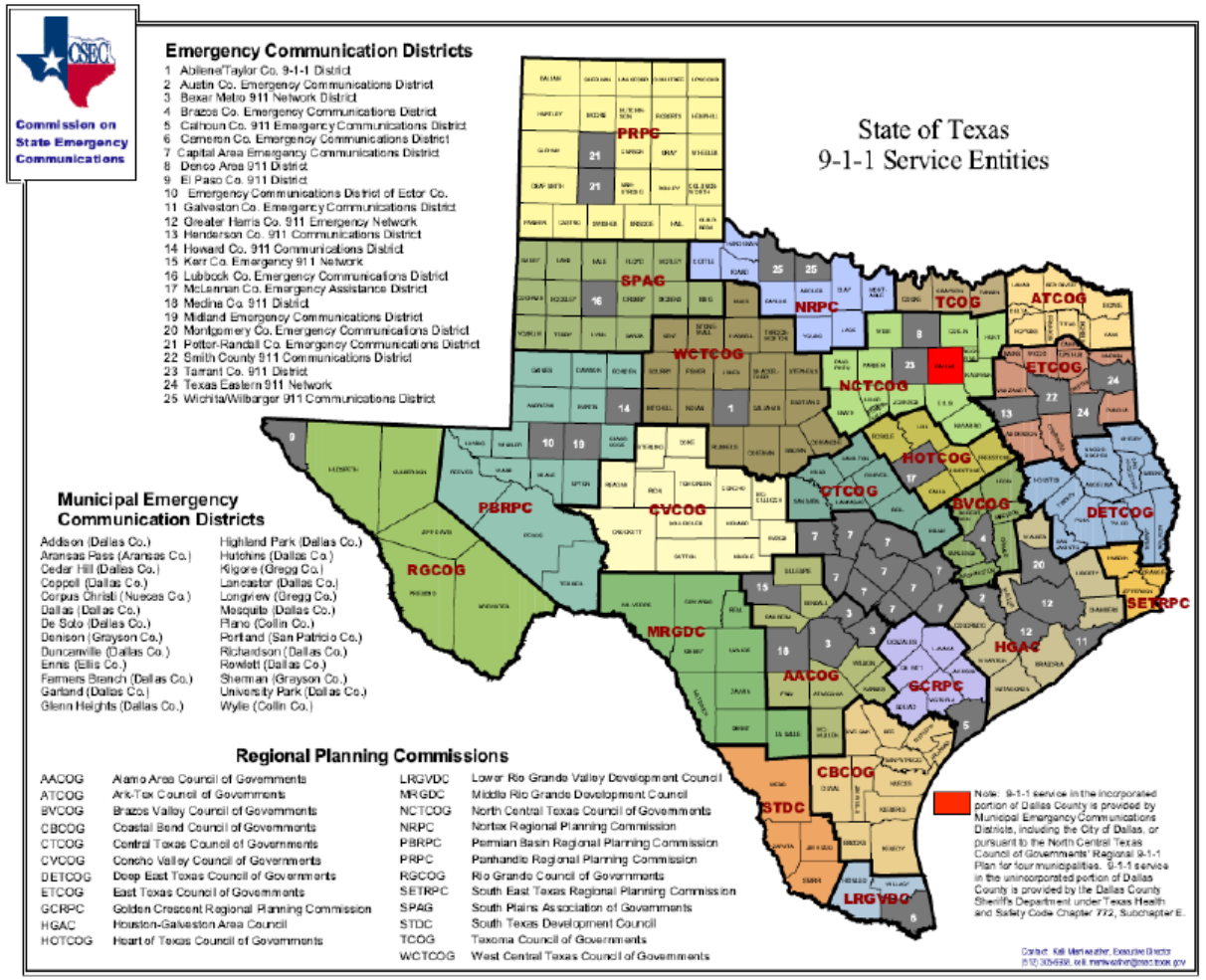
Texas Statewide 9-1-1 Strategic Plan 2015

Texas Communications Districts

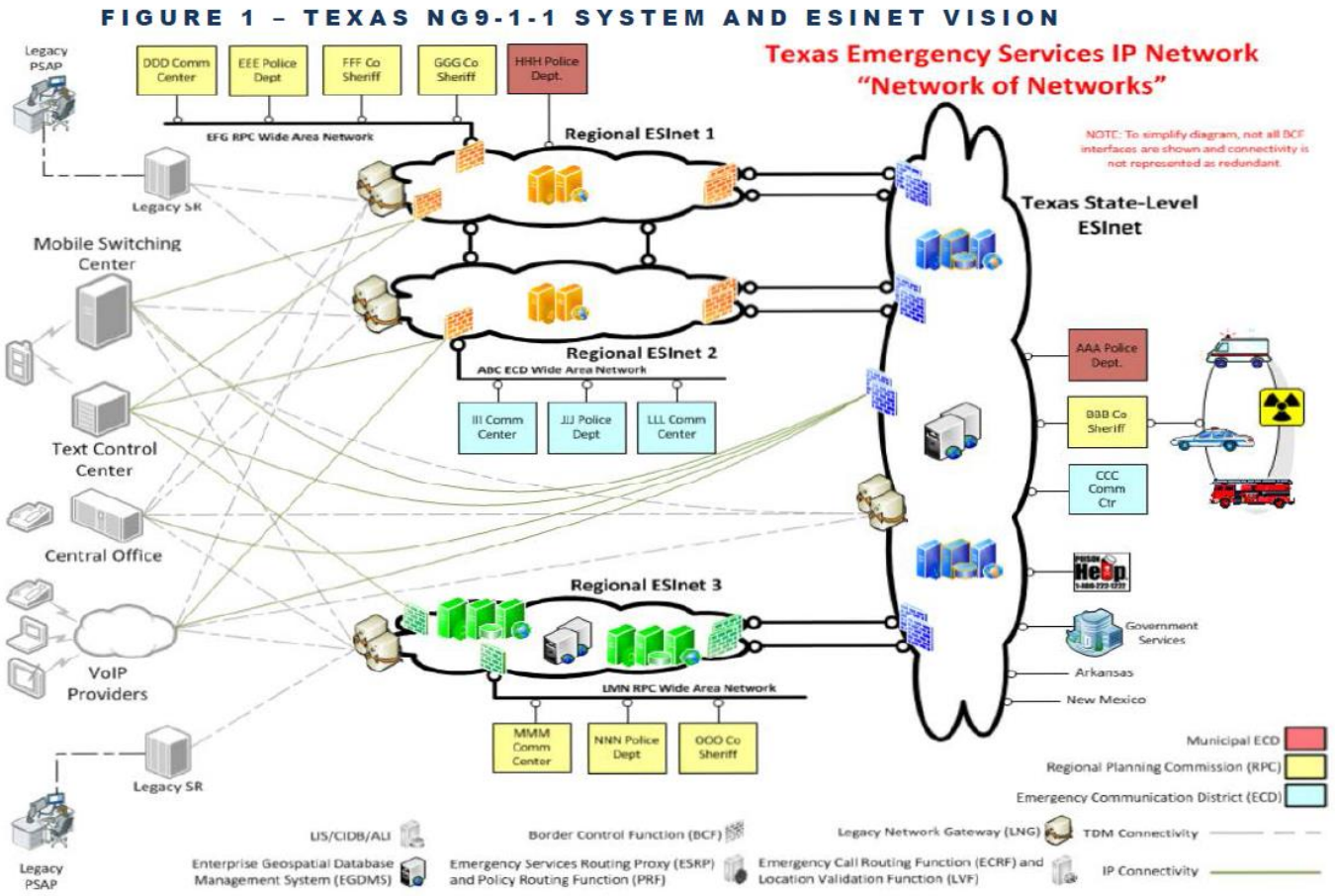
Three types of districts

- 24 Emergency Communications Districts
- 24 Regional 9-1-1 Systems
- 24 "Home Rule" City 9-1-1 Systems

Approximately 600 PSAPs



Texas NG9-1-1 System



Texas NG9-1-1 Implementation Phases

Phase One – FY 2015

- NG9-1-1 Geospatial Data Initiative
  - Enterprise Geospatial Database Management Services (EGDMS) – Implementation
  - 9-1-1 Database Management System – Procurement
- State-level ESInet (Phase I) – Procurement
- Regional ESInets – Procurement and Implementation

Texas MG9-1-1 Implementation Phases

Phase Two - FY 2016 - 2017

- NG9-1-1 Geospatial Data Initiative
- 9-1-1 Database Management System - Implementation (FY 2016)
- State-level ESInet (Phase I) – Implementation (FY 2017)
- State-level ESInet (Phase II) – Procurement (FY 2016)
- Regional ESInets Procurement, Implementation and Maintenance

Texas NG9-1-1 Implementation Phases

Phase Three FY 2018 – 2019

- State-level ESInet (Phase II) – Implementation (FY 2018)
- State-level ESInet (Phase III)
- Procurement (FY 2018)
- Implementation (FY 2019)
- Regional ESInet – Procurement, Implementation and Maintenance
- State-level and Regional ESInets – Interconnected and Fully Functional
- Legacy 9-1-1 Systems – Decommissioned (FY 2019)

Pennsylvania- 67 Counties/ 69 PSAP's

2015

9-1-1 Advisory Board Established

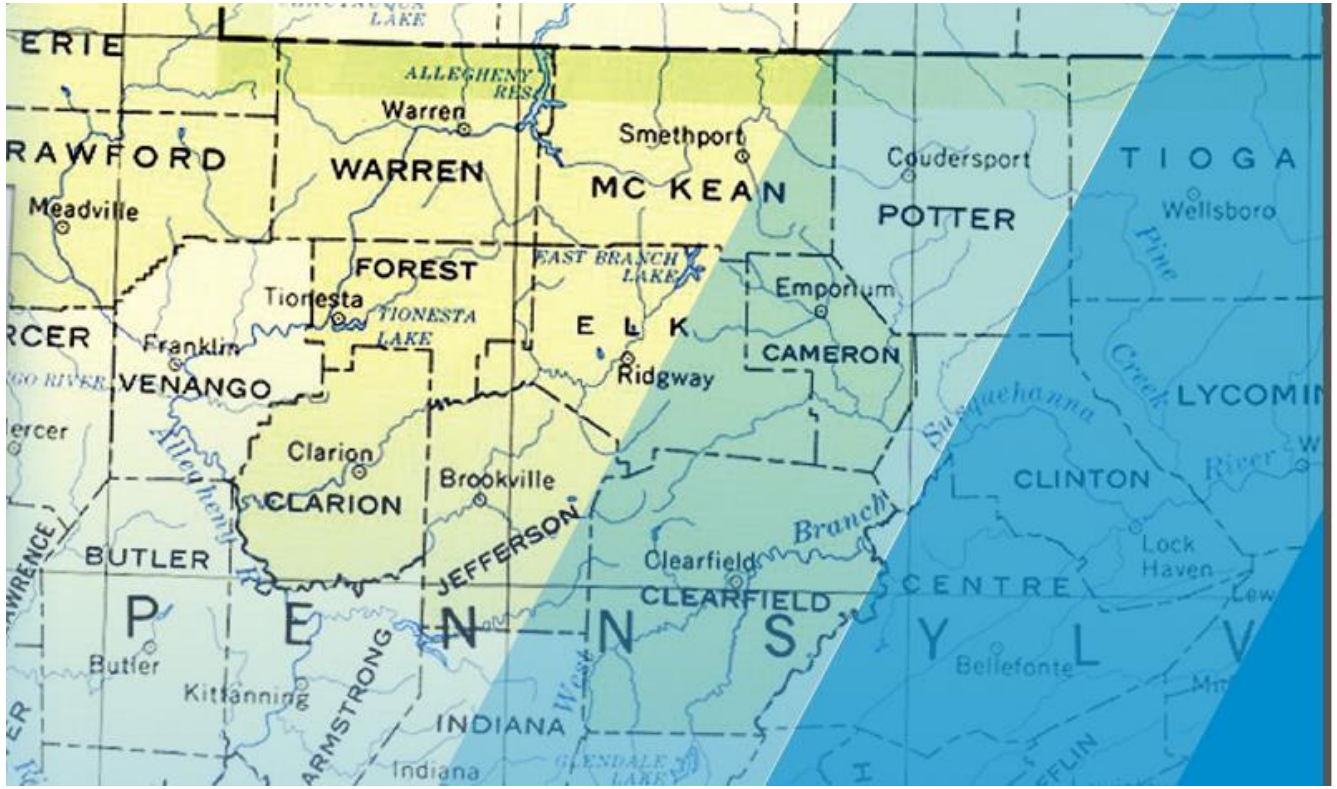
Two Main NG Efforts:

- **Northern Tier – 10 Counties**
- **Westcore- 13 Counties**

Pennsylvania- Northern Tier

2013

- Centralized Call Processing
- 10 Counties
- Self Funded
- Savings:
  - $2.3M Upfront
  - $250k Annually



Pennsylvania- WestCore

2013- Seed Funds from NHTSA Grant

Cost of CPE replacement / upgrade

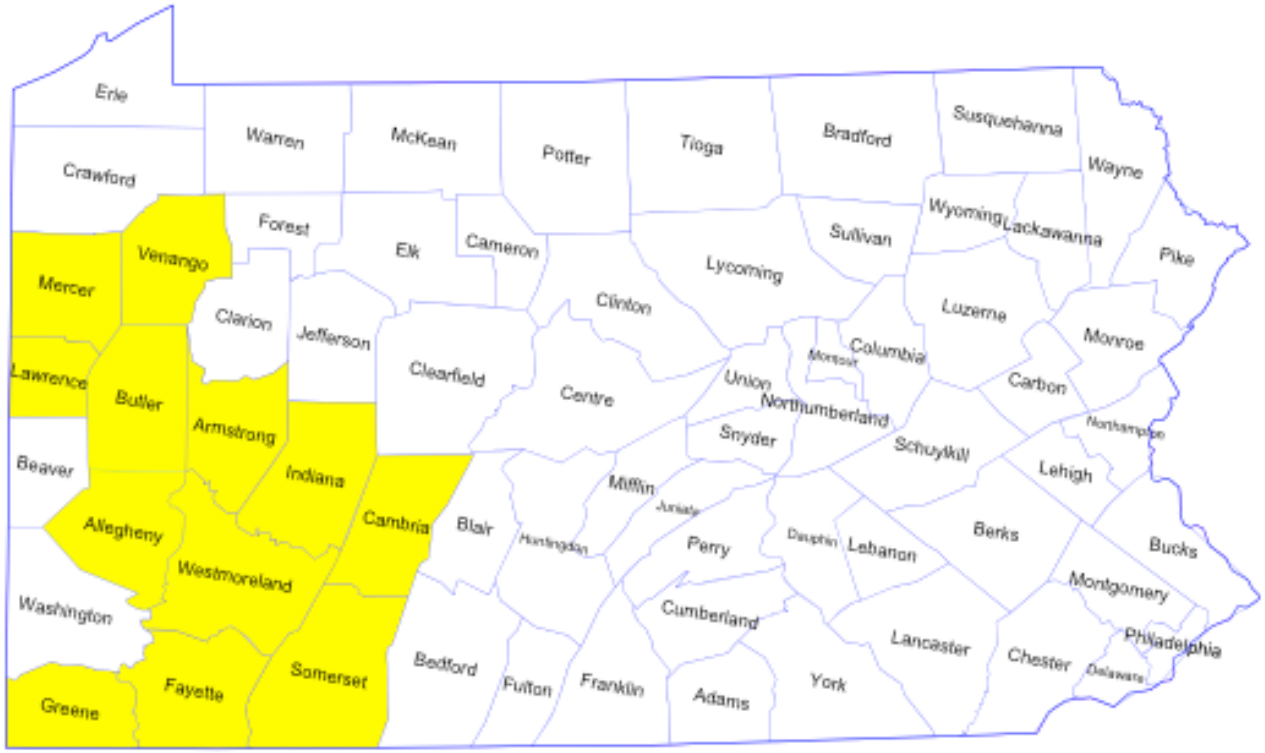
$9.4M Capital Investment

$564K Annual Operating Expense

Regional NG9-1-1 capable CPE

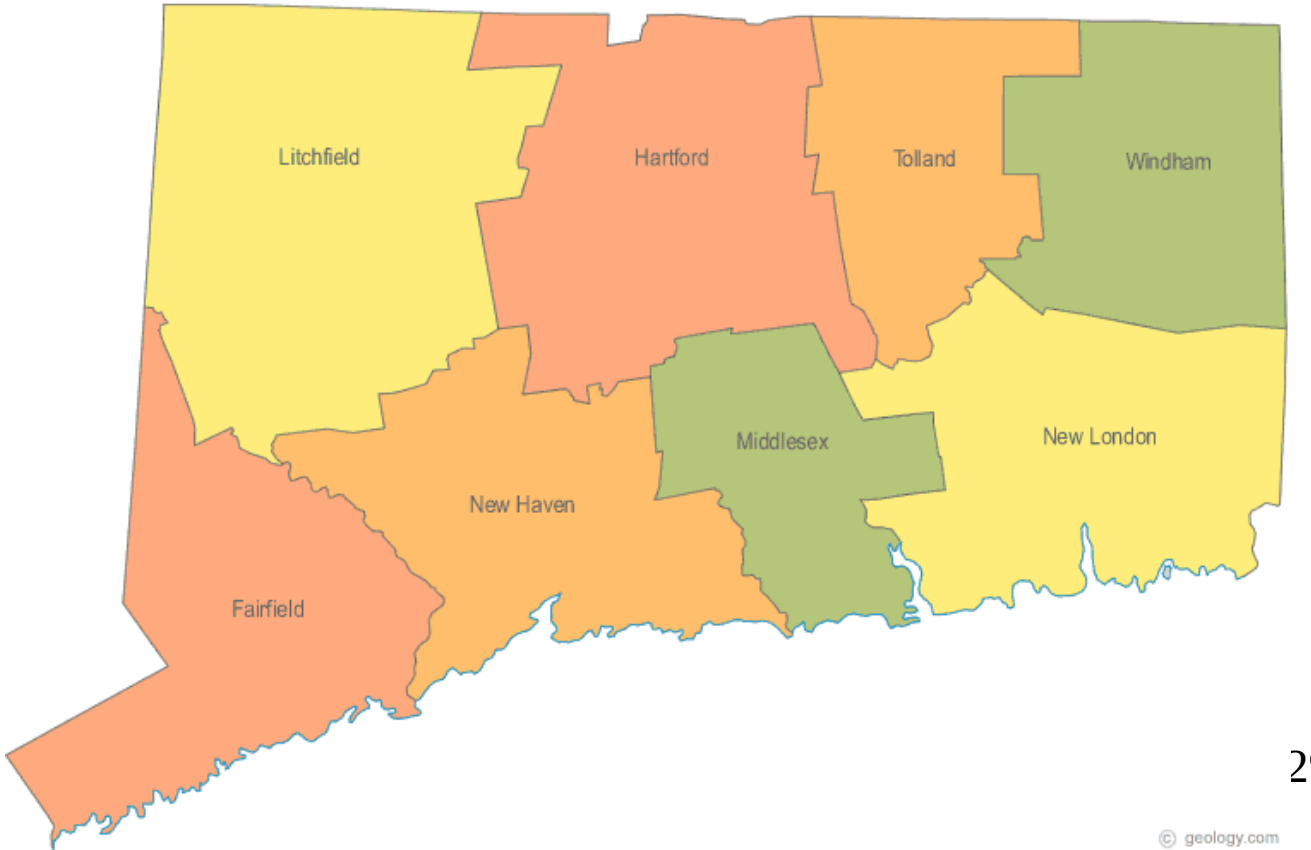
$5.1M Capital Investment

$392K Annual Operating Expense



Connecticut – 8 Counties/ 105 PSAP's

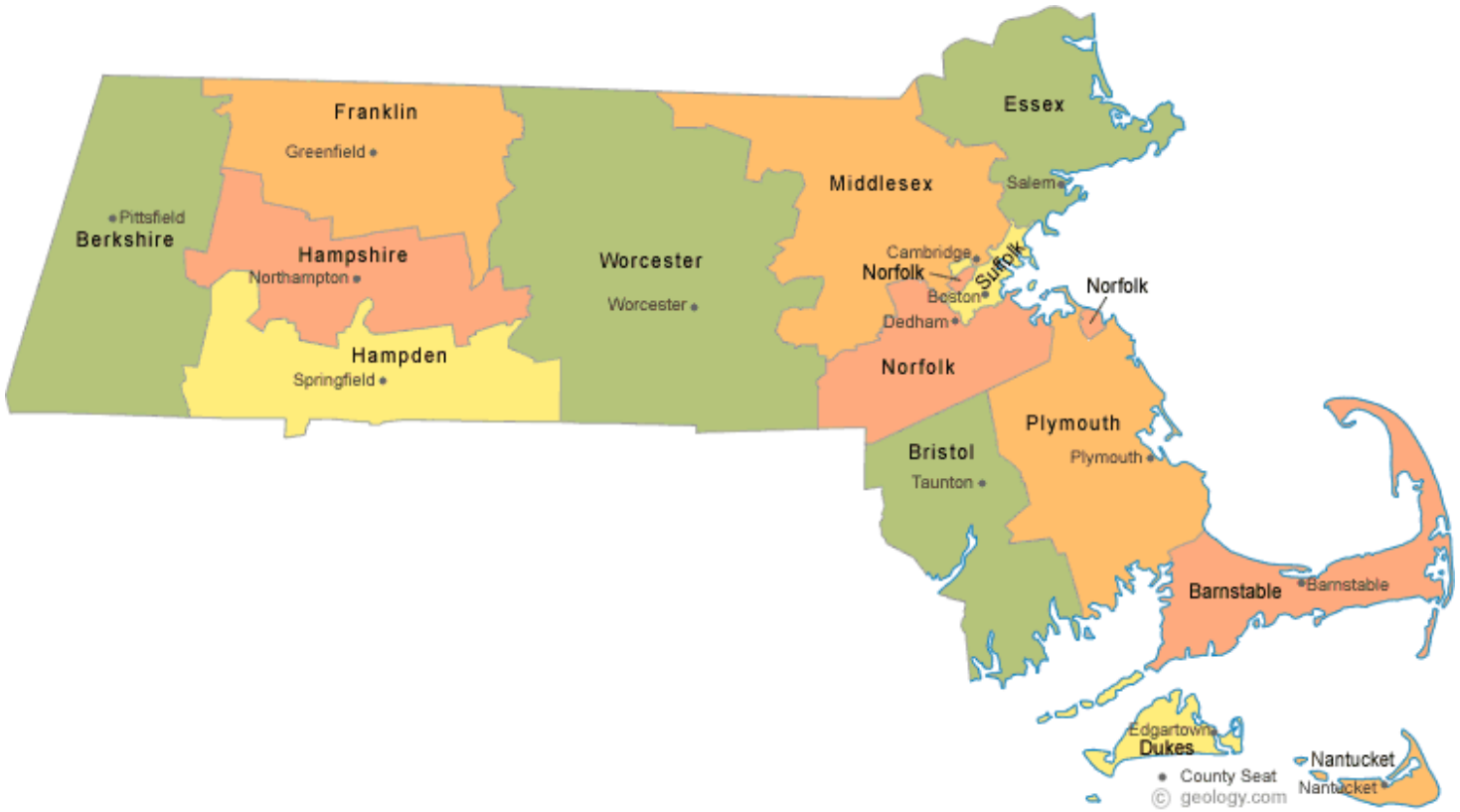
- Statewide Public Safety Data Network (Basis for ESInet)
- **Contract with AT&T for Statewide NG9-11**
- 22 PSAP's Cutover
- **GIS**
- Text
- **48th Largest State**



Massachusetts – 14 Counties/ 249 PSAP's

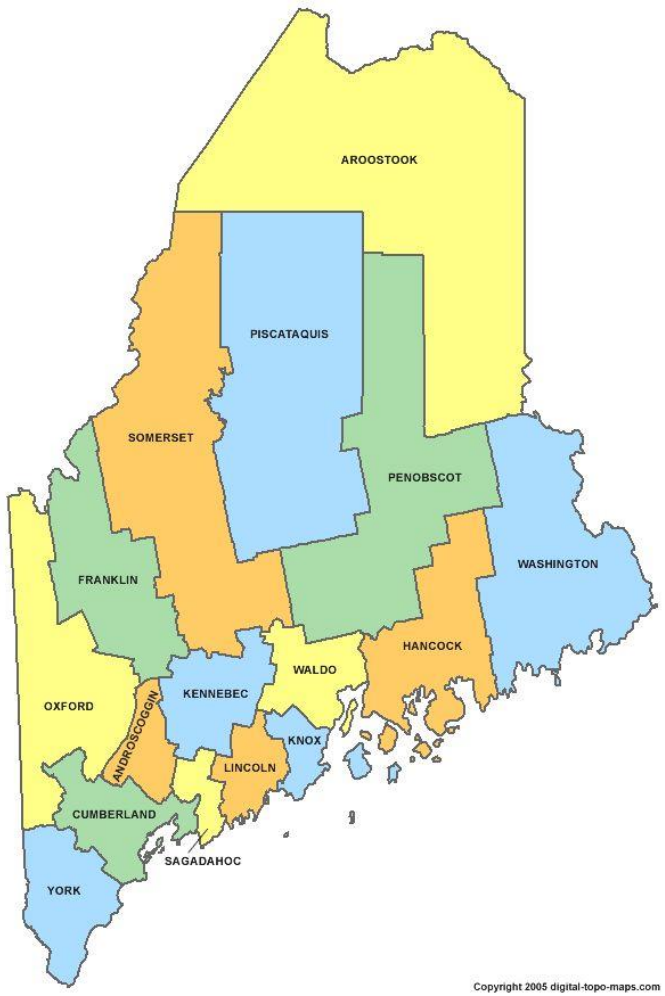
- Statewide NG9-11 Contract Awarded 2014- General Dynamics
- **GIS**
- Text
- **44th Largest State**

The State 911 Department also provides services and equipment for approximately **104** limited secondary PSAPs, **3** secondary PSAPs and **1** mobile PSAP



Maine – 16 Counties/ 26 PSAP's

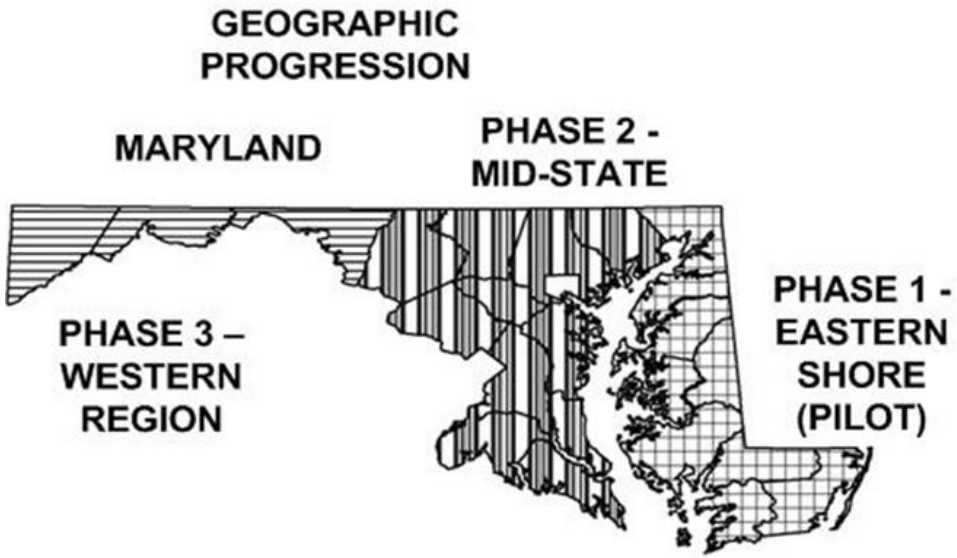
- Statewide NG9-11 Contract Awarded 2013- FairPoint
- Completed July 2014
- **GIS**
- Text Today via TTY
- **39th Largest State**

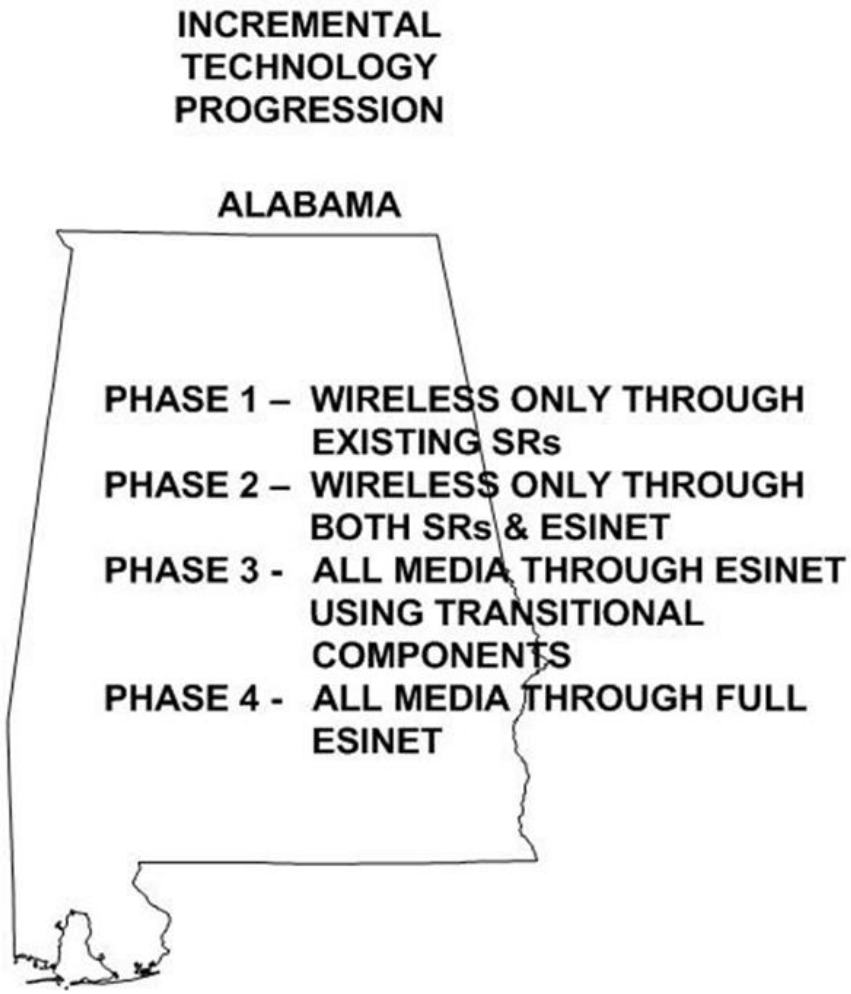


NG911 Transition Alternatives

- **Two major alternatives for a phased rollout**
  - **Geographic Progression –** Each successive phase corresponds to the transition of a geographic area of the state to NG911 implementation
  - **Incremental Technology Progression –** Successive phases correspond to incremental advances in technology leading to full NG911 realization in the final phase
- Each alternative has its advantages
  - In the geographic approach, the first phase can be a pilot for proof of concept
  - In the incremental technology advance, all of the PSAPs are provided with the same level of service simultaneously

NG911 Transition Alternatives





NG9-1-1 Next Steps
Transition Planning

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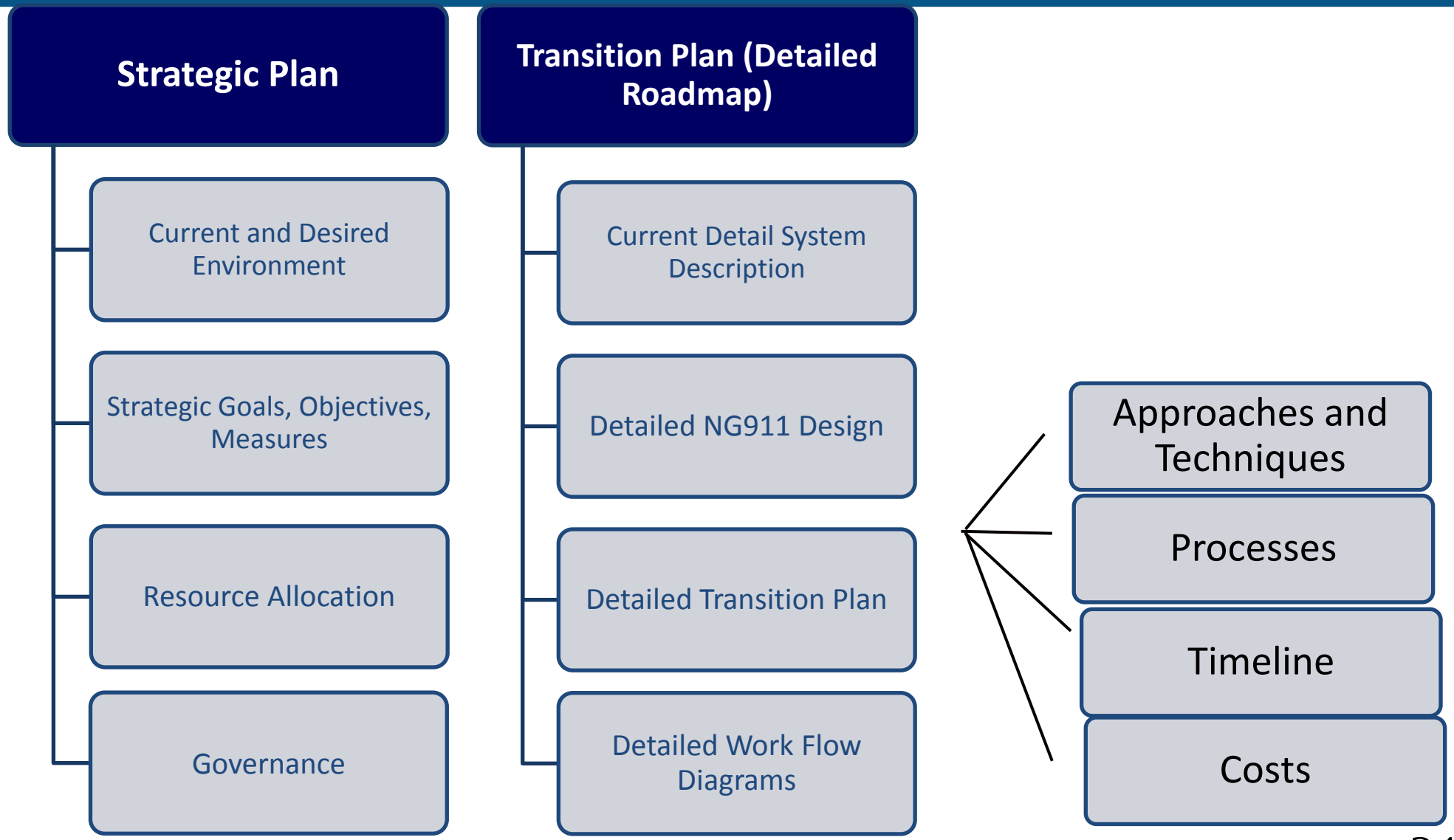
NG9-1-1 Realities

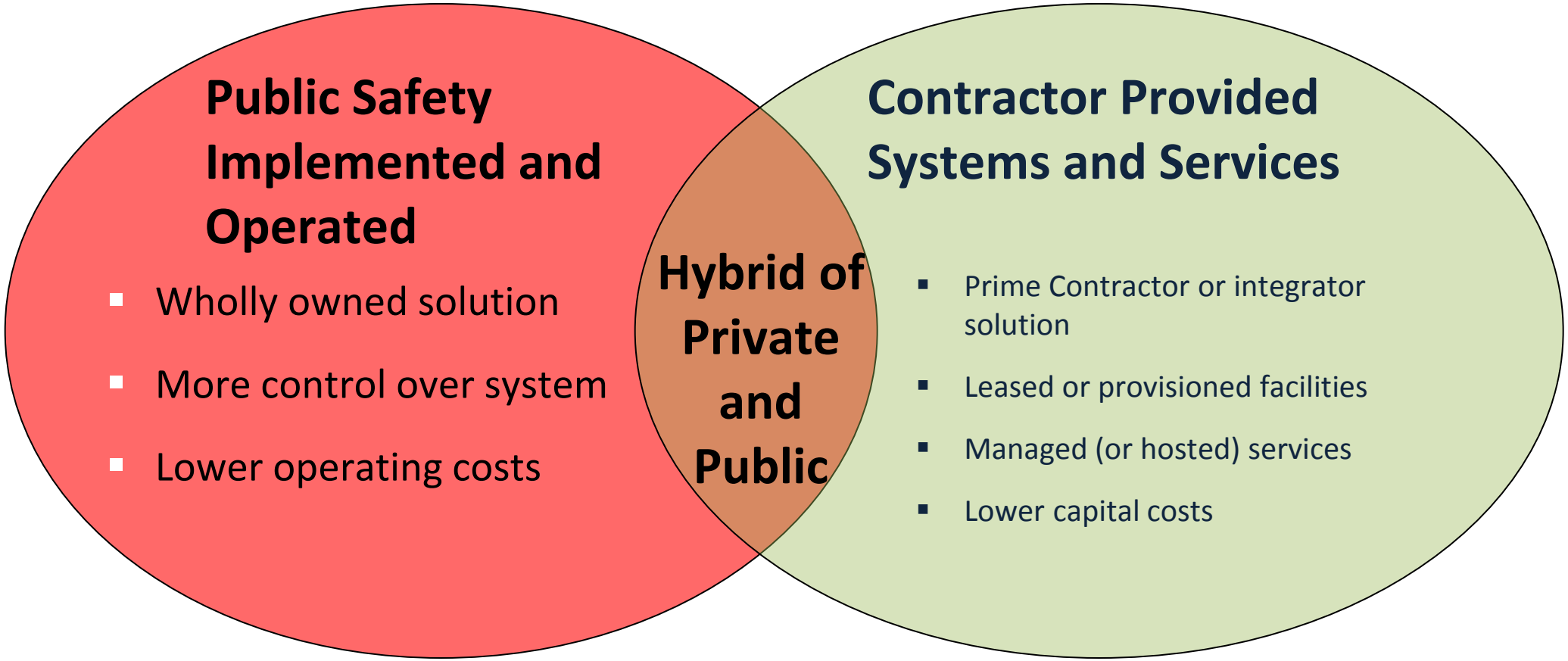
- There are many alternative paths for the migration from legacy to NG9-1-1
- Coordination among participating entities during transition may be complex and challenging
- Operating costs will be higher during transition because of the need to maintain legacy systems during NG9-1-1 deployment
- Education and training of operators and maintainers is essential for success and acceptance
- NG9-1-1 standards are evolving as technologies and society evolves
- Interim SMS Text-to-911 solutions are being deployed and the service is becoming wide spread

In preparing for NG9-1-1, detailed planning is critical!

NG9-1-1 Next Steps: Strategic &Transition Plans



Business Model Considerations



Transition Considerations

- The objective is a non-disruptive step-wise migration
- Close coordination among all parties is essential
  - OSPs, SSP, PSAPs, and the NG911 administrator
- There will be alternative paths and the most appropriate can be determined through the process leading to a detailed transition plan.
  - Development of a detailed transition plan is critical
- During the transition, the legacy databases must be maintained until the migration is complete

NG9-1-1 Transition Alternatives

- Each alternative has its advantages
  - In the geographic approach, the first phase can be a pilot for proof of concept
  - In the incremental technology advance, all of the PSAPs are provided with the same level of service simultaneously

NG9-1-1 Next Steps: Developing Your Vision

- Purpose: to support a shared idea of the group's direction, and often help groups face unexpected change and respond to emerging trends or issues

- A successful vision statement outlines lofty but achievable emergency communications goals supported by internal and external stakeholders

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NG9-1-1 Next Steps: Developing Your Mission

- Purpose: describes the State's purpose in achieving your vision
- A successful mission statement is
  - **Distinctive**: defines your group uniquely
  - **Descriptive**: what you do
  - **Believable**: realistic and achievable
  - **Actionable**: sets a specific direction with action implications
  - **Measurable**: so you know when you're meeting your goals

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NG9-1-1 Next Steps: Developing Your Goals

- Purpose: To clearly articulate the statewide goals for delivering the vision
- Goals build on the vision and mission by **defining and prioritizing the broad direction** in response to specific priorities and gaps

S	pecific
M	easureable or observable
A	ction-orientated
R	ealistic
T	ime-bound

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NG9-1-1
Questions to Consider

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NG911 Questions to Consider: Motivators for NG9-1-1

What are the key drivers for NG9-1-1 in your State?

- What are the strengths and weaknesses/challenges of the current 9-1-1 landscape?
  - Is there a comprehensive understanding of the current costs of maintaining and upgrading legacy, stand-alone systems across the State?

NG911 Questions to Consider: Motivators for NG9-1-1

What are the key drivers for NG9-1-1 in your State?

- What aspects of NG9-1-1 are appealing to your State and your stakeholders?
  - Greater interoperability among PSAPs?
  - IP technology enabling greater connectivity between PSAPs?
  - Cost sharing and greater economies of scale to realize long-term cost savings compared to existing, stand-alone systems?
  - New capabilities such as location identification, multimedia information sharing, and geospatial call routing?
  - Ability to support the evolving technology requirements and expectations of the public?

NG911 Questions to Consider: Statutory & Regulatory

Has the State conducted a comprehensive regulatory review to ensure that nothing will limit or hinder the State from proceeding with the planning, design or implementation of an NG9-1-1 system?

- What legislation, rules, regulations, tariffs, and other pertinent statute related to or involving 9-1-1 emergency telecommunication services currently exist in the State?
- How would shared networks, databases, and applications impact the statutory and regulatory environment across the State?

NG911 Questions to Consider: Funding

Does State statute provide for a dedicated and sustainable source of adequate funding for planning, implementation, system administration and on-going maintenance for NG9-1-1?

- Is there currently a State-agency or position tasked with coordination of funding for NG9-1-1 deployment?
- Have future costs of planning, implementing, administering, and maintaining a NG9-1-1 system statewide been determined?

NG911 Questions to Consider: Governance

Is there a 9-1-1 Governance Model in place and is it highly inclusive and representative of the stakeholders associated with NG9-1-1 implementation?

- Is there currently a governing body in place for 9-1-1 service in the State?
- If a governance model is place for 9-1-1 in the State, is it inclusive and representative of all the 9-1-1 stakeholders across the State?
- Are stakeholders engaged and participating in the governance model on a consistent basis?

NG911 Questions to Consider: Governance

Is there a State-level entity with a clearly defined 9-1-1 program coordination role with statewide authority to address associated State or local level functions and responsibilities?

- What State Agency is the primary agency tasked with 9-1-1 coordination across the State?
- Is there a State-level 9-1-1 Program Manager/Coordinator?

NG911 Questions to Consider: Technology

Existing Infrastructure

Are there currently any existing networks that can be leveraged to support build-out of an Emergency Services Internet Protocol (IP) Network (ESInet)?

- Are there any fiber networks used at a local, regional, or State level that could support the build-out of an ESInet to support NG9-1-1 services?
- Are there any NG9-1-1 Pilots in the State?

NG911 Questions to Consider: Operations

Security

Does the State have network security and physical security plan/requirement for PSAPs?

- Do plans and procedures exist that describe the minimum network and data protection measures to be in place for each facility, locally at the PSAP and under State responsibility?
- Are there State or local-level requirements that describe the minimum physical security and access control features to be in place for PSAPs?

NG911 Questions to Consider: Operations

Evaluation

Is data collected across the State for evaluation and planning purposes?

- Is data is collected from all PSAPs in the State and does the State have a process to evaluate collected data?
- Is data shared throughout the State with 9-1-1 authorities that have provided data?

NG911 Questions to Consider: Operations

Staff and Training

Does the State have minimum/essential telecommunicator training requirements?

- Does the State require a training program that meets national training standards or equivalent?
- Is the training requirement supported with dedicated funding?

NG911 Questions to Consider: Outreach & Education

Does the State have an effective public education program for 911?

- Is there a public education program at either the State or local levels that includes dissemination of information to the public using electronic media (including social media) and print media?
- If so, how can this be applied for NG9-1-1 implementation, as the need for public information and awareness increases with the migration to NG9-1-1 services?

NG9-1-1 Resources

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NG9-1-1 Affiliated Organizations

- FCC: Federal Communications Commission
  - PSHSB: Public Safety Homeland Security Bureau
  - NRIC: Network Reliability and Interoperability Council
- DOT: U.S. Department of Transportation
  - NHTSA: National Highway Traffic Safety Administration
  - RITA: Research and Innovative Technology Administration
  - 911.gov: National 911 Program
- DHS: Department of Homeland Security
  - OEC: Office of Emergency Communications
- NENA: National Emergency Number Association
- APCO: Association of Public-Safety Communications Officials
- NASNA: National Association of State Nine-One-One Administrators
- IETF: Internet Engineering Task Force
- ATIS: Alliance for Telecommunications Industry Solutions
  - ESIF: Emergency Services Interconnection Forum

Questions